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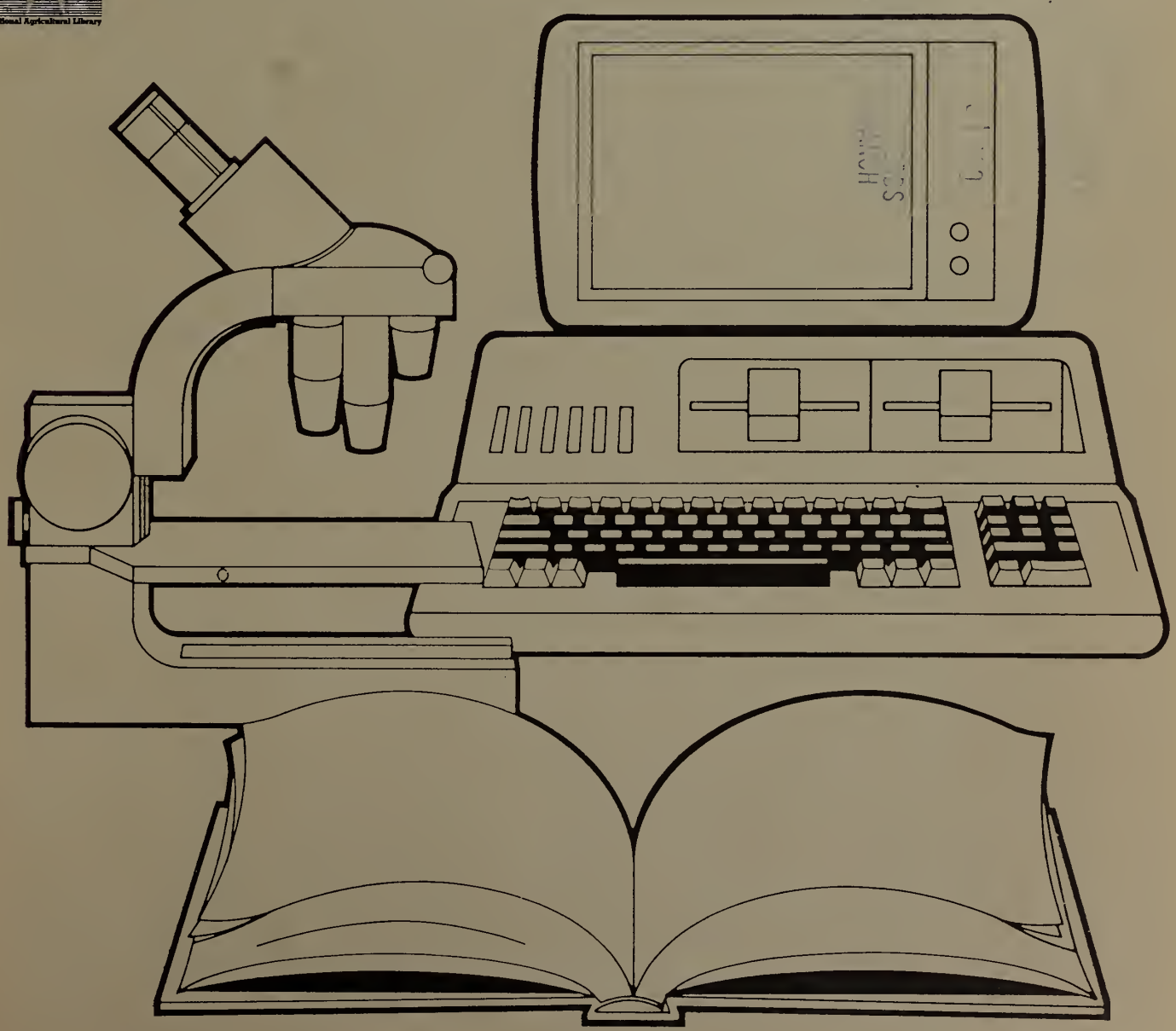
The Protection of Small Grains, Other Than Wheat, Rice, or Sorghums, 1979 - April 1990

Citations from AGRICOLA Concerning Diseases and other Environmental Considerations



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Compiled and Edited by

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National Agricultural Library

National Agricultural Library
Beltsville, Maryland
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FOREWORD

This is the 34th volume in a series of commodity-oriented environmental bibliographies resulting from a memorandum of understanding between the U.S. Department of Agriculture, National Agricultural Library (USDA-NAL), and the U.S. Environmental Protection Agency, Office of Pesticide Programs (EPA-OPP).

This close working relationship between the two agencies will produce a series of bibliographies which will be useful to EPA in the regulation of pesticides, as well as to any researcher in the field of plant or commodity protection. The broad scope of information contained in this series will benefit USDA, EPA, and the agricultural community as a whole.

The sources referenced in these bibliographies include the majority of the latest available information from U.S. publications involving commodity protection throughout the growing and processing stages for each agricultural commodity.

We welcome the opportunity to join this cooperative effort between USDA and EPA in support of the national agricultural community.

JOSEPH H. HOWARD, Director
National Agricultural Library

DOUGLAS D. CAMPT, Director
Office of Pesticide Programs

INTRODUCTION

The citations in this bibliography, The Protection of Small Grains Other Than Wheat, Rice, or Sorghums, are selected from the AGRICOLA (AGRICultural OnLine Access) database limited to those produced by North American authors. They cover articles or monographic publications added to the database from 1979 - April 1990.

This is the 34th bibliography in a series of commodity-oriented listings of citations from AGRICOLA jointly sponsored by the U.S. Department of Agriculture, National Agricultural Library (USDA-NAL), and the U.S. Environmental Protection Agency, Office of Pesticide Programs (EPA-OPP). Additional volumes issued recently include The Protection of Cotton, 1985 - 1989, The Protection of Soybeans, 1985 - 1989, The Protection of Small Fruits and Berries, The Protection of Grapes and Cherries, The Protection of Ornamental Plants, The Protection of Farm Animals, and The Protection of Wildlife and Vertebrate Pest Control. The 1990 volumes include The Protection of Tropical and Subtropical Fruits, The Protection of Small Grains (other than Wheat, Rice or Sorghums), The Protection of Cucurbits, The Protection of Minor Vegetable Crops, The Protection of Beans, Peas, and Lentils, and The Protection of Forestry.

Entries in the bibliography are subdivided into a series of section headings used in the contents of the Bibliography of Agriculture. Each item appears under every section heading assigned to the cited document. A personal author index is also included in the publication and a site index to plants follows the personal author index.

The U.S. Environmental Protection Agency contact for this project is Richard B. Peacock, Office of Pesticides and Toxic Substances.

Any comments or questions concerning this bibliography may be addressed to the compiler and editor:

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0029

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Volunteer barley (Hordeum vulgare) interference in canola (Brassica campestris and B. napus).
WEESA6. O'Donovan, J.T. Sharma, A.K.; Kirkland, K.J.; De St Remy, E.A. Champaign, Ill. : Weed Science Society of America. The yield potential and the effect on yield loss of canola of different densities of volunteer barley were investigated at three locations in western Canada. Field studies were conducted from 1982 to 1986. Rectangular hyperbolic models based on data pooled over years, locations, and canola cultivars, and incorporating different densities of volunteer barley and canola accurately portrayed field responses in most instances. Results indicated that volunteer barley severely reduced canola yield. However, financial losses due to reduced canola yield were partly offset by the volunteer barley crop. Weed science. Nov 1988. v. 36 (6). p. 734-739. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Why the world doesn't want our grain.
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0034

The effects of phosphate on early growth and maturity.
AGJOAT. Noll, C.F. Madison, Wis. : American Society of Agronomy. A number of investigators have found that the use of phosphates produced a more rapid growth of the roots of seedlings and several have claimed that, in the case of small grains, phosphates promote tillering. Russell states that in England superphosphates cause rapid early growth of turnips and swedes. The evidence is not conclusive that these effects from phosphate are more pronounced than from the other fertilizer elements where the latter are the limiting factors for crop yields. Fertilizer tests have quite generally, if not always, shown that the use of phosphatic fertilizers induces earlier ripening of the grain crops on soils low in phosphorus. Similar effects have been noted with cabbage and with cotton. In the case of tomatoes, the use of phosphates at the Pennsylvania Experiment Station, has been accompanied by a much greater growth of stalk and larger total yield, but also by later ripening. The effects of different phosphatic fertilizers seem to vary with the availability of the phosphates as shown by the responses in crop yeilds. However, at the Ohio Experiment Station, acid phosphate had more influence in promoting earliness than either steamed bonemeal or basic slag, altho all these phosphates gave approximately the same yield. Applied in moderate rates, the soluble phosphates, as a rule, have shown a more pronounced influence in hastening maturity than the same quantity of phosphoric acid in rock phosphate, the influence in earliness varying in degree with the response in yield. Increasing the rates of application of phosphatic fertilizers above the needs of the crop as indicated by yields has not been accompanied by further increases in earliness. Though phosphates show a more marked influence in promoting earliness than the other fertilizer elements, yet moderate amounts of nitrogen and potash, where these are needed for the production of crops, have a similar effect. Lime, also, if applied to soils having a high lime requirement, may induce earli. Agronomy journal. Mar 1923. v. 15 (3). p. 87-99. (NAL Call No.: DNAL 4 AM34P).

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Requirements and developments in small grain seed treatments.
PLDRA. Phipps, P.M. St. Paul, Minn. : American Phytopathological Society. Plant disease. Nov 1985. v. 69 (11). p. 1009-1010. (NAL Call No.: DNAL 1.9 P69P).

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Weed control by means of chemical sprays.
AGJOAT. Bolley, H.L. Madison, Wis. : American Society of Agronomy. Agronomy journal. 1910. v. 1. p. 159-168. (NAL Call No.: DNAL 4 AM34P).

0037

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0038

Postemergence control of an oat cover crop and broadleaf weeds in direct-seeded nursery beds.
HJHSA. Warmund, M.R. Alexandria, Va. : American Society for Horticultural Science. HortScience. Aug 1987. v. 22 (4). p. 603-605. Includes references. (NAL Call No.: DNAL SB1.H6).

0039

Root-lesion nematodes, potassium deficiency, and prior cover crops as factors in apple replant disease.
JOSHB. Merwin, I.A. Stiles, W.C. Alexandria, Va. : The Society. Growth chamber evaluations of soil from an orchard replant site showed severe stunting of 'Northern Spy' apple (Malus domestica Borkh.) seedlings grown in field soil (FS) compared with pasteurized soil (PS) from the same site. The FS : PS seedling dry weight ratio of 0.44 indicated a serious replant problem. Leaf nutrient content was generally higher in PS than FS seedlings.
Multiple-regression analysis indicated that leaf K and root-lesion nematode (Pratylenchus penetrans Filipjev) primary inoculum accounted for 75% of the variation in FS seedling dry weight. Apple seedling dry weight in FS was 97% of that in PS following a marigold (Tagetes patula L. cv. Sparky) cover crop, and 75% following oats (Avena sativa L. cv. Saia). Root-lesion nematodes were nearly eliminated from the plots with marigold. Other cover crops and weed-free fallow period were less effective in controlling apple replant disease and/or phytonematodes. Journal of the American Society for Horticultural Science. Sept 1989. v. 114 (5). p. 728-732. Includes references. (NAL Call No.: DNAL 81 S012).

0040

Seasonal establishment of bermudagrass using plastic and straw mulches.
AGJOAT. Sowers, R.S. Welterlen, M.S. Madison, Wis. : American Society of Agronomy.
Bermudagrass Cynodon dactylon (L.) Pers. is normally established vegetatively during the early summer in the transition zone, to allow sufficient establishment time before the onset of freezing conditions in the fall. Clear polyethylene covers and straw mulches cause changes in the turfgrass microenvironment that may influence the rate of sprig establishment. The objective of this study was to evaluate the effects of barley (Hordeum vulgare L.) straw and clear polyethylene plastic mulch (0.04-mm thickness) on the establishment of 'Midiron', 'Tufcote', and 'Vamont' bermudagrass from sprigs. Separate tests were conducted in the fall of 1983 and 1984 and the summer of 1984 and 1985. Summer spriggings were made in May, June, and July, months generally recommended for planting in the transition zone. Late-season spriggings were made in August, September, and October. Plantings were made on a Sassafrass sandy loam (fine-loamy, siliceous, mesic Typic Hapludult). Summer bermudagrass establishment was reduced under straw and polyethylene covers. Injury under plastic occurred to plantings made in May and June, which were exposed to mean soil temperatures above 41 degrees C during the 8-wk cover period. In contrast, plastic mulch stimulated early fall bermudagrass growth and delayed dormancy. August and September plantings remaining under plastic throughout the winter exhibited high winter survival in comparison to unmulched or straw mulched turf, and were nearly 100% established by 1 July of the following year. Spriggings under plastic planted after 20 September exhibited poor establishment by 1 July the following year. These studies showed that plastic covers can be used to extend the establishment season of bermudagrass into the fall; however, plastic covers are detrimental to summer bermudagrass establishment. Agronomy journal. Jan/Feb 1988. v. 80 (1). p. 144-148. Includes references. (NAL Call No.: DNAL 4 AM34P).

0041

Treatment of currants and cherries to prevent spot diseases /L.H. Pammel, G.W. Carver. Squirrel-tail grass or wild barley, (Hordeum jubatum L.) / by L.H. Pammel. The chemical composition of Squirrel-tail grass / J.B. Weems, W.H. Heileman.
Pammel, L. H. 1862-1931. Carver, George Washington, 1864?-1943.; Weems, J. B.; Heileman, W. H. Ames, Iowa : Experiment Station. Iowa Agricultural College, 1895. Caption title. p. 289-321 : ill. ; 23 cm. Includes bibliographical references. (NAL Call No.: DNAL 100 Io9 no.30).

0042

Andre spring barley (Two-rowed, long-awned variety, performance, disease resistance).
Morrison, K.J. Ullrich, S.E.; Nilan, R.A.; Brauen, S.E.; Muir, C.E.; Reisenauer, P. Pullman, Wash. : The Service. Extension Bulletin - Washington State University, Cooperative Extension Service. Mar 1984. Mar 1984. (1249). 5 p. (NAL Call No.: 275.29 W27P).

0043

Annual Grass control in flax (Linum usitatissimum) with quizalofop.
WETEE9. Friesen, G.H. Champaign, Ill. : The Society. Weed technology : a journal of the Weed Science Society of America. Apr 1988. v. 2 (2). p. 144-146. Includes references. (NAL Call No.: DNAL SB610.W39).

0044

Availability studies upon high potash nitrate.
AGJOAT. Allison, R.V. Madison, Wis. : American Society of Agronomy. Experimental studies upon the availability of the nitrogen and potash of High Potash Nitrate have been carried out under both green-house and field conditions. The results in pot culture indicated the value of the nitrogen and potash of this compound as being fully equivalent to that derived from sodium nitrate and potassium sulfate. Because of the fact that the field plots responded strongly to applications of nitrogen and not at all to potash, it may be assumed that the nitrogen of the High Potash Nitrate was as effective as that of sodium nitrate. Agronomy journal. Jan 1924. v. 16 (1). p. 26-30. (NAL Call No.: DNAL 4 AM34P).

0045

Barley.
AGRYA. Foster, E. Prentice, N. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (28). p. 337-396. ill. Includes references. (NAL Call No.: DNAL 4 AM392).

0046

Barley (Hordeum vulgare) response to herbicides applied at three growth stages.
WETEE9. Martin, D.A. Miller, S.D.; Alley, H.P. Champaign, Ill. : The Society. Weed technology : a journal of the Weed Science Society of America. Jan 1988. v. 2 (1). p. 41-45. Includes references. (NAL Call No.: DNAL SB610.W39).

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Barley production on Alabama farms.
Mask, P.L. Hagan, A.K. Auburn, Ala. : The Service. Circular ANR - Alabama Cooperative Extension Service, Auburn University. In Subseries: Agriculture and Natural Resources. Agronomy. Oct 1988. (517). 2 p. (NAL Call No.: DNAL S544.3.A2C47).

0048

Barley variety performance in Michigan.
MUCBA. Copeland, L.O. Freed, R.D.; Leep, R.H.; Wolfe, D. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. Apr 1986. (1313,rev.). 2 p. (NAL Call No.: DNAL 275.29 M58B).

0049

Barley vs. oat companion crops. I. Forage yield and quality response during alfalfa establishment.
CRPSAY. Brink, G.E. Marten, G.C. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1060-1067. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Bowers barley.
Leep, R. H. Copeland, L. O.; Grafius, J. E.& A new spring barley for feed. Document available from: Michigan State Univ., Bulletin Office, P.O. Box 231, East Lansing, Michigan 48824 1979. This discusses the history of Bowers barley, it's time and rate of seeding, seed quality and treatment, weed control, fertilization, and harvesting. 1 sheet : ill. (NAL Call No.: Document available from source.).(NAL Call No.: Extension Bulletin E-1314).

0051

Breeding winter oats for the South.
AGJOAT. Stanton, T.R. Madison, Wis. : American Society of Agronomy. A nursery for the isolation and development of cold-resistant, high-yielding, and otherwise desirable strains of winter oats has been maintained at the Arlington Experiment Farm since 1907. A more or less standardized nursery system is used consisting of series of single 5-foot plant or head rows, duplicated 15-foot rows, and duplicated blocks or plats of three 15-foot rows each. Two strains of Winter Turf, C. I. Nos. 435-4 and 541-4, have been developed which during the 10-year period, 1916-25, inclusive, have outyielded the unselected stock by about 8 bushels to the acre. Definite winter types of Fulghum have been isolated and are being studied. In these forms the plants show a

decided spreading or winter habit in early growth and have dark green, rather narrow leaves. The selections apparently are more cold-resistant, and are superior in yield to the original Fulghum. Several high-yielding strains of winter oats have been developed from a Winter Turf-Auror case. In these strains the earliness and excellent kernel characters of the Aurora variety have been combined with the winter resistance of the Winter Turf oat to a highly satisfactory degree. Two of the most promising selections have been named Lee and Custis. The maintenance of varietal identity in such standard oats as fulghum and Red Rustproof is one of the most pressing practical problems in connection with the growing of oats in the South. Selected strains of these varieties are available of these varieties are available and should be substituted for the nondescript, so-called Red Rustproof oats which are grown in many districts of the South. The selection work with Fulghum was considerably expanded in the fall of 1925 at the Arlington Experiment Farm. In addition, 500 selections from Fulghum were sown at Tifton, Ga., for the development of strains especially adapted to the southern portion of the cotton belt. Numerous selections from hybrids between Fulghum and hardy winter varieties, such as Culberson. Agronomy journal. Sept 1926. v. 18 (9). p. 804-814. ill. (NAL Call No.: DNAL 4 AM34P).

0052

Broadleaf weed control in barley with sulfonyl urea herbicides.
WAEBA. Miller, S.D. Krall, J.M. Laramie : The Station. Bulletin B - Wyoming, Agricultural Experiment Station. 1986. (885). p. 150-151. (NAL Call No.: DNAL 100 W99 (1)).

0053

The Cereal rusts /edited by William R. Bushnell and Alan P. Roelfs. --.
Bushnell, William R.; Roelfs, A. P. Orlando : Academic Press, c1984-1985. 2 v. : ill. ; 24 cm. Includes bibliographies and indexes. (NAL Call No.: DNAL SB741.R8C44).

0054

Cereal vegetation as a source of forage.
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AGJOAT. Pearson, C.H. Golus, H.M.; Tindall, T.A. Madison, Wis. : American Society of Agronomy. Lodging in barley (Hordeum vulgare L.) can result in grain loss, lower seed quality, increased disease, high grain moisture, reduced harvest efficiency, and lower milling grade. Application of N fertilizer to achieve high barley yields often results in increased lodging. Consequently, N applications are often reduced in order to lessen the potential for loding. Use of plant growth regulators may permit higher N application rates without increased lodging. Field studies were conducted in an irrigated arid environment during 1986 and 1987 on Fruita sandy clay loam (fine-loamy, mixed, mesic Typic Haplargid) soil. Ethephon (2-chloroethyl) phosphonic acid was applied at 0.42 kg a.i. ha-1 to irrigated winter barley that received 56, 112, 168, and 224 kg ha-1 of spring-applied N. The 1986 data indicated that, in the absence of lodging. ethepnon did not affect barley grain yields. Ethephon increased grain yields in 1987 in association with reduced lodging. Plant height response to ethephon was similar across N rates. Ethephon shortened internode lengths on the upper portion of the culm and reduced lodging of winter barley grown at high N rates. Ethephon did not affect spikes m-2, kernel mass, kernels spike-1, or seed N content in either year. Application of higher N rates than traditionally used in irrigated winter barley increased grain yield and seed N content. In years when lodging occurred, ethephon was effective as an antilodging agent. Agronomy journal. Sept/Oct 1989. v. 81 (5). p. 7171-719. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGJOAT. Baltenberger, D.C.C. Frey, K.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1987. v. 79 (5). p. 813-816. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGJOAT. Burnside, D.C. Moomaw, R.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1984. v. 76 (6). p. 887-890. Includes 13 references. (NAL Call No.: DNAL 4 AM34P).

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CRPSAY. Smail, V.W. Eslick, R.F.; Hockett, E.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1023-1029. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Purdue University ~ Cooperative Extension Service. 1967. This publication examines Jaycee, C17971, as an acceptable spring growing oat for the southern one fourth of Indiana and is recommended for production in the rest of Indiana. Document available from: Mailing Room, Ag. Administration Bldg., Purdue University, West Lafayette, IN 47907. 1 sheet. (NAL Call No.: ID-69).

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Legume growth and residual effects on oat (Avena sativa L.) production.
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AGJOAT. Bracken, A.F. Madison, Wis. : American Society of Agronomy. Agronomy journal. Aug 1925. v. 17 (8). p. 508-514. (NAL Call No.: DNAL 4 AM34P).

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Methods of eradicating buckthorn (rhamnus) susceptible to crown rust (puccinia coronata) of oats /by S.M. Dietz and L.D. Leach.
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Methods of seeding oats drilling and broadcasting /by Albert N. Hume, O.D. Center and Leonard Hegnauer.
Hume, Albert N. 1878-. Center, O. D._1872-; Hegnauer, Leonard,_1872-. Urbana, Ill. : University of Illinois Agricultural Experiment Station, 1909. Cover title. p. 297 -312 : ill. ; 23 cm. (NAL Call No.: DNAL 100 I16S no.136).

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AGJOAT. Mackie, W.W. Hoffman, A.H. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan 1924. v. 16 (1). p. 57-60. (NAL Call No.: DNAL 4 AM34P).

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AGRYA. Sander, D.H. Allaway, W.H.; Olson, R.A. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (28). p. 45-82. Includes references. (NAL Call No.: DNAL 4 AM392).

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Modifications of plant growth and ash content as effected by acids added to soils.
AGJOAT. Carr, R.H. Havercamp, H.G. Madison, Wis. : American Society of Agronomy. A comparison has been made of the effect upon the growth of soybean and buckwheat plants of adding an organic (acetic) and an inorganic (sulfuric) acid to a silt and a clay-loam soil. It has been found that both acids seriously interfere with plant growth, but that acetic was more deleterious than sulfuric acid. This is believed to be due to the effect of acetic acid in supplying more toxic aluminum and iron, etc., to the plant and in decreasing calcium and magnesium to a greater extent than was done by the sulfuric acid. In addition two other series of acids (phosphoric and silicic) were used, because they make compounds with aluminum and iron which seem to be harmless to the growing plant, regardless of the fact that the root is surrounded by a soil which is highly acid. The good growth of both kinds of plants obtained, even when rather large amounts of these latter acids were added, indicates that relatively insoluble compounds of aluminum and iron, etc., were formed and that the acid by itself did no harm. Agronomy journal. Apr 1924. v. 16 (4). p. 278-283. (NAL Call No.: DNAL 4 AM34P).

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Mosaics of winter oats and their control in the southeastern states /by H.H. McKinney ... et al. .
McKinney, Harold Hall,_1889-. Washington, D.C. : U.S. Dept. of Agriculture, 1949. Caption title. 17 p. : ill. ; 23 cm. Includes bibliograpnical references. (NAL Call No.: DNAL 1 Ag84C no.809).

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Narrow row soybean production in untilled oat stubble.
AGJOAT. Burnside, O.C. Moomaw, R.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1985. v. 77 (1). p. 36-40. Includes 11 references. (NAL Call No.: DNAL 4 AM34P).

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Natural selection in a doubled-haploid mixture and a composite cross of barley.
CRPSAY. Patel, J.D. Reinbergs, E.; Mather, D.E.; Choo, T.M.; Sterling, J.D.E. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 474-479. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Nematode populations in a rye/soybean succession after four years of no tillage management.
Post, T.J. Gallaher, R.N.; Dickson, D.W. Gainesville, Fla. : The Station. Agronomy research report AY - Agricultural Experiment Stations, University of Florida. 1983? . (84-6). 5 p. Includes references. (NAL Call No.: DNAL S540.A2F62).

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New varieties of oats from bond crosses resistant to Victoria Blight /by T.R. Stanton.
Stanton, T. R. 1885-. Washington, D.C. : U.S. Dept. of Agriculture, 1948. 7 p., 1 folded leaf : ill. ; 26 cm. Bibliography: p.6-7. (NAL Call No.: DNAL 1 Ag84C no.795).

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Agronomic evaluation of oat cultivars with substituted Avena fatua and A. sterilis cytoplasms.
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Allelic relationships of genes for multinodosum mutants in barley (Hordeum vulgare L.).
Ahuja, S.L. Sethi, G.S. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 63-67. Includes references. (NAL Call No.: DNAL QK495.G74B34).

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Aniol, A. Hill, R.D.; Larter, E.N. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1980. v. 20 (2). p. 205-208. ill. 11 ref. (NAL Call No.: 64.8 C883).

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Andre spring barley (Two-rowed, long-awned variety, performance, disease resistance).
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Assessment of barley accessions PI 382313, PI 382474, PI 382915, and PI 382976 for stem rust resistance.
CRPSAY. Jedel, P.E. Metcalfe, D.R.; Martens, J.W. Madison, Wis. : Crop Science Society of America. New sources of resistance to Puccinia graminis Pers. f. sp. tritici Erikss. and Henn. in barley (Hordeum vulgare L.) should be identified and incorporated into breeding programs to ensure the continued resistance of barley to this pathogen. The objective of this study was to identify resistance to stem rust in barley accessions from the USDA Wiebe collection and determine the relationship of this resistance to resistance conferred by the T gene. Four accessions, PI 382313, PI 382474, PI 382915, and PI 382976, were selected as having good field resistance at the Winnipeg Agriculture Canada Research Station, Glenlea rust nursery in 1986. The field resistance of these four accessions was reconfirmed in the 1987 rust nursery and was found to be as effective as, or more effective than, that conferred by T. Seedling and adult plant tests were conducted in controlled environments with six races (C5, C10, C17, C25, C35, and C53). In seedling tests, PI 382313 was resistant or moderately resistant to all six races. Both PI 382474 and PI 382915 were moderately susceptible to C35 and susceptible to the other five races. The PI 382976 was moderately resistant to C35 and C53, and moderately susceptible or susceptible to the other races. In adult plant tests, PI 382474 was resistant to C35 and PI 382313 was resistant to C17. Both PI 382915 and PI 382979 displayed little resistance as adults to the six races. Genetic studies with PI 382313 indicated that the field resistance of this accession was conferred by a single dominant gene that different from T. Crop science. Nov/Dec 1989. v. 29 (6). p. 1473-1477. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Hayashi, J. Heta, H. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 46-47. (NAL Call No.: DNAL QK495.G74B34).

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Pickering, R.A. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 5-8. Includes references. (NAL Call No.: DNAL QK495.G74B34).

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Jensen, H.P. Helms Jorgensen, J.; Jensen, J. Fort Collins, Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1982. v. 12. p. 65-68. 3 ref. (NAL Call No.: QK495.G74B34).

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AGRYA. Anderson, M.K. Reinbergs, E. Madison, Wis., Soil Science Society of America. Agronomy. A series of monographs - American Society of Agronomy. Literature review. 1985. (26). p. 231-268. Includes references. (NAL Call No.: DNAL 4 AM392).

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Barley composite cross CC XXXV-A as a source of both specific and slow rusting resistance against leaf rust.
CRPSAY. Andres, M.W. Wilcoxson, R.D. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 273-275. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Barley yellow dwarf symptom severity in oat affected by plant growth stage at infection and plot type.
CRPSAY. Goulart, L.R. Ohm, H.W.; Foster, J.E. Madison, Wis. : Crop Science Society of America. Lack of a standard method for evaluation of barley yellow dwarf (BYD) symptoms may result in inconsistency for genetic evaluation. The BYD symptoms were determined in oat, Avena sativa L., subsequent to virus infection at three plant growth stages and with two types of field plots. Five treatments: noninoculated; and inoculated at the two- to three-leaf (transplanted), three-leaf, four- to five-leaf, and stem elongation stages (direct seeded) were whole plots. Five oat cultivars were subplots. Two types of plots, hill and space planted, were whole units across the five cultivars. Seven traits were measured: BYD symptoms, plant height, heading date, grain yield and yield components. The plot types were not significantly different and there was a high

correlation between the types of plot for these characters. Cultivar rank was similar at all growth stages, indicating that sensitive cultivars may be severely damaged by BYDV infection at any stage of development. Small differences among cultivars for tolerance to BYDV were detected, subsequent to infection at the stem elongation stage under conditions of moderate temperatures and well distributed rainfall during the growing season. The plants that were transplanted after inoculation at the two- to three-leaf stage were more severely affected by BYDV than plants that were seeded in the field and inoculated at the three-leaf stage. Differences among cultivars were most distinct for BYD symptom, kernel weight, grain yield, number of kernels per panicle and plant height. Inoculation at the three-leaf stage resulted in maximum differences among cultivars and hill plots involved minimal effort for BYDV evaluation. Crop science. Nov/Dec 1989. v. 29 (6). p. 1412-1416. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Betaine accumulation: metabolic pathways and genetics.
Hanson, A.D. Grumet, R. New York : Alan R. Liss. UCLA symposia on molecular and cellular biology. Paper presented at the "Symposium on Molecular and Cellular Biology of Plant Stress," April 15-21, 1984, Keystone, Colorado. 1985. v. 22. p. 71-92. ill. Includes references. (NAL Call No.: DNAL QH506.U34).

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Biotype C and E greenbugs: distribution in the Texas rolling plains and damage to four small grain varieties (Schizaphis graminum).
Puterka, G.J. Slosser, J.E.; Gilmore, E.C. College Station, Tex., Southwestern Entomological Society. The Southwestern entomologist. Mar 1982. v. 7 (1). p. 4-8. map. Includes 5 ref. (NAL Call No.: QL461.S65).

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Breeding for preharvest sprouting tolerance.
Derera, N.F. Boca Raton, Fla. : CRC Press, 1988. Preharvest field sprouting in cereals / editor, N.F. Derera. Literature review. p. 111-128. ill. Includes references. (NAL Call No.: DNAL SB189.6.P73).

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Burrows, V.D. St. Paul, Minn. : American Association of Cereal Chemists, c1986. Oats : chemistry and technology / edited by Francis H. Webster. p. 13-46. ill. Includes references. (NAL Call No.: DNAL TP435.O5O2).

0200

Breeding winter oats for the South.
AGJOAT. Stanton, T.R. Madison, Wis. : American Society of Agronomy. A nursery for the isolation and development of cold-resistant, high-yielding, and otherwise desirable strains of winter oats has been maintained at the Arlington Experiment Farm since 1907. A more or less standardized nursery system is used consisting of series of single 5-foot plant or head rows, duplicated 15-foot rows, and duplicated blocks or plats of three 15-foot rows each. Two strains of Winter Turf, C. I. Nos. 435-4 and 541-4, have been developed which during the 10-year period, 1916-25, inclusive, have outyielded the unselected stock by about 8 bushels to the acre. Definite winter types of Fulghum have been isolated and are being studied. In these forms the plants show a decided spreading or winter habit in early growth and have dark green, rather narrow leaves. The selections apparently are more cold-resistant, and are superior in yield to the original Fulghum. Several high-yielding strains of winter oats have been developed from a Winter Turf-Auror case. In these strains the earliness and excellent kernel characters of the Aurora variety have been combined with the winter resistance of the Winter Turf oat to a highly satisfactory degree. Two of the most promising selections have been named Lee and Custis. The maintenance of varietal identity in such standard oats as fulghum and Red Rustproof is one of the most pressing practical problems in connection with the growing of oats in the South. Selected strains of these varieties are available of these varieties are available and should be substituted for the nondescript, so-called Red Rustproof oats which are grown in many districts of the South. The selection work with Fulghum was considerably expanded in the fall of 1925 at the Arlington Experiment Farm. In addition, 500 selections from Fulghum were sown at Tifton, Ga., for the development of strains especially adapted to the southern portion of the cotton belt. Numerous selections from hybrids between Fulghum and hardy winter varieties, such as Culberson. Agronomy journal. Sept 1926. v. 18 (9). p. 804-814. ill. (NAL Call No.: DNAL 4 AM34P).

0201

Can we lead the pathogen astray? (Breeding cereals for resistance to fungus diseases).
Wolfe, M.S. Barrett, J.A. St. Paul, Minn., American Phytopathological Society. Plant disease. Feb 1980. v. 64 (2). p. 148-151, 153-155. ill. 13 ref. (NAL Call No.: 1.9 P69P).

0202

Canopy light and tiller mortality in spring barley.
CRPSAY. Lauer, J.G. Simmons, S.R. Madison, Wis. : Crop Science Society of America. Mortality of tillers in barley (Hordeum vulgare L.) is an important developmental event affecting spike number and yield potential of the crop. It has traditionally been thought that increased shading of young tillers by the developing canopy initiates the premature senescence of tillers. A series of field experiments were conducted in 1982, 1983, and 1984 at St. Paul, MN on a Waukegan silt loam soil (fine-silty over sandy or sandy skeletal, mixed, Typic Hapludoll) to test this hypothesis. Degree of shading within the crop canopy was measured in relation to the position of tiller leaves during the vegetative phase of development for three genotypes. The decline in rate of leaf appearance on nonsurviving primary tillers, monitored as an early indicator of tiller senescence, was noted within 3 to 4 wk after crop emergence and before appreciable shading of tillers occurred. This indicates that tiller mortality was not initiated by lack of light. However, after main stem elongation began, tillers soon became heavily shaded suggesting the possibility that shading plays an auxilliary role in the senescence of barley tillers. We discuss the possibility that changes in light quality early in the growing season may be important for initiating the senescence of tillers. Crop science. Mar/Apr. 1989. v. 29 (2). p. 420-424. Includes references. (NAL Call No.: DNAL 64.8 C883).

0203

Characteristic cellular responses as expression of genes for resistance to Erysiphe graminis f. sp. hordei in barley (Hordeum vulgare).
Koga, H.PHYTA. Toyoda, H.; Mayama, S.; Shishiyama, J.; Hiura, U. St. Paul : American Phytopathological Society. Phytopathology. June 1983. v. 73 (6). p. 907-910. Includes references. (NAL Call No.: 464.8 P56).

0204

Chitinase locus (Chi 1) assigned to barley chromosome 1 (7H) by immunoblotting.
Hejgaard, J. Bjorn, S.E. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 92-93. ill. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0205

Chromosome damage induced by artificial seed aging in barley. II. Types of chromosomal aberrations at first mitosis (Hordeum vulgare).
Murata, M. Tsuchiya, t.; Roos, E.E. Chicago, Ill., University of Chicago Press. Botanical gazette. Mar 1982. v. 143 (1). p. 111-116. ill. 1 p. ref. (NAL Call No.: 450 B652).

0206

Cloning and nitrate induction of nitrate reductase mRNA.
PNASA. Cheng, C.L. Dewdney, J.; Kleinhofs, A.; Goodman, H.M. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Sept 1986. v. 83 (18). p. 6825-6828. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0207

Common root rot of spring barley: relative susceptibility of six-rowed cultivars.
NDFRA. Stack, R.W. Fargo, N.D. : The Station. North Dakota farm research - North Dakota, Agricultural Experiment Station. July/Aug 1986. v. 44 (1). p. 5-7. ill. Includes references. (NAL Call No.: DNAL 100 N813B).

0208

A comparison of the effect of salt on polypeptides and translatable mRNAs in roots of a salt-tolerant and a salt-sensitive cultivar of barley.
PLPHA. Hurkman, W.J. Fornari, C.S.; Tanaka, C.K. Rockville, Md. : American Society of Plant Physiologists. The effect of salt stress on polypeptide and mRNA levels in roots of two barley (Hordeum vulgare L.) cultivars differing in salt tolerance (cv CM 72, tolerant; cv Prato, sensitive) was analyzed using to-dimensional polyacrylamide gel electrophoresis. Preliminary experiments indicated that germination of Prato was inhibited significantly in the presence of NaCl, but growth of the surviving Prato seedlings was not substantially different from that of CM 72. Fluorographs of two-dimensional gels containing in vivo labeled polypeptides or in vitro translation products were computer analyzed to identify and quantitate changes that resulted when plants were grown in the presence of 200 bmillimolar NaCl for 6 days. The patterns of in vi vo labeled polypeptides and in vitro products of CM 72 and Prato were qualitatively the same. Salt caused quantitative changes in numerous polypeptides and translatable mRNAs, but, overall, the changes were relatively small. Salt did not induce the synthesis of unique polypeptides or translatable mRNAs and did not cause any to disappear. Because of the similarities of the two cultivars with respect to growth and polypeptide patterns and the slight changes in polypeptide and translation product levels

caused by salt, specific polypeptides or translatable mRNAs that are related to salt tolerance in barley could not be identified. Plant physiology. Aug 1989. v. 90 (4). p. 1444-1456. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0209

Compatibility of Lysiphlebus testaceipes (Hymenoptera: Braconidae) with greenbug (Homoptera: Aphididae) biotypes "C" and "E" reared on susceptible and resistant oat varieties (Schizaphis graminum).
Salto, C.E.EVETB. Eikenbary, R.D.; Starks, K.J. College Park : Entomological Society of America. Environmental entomology. Apr 1983. v. 12 (2). p. 603-604. Includes references. (NAL Call No.: QL461.E532).

0210

Coordinator's report: anthocyanin genes. Stock list of ant mutants kept at the Carlsberg laboratory.
Jende-Strid, B. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 74-79. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0211

Coordinator's report: chromosome 5.
Jensen, J. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 61-63. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0212

Coordinator's report: chromosome 5 (Hordeum, barley, hordein component controlled by locus).
Jensen, J. Fort Collins : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1983. v. 13. p. 94-97. Includes references. (NAL Call No.: QK495.G74B34).

0213

Coordinator's report: disease and pest resistance genes.
Jorgensen, J.H. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 65-69. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0214

Cytoplasmic effects on plant traits in interspecific matings of Avena (Cultivars, oats).
Robertson, L.D. Frey, K.J. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 199-204. Includes references. (NAL Call No.: 64.8 C883).

0215

Cytoplasmic male sterility in barley. VIII. Lipoxygenase activity and anther amino nitrogen in the msm1-Rfm1a system.
Ahokas, H. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Jan 1982. v. 69 (1). p. 268-272. ill. 33 ref. (NAL Call No.: 450 P692).

0216

Designation of two new greenbug (Homoptera: Aphididae) biotypes G and H.
JEENAI. Puterka, G.J. Peters, D.C.; Kerns, D.L.; Slosser, J.E.; Bush, L.; Worrall, D.W.; McNew, R.W. Lanham, Md. : Entomological Society of America. Journal of economic entomology. Dec 1988. v. 81 (6). p. 1754-1759. Includes references. (NAL Call No.: DNAL 421 J822).

0217

Development and characterization of friable, embryogenic oat callus.
CRPSAY. Bregitzer, P. Somers, D.A.; Rines, H.W. Madison, Wis. : Crop Science Society of America. Friable, embryogenic (FE) callus cultures are desired for genetic manipulations at the cellular level. The goal of this research was to develop and charaterize such cultures for oat (Avena spp.). Nonfriable (NF) oat callus derived from immature embryos was plated on a modified MS medium containing 60 g L-1 sucrose and no hormones. This treatment resulted in the development of distinct somatic embryos that germinated to form complete plants when placed on a modified MS medium containing 20 g L-1 surcrose and no hormones. Embryogenic sectors isolated from 26-wk-old NF callus were visually selected during repeated subculture on a modified MS medium containing 2 mg L-1, 2,4-dichlorophenoxyacetic acid (2,4-D) and 20 g L-1 sucrose to produce FE callus. Transfer of FE callus to a modified MS medium containing 60 g L-1 sucrose and no hormones induced the maturation of somatic embryos. Subsequent transfer of this FE callus to modified MS medium containing 20 g L-1 sucrose and no hormones allowed the germination of some of these embryos. Plants were regenerated from FE callus lines for more than 78 wk after FE callus establishment. Friable embryogenic callus also was initiated directly from immature embryos of three genotypes and seedling mesocotyls of two genotypes. Genotypic variation in this response was noted. The FE oat cultures represent an improved callus type

for in vitro genetic manipulation of oat. Crop science. May/June 1989. v. 29 (3). p. 798-803. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

0218

Development of a barley germ plasm resistant to the seed transmission of barley stripe mosaic virus (Abstract only).
Carroll, T.W. Zaske, S.K.; Hockett, E.A. St. Paul, Minn., American Phytopathological Society. Phytopathology. Aug 1981. v. 71 (8). p. 865. (NAL Call No.: 464.8 P56).

0219

Differential aluminum tolerance of winter barley varieties and selections in associated greenhouse and field experiments.
AGJOAT. Reid, D.A. Jones, G.D.; Armiger, W.H.; Foy, C.D.; Koch, E.J.; Starling, T.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1969. v. 61 (2). p. 218-222. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

0220

Differential mRNA transcription during salinity stress in barley.
PNASA. Ramagopal, S. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Jan 1987. v. 84 (1). p. 94-98. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0221

Diploid-tetraploid comparisons in rye. III. Temperature effects on seedling development.
CRPSAY. Sullivan, B.P. Pfahler, P.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 795-799. Includes 22 references. (NAL Call No.: DNAL 64.8 C883).

0222

Disease severity and grain yield in barley multilines with resistance to powdery mildew.
CRPSAY. Kolster, P. Munk, L.; Stolen, O. Madison, Wis. : Crop Science Society of America. Superiority of yield in cultivar mixtures may be ascribed to specific and nonspecific resistance against leaf pathogens and to differential reactions of components to environment. This study was conducted to investigate the significance of specific resistance on powdery mildew (Erysiphe graminis DC.: Fr. f. sp. hordei) severity and grain yield in barley (Hordeum vulgare L.) multilines and isolines, each carrying different genes for specific resistance to powdery mildew. Multilines were composed of equal proportions of four or five isolines. In the multilines, disease levels were 50 to 80% lower than the mean level for the components grown in pure stands. The advantage of mixing increased with increasing mean level of resistance in the component isolines. Grain yield in both multilines and isolines increased with the mean level of resistance, with most resistant multilines producing higher grain yields than predicted by the mean level of the components in pure stands. The results indicate that components with higher levels of resistance gained the most benefit from utilizing them in a multiline. Crop science. Nov/Dec 1989. v. 29 (6). p. 1459-1463. Includes references. (NAL Call No.: DNAL 64.8 C883).

0223

Durable resistance of barley cultivars to the nematode Heterodera avenae.
Person-Dedryver, F.NASSD. New York : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. 1983. v. 55. p. 207-210. Includes references. (NAL Call No.: QH301.N32).

0224

Effect of environment and genotype and their interaction on pathogenicity of Ustilago hordei (causing the covered smut of barley). I. Parasite-environment effects.
Emara, Y.A. Freake, G.W. Washington, D.C., American Genetic Association. The Journal of heredity. July/Aug 1981. v. 72 (4). p. 261-263. 15 ref. (NAL Call No.: 442.8 AM3).

0225

Effect of erect leaf angle on grain yield in barley.
CRPSAY. Tungland, L. Chapko, L.B.; Wiersma, J.V.; Rasmusson, D.C. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1987. v. 27 (1). p. 37-40. Includes references. (NAL Call No.: DNAL 64.8 C883).

0226

Effect of genetically and environmentally induced heading date differences on yield and adaptation of an isogenic barley pair.
CRPSAY. Smail, V.W. Eslick, R.F.; Hockett, E.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 889-893. Includes references. (NAL Call No.: DNAL 64.8 C883).

0227

The effect of genotypes on the feed value of barley straws (North Dakota).
Erickson, D.O.JANSA. Meyer, D.W.; Foster, A.E. Champaign : American Society of Animal Science. Journal of animal science. Nov 1982. v. 55 (5). p. 1015-1026. 15 ref. (NAL Call No.: 49 J82).

0228

Effect of host genotype unit area on epidemic development of crown rust following focal and general inoculations of mixtures of immune and susceptible oat plants.
PHYTA. Mundt, C.C. Leonard, K.J. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Oct 1985. v. 75 (10). p. 1141-1145. Includes 26 references. (NAL Call No.: DNAL 464.8 P56).

0229

Effect of planting dates on spring barley varieties, San Juan Branch Station, 1974-1979 (New Mexico, performance, yield).
Gregory, E.J. Arnold, R.N. Las Cruces : The Station. Research report - New Mexico, Agricultural Experiment Station. June 1982. June 1982. (478). 12 p. 8 ref. (NAL Call No.: 100 N465R).

0230

The effect of selection in pure-line oat work.
AGJOAT. Spragg, F.A. Madison, Wis. : American Society of Agronomy. Agronomy journal. 1912. v. 4. p. 81-83. (NAL Call No.: DNAL 4 AM34P).

0231

Effect of sexual and asexual reproduction on race abundance in cereal rust fungus populations (Puccinia graminis f. sp. tritici, Puccinia coronata, Puccinia recondita, genetic variation).
Groth, J.V.PHYTA. Roelfs, A.P. St. Paul : American Phytopathological Society. Phytopathology. Nov 1982. v. 72 (11). p. 1503-1507. 20 ref. (NAL Call No.: 464.8 P56).

0232

An effective method developing inversions on a specific chromosome.
Makino, T. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 103-104. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0233

Effectiveness of utilizing various leaf characteristics as selection criteria in breeding for drought tolerance in barley / by Marvin L. Boerboom. -.
Boerboom, Marvin L. Ann Arbor, Mich. University Microfilms International 1978. Thesis--North Dakota State University, 1977. Facsimile produced by microfilm-xerography. viii, 128 leaves. Bibliography: leaves 92-99. (NAL Call No.: DISS 77-29,178).

0234

The effects of benzyladenine, cycloheximide, and cordycepin on wilting-induced abscisic acid and proline accumulations and abscisic acid- and salt-induced proline accumulation in barley leaves.
PLPHA. Stewart, C.R. Voetberg, G.; Rayapati, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 703-707. Includes references. (NAL Call No.: DNAL 450 P692).

0235

Effects of cycloheximide treatments on prophase and metaphase cells of a (2X) Hordeum vulgare X (2X) Hordeum bulbosum hybrid (Barley).
Wheatley, W.G. Kasha, K.J. Fort Collins, Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1982. v. 12. p. 72-74. ill. 2 ref. (NAL Call No.: QK495.G74B34).

0236

Effects of dried sewage sludge on forage production from barley genotypes in the Sonoran Desert.
Day, A.D. Thompson, R.K.; Swingle, R.S. Superior : University of Arizona. Desert plants. 1986. v. 8 (1). p. 17-19. Includes references. (NAL Call No.: DNAL QK938.D4D4).

0237

The effects of genes controlling barley leaf and sheath waxes on agronomic performance in irrigated and dryland environments (Eceriferum, mutation).
Baenziger, P.S.CRPSA. Wesenberg, D.M.; Sicher, R.C. Madison : Crop Science Society of America. Crop science. Jan/Feb 1983. v. 23 (1). p. 116-120. Includes references. (NAL Call No.: 64.8 C883).

0238

Effects of natural selection in advances generations of barley composite cross II (Hordeum vulgare, yield components).
Hockett, E.A.CRPSA. Eslick, R.F.; Qualset, C.O.; Dubbs, A.L.; Stewart, V.R. Madison : Crop Science Society of America. Crop science. July/Aug 1982. v. 23 (4). p. 752-756. Includes references. (NAL Call No.: 64.8 C883).

0239

Effects of nitrogen fertilizer rate, seeding rate, and row spacing on semidwarf and conventional height spring oat.
CRPSAY. Marshall, H.G. Kolb, F.L.; Roth, G.W. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 572-575. Includes references. (NAL Call No.: DNAL 64.8 C883).

0240

Effects of plant density on the performance of 10 barley cultivars (Genotype-environment interaction, yield).
Baker, R.J.CRPSA. Briggs, K.G. Madison : Crop Science Society of America. Crop science. Nov/Dec 1982. v. 22 (6). p. 1164-1167. 6 ref. (NAL Call No.: 64.8 C883).

0241

Effects of regional releases of resistant wheats on the population dynamics of the cereal leaf beetle (Coleoptera: Chrysomelidae) (Oulema melanopus).
Lampert, E.P.AESAA. Haynes, D.L.; Sawyer, A.J.; Jokinen, D.P.; Wellso, S.G. College Park : The Society. Annals of the Entomological Society of America. Nov 1983. v. 76 (6). p. 972-980. Includes references. (NAL Call No.: 420 EN82).

0242

Erysiphe graminis resistance in the Hordeum murinum complex (Powdery mildew, wild barley, genetic aspects).
Giles, B. Barrett, J. Fort Collins : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1983. v. 13. p. 78-82. Includes references. (NAL Call No.: QK495.G74B34).

0243

Evaluation of sources of resistance in oats to Puccinia coronata by use of many fungus cultures.
Michel, L.J.PIAIA. Simons, M.D. Cedar Falls : The Academy. The Proceedings of the Iowa Academy of Science. Dec 1983. v. 90 (4). p. 144-146. Includes references. (NAL Call No.: 500 I093).

0244

Field crops.
Arny, D.C. Dubuque, Iowa : Kendall/Hunt Pub. Co., c1986. With one foot in the furrow : a history of the first seventy-five years of the Department of Plant Pathology at the University of Wisconsin-Madison / edited by Paul H. Williams, Melissa Marosy. p. 164-174. ill. (NAL Call No.: DNAL SB732.54.U6W5).

0245

Field evaluation of seedling root length selection in oats (Avena sativa, drought stress).
Barbour, N.W. Murphy, C.F. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 165-169. Includes references. (NAL Call No.: 64.8 C883).

0246

For horses: Kelly.
SDFHA. Leslie, J. Brookings, S.D. : The Station. South Dakota farm and home research - South Dakota, Agricultural Experiment Station. 1984. v. 35 (2). p. 14. ill. (NAL Call No.: DNAL 100 SD82S).

0247

Generation mean analysis of inheritance of resistance to barley yellow dwarf in crosses involving bates spring oats.
PLDRA. Gellner, J.L. Sechler, D.T. St. Paul, Minn. : American Phytopathological Society. Plant disease. Aug 1986. v. 70 (8). p. 795-797. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0248

Genes conditioning resistance of Hordeum spontaneum (wild relative of barley) to Erysiphe graminis f. sp. hordei (barley powdery mildew).
Moseman, J.G. Baenziger, P.S.; Kilpatrick, R.A. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1981. v. 21 (2). p. 229-232. 24 ref. (NAL Call No.: 64.8 C883).

0249

Genetic analysis of a mutant resistant to barley yellow mosaic virus.
Ukai, Y. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1984. v. 14. p. 31-33. Includes references. (NAL Call No.:

QK495.G74B34).

0250

Genetic analysis of changes in scald resistance in barley composite cross V (Rhynchosporium secalis, Hordeum vulgare).
Jackson, L.F. Webster, R.K.; Allard, R.W.; Kahler, A.L. St. Paul, Minn., American Phytopathological Society. Phytopathology. Aug 1982. v. 72 (8). p. 1069-1072. 16 ref. (NAL Call No.: 464.8 P56).

0251

Genetic analysis of resistance to barley yellow dwarf virus in hybrids between Avena sativa 'Lamar' and virus-resistant lines of Avena sterilis (Oats).
Landry, B. Comeau, A.; Minvielle, F.; St.Pierre, C.A. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1984. v. 24 (2). p. 337-340. ill. Includes references. (NAL Call No.: 64.8 C883).

0252

Genetic and temperature effects on rye germination and seedling development.
Sullivan, B.P. Peahler, P.L. S.l. : The Society. Proceedings - Soil and Crop Science Society of Florida. 1985. v. 44. p. 205-208. Includes 10 references. (NAL Call No.: DNAL 56.9 S032).

0253

Genetic control of ethirimol resistance in a natural population of Erysiphe graminis f.sp. hordei (Barley powdery mildew).
Hollomon, D.W. Laramie, The Station. Science monograph - University of Wyoming, Agricultural Experiment Station. May 1981. v. 71 (5). p. 536-540. 20 ref. (NAL Call No.: S131.E2).

0254

Genetic control of glycinebetaine level in barley.
CRPSAY. Grument, R. Isleib, T.G.; Hanson, A.D. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 618-623. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

0255

Genetic dissection of a powdery mildew resistance gene in barley.
Jorgensen, J.H. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 99-100. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0256

Genetic factors governing resistance and susceptibility of oats to Puccinia coronata Corda var. avenae, F. and L. Race 57 /by Verne C. Finkner.
Finkner, Verne C. Ames, Iowa : Agricultural Experiment Station, Iowa State College, 1954. p. 1040-1063, 1 leaf of plates : ill. (1 col.) ; 22 cm. Bibliography: p. 1063. (NAL Call No.: DNAL 100 Io9 no.411).

0257

Genetic studies of resistance to barley yellow mosaic virus of German winter barley cultivars.
Friedt, W. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 58-61. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0258

Genetic variability for herbicide reaction in plant populations (Wild oat, Avena barbata, Avena fatua, godetia, Clarkia williamsonii, toxicity, Sierra Nevada in California).
Price, S.C.WEESA. Hill, J.E.; Allard, R.W. Champaign : Weed Science Society of America. Weed science. Sept 1983. v. 31 (5). p. 652-657. ill. Includes references. (NAL Call No.: 79.8 W41).

0259

Genetic variability for pathogenicity, isozyme, ribosomal DNA and colony color variants in populations of Rhynchosporium secalis.
GENTA. McDermott, J.M. McDonald, B.A.; Allard, R.W.; Webster, R.K. Baltimore, Md. : Genetics Society of America. Samples of Rhynchosporium secalis were collected from two experimental barley populations known to carry a diverse array of alleles for resistance to this fungal pathogen. Classification of 163 isolates for four putative isozyme systems, a colony color dimorphism and 20 ribosomal DNA restriction fragment length variants revealed 49 different multilocus phenotypes (haplotypes). The six most common haplotypes differed significantly in pathogenicity. Genetic analyses of the data indicated that effective population sizes of the fungus were very large, that the effects of genetic drift were small, and that negligible recombination occurred in the populations

studied. Frequency dependent selection was suggested as an explanation for the maintenance of variation in pathogenicity in the fungus. Genetics. July 1989. v. 122 (3). p. 561-565. ill. Includes references. (NAL Call No.: DNAL 442.8 G28).

0260

Genotype X year interaction for length and rate of grain filling in oats (Environmental stresses).
Wych, R.D. McGraw, R.L.; Stuthman, D.D. Madison, Crop Science Society of America. Crop science. Sept/Oct 1982. v. 22 (5). p. 1025-1028. 20 ref. (NAL Call No.: 64.8 C883).

0261

Genotypic variability in response of oat to delayed sowing.
AGJOAT. Baltenberger, D.C.C. Frey, K.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1987. v. 79 (5). p. 813-816. Includes references. (NAL Call No.: DNAL 4 AM34P).

0262

Genotypic variation for glycinebetaine accumulation by cultivated and wild barley in relation to water stress.
Ladyman, J.A.R.CRPSA. Ditz, K.M.; Grumet, R.; Hanson, A.D. Madison : Crop Science Society of America. Crop science. May/June 1983. v. 23 (3). p. 465-468. ill. Includes references. (NAL Call No.: 64.8 C883).

0263

Geographical distribution of diazinon sensitive varieties in barley.
Takeda, K. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 90-93. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0264

Grain-filling duration and yield in spring barley.
CRPSAY. Metzger, D.D. Czaplewski, S.J.; Rasmusson, D.C. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1101-1105. Includes 11 references. (NAL Call No.: DNAL 64.8 C883).

0265

Gramine (indole alkaloid) in barley forage--effects of genotype and environment.
Hanson, A.D. Traynor, P.L.; Ditz, K.M.; Reicosky, D.A. Madison, Wis., Crop Science Society of America. Crop science. Sept/Oct 1981. v. 21 (5). p. 726-730. ill. 21 ref. (NAL Call No.: 64.8 C883).

0266

Greenbug (Homoptera: Aphididae) antibiosis tests in growth chambers: design of experiments and optimum sample size.
EVETEX. Inayatullah, C. Webster, J.A.; Nguyen, H.T. College Park, Md. : Entomological Society of America. Environmental entomology. June 1986. v. 15 (3). p. 581-584. Includes references. (NAL Call No.: DNAL QL461.E532).

0267

Growth and yield of barley isopopulations differing in solute potential.
CRPSAY. Grumet, R. Albrechtsen, R.S.; Hanson, A.D. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 991-995. Includes references. (NAL Call No.: DNAL 64.8 C883).

0268

Half-seed determination of hordeins associated with known M1-a alleles conferring race-specific resistance to barley powdery mildew (Erysiphe graminis f. sp. hordei).
Hash, C.T. Jr. Blake, T.K. Fort Collins, Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1981. v. 11. p. 74-76. ill. 4 ref. (NAL Call No.: QK495.G74B34).

0269

Heterodera avenae: virulence and resistance.
NASSD. Andersen, K. Andersen, S. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Cyst nematodes / edited by F. Lamberti and C.E. Taylor. 1986. v. 121. p. 277-285. Includes references. (NAL Call No.: DNAL QH301.N32).

0270

Histology of the relation between minor and major genes for resistance of barley to leaf rust (Puccinia hordei on Hordeum vulgare).
Niks, R.E.PHYTA. Kuiper, H.J. St. Paul : American Phytopathological Society. Phytopathology. Jan 1983. v. 73 (1). p. 55-59. 25 ref. (NAL Call No.: 464.8 P56).

0271

Hordein mutants for barley Hrd loci.
Netsvetaev, V.P. Sozinov, A.A. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 51-55. ill. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0272

Hormonal regulation of alpha-amylase gene transcription in wild oat (Avena fatua L.) aleurone protoplasts.
PLPHA. Zwar, J.A. Hooley, R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 459-463. ill. Includes 25 references. (NAL Call No.: DNAL 450 P692).

0273

Hybrid barley research: history and potential.
PMASA. Hockett, E.A. S.l. : The Academy. Proceedings of the Montana Academy of Sciences. Literature review. 1987. v. 47. p. 27-35. Includes references. (NAL Call No.: DNAL 500 M762).

0274

Identification of three new loci which control male sterility of barley.
Franckowiak, J.D. Hockett, E.A. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 11-13. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0275

In vitro culture of barley: a method to study Rhynchosporium scald disease and select plants resistant to the toxin, Rhynchosporoside (Rhynchosporium secalis, Hordeum vulgare).
Branchard, M. New York : Praeger, 1982. Variability in plants regenerated from tissue culture / edited by E.D. Earle, Y. Demarly. p. 343-350. ill. Includes references. (NAL Call No.: QK840.V37).

0276

In vitro selection for resistance.
Foroughi-Wehr, B. Friedt, W.; Schuchmann, R.; Kohler, F.; Wenzel, G. Hingham, Mass. : Martinus Nijhoff Publishers. Advances in agricultural biotechnology. 1986. (20). p. 35-44. ill. Includes references. (NAL Call No.: DNAL S494.5.B563A39).

0277

Individual crown selection for resistance to freezing stress in winter oats (Germplasm, Cold hardiness).
Marshall, H.G. Kolb, F.L. Madison, Wis., Crop Science Society of America. Crop science. May/June 1982. v. 22 (3). p. 506-510. ill. 8 ref. (NAL Call No.: 64.8 C883).

0278

Induction of alcohol dehydrogenase and lactate dehydrogenase in hypoxically induced barley.
PLPHA. Good, A.G. Crosby, W.L. Rockville, Md. : American Society of Plant Physiologists. In barley (Hordeum vulgare L.), alcohol dehydrogenase (ADH) and lactate dehydrogenase (LDH) are induced by anaerobiosis in both aleurone layers and roots. Under aerobic conditions, developing seeds of cv Himalaya accumulate ADH activity, which survives seed drying and rehydration. This activity consists almost entirely of the ADH1 homodimer. Activity of LDH also increases during seed development, but the level of activity in dry or rehydrated seeds is very low, indicating that this enzyme may not be involved in anaerobic glycolysis during the initial stages of germination. In contrast to ADH, the LDH isozymes present in developing seeds are similar to those found in uninduced and induced roots. Developmental expression of ADH and LDH was monitored from 0 to 24 days postgermination. Neither activity was induced to any extent in the germinating seeds; however, both enzymes were highly induced by anoxia in root tissue during development. Based on gel electrophoresis, this increase in activity results from the differential expression of different Adh and Ldh genes in root tissue. The changes in ADH and LDH activity levels were matched by changes in the amount of these particular proteins, indicating that the increase in activity results from de novo synthesis of these two proteins. The level of inducible LDH activity in an ADH1- mutant was not found to differ from cv Himalaya. We suggest that although the ADH- plants are more susceptible to flooding, they are not capable of responding to the lack of ADH1 activity by increasing the amount of LDH activity in root tissue. Plant physiology. July 1989. v. 90 (3). p. 860-866. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0279

Induction of lactate dehydrogenase isozymes by oxygen deficit in barley root tissue.
PLPHA. Hoffman, N.E. Bent, A.F.; Hanson, A.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 658-663. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0280

Induction of resistance to Erysiphe graminis f. sp. hordei in near-isogenic barley lines.
PHYTA. Cho, B.H. Smedegaard-Petersen, V. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Mar 1986. v. 76 (3). p. 301-305. ill. Includes 16 references. (NAL Call No.: DNAL 464.8 P56).

0281

The influence of ammonium and chloride on potassium and nitrate absorption by barley roots depends on time of exposure and cultivar.
PLPHA. Bloom, A.J. Finazzo, J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 67-69. Includes 22 references. (NAL Call No.: DNAL 450 P692).

0282

Influence of genotype and environment on kernel discoloration of Midwestern malting barley.
PLDRA. Miles, M.R. Wilcoxson, R.D.; Rasmusson, D.C.; Wiersma, J.; Warnes. D. St. Paul, Minn. : American Phytopathological Society. Plant disease. June 1987. v. 71 (6). p. 500-504. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0283

Influence of weed control treatments on soybean cultivars in an oat-soybean rotation.
AGJOAT. Burnside, O.C. Moomaw, R.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1984. v. 76 (6). p. 887-890. Includes 13 references. (NAL Call No.: DNAL 4 AM34P).

0284

Inheritance of a second source of greenbug resistance in barley.
CRPSAY. Merkle, O.G. Webster, J.A.; Morgan, G.H. Madison, Wis. : Crop Science Society of America. Genetic studies were conducted to determine the inheritance of resistance to biotype E greenbug, Schizaphis graminum (Rondani), in PI 426756, a barley (Hordeum vulgare L.) line previously identified as resistant to this pest. An additional objective was to determine whether the genes governing resistance in PI 426756 and 'Post' are allelic or nonallelic. Results from greenbug-infested F2 and F3 seedlings in the greenhouse indicated that the resistance in each line is governed by a single dominant gene, and that these two genes are nonallelic and independent. The discovery of another gene for greenbug resistance is important because greenbug resistance in all current U.S. commerical barley cultivars appears to trace back to the same single dominant gene present in Post. The gene symbol Rsg2b was assigned to this gene; whereas, the gene symbol formerly designated Grb was modified to Rsg1a. Crop science. Mar/Apr 1987. v. 27 (2). p. 241-243. Includes references. (NAL Call No.: DNAL 64.8 C883).

0285

Inheritance of blast resistance in two-rowed barley.
PLDIDE. Yaegashi, H. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1988. v. 72 (7). p. 608-610. ill. Includes references. (NAL Call No.: DNAL 1.9 P69P).

0286

Inheritance of dwarfness in three oat crosses and relationship of height to panicle and culm length (Lodging resistance).
Marshall, H.G. Murphy, C.F. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1981. v. 21 (2). p. 335-338. 15 ref. (NAL Call No.: 64.8 C883).

0287

Inheritance of resistance in oats to two biotypes of the greenbug (Schizaphis graminum).
Boozaya-Angoon, D. Starks, K.J.; Edwards, L.H.; Pass, H. College Park, Md., Entomological Society of America. Environmental entomology. Aug 1981. v. 10 (4). p. 557-559. 6 ref. (NAL Call No.: QL461.E532).

0288

Inheritance of resistance to barley leaf stripe.
Skou, J.P. Haahr, V. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 50-52. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0289

Inheritance of resistance to Puccinia graminis f. sp. secalis in barley (Breeding for disease resistance).
Steffenson, B.J. Wilcoxson, R.D.; Roelfs, A.P. St. Paul, Minn. : American Phytopathological Society. Plant disease. Sept 1984. v. 68 (9). p. 762-763. Includes 9 references. (NAL Call No.: 1.9 P69P).

0290

The inheritance of smut resistance in crosses of certain varieties of oats.
AGJOAT. Barney, A.F. Madison, Wis. : American Society of Agronomy. The data presented indicate that some varieties of oats contain one factor pair for resistance to loose smut, that other varieties contain two independent factor pairs, while in other varieties three factor pairs may be concerned with resistance. Selection within seventy families from two crosses indicated that resistant families can be isolated in the second generation which breed true to that characteristic thru the F3, F4 and F5 generations. Likewise, highly susceptible families can be isolated which breed true. Such results show the possibility of obtaining desirable types of smut resistant oats from crosses between resistant and susceptible varieties. The accompanying illustrations (Figures 1, 2, 3 and 4) are presented to indicate the response to smut exposure exhibited by two resistant and two susceptible families. Agronomy journal. Apr 1924. v. 16 (4). p. 283-291. (NAL Call No.: DNAL 4 AM34P).

0291

Inheritance of subcrown internode length in a winter barley cross (Winter hardiness, optimum depth of crown formation).
Dofing, S.M. Schmidt, J.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1984. v. 24 (4). p. 692-694. ill. Includes references. (NAL Call No.: 64.8 C883).

0292

Interrelationships among three major loci controlling heading date of spring barley when grown under short daylengths.
CRPSAY. Gallagher, L.W. Belhadri, M.; Zahour, A. Madison, Wis. : Crop Science Society of America. Early maturing cultivars of barley (Hordeum vulgare L.) would enhance yield stability in lowland, low rainfall areas of Morocco. The objective of this work was to study the inheritance of heading date in crosses involving six spring barleys developed in the Sacramento Valley of California, USA and the Yaqui Valley of Sonora, Mexico. Data were gathered under short daylengths at 32 degrees C 15' N Lat with December sowing in Morocco. Frequency distributions of parental, F1, F2, and backcross generations indicated a three-locus model with recessive and duplicate dominant epistasis accounting for most of the phenotypic variability. Recessive gene interaction resulted in plants that were about 19 to 35 days earlier than later counterparts with the dominant allele present. Among the later genotypes, the presence of a dominant allele at either of the duplicate loci in the genotypes not homozygous for extreme earliness resulted in increased earliness of 5 to 14 days over the duplicate double recessive depending upon modifiers. A genotype for each parent was suggested; however, the three-locus model did not account for the 4- to 6-day differences between two pairs of parents. Apparently, modifying loci or different alleles were present in some parents. Crop science. Mar/Apr 1987. v. 27 (2). p. 155-160. Includes references. (NAL Call No.: DNAL 64.8 C883).

0293

List of barley genetic stocks.--Supplementary list No. 1 (to Masterlist of Barley Genes): genes for reaction to Erysiphe graminis hordei (Powdery mildew).
Sogaard, B. Jorgensen, J.H. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Includes addresses for sources of genetic stock seeds. Aug 31, 1987. v. 17. p. 120-134. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0294

Localization of induced genes for powdery mildew resistance.
Robbelen, G. Heun, M. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 4-7. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0295

Low ribonuclease I activity prior to cold acclimation in freeze selected winter barley.
CRPSAY. Kenefick, D.G. Blake, T.K. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1099-1103. Includes 14 references. (NAL Call No.: DNAL 64.8 C883).

0296

Maintenance of low Cl- concentrations in mesophyll cells of leaf blades of barley seedlings exposed to salt stress.
PLPHA. Huang, C.X. Van Steveninck, R.F.M. Rockville, Md. : American Society of Plant Physiologists. The concentrations of vacuolar Na+ and Cl- in the epidermal and mesophyll cells of the leaf blade and sheath of Hordeum vulgare seedlings (cv California Mariout and Clipper) were measured by means of quantitative electron probe X-ray microanalysis. A preferential accumulation of Cl- in vacuoles of epidermal cells in both blade and sheath and a low level in mesophyll cells of the blade were evident in plants grown in full strength Johnson solution. The concentration of Cl- in the mesophyll cells of the blade remained at a low level after exposure to 50 or 100 millimolar NaCl for 1 day or to 50 millimolar for 4 days, while at the same time the concentration of Cl- in the epidermis and mesophyll of the sheath showed a dramatic increase. Clipper generally contained more Cl- in the mesophyll cells of the blade than

California Mariout. A greater accumulation of Na+ in the mesophyll of the sheath relative to that of the blade was only apparent after treatment with 100 millimolar NaCl for 1 day or 50 millimolar for 4 days. These results confirm the suggestion that sheath tissue is capable of accumulating excess Cl- (and to a lesser extent Na+) and suggest that the site of regulation of Cl- concentration in the barley leaf is located in the mesophyll cells of the blade. Plant physiology. Aug 1989. v. 90 (4). p. 1440-1443. Includes references. (NAL Call No.: DNAL 450 P692).

0297

Male sterile facilitated recurrent selection populations for developing broad-based resistance by major and minor effect genes (Barley, genetic manipulation).
Sharp, E.I. Bockelman, H.E.; Eslick, R.F. Minneapolis, Minn. : Published for the Congress by Burgess Pub., c1981. Proceedings of symposia : IX International Congress of Plant Protection, Washington, D.C., U.S.A., August 5-11, 1979 / editor, Thor Kommedahl. p. 193-194. (NAL Call No.: SB951.I5 1979).

0298

Marker genes for cereal cyst nematode resistance.
Ellis, S.E. New South Wales : Dept. of Agriculture, 1987? . Proceedings, Australian Barley Technical Symposium : Wagga Wagga, 11-15th October 1987. p. 249-250. (NAL Call No.: DNAL SB191.B2A9 1987).

0299

Mass rearing the bird cherry oat aphid, Rhopalosiphum padi (L.).
PIACA. Kudagamage, C. Foster, J.E. Indianapolis, Ind. : The Academy. Proceedings of the Indiana Academy of Science. Includes abstract. 1985. v. 94. p. 304. (NAL Call No.: DNAL 500 IN2).

0300

Measured crop performance: small grain, 1984.
NUSRA. Bowman, D.T. Raleigh, N.C., The Station. Research report - Dept. of Crop Science, North Carolina State University, Agricultural Experiment Station. Includes statistical data. July 1984. (96). 26 p. maps. (NAL Call No.: DNAL 100 N8122).

0301

Measured crop performance: small grain, 1985.
NUSRA. Bowman, D.T. Raleigh, N.C., The Station. Research report - Dept. of Crop Science, North Carolina State University, Agricultural Experiment Station. Includes statistical data. July 1985. (101). 29 p. maps. (NAL Call No.: DNAL 100 N8122).

0302

Measuring disease progress in pure and mixed stands of plant cultivars.
PHYTA. Gumpert, F.M. St. Paul, Minn. : American Phytopathological Society. A measure is presented that quantifies disease progress of fungal pathotypes during the exponential phase of the epidemic. This measure, referred to as rate of disease increase (p), represents the factor by which the number of infection units is multiplied from one day to another after the initial infection waves have damped. The rate of disease increase depends on four pathotype/cultivar-specific parameters (latent period, infectious period, infection efficiency, spore production rate) and two nonspecific parameters (deposition frequency and autodeposition frequency). Three applications are given. First, it is used to determine the levels of partial resistance of barley cultivars to leaf rust. The calculated p values were highly correlated both with total spore production per unit leaf area (r = 0.97) and with disease score in the field (r = 0.81). The rate of disease increase is particularly useful if the epidemiological parameters display compensatory effects. The second application deals with the long-term composition of pathotype mixtures. The pathotype with the largest p value will predominate in the long run. This is again exemplified by using barley leaf rust data. The third application concerns disease control strategies. A host stand should be composed so that the corresponding predominant pathotype has a p value smaller than the prevailing pathotype of any other composition. This concept does not presuppose selection against unnecessary genes for virulence. A condition is given under which a cultivar mixture may be more beneficial than each of its components grown in pure stands, and this condition is illustrated by a simple example of two pathotypes and two cultivars. Phytopathology. Sept 1989. v. 79 (9). p. 969-973. Includes references. (NAL Call No.: DNAL 464.8 P56).

0303

Mechanical mass selection methods for improvement of oat groat percentage.
CRPSAY. Souza, E.J. Sorrells, M.E. Madison, Wis. : Crop Science Society of America. Three methods of mechanical mass selection for seed density, aspiration (ASP), gravity table selection (GT), and gravity table selection with a speeed polishing pretreatment (P-GT), were evaluated and compared for effectiveness of increasing caryopsis (groat) percentage and

test weight in oat (Avena sativa L.). Selection using these methods in two heterogeneous F5 populations resulted in absolute differences in the groat percentage between high and low density treatments of 0.3 and 0.5% for ASP and P-GT, respectively. The GT selection resulted in a lower groat percentage in the high density treatment. Selection methods interacted with populations and seed size classes. These interactions were due to different levels of variation in the populations for seed size and shape. Two cycles of selection for high groat percentage beginning in F3 segregating bulk populations showed little overall improvement. Selection increased the number of fertile florets per spikelet. This increase in fertility was due primarily to a 22% increase in tertiary florets per panicle per cycle of selection. Tertiary floret number exhibited a negative genotypic correlation with groat percentage, which limited improvement for groat percentage. There also were significant changes in plant height, days to flowering, and harvest index in these experiments with direction and magnitude dependent on the individual population. Effectiveness of mechanical mass selection for groat percentage could be increased by avoiding selection for characters such as tertiary kernels which have undesirable correlated effects on milling quality. Crop science. July/Aug 1988. v. 28 (4). p. 618-623. Includes references. (NAL Call No.: DNAL 64.8 C883).

0304

A method for rating freezing inhibitor activity of barley genotypes using seed and crown tissue mucilages (Winter hardiness).
Olien, C.R. AR-NC. Kuhna, A.S. Madison, Wis., Crop Science Society of America. Crop science. July/Aug 1980. v. 20 (4). p. 537-539. ill. 9 ref. (NAL Call No.: 64.8 C883).

0305

Methods in breeding cereals for rust resistance.
AGJOAT. Johnson, E.C. Madison, Wis. : American Society of Agronomy. Agronomy journal. 1910. v. 2. p. 76-80. (NAL Call No.: DNAL 4 AM34P).

0306

Metribuzin absorption and translocation in two barley (Hordeum vulgare) cultivars.
WEESA6. Gawronski, S. Haderlie, L.C.; Stark, J.C. Champaign, Ill. : Weed Science Society of America. Weed science. July 1986. v. 34 (4). p. 491-495. ill. Includes 13 references. (NAL Call No.: DNAL 79.8 W41).

0307

Models explaining the specificity and durability of host resistance derived from the observations on the barley-Puccinia hordei system.
Parlevliet, J.E.NASSD. New York : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. 1983. v. 55. p. 57-80. Includes references. (NAL Call No.: QH301.N32).

0308

Molecular and cellular biology associated with endosperm mobilization in germinating cereal grains.
Fincher, G.B. Palo Alto, Calif. : Annual Reviews, Inc. Annual review of plant physiology and plant molecular biology. Literature review. 1989. v. 40. p. 305-346. ill. Includes references. (NAL Call No.: DNAL QK1.A57).

0309

Molecular biology of salinity stress: preliminary studies and perspectives.
Ramagopal, S. New York : Plenum Press, c1987. Tailoring genes for crop improvement : an agricultural perspective / edited by George Bruening ... et al. . p. 111-119. ill. Includes references. (NAL Call No.: DNAL SB123.57.C66 1986).

0310

Molecular cloning and sequence of cDNA encoding the plasma membrane proton pump (H+-ATPase) of Arabidopsis thaliana.
PNASA. Harper, J.F. Surowy, T.K.; Sussman, M.R. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Feb 1989. v. 86 (4). p. 1234-1238. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0311

The morphological and physiological response of slender oat (Avena barbata) to the herbicides barban and difenzoquat.
WEESA6. Price, S.C. Hill, J.E.; Allard, R.W. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 60-69. Includes references. (NAL Call No.: DNAL 79.8 W41).

0312

Morphological and physiological variation in wild oat (Avena fatua, dormancy, herbicide resistance, varieties, weeds).
Miller, S.D. Nalewaja, J.D.; Mulder, C.E.G. Madison, Wis., American Society of Agronomy. Agronomy journal. Sept/Oct 1982. v. 74 (5). p.

771-775. ill. 11 ref. (NAL Call No.: 4 AM34P).

0313

Morphological changes associated with three cycles of recurrent selection for grain yield improvement in oat.
CRPSAY. Bregitzer, P.P. Stuthman, D.D.; McGraw, R.L.; Payne, T.S. Madison, Wis. : Crop Science Society of America. To assess the potential for improving grain yield is via indirect morphological trait selection, the original and third cycle parents from a recurrent selection program for grain yield in oat (Avena sativa L.) were compared. Evaluation was based on hill plots grown in three field environments. This selection increased grain yield 13.5% and total dry matter 15.9%; thus, there was no increase in harvest index. All morphological structures measured increased in size. Grain yield was not closely or consistently related to any individual morphological trait, nor to the photosynthetic area of the flag leaf and panicle. Analysis of allometric relationships (the size of one plant structure relative to another) indicated that the size of morphological structures within a genotype tended to be proportional, but variability in allometric relationships was present. Therefore, selection for altered allometric relationships may be successful, but construction of an ideotype based on certain levels of expression of individual morphological traits, or photosynthetic areas, is not likely to be effective in increasing grain yield. Crop science. Mar/Apr 1987. v. 27 (2). p. 165-168. Includes references. (NAL Call No.: DNAL 64.8 C883).

0314

Multiline breeding (Cereal varieties, disease resistance).
Frey, K.J. New York : Academic Press, 1982. Plant improvement and somatic cell genetics / edited by I.K. Vasil, W.R. Scowcroft, K.J. Frey. p. 43-71. ill. Includes references. (NAL Call No.: SB123.P563).

0315

Multiple inoculation technique for evaluating resistance of single barley seedlings to three fungi (Rhynchosporium secalis, Puccinia hordei, Erysiphe graminis hordei, breeding for disease resistance).
Kilpatrick, R.A. Baenziger, P.S.; Moseman, J.G. St. Paul, Minn., American Phytopathological Society. Plant disease. June 1981. v. 65 (6). p. 504-506. 8 ref. (NAL Call No.: 1.9 P69P).

0316

Mutant selection.
Flick, C.E. Evans, D.A. New York : Macmillan Publishing Company. Plant-microbe interactions : molecular and genetic perspectives. 1984. v. 1. p. 168-192. Includes references. (NAL Call No.: DNAL QR351.P53).

0317

Natural selection in a doubled-haploid mixture and a composite cross of barley.
CRPSAY. Patel, J.D. Reinbergs, E.; Mather, D.E.; Choo, T.M.; Sterling, J.D.E. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 474-479. Includes references. (NAL Call No.: DNAL 64.8 C883).

0318

Near-isogenic barley lines with genes for resistance to powdery mildew.
CRPSAY. Kolster, P. Munk, L.; Stolen, O.; Lohde, J. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 903-907. Includes references. (NAL Call No.: DNAL 64.8 C883).

0319

New barley developed (Scio variety, resistant to lodging).
Corvallis, The Station. Oregon's agricultural progress - Oregon Agricultural Experiment Station. Spring/Summer 1982. v. 28/29 (4/1). p. 14. (NAL Call No.: 100 OR3OR).

0320

New mutants in the genetic male sterile barley collection.
Hockett, E.A. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 70-73. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0321

New sources of resistance to Puccinia hordei in barley land race cultivars.
PHYTAJ. Yahyaoui, A.H. Sharp, E.L.; Reinhold, M. St. Paul, Minn. : American Phytopathological Society. Phytopathology. July 1988. v. 78 (7). p. 905-908. Includes references. (NAL Call No.: DNAL 464.8 P56).

0322

New varieties of oats from bond crosses resistant to Victoria Blight /by T.R. Stanton.
Stanton, T. R. 1885-. Washington, D.C. : U.S. Dept. of Agriculture, 1948. 7 p., 1 folded leaf : ill. ; 26 cm. Bibliography: p.6-7. (NAL Call No.: DNAL 1 Ag84C no.795).

0323

Nitrate accumulation in plants.
Jensen, E.H. Reno, Nev. : College of Agriculture, University of Nevada-Reno, Nevada Cooperative Extension. Fact sheet - College of Agriculture, University of Nevada-Reno, Nevada Cooperative Extension. 1987? . (87-32). 3 p. (NAL Call No.: DNAL S544.3.N3C66).

0324

Nitrogen harvest index in oats: its repeatability and association with adaptation.
CRPSAY. Rattunde, H.F. Frey, K.J. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 606-610. Includes references. (NAL Call No.: DNAL 64.8 C883).

0325

Oats (Production, breeding, composition).
Youngs, V.L. Peterson, D.M.; Brown, C.M. St. Paul, Minn. : American Association of Cereal Chemists. Advances in cereal science and technology. 1982. Literature review. v. 5. p. 49-105. ill. Includes references. (NAL Call No.: TS2120.A3).

0326

Oats research.
Reeves, D.L. Brookings, S.D. : The Station. Plant science pamphlet - Plant Science Dept., Agricultural Experiment Station, South Dakota State University. In the series analytic: 1987 Annual Progress Report--Northeast Research Station, Watertown, South Dakota. Jan 1988. (5). p. 37-38. (NAL Call No.: DNAL S541.5.S8P5).

0327

Pathogen fitness in cereal mildews (Plant breeding, disease resistance).
Wolfe, M.S.NASSD. Barrett, J.A.; Slater, S.E. New York : Plenum Press. NATO advanced study institutes series. Series A. Life sciences. 1983. v. 55. p. 81-100. Includes references. (NAL Call No.: QH301.N32).

0328

Pathogenic variation in field populations of barley mildew.
Chan, K. Boyd, W.J.R. New South Wales : Dept. of Agriculture, 1987? . Proceedings, Australian Barley Technical Symposium : Wagga Wagga, 11-15th October 1987. p. 242-245. (NAL Call No.: DNAL SB191.B2A9 1987).

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Performance of cereal crops in the Tanana River Valley of Alaska, 1978-1979 (Varieties, yields, resistance).
Wooding, F.J. McBeath, J.H. Fairbanks : The Station. Circular - Alaska Agricultural Experiment Station. Dec 1979. Dec 1979. (34). 23 p. (NAL Call No.: 100 AL122E).

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Performance of cereal crops in the Tanana Valley of Alaska, 1980 (Varieties, yields, disease resistance).
Wooding, F.J. McBeath, J.H.; Hanscom, J.T.; Van Veldhuizen, R.M. Fairbanks : The Station. Circular - Alaska Agricultural Experiment Station. Dec 1980. Dec 1980. (36). 29 p. (NAL Call No.: 100 AL122E).

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Performance of cereal crops in the Tanana Valley of Alaska, 1981 (Varieties, yields, disease resistance).
Wooding, F.J. McBeath, J.H.; Hanscom, J.T.; Van Veldhuizen, R.M.; Delucchi, G.M. Fairbanks : The Station. Circular - Alaska Agricultural Experiment Station. Mar 1982. Mar 1982. (42). 27 p. (NAL Call No.: 100 AL122E).

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Performance of cereal crops in the Tanana Valley of Alaska, 1982 (Variety trials, disease resistance comparisons, yields).
Wooding, F.J. McBeath, J.H.; Frost, S.; Hanscom, J.T.; Van Veldhuizen, R.M. Fairbanks : The Station. Circular - Alaska Agricultural Experiment Station. Feb 1983. Feb 1983. (44). 28 p. (NAL Call No.: 100 AL122E).

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Performance of small grain varieties in Louisiana, 1987-88.
Harrison, S.A. Boquet, D.J.; Colyer, P.D.; Groth, D.E.; Habetz, R.J.; Hallmark, W.B.; Hutchinson, R.L.; Moore, S.H.; Rabb, J.L. Baton Rouge, La. : The Department. Report of projects - Louisiana Agricultural Experiment Station, Department of Agronomy. 1988. p. 80-83. (NAL Call No.: DNAL 100 L936).

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The physiological basis of nitrogen redistribution during grain filling in cereals.
Dalling, M.J. Rockville, Md. : American Society of Plant Physiologists, c1985. Exploitation of physiological and genetic variability to enhance crop productivity / edited by James E. Harper, Lawrence E. Schrader, and Robert W. Howell. Literature review. p. 55-71. ill. Includes 45 references. (NAL Call No.: DNAL SB189.4.E97).

0335

Physiological changes associated with three cycles of recurrent selection for grain yield improvement in oats.
CRPSAY. Payne, T.S. Stuthman, D.D.; McGraw, R.L.; Bregitzer, P.P. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 734-736. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Plant cell culture and somatic cell genetics of cereals and grasses.
Vasil, I.K. New York : Academic Press, 1982. Plant improvement and somatic cell genetics / edited by I.K. Vasil, W.R. Scowcroft, K.J. Frey. Literature review. p. 179-203. Includes references. (NAL Call No.: SB123.P563).

0337

Plastid transcription activity and DNA copy number increase early in barley chloroplast development.
PLPHA. Baumgartner, B.J. Rapp, J.C.; Mullet, J.E. Rockville, Md. : American Society of Plant Physiologists. Plastid transcription activity and DNA copy number were quantified during chloroplast development in the first foliage leaf in dark-grown and illuminated barley (Hordeum vulgare L.) seedlings. Primary foliage leaves of seedlings given continuous illumination from 2 days post-imbibition reached a final mean length of 15 centimeters at 6.5 days, whereas primary leaves of dark-grown seedlings required 7 days to reach a similar length. Dividing cells were observed in the basal 0.5 to 1 centimeter of primary leaves until 5.5 days post-imbibition. Plastids isolated form cells located in the basal meristem of 4-day-old seedlings were small (approximately 2 micrometers in diameter), exhibited low transcription activity and contained approximately 130 copies of plastid DNA per organelle. Cell size increased from 18 to 60 micrometers in a 1 to 3 centimeter region located adjacent to the leaf basal meristem. In this region, transcriptional activity per plastid increased 10-fold and DNA copy number increased from 130 to 210. Plastid trancriptional activity declined rapidly in illuminated plants with increasing leaf cell age and plastid DNA copy number also declined but with a slower time course. In dark-grown seedlings plastid transcriptional activity declined more slowly than in illuminated plants while DNA copy number remained constant with increasing cell age. These data show that plastid transcriptional activity and DNA copy number increase early in chloroplast development and that transcriptional activity per DNA template varies up to 5-fold during barley leaf biogenesis. Plant physiology. Mar 1989. v. 89 (3). p. 1011-1018. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0338

Powdery mildew resistance gene M1-a8 (Reg1h8) in northwest European spring barley varieties (Erysiphe graminis hordei, Hordeum).
Jorgensen, J.H. Jensen, H.P. Fort Collins : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1983. v. 13. p. 51-53. Includes references. (NAL Call No.: QK495.G74B34).

0339

A preliminary note on the inheritance of rust resistance in oats.
AGJOAT. Garber, R.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan 1921. v. 13 (1). p. 41-43. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

0340

A preliminary study of the inheritance of rust resistance in oats.
AGJOAT. Parker, J.H. Madison, Wis. : American Society of Agronomy. Pedigree lines of two oat varieties, Burt and Sixty-Day, together with a larg number of F2 generation hybrids between these varieties, were studied in relation to their rust resistance. Most of the inoculations were made on seedlings, but enough were made on plants at time of heading to show that the results were similar. The rusts used were the crown rust of oats, Puccinia lolii avenaeMcAlpine, and the stem rust of oats, Puccinia graminis avenae Erikss, and Henn. Burt and Sixty-Day and all the hybrids of these two varieties so far tested were found to be entirely susceptible to stem rust. All plants to Sixty-Day also were uniformly susceptible to crown rust. Of 223 inoculated plants of Burt, 48 were classified as resistant, 152 as intermediate, and 23 as susceptible. Each of the five hybrid families contained, in the F2 generation, some plants showing a high degree of resistance to crown rust and others which were as susceptible as plants of the Sixty-Day parent. In other words, there was definite segregation. There was, however a rather large number of plants which were classified as intermediate and which showed varying degrees of resistance. The numerical results of inoculations made in the F2 hybrids were as follows: seedlings classified as resistant no. 81 (17.3%); seedlings classified as

intermediate no. 61 (13.0%); seedlings classified as susceptible no. 326 (69.7%); total no. 468 (100.0%). The fact that there were so many more susceptible than resistant plants indicates that susuceptibility to crown rust in this cross is partially dominant, while resistance is recessive. These contrasted characters are not thought to be due to environmental conditions or to differences in the metabolism of the host plants, but to definite genetic factors. Nonhereditary factors may of course influence or modify their expression. Rust resistance and susceptibility hardly can be considered as simple characters or as being determined by a single factor difference. The F2 gene. Agronomy journal. Jan 1920. v. 12 (1). p. 23-38. plates. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Proanthocyanidin-free barley for brewing: progress in breeding for high yield and research tool in polyphenol chemistry.
TQMBA. Wettstein, D. von. Nilan, R.A.; Ahrenst-Larsen, B.; Erdal, K.; Ingversen, J.; Jende-Strid, B.; Kristiansen, K.N.; Larsen, J.; Outtrup, H.; Ullrich, S.E. Madison, Wis. : The Association. Technical quarterly - Master Brewers Association of the Americas. 1985. v. 22 (2). p. 41-52. Includes references. (NAL Call No.: DNAL 390.9 M39T).

0342

Production of ochratoxin A in barley by Aspergillus ochraceus and Penicillium viridicatum: effect of fungal growth, time, temperature, and inoculum size (Mycotoxins).
Haggblom, P. Washington, D.C., American Society for Microbiology. Applied and environmental microbiology. May 1982. v. 43 (5). p. 1205-1207. Includes 10 ref. (NAL Call No.: 448.3 AP5).

0343

A quest for cereal varieties resistant to the minor cereal diseases in eastern Oregon.
Kolding, M.F. Corvallis, Or., The Station. Special report - Oregon Agricultural Experiment Station. June 1981. June 1981. (623). p. 35-42. (NAL Call No.: 100 OR3M).

0344

Rapid electrophoresis of oat (Avena sativa L.) prolamins from single seeds for cultivar identification.
CECHAF. Hansen, A.E. Nassuth, A.; Altosaar, I. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Mar/Apr 1988. v. 65 (2). p. 153-154. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

0345

Reaction of Hordeum bulbosum L. to Japanese races of powdery mildew (Erysiphe graminis f. sp. hordei) (that attack Hordeum vulgare, barley, genetic transfer of resistance).
Prasad, G. Yasuda, S.; Konishi, T. Fort Collins : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1983. v. 13. p. 60-62. Includes references. (NAL Call No.: QK495.G74B34).

0346

Receptivity, incubation period, and lesion size as criteria for screening barley genotypes for resistance to pyrenophora teres.
PHYTAJ. Nutter, F.W. Jr. Pederson, V.D. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1985. v. 75 (5). p. 603-606. Includes 12 references. (NAL Call No.: DNAL 464.8 P56).

0347

Recurrent selection for tolerance to barley yellow dwarf virus in oat.
CRPSAY. Baltenberger, D.E. Ohm, H.W.; Foster, J.E. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1988. v. 28 (3). p. 477-480. Includes references. (NAL Call No.: DNAL 64.8 C883).

0348

Reduced accumulation of ABA during water stress in a molybdenum cofactor mutant of barley.
PLPHA. Walker-Simmons, M. Kudrna, D.A.; Warner, R.L. Rockville, Md. : American Society of Plant Physiologists. A barley (Hordeum vulgare L.) mutant (Az34) has been identified with low basal levels of abscisic acid (ABA) and with reduced capacity for producing ABA in response to water stress. The mutation is in a gene controlling the molybdenum cofactor resulting in a pleiotropic deficiency in at least three molybdoenzymes, nitrate reductase, xanthine dehydrogenase, and aldehyde oxidase. The mutant was found to lack aldehyde oxidase activity with several substrates including: (a) ABA aldehyde, a putative precursor of ABA; (b) an acetylenic analog of ABAaldehyde; and (c) heptaldehyde. Elevating the growth temperature from 18 to 26 degrees C caused mutant leaves to wilt and brown. Desiccation of mutant leaves was prevented by applying ABA. These results indicate that ABA biosynthesis at some developmental stages is dependent upon a molybdoenzyme which may be an aldehyde oxidase. Plant physiology. June 1989 v. 90 (2). p. 728-733. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0349

Registration of Arizona 8501 barley germplasm for disturbed land reclamation.
CRPSAY. Day, A.D. Ludeke, K.L.; Ottman, M.J. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 387. Includes references. (NAL Call No.: DNAL 64.8 C883).

0350

Registration of barley yellow dwarf virus tolerant barley composite cross XLIV germplasm.
CRPSAY. Crosslin, J.M. Carroll, T.W.; Hockett, E.A.; Zaske, S.K. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 387-388. Includes references. (NAL Call No.: DNAL 64.8 C883).

0351

Registration of CM 221 semidwarf buckwheat germplasm.
CRPSAY. Campbell, C.G. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1987. v. 27 (1). p. 151. Includes references. (NAL Call No.: DNAL 64.8 C883).

0352

Registration of 'Diamond' barley.
CRPSAY. Kaufmann, M.L. Kibite, S. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 706. Includes references. (NAL Call No.: DNAL 64.8 C883).

0353

Registration of 'Florida 401' rye.
CRPSAY. Pfahler, P.L. Barnett, R.D.; Luke, H.H. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 836. Includes references. (NAL Call No.: DNAL 64.8 C883).

0354

Registration of four pairs of greenbug-resistant vs. susceptible near-isolines of winter barley germplasms.
CRPSAY. Carver, B.F. Morgan, G.H.; Edwards, L.H.; Webster, J.A. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1988. v. 28 (6). p. 1034-1035. Includes references. (NAL Call No.: DNAL 64.8 C883).

0355

Registration of four stem rust and crown rust resistant oat germplasm lines.
CRPSAY. Rothman, P.G. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1217-1218. Includes 6 references. (NAL Call No.: DNAL 64.8 C883).

0356

Registration of 'Heartland' barley.
CRPSAY. Therrien, M.C. Irvine, R.B.; Campbell, K.W.; Wolfe, R.I. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1124. (NAL Call No.: DNAL 64.8 C883).

0357

Registration of 'Hercules' oat.
CRPSAY. Marshall, H.G. Kolb, F.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1988. v. 28 (4). p. 719. Includes references. (NAL Call No.: DNAL 64.8 C883).

0358

Registration of 'Hitchcock' barley.
CRPSAY. Schmidt, J.W. Dreier, A.F.; Dofing, S.M. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1123. (NAL Call No.: DNAL 64.8 C883).

0359

Registration of 'Jasper' oat.
CRPSAY. Kibite, S. Kaufmann, M.L.; Allen, H.T. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1987. v. 27 (5). p. 1089. Includes references. (NAL Call No.: DNAL 64.8 C883).

0360

Registration of 'Kelly' oat.
CRPSAY. Reeves, D.L. Hall, L. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 385-386. (NAL Call No.: DNAL 64.8 C883).

0361

Registration of Kline barley.
CRPSAY. Brown, A.R. Morey, D.D.; Johnson, J.W.; Cunfer, B.M. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 706-707. Includes 1 references. (NAL Call No.: DNAL 64.8 C883).

0362

Registration of 'Lamont' barley.
CRPSAY. Wesenberg, D.M. Robbins, G.S. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 373. Includes references. (NAL Call No.: DNAL 64.8 C883).

0363

Registration of 'Lancer' oats.
CRPSAY. Reeves, D.L. Hall, L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 710. Includes 2 references. (NAL Call No.: DNAL 64.8 C883).

0364

Registration of leaf rust resistant barley composite cross XLI germplasm (Hordeum vulgare).
Bockelman, H.E.CRPSAY. Reinhold, M.; Sharp, E.L.; Eslick, R.F. Madison : Crop Science Society of America. Crop science. Nov/Dec 1983. v. 23 (6). p. 1224-1225. Includes references. (NAL Call No.: 64.8 C883).

0365

Registration of 'Multiline E76' and 'Multiline E77' oats.
CRPSAY. Frey, K.J. Browning, J.A.; Simons, M.D. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1985. v. 25 (6). p. 1125. Includes 1 references. (NAL Call No.: DNAL 64.8 C883).

0366

Registration of net blotch resistant barley composite cross XLV germplasm.
CRPSAY. Bockelman, H.E. Sharp, E.L.; Harrabi, M.M.; Cherif, M. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1988. v. 28 (1). p. 199. (NAL Call No.: DNAL 64.8 C883).

0367

Registration of 'Noble' barley.
CRPSAY. Helm, J.H. Salmon, D.F.; Dyson, D.H.; Stewart, W.M. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1989. v. 29 (1). p. 235. (NAL Call No.: DNAL 64.8 C883).

0368

Registration of oat germplasms IA H676, IA H677, and IA H681 resistant to the crown fungus.
CRPSAY. Michel, L.J. Simons, M.D. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 716-717. Includes 4 references. (NAL Call No.: DNAL 64.8 C883).

0369

Registration of powdery mildew resistant barley composite cross XLII germplasm (Hordeum vulgare, Erysiphe graminis).
Bockelman, H.E.CRPSAY. Sharp, E.L.; Eslick, R.F.; Ramage, R.T. Madison : Crop Science Society of America. Crop science. Nov/Dec 1983. v. 23 (6). p. 1225. Includes references. (NAL Call No.: 64.8 C883).

0370

Registration of 'Proat' oat.
CRPSAY. Stuthman, D.D. Rothman, P.G.; Wilcoxson, R.D.; Rines, H.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1987. v. 27 (4). p. 816. (NAL Call No.: DNAL 64.8 C883).

0371

Registration of 'Ray' barley.
CRPSAY. Lafever, H.N. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1988. v. 28 (1). p. 187. (NAL Call No.: DNAL 64.8 C883).

0372

Registration of 'Samson' barley.
CRPSAY. Helm, J.H. Dyson, D.H.; Stewart, W.M. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 384. (NAL Call No.: DNAL 64.8 C883).

0373

Registration of scald and net blotch resistant barley composite cross XLIII germplasm (Hordeum vulgare).
Bockelman, H.E.CRPSAY. Eslick, R.F.; Sharp, E.L. Madison : Crop Science Society of America. Crop science. Nov/Dec 1983. v. 23 (6). p. 1225-1226. Includes references. (NAL Call No.: 64.8 C883).

0374

Registration of 'Simpson' oat.
CRPSAY. Graham, W.D. Jr. Morton, B.C. Jr.; Kingsland, G.C.; Gambrell, R.H. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1986. v. 26 (2). p. 386. (NAL Call No.: DNAL 64.8 C883).

0375

Registration of six germplasm sources of cereal leaf beetle resistant hard red spring wheats (Reg. No. GP 132 to GP 137).
Smith, D.H. Jr. AR-NC. Webster, J.A.; Everson, E.H. Madison, Wis., Crop Science Society of America. Crop science. May/June 1980. v. 20 (3). p. 420. (NAL Call No.: 64.8 C883).

0376

Registration of three oat germplasm lines resistant to the crown rust fungus.
CRPSAY. Simons, M.D. Michel, L.J.; Frey, K.J. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1987. v. 27 (2). p. 369. Includes references. (NAL Call No.: DNAL 64.8 C883).

0377

Registration of two cereal leaf beetle resistant barley germplasms (Oulema melanopus).
Smith, D.H. Jr. Webster, J.A.; Grafius, J.E. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1984. v. 24 (4). p. 828. Includes references. (NAL Call No.: 64.8 C883).

0378

Registration of 'Venus' barley.
CRPSAY. Brown, A.R. Johnson, J.W.; Rothrock, C.S.; Bruckner, P.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1988. v. 28 (4). p. 718-719. Includes references. (NAL Call No.: DNAL 64.8 C883).

0379

Registration of 'Virden' barley.
CRPSAY. Therrien, M.C. Irvine, R.B.; Campbell, K.W.; Wolfe, R.I. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 374. Includes references. (NAL Call No.: DNAL 64.8 C883).

0380

Registration of 'Webster' oat.
CRPSAY. Frey, K.J. Simons, M.D.; Michel, L.J.; Murphy, J.P.; Brownining, J.A. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 374-375. Includes references. (NAL Call No.: DNAL 64.8 C883).

0381

Registration of Webster oat isolines as parental lines.
CRPSAY. Frey, K.J. Simons, M.D.; Michel, L.J.; Murphy, J.P.; Browning, J.A. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 386-387. Includes references. (NAL Call No.: DNAL 64.8 C883).

0382

Registration of 'Willis' winter barley.
CRPSAY. Sorrells, M.E. Jensen. N.F. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1989. v. 29 (4). p. 1086. Includes references. (NAL Call No.: DNAL 64.8 C883).

0383

Registration of 'Wysor' barley.
CRPSAY. Starling, T.M. Roane, C.W.; Camper, H.M. Jr.; . Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1987. v. 27 (6). p. 1306-1307. (NAL Call No.: DNAL 64.8 C883).

0384

Relation between kernel row number and crude protein content of the grain in barley (Effects of two-rowed alleles on agronomic characters, physiological cause).
Yasuda, S. Moriya, I. Fort Collins, Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1982. v. 12. p. 45-46. (NAL Call No.: QK495.G74B34).

0385

A relationship between ice-nucleation-active bacteria, freeze damage, and genotype in oats.
PHYTAJ. Marshall, D. St. Paul, Minn. : American Phytopathological Society. Phytopathology. July 1988. v. 78 (7). p. 952-957. Includes references. (NAL Call No.: DNAL 464.8 P56).

0386

Relationship between subcrown internode length and winter survival in winter barley.
CRPSAY. Dofing, S.M. Schmidt, J.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 690-692. Includes references. (NAL Call No.: DNAL 64.8 C883).

0387

Resistance of cereal crops to aphids: role of allelochemicals.
ACSMC. Corcuera, L.J. Argandona, V.H.; Zuniga, G.E. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1987. (330). p. 129-135. Includes references. (NAL Call No.: DNAL QD1.A45).

0388

Resistance of Hordeum spontaneum collected in Israel to infection with Erysiphe graminis hordei (Barley, powdery mildew, germplasm, disease).
Moseman, J.G.CRPSAY. Nevo, E.; Zohary, D. Madison : Crop Science Society of America. Crop science. Nov/Dec 1983. v. 23 (6). p. 1115-1119. maps. Includes references. (NAL Call No.: 64.8 C883).

0389

Resistance of wild barley accessions from Israel to leaf rust collected in the USA and Israel.
CRPSAY. Manisterski, J. Treeful, L.; Tomerlin, J.R.; Anikstesr, Y.; Moseman, J.G.; Wahl, I.; Wilcoxson, R.D. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 727-730. Includes 22 references. (NAL Call No.: DNAL 64.8 C883).

0390

Resistance to covered smut in varieties and hybrids of oats.
AGJOAT. Gaines, E.F. Madison, Wis. : American Society of Agronomy. Of 210 varieties and selections of oats tested for resistance to covered smut, Ustilago levis (K. & S.) Magn., during the past eight years, 21 were smut free, the others ranging from slight infection to extreme susceptibility in which nine-tenths of the panicles were black masses of smut spores. Markton, one of the immune selections, is a thin hulled, white oat of sativa type, and is one of the best yielding varieties tested in recent years. It has been increased and grown commercially since 1924. The inheritance of the immunity of Red Rustproof has been studied in four crosses with susceptible varieties. The crosses with Black Tartarian and Abundance indicate that Red Rustproof carries three dominant factors for immunity, any one of which prevents the production of covered smut spores. In crosses with Large and Chinese Hulless, one factor apparently does not give complete dominance in hulless segregates, but otherwise the prepotency of the factors for immunity is similar in all four crosses. Of 56 F3 plants selected from smut-free rows, 45 produced only smut-free plants in the F4 generation. From the results already obtained in varietal testing and breeding for disease resistance in field crops, it is to be hoped that the major diseases will in time be successfully controlled by the development and introduction of resistant or immune varieties. Agronomy journal. Dec 1925. v. 17 (12). p. 775-789. (NAL Call No.: DNAL 4 AM34P).

0391

Resistance to disease and maximum potential yield.
Vanderplank, J.E. New York : Gordon and Breach Science Pub., c1988. Experimental and conceptual plant pathology / edited by R.S. Singh ... et al. . p. 593-599. Includes references. (NAL Call No.: DNAL SB731.E97).

0392

Response of current Midwestern soybean cultivars to late planting.
CRPSAY. Raymer, P.L. Bernard, R.L. Madison, Wis. : Crop Science Society of America. Soybean Glycine max (L.) Merr. is grown in the Midwestern USA primarily as a full-season crop and only to a limited extent as a double crop following small grains. Development of cultivars specifically adapted to later planting dates commonly associated with double-crop production has been suggested as a means to expand double-crop hectarage in this area. To determine if currently used soybean cultivars differ in their adaptation to late planting and if any specific plant traits are related to improved performance under late-planted conditions, 16 soybean cultivars were evaluated at both conventional (May) and late (late June to early July) planting dates in 1979, 1980, and 1981. Cultivar by planting date interactions were found for days to maturity, height at maturity, seed quality, and seed mottling, but not for yield, days to flowering, height at flowering, lodging, and weight per 100 seeds. All cultivars suffered substantial and similar yield reductions when planted late. Phenotypic correlation coefficients of cultivar performance between the two planting dates were positive and highly significant for all plant traits measured. The relationship of yield with various plant traits varied greatly from year to year and no differences in these relationships were observed between the two planting dates. These results do not furnish any evidence to justify a separate breeding program for the development of double-crop cultivars adapted to the Midwest. The lack of a strong cultivar by planting date interaction for yield and the lack of any strong associations of specific plant characteristics with yield in a

late-planted environment imply that testing in a conventional early-planted environment will be effective in identifying lines that perform well in either full-season or double-crop environments. Crop science. Sept/Oct 1988. v. 28 (5). p. 761-764. Includes references. (NAL Call No.: DNAL 64.8 C883).

0393

Responses of two-, three-, and four-component barley mixtures to a variable pathogen population.
CRPSAY. McDonald, B.A. Allard, R.W.; Webster, R.K. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1988. v. 28 (3). p. 447-452. Includes references. (NAL Call No.: DNAL 64.8 C883).

0394

Root development and lodging resistance in oats /Dale T. Sechler.
Sechler, Dale Truman, 1926-. Columbia, Mo. : University of Missouri, College of Agriculture, Agricultural Experiment Station, 1961. Cover title. 38 p. : ill. ; 23 cm. Bibliography: p. 37. (NAL Call No.: DNAL 100 M693 (3) no.769).

0395

Seed dormancy in wild and weedy relatives of cereals.
Key, J.M. Boca Raton, Fla. : CRC Press, 1988. Preharvest field sprouting in cereals / editor, N.F. Derera. Literature review. p. 15-25. ill. Includes references. (NAL Call No.: DNAL SB189.6.P73).

0396

Selection of barley for slow rusting resistance to leaf rust in epidemics of different severity.
CRPSAY. Andres, M.W. Wilcoxson, R.D. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 511-514. Includes 25 references. (NAL Call No.: DNAL 64.8 C883).

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Sources of genes resistant to Puccinia hordei in barley (leaf rust, Hordeum vulgare, cultivars and lines).
Sharp, E.L. Reinhold, M. St. Paul, American Phytopathological Society. Plant disease. Nov 1982. v. 66 (11). p. 1012-1013. 14 ref. (NAL Call No.: 1.9 P69P).

0398

Soybean cultivar response to reduced tillage systems in northern dryland areas.
AGJOAT. Deibert, E.J. Madison, Wis. : American Society of Agronomy. Information on response of soybean Glycine max (L.) Merr. cultivars to reduced tillage systems in northern dryland areas is limited. A 4-yr field study (1984 to 1987) was conducted to evaluate the effect of tillage system, weed control method, and cultivar maturity on soybean seed yield variables. An early and a late-maturing soybean cultivar were grown on a Fargo clay (fine, montmorillonitic frigid Vertic Haplaquoll) on established tillage plots. Tillage systems included conventional (moldboard plow) and three reduced tillage systems (sweep, intertill, and no-till) with herbicides or herbicides plus cultivation for weed control. Climatic conditions resulted in differences among years in seed yield, seed weight, seed moisture, seed oil concentration, and seed oil yield. These seed variables were not significantly influenced by tillage system, weed control method, or cultivar maturity when grown in rotation with barley (Hordeum vulgare L.), but showed significant interactions. Cultivation for weed control depressed seed yield and weight of only the early cultivar. Early plant water stress (June and July) lowered yield of the early cultivar more than the late cultivar. Early cultivar no-till yields (1240 kg ha-1) were greater than tilled system yields (average 1070 kg ha-1), while late cultivar yields were similar among systems (average 1420 kg ha-1). An early maturing cultivar performed similarly to a late-maturing cultivar irrespective of tillage system unless early plant water stress was encountered. Fall application of granular herbicide provided good weed control, but cultivation for weed control was not beneficial for the yields parameters measured. Agronomy journal. July/Aug 1989. v. 81 (4). p. 672-676. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Sterility in rye.
AGJOAT. Stroman, G.N. Madison, Wis. : American Society of Agronomy. Agronomy journal. June 1923. v. 15 (6). p. 253-254. (NAL Call No.: DNAL 4 AM34P).

0400

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Strategies to select biochemical mutants with potential use in genetic manipulation of plants.
Jacobs, M. Negrutiu, I.; Cammaerts, D.; Cattoir-Reynaerts, A.; Dirks, R.; Dolferus, R.; Famelaer, Y. New York : Alan R. Liss. UCLA symposia on molecular and cellular biology. Paper presented at the "Symposium on Plant Genetics," April 13-19, 1985, Keystone, Colorado. 1985. v. 35. p. 685-700. Includes references. (NAL Call No.: DNAL QH506.U34).

0402

Student's method for interpreting paired experiments.
AGJOAT. Love, H.H. Brunson, A.M. Madison, Wis. : American Society of Agronomy. Too close an analogy should not be drawn between the determination of exact constants and the results of comparative agronomic experiments. Bessel's and Peter's formulas are not adapted to calculating the degree of significance of a difference between two varieties or two comparative treatments in experiments in which the variability within each variety or treatment is high because they extend through a series of years or because of place effect. For observations which naturally arrange themselves in pairs, Student's method is a better method with which to determine the probability of the difference, and deserves a larger application in the intrepretation of agronomic investigations. Agronomy journal. Jan 1924. v. 16 (1). p. 60-68. (NAL Call No.: DNAL 4 AM34P).

0403

Studies of inheritance in crosses between Bond, Avena byzantina, and varieties of A. sativa /H.K. Hayes, M.B. Moore, E.C. Stakman.
Hayes, H. K. 1884-. Moore, M. B._1905-; Stakman, E. C._1885-1979. St. Paul : University of Minnesota, Agricultural Experiment Station, 1939 . Cover title. 38 p. : ill. ; 23 cm. Bibliography: p. 37-38. (NAL Call No.: DNAL 100 M66 (3) no.137).

0404

Sugar composition and freezing tolerance in barley crowns at varying carbohydrate levels.
CRPSAY. Livingston, D.P. III. Olien, C.R.; Freed, R.D. Madison, Wis. : Crop Science Society of America. During hardening, carbohydrate content in winter cereals is affected by light intensity, which in turn affects freezing survival. To determine whether total carbohydrate content affects compositon of individual sugars and whether a particular composition is related to freezing tolerance, three barley (Hordeum vulgare L.) cultivars, differing in carbohydrate composition and in response to a controlled freezing test, were hardened under six light levels. At each level, total crown sugars were measured by water/ethanol extraction and high-pressure liquid chromatography and at four light levels plants were freeze tested. Carbohydrate composition changed depending on total carbohydrate content, and maximum freezing resistance was not found at the maximum simple sugar level. In addition, the relationship between kill temperature and total carbohydrate was different for the three cultivars. A simple relationship between carbohydrate composition and freezing tolerance was not found, but results suggest that the three cultivars may allocate total carbohydrate differently for cryoprotection. Crop science. Sept/Oct 1989. v. 29 (5). p. 1266-1270. Includes references. (NAL Call No.: DNAL 64.8 C883).

0405

Survey of barley germplasm for betaine-accumulating potential in controlled environments and in the field (Hordeum vulgare, Hordeum spontaneum, genotypes).
Ladyman, J.A.R. Ditz, K.M.; Hanson, A.D. East Lansing, Mich., The Laboratory. Annual report - Michigan State University, MSU/DOE Plant Research Laboratory. 1981. 1981 (16th). p. 64-66. 3 ref. (NAL Call No.: QK1.M5).

0406

Techniques for selection of cold hardiness in cereals (Oats).
Marshall, G.H. Olien, C.R.; Everson, E.H. Boca Raton, Fla., CRC Press. Analysis and improvement of plant cold hardiness. 1981. 1981. p. 139-159. 30 ref. (NAL Call No.: SB781.A52).

0407

Tillering dynamics of winter barley as influenced by cultivar and nitrogen fertilizer: a field study (Hordeum vulgare, Hordeum distichon L., tillers survival).
Garcia del Moral, L.F. Ramos, J.M.; Recalde, L. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 179-181. ill. Includes references. (NAL Call No.: 64.8 C883).

0408

Tillering in barley: genotype, row spacing, and seeding rate effects (Tiller mortality, abortion, axillary shoots).
Simmons, S.R. Rasmusson, D.C.; Wiersma, J.V. Madison, Wis., Crop Science Society of America. Crop science. July/Aug 1982. v. 22 (4). p. 801-805. 10 ref. (NAL Call No.: 64.8 C883).

0409

Tolerances of oat cultivars to an acid soil high in exchangeable aluminum.
JPNUDS. Foy, C.D. Smith, D.H. Jr.; Briggle, L.W. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9116). p. 1163-1174. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

0410

Transfer of field resistance to Puccinia coronata from Avena sterilis to cultivated oats by backcrossing.
PHYTAJ. Simons, M.D. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Mar 1985. v. 75 (3). p. 314-317. Includes 26 references. (NAL Call No.: DNAL 464.8 P56).

0411

Un8 allele for loose smut resistance associated with necrosis in embryos of infected barley.
PHYTAJ. Gabor, B.K. Thomas, P.L. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Apr 1987. v. 77 (4). p. 533-538. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

0412

Use of phytotoxins in selection of disease resistant mutants in tissue culture.
ISJRA6. Gengenbach, B.G. Rines, H.W. Ames, Iowa : Iowa State University. Iowa state journal of research. May 1986. v. 60 (4). p. 449-476. ill. Includes references. (NAL Call No.: DNAL 470 I09).

0413

Using cDNA probes to identify barley yellow dwarf virus-resistant barley lines.
Heath, R. Van de Velde, R.; Holloway, P. New South Wales : Dept. of Agriculture, 1987? . Proceedings, Australian Barley Technical Symposium : Wagga Wagga, 11-15th October 1987. p. 247-248. (NAL Call No.: DNAL SB191.B2A9 1987).

0414

Variation of resistance to powdery mildew in wild barley, Hordeum spontaneum.
Fukuyama, T. Heta, H.; Takeda, K. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Nov 10, 1986. v. 16. p. 15-17. (NAL Call No.: DNAL QK495.G74B34).

0415

Varietal variation of water sensitivity in Asian barley varieties.
Takeda, K. Fukuyama, T. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 15-16. (NAL Call No.: DNAL QK495.G74B34).

0416

Victorin as a tool for elucidating the molecular mechanism of disease specificity in victoria blight of oats.
Macko, V. Wolpert, T.J.; Acklin, W.; Arigoni, D. Columbia, Mo. : The Interdisciplinary Plant Biochemistry and Physiology Program. Current topics in plant biochemistry and physiology : Proceedings of the ... Plant Biochemistry and Physiology Symposium held at the University of Missouri, Columbia. 1987. v. 6. p. 55-58. Includes references. (NAL Call No.: DNAL QK861.P55).

0417

Volunteer barley (Hordeum vulgare) interference in canola (Brassica campestris and B. napus).
WEESA6. O'Donovan, J.T. Sharma, A.K.; Kirkland, K.J.; De St Remy, E.A. Champaign, Ill. : Weed Science Society of America. The yield potential and the effect on yield loss of canola of different densities of volunteer barley were investigated at three locations in western Canada. Field studies were conducted from 1982 to 1986. Rectangular hyperbolic models based on data pooled over years, locations, and canola cultivars, and incorporating different densities of volunteer barley and canola accurately portrayed field responses in most instances. Results indicated that volunteer barley severely reduced canola yield. However, financial losses due to reduced canola yield were partly offset by the volunteer barley crop. Weed science. Nov 1988. v. 36 (6). p. 734-739. Includes references. (NAL Call No.: DNAL 79.8 W41).

0418

Water stress enhances expression of an alpha-amylase gene in barley leaves.
PLPHA. Jacobsen, J.V. Hanson, A.D.; Chandler, P.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 350-359. ill. Includes 33 references. (NAL Call No.: DNAL 450 P692).

0419

Allelopathic activity of rye (Secale cereale L.).
Barnes, J.P. Putnam, A.R.; Burke, B.A. New York, N.Y. : John Wiley & Sons, c1986. The Science of allelopathy / edited by Alan R. Putnam and Chung-Shih Tang. Literature review. p. 271-286. ill. Includes references. (NAL Call No.: DNAL QK898.A43S34).

0420

Conjugation of allelochemicals by plant. Enzymatic glucosylation of salicylic acid by Avena sativa.
ACSMC. Balke, N.E. Davis, M.P.; Lee, C.C. Washington, D.C. : The Society. ACS Symposium series - American Chemical Society. 1987. (330). p. 214-227. Includes references. (NAL Call No.: DNAL QD1.A45).

0421

The effect of sigma-aminolevulinic acid on red-light-induced leaf unrolling (Barley).
Sundqvist, C. Briggs, W.R. Washington, D.C., The Institute. Year book - Carnegie Institution of Washington. 1979/1980. 1979/1980. (79th). p. 136-138. ill. 4 ref. (NAL Call No.: 500 C21).

0422

Effects of ambient temperature and nitrogen supply on content of four nitrogen fractions in barley plants / by Ikbalur Rashid Chowdhury. -.
Chowdhury, Ikbalur Rashid, 1939-. 1970. Thesis (Ph.D.)--North Dakota State University, 1970. Photocopy. Ann Arbor, Mich. : University Microfilms, 1971. xiii, 204 leaves ; 21 cm. Bibliography: leaves 162-175. (NAL Call No.: DISS 71-5,508).

0423

Effects of deletions in the N-terminal basic arm of brome mosaic virus coat protein on RNA packaging and systemic infection.
JOVIAM. Sacher, R. Ahlquist, P. Washington, D.C. : American Society for Microbiology. The first 25 amino acids of brome mosaic virus (BMV) coat protein include 8 basic and no acidic residues and are implicated in binding the encapsidated RNA. Using infectious transcripts from BMV RNA3 cDNA clones, we modified this region of the coat gene. A coat protein mutant with the first 25 amino acids deleted failed to direct either packaging of viral RNA in protoplasts or systemic infection of whole barley plants. Neither symptoms, virions, nor viral RNA was detectable in plants inoculated with this mutant or a mutant with a frameshift mutation in the coat gene. Mutants with the normal start codon changed to AAG or with the first eight codons deleted allowed translation to start at a downstream AUG, resulting in a deletion of the first 7 amino acids of the mature wild-type coat protein. These mutants not only packaged viral RNA in protoplasts but directed symptomatic, systemic infections that developed with normal speed and degree of spread within the host. The AUG-to-AAG point substitution did not revert to the wild type after long-term culture in planta. Wild-type BMV virions were also found to contain small amounts of a protein that coelectrophoresed with the truncated coat protein produced by the viable AAG and eight-codon-deletion mutants. This minor coat protein species presumably arose by infrequent translation initiation at the second AUG in the wild-type coat protein gene. Absence of encapsidation-competent coat protein appeared to stimulate production of nonstructural proteins in protoplast infections. Journal of virology. Nov 1989. v. 63 (11). p. 4545-4552. ill. Includes references. (NAL Call No.: DNAL QR360.J6).

0424

Factors affecting survival of winter oats / by Franklin A. Coffman .
Coffman, Franklin A. 1892-. Washington : U.S. Dept. of Agriculture, 1965. 28 p. : 1 map ; 23 cm. Literature cited: p. 27-28. (NAL Call No.: DNAL 1 Ag84Te no.1346).

0425

Natural occurrence of the mycotoxin viomellein in barley and the associated quinone-producing penicillia.
Hald, B.APMBA. Christensen, D.H.; Krogh, P. Washington : American Society for Microbiology. Applied and environmental microbiology. Dec 1983. v. 46 (6). p. 1311-1317. ill. Includes references. (NAL Call No.: 448.3 AP5).

0426

Oat stem vascular size in relation to kernel number and weight. I. Controlled environment (Avena sativa).
Housley, T.L. Peterson, D.M. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1982. v. 22 (2). p. 259-263. ill. Includes 15 ref. (NAL Call No.: 64.8 C883).

0427

Pulse domestication and cereal domestication: how different are they?.
ECBOA. Zohary, D. Bronx, N.Y. : New York Botanical Garden. Economic botany. Jan/Mar 1989. v. 43 (1). p. 31-34. Includes references. (NAL Call No.: DNAL 450 EC7).

0428

Response of round-headed buckwheat to summer burning.
NOSCA. Rickard, W.H. Pullman, Wash. : Washington State University Press. Northwest science : official publication of the Northwest Scientific Association. Aug 1989. v. 63 (4). p. 144-145. Includes references. (NAL Call No.: DNAL 470 N81).

0429

Rye residues contribute weed suppression in no-tillage cropping systems (Agroecosystems, biomass).
Barnes, J.P.JCECD. Putnam, A.R. New York : Plenum Press. Journal of chemical ecology. Aug 1983. v. 9 (8). p. 1045-1057. ill. Includes references. (NAL Call No.: QD415.A1J6).

0430

Stimulatory and inhibitory effects of light upon auxin biosynthesis (Avena, oats).
Wolf, F.T. Nashville, Tenn. : The Academy. Journal of the Tennessee Academy of Science. Jan/Apr 1984. v. 59. p. 25-27. Includes references. (NAL Call No.: 500 T25A).

0431

Cell membrane permeability and ultrastructural effects of difenzoquat on wild oats (Avena fatua).
WEESA6. Thai, K.M. Jana, S.; Fowke, L.C. Champaign, Ill. : Weed Science Society of America. Effects of difenzoquat on wild oats grown under controlled environmental conditions were studied. Seedling height and fresh weight were significantly reduced 5 days after postemergence treatment. Dose-dependent increase in cell membrane permeability was detected after a 12-h exposure to the herbicide. Scanning electron micrography showed normal leaf hairs and cuticular wax but swollen guard cells 10 days after treatment. Ultrastructural changes occurred before the visible symptoms. The primary effect of difenzoquat appears to be the disruption of the tonoplast and plasmalemma. The tonoplast showed greater damage than the plasmalemma. Secondary effects included damage to mitochondria and chloroplasts. Mitochondria were swollen and often ruptured, but the effect did not increase with the duration of exposure. Chloroplasts became spherical in shape, and their contents were also affected. The changes included: accumulation and then disappearance of starch granules, swelling of frets, fusion of granal thylakoids, detachment and then rupture of the outer membrane of the envelope, and clumping of ribosomes. By contrast, natural senescence caused greater injury of the plasmalemma than the tonoplast, a marked increase in size of plastoglobuli, and loss of starch grains without early accumulation. Weed science. Jan 1989. v. 37 (1). p. 98-106. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0432

Changes in endogenous gibberellins and the metabolism of (3H)-GA4 after geostimulation in shoots of the oat plant (Avena sativa) (Recovery from lodging).
Pharis, R.P. Legge, R.L.; Noma, M.; Kaufman, P.B.; Ghosheh, N.S.; LaCroix, J.D.; Heller, K. Rockville, Md., American Society of Plant Physiologists. Plant physiology. May 1981. v. 67 (5). p. 892-897. ill. 26 ref. (NAL Call No.: 450 P692).

0433

Characterization of the nuclear DNA of Hordeum vulgare root hairs: amplification disappears under salt stress.
AJBOAA. Murry, L.E. Christianson, M.L.; Alfinito, S.H.; Garger, S.J. Columbus, Ohio : Botanical Society of America. American journal of botany. Dec 1987. v. 74 (12). p. 1779-1786. Includes references. (NAL Call No.: DNAL 450 AM36).

0434

Effect of erect leaf angle on grain yield in barley.
CRPSAY. Tungland, L. Chapko, L.B.; Wiersma, J.V.; Rasmusson, D.C. Madison, Wis. : Crop Science Society of America. Crop science. Jan/Feb 1987. v. 27 (1). p. 37-40. Includes references. (NAL Call No.: DNAL 64.8 C883).

0435

The effects of iron and light treatments on chloroplast composition and ultrastructure in iron-deficient barley leaves (Hordeum vulgare).
Pushnik, J.C. Miller, G.W. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). p. 311-321. ill. 26 ref. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

0436

Heat shock causes destabilization of specific mRNAs and destruction of endoplasmic reticulum in barley aleurone cells.
PNASA. Belanger, F.C. Brodl, M.R.; Ho, T.H.D. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Mar 1986. v. 83 (5). p. 1354-1358. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0437

Inheritance of subcrown internode length in a winter barley cross (Winter hardiness, optimum depth of crown formation).
Dofing, S.M. Schmidt, J.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1984. v. 24 (4). p. 692-694. ill. Includes references. (NAL Call No.: 64.8 C883).

0438

Localization and pattern of graviresponse across the pulvinus of barley Hordeum vulgare.
PLPHA. Brock, T.G. Lu, C.R.; Ghosheh, N.S.; Kaufman, P.B. Rockville, Md. : American Society of Plant Physiologists. Pulvini of excised stem segments from barley (Hordeum vulgare cv Larker') were pretreated with 1 millimolar coumarin before gravistimulation to reduce longitudinal cell expansion and exaggerate radial cell enlargement. The cellular localization and pattern of graviresponse across individual pulvini were then evaluated by cutting the organ in cross-section, photographing the cross-section, and then measuring pulvinus thickness and the radial width of cortical and epidermal cells in enlargements of photomicrographs. With respect to orientation during gravistimulation, we designated the uppermost point of the cross-section 0 degrees and the lowermost point

180 degrees. A gravity-induced increase in pulvinus thickness was observable within 40 degrees of the vertical in coumarin-treated pulvini. In the upper halves of coumarin-treated gravistimulated pulvini, cells in the inner cortex and inner epidermis had increased radial widths, relative to untreated gravistimulated pulvini. In lower halves of coumarin-treated pulvini, cells in the central and outer cortex and in the outer epidermis showed the greatest increase in radial width. Cells comprising the vascular bundles also increased in radial width, with this pattern following that of the central cortex. These results indicate (a) that all cell types are capable of showing a graviresponse, (b) that the graviresponse occurs in both the top and the bottom the responding organ, and (c) that the magnitude of the response increases approximately linearly from the uppermost point to the lowermost. These results are also consistent with models of gravitropism that link the pattern and magnitude of the graviresponse to graviperception via statolith sedimentation. Plant physiology. Oct 1989. v. 91 (2). p. 744-748. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0439

The modification of the foliage structure and radiation absorption in a plant canopy by wind.
Hipps, L.E. Baiden, E. Boston : The Society, 1985. 17th Conference on Agricultural and Forest Meteorology and seventh Conference on Biometeorology and Aerobiology, May 21-24, 1985, Scottsdale, Ariz. : preprint volume / sponsored by the American Meteorological Society. p. 127-128. Includes references. (NAL Call No.: DNAL S600.2.C6 1985).

0440

Molecular and cellular biology associated with endosperm mobilization in germinating cereal grains.
Fincher, G.B. Palo Alto, Calif. : Annual Reviews, Inc. Annual review of plant physiology and plant molecular biology. Literature review. 1989. v. 40. p. 305-346. ill. Includes references. (NAL Call No.: DNAL QK1.A57).

0441

Morphological and histological effects of three grass selective herbicides on developing wild oat (Avena fatua) stems.
WEESA6. Jain, R. Born, W.H. vanden. Champaign, Ill. : Weed Science Society of America. Three grass selective herbicides, sethoxydim, fluazifop, and haloxyfop, applied to wild oat plants at the five-leaf stage inhibited growth and induced chlorosis in leaves. Young and actively growing tissues were affected first. Stem elongation in wild oat was inhibited within 2 days of treatment with sethoxydim and within 5 days of treatment with fluazifop or haloxyfop. At these same observation times, internodes that were elongating rapidly at the time of treatment were constricted at the base. These symptoms were followed by necrosis of the internode tisssue. Histological examination of the affected internodes indicated that the herbicides inhibited cell division in very young internodes and inhibited both cell division and cell elongation in slightly older internodes. Initial injury occurred in the epidermal, cortical, and procambium cells of the peripheral regions of the stems located at the base of the affected internodes. Necrosis then progressed to the center of the stem tissue and all cells in the internodes were killed within 14 days of treatment. All three herbicides caused similar morphological and histological effects on developing wild oat stems. Weed science. July 1989. v. 37 (4). p. 575-584. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0442

New mutants in the genetic male sterile barley collection.
Hockett. E.A. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 70-73. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0443

Physiological and ultrastructural studies of oat membranes treated with Helminthosporium victoriae toxin / by Vernon Edward Gracen, Jr. -.
Gracen, Vernon Edward, 1945-. 1970. Thesis (Ph.D.)--University of Florida, 1970. Photocopy. Ann Arbor, Mich. : University Microfilms, 1971. ix, 89 leaves ; 21 cm. Bibliography: leaves 84-88. (NAL Call No.: DISS 71-248).

0444

Quantitative observations on the pattern of synergid degeneration in barley.
AJBOA. Mogensen, H.L. Baltimore, Md. : Botanical Society of America. American journal of botany. Nov/Dec 1984. v. 71 (10). p. 1448-1451. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

0445

The response of wild oat (Avena fatua) and Avena sterilis accessions to photoperiod and temperature (Morphology, seed dormancy, growth rate).
Somody, C.N. Nalewaja, J.D.; Miller, S.D. Champaign : Weed Science Society of America. Weed science. Mar 1984. v. 32 (2). p. 206-213. ill. Includes references. (NAL Call No.: 79.8 W41).

0446

Structural changes occurring in nuclei of barley root cells in response to a combined effect of salinity and ageing (Hordeum vulgare).
Werker, E.AJBOA. Lerner, H.R.; Weimberg, R.; Poljakoff-Mayber, A. Baltimore : Botanical Society of America. American journal of botany. Feb 1983. v. 70 (2). p. 222-225. ill. Includes references. (NAL Call No.: 450 AM36).

0447

A study of stem inflation in wild buckwheat, Eriogonum inflatum (Insect damage, anatomy).
Stone, A.M. Mason, C.T. Jr. Superior, Ariz., University of Arizona. Desert plants. Nov 1979. v. 1 (2). p. 77-81. ill. 9 ref. (NAL Call No.: QK938.D4D4).

0448

Weed control in small grains /by F.W. Slife ... et al. .
Slife, F. W._1923-. Urbana, Ill. : University of Illinois, College of Agriculture, Extension Service in Agriculture and Home Economics, 1950. Cover title. 11 p. : ill., plans ; 23 cm. (NAL Call No.: DNAL 275.29 I162c no.658).

0449

Wild oats: one of the worst weeds.
CRSOA. Puy, D. van der. Madison, Wis. : American Society of Agronomy. Crops and soils magazine. Aug/Sept 1986. v. 38 (9). p. 13-14. ill. (NAL Call No.: DNAL 6 W55).

0450

Barley, potato and bromegrass chemical composition unchanged by use of a multipurpose wetting agent (The active ingredients of which are alcohol ethoxylates, propylene glycol, and dimethylpolysiloxane, fertilizer, uptake).
Laughlin, W.M. AK~AR-NC. Smith, G.R.; Peters, M.A. Fairbanks, The Station. Agroborealis.Alaska. Agricultural Experiment Station, Fairbanks. Jan 1980. v. 12 (1). p. 29-30. ill. 7 ref. (NAL Call No.: S33.E2).

0451

Characteristics of boron absorption by barley plants / by Ahmed Abd Elhamid Mohamed Elseewi. -.
Elseewi, Ahmed Abd Elhamid Mohamed, 1937-. 1968. Thesis (Ph.D.)--University of California, Riverside, 1968. Photocopy. Ann Arbor, Mich. : Univeristy Microfilms, 1970. ix, 102 leaves : ill. ; 21 cm. Bibliography: leaves 96-102. (NAL Call No.: DISS 69-10,096).

0452

The control of nutrient uptake rates in relation to the inorganic composition of plants Memna .
Glass, A.D.M. Siddiqi, M.Y. New York : Praeger. Advances in plant nutrition. 1984. v. 1. p. 103-147. ill. Includes 168 references. (NAL Call No.: DNAL QK867.A48).

0453

Effect of Cu on the distribution of P, Ca, and Fe in barley plants.
SOSCAK. Brown, J.C. Foy, C.D. Baltimore, Md. : Williams & Wilkins. Soil science. Dec 1964. v. 98 (6). p. 362-370. ill. Includes references. (NAL Call No.: DNAL 56.8 S03).

0454

Effect of heavy metals on the calcium absorption by intact barley roots.
Veltrup, W. New York, Marcel Dekker. Journal of plant nutrition. 1981. v. 3 (1/4). p. 225-231. ill. 17 ref. (NAL Call No.: QK867.J67).

0455

Effect of legume cover crops and tillage on soil water, temperature, and organic matter.
Utomo, M. Blevins, R.L.; Frye, W.W. Ankeny, Iowa : Soil Conservation Society of America, c1987. The role of legumes in conservation tillage systems / J.F. Power, editor. Paper presented at the "National Conference on the Role of Legumes in Conservation Tillage Systems", April 27-29, 1987, University of Georgia, Athens, Georgia. p. 5-6. Includes references. (NAL Call No.: DNAL SB203.R6).

0456

Effect of manganese and soil pH on the iron content of crops grown on Podzol soils (Hordeum vulgare, barley, Pisum sativum, peas).
Gupta, U.C.JPNUD. New York : Marcel Dekker. Journal of plant nutrition. 1982. v. 5 (10). p. 1229-1239. 14 ref. (NAL Call No.: QK867.J67).

0457

Effect of NaCl (sodium chloride) on some trace metals in barley (Salinity, interactions, cobalt, lithium, strontium).
Wallace, A. Cha, J.W.; Mueller, R.T. New York, Marcel Dekker. Journal of plant nutrition. 1980. v. 2 (1/2). p. 115-117. ill. 5 ref. (NAL Call No.: QK867.J67).

0458

Effect of nitrogen nutrition on quality of agronomic crops.
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0459

Effect of potassium fertilizers on malting barley infected with common root rot.
AGJOAT. Timm, C.A. Goos, R.J.; Johnson, B.E.; Sobolik, F.J.; Stack, R.W. Madison, Wis. : American Society of Agronomy. Agronomy journal. Jan/Feb 1986. v. 78 (1). p. 197-200. Includes references. (NAL Call No.: DNAL 4 AM34P).

0460

Effect of potassium nutrition on sink intensity and duration (Cereal grains).
Haeder, H.E. Bern : International Potash Institute, 1980. Physiological aspects of crop productivity : proceedings of the 15th Colloquium of the International Potash Institute held in Wageningen, The Netherlands. p. 185-194. ill. 26 ref. (NAL Call No.: SB185.5.C6 1980).

0461

The effect of residual copper levels on the nutrition and yield of oats grown in microplots on three organic soils.
CSOSA2. Belanger, A. Levesue, M.; Mathur, S.P. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Jan 1986. v. 17 (1). p. 85-96. Includes 12 references. (NAL Call No.: DNAL S590.C63).

0462

Effect of sample pretreatment on extractable soil potassium.
CSOSA2. Haby, V.A. Sims, J.R.; Skogley, E.O.; Lund, R.E. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1988. v. 19 (1). p. 91-106. Includes references. (NAL Call No.: DNAL S590.C63).

0463

The effect of surface applied soil amendments on barley root growth in an acid subsoil.
CSOSA2. Wright, R.J. Hern, J.L.; Baligar, V.C.; Bennett, O.L. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Feb 1985. v. 16 (2). p. 179-192. ill. Includes 26 references. (NAL Call No.: DNAL S590.C63).

0464

The effect of thiosulfate on phosphorus availability and uptake by plants.
JPNUDS. Morden, G. Soper, R.; Huzel, V.; Swan, M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Oct 1986. v. 9 (10). p. 1315-1321. Includes references. (NAL Call No.: DNAL QK867.J67).

0465

Effect of zinc deficiency on the accumulation of boron and other mineral nutrients in barley.
SSSJD4. Graham, R.D. Welch, R.M.; Grunes, D.L.; Cary, E.E.; Norvell, W.A. Madison, Wis. : The Society. Soil Science Society of America journal. May/June 1987. v. 51 (3). p. 652-657. Includes references. (NAL Call No.: DNAL 56.9 S03).

0466

Effect of zinc, phosphorus, and root-zone temperature on nutrient uptake by barley.
SSSJD4. Schwartz, S.M. Welch, R.M.; Grunes, D.L.; Cary, E.E.; Norvell, W.A.; Gilbert, M.D.; Meredith, M.P.; Sanchirico, C.A. Madison, Wis. : The Society. Soil Science Society of America journal. Mar/Apr 1987. v. 51 (2). p. 371-375. ill. Includes references. (NAL Call No.: DNAL 56.9 S03).

0467

Effects of NaCl on metabolic heat evolution rates by barley roots.
PLPHA. Criddle, R.S. Hansen, L.D.; Breidenbach, R.W.; Ward, M.R.; Huffaker, R.C. Rockville, Md. : American Society of Plant Physiologists. The effect of salinity stress on metabolic heat output of barley (Hordeum vulgare L.) root tips was measured by isothermal microcalorimetry. Several varieties differing in tolerance to salinity were compared and differences quantified. Two levels of inhibition by increasing salt were found. Following the transition from the initial rate to the first level, inhibition remained at about 50% with further increases in salt concentration up to 150 millimolar. The concentration of salt required to inhibit to this level was cultivar dependent. At higher concentrations (greater than 150 millimolar) of salt, metabolism was further decreased. This decrease was not cultivar dependent. The decreased rate of metabolic heat output at the first transition could be correlated with decreases in uptake of NO3-, NH4+, and Pi that occurred as the salt concentration was increased. The high degree of dependence of the inhibition of metabolic heat output on NaCl concentration points to a highly cooperative reaction responsible for the general inhibition of metabolism and nutrient uptake. The time required to attain the first level of salt inhibition is less than 20 minutes. Inhibition of root tips was not reversible by washing with salt free solutions. In addition to revealing these features of salt inhibition, isothermal microcalorimetry is a promising method for convenient and rapid determination of varietal differences in response to increasing salinity. Plant physiology. May 1989. v. 90 (1). p. 53-58. Includes references. (NAL Call No.: DNAL 450 P692).

0468

Effects of nitrogen rate and placement on two malting barley varieties (Comparisons, Minnesota).
Varvel, G.E.MXMRA. Severson, R.K. St. Paul : The Station. Miscellaneous publication - University of Minnesota, Agricultural Experiment Station. 1983. 1983. (2 rev.). p. 63-64. (NAL Call No.: S1.M52).

0469

Effects of nitrogen rate and placement on two malting barley varieties (in Northwest Minnesota).
Varvel, G.E. Severson, R.K. St. Paul : The Station. Miscellaneous publication - University of Minnesota, Agricultural Experiment Station. 1982. 1982. (2). p. 70-71. (NAL Call No.: S1.M52).

0470

Effects of P and K (phosphorus and potassium) on cereal crop diseases (Mineral deficiencies).
Piening, L.J. Atlanta, Ga., Potash & Phosphate Institute. Better crops with plant food. Winter 1981/1982. v. 66. p. 36-37, 39. (NAL Call No.: 6 B46).

0471

The effects of using copper for mitigating histosol subsidence on: 1. The yield and nutrition of oats and lettuce grown on histosols, mineral sublayers, and their mixtures.
Levesque, M.P.SOSCA. Mathur, S.P. Baltimore : Williams & Wilkins. Soil science. Feb 1983. v. 135 (2). p. 88-100. Includes references. (NAL Call No.: 56.8 S03).

0472

Evidence for a specific uptake system for iron phytosiderophores in roots of grasses.
PLPHA. Romheld, V. Marschner, H. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1985. v. 80 (1). p. 175-180. ill. Includes 29 references. (NAL Call No.: DNAL 450 P692).

0473

Exploitation of soil potassium in layered profiles by root systems of cotton and barley.
SSSJD4. Gulick, S.H. Cassman, K.G.; Grattan, S.R. Madison, Wis. : The Society. On vermiculitic soils of the San Joaquin Valley, cotton (Gossypium hirsutum L.) often responds to K fertilization where other annual crops do not. These soils have markedly higher available K in surface soil than subsoil. A pot study was conducted to compare rooting patterns, K uptake, and dry matter production of cotton and barley (Hordeum vulgare L.) in soil profiles with layered K availability. Topsoil (0.15 cmolc K kg-1) was layered to each of six depths above subsoil (0.09 cmolc K kg-1) in 17-L pots with a total soil depth of 45 cm in all treatments. Two irrigation regimes were imposed and nutrients other than K were adequately supplied. For both crops, plant dry matter and K uptake increased linearly with increased topsoil depth but K uptake per unit increase in topsoil depth was 6.5- and 3.6-fold greater by barley than for cotton with frequent and infrequent irrigation, respectively. Increased K uptake per unit increase in topsoil depth reflected conincident root and K distribution: barley root length density (RLD) was 2.7 times greater than RLD of cotton in topsoil layers but little different in subsoil layers. Poor exploitation of topsoil layers by the cotton root system was attributed to greater sensitivity to low soil water potential. A root system with little compensatory root development in the surface soil when the subsoil is low in nutrients may limit K uptake and crop productivity on layered soils in the San Joaquin Valley and may require management systems designed to promote more congruent root and nutrient distribution. Soil Science Society of America journal. Jan/Feb 1989. v. 53 (1). p. 146-153. ill. Includes references. (NAL Call No.: DNAL 56.9 S03).

0474

The formation of delta-aminolevulinate, a precursor of chlorophyll, in barley and the role of iron (Hordeum vulgare, iron requirements).
Miller, G.W. Denney, A.; Pushnik, J.; Yu, M.H. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). p. 289-300. 25 ref. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

0475

Fractionation of selenium in barley and rye-grass.
JPNUDS. Gissel-Nielsen, G. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 2147-2152. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

0476

The functions of calcium in plant nutrition.
Hanson, J.B. New York : Praeger. Advances in plant nutrition. 1984. v. 1. p. 149-208. ill. Includes references. (NAL Call No.: DNAL QK867.A48).

0477

Growth and composition of alfalfa fertilized in greenhouse trials with deproteinized juice from low and high saponin alfalfa and from oat herbage (Phytotoxicity).
Welch, D.A. Smith, D.; Soberalske, R.M.; Ream, H.W. New York, Marcel Dekker. Journal of plant nutrition. 1979. v. 1 (2). p. 151-170. ill. 15 ref. (NAL Call No.: QK867.J67).

0478

The influence of ammonium and chloride on potassium and nitrate absorption by barley roots depends on time of exposure and cultivar.
PLPHA. Bloom, A.J. Finazzo, J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 67-69. Includes 22 references. (NAL Call No.: DNAL 450 P692).

0479

Inoculation effects on growth, nodulation, cytosol components and nitrogen fixation of narrowleaf and hairy vetch (Rhizobium leguminosarum, Vici angustifolia, Vici villosa, Secale cereale).
Lynd, J.Q.CSOSA. McNew, R.W. New York : Marcel Dekker. Communications in soil science and plant analysis. 1983. v. 14 (5). p. 411-426. ill. Includes references. (NAL Call No.: S590.C63).

0480

An iron chelating compound released by barley roots in response to Fe-deficiency stress.
JPNUDS. Jolley, V.D. Brown, J.C.; Blaylock, M.J. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Jan 1988. v. 11 (1). p. 77-91. Includes references. (NAL Call No.: DNAL QK867.J67).

0481

Legume growth and residual effects on oat (Avena sativa L.) production.
CSOSA2. Guillard, K. Allinson, D.W. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Apr 1985. v. 16 (4). p. 375-383. Includes 13 references. (NAL Call No.: DNAL S590.C63).

0482

Long term residual effects of applied selenium on the selenium uptake by plants (Cereals, forages, Canada).
Gupta, U.C. Winter, K.A. New York, Marcel Dekker. Journal of plant nutrition. 1981. v. 3 (1/4). p. 493-502. 19 ref. (NAL Call No.: QK867.J67).

0483

Mineral nutrition of plants exposed to salinity stress.
Lauchli, A. Davis : University of California, Davis?, 1981? . A Conference on biosalinity : the problem of salinity in agriculture : a joint conference of Egyptian, Israeli and American scientists, Univ. of California, Davis, September 1-4, 1981 / organized and. p. 63-69. ill. Includes 8 references. (NAL Call No.: DNAL S619.S24C6).

0484

Mutual influence of certain crops in relation to nitrogen.
AGJOAT. Kellerman, K.F. Wright, R.C. Madison, Wis. : American Society of Agronomy. Agronomy journal. July/Oct 1914. v. 6 (4/5). p. 204-210. Includes references. (NAL Call No.: DNAL 4 AM34P).

0485

Nitrification and total nitrogen as affected by crops, fertilizers, and copper sulfate.
AGJOAT. Jensen, C.A. Madison, Wis. : American Society of Agronomy. The accumulation of nitrates in the soils in the Arkansas River Valley in Colorado, which promised in 1910 and 1911 to become a serious factor in sugar beet growth, became less in 1912 and 1913. In the work in 1911, mustard appeared to have some effect in checking the accumulation of nitrate in the field. Copper sulfate at tne rate of 100 pounds per acre on fallow was also effective in checking nitrification, reducing the average seasonal accumulation to about 60 percent of the amount found in the check plot. Molasses on fallow decreased nitrification about 25 percent as compared with the check, but the molasses-treated plot showed a little more nitrates than the plots cropped to cane and oats. Manure on fallow gave a slightly higher accumulation of nitrates than the fallow check. The waste lime on fallow caused strong nitrate accumulation, being more effective in this regard than any other treatment. In general, active nitrification did not set in until the first part of June. From then until the middle of July it was strongest and then suddenly decreased and became very feeble until the end of the experiment, August 17, regardless of the field treatments. The differences in the average seasonal accumulations of nitrates could not have been due entirely to the differences in beet yields from the plots. The mustard plot contained less total nitrogen than any of the others. The fallow plots receiving copper sulfate and molasses contained less total nitrogen than theother fallow plots. The fallow plots with waste lime and manure each contained less total nitrogen than the plot fallowed with nothing added. The reverse was trueas regards nitrates. In general, there seemed to be an inverse relation between the amounts of total nitrogen. In the work in 1912, in the presence of a vigorously growing beet crop, the only treatment which showed decided increases in nitrification were cyanamid and manure plus ammonium sulfate. Aside from considerable weekly variations, there. Agronomy journal. Jan/Feb 1916. v. 8 (1). p. 10-22. Includes references. (NAL Call No.: DNAL 4 AM34P).

0486

Nitrogen and yield as related to water use of spring barley (Hordeum vulgare, seasonal evapotranspiration, New Mexico).
Kallsen, C.E.AGJOAT. Sammis, T.W.; Gregory, E.J. Madison : American Society of Agronomy. Agronomy journal. Jan/Feb 1984. v. 76 (1). p. 59-64. Includes references. (NAL Call No.: 4 AM34P).

0487

Oxygen and carbon dioxide fluxes from barley shoots depend on nitrate assimilation.
PLPHA. Bloom, A.J. Caldwell, R.M.; Finazzo, J.; Warner, R.L.; Weissbart, J. Rockville, Md. : American Society of Plant Physiologists. A custom oxygen analyzer in conjunction with an infrared carbon dioxide analyzer and humidity sensors permitted simultaneous measurements of oxygen, carbon dioxide, and water vapor fluxes from the shoots of intact barley plants (Hordeum vulgare L. cv Steptoe). The oxygen analyzer is based on a calciazirconium sensor and can resolve concentration differences to within 2 microliters per liter against the normal background of 210,000 microliters per liter. In wild-type plants receiving ammonium as their sole nitrogen source or in nitrate reductase-deficient mutants, photosynthetic and respiratory fluxes of oxygen equaled those of carbon dioxide. By contrast, wild-type plants exposed to nitrate had unequal oxygen and carbon dioxide fluxes: oxygen evolution at high light exceeded carbon dioxide consumption by 26% and carbon dioxide evolution in the dark exceeded oxygen consumption by 25%. These results indicate that a substantial portion of photosynthetic electron transport or respiration generates reductant for nitrate assimilation rather than for carbon fixation or mitochondrial electron transport. Plant physiology. Sept 1989. v. 91 (1). p. 352-356. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0488

Peptides related to phytosiderophore secretion by Fe-deficient barley roots.
JPNUDS. Mori, S. Hachisuka, M.; Kawai, S.; Takagi, S.; Kishi-Nishizawa, N. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Fourth International Symposium on Iron Nutrition and Interactions in Plants," July 6-9, 1987, University of New Mexico, Albuquerque. June/Nov 1988. v. 11 (6/11). p. 653-662. Includes references. (NAL Call No.: DNAL QK867.J67).

0489

Physiological responses of barley leaves of foliar applied urea-ammonium nitrate.
CRPSAY. Turley, R.H. Ching, T.M. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 987-993. Includes references. (NAL Call No.: DNAL 64.8 C883).

0490

The rate of absorption of nitrate of soda by oats and cotton when applied at different stages of plant growth.
AGJOAT. Appleton, W.H. Helms, H.B. Madison, Wis. : American Society of Agronomy. Experiments were conducted in the greenhouse to study the rate of absorption of nitrate nitrogen by oats and cotton when applied as nitrate of soda at different stages of plant growth. The general plan of the experiment was to add nitrate to a series of cultures at a certain stage of growth. Then, at intervals of a few days, part of the cultures were harvested and the amount of nitrate absorbed was determined by plant analysis and also by determining the nitrate content of the soil. Cultures that did not receive nitrate were used as checks to indicate how much nitrogen the plant secured from the soil. With oats these studies were made at four stages of plant growth. With cotton the study was made at three stages of plant growth. The results may be summarized as follows: When sodium nitrate at the rate of 400 pounds per acre was applied to oats 14 days after planting, absorption of the nitrate was very slow for three weeks. After the third week absorption increased and all nitrate was absorbed by the close of the seventh week. When the nitrate was applied to oats at later stages of growth, the rate of absorption was more rapid. Nitrate applied 42, 70, and 92 days after planting was completely absorbed in 20, 14, and 10 days, respectively. With both oats and cotton there was a close correlation between the rate of growth and the rate of nitrate absorption. Sodium nitrate at the rate of 600 pounds per acre was applied to cotton 14, 40, and 61 days after planting. Abs orption of the nitrate was complete in 36, 14, and 11 days, respectively. The results of both experiments indicate that the loss of soluble nitrogenous fertilizer by leaching may be reduced by delaying the application until the crop will absorb it rapidly. Agronomy journal. Oct 1925. v. 17 (10). p. 596-605. (NAL Call No.: DNAL 4 AM34P).

0491

Soil fertility and defoliation effects with arrowleaf clover and nitrogen fertilizer equivalence of crimson-arrowleaf clover combinations (Trifolium vesiculosum, Trifolium incarnatum, Secale cereale, rhizobium, nitrogen fixation by forage legumes, Oklahoma).
Lynd, J.Q.AGJOAT. Hanlon, E.A. Jr.; Odell, G.V. Jr. Madison : American Society of Agronomy. Agronomy journal. Jan/Feb 1984. v. 76 (1). p. 13-16. ill. Includes references. (NAL Call No.: 4 AM34P).

0492

Strategy I and strategy II mechanisms affecting iron availability to plants may be established too narrow or limited.
JPNUDS. Brown, J.C. Jolley, V.D. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Fourth International Symposium on Iron Nutrition and Interactions in Plants," July 6-9, 1987, University of New Mexico, Albuquerque. June/Nov 1988. v. 11 (6/11). p. 1077-1098. Includes references. (NAL Call No.: DNAL QK867.J67).

0493

Utilization of phosphorus from barley residues in calcareous soils /by W.H. Fuller and R.N. Rogers.
Fuller, Wallace Hamilton. Rogers, R. N._1927-.
Tucson, Ariz. : University of Arizona, 1951.
Cover title. p. 53-77 : ill. ; 23 cm.
Bibliography: p. 77. (NAL Call No.: DNAL 100 Ar4 (2) no.123).

0494

Accumulation of plastoquinone A during low temperature growth of winter rye (Secale cereale, cold acclimation).
Griffith, M. Elfman, B.; Camm, E.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1984. v. 74 (3). p. 727-729. ill. Includes references. (NAL Call No.: 450 P692).

0495

An adaptive response of rye to freezing (Winter hardiness, cryoprotection, Secale cereale, Hordeum vulgare).
Olien, C.R. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 51-54. ill. Includes references. (NAL Call No.: 64.8 C883).

0496

Alteration of membrane sterols of barley roots by DNP.
JCLBA3. Jackson, P.C. Grunwald, C. New York, N.Y. : Rockefeller University Press. The Journal of cell biology. Includes abstract. Nov 1986. v. 103 (5,pt.2). p. 223a. (NAL Call No.: DNAL 442.8 J828).

0497

Altered growth response to exogenous auxin and gibberellic acid by gravistimulation in pulvini of Avena sativa.
PLPHA. Brock, T.G. Kaufman, P.B. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1988. v. 87 (1). p. 130-133. Includes references. (NAL Call No.: DNAL 450 P692).

0498

Aluminum-induced changes in calmodulin.
NASSD. Haug, A. Weis, C. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Molecular and cellular aspects of calcium in plant development / edited by A. J. Trewavas. 1986. v. 104. p. 19-25. Includes references. (NAL Call No.: DNAL QH301.N32).

0499

Aluminum tolerance of spring rye inbred lines.
Aniol, A. Hill, R.D.; Larter, E.N. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1980. v. 20 (2). p. 205-208. ill. 11 ref. (NAL Call No.: 64.8 C883).

0500

Analysis of midwinter freezing stress (Barley, hardiness, injuries).
Olien, C.R. Boca Raton, Fla., CRC Press. Analysis and improvement of plant cold hardiness. 1981. 1981. p. 35-59. 65 ref. (NAL Call No.: SB781.A52).

0501

Application of 14C-labeled herbicides in lysimeter studies.
WEESA6. Fuhr, F. Champaign, Ill. : Weed Science Society of America. Weed science. Presented at the "Symposium on Assessment of Methodology for Field Evaluation of Herbicide Behavior in Soils," Weed Science Society of America, February 9, 1984, Miami, Florida. 1985. v. 33 (suppl.2). p. 11-17. ill. Includes 39 references. (NAL Call No.: DNAL 79.8 W41).

0502

Autoradiographic investigation of the site of betaine synthesis in water-stressed barley leaves (Hordeum vulgare).
Giddings, T.H. Hanson, A.D. East Lansing, Mich., The Laboratory. Annual report - Michigan State University, MSU/DOE Plant Research Laboratory. 1981. 1981 (16th). p. 66-67. 2 ref. (NAL Call No.: QK1.M5).

0503

Barley.
AGRYA. Foster, E. Prentice, N. Madison, Wis. : American Society of Agronomy. Agronomy. 1987. (28). p. 337-396. ill. Includes references. (NAL Call No.: DNAL 4 AM392).

0504

Barley, potato and bromegrass chemical composition unchanged by use of a multipurpose wetting agent (The active ingredients of which are alcohol ethoxylates, propylene glycol, and dimethylpolysiloxane, fertilizer, uptake).
Laughlin, W.M. AK-AR-NC. Smith, G.R.; Peters, M.A. Fairbanks, The Station. Agroborealis.Alaska. Agricultural Experiment Station, Fairbanks. Jan 1980. v. 12 (1). p. 29-30. ill. 7 ref. (NAL Call No.: S33.E2).

0505

Barley vs. oat companion crops. I. Forage yield and quality response during alfalfa establishment.
CRPSAY. Brink, G.E. Marten, G.C. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1060-1067. Includes references. (NAL Call No.: DNAL 64.8 C883).

0506

Betaine accumulation: metabolic pathways and genetics.
Hanson, A.D. Grumet, R. New York : Alan R. Liss. UCLA symposia on molecular and cellular biology. Paper presented at the "Symposium on Molecular and Cellular Biology of Plant Stress," April 15-21, 1984, Keystone, Colorado. 1985. v. 22. p. 71-92. ill. Includes references. (NAL Call No.: DNAL QH506.U34).

0507

Betaine synthesis and accumulation in barley during field water stress.
Hitz, W.D. Ladyman, J.A.R.; Hanson, A.D. Madison, Wis., Crop Science Society of America. Crop science. Jan/Feb 1982. v. 22 (1). p. 47-54. ill. Includes 24 ref. (NAL Call No.: 64.8 C883).

0508

Betaine synthesis from radioactive precursors in attached, water-stressed barley leaves.
Hanson, A.D. Scott, N.A. Bethesda, Md., American Society of Plant Physiologists. Plant physiology. Aug 1980. v. 66 (2). p. 342-348. ill. 23 ref. (NAL Call No.: 450 P692).

0509

Buffer capacities of leaves, leaf cells, and leaf cell organelles in relation to fluxes of potentially acidic gases.
PLPHA. Pfanz, H. Heber, U. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 597-602. Includes 38 references. (NAL Call No.: DNAL 450 P692).

0510

Calcium transport in protoplasts isolated from ml-o barley isolines resistant and susceptible to powdery mildew.
PLPHA. Wrona, A.F. Spanswick, R.M.; Aist, J.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1988. v. 88 (4). p. 1157-1162. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0511

Canopy light and tiller mortality in spring barley.
CRPSAY. Lauer, J.G. Simmons, S.R. Madison, Wis. : Crop Science Society of America. Mortality of tillers in barley (Hordeum vulgare L.) is an important developmental event affecting spike number and yield potential of the crop. It has traditionally been thought that increased shading of young tillers by the developing canopy initiates the premature senescence of tillers. A series of field experiments were conducted in 1982, 1983, and 1984 at St. Paul, MN on a Waukegan silt loam soil (fine-silty over sandy or sandy skeletal, mixed, Typic Hapludoll) to test this hypothesis. Degree of shading within the crop canopy was measured in relation to the position of tiller leaves during the vegetative phase of development for three genotypes. The decline in rate of leaf appearance on nonsurviving primary tillers, monitored as an early indicator of tiller senescence, was noted within 3 to 4 wk after crop emergence and before appreciable shading of tillers occurred. This indicates that tiller mortality was not initiated by lack of light. However, after main stem elongation began, tillers soon became heavily shaded suggesting the possibility that shading plays an auxilliary role in the senescence of barley tillers. We discuss the possibility that changes in light quality early in the growing season may be important for initiating the senescence of tillers. Crop science. Mar/Apr. 1989. v. 29 (2). p. 420-424. Includes references. (NAL Call No.: DNAL 64.8 C883).

0512

Cell membrane permeability and ultrastructural effects of difenzoquat on wild oats (Avena fatua).
WEESA6. Thai, K.M. Jana, S.; Fowke, L.C. Champaign, Ill. : Weed Science Society of America. Effects of difenzoquat on wild oats grown under controlled environmental conditions were studied. Seedling height and fresh weight were significantly reduced 5 days after postemergence treatment. Dose-dependent increase in cell membrane permeability was detected after a 12-h exposure to the herbicide. Scanning electron micrography showed normal leaf hairs and cuticular wax but swollen guard cells 10 days after treatment. Ultrastructural changes occurred before the visible symptoms. The primary effect of difenzoquat appears to be the disruption of the tonoplast and plasmalemma. The tonoplast showed greater damage than the plasmalemma. Secondary effects included damage to mitochondria and chloroplasts. Mitochondria were swollen and often ruptured, but the effect did not increase with the duration of exposure. Chloroplasts became spherical in shape, and their contents were also affected. The changes included: accumulation and then disappearance of starch granules, swelling of frets, fusion of granal thylakoids, detachment and then rupture of the outer membrane of the envelope, and clumping of ribosomes. By contrast, natural senescence caused greater injury of the plasmalemma than the tonoplast, a marked increase in size of plastoglobuli, and loss of starch grains without early accumulation. Weed science. Jan 1989. v. 37 (1). p. 98-106. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0513

Cereal cyst nematode (Heterodera avenae) on oats. II. Early root development and nematode tolerance.
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Changes in composition of chlorophylls, carotenoids, and prenylquinones in green seedlings of Hordeum (barley) and Raphanus (radishes) induced by the herbicide San 6706--an effect possibly antagonistic to phytochrome action.
Kleudgen, H.K. New York, Academic Press. Pesticide biochemistry and physiology. Dec 1979. v. 12 (3). p. 231-238. ill. 36 ref. (NAL Call No.: SB951.P49).

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Changes in endogenous gibberellins and the metabolism of (3H)-GA4 after geostimulation in shoots of the oat plant (Avena sativa) (Recovery from lodging).
Pharis, R.P. Legge, R.L.; Noma, M.; Kaufman, P.B.; Ghosheh, N.S.; LaCroix, J.D.; Heller, K. Rockville, Md., American Society of Plant Physiologists. Plant physiology. May 1981. v. 67 (5). p. 892-897. ill. 26 ref. (NAL Call No.: 450 P692).

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Changes in K, Rb, and Na transport to shoots after anoxia.
PLPHA. Brauer, D. Leggett, J.E.; Egli, D.B. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1987. v. 83 (1). p. 219-224. Includes references. (NAL Call No.: DNAL 450 P692).

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Characteristics of boron absorption by barley plants / by Ahmed Abd Elhamid Mohamed Elseewi. -.
Elseewi, Ahmed Abd Elhamid Mohamed, 1937-. 1968. Thesis (Ph.D.)--University of California, Riverside, 1968. Photocopy. Ann Arbor, Mich. : Univeristy Microfilms, 1970. ix, 102 leaves : ill. ; 21 cm. Bibliography: leaves 96-102. (NAL Call No.: DISS 69-10,096).

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Characteristics of cadmium and zinc in four soils treated with sewage sludge.
JEVQAA. Mullins, G.L. Sommers, L.E. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1986. v. 15 (4). p. 382-387. Includes references. (NAL Call No.: DNAL QH540.J6).

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Characteristics of injury and recovery of net NO3- transport of barley seedlings from treatments of NaCl.
PLPHA. Klobus, G. Ward, M.R.; Huffaker, R.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1988. v. 87 (4). p. 878-882. Includes references. (NAL Call No.: DNAL 450 P692).

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The characteristics of secondary dormant wild oat (Avena fatua L.) seed.
WSWPA. Fellows, G.M. Fay, P.K.; Foley, M.E. Reno : The Society. Proceedings - Western Society of Weed Science. 1985. v. 38. p. 105-107. (NAL Call No.: DNAL 79.9 W52).

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Characterization of the nuclear DNA of Hordeum vulgare root hairs: amplification disappears under salt stress.
AJBOAA. Murry, L.E. Christianson, M.L.; Alfinito, S.H.; Garger, S.J. Columbus, Ohio : Botanical Society of America. American journal of botany. Dec 1987. v. 74 (12). p. 1779-1786. Includes references. (NAL Call No.: DNAL 450 AM36).

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Cloning and nitrate induction of nitrate reductase mRNA.
PNASA. Cheng, C.L. Dewdney, J.; Kleinhofs, A.; Goodman, H.M. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Sept 1986. v. 83 (18). p. 6825-6828. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

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A comparative spin-label study of isolated plasma membranes and plasma membranes of whole cells and protoplasts from cold-hardened and nonhardened winter rye.
PLPHA. Windle, J.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1988. v. 88 (4). p. 1388-1396. Includes references. (NAL Call No.: DNAL 450 P692).

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Comparative systemic translocation of several xenobiotics and sucrose (in soybean and barley).
Martin, R.A. Edgington, L.V. New York, Academic Press. Pesticide biochemistry and physiology. Oct 1981. v. 16 (2). p. 87-96. ill. 19 ref. (NAL Call No.: SB951.P49).

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Comparative winter hardiness of barley varieties /by G.A. Wiebe and David A. Reid.
Wiebe, G. A.(Gustav A.), 1899-. Reid, David A._1914-. Washington : U.S. Dept. of Agriculture, 1958. 20 p. : ill., maps ; 23 cm. Includes bibliographical references. (NAL Call No.: DNAL 1 Ag84Te no.1176).

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Comparison of selenium treatments of crops in the field.
Gissel-Nielsen, G. Passaic, N.J. : Humana Press. Biological trace element research. Sept 1986. v. 10 (3). p. 209-213. Includes references. (NAL Call No.: DNAL QP534.B56).

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A comparison of the effect of salt on polypeptides and translatable mRNAs in roots of a salt-tolerant and a salt-sensitive cultivar of barley.
PLPHA. Hurkman, W.J. Fornari, C.S.; Tanaka, C.K. Rockville, Md. : American Society of Plant Physiologists. The effect of salt stress on polypeptide and mRNA levels in roots of two barley (Hordeum vulgare L.) cultivars differing in salt tolerance (cv CM 72, tolerant; cv Prato, sensitive) was analyzed using to-dimensional polyacrylamide gel electrophoresis. Preliminary experiments indicated that germination of Prato was inhibited significantly in the presence of NaCl, but growth of the surviving Prato seedlings was not substantially different from that of CM 72. Fluorographs of two-dimensional gels containing in vivo labeled polypeptides or in vitro translation products were computer analyzed to identify and quantitate changes that resulted when plants were grown in the presence of 200 bmillimolar NaCl for 6 days. The patterns of in vi vo labeled polypeptides and in vitro products of CM 72 and Prato were qualitatively the same. Salt caused quantitative changes in numerous polypeptides and translatable mRNAs, but, overall, the changes were relatively small. Salt did not induce the synthesis of unique polypeptides or translatable mRNAs and did not cause any to disappear. Because of the similarities of the two cultivars with respect to growth and polypeptide patterns and the slight changes in polypeptide and translation product levels caused by salt, specific polypeptides or translatable mRNAs that are related to salt tolerance in barley could not be identified. Plant physiology. Aug 1989. v. 90 (4). p. 1444-1456. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Comparison of the lipid composition of oat root and coleoptile plasma membranes. Lack of short-term change in response to auxin.
PLPHA. Sandstrom, R.P. Cleland, R.E. Rockville, Md. : American Society of Plant Physiologists. The total lipid composition of plasma membranes (PM), isolated by the phase partitioning method from two different oat (Avena sativa L.) tissues, the root and coleoptile, was compared. In general, the PM lipid composition was not conserved between these two organs of the oat seedling. Oat roots contained 50 mole percent phospholipid, 25 mole percent glycolipid, and 25 mole percent free sterol, whereas comparable amounts in the coleoptile were 42, 39, and 19 mole percent, respectively. Individual lipid components within each lipid class also showed large variations in the root PM was more than double the activity in the coleoptile. Treatment of coleoptile with auxin for 1 hour resulted in no detectable changes in PM lipids or extractable ATPase activity. Differences in the PM lipid composition between the two tissues that may define the limits of ATPase activity are discussed. Plant physiology. July 1989. v. 90 (3). p. 1207-1213. Includes references. (NAL Call No.: DNAL 450 P692).

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Competency for graviresponse in the leaf-sheath pulvinus of Avena sativa: onset to loss.
AJBOAA. Brock, T.G. Kaufman, P.B. Columbus, Ohio : Botanical Society of America. American journal of botany. Nov 1988. v. 75 (11). p. 1672-1677. Includes references. (NAL Call No.: DNAL 450 AM36).

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Glass, A.D.M. Siddiqi, M.Y. New York : Praeger. Advances in plant nutrition. 1984. v. 1. p. 103-147. ill. Includes 168 references. (NAL Call No.: DNAL QK867.A48).

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Coordinator's report: anthocyanin genes. Stock list of ant mutants kept at the Carlsberg laboratory.
Jende-Strid, B. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 74-79. Includes references. (NAL Call No.: DNAL QK495.G74B34).

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Correlation between the lipid composition and the responsiveness of Avena sativa stem segments to gibberellic acid (Oats).
Jusaitis, M. Paleg, L.G.; Aspinall, D. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1982. v. 70 (5). p. 1486-1494. 17 ref. (NAL Call No.: 450 P692).

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Correlations between potassium uptake and huydrogen efflux in barley varieties. A potential screening method for the isolation of nutrient efficient lines.
Glass, A.D.M. Siddiqi, M.Y.; Giles, K.I. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Aug 1981. v. 68 (2). p. 457-459. ill. 15 ref. (NAL Call No.: 450 P692).

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BCYCDK. Day, A.D. Solomon, M.A.; Ottman, M.J.; Taylor, B.B. Emmaus, Pa. : J.G. Press. BioCycle. Aug 1989. v. 30 (8). p. 72-75. Includes references. (NAL Call No.: DNAL 57.8 C734).

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Cytokinin biochemistry in relation to leaf senescence. I. The metabolism of 6-benzylaminopurine and zeatin in oat leaf segments (Avena sativa).
Tao, G.Q. Letham, D.S.; Palni, L.M.S.; Summons, R.E. New York : Springer. Journal of plant growth regulation. 1983. v. 2 (2). p. 89-102. Includes references. (NAL Call No.: QK745.J6).

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Cytokinin inhibition of respiration in mitochondria from six plant species (Cereals and vegetables).
Miller, C.O. Washington, D.C., The Academy. Proceedings of the National Academy of Sciences of the United States of America. Aug 1980. v. 77 (8). p. 4731-4735. ill. 26 ref. (NAL Call No.: 500 N21P).

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Cytoplasmic male sterility in barley. VIII. Lipoxygenase activity and anther amino nitrogen in the msm1-Rfm1a system.
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Daily growth of the oat kernel and effect on germination of immaturity and controlled low temperatures /Ernest Gordon Booth.
Booth, Ernest Gordon, 1899-. St. Paul : University Farm, 1929? . Cover title.~ Originally presented as: Thesis (Ph. D)--University of Minnesota, 1928. 42 p. : ill., charts ; 23 cm. Bibliography: p. 41-42. (NAL Call No.: DNAL 100 M66 (3) no.62).

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Determining vigor of natural and planted stands of sea oats (Uniola paniculata) on the Texas Gulf Coast.
Baker, R.L. Dahl, B.E. Austin, Tex., Southwestern Association of Naturalists. The Southwestern naturalist. May 21, 1981. v. 26 (2). p. 117-123. ill. 17 ref. (NAL Call No.: 409.6 S08).

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Development and characterization of friable, embryogenic oat callus.
CRPSAY. Bregitzer, P. Somers, D.A.; Rines, H.W. Madison, Wis. : Crop Science Society of America. Friable, embryogenic (FE) callus cultures are desired for genetic manipulations at the cellular level. The goal of this research was to develop and charaterize such cultures for oat (Avena spp.). Nonfriable (NF) oat callus derived from immature embryos was plated on a modified MS medium containing 60 g L-1 sucrose and no hormones. This treatment resulted in the development of distinct somatic embryos that germinated to form complete plants when placed on a modified MS medium containing 20 g L-1 surcrose and no hormones. Embryogenic sectors isolated from 26-wk-old NF callus were visually selected during repeated subculture on a modified MS medium containing 2 mg L-1, 2,4-dichlorophenoxyacetic acid (2,4-D) and 20 g L-1 sucrose to produce FE callus. Transfer of FE callus to a modified MS medium containing 60

g L-1 sucrose and no hormones induced the maturation of somatic embryos. Subsequent transfer of this FE callus to modified MS medium containing 20 g L-1 sucrose and no hormones allowed the germination of some of these embryos. Plants were regenerated from FE callus lines for more than 78 wk after FE callus establishment. Friable embryogenic callus also was initiated directly from immature embryos of three genotypes and seedling mesocotyls of two genotypes. Genotypic variation in this response was noted. The FE oat cultures represent an improved callus type for in vitro genetic manipulation of oat. Crop science. May/June 1989. v. 29 (3). p. 798-803. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Development at cold-hardening temperatures: membrane assembly and organization.
Huner, N.P.A. Krol, M.; Williams, J.P.; Maissan, E.; Krupa, Z. Boca Raton, FL : CRC Press, c1989. Low temperature stress physiology in crops / editor, Paul H. Li. Literature review. p. 53-65. ill. Includes references. (NAL Call No.: DNAL SB781.L68).

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Development at cold-hardening temperatures. The structure and composition of purified rye light harvesting complex II.
PLPHA. Krupa, Z. Huner, N.P.A.; Williams, J.P.; Maissan, E.; James, D.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1987. v. 84 (1). p. 19-24. Includes references. (NAL Call No.: DNAL 450 P692).

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Development rate and growth duration of oats in response to delayed sowing.
AGJOAT. Colville, D.C. Frey, K.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1986. v. 78 (3). p. 417-421. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Developmental effects of (the herbicide) Sandoz 6706 on activities of enzymes of phenolic and general metabolism in barley shoots grown in the dark or under low or high intensity light.
Blume, D.E. McClure, J.W. Bethesda, Md., American Society of Plant Physiologists. Plant physiology. Feb 1980. v. 65 (2). p. 238-244. ill. 24 ref. (NAL Call No.: 450 P692).

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Diallel analyses of some developmental morpho-physiological and agronomic traits on barley, Hordeum vulgare L. Emend. Lam. / by Yap, Thoo Chai. -.
Yap, Thoo Chai, 1940-. 1970. Thesis (Ph.D.)--University of Saskatchewan, 1970. Photocopy. Ann Arbor, Mich. : University Microfilms, 1971. xiii, 133 leaves : ill. ; 21 cm. Bibliography: leaves 115-120. (NAL Call No.: DISS 71-20,635).

0548

Diclofop-methyl increases the proton permeability of isolated oat-root tonoplast.
PLPHA. Ratterman, D.M. Balke, N.E. Rockville, Md. : American Society of Plant Physiologists. Diclofop-methyl (methyl ester of 2- 4-(2',4'-dichlorophenoxy)phenoxy propionate; 100 micromolar) and diclofop (100 micromolar) inhibited both ATP- and PPi-dependent formation of H+ gradients by tonoplast vesicles isolated from oat (Avena sativa L., cv Dal) roots. Diclofop-methyl (1 micromolar) significantly reduced the steady-state H+ gradient generated in the presence of ATP. The ester (diclofop-methyl) was more inhibitory than the free acid (diclofop) at pH 7.4, but this relative activity was reversed at pH 5.7. Neither compound affected the rate of ATP or PPi hydrolysis by the proton-pumping enzymes. Diclofop-methyl (50, 100 micromolar), but not diclofop (100 micromolar), accelerated the decay of nonmetabolic H+ gradients established across vesicle membranes. Diclofop-methyl (100 micromolar) did not collapse K+ gradients across vesicle membranes. Both the (+)- and (-)-enantiomers of diclofop-methyl dissipated nonmetabolic H+ gradients established across vesicle membranes. Diclofop-methyl, but not diclofop (each 100 micromolar), accelerated the decay of H+ gradients imposed across liposomal membranes. These results show that diclofop-methyl causes a specific increase in the H+ permeability of tonoplast. Plant physiology. Oct 1989. v. 91 (2). p. 756-765. Includes references. (NAL Call No.: DNAL 450 P692).

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Differences between effects of undissociated and anionic 2, 4-dinitrophenol on permeability of barley roots (Hordeum vulgare).
Jackson, P.C. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1982. v. 70 (5). p. 1373-1379. 21 ref. (NAL Call No.: 450 P692).

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Differences in steady-state net ammonium and nitrate influx by cold- and warm-adapted barley varieties.
Bloom, A.J. Chapin, F.S. III. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Nov 1981. v. 68 (5). p. 1064-1067. ill. 24 ref. (NAL Call No.: 450 P692).

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Differences in the physical properties of native and partially degraded phytochrome as probed by their differential sensitivity to permanganate oxidation (Avena sativa, oats).
Baron, O.PLPHA. Epel, B.L. Rockville : American Society of Plant Physiologists. Plant physiology. Oct 1983. v. 73 (2). p. 471-474. Includes references. (NAL Call No.: 450 P692).

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Differential aluminum tolerance of winter barley varieties and selections in associated greenhouse and field experiments.
AGJOAT. Reid, D.A. Jones, G.D.; Armiger, W.H.; Foy, C.D.; Koch, E.J.; Starling, T.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1969. v. 61 (2). p. 218-222. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Differential thermal analysis of the freezing of water in leaves of cold-hardened and nonhardened Puma rye (Secale cereale).
Lindstrom, O.M. Huner, N.P.A.; Carter, J.V. Chicago : University of Chicago Press. Botanical gazette. June 1983. v. 144 (2). p. 234-239. Includes references. (NAL Call No.: 450 B652).

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Diploid-tetraploid comparisons in rye. III. Temperature effects on seedling development.
CRPSAY. Sullivan, B.P. Pfahler, P.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 795-799. Includes 22 references. (NAL Call No.: DNAL 64.8 C883).

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Distribution of potassium between vacuole and cytoplasm in response to potassium deficiency.
NASSD. Storey, R. Leigh, R.A. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Plant vacuoles: their importance in solute compartmentation in cells and their applications in plant biotechnology / edited by B. Marin. Proceedings of a Workshop, July 6-11, 1986, Sophia-Antipolis, France. 1987. 134. p. 95-98. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

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Dormant embryo morphology, seedling morphogenesis and tiller development of Himalaya barley / Richard H. Mullenax .
Mullenax, Richard H. Pullman, Wash. : Washington Agricultural Experiment Stations, College of Agriculture, Washington State University, 1967. Cover title. 6 p. : ill. ; 28 cm. Bibliography: p. 6. (NAL Call No.: DNAL 100 W27T no.55).

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Drought and freezing tolerance and adaptation in plants: some evidence of near equivalences (Rye, Secale cereale).
Siminovitch, D.CRYBA. Cloutier, Y. New York : Academic Press. Cryobiology. Aug 1983. v. 20 (4). p. 487-503. ill. Includes references. (NAL Call No.: QH324.C7).

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Early effects of salinity on nitrate assimilation in barley seedlings.
PLPHA. Aslam, M. Huffaker, R.C.; Rains, D.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 321-325. ill. Includes 31 references. (NAL Call No.: DNAL 450 P692).

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Effect of abscisic acid on ion transport and translocation in Horedeum vulgare seedlings.
TISAA. Riedell, W.E. Schmid. W.E. Springfield : The Academy. Transactions of the Illinois State Academy of Science. Includes list of species. 1984. v. 77 (3/4). p. 241-247. Includes references. (NAL Call No.: DNAL 500 IL6).

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Effect of calcium and phosphorus content of various soil series in western Washington upon the calcium and phosphorus composition of oats, red clover and white clover /by Henry F. Holtz.
Holtz, Henry F., 1880-1931. Pullman, Wash. : State College of Washington, Agricultural Experiment Station, 1930. Cover title. 45 p. ; 23 cm. Bibliography: p. 31-33. (NAL Call No.: DNAL 100 W27E no.243).

0561

Effect of cold acclimation on intracellular ice formation in isolated protoplasts (Secale cereale, rye).
Dowgert, M.F.PLPHA. Steponkus, P.L. Rockville : American Society of Plant Physiologists. Plant physiology. Aug 1983. v. 72 (4). p. 978-988. Includes references. (NAL Call No.: 450 P692).

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SOSCAK. Brown, J.C. Foy, C.D. Baltimore, Md. : Williams & Wilkins. Soil science. Dec 1964. v. 98 (6). p. 362-370. ill. Includes references. (NAL Call No.: DNAL 56.8 S03).

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The effect of ethephon (2-chloroethyl) phosphonic acid on lodging and yield of small grain cereal crops.
Schwartz, T.K.PPGGD. Coffin, R.H.; Evans, W.F.; Nash, R.L.; Rao, K.P. Lake Alfred : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1982. 1982. (9th). p. 89-95. Includes references. (NAL Call No.: SB128.P5).

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Effect of genetically and environmentally induced heading date differences on yield and adaptation of an isogenic barley pair.
CRPSAY. Smail, V.W. Eslick, R.F.; Hockett, E.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 889-893. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Effect of heavy metals on the calcium absorption by intact barley roots.
Veltrup, W. New York, Marcel Dekker. Journal of plant nutrition. 1981. v. 3 (1/4). p. 225-231. ill. 17 ref. (NAL Call No.: QK867.J67).

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Effect of inorganic orthophosphate on in vitro activity of NADH-nitrate reductase isolated from 2-row barley leaves.
PLPHA. Oji, Y. Ryoma, Y.; Wakiuchi, N.; Okamoto, S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1987. v. 83 (3). p. 472-474. Includes references. (NAL Call No.: DNAL 450 P692).

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Effect of leaf extracts of mustard and barley on growth behavior of some phylloplane microfungi (Brassica campestris, Hordeum vulgare).
Singh, D.B. Rai, B. Bronx, N.Y., The Club. Bulletin of the Torrey Botanical Club. Oct/Dec 1981. v. 108 (4). p. 419-421. Includes 10 ref. (NAL Call No.: 451 T63B).

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Effect of nitrogen nutrition on endosperm protein synthesis in wild and cultivated barley grown in spike culture.
PLPHA. Corke, H. Atsmon, D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1988. v. 87 (2). p. 523-528. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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The effect of sigma-aminolevulinic acid on red-light-induced leaf unrolling (Barley).
Sundqvist, C. Briggs, W.R. Washington, D.C., The Institute. Year book - Carnegie Institution of Washington. 1979/1980. 1979/1980. (79th). p. 136-138. ill. 4 ref. (NAL Call No.: 500 C21).

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Effect of triadimefon and triadimenol on growth of various plant species as well as on gibberellin content and sterol metabolism in shoots of barley seedlings (Fungicides, retardation).
Buchenauer, H. Rohner, E. New York, Academic Press. Pesticide biochemistry and physiology. Feb 1981. v. 15 (1). p. 58-70. ill. 36 ref. (NAL Call No.: SB951.P49).

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Effect of vanadate on bean leaf movement, stomatal conductance, barley leaf unrolling, respiration, and phosphatase activity.
Saxe, H. Rajagopal, R. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Oct 1981. v. 68 (4). p. 880-884. 24 ref. (NAL Call No.: 450 P692).

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Effect of volatile compounds, nutrients, and source of sclerotia on eruptive sicerotial germination of Sclerotium rolfsii.
PHYTAJ. Punja, Z.K. Jenkins, S.F.; Grogan, R.G. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Nov 1984. v. 74 (11). p. 1290-1295. ill. Includes 29 references. (NAL Call No.: DNAL 464.8 P56).

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Effect on buckwheat protein quality of seed germination and changes in trypsin inhibitor content (Fagopyrum esculentum).
Ikeda, K. Arioka, K.; Fujii, S.; Kusano, T.; Oku, M. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. May/June 1984. v. 61 (3). p. 236-238. Includes references. (NAL Call No.: 59.8 C33).

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Effectiveness of utilizing various leaf characteristics as selection criteria in breeding for drought tolerance in barley / by Marvin L. Boerboom. -.
Boerboom, Marvin L. Ann Arbor, Mich. University Microfilms International 1978. Thesis--North Dakota State University, 1977. Facsimile produced by microfilm-xerography. viii, 128 leaves. Bibliography: leaves 92-99. (NAL Call No.: DISS 77-29,178).

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Effects of ambient temperature and nitrogen supply on content of four nitrogen fractions in barley plants / by Ikbalur Rashid Chowdhury. -.
Chowdhury, Ikbalur Rashid, 1939-. 1970. Thesis (Ph.D.)--North Dakota State University, 1970. Photocopy. Ann Arbor, Mich. : University Microfilms, 1971. xiii, 204 leaves ; 21 cm. Bibliography: leaves 162-175. (NAL Call No.: DISS 71-5,508).

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The effects of anions on PPi-dependent proton transport in tonoplast vesicles from oat roots.
NASSD. Pope, A.J. Leigh, R.A. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Plant vacuoles: their importance in solute compartmentation in cells and their applications in plant biotechnology / edited by B. Marin. Proceedings of a Workshop, July 6-11, 1986, Sophia-Antipolis, France. 1987. 134. p. 199-204. Includes references. (NAL Call No.: DNAL QH301.N32).

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The effects of benzyladenine, cycloheximide, and cordycepin on wilting-induced abscisic acid and proline accumulations and abscisic acid- and salt-induced proline accumulation in barley leaves.
PLPHA. Stewart, C.R. Voetberg, G.; Rayapati, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 703-707. Includes references. (NAL Call No.: DNAL 450 P692).

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The effects of cytokinins of auxin and growth in tobacco tissue cultures and in oat seedlings and a search for an auxin-transfer RNA complex / by William R. Jordon. -.
Jordon, William R. (William Roy), 1944-. 1971. Thesis (Ph.D.)--University of Wisconsin, 1971. Photocopy. Ann Arbor, Mich. : University Microfilms, 1972. vi, 153 leaves ; 21 cm. Includes bibliographies. (NAL Call No.: DISS 71-25,728).

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Effects of different endomycorrhizal fungi on five host plants grown on calcined montmorillonite clay (Apple, asparagus, leek, strawberry, oats).
Plenchette, C. Furian, V.; Fortin J.A. Alexandria, Va., The Society. Journal of the American Society for Horticultural Science. July 1982. v. 107 (4). p. 535-538. 16 ref. (NAL Call No.: 81 SO12).

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Effects of DNP on root membrane lipids (Barley).
Jackson, P.C. St John, J.B. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Apr 1981. Abstract only. v. 67 (4). p. 65. (NAL Call No.: 450 P692).

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Effects of NaCl on metabolic heat evolution rates by barley roots.
PLPHA. Criddle, R.S. Hansen, L.D.; Breidenbach, R.W.; Ward, M.R.; Huffaker, R.C. Rockville, Md. : American Society of Plant Physiologists. The effect of salinity stress on metabolic heat output of barley (Hordeum vulgare L.) root tips was measured by isothermal microcalorimetry. Several varieties differing in tolerance to salinity were compared and differences quantified. Two levels of inhibition by increasing salt were found. Following the transition from the initial rate to the first level, inhibition remained at about 50% with further increases in salt concentration up to 150 millimolar. The concentration of salt required to inhibit to this level was cultivar dependent. At higher concentrations (greater than 150 millimolar) of salt, metabolism was further decreased. This decrease was not cultivar dependent. The decreased rate of metabolic heat output at the first transition could be correlated with decreases in uptake of NO3-, NH4+, and Pi that occurred as the salt concentration was increased. The high degree of dependence of the inhibition of metabolic heat output on NaCl concentration points to a highly cooperative reaction responsible for the general inhibition of metabolism and nutrient uptake. The time required to attain the first level of salt inhibition is less than 20 minutes. Inhibition of root tips was not

reversible by washing with salt free solutions. In addition to revealing these features of salt inhibition, isothermal microcalorimetry is a promising method for convenient and rapid determination of varietal differences in response to increasing salinity. Plant physiology. May 1989. v. 90 (1). p. 53-58. Includes references. (NAL Call No.: DNAL 450 P692).

0582

Effects of NaCl (sodium chloride) on proline synthesis and utilization in excised barley leaves (Hordeum vulgare).
Buhl, M.B.PLPHA. Stewart, C.R. Rockville : American Society of Plant Physiologists. Plant physiology. July 1983. v. 72 (3). p. 664-667. Includes references. (NAL Call No.: 450 P692).

0583

Effects of open-air fumigation with sulphur dioxide on the growth and yield of winter barley.
NEPHA. McLeod, A.R. Roberts, T.M.; Alexander, K.; Cribb, D.M. New York, N.Y. : Cambridge University Press. The New phytologist. Literature review. May 1988. v. 109 (1). p. 67-78. ill. Includes references. (NAL Call No.: DNAL 450 N42).

0584

The effects of phosphate on early growth and maturity.
AGJOAT. Noll, C.F. Madison, Wis. : American Society of Agronomy. A number of investigators have found that the use of phosphates produced a more rapid growth of the roots of seedlings and several have claimed that, in the case of small grains, phosphates promote tillering. Russell states that in England superphosphates cause rapid early growth of turnips and swedes. The evidence is not conclusive that these effects from phosphate are more pronounced than from the other fertilizer elements where the latter are the limiting factors for crop yields. Fertilizer tests have quite generally, if not always, shown that the use of phosphatic fertilizers induces earlier ripening of the grain crops on soils low in phosphorus. Similar effects have been noted with cabbage and with cotton. In the case of tomatoes, the use of phosphates at the Pennsylvania Experiment Station, has been accompanied by a much greater growth of stalk and larger total yield, but also by later ripening. The effects of different phosphatic fertilizers seem to vary with the availability of the phosphates as shown by the responses in crop yeilds. However, at the Ohio Experiment Station, acid phosphate had more influence in promoting earliness than either steamed bonemeal or basic slag, altho all these phosphates gave approximately the same yield. Applied in moderate rates, the soluble phosphates, as a rule, have shown a more pronounced influence in hastening maturity than the same quantity of phosphoric acid in rock phosphate, the influence in earliness varying in degree with the response in yield. Increasing the rates of application of phosphatic fertilizers above the needs of the crop as indicated by yields has not been accompanied by further increases in earliness. Though phosphates show a more marked influence in promoting earliness than the other fertilizer elements, yet moderate amounts of nitrogen and potash, where these are needed for the production of crops, have a similar effect. Lime, also, if applied to soils having a high lime requirement, may induce earli. Agronomy journal. Mar 1923. v. 15 (3). p. 87-99. (NAL Call No.: DNAL 4 AM34P).

0585

Effects of powdery mildew (Erysiphe graminis f.sp. hordei) and water stress on CO2 (carbon dioxide) exchange in uninfected leaves of barley.
Williams, G.M. Ayres, P.G. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1981. v. 68 (3). p. 527-530. 25 ref. (NAL Call No.: 450 P692).

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The effects of salt on the pattern of protein synthesis in barley roots.
PLPHA. Hurkman, W.J. Tanaka, C.K. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1987. v. 83 (3). p. 517-524. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0587

The effects of salt stress on polypeptides in membrane fractions from barley roots.
PLPHA. Hurkman, W.J. Tanaka, C.K.; DuPont, F.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1988. v. 88 (4). p. 1263-1273. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Effects of seed moisture content, gamma rays, and ummmoderated fission neutrons on various biological end-points in barley, Hordeum vulgare L. emend Lam. / by Gurubasavappa Shivashankar. -.
Shivashankar, Gurubasavappa, 1934-. 1971. Thesis (Ph.D.)--University of Tennessee, 1971. Photocopy of typescript. Ann Arbor: University Microfilms, 1972. xvi, 119 leaves ; 21 cm. Bibliography: leaves 90-95. (NAL Call No.: DISS 72-15,549).

0589

Effects of seeding time on lipid content and fatty acid composition of buckwheat grains.
JAFCAU. Taira, H. Akimoto, I.; Miyahara, T. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. Jan/Feb 1986. v. 34 (1). p. 14-17. Includes references. (NAL Call No.: DNAL 381 J8223).

0590

Effects of soil moisture on the vegetative growth of wild oat (Avena fatua) (Water stress, stomatal diffusion, Manitoba).
Akey, W.C. Morrison, I.N. Champaign, Ill. : Weed Science Society of America. Weed science. Sept 1984. v. 32 (5). p. 625-630. ill. Includes 14 references. (NAL Call No.: 79.8 W41).

0591

Effects of sulfur supply on the yield, composition, and quality of grain from cereals, oilseeds, and legumes.
ACSTD. Randall, P.J. Wrigley, C.W. St. Paul, Minn. : American Association of Cereal Chemists. Advances in cereal science and technology. Literature review. 1986. v. 8. p. 171-206. ill. Includes references. (NAL Call No.: DNAL TS2120.A3).

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Effects of tabtoxinine-beta-lactam on nitrogen metabolism in Avena sativa L. roots.
PLPHA. Knight, T.J. Durbin, R.D.; Langston-Unkefer, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1986. v. 82 (4). p. 1045-1050. Includes references. (NAL Call No.: DNAL 450 P692).

0593

Effects of tiller removal on spring barley.
CRPSAY. Chafai El Alaoui, A. Simmons, S.R.; Crookston, R.K. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1988. v. 28 (2). p. 305-307. Includes references. (NAL Call No.: DNAL 64.8 C883).

0594

Effects of 2,4-dinitrophenol on membrane lipids of roots (Hordeum vulgare var. trebi).
Jackson, P.C. St John, J.B. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1982. v. 70 (3). p. 858-862. 20 ref. (NAL Call No.: 450 P692).

0595

Efficacy of postharvest herbicides on Russian thistle (Salsola iberica) control and seed germination.
WEESA6. Young, F.L. Whitesides, R.E. Champaign, Ill. : Weed Science Society of America. Weed science. July 1987. v. 35 (4). p. 544-559. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Enhancement of nitrate uptake and growth of barley seedlings by calcium under saline conditions.
PLPHA. Ward, M.R. Aslam, M.; Huffaker, R.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 520-524. Includes 28 references. (NAL Call No.: DNAL 450 P692).

0598

Estimates of free and bound indole-3-acetic acid and zeatin levels in relation to regulation of apical dominance and tiller release in oat shoots (Avena sativa).
Harrison, M.A.JPGRDI. Kaufman, P.B. New York : Springer. Journal of plant growth regulation. 1983. v. 2 (3). p. 215-223. ill. Includes references. (NAL Call No.: QK745.J6).

0599

Ethylene as an effector of wound-induced resistance to cellulase in oat leaves (Avena sativa).
Geballe, G.T. Galston, A.W. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1982. v. 70 (3). p. 788-790. 31 ref. (NAL Call No.: 450 P692).

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Evaluation of chlorophyll fluorescence parameters for an intact-plant herbicide bioassay.
CRPSAY. Shaw, D.R. Peeper, T.F.; Nofziger, D.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 756-760. Includes references. (NAL Call

No.: DNAL 64.8 C883).

0601

Evaluation of varieties and selections of barley for disease resistance and winter hardiness in southeastern United States /by J.G. Moseman.
Moseman, J. G. 1921-. Washington : U.S. Dept. of Agriculture, 1956. 33 p. ; 23 cm. Literature cited: p. 32-33. (NAL Call No.: DNAL 1 Ag84Te no.1152).

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Evidence for a specific uptake system for iron phytosiderophores in roots of grasses.
PLPHA. Romheld, V. Marschner, H. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1985. v. 80 (1). p. 175-180. ill. Includes 29 references. (NAL Call No.: DNAL 450 P692).

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Detling, J.K. Ross, C.W.; Walmsley, M.H.; Hilbert, D.W.; Bonilla, C.A.; Dyer, M.I. New York, Plenum Press. Journal of chemical ecology. Mar 1981. v. 7 (2). p. 239-246. ill. 27 ref. (NAL Call No.: QD415.A1J6).

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Expression of hydrogenase activity in barley (Hordeum vulgare L.) after anaerobic stress.
ABBIA. Torres, V. Ballesteros, A.; Fernandez, V.M. New York, N.Y. : Academic Press. Archives of biochemistry and biophysics. Feb 15, 1986. v. 245 (1). p. 174-178. Includes 21 references. (NAL Call No.: DNAL 381 AR2).

0605

The extent to which weeds modify the transpiration of cereals /by A.L. Bakke and H.H. Plagge.
Bakke, Arthur Laurence, b. 1886. Plagge, H. H._1894-. Ames, Iowa : Agricultural Experiment Station, Iowa State College of Agriculture and Mechanic Arts, 1926. p. 212-239 : charts ; 22 cm. Bibliography: p. 238-239. (NAL Call No.: DNAL 100 Io9 no.96).

0606

Factors affecting survival of winter oats / by Franklin A. Coffman .
Coffman, Franklin A. 1892-. Washington : U.S. Dept. of Agriculture, 1965. 28 p. : 1 map ; 23 cm. Literature cited: p. 27-28. (NAL Call No.: DNAL 1 Ag84Te no.1346).

0607

Factors of wild oat (Avena fatua) interference on spring barley (Hordeum vulgare) growth and yield.
WEESA6. Morishita, D.W. Thill, D.C. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 37-42. Includes references. (NAL Call No.: DNAL 79.8 W41).

0608

Fate of tagged urea N (nitrogen) in the field with different methods of N and organic matter placement (Broadcast and banded, barley).
Tomar, J.S. Soper, R.J. Madison, Wis., American Society of Agronomy. Agronomy journal. Nov/Dec 1981. v. 73 (6). p. 991-995. 18 ref. (NAL Call No.: 4 AM34P).

0609

Field evaluation of seedling root length selection in oats (Avena sativa, drought stress).
Barbour, N.W. Murphy, C.F. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 165-169. Includes references. (NAL Call No.: 64.8 C883).

0610

Fluorescence properties indicate that photosystem II reaction centers and light-harvesting complex are modified by low temperature growth in winter rye.
PLPHA. Griffith, M. Huner, N.P.A.; Kyle, D.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 381-385. ill. Includes 26 references. (NAL Call No.: DNAL 450 P692).

0611

Fluorescene induction tranients in the process of development and senescence of barley leaves during prolonged influence of blue or red light.
SOPPAA. Rozhkovskii, A.D. Bukhov, N.G.; Voskresenskaya, N.P. New York, N.Y. : Consultants Bureau. Soviet plant physiology. Translated from: Fiziologiia rastenii, p. 1046-1054. (450 F58). Nov/Dec 1985 (pub. 1986). v. 32 (6, pt. 1). p. 795-801. Includes 17

references. (NAL Call No.: DNAL 450 F58AE).

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The formation of delta-aminolevulinate, a precursor of chlorophyll, in barley and the role of iron (Hordeum vulgare, iron requirements).
Miller, G.W. Denney, A.; Pushnik, J.; Yu, M.H. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). p. 289-300. 25 ref. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

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Freeze-induced changes in soluble carbohydrates of rye.
CRPSAY. Olien, C.R. Lester, G.E. Madison, Wis. : Crop Science Society of America. Crop science. Mar/Apr 1985. v. 25 (2). p. 288-290. Includes 9 references. (NAL Call No.: DNAL 64.8 C883).

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Freezing resistance and cold acclimation in turfgrasses (Perennial rye, Lolium perenne, Kentucky bluegrass, Poa pratensis, chewings fescue, Festuca rubra).
Rajashekar, C.HJHSA. Tao, D.; Li. P.H. Alexandria : American Society for Horticultural Science. HortScience. Feb 1983. v. 18 (1). p. 91-93. ill. Includes references. (NAL Call No.: SB1.H6).

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Genetics, phenotypes, agronomic and malting performance of glossy sheath mutants in barley, Hordeum vulgare L. / by Wayne Lucas McProud. -.
McProud, Wayne Lucas, 1945-. 1971. Thesis (Ph.D.)--Montana State University, 1971. Photocopy. Ann Arbor, Mich. : University Microfilms, 1972. ix, 72 leaves ; 21 cm. Bibliography: leaves 70-72. (NAL Call No.: DISS 72-8,888).

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Genotype X year interaction for length and rate of grain filling in oats (Environmental stresses).
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Genotypic variability in response of oat to delayed sowing.
AGJOAT. Baltenberger, D.C.C. Frey, K.J. Madison, Wis. : American Society of Agronomy. Agronomy journal. Sept/Oct 1987. v. 79 (5). p. 813-816. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Genotypic variation for glycinebetaine accumulation by cultivated and wild barley in relation to water stress.
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Germination and emergence of little barley (Hordeum pusillum).
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Grain-filling duration and yield in spring barley.
CRPSAY. Metzger, D.D. Czaplewski, S.J.; Rasmusson, D.C. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1984. v. 24 (6). p. 1101-1105. Includes 11 references. (NAL Call No.: DNAL 64.8 C883).

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Gramine accumulation in leaves of barley during high-temperature stress (Hordeum vulgare).
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The growth of subterranean clover established with barley / by Anthony Alexander Mc Gowan. -.
Mc Gowan, Anthony Alexander, 1932-. 1970. Thesis (Ph.D.)--University of California, Davis, 1970. Photocopy. Ann Arbor, Mich. : University Microfilms, 1971. ix, 194 leaves ; 21 cm. Bibliography: leaves 158-169. (NAL Call No.: DISS 71-15,543).

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Hormonal regulation of alpha-amylase gene transcription in wild oat (Avena fatua L.) aleurone protoplasts.
PLPHA. Zwar, J.A. Hooley, R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 459-463. ill. Includes 25 references. (NAL Call No.: DNAL 450 P692).

0634

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Hormonal regulation of protein synthesis in barley aleurone layers / by Warren H. Evins. -.
Evins, Warren H., 1944-. 1971. Thesis (Ph.D.)--Michigan State University, 1971. Photocopy. Ann Arbor, Mich. : University Microfilms, 1972. ix, 92 leaves ; 21 cm. Bibliography: leaves 86-92. (NAL Call No.: DISS 71-23,182).

0636

Hormonal regulation of the development of protease and carboxypeptidase activities in barley aleurone layers.
PLPHA. Hammerton, R.W. Ho, T.H.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1986. v. 80 (3). p. 692-697. ill. Includes 26 references. (NAL Call No.: DNAL 450 P692).

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AJBOA. Kaufman, P.B. Brock, T.G.; Song, I.; Rho, Y.B.; Ghosheh, N.S. Baltimore, Md. : Botanical Society of America. American journal of botany. Sept 1987. v. 74 (9). p. 1446-1457. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

0638

Hypochlorite disinfection influences the GA3-induced synthesis of alpha-amylase isozymes by isolated barley aleurone layers.
PLPHA. Tittle, F.T. Goudey, J.S.; Spencer, M.S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1988. v. 86 (2). p. 510-511. Includes references. (NAL Call No.: DNAL 450 P692).

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Marshall, H.G. Kolb, F.L. Madison, Wis., Crop Science Society of America. Crop science. May/June 1982. v. 22 (3). p. 506-510. ill. 8 ref. (NAL Call No.: 64.8 C883).

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PLPHA. Leland, T.J. Hanson, A.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1985. v. 79 (2). p. 451-457. ill. Includes 23 references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Chen, Y.G. Ching, T.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1988. v. 86 (3). p. 941-945. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Hoffman, N.E. Bent, A.F.; Hanson, A.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1986. v. 82 (3). p. 658-663. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Satler, S.O. Thimann, K.V. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1980. v. 66 (3). p. 395-399. ill. 28 ref. (NAL Call No.: 450 P692).

0646

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PLPHA. Bloom, A.J. Finazzo, J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 67-69. Includes 22 references. (NAL Call No.: DNAL 450 P692).

0647

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0652

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0653

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Adams, P.A.PLPHA. Ross, M.A. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1983. v. 73 (3). p. 566-568. ill. Includes references. (NAL Call No.: 450 P692).

0654

Interactions between ethylene, CO2, and ABA and GA3-induced amylase synthesis in barley aleurone tissue.
PLPHA. Tittle, F.L. Spencer, M.S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1986. v. 80 (4). p. 1034-1037. Includes 22 references. (NAL Call No.: DNAL 450 P692).

0655

Interrelationships among three major loci controlling heading date of spring barley when grown under short daylengths.
CRPSAY. Gallagher, L.W. Belhadri, M.; Zahour, A. Madison, Wis. : Crop Science Society of America. Early maturing cultivars of barley (Hordeum vulgare L.) would enhance yield stability in lowland, low rainfall areas of Morocco. The objective of this work was to study the inheritance of heading date in crosses involving six spring barleys developed in the Sacramento Valley of California, USA and the Yaqui Valley of Sonora, Mexico. Data were gathered under short daylengths at 32 degrees C 15′ N Lat with December sowing in Morocco. Frequency distributions of parental, F1, F2, and backcross generations indicated a three-locus model with recessive and duplicate dominant epistasis accounting for most of the phenotypic variability. Recessive gene interaction resulted in plants that were about 19 to 35 days earlier than later counterparts with the dominant allele present. Among the later genotypes, the presence of a dominant allele at either of the duplicate loci in the genotypes not homozygous for extreme earliness resulted in increased earliness of 5 to 14 days over the duplicate double recessive depending upon modifiers. A genotype for each parent was suggested; however, the three-locus model did not account for the 4- to 6-day differences between two pairs of parents. Apparently, modifying loci or different alleles were present in some parents. Crop science. Mar/Apr

1987. v. 27 (2). p. 155-160. Includes references. (NAL Call No.: DNAL 64.8 C883).

0656

Involvement of plasma membrane alterations in cold acclimation of winter rye seedlings (Secale cereale L. cv Puma) (Sterol and protein composition changes).
Uemura, M. Yoshida, S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1984. v. 75 (3). p. 818-826. ill. Includes 34 references. (NAL Call No.: 450 P692).

0657

Iron reduction and uptake by grapevine roots (Vitis spp., also Avena sativa, oats).
Varanini, Z. Maggioni, A. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). p. 521-529. 9 ref. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

0658

Isogenic heading date effects on yield component development in 'Titan' barley.
CRPSAY. Smail, V.W. Eslick, R.F.; Hockett, E.A. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1023-1029. Includes references. (NAL Call No.: DNAL 64.8 C883).

0659

Isolation and identification of some phytotoxic compounds from aqueous extracts of rye (Secale Cereale L.).
JAFCAU. Shilling, D.G. Jones, L.A.; Worsham, A.D.; Parker, C.E.; Wilson, R.F. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1986. v. 34 (4). p. 633-638. Includes references. (NAL Call No.: DNAL 381 J8223).

0660

Kinetics of the uptake of 14C-labelled chlorinated benzenes from soil by plants.
EESAD. Topp, E. Scheunert, I.; Korte, F. Duluth, Minn. : Academic Press. Ecotoxicology and environmental safety. Apr 1989. v. 17 (2). p. 157-166. Includes references. (NAL Call No.: DNAL QH545.A1E29).

0661

Lamellar-to-hexagonalII phase transitions in the plasma membrane of isolated protoplasts after freeze-induced dehydration.
PNASA. Gordon-Kamm, W.J. Steponkus, P.L. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Oct 1984. v. 81 (20). p. 6363-6377. ill. Includes 34 references. (NAL Call No.: DNAL 500 N21P).

0662

Latency of plasma membrane H+-ATPase in vesicles isolated by aqueous phase partitioning: increased substrate accessibility or enzyme activation.
PLPHA. Sandstrom, R.P. deBoer, A.H.; Lomax, T.L.; Cleland, R.E. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1987. v. 85 (3). p. 693-698. Includes references. (NAL Call No.: DNAL 450 P692).

0663

Leaf water potential, relative water content, and diffusive resistance as screening techniques for drought resistance in barley.
AGJOAT. Matin, M.A. Brown, J.H.; Ferguson, H. Madison, Wis. : American Society of Agronomy. Rapid drought resistance screening techniques could accelerate selection of improved cultivars for semiarid areas. This study was conducted to determine if total leaf water potential, leaf relative water content, and leaf diffusive resistance could be used to differentiate between barley (Hordeum vulgare L.) cultivars differing in apparent drought resistance. Resistant and susceptible cultivars were selected by regressing individual cultivar yields against site mean yield for numerous yield trails. Individual plants were grown in cone-tainers (plastic tubes 25 mm in diameter and 123 mm long). The lower 30 mm of the cone-tainers were imbedded in sand so that roots emerging from the bottom of the cone-tainers were in the capillary fringe above a water table in the sand. Fifty plants were grown at a time in a sand bed, five replications each of five resistant and five susceptible barley cultivars of either two- or six-row head types. At the three-leaf growth stage total leaf water potential was measured on the third leaf of each plant under low stress conditions (predawn). Water was then drained from the sand bed to stress the plants. Leaf diffusive resistance (LDR) was measured at 1000 and 1300 h each day as stress developed. When the PM diffusive resistance reached about 1000 s m-1, relative water content (RWC) of the second leaf was determined. All measurements were repeated in three different trials for each head type. Relative water content and total leaf water potential differentiated between drought-resistant and drought-susceptible groups of two- and six-rowed barley at the 0.01 probability level in every trial. Leaf diffusive resistance

differentiated between resistant and susceptible groups at the 0.01 or 0.05 level under low and high stress conditions. Neither RWC nor LDR allowed separation of cultivars within resistant or susceptible groups, but total leaf water potential did show differences between cultivars within groups. These techniques provide an ea. Agronomy journal. Jan/Feb 1989. v. 81 (1). p. 100-105. Includes references. (NAL Call No.: DNAL 4 AM34P).

0664

Lipid and fatty acid composition of three winter barley cultivars differing in winterhardiness / by Mohammed Abdul Ali. -.
Ali, Mohammed Abdul, 1941-. 1971. Thesis (Ph.D.)--University of Wyoming, 1971. Photocopy of typescript. Ann Arbor: University Microfilms, 1972. v, 32 leaves ; 21 cm. Bibliography: leaves 28-31. (NAL Call No.: DISS 72-18,322).

0665

Lipid composition of plasma membranes and endomembranes prepared from roots of barley (Hordeum vulgare L.). Effects of salt.
PLPHA. Brown, D.J. DuPont, F.M. Rockville, Md. : American Society of Plant Physiologists. Membrane fractions enriched in endoplasmic reticulum (ER), tonoplast and Golgi membranes (TG) and plasma membranes (PM) were prepared from barley (Horedum vulgare L. cv CM 72) roots and the lipid compositions of the three fractions were analyzed and compared. Plants were grown in an aerated nutrient solution with or without 100 millimolar NaCl. Each membrane fraction had a characteristic lipid composition. The mole per cent of the individual phospholipids, glycolipids, and sterols in each fraction was not altered when roots were grown in 100 millimolar NaCl. The ER had the highest percentages of phosphatidylinositol and phosphatidylcholine of the three fractions (7 and 45 mole per cent, respectively, of the total lipid). The TG contained the highest percentage of glycosylceramide (13 mole per cent). The PM had the highest percentage of phosphatidylserine (3 mole per cent) and nearly equal percentages of phosphatidylethanolamine (15 mole per cent and phosphatidylcholine (18 mole per cent). The most abundant sterols in membranes prepared from barley roots were stigmasterol (10 mole per cent), sitosterol (50 mole per cent), and 24 zeta-methylcholesterol (40 mole per cent of the total sterol). Salt-treated plants contained a slightly higher percentage of stigmasterol than controls. The percentage of stigmasterol increased with age and a simple cause and effect relationship between salt treatment and sterol composition was not observed. Plant physiology. July 1989. v. 90 (3). p. 955-961. Includes references. (NAL Call No.: DNAL 450 P692).

0666

Localization and pattern of graviresponse across the pulvinus of barley Hordeum vulgare.
PLPHA. Brock, T.G. Lu, C.R.; Ghosheh, N.S.; Kaufman, P.B. Rockville, Md. : American Society of Plant Physiologists. Pulvini of excised stem segments from barley (Hordeum vulgare cv Larker') were pretreated with 1 millimolar coumarin before gravistimulation to reduce longitudinal cell expansion and exaggerate radial cell enlargement. The cellular localization and pattern of graviresponse across individual pulvini were then evaluated by cutting the organ in cross-section, photographing the cross-section, and then measuring pulvinus thickness and the radial width of cortical and epidermal cells in enlargements of photomicrographs. With respect to orientation during gravistimulation, we designated the uppermost point of the cross-section 0 degrees and the lowermost point 180 degrees. A gravity-induced increase in pulvinus thickness was observable within 40 degrees of the vertical in coumarin-treated pulvini. In the upper halves of coumarin-treated gravistimulated pulvini, cells in the inner cortex and inner epidermis had increased radial widths, relative to untreated gravistimulated pulvini. In lower halves of coumarin-treated pulvini, cells in the central and outer cortex and in the outer epidermis showed the greatest increase in radial width. Cells comprising the vascular bundles also increased in radial width, with this pattern following that of the central cortex. These results indicate (a) that all cell types are capable of showing a graviresponse, (b) that the graviresponse occurs in both the top and the bottom the responding organ, and (c) that the magnitude of the response increases approximately linearly from the uppermost point to the lowermost. These results are also consistent with models of gravitropism that link the pattern and magnitude of the graviresponse to graviperception via statolith sedimentation. Plant physiology. Oct 1989. v. 91 (2). p. 744-748. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0667

Longitudinal and transverse profiles of K+ and Cl- concentration in 'low-' and 'high-salt' barley roots.
NEPHA. Huang, C.X. Van Steveninck, R.F.M. New York, N.Y. : Cambridge University Press. The New phytologist. Aug 1989. v. 112 (4). p. 415-480. ill. Includes references. (NAL Call No.: DNAL 450 N42).

0668

Low ribonuclease I activity prior to cold acclimation in freeze selected winter barley.
CRPSAY. Kenefick, D.G. Blake, T.K. Madison, Wis. : Crop Science Society of America. Crop science. Nov/Dec 1986. v. 26 (6). p. 1099-1103. Includes 14 references. (NAL Call No.: DNAL 64.8 C883).

0669

Maintenance of low Cl- concentrations in mesophyll cells of leaf blades of barley seedlings exposed to salt stress.
PLPHA. Huang, C.X. Van Steveninck, R.F.M. Rockville, Md. : American Society of Plant Physiologists. The concentrations of vacuolar Na+ and Cl- in the epidermal and mesophyll cells of the leaf blade and sheath of Hordeum vulgare seedlings (cv California Mariout and Clipper) were measured by means of quantitative electron probe X-ray microanalysis. A preferential accumulation of Cl- in vacuoles of epidermal cells in both blade and sheath and a low level in mesophyll cells of the blade were evident in plants grown in full strength Johnson solution. The concentration of Cl- in the mesophyll cells of the blade remained at a low level after exposure to 50 or 100 millimolar NaCl for 1 day or to 50 millimolar for 4 days, while at the same time the concentration of Cl- in the epidermis and mesophyll of the sheath showed a dramatic increase. Clipper generally contained more Cl- in the mesophyll cells of the blade than California Mariout. A greater accumulation of Na+ in the mesophyll of the sheath relative to that of the blade was only apparent after treatment with 100 millimolar NaCl for 1 day or 50 millimolar for 4 days. These results confirm the suggestion that sheath tissue is capable of accumulating excess Cl- (and to a lesser extent Na+) and suggest that the site of regulation of Cl- concentration in the barley leaf is located in the mesophyll cells of the blade. Plant physiology. Aug 1989. v. 90 (4). p. 1440-1443. Includes references. (NAL Call No.: DNAL 450 P692).

0670

Mechanical properties of the plasma membrane of isolated plant protoplasts. Mechanism of hyperosmotic and extracellular freezing injury (Secale cereale, rye seedlings, changes in area and membrane contraction in lysis).
Wolfe, J.PLPHA. Steponkus, P.L. Rockville : American Society of Plant Physiologists. Plant physiology. Feb 1983. v. 71 (2). p. 276-285. ill. 28 ref. (NAL Call No.: 450 P692).

0671

Mechanical study of the deformation and rupture of the plasma membranes of protoplasts during osmotic expansions.
JMBBBD. Wolfe, J. Dowgert, M.F.; Steponkus, P.L. New York, N.Y. : Springer. The Journal of membrane biology. 1986. v. 93 (1). p. 63-74. ill. Includes references. (NAL Call No.: DNAL QH573.J6).

0672

The mechanics of injury to isolated protoplasts following osmotic contraction and expansion.
PLPHA. Dowgert, M.F. Wolfe, J.; Steponkus, P.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1987. v. 83 (4). p. 1001-1007. Includes references. (NAL Call No.: DNAL 450 P692).

0673

Mesocotyl growth of etiolated seedlings of Avena sativa and Zea mays in relation to light and diffusible auxin.
JPGRDI. Kessler, R.W. Gerhold, L.S.; Muir, R.M. New York, N.Y. : Springer. Journal of plant growth regulation. 1985. v. 4 (1). p. 11-18. Includes references. (NAL Call No.: DNAL QK745.J6).

0674

Mesophyll resistances to SO2 fluxes into leaves.
PLPHA. Pfanz, H. Martinoia, E.; Lange, O.L.; Heber, U. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1987. v. 85 (4). p. 922-927. Includes references. (NAL Call No.: DNAL 450 P692).

0675

A method for rating freezing inhibitor activity of barley genotypes using seed and crown tissue mucilages (Winter hardiness).
Olien, C.R. AR-NC. Kuhna, A.S. Madison, Wis., Crop Science Society of America. Crop science. July/Aug 1980. v. 20 (4). p. 537-539. ill. 9 ref. (NAL Call No.: 64.8 C883).

0676

A model for the regulation of K+ influx, and tissue potassium concentrations by negative feedback effects upon plasmalemma influx.
PLPHA. Siddiqi, M.Y. Glass, A.D.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1986. v. 81 (1). p. 1-7. Includes 32 references. (NAL Call No.: DNAL 450 P692).

0677

Modification of flag leaf senescence and yield characters in barley (Hordeum vulgare L.) by gibberellic acid and kinetin.
JPGRDI. Mishra, S.D. Gaur, B.K. New York, N.Y. : Springer. Journal of plant growth regulation. 1985. v. 4 (2). p. 63-70. Includes references. (NAL Call No.: DNAL QK745.J6).

0678

Modifications of plant growth and ash content as effected by acids added to soils.
AGJOAT. Carr, R.H. Havercamp, H.G. Madison, Wis. : American Society of Agronomy. A comparison has been made of the effect upon the growth of soybean and buckwheat plants of adding an organic (acetic) and an inorganic (sulfuric) acid to a silt and a clay-loam soil. It has been found that both acids seriously interfere with plant growth, but that acetic was more deleterious than sulfuric acid. This is believed to be due to the effect of acetic acid in supplying more toxic aluminum and iron, etc., to the plant and in decreasing calcium and magnesium to a greater extent than was done by the sulfuric acid. In addition two other series of acids (phosphoric and silicic) were used, because they make compounds with aluminum and iron which seem to be harmless to the growing plant, regardless of the fact that the root is surrounded by a soil which is highly acid. The good growth of both kinds of plants obtained, even when rather large amounts of these latter acids were added, indicates that relatively insoluble compounds of aluminum and iron, etc., were formed and that the acid by itself did no harm. Agronomy journal. Apr 1924. v. 16 (4). p. 278-283. (NAL Call No.: DNAL 4 AM34P).

0679

Modifications of sulfhydryl groups on phytochrome and their influence on physicochemical differences between the red- and far-red-absorbing forms.
PLPHA. Smith, W.O. Jr. Cyr, K.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1988. v. 87 (1). p. 195-200. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0680

Molecular and cellular biology associated with endosperm mobilization in germinating cereal grains.
Fincher, G.B. Palo Alto, Calif. : Annual Reviews, Inc. Annual review of plant physiology and plant molecular biology. Literature review. 1989. v. 40. p. 305-346. ill. Includes references. (NAL Call No.: DNAL QK1.A57).

0681

The molecular biology of barley storage protein synthesis.
Cameron-Mills, V. Brandt, A.; Ingversen, J. New York, Academic Press, 1980. Cereals for food and beverages : recent progress in cereal chemistry and technology, edited by George E. Inglett, Lars Munck.International Conference on Cereals for Food and Beverages (1979 : Copenhagen). p. 339-364. ill. 33 ref. (NAL Call No.: TX557.I57 1979).

0682

Molecular cloning and sequence of cDNA encoding the plasma membrane proton pump (H+-ATPase) of Arabidopsis thaliana.
PNASA. Harper, J.F. Surowy, T.K.; Sussman, M.R. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Feb 1989. v. 86 (4). p. 1234-1238. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0683

Morphological and histological effects of three grass selective herbicides on developing wild oat (Avena fatua) stems.
WEESA6. Jain, R. Born, W.H. vanden. Champaign, Ill. : Weed Science Society of America. Three grass selective herbicides, sethoxydim, fluazifop, and haloxyfop, applied to wild oat plants at the five-leaf stage inhibited growth and induced chlorosis in leaves. Young and actively growing tissues were affected first. Stem elongation in wild oat was inhibited within 2 days of treatment with sethoxydim and within 5 days of treatment with fluazifop or haloxyfop. At these same observation times, internodes that were elongating rapidly at the time of treatment were constricted at the base. These symptoms were followed by necrosis of the internode tisssue. Histological examination of the affected internodes indicated that the herbicides inhibited cell division in very young internodes and inhibited both cell division and cell elongation in slightly older internodes. Initial injury occurred in the epidermal, cortical, and procambium cells of the peripheral regions of the stems located at the base of the affected internodes. Necrosis then progressed to the center of the stem tissue and all cells in the internodes were killed within 14 days of treatment. All three herbicides caused similar morphological and histological effects on developing wild oat stems. Weed science. July 1989. v. 37 (4). p. 575-584. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

0684

The morphological and physiological response of slender oat (Avena barbata) to the herbicides barban and difenzoquat.
WEESA6. Price, S.C. Hill, J.E.; Allard, R.W. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 60-69. Includes references. (NAL Call No.: DNAL 79.8 W41).

0685

Morphological and physiological variation in wild oat (Avena fatua, dormancy, herbicide resistance, varieties, weeds).
Miller, S.D. Nalewaja, J.D.; Mulder, C.E.G. Madison, Wis., American Society of Agronomy. Agronomy journal. Sept/Oct 1982. v. 74 (5). p.

771-775. ill. 11 ref. (NAL Call No.: 4 AM34P).

0686

Multiple actions of abscisic acid in senescence of oat leaves.
JPGRDI. Zhi-Yi, T. Veierskov, B.; Park, J.; Thimann, K.V. New York, N.Y. : Springer. Journal of plant growth regulation. 1988. v. 7 (4). p. 213-226. Includes references. (NAL Call No.: DNAL QK745.J6).

0687

NaCl induces a Na+/H+ antiport in tonoplast vesicles from barley roots.
PLPHA. Garbarino, J. DuPont, F.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1988. v. 86 (1). p. 231-236. Includes references. (NAL Call No.: DNAL 450 P692).

0688

Natural selection in a doubled-haploid mixture and a composite cross of barley.
CRPSAY. Patel, J.D. Reinbergs, E.; Mather, D.E.; Choo, T.M.; Sterling, J.D.E. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 474-479. Includes references. (NAL Call No.: DNAL 64.8 C883).

0689

Nature of photooxidative events in leaves treated with chlorosis-inducing herbicides (Secale cereale, winter rye seedlings).
Feierabend, J. Winkelhusener, T. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1982. v. 70 (5). p. 1277-1282. 30 ref. (NAL Call No.: 450 P692).

0690

New mutants in the genetic male sterile barley collection.
Hockett, E.A. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 70-73. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0691

Nitrate accumulation in plants.
Jensen, E.H. Reno, Nev. : College of Agriculture, University of Nevada-Reno, Nevada Cooperative Extension. Fact sheet - College of Agriculture, University of Nevada-Reno, Nevada Cooperative Extension. 1987? . (87-32). 3 p. (NAL Call No.: DNAL S544.3.N3C66).

0692

Nitrate content in oats /by B.J. Kolp ... et al. .
Kolp, B. J._1928-. Laramie, Wyo. : University of Wyoming, Agricultural Experiment Station, 1963. 12 p. ; 23 cm. Bibliography: p. 12. (NAL Call No.: DNAL 100 W99 (1) no.409).

0693

Nitrate uptake into barley (Hordeum vulgare) plants. A new approach using 36C103- (chlorate) as an analog for N03- (nitrate).
Deane-Drummond, C.E. Glass, A.D.M. Rockville, American Society of Plant Physiologists. Plant physiology. July 1982. v. 70 (1). p. 50-54. 27 ref. (NAL Call No.: 450 P692).

0694

Nitrate utilization by nitrate reductase-deficient barley mutants (Nutritional deficiencies).
Warner, R.L. Kleinhofs, A. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Apr 1981. v. 67 (4). p. 740-743. ill. 22 ref. (NAL Call No.: 450 P692).

0695

Nitrogen and yield as related to water use of spring barley (Hordeum vulgare, seasonal evapotranspiration, New Mexico).
Kallsen, C.E.AGJOAT. Sammis, T.W.; Gregory, E.J. Madison : American Society of Agronomy. Agronomy journal. Jan/Feb 1984. v. 76 (1). p. 59-64. Includes references. (NAL Call No.: 4 AM34P).

0696

Nitrogen harvest index in oats: its repeatability and association with adaptation.
CRPSAY. Rattunde, H.F. Frey, K.J. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1986. v. 26 (3). p. 606-610. Includes references. (NAL Call No.: DNAL 64.8 C883).

0697

Oat leaf volatiles: possible insect attractants.
Buttery, R.G. Ling, L.C.; Wellso, S.G. Washington, D.C., American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1982. v. 30 (4). p. 791-792. 10 ref. (NAL Call No.: 381 J8223).

0698

Oat lipids and lipid-related enzymes.
Youngs, V.L. St. Paul, Minn. : American Association of Cereal Chemists, c1986. Oats : chemistry and technology / edited by Francis H. Webster. Literature review. p. 205-226. ill. Includes references. (NAL Call No.: DNAL TP435.0502).

0699

Oat stem vascular size in relation to kernel number and weight. I. Controlled environment (Avena sativa).
Housley, T.L. Peterson, D.M. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1982. v. 22 (2). p. 259-263. ill. Includes 15 ref. (NAL Call No.: 64.8 C883).

0700

Oat stem vascular size in relation to kernel number and weight. II. Field environment (Avena sativa).
Peterson, D.M. Housley, T.L.; Luk, T.M. Madison, Wis., Crop Science Society of America. Crop science. Mar/Apr 1982. v. 22 (2). p. 274-278. Includes 22 ref. (NAL Call No.: 64.8 C883).

0701

Oats (Production, breeding, composition).
Youngs, V.L. Peterson, D.M.; Brown, C.M. St. Paul, Minn. : American Association of Cereal Chemists. Advances in cereal science and technology. 1982. Literature review. v. 5. p. 49-105. ill. Includes references. (NAL Call No.: TS2120.A3).

0702

Oats tolerant of Pseudomonas syringae pv. tabaci contain tabtoxinine-beta-lactam-insensitive leaf glutamine synthetases.
PLPHA. Knight, T.J. Bush, D.R.; Langston-Unkefer, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1988. v. 88 (2). p. 333-339. Includes references. (NAL Call No.: DNAL 450 P692).

0703

On the uptake, metabolism and retention of (3H) (hydrogen isotope) gibberellin A1 by barley aleurone layers at low temperatures.
Keith, B. Boal, R.; Srivastava, L.M. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Nov 1980. v. 66 (5). p. 956-961. ill. 20 ref. (NAL Call No.: 450 P692).

0704

Origin, taxonomy, and related species.
AGRYA. Bothmer, R. von. Jacobsen, N. Madison, Wis., Soil Science Society of America. Agronomy. A series of monographs - American Society of Agronomy. Literature review. 1985. (26). p. 19-56. maps. Includes references. (NAL Call No.: DNAL 4 AM392).

0705

Osmotic adjustment and growth of barley genotypes under drought stress.
CRPSAY. Blum, A. Madison, Wis. : Crop Science Society of America. Osmotic adjustment is receiving increasing attention as a probable component of drought resistance in crop plants, including barley (Hordeum vulgare L.). This work was done to study a possible association between osmotic adjustment and growth under drought stress. Twenty-six diverse barley genotypes were grown in nutrient solutions in the growth chamber. Drought stress was imposed by adding polyethylene glycol 6000 to the nutrient solution producing a -0.54 MPa solution water potential as compared with controls of pure nutrient solution with a -0.02 MPa of solution potential. Percent growth reduction by drought stress was calculated from growth rates measured under stress and in the controls. Osmotic adjustment was calculated as the difference in osmotic potential at full turgor between stress and controls. Leaf water potentials of genotypes grown under drought stress ranged from -1.37 to -1.51 MPa, but did not differ significantly. For the same leaf water potential, genotypes differed significantly in osmotic adjustment which ranged from -0.17 to 0.46 MPa. Growth reduction by drought stress differed significantly among genotypes with a range of 78.1%. Growth reduction by drought stress was negatively associated with osmotic adjustment across genotypes (r = -0.80). The association was nonlinear, indicating that growth reduction decreased only as osmotic adjustment increased to about 0.2 MPa or more. These results suggest that induced osmotic adjustment under drought stress may be an important component of drought resistance in barley growth, and it should be evaluated when all genotypes are subjected to the same leaf water status. Crop science. Jan/Feb 1989. v. 29 (1). p. 230-233. Includes references. (NAL Call No.: DNAL 64.8 C883).

0706

Osmotic stress-induced polyamine accumulation in cereal leaves. I. Physiological parameters of the response (Includes wild oats, Avena fatua, and peas, water stress).
Flores, H.E. Galston, A.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1984. v. 75 (1). p. 102-109. ill. Includes 33 references. (NAL Call No.: 450 P692).

0707

Osmotic stress-induced polyamine accumulation in cereal leaves. II. Relation to amino acid pools (Oats).
Flores, H.E. Galston, A.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1984. v. 75 (1). p. 110-113. Includes 29 references. (NAL Call No.: 450 P692).

0708

Oxygen and carbon dioxide fluxes from barley shoots depend on nitrate assimilation.
PLPHA. Bloom, A.J. Caldwell, R.M.; Finazzo, J.; Warner, R.L.; Weissbart, J. Rockville, Md. : American Society of Plant Physiologists. A custom oxygen analyzer in conjunction with an infrared carbon dioxide analyzer and humidity sensors permitted simultaneous measurements of oxygen, carbon dioxide, and water vapor fluxes from the shoots of intact barley plants (Hordeum vulgare L. cv Steptoe). The oxygen analyzer is based on a calciazirconium sensor and can resolve concentration differences to within 2 microliters per liter against the normal background of 210,000 microliters per liter. In wild-type plants receiving ammonium as their sole nitrogen source or in nitrate reductase-deficient mutants, photosynthetic and respiratory fluxes of oxygen equaled those of carbon dioxide. By contrast, wild-type plants exposed to nitrate had unequal oxygen and carbon dioxide fluxes: oxygen evolution at high light exceeded carbon dioxide consumption by 26% and carbon dioxide evolution in the dark exceeded oxygen consumption by 25%. These results indicate that a substantial portion of photosynthetic electron transport or respiration generates reductant for nitrate assimilation rather than for carbon fixation or mitochondrial electron transport. Plant physiology. Sept 1989. v. 91 (1). p. 352-356. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0709

Partial characterization of fusicoccin (a phytotoxin isolated from the fungus Fusicoccum amygdali) binding to receptor sites on oat root membranes.
Stout, R.G. Cleland, R.E. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1980. v. 66 (3). p. 353-359. ill. 27 ref. (NAL Call No.: 450 P692).

0710

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PLPHA. Young, N.D. Galston, A.W. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1984. v. 76 (2). p. 331-335. ill. Includes 13 references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Shinkle, J.R. Briggs, W.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Oct 1985. v. 79 (2). p. 349-356. Includes 27 references. (NAL Call No.: DNAL 450 P692).

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JSWCA3. Mielke, L.N. Schepers, J.S. Ankeny, Iowa : Soil Conservation Society of America. Journal of soil and water conservation. Jan/Feb 1986. v. 41 (1). p. 59-63. Includes 15 references. (NAL Call No.: DNAL 56.8 J822).

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Plant stress and polyamine metabolism induction of arginine decarboxylase in stressed oat leaves (putrescine, mineral- deficiency, ionic-stress) /Nevin Dale Young.
Young, Nevin Dale. 1984. Thesis (Ph.D)--Yale University, 1984. vi, 179 p. : ill. Bibliography: p. 166-179. (NAL Call No.: DNAL DISS 85-09,796).

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Plasma membrane lipid alterations associated with cold acclimation of winter rye seedlings (Secale cereale L. cv Puma).
PLPHA. Lynch, D.V. Steponkus, P.L. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Apr 1987. v. 83 (4). p. 761-767. Includes references. (NAL Call No.: DNAL 450 P692).

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0731

Plastid transcription activity and DNA copy number increase early in barley chloroplast development.
PLPHA. Baumgartner, B.J. Rapp, J.C.; Mullet, J.E. Rockville, Md. : American Society of Plant Physiologists. Plastid transcription activity and DNA copy number were quantified during chloroplast development in the first foliage leaf in dark-grown and illuminated barley (Hordeum vulgare L.) seedlings. Primary foliage leaves of seedlings given continuous illumination from 2 days post-imbibition reached a final mean length of 15 centimeters at 6.5 days, whereas primary leaves of dark-grown seedlings required 7 days to reach a similar length. Dividing cells were observed in the basal 0.5 to 1 centimeter of primary leaves until 5.5 days post-imbibition. Plastids isolated form cells located in the basal meristem of 4-day-old seedlings were small (approximately 2 micrometers in diameter), exhibited low transcription activity and contained approximately 130 copies of plastid DNA per organelle. Cell size increased from 18 to 60 micrometers in a 1 to 3 centimeter region located adjacent to the leaf basal meristem. In this region, transcriptional activity per plastid increased 10-fold and DNA copy number increased from 130 to 210. Plastid trancriptional activity declined rapidly in illuminated plants with increasing leaf cell age and plastid DNA copy number also declined but with a slower time course. In dark-grown seedlings plastid transcriptional activity declined more slowly than in illuminated plants while DNA copy number remained constant with increasing cell age. These data show that plastid transcriptional activity and DNA copy number increase early in chloroplast development and that transcriptional activity per DNA template varies up to 5-fold during barley leaf biogenesis. Plant physiology. Mar 1989. v. 89 (3). p. 1011-1018. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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PLPHA. Laroche, A. Hopkins, W.G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1987. v. 85 (3). p. 648-654. Includes references. (NAL Call No.: DNAL 450 P692).

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Thaxter, Roland, 1858-1932. Osborne, Thomas B._1859-1929. New Haven : Connecticut Agricultural Experiment Station, 1890. Cover title. 8 p. ; 24 cm. (NAL Call No.: DNAL 100 C76St (1) no.105).

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Mares, D.J. Boca Raton, Fla. : CRC Press, 1988. Preharvest field sprouting in cereals / editor, N.F. Derera. Literature review. p. 129-170. ill. Includes references. (NAL Call No.: DNAL SB189.6.P73).

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Proanthocyanidin-free barley for brewing: progress in breeding for high yield and research tool in polyphenol chemistry.
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Propagation of sea oats (Uniola latifolia).
Wilsey, M.H. Boulder, Colo. : International Plant Propagators' Society. The Plant propagator. June 1985. v. 31 (2). p. 15. (NAL Call No.: DNAL 81 P692).

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Protoporphyrinogen oxidation in chloroplasts and plant mitochondria, a step in heme and chlorophyll synthesis (Barley seedlings, Hordeum vulgare).
Jacobs, J.M.ABBIA. Jacobs, N.J.; De Maggio, A.E. New York : Academic Press. Archives of biochemistry and biophysics. Oct 1, 1982. v. 218 (1). p. 233-239. 26 ref. (NAL Call No.: 381 AR2).

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Pulse domestication and cereal domestication: how different are they?.
ECBDA. Zohary, D. Bronx, N.Y. : New York Botanical Garden. Economic botany. Jan/Mar 1989. v. 43 (1). p. 31-34. Includes references. (NAL Call No.: DNAL 450 EC7).

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Purification and characterization of gibberellic acid-induced cysteine endoproteases in barley aleurone layers.
PLPHA. Koehler, S. Ho, T.H.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. May 1988. v. 87 (1). p. 95-103. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Putrescine and acid stress. Induction of arginine decarboxylase activity and putrescine accumulation by low pH (Avena sativa, oats, Pisum sativum, peas).
Young, N.D.PLPHA. Galston, A.W. Rockville : American Society of Plant Physiologists. Plant physiology. Apr 1983. v. 71 (4). p. 767-771. Includes references. (NAL Call No.: 450 P692).

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Vierling, E.PLPHA. Alberte, R.S. Rockville : American Society of Plant Physiologists. Plant physiology. July 1983. v. 72 (3). p. 625-633. ill. Includes references. (NAL Call No.: 450 P692).

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Quantitative measurement and evaluation of seasonal plant water deficits in barley / by Ray Eugene Jensen. -.
Jensen, Ray Eugene. 1971. Thesis (Ph.D.)--North Dakota State University, 1971. Photocopy of typescript. Ann Arbor: University Microfilms, 1972. xviii, 178 leaves ; 21 cm. Bibliography: leaves 151-155. (NAL Call No.: DISS 72-6,540).

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Quantitative observations on the pattern of synergid degeneration in barley.
AJBDA. Mogensen, H.L. Baltimore, Md. : Botanical Society of America. American journal of botany. Nov/Dec 1984. v. 71 (10). p. 1448-1451. ill. Includes references. (NAL Call No.: DNAL 450 AM36).

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Radiotracer evidence implicating phosphoryl and phosphatidyl bases as intermediates in betaine synthesis by water-stressed barley leaves.
Hitz, W.D. Rhodes, D.; Hanson, A.D. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Oct 1981. v. 68 (4). p. 814-822. 20 ref. (NAL Call No.: 450 P692).

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A rapid and simple procedure for purification of indole-3-acetic acid prior to GC-SIM-MS analysis.
PLPHA. Chen, K.H. Miller, A.N.; Patterson, G.W.; Cohen, J.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1988. v. 86 (3). p. 822-825. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Rapid induction of Na+/H+ exchange activity in barley root tonoplast.
PLPHA. Garbarino, J. DuPont, F.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Jan 1989. v. 89 (1). p. 1-4. Includes references. (NAL Call No.: DNAL 450 P692).

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A rapid method for the determination of barley seed viability.
PIACA. Marks, G.C. Bloom, W.W.; Boyle, J.G. Indianapolis, Ind. : The Academy. Proceedings of the Indiana Academy of Science. 1985. v. 94. p. 117-119. Includes references. (NAL Call No.: DNAL 500 IN2).

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Rapid reduction by IAA of malondialdehyde levels in avena coleoptiles, a possible effect on lipid peroxidation.
BBRCA. Dhindsa, R.S. Amaral, A.C.; Cleland, R.E. New York, N.Y. : Academic Press. Biochemical and biophysical research communications. Nov 30, 1984. v. 125 (1). p. 76-81. Includes 20 references. (NAL Call No.: DNAL 442.8 B5236).

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The rate of absorption of nitrate of soda by oats and cotton when applied at different stages of plant growth.
AGJOAT. Appleton, W.H. Helms, H.B. Madison, Wis. : American Society of Agronomy. Experiments were conducted in the greenhouse to study the rate of absorption of nitrate nitrogen by oats and cotton when applied as nitrate of soda at different stages of plant growth. The general plan of the experiment was to add nitrate to a series of cultures at a certain stage of growth. Then, at intervals of a few days, part of the cultures were harvested and the amount of nitrate absorbed was determined by plant analysis and also by determining the nitrate content of the soil. Cultures that did not receive nitrate were used as checks to indicate how much nitrogen the plant secured from the soil. With oats these studies were made at four stages of plant growth. With cotton the study was made at three stages of plant growth. The results may be summarized as follows: When sodium nitrate at the rate of 400 pounds per acre was applied to oats 14 days after planting, absorption of the nitrate was very slow for three weeks. After the third week absorption increased and all nitrate was absorbed by the close of the seventh week. When the nitrate was applied to oats at later stages of growth, the rate of absorption was more rapid. Nitrate applied 42, 70, and 92 days after planting was completely absorbed in 20, 14, and 10 days, respectively. With both oats and cotton there was a close correlation between the rate of growth and the rate of nitrate absorption. Sodium nitrate at the rate of 600 pounds per acre was applied to cotton 14, 40, and 61 days after planting. Abs orption of the nitrate was complete in 36, 14, and 11 days, respectively. The results of both experiments indicate that the loss of soluble nitrogenous fertilizer by leaching may be reduced by delaying the application until the crop will absorb it rapidly. Agronomy journal. Oct 1925. v. 17 (10). p. 596-605. (NAL Call No.: DNAL 4 AM34P).

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Reduced accumulation of ABA during water stress in a molybdenum cofactor mutant of barley.
PLPHA. Walker-Simmons, M. Kudrna, D.A.; Warner, R.L. Rockville, Md. : American Society of Plant Physiologists. A barley (Hordeum vulgare L.) mutant (Az34) has been identified with low basal levels of abscisic acid (ABA) and with reduced capacity for producing ABA in response to water stress. The mutation is in a gene controlling the molybdenum cofactor resulting in a pleiotropic deficiency in at least three molybdoenzymes, nitrate reductase, xanthine dehydrogenase, and aldehyde oxidase. The mutant was found to lack aldehyde oxidase activity with several substrates including: (a) ABA aldehyde, a putative precursor of ABA; (b) an acetylenic analog of ABAaldehyde; and (c) heptaldehyde. Elevating the growth temperature from 18 to 26 degrees C caused mutant leaves to wilt and brown. Desiccation of mutant leaves was prevented by applying ABA. These results indicate that ABA biosynthesis at some developmental stages is dependent upon a molybdoenzyme which may be an aldehyde oxidase. Plant physiology. June 1989 v. 90 (2). p. 728-733. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Relation between kernel row number and crude protein content of the grain in barley (Effects of two-rowed alleles on agronomic characters, physiological cause).
Yasuda, S. Moriya, I. Fort Collins, Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Apr 10, 1982. v. 12. p. 45-46. (NAL Call No.: QK495.G74B34).

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Relationship between fructose 2,6-bisphosphate and carbohydrate metabolism in darkened barley primary leaves.
PLPHA. Baysdorfer, C. Sicher, R.C.; Kremer, D.F. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1987. v. 84 (3). p. 766-769. Includes references. (NAL Call No.: DNAL 450 P692).

0753

Relationship between stress-induced ABA and proline accumulations and ABA-induced proline accumulation in excised barley leaves.
PLPHA. Stewart, C.R. Voetberg, G. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Sept 1985. v. 79 (1). p. 24-27. Includes 17 references. (NAL Call No.: DNAL 450 P692).

0754

Relationship between subcrown internode length and winter survival in winter barley.
CRPSAY. Dofing, S.M. Schmidt, J.W. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1985. v. 25 (4). p. 690-692. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Relationship to lipophilicity to influx and efflux of triazine herbicides in oat roots.
PCBPB. Balke, N.E. Price, T.P. Duluth, Minn. Academic Press. Pesticide biochemistry and physiology. Mar 1988. v. 30 (3). p. 228-237. Includes references. (NAL Call No.: DNAL SB951.P49).

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The response of barley aleurone layers to gibberellic acid includes the transcription of new sequences.
Bernal-Lugo, I. Beachy, R.N.; Varner, J.E. New York, Academic Press. Biochemical and biophysical research communications. Sept 30, 1981. v. 102 (2). p. 617-623. ill. 15 ref. (NAL Call No.: 442.8 B5236).

0757

Response of soft chess (Bromus mollis) and slender oat (Avena barbata) to simulated drought cycles.
Ewing, A.L.JRMGA. Menke, J.W. Denver : Society for Range Management. Journal of range management. July 1983. v. 36 (4). p. 415-418. ill. Includes references. (NAL Call No.: 60.18 J82).

0758

The response of wild oat (Avena fatua) and Avena sterilis accessions to photoperiod and temperature (Morphology, seed dormancy, growth rate).
Somody, C.N. Nalewaja, J.D.; Miller, S.D. Champaign : Weed Science Society of America. Weed science. Mar 1984. v. 32 (2). p. 206-213. ill. Includes references. (NAL Call No.: 79.8 W41).

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Responses of Avena (oat) coleoptiles to suboptimal fusicoccin: kinetics and comparisons with indoleacetic acid.
Rubinstein, B. Cleland, R.E. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1981. v. 68 (3). p. 543-547. 17 ref. (NAL Call No.: 450 P692).

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Responses of winter cereals to various low temperature stresses.
Pomeroy, M.K. Andrews, C.J. Columbia, Mo. : The University, 1983. Current topics in plant biochemistry and physiology, 1983 : proceedings, inaugural Plant Biochemistry and Physiology Symposium held, Univ. Missouri-Columbia, 7-9 April 1982 / editorial committee: D.D. Randall ... (et al.). v. 2 p. 96-106. ill. Includes 22 references. (NAL Call No.: QK861.P55 1982).

0761

Role of benzoxazinones in allelopathy by rye (Secale cereale L.).
JCECD. Barnes, J.P. Putnam, A.R. New York, N.Y. : Plenum Press. Journal of chemical ecology. Apr 1987. v. 13 (4). p. 889-906. Includes references. (NAL Call No.: DNAL QD415.A1J6).

0762

Role of endogenous growth regulators in seed dormancy of Avena fatua. I. Short chain fatty acids (Wild oats).
Metzger, J.D. Sebesta, D.K. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1982. v. 70 (5). p. 1480-1485. 25 ref. (NAL Call No.: 450 P692).

0763

Role of endogenous plant growth regulators in seed dormancy of Avena fatua (Wild oats).
Metzger, J.D.PLPHA. Rockville : American Society of Plant Physiologists. Plant physiology. Nov 1983. v. 73 (3). p. 791-795. Includes references. (NAL Call No.: 450 P692).

0764

The role of hormone transport and metabolism in apical dominance in oats.
BOGAA. Harrison, M.A. Kaufman, P.B. Chicago, Ill. : University of Chicago Press. Botanical gazette. Sept 1984. v. 145 (3). p. 293-297. ill. Includes references. (NAL Call No.: DNAL 450 B652).

0765

Root development and lodging resistance in oats /Dale T. Sechler.
Sechler, Dale Truman, 1926-. Columbia, Mo. : University of Missouri, College of Agriculture, Agricultural Experiment Station, 1961. Cover title. 38 p. : ill. ; 23 cm. Bibliography: p. 37. (NAL Call No.: DNAL 100 M693 (3) no.769).

0766

Root excision decreases nutrient absorption and gas fluxes.
PLPHA. Bloom, A.J. Caldwell, R.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1988. v. 87 (4). p. 794-796. Includes references. (NAL Call No.: DNAL 450 P692).

0767

Salinity effects on rye grain yield, quality, vegetative growth, and emergence.
AGJOAT. Francois, L.E. Donovan, T.J.; Lorenz, K.; Maas, E.V. Madison, Wis. : American Society of Agronomy. Although current rye (Secale cereale L.) grain production is concentrated mainly in the northern half of the USA and Canada, some rye grain is grown in the arid southwest. Soils in this area are, or have the potential to become, highly saline from the application of saline irrigation water. Since there is neraly a complete lack of information about the response of rye grown under saline conditions, a 2-yr field plot study was conducted. Six salinity treatments were imposed on a Holtville silty clay (clayey over loamy, montmorillonitic calcareous , hyperthermic Typic Torrifluvent) by irrigating with Colorado River water artifically salinized with NaCl and CaCl2 (1:1 by weight). Electrical conductivities of the irrigation waters were 1.1, 4.0, 8.0, 12.1, 16.0, and 20.1 dS m-1 the first year, and 1.1, 3.9, 7.5, 11.6, 15.6, and 19.8 dS m-1 the second year. Grain yield and vegetative growth were measured. Relative grain yield of two cultivars, Maton and Bonel, was unaffected up to a soil salinity of 11.4 dS m-1 (electrical conductivity of the saturation extract;k(e)). Each unit increase in salinity above 11.4 dS m-1 reduced yield by 10.8%. These results place rye in the salt-tolerant category. Yield reduction was attributed primarily to reduced spike weight and individual seed weight rather than spike number. Bread quality decreased slightly with increasing levels of salinity. Straw yield was more sensitive to salinity than was grain yield. Plant emergence was determined in greenhouse sand cultures. Both cultivars were slightly less salt tolerant during plant emergence than during subsequent stages of growth. Agronomy journal. Sept/Oct 1989. v. 81 (5). p. 707-712. Includes references. (NAL Call No.: DNAL 4 AM34P).

0768

Salinity stress induced tissue-specific proteins in barley seedlings.
PLPHA. Ramagopal, S. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1987. v. 84 (2). p. 324-331. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0769

Seed dormancy in Avena fatua. I. Induction of germination by mechanical injury (Wild oats).
Hsiao, A.I. McIntyre, G.I.; Hanes, J.A. Chicago : University of Chicago Press. Botanical gazette. June 1983. v. 144 (2). p. 217-222. Includes references. (NAL Call No.: 450 B652).

0770

Seed dormancy in wild and weedy relatives of cereals.
Key, J.M. Boca Raton, Fla. : CRC Press, 1988. Preharvest field sprouting in cereals / editor, N.F. Derera. Literature review. p. 15-25. ill. Includes references. (NAL Call No.: DNAL SB189.6.P73).

0771

Seedling competition between mountain rye, 'Hycrest' crested wheatgrass, and downy brome.
JRMGA. Buman, R.A. Monsen, S.B.; Abernethy, R.H. Denver, Colo. : Society for Range Management. Journal of range management. Jan 1988. v. 41 (1). p. 30-34. Includes references. (NAL Call No.: DNAL 60.18 J82).

0772

Simultaneous consideration of tissue and substrate potassium concentration in K+ (potassium ion) uptake kinetics: a model (With the example of barley).
Siddiqi, M.Y. Glass, A.D.M. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Jan 1982. v. 69 (1). p. 283-285. 25 ref. (NAL Call No.: 450 P692).

0773

Sodium and potassium fluxes and compartmentation in roots of Atriplex and oat.
PLPHA. Mills, D. Robinson, K.; Hodges, T.K. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1985. v. 78 (3). p. 500-509. Includes 37 references. (NAL Call No.: DNAL 450 P692).

0774

Soil tests for copper, iron, manganese, and zinc in histosols: 4. Selection on the basis of soil chemical data and uptakes by oats, carrots, onions, and lettuce.
SOSCAK. Mathur, S.P. Levesque, M.P. Baltimore, Md. : Williams & Wilkins. Soil science. Dec 1989. v. 148 (6). p. 424-432. Includes references. (NAL Call No.: DNAL 56.8 S03).

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Solubilization of the fusicoccin receptor and a protein kinase from highly purified plasma membrane from oat roots.
NASSD. De Boer, A.H. Lomax, T.L.; Sandstrom, R.P.; Cleland, R.E. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Membrane receptors, dynamics, and energetics / edited by K.W.A. Wirtz. Proceedings of a NATO Advanced Study Institute,

August 17-30, 1986, Spetsai, Greece. 1987. v. 133. p. 181-190. Includes references. (NAL Call No.: DNAL QH301.N32).

0776

Sources of ammonium in oat leaves treated with tabtoxin or methionine sulfoximine (Avena sativa).
Frantz, T.A. Peterson, D.M.; Durbin, R.D. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Feb 1982. v. 69 (2). p. 345-348. Includes 35 ref. (NAL Call No.: 450 P692).

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Sporulation of oat-cultured Physarum polycephalum. I. Sporulation competence of dark starved plasmodia (Fungi).
Hosoda, E. Bronx, N.Y., New York Botanical Garden. Mycologia. July/Aug 1981. v. 73 (4). p. 689-696. ill. 18 ref. (NAL Call No.: 450 M99).

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Sporulation of oat-cultured Physarum polycephalum. II. Sporulation competence of slow desiccation-induced sclerotia (Fungi).
Hosoda, E.MYCOA. Bronx : The New York Botanical Garden. Mycologia. Jan/Feb 1983. v. 75 (1). p. 14-21. 16 ref. (NAL Call No.: 450 M99).

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Steady state proline levels in salt-shocked barley leaves.
PLPHA. Voetberg, G. Stewart, C.R. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1984. v. 76 (3). p. 567-570. ill. Includes 20 references. (NAL Call No.: DNAL 450 P692).

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Sterility in rye.
AGJOAT. Stroman, G.N. Madison, Wis. : American Society of Agronomy. Agronomy journal. June 1923. v. 15 (6). p. 253-254. (NAL Call No.: DNAL 4 AM34P).

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Sterility of oats /by Charlotte Elliott.
Elliott, Charlotte, 1883-. Washington, D.C. : U.S. Dept. of Agriculture, 1922. Caption title.~ "March 6, 1922."~ "Professional paper.". 8 p., 4 p. of plates ; 24 cm. (NAL Call No.: DNAL 1 Ag84B no.1058).

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Sterility of rye.
AGJOAT. Leith, B.D. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar 1925. v. 17 (3). p. 129-132. (NAL Call No.: DNAL 4 AM34P).

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Stimulation of glutathione synthesis in photorespiring plants by catalase inhibitors.
PLPHA. Smith, I.K. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1985. v. 79 (4). p. 1044-1047. Includes 17 references. (NAL Call No.: DNAL 450 P692).

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Stimulatory and inhibitory effects of light upon auxin biosynthesis (Avena, oats).
Wolf, F.T. Nashville, Tenn. : The Academy. Journal of the Tennessee Academy of Science. Jan/Apr 1984. v. 59. p. 25-27. Includes references. (NAL Call No.: 500 T25A).

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Storage protein accumulation in 'Scio' barley seed as affected by late foliar applications of nitrogen.
CRPSAY. Turley, R.H. Ching, T.M. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 778-782. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Structural changes in thylakoid proteins during cold acclimation and freezing of winter rye (Secale cereale L. cv. Puma).
Griffith, M. Brown, G.N.; Huner, N.P.A. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Aug 1982. v. 70 (2). p. 418-423. ill. 35 ref. (NAL Call No.: 450 P692).

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Studies of self-fertilization in rye /by H.E. Brewbaker.
Brewbaker, H. E. 1895-. St. Paul : University Farm, 1926. Cover title.~ Originally presented as Thesis (Ph. D.)--University of Minnesota, 1926. 40 p. : ill. ; 23 cm. Bibliography: p. 30-32. (NAL Call No.: DNAL 100 M66 (3) no.40).

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Studies of the regulation of nitrate influx by barley seedlings using 13NO3-1.
PLPHA. Siddiqi, M.Y. Glass, A.D.M.; Ruth, T.J.; Fernando, M. Rockville, Md. : American Society of Plant Physiologists. Using 13NO3-, effects of various NO3- pretreatments upon NO3- influx were studied in intact roots of barley (Hordeum vulgare L. cv Klondike). Prior exposure to roots to NO3- increased NO3- influx and net NO3- uptake. The 'induction' of NO3- uptake was dependent both on time and external NO3- concentration (NO3O). During induction influx was positively correlated with root NO3- . In the postinduction period, however, NO3- influx declined as root NO3- increased. It is suggested that induction and negative feedback regulation are independent processes: induction appears to depend upon some critical cytoplasmic NO3- ; removal of external NO3- caused a reduction of 13NO3- influx even though mean root NO3- remained high. It is proposed that cytoplasmic NO3- is depleted rapidly under these conditions resulting in 'deinduction' of the NO3- transport system. Beyond 50 micromoles per gram NO3- , 13NO3- influx was negatively correlated with root NO3- . However, it is unclear whether root NO3- per se or some product(s) of NO3- assimilation are responsible for the negative feedback effects. Plant physiology. July 1989. v. 90 (3). p. 806-813. Includes references. (NAL Call No.: DNAL 450 P692).

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Studies on plant absorption of Fe (iron) humate (Extraction from Brunizem soil, Hordeum vulgare, barley).
Orioli, G.A. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). Abstract only. p. 413. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

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Studies on the effect of nitrogen applied to oats at different periods of growth.
AGJOAT. Gericke, W.F. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov 1922. v. 14 (8). p. 312-320. (NAL Call No.: DNAL 4 AM34P).

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Studies with 4,6-dioxoheptanoic acid on etiolated and greening barley leaves (Varieties).
Meller, E. Gassman, M.L. Rockville, Md., American Society of Plant Physiologists. Plant physiology. June 1981. v. 67 (6). p. 1065-1068. ill. 18 ref. (NAL Call No.: 450 P692).

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Sugar composition and freezing tolerance in barley crowns at varying carbohydrate levels.
CRPSAY. Livingston, D.P. III. Olien, C.R.; Freed, R.D. Madison, Wis. : Crop Science Society of America. During hardening, carbohydrate content in winter cereals is affected by light intensity, which in turn affects freezing survival. To determine whether total carbohydrate content affects compositon of individual sugars and whether a particular composition is related to freezing tolerance, three barley (Hordeum vulgare L.) cultivars, differing in carbohydrate composition and in response to a controlled freezing test, were hardened under six light levels. At each level, total crown sugars were measured by water/ethanol extraction and high-pressure liquid chromatography and at four light levels plants were freeze tested. Carbohydrate composition changed depending on total carbohydrate content, and maximum freezing resistance was not found at the maximum simple sugar level. In addition, the relationship between kill temperature and total carbohydrate was different for the three cultivars. A simple relationship between carbohydrate composition and freezing tolerance was not found, but results suggest that the three cultivars may allocate total carbohydrate differently for cryoprotection. Crop science. Sept/Oct 1989. v. 29 (5). p. 1266-1270. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Survey of barley germplasm for betaine-accumulating potential in controlled environments and in the field (Hordeum vulgare, Hordeum spontaneum, genotypes).
Ladyman, J.A.R. Ditz, K.M.; Hanson, A.D. East Lansing, Mich., The Laboratory. Annual report - Michigan State University, MSU/DOE Plant Research Laboratory. 1981. 1981 (16th). p. 64-66. 3 ref. (NAL Call No.: QK1.M5).

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Synthesis and degradation of barley nitrate reductase (Hordeum vulgare).
Somers, D.A.PLPHA. Kuo, T.M.; Kleinhofs, A.; Warner, R.L.; Oaks, A. Rockville : American Society of Plant Physiologists. Plant physiology. Aug 1983. v. 72 (4). p. 949-952. ill. Includes references. (NAL Call No.: 450 P692).

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Techniques for selection of cold hardiness in cereals (Oats).
Marshall, G.H. Olien, C.R.; Everson, E.H. Boca Raton, Fla., CRC Press. Analysis and improvement of plant cold hardiness. 1981. 1981. p. 139-159. 30 ref. (NAL Call No.: SB781.A52).

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Temperature requirements for mountain rye, Hycrest crested wheatgrass, and downy brome germination.
JRMGA. Buman, R.A. Abernethy, R.H. Denver, Colo. : Society for Range Management. Journal of range management. Jan 1988. v. 41 (1). p. 35-39. Includes references. (NAL Call No.: DNAL 60.18 J82).

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Three alcohol dehydrogenase genes in wild and cultivated barley: characterization of the products of variant alleles (Hordeum vulgare, Hordeum spontaneum).
Hanson, A.D. Brown, A.H.D. New York, N.Y. : Plenum Press. Biochemical genetics. June 1984. v. 22 (5/6). p. 495-515. ill. Includes references. (NAL Call No.: QR73.B5).

0799

Tillering dynamics of winter barley as influenced by cultivar and nitrogen fertilizer: a field study (Hordeum vulgare, Hordeum distichon L., tillers survival).
Garcia del Moral, L.F. Ramos, J.M.; Recalde, L. Madison : Crop Science Society of America. Crop science. Jan/Feb 1984. v. 24 (1). p. 179-181. ill. Includes references. (NAL Call No.: 64.8 C883).

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Tolerances of oat cultivars to an acid soil high in exchangeable aluminum.
JPNUDS. Foy, C.D. Smith, D.H. Jr.; Briggle, L.W. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9116). p. 1163-1174. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

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Toxic factors in acid soils.
Foy, C.D. Burns, G.R. Washington, D.C. : National Plant Food Institute. Plant food review. Fall 1964. v. 10 (3). p. 2-3, 16. ill. (NAL Call No.: DNAL 57.8 P694).

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Transformation of the cryobehavior of rye protoplasts by modification of the plasma membrane lipid composition.
PNASA. Steponkus, P.L. Uemura, M.; Balsamo, R.A.; Arvinte, T.; Lynch, D.V. Washington, D.C. : The Academy. Proceedings of the National Academy of Sciences of the United States of America. Dec 1988. v. 85 (23). p. 9026-9030. ill. Includes references. (NAL Call No.: DNAL 500 N21P).

0803

Transpiration efficiency of oat.
AGJOAT. Ehlers, W. Madison, Wis. : American Society of Agronomy. Dry matter production, water use, and their ratio (i.e., the water use efficiency WUE of crops) vary among species and with climatic conditions. This study was undertaken to determine the WUE of oat (Avena sativa L.) because recent field evaluations for this crop are not available. Oat was grown on loess-derived silt loam fine-silty, mixed, mesic Typic Hapludalf) near Goettingen, West Germany, during 4 yr. Periodically, shoot and root dry matter were determined. Water use within five consecutive growth stages was evaluated by the soil water budget approach. Balanced evapotranspiration (ET), including evaporation from soil (E), water intercepted by leaves (I), and transpiration from plants (T), was divided into its components, E, I, and T by calculation precedures. The term E was approximated from meteorological factors, leaf area index (LAI), and soil water tension, and I from daily precipitation and LAI. Shoot and total oat dry matter including roots were linearly related to cumulative T, IT, and ET. The X-intercept of the regression line was nearest to zero, when X was IT. Therefore, I was regarded to be part of "productive" water use. Including I and considering only shoot dry matter, WUE(IT) was 4.1 kg m-3. When considering shoots and roots, WUE(IT) increased to 4.5 kg m-3. The relation between dry matter production and IT was improved by relating IT to the potential evapotranspiration rate or the saturation deficit (delta epsilon) of the air. As compared with other crops, WUE(IT) of oat appeared to be lower. This study provided evidence that normalization of IT by delta epsilon requires the appropriate evaluation of delta epsilon for the daylight period when transpiration occurs. Agronomy jcurnal. Sept/Oct 1989. v. 81 (5). p. 810-817. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Twenty-four-hour induction of freezing and drought tolerance in plumules of winter rye seedlings by desiccation stress at room temperature in the dark.
Siminovitch, D. Cloutier, Y. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Jan 1982. v. 69 (1). p. 250-255. ill. 25 ref. (NAL Call No.: 450 P692).

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Uptake and subcellular compartmentation of gibberellin A1 applied to leaves of barley and cowpea.
Ohlrogge, J.B. AR-NRRC. Garcia-Martinez, J.L.; Adams, D.; Rappaport, L. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1980. v. 66 (3). p. 422-427. ill. 33 ref. (NAL Call No.: 450 P692).

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The uptake, distribution and metabolism of four organic chemicals by soybean plants and barley roots.
ETOCDK. McFarlane, C. Nolt, C.; Wickliff, C.; Pfleeger, T.; Shimabuku, R.; McDowell, M. Elmsford : Pergamon Press. Environmental toxicology and chemistry. 1987. v. 6 (11). p. 847-856. ill. Includes references. (NAL Call No.: DNAL QH545.A1E58).

0807

Uptake of phenylalanine into isolated barley vacuoles is driven by both tonoplast adenosine triphosphatase and pyrophosphatase: evidence for a hydrophobic L-amino acid carrier system.
PLPHA. Homeyer, U. Litek, K.; Huchzermeyer, B.; Schultz, G. Rockville, Md. : American Society of Plant Physiologists. The uptake of phenylalanine was studied with vacuole isolated from barley mesophyll protoplasts. The phenylalanine transport exhibited saturation kinetics with apparent Km-values of 1.2 to 1.4 millimolar for ATP- or PPi-driven uptake; Vmax apparent was 120 to 140 nanomoles Phe per milligram of chlorophyll per hour (1 milligram of chlorophyll corresponds to 5 X 10(6) vacuoles). Half-maximal transport rates driven with ATP or PPi were reached at 0.5 millimolar ATP or 0.25 millimolar PPi. ATP-driven transport showed a distinct pH optimum at 7.3 while PPi-driven transport reached maximum rates at pH 7.8. Direct measurement of the H+-translocating enzyme activities revealed Km apparent values of 0.45 millimolar for ATPase (EC 3.6.1.3) and 23 micromolar for pyrophosphatase (PPase) (EC 3.6.1.1). In contrast to the coupled amino acid transport, ATPase and PPase activities had relative broad pH optima between 7 to 8 for ATPase and 8 to 9 for PPase. ATPase as well as ATP-driven transport was markedly inhibited by nitrate while PPase and PPi-coupled transport was not affected. The addition of ionophores inhibited phenylalanine transport suggesting the destruction of the electrochemical proton potential difference while the rate of ATP and PPi hydrolysis was stimulated. The uptake of other lipophilic amino acids like L-Trp, L-Leu, and L-Tyr was also stimulated by ATP. They seem to compete for the same carrier system. L-Ala, L-Val, D-Phe, and D-Leu did not influence phenylalanine transport suggesting a stereospecificity of the carrier system for L-amino acids having a relatively high hydrophobicity. Plant physiology. Apr 1989. v. 89 (4). p. 1388-1393. ill. Includes references. (NAL Call No.: DNAL 450 P692).

0808

Use of a mathematical model to determine the fate of atrazine in barley (Hordeum vulgare).
WEESA6. Raynaud, S. Bastide, J.; Coste, C. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1985. v. 33 (6). p. 906-912. Includes 28 references. (NAL Call No.: DNAL 79.8 W41).

0809

Use of 31P NMR to assess effects of DNP on ATP levels in vivo in barley roots.
PLPHA. Jackson, P.C. Pfeffer, P.E.; Gerasimowicz, W.V. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Aug 1986. v. 81 (4). p. 1130-1133. Includes 11 references. (NAL Call No.: DNAL 450 P692).

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Utilization of microbial siderophores in iron acquisition by oat.
PLPHA. Crowley, D.E. Reid, C.P.P.; Szaniszlo, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. July 1988. v. 87 (3). p. 680-685. Includes references. (NAL Call No.: DNAL 450 P692).

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Vaculoar deposition of ascorbate-derived oxalic acid in barley.
Wagner, G.J. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Mar 1981. v. 67 (3). p. 591-593. 15 ref. (NAL Call No.: 450 P692).

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Varietal variation of water sensitivity in Asian barley varieties.
Takeda, K. Fukuyama, T. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 15-16. (NAL Call No.: DNAL QK495.G74B34).

0813

Victorin-induced changes in carbohydrate metabolism in oat leaves / by Carroll David Rawn. -.
Rawn, Carroll David. Ann Arbor, Mich. University Microfilms International 1978. Thesis--University of Kentucky, 1974. Facsimile produced by microfilm-xerography. ix, 79, 3 leaves. Bibliography: leaves 73-78. (NAL Call

No.: DISS 75-18,508).

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Water stress enhances expression of an alpha-amylase gene in barley leaves.
PLPHA. Jacobsen, J.V. Hanson, A.D.; Chandler, P.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1986. v. 80 (2). p. 350-359. ill. Includes 33 references. (NAL Call No.: DNAL 450 P692).

0815

Wild oat (Avena fatua) and spring barley (Hordeum vulgare) growth and development in monoculture and mixed culture.
WEESA6. Morishita, D.W. Thill, D.C. Champaign, Ill. : Weed Science Society of America. Weed science. Jan 1988. v. 36 (1). p. 43-48. Includes references. (NAL Call No.: DNAL 79.8 W41).

0816

Wild oat (Avena fatua) seed environment and germination (North Dakota).
Somody, C.N. Nalewaja, J.D.; Miller, S.D. Champaign, Ill. : Weed Science Society of America. Weed science. July 1984. v. 32 (4). p. 502-507. ill. Includes 11 references. (NAL Call No.: 79.8 W41).

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Wound-induced resistance to cellulase in oat leaves (Avena sativa).
Geballe, G.T. Galston, A.W. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Sept 1982. v. 70 (3). p. 781-787. ill. 20 ref. (NAL Call No.: 450 P692).

0818

Zinc-inhibited electron transport of photosynthesis in isolated barley chloroplasts.
Tripathy, B.C. Mohanty, P. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Dec 1980. v. 66 (6). p. 1174-1178. ill. 25 ref. (NAL Call No.: 450 P692).

0819

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PLPHA. Elich, T.D. Lagarias, J.C. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Nov 1988. v. 88 (3). p. 747-751. Includes references. (NAL Call No.: DNAL 450 P692).

0820

5,6-dichloroindole-3-acetic acid as a potent auxin and 5,7-dichloroindole-3-isobutyric acid as potent anti-auxin: their synthesis and biological activities.
PPGGD. Hatano, T. Katayama, M.; Marumo, S. Lake Alfred, Fla. : The Society. Proceedings annual meeting - Plant Growth Regulator Society of America. 1987. (14th). p. 353-358. Includes references. (NAL Call No.: DNAL SB128.P5).

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Geographical distribution of diazinon sensitive varieties in barley.
Takeda, K. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Aug 31, 1987. v. 17. p. 90-93. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0822

Origin, taxonomy, and related species.
AGRYA. Bothmer, R. von. Jacobsen, N. Madison, Wis., Soil Science Society of America. Agronomy. A series of monographs - American Society of Agronomy. Literature review. 1985. (26). p. 19-56. maps. Includes references. (NAL Call No.: DNAL 4 AM392).

0823

Pulse domestication and cereal domestication: how different are they?.
ECBOA. Zohary, D. Bronx, N.Y. : New York Botanical Garden. Economic botany. Jan/Mar 1989. v. 43 (1). p. 31-34. Includes references. (NAL Call No.: DNAL 450 EC7).

0824

Rapid electrophoresis of oat (Avena sativa L.) prolamins from single seeds for cultivar identification.
CECHAF. Hansen, A.E. Nassuth, A.; Altosaar, I. St. Paul, Minn. : American Association of Cereal Chemists. Cereal chemistry. Mar/Apr 1988. v. 65 (2). p. 153-154. ill. Includes references. (NAL Call No.: DNAL 59.8 C33).

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Seed dormancy in wild and weedy relatives of cereals.
Key, J.M. Boca Raton, Fla. : CRC Press, 1988. Preharvest field sprouting in cereals / editor, N.F. Derera. Literature review. p. 15-25. ill. Includes references. (NAL Call No.: DNAL SB189.6.P73).

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Weed control in conservation tillage systems--small grains.
Wicks, G.A. Champaign, Il. : Weed Science Society of America. Monograph series of the Weed Science Society of America. Literature review. 1985. (2). p. 77-92. Includes references. (NAL Call No.: DNAL SB610.M65).

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Wild oat identification and control.
Strand, Oliver E. Document available from: University of Minnesota, Bulletin Room, 1420 Eckles Avenue, St. Paul, Minnesota 55108 1981. Explores identification and control for wild oat. 1 sheet : ill. (NAL Call No.: Document available from source.).(NAL Call No.: Fs No.9).

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Ag facts: Barley diseases.
MUCBA. Clayton, J.L. Hart, L.P. East Lansing, Mich. : The Service. Extension bulletin E - Cooperative Extension Service, Michigan State University. June 1986. (1982). 8 p. Includes references. (NAL Call No.: DNAL 275.29 M58B).

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Ag facts: Oat diseases.
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0831

Compendium of barley diseases /D.E. Mathre, editor.
Mathre, Don E.,_1938-. St. Paul, Minn. : American Phytopathological Society ; Bozeman : Dept. of Plant Pathology, Montana State University, 1982. v, 78 p., 16 p. of plates : ill. (some col.) ; 28 cm. Includes bibliographies and index. (NAL Call No.: DNAL SB608.B2M37).

0832

Montana small grain problem diagnostic guide and disease index.
Inglis, D. (comp.). Bozeman, Mont. : The Service. Circular - Montana State University, Cooperative Extension Service. June 1986. (1301). 15 p. (NAL Call No.: DNAL 275.29 M76CI).

0833

Pest control in forages and small grains--1981 (Includes control of weeds, insects, diseases).
Doll, J.D. Wedberg, J.L.; Grau, C.R.; Doersch, R.E. Madison, Wis., The Programs. Publication - Cooperative Extension Programs, University of Wisconsin Extension. June 1981. June 1981. (A1981). 36 p. (NAL Call No.: S544.3.W6W53).

0834

Preservation and storage of grains, seeds, and their by-products cereals, oilseeds, pulses, and animal feed /edited by J.L. Multon ; preface by A.M. Reimbert ; translated from the French by D. Marsh ; reread by A.J. Eydt.
Multon, J. L.,_1938-. New York, N.Y. : Lavoisier Pub., c1988. Translated from French.~ Translation of: Conservation et stockage des grains et graines et produits dberivbes.~ Originally publised: Lavoisier : Technique et documentation, 1982. xxiv, 1095 p. : ill. ; 25 cm. Includes bibliographies and index. (NAL Call No.: DNAL SB190.C6513).

0835

Profitable small grain production in the Texas Gulf Coast.
TAEBA. Miller, T.D. Livingston, S. College Station, Tex. : The Station. B - Texas Agricultural Experiment Station. Nov 1987. (1587). 8 p. (NAL Call No.: DNAL 100 T31S (1)).

0836

Subsurface drip irrigation of cotton and small grains.
Tollefson, S. St. Joseph, Mich. : American Society of Agricultural Engineers, c1985. Drip/trickle irrigation in action : proceedings of the Third International Drip/Trickle Irrigation Congress, November 18-21, 1985, Centre Plaza Holiday Inn, Fresno, California, USA. p. 887-895. Includes 7 references. (NAL Call No.: DNAL S612.I5 1985).

0837

Using crop diversity to manage pest problems: some California examples.
Flint, M.L. Roberts, P.A. Greenbelt, Md. : Institute for Alternative Agriculture. Moderate to large scale California growers (as well as small scale ones) manipulate cropping patterns in a number of ways to reduce pest problems. Crop rotation, which can be defined as diversifying crops over time, is used to manage selected pests, primarily weeds, pathogens, and nematodes. As a substitute for pesticides, crop rotation has been most rewarding in the control of nematodes; sugarbeet cyst and root knot nematode examples are detailed. Some pests that invade fields from nearby areas can be managed by modifying adjacent cropping patterns or practices; Pierce's disease of grapes, sugarbeet yellows and border harvesting of alfalfa are given as examples. Finally, multiple crops can be grown within a single field or orchard. Although this approach is not widely practiced by many California growers, two examples of systems where intercropping has been shown to limit pest numbers without the use of pesticides are described: intercropping of cotton with alfalfa and companion planting oats when seeding alfalfa. These examples show that using crop diversification to manage pests

is feasible, but growers must be strongly motivated to make the necessary changes in cropping patterns. Most of the systems that have been widely adopted are those for which few other economically feasible methods were available. American journal of alternative agriculture. Fall 1988. v. 3 (4). p. 163-167. Includes references. (NAL Call No.: DNAL S605.5.A43).

0838

Breeding for pest resistance.
AGRYA. Sharp, E.L. Madison, Wis., Soil Science Society of America. Agronomy. A series of monographs - American Society of Agronomy. Literature review. 1985. (26). p. 313-333. Includes references. (NAL Call No.: DNAL 4 AM392).

0839

Can goose damage to grain fields be prevented through methiocarb-induced aversive conditioning?.
WLSBA. Conover, M.R. Bethesda, Md. : The Society. Wildlife Society bulletin. Summer 1989. v. 17 (2). p. 172-175. Includes references. (NAL Call No.: DNAL SK357.A1W5).

0840

Compensation for vertebrate pest damage (Cereals, forage, livestock, bees, Alberta, Canada).
Gurba, J.B.PVPCB. Davis, Calif. : University of California. Proceedings ... Vertebrate Pest Conference. June 1982. June 1982. (10th). p. 90-94. ill. Includes references. (NAL Call No.: SB950.A1V4).

0841

Coordinator's report: disease and pest resistance genes.
Jorgensen, J.H. Fort Collins, Colo. : Department of Agronomy, Colorado State University. Barley genetics newsletter. 1988. v. 18. p. 65-69. Includes references. (NAL Call No.: DNAL QK495.G74B34).

0842

Effect of grazing by Canada geese on the winter growth of rye.
JWMAA9. Conover, M.R. Bethesda, Md. : Wildlife Society. Journal of wildlife management. Jan 1988. v. 52 (1). p. 76-80. Includes references. (NAL Call No.: DNAL 410 J827).

0843

Methods for assessing the efficiency of aerial spraying control operations on quelea colonies and roosts (Bird control, damage to the smaller cereal grain crops in Africa).
Elliott, C.C.H. Philadelphia : American Society for Testing and Materials, 1981. Vertebrate pest control and management materials : proceedings of the Third Symposium on Test Methods for Vertebrate Pest Control and Management Materials, Fresno, Calif., 7 March 1980 : a symposium. p. 62-73. ill. 10 ref. (NAL Call No.: SB950.A2S95 1980).

0844

Pest control in forages and small grains.
Doll, J. D. Grau, C. R.; Doersch, R. E.; Wedberg, J. L. 1981. This publication discusses the various methods of pest control in forages and small grains. Document available from: Agricultural Bulletin Building, 1535 Observatory Drive, University of Wisconsin, Madison, WI 53706. 36 p. (NAL Call No.: A 1981).

0845

The rodent problem in Latin America.
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plant-aphid interactions that invoke alterations in aphid probing or feeding behavior. In addition, the number of sieve element contacts and duration of ingestion from sieve element cells by R. padi indicate that this aphid should be highly efficient in acquiring and transmitting the phloem-delimited BYDV to 'California Mariout' barley, with or without the Yd2 gene. Environmental entomology. Dec 1988. v. 17 (6). p. 988-991. Includes references. (NAL Call No.: DNAL QL461.E532).

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GENTA. McDermott, J.M. McDonald, B.A.; Allard, R.W.; Webster, R.K. Baltimore, Md. : Genetics Society of America. Samples of Rhynchosporium secalis were collected from two experimental barley populations known to carry a diverse array of alleles for resistance to this fungal pathogen. Classification of 163 isolates for four putative isozyme systems, a colony color dimorphism and 20 ribosomal DNA restriction fragment length variants revealed 49 different multilocus phenotypes (haplotypes). The six most common haplotypes differed significantly in pathogenicity. Genetic analyses of the data indicated that effective population sizes of the fungus were very large, that the effects of genetic drift were small, and that negligible recombination occurred in the populations studied. Frequency dependent selection was suggested as an explanation for the maintenance of variation in pathogenicity in the fungus. Genetics. July 1989. v. 122 (3). p. 561-565. ill. Includes references. (NAL Call No.: DNAL 442.8 G28).

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PLDIDE. Boulif, M. Wilcoxson, R.D. St. Paul, Minn. : American Phytopathological Society. Plant disease. Mar 1988. v. 72 (3). p. 233-238. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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The inheritance of smut resistance in crosses of certain varieties of oats.
AGJOAT. Barney, A.F. Madison, Wis. : American Society of Agronomy. The data presented indicate that some varieties of oats contain one factor pair for resistance to loose smut, that other varieties contain two independent factor pairs, while in other varieties three factor pairs may be concerned with resistance. Selection within seventy families from two crosses indicated that resistant families can be isolated in the second generation which breed true to that characteristic thru the F3, F4 and F5 generations. Likewise, highly susceptible families can be isolated which breed true. Such results show the possibility of obtaining desirable types of smut resistant oats from crosses between resistant and susceptible varieties. The accompanying illustrations (Figures 1, 2, 3 and 4) are presented to indicate the response to smut exposure exhibited by two resistant and two susceptible families. Agronomy journal. Apr 1924. v. 16 (4). p. 283-291. (NAL Call No.: DNAL 4 AM34P).

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Initiation of induced nonhost resistance of oat leaves to rust infection (Puccinia sp.).
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Localization of induced genes for powdery mildew resistance.
Robbelen, G. Heun, M. Fort Collins, Colo. : Dept. of Agronomy, Colorado State University. Barley genetics newsletter. Oct 10, 1985. v. 15. p. 4-7. Includes references. (NAL Call No.: DNAL QK495.G74B34).

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Measuring disease progress in pure and mixed stands of plant cultivars.
PHYTA. Gumpert, F.M. St. Paul, Minn. : American Phytopathological Society. A measure is presented that quantifies disease progress of fungal pathotypes during the exponential phase of the epidemic. This measure, referred to as rate of disease increase (p), represents the factor by which the number of infection units is multiplied from one day to another after the initial infection waves have damped. The rate of disease increase depends on four pathotype/cultivar-specific parameters (latent period, infectious period, infection efficiency, spore production rate) and two nonspecific parameters (deposition frequency and autodeposition frequency). Three applications are given. First, it is used to determine the levels of partial resistance of barley cultivars to leaf rust. The calculated p values were highly correlated both with total spore production per unit leaf area (r = 0.97) and with disease score in the field (r = 0.81). The rate of disease increase is particularly useful if the epidemiological parameters display compensatory effects. The second application deals with the long-term composition of pathotype mixtures. The pathotype with the largest p value will predominate in the long run. This is again exemplified by using barley leaf rust data. The third application concerns disease control strategies. A host stand should be composed so that the corresponding predominant pathotype has a p value smaller than the prevailing pathotype of any other composition. This concept does not presuppose selection against unnecessary genes for virulence. A condition is given under which a cultivar mixture may be more beneficial than each of its components grown in pure stands, and this condition is illustrated by a simple example of two pathotypes and two cultivars. Phytopathology. Sept 1989. v. 79 (9). p. 969-973. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Method for screening bacteria and application thereof for field control of Pythium spp. on small grain crops.
Weller, D.M. Cook, R.J.; Becker, J.O. Washington, D.C.? : The Department. Abstract: A method for screening bacteria to select strains which will suppress Pythium spp. in small grain crops under field conditions and a methodfor applying field-suppressive bacteria to suppress Pythium spp. in a commercial setting are described. Four Pseudomonas strains which passed the screen test are disclosed. United States Department of Agriculture patents. Copies of USDA patents are available for a fee from the Commissioner of Patents and Trademarks, U.S. Patents and Trademarks Office, Washington, D.C. 20231. Mar 3, 1987. (4,647,533). 1 p. ill. Includes references. (NAL Call No.: DNAL aT223.V4A4).

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Methods of seeding oats drilling and broadcasting /by Albert N. Hume, O.D. Center and Leonard Hegnauer.
Hume, Albert N. 1878-. Center, O. D._1872-; Hegnauer, Leonard,_1872-. Urbana, Ill. : University of Illinois Agricultural Experiment Station, 1909. Cover title. p. 297 -312 : ill. ; 23 cm. (NAL Call No.: DNAL 100 I16S no.136).

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Christensen, C.M. Sauer, D.B. St. Paul, Minn. : American Association of Cereal Chemists, 1982. Storage of cereal grains and their products, 3rd ed. / edited by Clyde M. Christensen. p. 219-240. 1 p. ref. (NAL Call No.: SB190.C43 1982).

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Hart, Helen, 1900-. Washington : U.S. Dept. of Agriculture, 1931. Cover title. 76 p. : ill. ; 23 cm. Literature cited: p. 72-75. (NAL Call No.: DNAL 1 Ag84Te no.266).

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Effect of plant species and environmental conditions on epiphytic population sizes of Pseudomonas syringae and other bacteria.
PHYTA. O'Brien, R.D. Lindow, S.E. St. Paul, Minn. : American Phytopathological Society. Selected biological and environmental effects influenced epiphytic colonization of plants by Pseudomonas syringae, Escherichia coli, Salmonella typhimurium, Aeromonas hydrophila, and Rhizobium meliloti when tested in a growth chamber at 24 C. Epiphytic population size varied with plant host, environmental conditions, and among strains of P. syringae tested. Strains of P. syringae achieved only slightly larger population sizes than strains from other genera when incubated on inoculated plants for 48 hr, and near 100% relative humidity (RH). However, the strains of P. syringae maintained populations at least 25 times higher after a subsequent 72 hr at 40% RH. Epiphytic population sizes of 15 different strains of P. syringae varied up to 10-fold on a given plant species, indicating epiphytic diversity within this bacterial species. Relative population sizes of three strains of P. syringae on plants under field conditions were predicted by growth chamber populations. Neither epiphytic strains, pathogenic strains, or toxin producing groups were associated with greater epiphytic population sizes. Different plant species varied up to 17-fold in the size of bacterial populations supported. Maceration of inoculated plant tissue increased bacterial population size estimates relative to cells removed by sonication, but only after low RH incubations. Phytopathology. May 1989. v. 79 (5). p. 619-627. Includes references. (NAL Call No.: DNAL 464.8 P56).

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PLPHA. Knight, T.J. Durbin, R.D.; Langston-Unkefer, P.J. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Dec 1986. v. 82 (4). p. 1045-1050. Includes references. (NAL Call No.: DNAL 450 P692).

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Stanton, T. R. 1885-. Stephens, David E._1874-; Gaines, E. F._1886-. Washington, D.C. : U.S. Dept. of Agriculture, 1924. 8 p. : ill. ; 23 cm. Includes bibliographical references. (NAL Call No.: DNAL 1 Ag84D no.324).

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Oats tolerant of Pseudomonas syringae pv. tabaci contain tabtoxinine-beta-lactam-insensitive leaf glutamine synthetases.
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Survival of ice nucleation-active and genetically engineered non-ice-nucleating Pseudomonas syringae strains after freezing.
APMBA. Buttner, M.P. Amy, P.S. Washington, D.C. : American Society for Microbiology. The survival after freezing of ice nucleation-active (INA) and genetically engineered non-INA strains of Pseudomonas syringae was ocmpared. Each strain was applied to oat seedlings and allowed to colonize for 3 days, and the plants were subjected to various freezing temperatures. Plant leaves were harvested before and after freezing on two consecutive days, and bacterial populations were determined. Populations of the INA wild-type strain increased 15-fold in the 18 h after the oat plants incurred frost damage at -5 and -12 degrees C. Plants colonized by the non-INA strain were undamaged at -5 degrees C and exhibited no changes in population size after two freeze trials. As freezing temperatures were lowered (-7, -9, and -12 degrees C), oat plants colonized by the non-INA strain suffered increased frost damage concomitant with bacterial population increases following 18 h. At -12 degrees C, both strains behaved identically. The data show a relationship between frost damage to plants and increased bacterial population size during the following 18 h, indicating a potential competitive advantage of INA strains of P. syringae over non-INA strains in mild freezing environments. Applied and environmental microbiology. July 1989. v. 55 (7). p. 1690-1694. ill. Includes references. (NAL Call No.: DNAL 448.3 AP5).

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Aphid feeding behavior: relationship to barley yellow dwarf virus resistance in Agropyron species.
PHYTAJ. Shukle, R.H. Lampe, D.J.; Lister, R.M.; Foster, J.E. St. Paul, Minn. : American Phytopathological Society. Phytopathology. May 1987. v. 77 (5). p. 725-729. ill. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Carroll, T.W. St. Paul, Minn., American Phytopathological Society. Plant disease. Feb 1980. v. 64 (2). p. 136-140. ill. 11 ref. (NAL Call No.: 1.9 P69P).

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Barley yellow dwarf of California cereals.
CAGRA. Griesbach, J.A. Creamer, R.; Lorens, G.; Falk, B.W.; Qualset, C.O.; Jackson, L.F. Berkeley, Calif. : The Station. California agriculture - California Agricultural Experiment Station. Jan/Feb 1989. v. 43 (1). p. 23-24. ill. (NAL Call No.: DNAL 100 C12CAG).

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Barley yellow dwarf symptom severity in oat affected by plant growth stage at infection and plot type.
CRPSAY. Goulart, L.R. Ohm, H.W.; Foster, J.E. Madison, Wis. : Crop Science Society of America. Lack of a standard method for evaluation of barley yellow dwarf (BYD) symptoms may result in inconsistency for genetic evaluation. The BYD symptoms were determined in oat, Avena sativa L., subsequent to virus infection at three plant growth stages and with two types of field plots. Five treatments: noninoculated; and inoculated at the two- to three-leaf (transplanted), three-leaf, four- to five-leaf, and stem elongation stages (direct seeded) were whole plots. Five oat cultivars were subplots. Two types of plots, hill and space planted, were whole units across the five cultivars. Seven traits were measured: BYD symptoms, plant height, heading date, grain yield and yield components. The plot types were not significantly different and there was a high correlation between the types of plot for these characters. Cultivar rank was similar at all growth stages, indicating that sensitive cultivars may be severely damaged by BYDV infection at any stage of development. Small differences among cultivars for tolerance to BYDV were detected, subsequent to infection at the stem elongation stage under conditions of moderate temperatures and well distributed rainfall during the growing season. The plants that were transplanted after inoculation at the two- to three-leaf stage were more severely affected by BYDV than plants that were seeded in the field and inoculated at the three-leaf stage. Differences among cultivars were most distinct for BYD symptom, kernel weight, grain yield, number of kernels per panicle and plant height. Inoculation at the three-leaf stage resulted in maximum differences among cultivars and hill plots involved minimal effort for BYDV evaluation. Crop science. Nov/Dec 1989. v. 29 (6). p. 1412-1416. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Barley yellow dwarf virus in Pennsylvania: effect of the PAV isolate on yield components of Noble spring oats.
PLDIDE. Gildow, F.E. Frank, J.A. St. Paul, Minn. : American Phytopathological Society. Plant disease. Mar 1988. v. 72 (3). p. 254-256. Includes references. (NAL Call No.: DNAL 1.9 P69P).

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PHYTAJ. Delserone, L.M. Cole, H. Jr.; Frank, J.A. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Oct 1987. v. 77 (10). p. 1435-1437. Includes references. (NAL Call No.: DNAL 464.8 P56).

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Feeding responses of Rhopalosiphum padi (Homoptera: Aphidae) to barley yellow dwarf virus resistant and susceptible barley varieties.
EVETEX. Ullman, D.E. Qualset, C.O.; McLean, D.L. Lanham, Md. : Entomological Society of America. The probing and feeding behavior of an important vector of barley yellow dwarf virus (BYDV), the bird cherry-oat aphid, Rhopalosiphum padi was electronically monitored on barley varieties with and without the Yd2 gene, a gene that imparts BYDV resistance to certain cereal cultivars. The presence of the Yd2 gene was shown to have no significant effect on the time elapsed to the first sieve element contact, total number of sieve element contacts, or duration of phloem sieve element ingestion by R. padi. Furthermore, aphid probing and feeding was not greatly affected by BYDV infection in susceptible plants. These data demonstrate that the mechanisms underlying BYDV resistance in plants with the Yd2 gene do not involve factors signiicantly influencing plant-aphid interactions that invoke alterations in aphid probing or feeding behavior. In addition, tne number of sieve element contacts and duration of ingestion from sieve element cells by R. padi indicate that this aphid should be highly efficient in acquiring and transmitting the phloem-delimited BYDV to 'California Mariout' barley, with or without the Yd2 gene. Environmental entomology. Dec 1988. v. 17 (6). p. 988-991. Includes references. (NAL Call No.: DNAL QL461.E532).

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Mass rearing the bird cherry oat aphid, Rhopalosiphum padi (L.).
PIACA. Kudagamage, C. Foster, J.E. Indianapolis, Ind. : The Academy. Proceedings of the Indiana Academy of Science. Includes abstract. 1985. v. 94. p. 304. (NAL Call No.: DNAL 500 IN2).

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Mosaics of winter oats and their control in the southeastern states /by H.H. McKinney ... et al. .
McKinney, Harold Hall,_1889-. Washington, D.C. : U.S. Dept. of Agriculture, 1949. Caption title. 17 p. : ill. ; 23 cm. Includes bibliographical references. (NAL Call No.: DNAL 1 Ag84C no.809).

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Registration of 'Venus' barley.
CRPSAY. Brown, A.R. Johnson, J.W.; Rothrock, C.S.; Bruckner, P.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1988. v. 28 (4). p. 718-719. Includes references. (NAL Call No.: DNAL 64.8 C883).

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PHYTA. Hunter, B.G. Heaton, L.A.; Bracker, C.E.; Jackson, A.O. St. Paul, Minn. : American Phytopathological Society. Phytopathology. Mar 1986. v. 76 (3). p. 322-326. ill. Includes 27 references. (NAL Call No.: DNAL 464.8 P56).

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NASSD. Storey, R. Leigh, R.A. New York, N.Y. : Plenum Press. NATO advanced science institutes series : Series A : Life sciences. In the series analytic: Plant vacuoles: their importance in solute compartmentation in cells and their applications in plant biotechnology / edited by B. Marin. Proceedings of a Workshop, July 6-11, 1986, Sophia-Antipolis, France. 1987. 134. p. 95-98. ill. Includes references. (NAL Call No.: DNAL QH301.N32).

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Effect of nitrate reductase deficiency upon growth, yield, and protein in barley.
Oh, J.Y. Warner, R.L.; Kleinhofs, A. Madison, Wis., Crop Science Society of America. Crop science. July/Aug 1980. v. 20 (4). p. 487-490. ill. 27 ref. (NAL Call No.: 64.8 C883).

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SSSJD4. Graham, R.D. Welch, R.M.; Grunes, D.L.; Cary, E.E.; Norvell, W.A. Madison, Wis. : The Society. Soil Science Society of America journal. May/June 1987. v. 51 (3). p. 652-657. Includes references. (NAL Call No.: DNAL 56.9 SO3).

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The effects of iron and light treatments on chloroplast composition and ultrastructure in iron-deficient barley leaves (Hordeum vulgare).
Pushnik, J.C. Miller, G.W. New York ; Basel : Marcel Dekker, 1982. Iron nutrition and interactions in plants : Brigham Young University, August 12-14, 1981 / edited by S.D. Nelson ... (et al.). p. 311-321. ill. 26 ref. (NAL Call No.: QK867.J67 v. 5, nos. 4-7).

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Effects of P and K (phosphorus and potassium) on cereal crop diseases (Mineral deficiencies).
Piening, L.J. Atlanta, Ga., Potash & Phosphate Institute. Better crops with plant food. Winter 1981/1982. v. 66. p. 36-37, 39. (NAL Call No.: 6 B46).

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Effects of sulfur supply on the yield, composition, and quality of grain from cereals, oilseeds, and legumes.
ACSTD. Randall, P.J. Wrigley, C.W. St. Paul, Minn. : American Association of Cereal Chemists. Advances in cereal science and technology. Literature review. 1986. v. 8. p. 171-206. ill. Includes references. (NAL Call No.: DNAL TS2120.A3).

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Induction of alcohol dehydrogenase and lactate dehydrogenase in hypoxically induced barley.
PLPHA. Good, A.G. Crosby, W.L. Rockville, Md. : American Society of Plant Physiologists. In barley (Hordeum vulgare L.), alcohol dehydrogenase (ADH) and lactate dehydrogenase (LDH) are induced by anaerobiosis in both aleurone layers and roots. Under aerobic conditions, developing seeds of cv Himalaya accumulate ADH activity, which survives seed drying and rehydration. This activity consists almost entirely of the ADH1 homodimer. Activity of LDH also increases during seed development, but the level of activity in dry or rehydrated seeds is very low, indicating that this enzyme may not be involved in anaerobic glycolysis during the initial stages of germination. In contrast to ADH, the LDH isozymes present in developing seeds are similar to those found in uninduced and induced roots. Developmental expression of ADH and LDH was monitored from 0 to 24 days postgermination. Neither activity was induced to any extent in the germinating seeds; however, both enzymes were highly induced by anoxia in root tissue during development. Based on gel electrophoresis, this increase in activity results from the differential expression of different Adh and Ldh genes in root tissue. The changes in ADH and LDH activity levels were matched by changes in the amount of these particular proteins, indicating that the increase in activity results from de novo synthesis of these two proteins. The level of inducible LDH activity in an ADH1- mutant was not found to differ from cv Himalaya. We suggest that although the ADH- plants are more susceptible to flooding, they are not capable of responding to the lack of ADH1 activity by increasing the amount of LDH activity in root tissue. Plant physiology. July 1989. v. 90 (3). p. 860-866. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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An iron chelating compound released by barley roots in response to Fe-deficiency stress.
JPNUDS. Jolley, V.D. Brown, J.C.; Blaylock, M.J. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Jan 1988. v. 11 (1). p. 77-91. Includes references. (NAL Call No.: DNAL QK867.J67).

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Warner, R.L. Kleinhofs, A. Rockville, Md., American Society of Plant Physiologists. Plant physiology. Apr 1981. v. 67 (4). p. 740-743. ill. 22 ref. (NAL Call No.: 450 P692).

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JPNUDS. Mori, S. Hachisuka, M.; Kawai, S.; Takagi, S.; Kishi-Nishizawa, N. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Fourth International Symposium on Iron Nutrition and Interactions in Plants," July 6-9, 1987, University of New Mexico, Albuquerque. June/Nov 1988. v. 11 (6/11). p. 653-662. Includes references. (NAL Call No.: DNAL QK867.J67).

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Relative toxicities of inorganic aluminum complexes to barley.
SSSJD4. Cameron, R.S. Ritchie, G.S.P.; Robson, A.D. Madison, Wis. : The Society. Soil Science Society of America journal. Sept/Oct 1986. v. 50 (5). p. 1231-1236. Includes references. (NAL Call No.: DNAL 56.9 S03).

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Absorption and translocation of CGA-82725 with additives.
WEESA6. Gillespie, G.R. Skrzypczak, G.A.; Nalewaja, J.D. Champaign, Ill. : Weed Science Society of America. Abstract: The influence of various additives on CGA-82725 2-propanyl-2,4-(3,5-dichloro-2-pyridyloxy)phenoxy propanoate absorption and translocation was determined in oats (Avena sativa L. 'Lyon'). The absorption and translocation of 14C was greater when 14C-CGA-82725 was applied with petroleum oil compared to soybean Glycine max (L.) Merr oil. The translocation of 14C was greater at 96 than 48 h after 14C-CGA-82725 application. The absorption of 14C was greater at 48 than 24 h but was similar at 48 and 96 h after 14C-CGA-82725 application with no additive, petroleum oil, or soybean oil. The absorbed and translocated 14C was greater when 14C-CGA-82725 was applied with oil at 1.2 compared to 0.6 L/ha. No additional increase in14C absorption and translocation was obtained if the oil volume was increased to 2.3 L/ha. The addition of petroleum oil to 14C-CGA-82725 increased 14C absorption and translocation more than the addition of palm (Eleais quineeneis Jalq.), safflower (Carthamus tinctorius L.), linseed (Linum usitatissimum L.), or soybean oil. The four seed oils and the emulsifier. At Plus 300F caused similar increases in 14C absorption and translocation over 14C-CGA-82725 applied alone. Ethylene glycol did not increase 14C absorption and translocation compared to 14C-CGA-82725 applied alone. Weed science. May 1988. v. 36 (3). p. 282-285. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Absorption and translocation of fluazifop with additives.
WEESA6. Nalewaja, J.D. Skrzypczak, G.A. Champaign, Ill. : Weed Science Society of America. Weed science. July 1986. v. 34 (4). p. 572-576. Includes 9 references. (NAL Call No.: DNAL 79.8 W41).

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Watson, M.C. Bartels, P.G.; Hamilton, K.C. Champaign, Ill., Weed Science Society of America. Weed science. Jan 1980. v. 28 (1). p. 122-127. ill. 28 ref. (NAL Call No.: 79.8 W41).

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PNWSB. Lazowski, E.J. Hartwig, N.L.; Hall, J.K. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1986. v. 40. p. 10-15. Includes references. (NAL Call No.: DNAL 79.9 N814).

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Analysis of midwinter freezing stress (Barley, hardiness, injuries).
Olien, C.R. Boca Raton, Fla., CRC Press. Analysis and improvement of plant cold hardiness. 1981. 1981. p. 35-59. 65 ref. (NAL Call No.: SB781.A52).

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The antagonistic action of 2,4-D and bromoxynil on glyphosate phytotoxicity to barley (Hordeum vulgare) (Herbicide mixtures).
O'Donovan J.T. O'Sullivan, P.A. Champaign, Ill., Weed Science Society of America. Weed science. Jan 1982. v. 30 (1). p. 30-34. Includes 6 ref. (NAL Call No.: 79.8 W41).

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Abstract: Experiments were conducted to determine the influence of various factors on asulam
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wild oats (Avena fatua L. ~ AVEFA). Asulam toxicity to both flax and wild oats generally increased as temperature, humidity, and soil moisture increased after treatment. Octoxynol (alpha- p-1,1,3,3-tetramethyl butyl phenyl -omega-hydroxypoly(oxyethylene) in the spray solution increased asulam toxicity to both species in all environments. Octoxynol and trimethylenonypolyethoxyethanol (WK) enhanced asulam toxicity more than other adjuvants evaluated. Asulam toxicity to both flax and wild oats increased as octoxynol concentration in the spray increased. Flax tolerance to asulam generally increased with flax height at treatment. 'Flor' flax was the most asulam susceptible of six cultivars evaluated. A 2-mm simulated rainfall within 3 or 6 h after asulam treatment reduced toxicity to wild oats and flax, respectively. Weed science. May 1988. v. 36 (3). p. 367-372. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Olson, W. Nalewaja, J.D. Champaign, Ill., Weed Science Society of America. Weed science. Jan 1982. v. 30 (1). p. 59-63. Includes 18 ref. (NAL Call No.: 79.8 W41).

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Simeoni, L.A. Barbarick, K.A.; Sabey, B.R. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1984. v. 13 (2). p. 264-268. Includes references. (NAL Call No.: QH540.J6).

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Alam, S.M. Adams, W.A. New York, Marcel Dekker. Journal of plant nutrition. 1979. v. 1 (4). p. 365-375. ill. 31 ref. (NAL Call No.: QK867.J67).

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PLPHA. Hirano, S.S. Baker, L.S.; Upper, C.D. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Feb 1985. v. 77 (2). p. 259-265. ill. Includes 25 references. (NAL Call No.: DNAL 450 P692).

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Induction of alpha-amylase inhibitor synthesis in barley embryos and young seedlings by abscisic acid and dehydration stress.
PLPHA. Robertson, M. Walker-Simmons, M.; Munro, D.; Hill, R.D. Rockville, Md. : American Society of Plant Physiologists. An endogenous alpha-amylase inhibitor was found to be synthesized in embryos of developing barley grain (Hordeum vulgare cv Bonanza). Accumulation of this protein occurred late in development (stage IV,) at the same time that endogenous abscisic acid (ABA) showed a large increase. The inhibitor could be induced up to 23-fold in isolated immature embryos (stage III) by culture in ABA. Precocious germination was also blocked in stage III embryos by ABA. Dehydration stress on the isolated immature embryos also induced higher levels of the inhibitor and ABA. An even greater response to dehydration stress was observed in young seedlings, where inhibitor content increased 20-fold and ABA increased 80-fold during water stress. The high degree of correlation between ABA and inhibitor contents in in situ embryos, dehydrated embryos and young seedlings, as well as the increase in inhibitor caused by exogenously applied ABA to isolated embryos, suggest that increased alpha-amylase inhibitor synthesis in response to dehydration stress is mediated by ABA. Plant physiology. Sept 1989. v. 91 (1). p. 415-420. Includes references. (NAL Call No.: DNAL 450 P692).

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Wolfe, J.PLPHA. Steponkus, P.L. Rockville : American Society of Plant Physiologists. Plant physiology. Feb 1983. v. 71 (2). p. 276-285. ill. 28 ref. (NAL Call No.: 450 P692).

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JPNUDS. Krizek, D.T. Foy, C.D. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Apr 1988. v. 11 (4). p. 369-386. ill. Includes references. (NAL Call No.: DNAL QK867.J67).

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PLPHA. Bowyer, J.R. Smith, B.J.; Camilleri, P.; Lee, S.A. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1987. v. 83 (3). p. 613-620. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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Nash, R.G. Champaign, Ill., Weed Science Society of America. Weed science. Mar 1981. v. 29 (2). p. 147-155. ill. 22 ref. (NAL Call No.: 79.8 W41).

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Plasma membrane ATPase activity following reversible and irreversible freezing injury.
PLPHA. Iswari, S. Palta, J.P. Rockville, Md. : American Society of Plant Physiologists. Plasma membrane ATPase has been proposed as a site of functional alteration during early stages of freezing injury. To test this, plasma membrane was purified from Solanum leaflets by a single step partitioning of microsomes in a dextran-polyethylene glycol two phase system.

Addition of lysolecithin in the ATPase assay produced up to 10-fold increase in ATPase activity. ATPase activity was specific for ATP with a Km around 0.4 millimolar. Presence of the ATPase enzyme was identified by immunoblotting with oat ATPase antibodies. Using the phase partitioning method, plasma membrane was isolated from Solanum commersonii leaflets which had four different degrees of freezing damage, namely, slight (reversible), partial (partially reveisble), substantial and total (irreversible). With slight (reversible) damage the plasma membrane ATPase specific activity increased 1.5- to 2-fold and its Km was decreased by about 3-fold, whereas the specific activity of cytochrome c reductase and cytochrome c oxidase in the microsomes were not different from the control. However, with substantial (lethal, irreversible) damage, there was a loss of membrane protein, decrease in plasma membrane ATPase specific activity and decrease in Km while cytochrome c oxidase and cytochrome c reductase were unaffected. These results support the hypothesis that plasma membrane ATPase is altered by slight freeze-thaw stress. Plant physiology. July 1989. v. 90 (3). p. 1088-1095. ill. Includes references. (NAL Call No.: DNAL 450 P692).

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PCBPB. Young, A.J. Britton, G.; Musker, D. Duluth, Minn. : Academic Press. Pesticide biochemistry and physiology. Nov 1989. v. 35 (3). p. 244-250. Includes references. (NAL Call No.: DNAL SB951.P49).

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Smith, M.N. Olien, C.R. Boca Raton, Fla., CRC Press. Analysis and improvement of plant cold hardiness. 1981. 1981. p. 117-138. 97 ref. (NAL Call No.: SB781.A52).

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CRPSAY. Marshall, H.G. Kolb, F.L. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1988. v. 28 (4). p. 719. Includes references. (NAL Call No.: DNAL 64.8 C883).

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WETEE9. Clay, S.A. Thill, D.C.; Cochran, V.L. Champaign, Ill. : The Society. Weed technology : a journal of the Weed Science Society of America. Jan 1988. v. 2 (1). p. 68-71. Includes references. (NAL Call No.: DNAL SB610.W39).

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JCECD. Barnes, J.P. Putnam, A.R. New York, N.Y. : Plenum Press. Journal of chemical ecology. Apr 1987. v. 13 (4). p. 889-906. Includes references. (NAL Call No.: DNAL QD415.A1J6).

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Kahlon, P.S. Nashville, The Academy. Journal of the Tennessee Academy of Science.Tennessee Academy of Science. Jan 1980. v. 55 (1). p. 17-19. ill. 9 ref. (NAL Call No.: 500 T25A).

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Factors affecting survival of the merchant grain beetle (Coleoptera: Cucujidae) and the confused flour beetle (Coleoptera: Tenebrionidae) exposed to silica aerogel.
JEENAI. White, N.D.G. Loschiavo, S.R. Lanham, Md. : Entomological Society of America. Mortality of Oryzaephilus mercator Fauvel exposed to 0.72 mg/cm2 silica aerogel (SG-67) bound to paper was directly related to length of exposure of the insects and length of time between exposure and placement in food. Exposures of 15 s killed 97% of starved adults in 2 d, but mortality was low if adults had access to food within 2 h. As exposure times increased, insects survived only if food was available at shorter intervals. Type and quantity of food also affected mortality. Mortality of O. mercator adults exposed to SG-67 was greater on bread crumbs and whole rolled oats than on ground rolled oats. Starved Tribolium confusum Jacquelin du Val required exposures of 6 h to SG-67 for complete mortality; the presence of food following exposure, rather than type or quantity, affected survival, although mortality was slightly higher on bread crumbs. Early larval instars of O. mercator and T. confusum were more susceptible than late instars, which responded to SG-67 in the same way as adults. Adults of both species exposed to SG-67 and subsequently held in inert cellulose powder died within 1-3 d, but many insects in ground rolled oats survived, probably because they had ingested and metabolized food and produced metabolic water. Adult O. mercator immobilized at 2.5 degrees C during exposure to SG-67 for 4 h, then held at 25 degrees C without food, were unaffecteo by the treatment. Exposures of O. mercator for 15-60 s to silica aerogel on an adhesive surface will effectively control these insects if they cannot find food immediately. T. confusum cannot be controlled with exposure times of less than 6 h. Journal of economic entomology. June 1989. v. 82 (3). p. 960-969. ill. Includes references. (NAL Call No.: DNAL 421 J822).

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Powers, J.R. Culbertson, J.D. Ames, Iowa, International Association of Milk, Food, and Environmental Sanitarians. Journal of food protection. May 1982. v. 45 (7). p. 655-657. ill. Includes 14 ref. (NAL Call No.: 44.8 J824).

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Insect infestation in grain loaded in railroad cars at primary elevators in Southern Manitoba, Canada.
JEENAI. Smith, L.B. College Park, Md. : Entomological Society of America. Journal of economic entomology. June 1985. v. 78 (3). p. 531-534. ill. Includes references. (NAL Call No.: DNAL 421 J822).

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Insects infesting barley stored on farms in Minnesota.
JEENAI. Subramanyam, B. Harein, P.K. Lanham, Md. : Entomological Society of America. Barley stored on farms in Minnesota in 12 storage facilities during 1985 and 17 facilities during 1986 was sampled for adults of insect species. Grain samples were removed with grain probing devices or a plastic scoop, and live insects were trapped with unbaited plastic probe traps. Analysis of grain and probe trap samples indicated that, on average, about 85.0 to 100.0% of the facilities holding barley were infested with more than one insect species. The insect species most commonly occurring in grain or probe trap samples were Cryptolestes spp.; red flour beetle, Tribolium castaneum (Herbst); sawtoothed grain beetle, Oryzaephilus surinamensis (L.); foreign grain beetle, Ahasverus advena (Waltl); lesser grain borer, Rhyzopertha dominica (F.); and hairy fungus beetle, Typhaea stercorea (L.). Cryptolestes spp. and O. surinamensis were the most abundant insect species. Indianmeal moth, Plodia interpunctella (Hubner), larvae or adults were rarely found in the grain or probe trap samples, although adult males were captured in pheromone traps that were placed above the grain. Temperature of the grain in July and August 1985 and grain samples between May and September 1986 was within the range (15.6 to 35.0 degrees C) conducive for insect survival and reproduction. Moisture content of the grain samples during 1985 ranged from 12.0 to 16.0% and from 11.0 to 20.0% in 1986. These moisture levels were adequate to support insect infestations. Moisture content of the grain samples during 1985 and 1986 decreased by approximately 0.1 and 0.2%, respectively, for every 1 degrees C rise in grain temperature between 7 and 35 degrees C. Based on test weight of the grain samples, 5 of 12 facilities during 1985 and 3 of 17 facilities during 1986 held poor quality barley (U.S. Sample Grade). The amount of dockage in the grain samples ranged from 0.0 to 4.6%. Comparison of probe traps and grain sampling devices indicated that probe traps were more sensitive than a deep-bin cup probe. a. Journal of economic entomology. Dec 1989. v. 82 (6). p. 1817-1824. Includes references. (NAL Call No.: DNAL 421 J822).

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Tilton, Elvin W. Nelson, Stuart Owen,_1927-. Ames, Iowa : Council for Agricultural Science and Technology, 1984. "April 1984" - cover. 6 p. ; 28 cm. --. Bibliography: p. 5-6. (NAL Call No.: DNAL TP371.8.T55).

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Jilani, G. Su, H.C.F. College Park, Md. : Entomological Society of America. Journal of economic entomology. Feb 1983. v. 76 (1). p. 154-157. Includes references. (NAL Call No.: 421 J822).

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Management of stored barley in Minnesota: practices versus recommendations.
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Moth control in stored grain and the role of Bacillus thuringiensis: an overview.
RREVA. Subramanyam, B. Cutkomp, L.K. New York, N.Y. : Springer. Residue reviews. Literature review. 1985. v. 94. p. 1-47. ill. Includes references. (NAL Call No.: DNAL 389.9 R314).

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Organophosphate resistance in adults of red flour beetle (Coleoptera: Tenebrionidae) and sawtoothed grain beetle (Coleoptera: Cucujidae) infesting barley stored on farms in Minnesota.
JEENAI. Subramanyam, B. Harein, P.K.; Cutkomp, L.K. Lanham, Md. : Entomological Society of America. Four strains of adult red flour beetles, Tribolium castaneum (Herbst), and six strains of adult sawtoothed grain beetles, Oryzaephilus surinamensis (L.), infesting barley stored on farms in Minnesota were surveyed for resistance to malathion, pirimiphos-methyl, and chlorpyrifos-methyl. Adults were exposed to filter papers impregnated with each of the insecticides. Dose-response and discriminating-dose test procedures were used to evaluate pirimiphos-methyl and chlorpyrifos-methyl resistance. Dose-response and discriminating-dose tests indicated malathion resistance in all field strains of T. castaneum, but not in O. surinamensis field strains. T. castaneum strains did not show cross-resistance to pirimiphos-methyl or chlorpyrifos-methyl. All six O. surinamensis strains were susceptible to pirimiphos-methyl, but four strains showed reduced susceptibility (tolerance) to chlorpyrifos-methyl. The use of synergists in combination with malathion on T. castaneum strains and with chlorpyrifos-methyl on the four O. surinamensis strains indicated that carboxylesterase was involved in detoxifying malathion in resistant T. castaneum adults, whereas oxidases and esterases other than carboxylesterase were involved in detoxifying chlorpyrifos-methyl in tolerant O. surinamensis adults. Journal of economic entomology. Aug 1989. v. 82 (4). p. 989-995. Includes references. (NAL Call No.: DNAL 421 J822).

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Watters, F.L. St. Paul, Minn. : American Association of Cereal Chemists, c1984. Insect management for food storage and processing / edited by Fred J. Baur. Literature review. p. 267-278. Includes references. (NAL Call No.: DNAL SB937.I49).

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Preliminary infectivity tests using six bacterial formulations against the red flour beetle, Tribolium castaneum.
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population density, adults of both species more than 1 mo after eclosion produced almost optically pure (R)-(-)-1-octen-3-ol. Laboratory bioasasays in a two-choice, pitfall olfactometer indicated that 1-octen-3-ol alone serves as an aggregation pheromone, and when added to mixtures of cucujolide pheromones, it extends the attractive range of the cucujolides for both Oryzaephilus species. Environmental entomology. Oct 1989. v. 18 (5). p. 747-755. Includes references. (NAL Call No.: DNAL QL461.E532).

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Whitson, T.D. Langbehn, G. S.l. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 32. (NAL Call No.: DNAL 79.9 W52R).

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CRPSAY. Nelson, L.R. Ward, S.; Collins, F. Madison, Wis. : Crop Science Society of America. A wooden sled with an attached sponge was developed and used to successfully apply glyphosate N(phosphonomethyl)glycine to alleyways between small grain plots. The objective for constructing this device was to improve the procedure for killing vegetation in alleyways of small grain experiments. The sponge was attached to the bottom of a hinged platform. The platform allowed to glyphosate-treated sponge to follow the contour

of the soil surface as the sled was pulled through the alleys. The sponge was wetted with a solution containing 150 mL L-1 of a glyphosate formulation with 356 g (acid equivalent) L-1 of glyphosate. Excellent vegetation control was accomplished with this device. Advantages over other procedures are (i) glyphosate can be applied when small grain is quite tall (20 cm), (ii) dead vegetation remains on the soil to reduce erosion, (iii) the method prevents spray drift, and (iv) construction costs are minimal. Crop science. Nov/Dec 1989. v. 29 (6). p. 1567-1568. ill. Includes references. (NAL Call No.: DNAL 64.8 C883).

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Growth and control of wild oat (Avena fatua, Canada).
Banting, J.D. Champaign : Weeds Today, Inc. Weeds today. Winter 1982. v. 13 (4). p. 1-4. ill. (NAL Call No.: SB610.W4).

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Growth and reproduction of Drechslera sorokiniana (leaf and root pathogen of cereals and grasses) as influenced by preemergence herbicides.
Hodges, C.F. Bronx, N.Y., New York Botanical Garden. Mycologia. Mar/Apr 1981. v. 73 (2). p. 244-251. ill. 25 ref. (NAL Call No.: 450 M99).

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Influence of picloram alone of plus 2,4-D on control of wild oats (Avena fatua) with four postemergence herbicides (Antagonism, annual grass weed in western Canada).
O'Sullivan, P.A.WEESA. Champaign : Weed Science Society of America. Weed science. Nov 1983. v. 31 (6). p. 889-891. Includes references. (NAL Call No.: 79.8 W41).

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Influence of thiameturon and DLX-L5300 on wild oats (Avena fatua) control with barban, diclofop, AC 222,293, and difenzoquat.
WEESA6. Eberlein, C.V. Miller, T.L.; Wiersma, J.V. Champaign, Ill. : Weed Science Society of America. In field studies, wild oat control with AC 222,293 and difenzoquat was not reduced when each herbicide was applied in combination with thiameturon or DPX-L5300. Mixtures of barban with thiameturon gave wild oats control similar to barban applied alone, but mixtures of barban with DPX-L5300 sometimes gave less wild oats control than barban applied alone. Control was reduced when diclofop was applied in combination with thiameturon in 1985 but not in 1986. When antagonism occurred, addition of crop oil concentrate (COC) at 1.2 L/ha to the diclofop-thiameturon spray mixture overcame the antagonism. When diclofop was applied in combination with DPX-L5300, control was reduced and antagonism could not be overcome by increasing the diclofop rate or by adding COC to the spray mixture. In greenhouse studies the inert ingredients in the thiameturon and DPX-L5300 formulations did not antagonize diclofop activity on wild oats. TLC analysis of 14C-diclofop solutions with and without thiameturon of DPX-L5300 revealed neither degradation products of diclofop nor evidence of complexing between diclofop and thiameturon or diclofop and DPX-L5300. Diclofop antagonism by thiameturon or DPX-L5300 was not due to a chemical or physical interaction between the herbicides in the spray mixture. Weed science. Nov 1988. v. 36 (6). p. 792-799. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Influence of tillage on horseweed, Conyza canadensis.
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Influence of weed control treatments on soybean cultivars in an oat-soybean rotation.
AGJOAT. Burnside, O.C. Moomaw, R.S. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov/Dec 1984. v. 76 (6). p. 887-890. Includes 13 references. (NAL Call No.: DNAL 4 AM34P).

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Influence of 2,4-D and MCPA formulations and oil on diclofop phytotoxicity.
WEESA6. Gillespie, G.R. Nalewaja, J.D. Champaign, Ill. : Weed Science Society of America. Field experiments were conducted during 1984 and 1985 to determine the influence of 2,4-D and MCPA amine and ester formulations on control of foxtail millet with diclofop. Foxtail millet control increased as the diclofop rate increased from 0.6 to 1.7 kg ai/ha whether diclofop was applied alone or with 2,4-D or MCPA amine and ester formulations; however, foxtail millet control was lower when diclofop was applied with 2,4-D or MCPA amine and ester formulations compared to diclofop applied alone. MCPA ester, MCPA amine, 2,4-D ester, or 2,4-D amine at 0.14 kg ai/ha added to a diclofop spray mixture reduced foxtail millet control 8, 15, 20, and 30% compared to diclofop applied alone, averaged over diclofop rates of 0.6, 0.8, 1.1, 1.4, and 1.7 kg/ha. Adding a petroleum oil to diclofop increased foxtail millet control with diclofop at 0.6 kg/ha but not at 0.8 kg/ha. The petroleum oil additive dio not overcome the antagonism of foxtail millet control when diclofop at 0.6 kg/ha was applied with 2,4-D or MCPA amine and ester formulations. The amount of 14C-diclofop absorbed by oats was greater when diclofop was applied with the ester formulations of 2,4-D or MCPA compared to the amine formulations. Either once-refined sunflower oil or sunflower oil methyl ester applied with 14C-diclofop increased the amount of 14C absorbed and translocated in oat plants compared to 14C-diclofop applied alone. Weed science. May 1989. v. 37 (3). p. 380-384. Includes references. (NAL Call No.: DNAL 79.8 W41).

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The interaction between the sulfonylurea herbicides and diclofop-methyl on control of wild oat (Avena Fatua L.).
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Isolation and identification of some phytotoxic compounds from aqueous extracts of rye (Secale Cereale L.).
JAFCAU. Shilling, D.G. Jones, L.A.; Worsham, A.D.; Parker, C.E.; Wilson, R.F. Washington, D.C. : American Chemical Society. Journal of agricultural and food chemistry. July/Aug 1986. v. 34 (4). p. 633-638. Includes references. (NAL Call No.: DNAL 381 J8223).

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Miller, S.D. Krall, J.M. S.l. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 212. (NAL Call No.: DNAL 79.9 W52R).

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A management tool for small grain producers...the wild oat staging card (Weeds, herbicide application timing, Montana).
Dyer, W. Fay, P.; Rardon, P.; Stewart, V. Bozeman : The Station. Capsule information series - Montana Agricultural Experiment Station. June 1983. June 1983. (30). 5 p. ill. (NAL Call No.: S83.M6).

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Lish, J.M. Thill, D.C. S.l. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 198-199. (NAL Call No.: DNAL 79.9 W52R).

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Metabolism of chlorsulfuron by plants: biological basis for selectivity of a new herbicide for cereals.
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Morphological and histological effects of three grass selective herbicides on developing wild oat (Avena fatua) stems.
WEESA6. Jain, R. Born, W.H. vanden. Champaign, Ill. : Weed Science Society of America. Three grass selective herbicides, sethoxydim, fluazifop, and haloxyfop, applied to wild oat plants at the five-leaf stage inhibited growth and induced chlorosis in leaves. Young and actively growing tissues were affected first. Stem elongation in wild oat was inhibited within 2 days of treatment with sethoxydim and within 5 days of treatment with fluazifop or haloxyfop. At these same observation times, internodes that were elongating rapidly at the time of treatment were constricted at the base. These symptoms were followed by necrosis of the internode tisssue. Histological examination of the affected internodes indicated that the herbicides inhibited cell division in very young internodes and inhibited both cell division and cell elongation in slightly older internodes. Initial injury occurred in the epidermal, cortical, and procambium cells of the peripheral regions of the stems located at the base of the affected internodes. Necrosis then progressed to the center of the stem tissue and all cells in the internodes were killed within 14 days of treatment. All three herbicides caused similar morphological and histological effects on developing wild oat stems. Weed science. July 1989. v. 37 (4). p. 575-584. ill. Includes references. (NAL Call No.: DNAL 79.8 W41).

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The morphological and physiological response of slender oat (Avena barbata) to the herbicides barban and difenzoquat.
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Miller, S.D. Nalewaja, J.D.; Mulder, C.E.G. Madison, Wis., American Society of Agronomy. Agronomy journal. Sept/Oct 1982. v. 74 (5). p. 771-775. ill. 11 ref. (NAL Call No.: 4 AM34P).

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Fay, P.K. Stewart, V.R. Bozeman, The Station. Capsule information series - Montana Agricultural Experiment Station. May 1981. May 1981. (24). 3 p. ill. (NAL Call No.: S83.M6).

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An oats (Avena sativa)-soybean (Glycine max) rotation using ecofarming versus conventional tillage.
WEESA6. Moomaw, R.S. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 544-550. Includes 29 references. (NAL Call No.: DNAL 79.8 W41).

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WSWPA. Ryerson, D.K. Reno : The Society. Proceedings - Western Society of Weed Science. Paper presented at the annual meeting of the Western Society of Weed Science, March 18-20, 1986, San Diego, California. 1986. v. 39. p. 136-138. (NAL Call No.: DNAL 79.9 W52).

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Postemergence control of an oat cover crop and broadleaf weeds in direct-seeded nursery beds.
HJHSA. Warmund, M.R. Alexandria, Va. : American Society for Horticultural Science. HortScience. Aug 1987. v. 22 (4). p. 603-605. Includes references. (NAL Call No.: DNAL SB1.H6).

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Postemergence herbicide application on three accessions of wild oat.
Tapia, L.S. Dial, M.J.; Thill, D.C. S.l. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 364-365. (NAL Call No.: DNAL 79.9 W52R).

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Postemergence herbicide, wild oat control in irrigated, no-till spring barley.
Lish, J.M. Thill, D.C. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 200. (NAL Call No.: DNAL 79.9 W52R).

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The potential of scopoletin, a biotoxic root exudate of oats (Avena sativa L.), for biological weed control / by Peter K. Fay. -.
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A problem in small grains and alfalfa...controlling catchweed bedstraw (Galium aparine, weeds).
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A problem in winter and spring grains: controlling green foxtail and yellow foxtail (pigeongrass).
Nelson, J.E. Bozeman, Mont. : The Service. Montguide MT : Agriculture - Montana State University, Cooperative Extension Service. May 1985. (8517). 3 p. ill. (NAL Call No.: DNAL S544.3.M9M65).

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Racing to control wild oats.
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Rardon, P. Bozeman : The Service. Bulletin - Cooperative Extension Service. Montana State University. Mar 1983. Mar 1983. (1286). 28 p. ill. (NAL Call No.: 275.29 M76C).

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Results of bindweed control experiments at the Fort Hays Branch Station, Hays, Kansas, 1935 to 1940 / F.L. Timmons .
Timmons, F. L. 1905-. Manhattan, Kan. : Agricultural Experiment Station, Kansas State College of Agriculture and Applied Science, 1941. "In cooperation with Division of Cereal Crops and Diseases, Bureau of Plant Industry, U.S. Dept. of Agriculture"--Cover. 50 p. : ill. ; 22 cm. (NAL Call No.: DNAL 100 K13S (1) no.296).

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Seedling competition between mountain rye, 'Hycrest' crested wheatgrass, and downy brome.
JRMGA. Buman, R.A. Monsen, S.B.; Abernethy, R.H. Denver, Colo. : Society for Range Management. Journal of range management. Jan 1988. v. 41 (1). p. 30-34. Includes references. (NAL Call No.: DNAL 60.18 J82).

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Curtis, R.E. Haagsma, T. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 188. (NAL Call No.: DNAL 79.9 W52R).

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Selective control of Canada thistle in cereals with 3,6-dichloropicolinic acid (clopyralid).
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AGJOAT. Somody, C.N. Nalewaja, J.D.; Miller, S.D. Madison, Wis. : American Society of Agronomy. Agronomy journal. May/June 1985. v. 77 (3). p. 359-362. ill. Includes 5 references. (NAL Call No.: DNAL 4 AM34P).

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AGREA. Senft, D. Washington, D.C. : The Administration. Agricultural research - U.S. Department of Agriculture, Agricultural Research Service. Mar 1989. v. 37 (3). p. 22. (NAL Call No.: DNAL 1.98 AG84).

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Small grains (Weed control, Wyoming).
Alley, H.P. Humburg, N.E. Laramie, Wyo., The Station. Research journal - University of Wyoming, Agricultural Experiment Station. Jan 1982. Jan 1982. (172). p. 47-59. (NAL Call No.: S131.E22).

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Soybean cultivar response to reduced tillage systems in northern dryland areas.
AGJOAT. Deibert, E.J. Madison, Wis. : American Society of Agronomy. Information on response of soybean Glycine max (L.) Merr. cultivars to reduced tillage systems in northern dryland areas is limited. A 4-yr field study (1984 to 1987) was conducted to evaluate the effect of tillage system, weed control method, and cultivar maturity on soybean seed yield variables. An early and a late-maturing soybean cultivar were grown on a Fargo clay (fine, montmorillonitic frigid Vertic Haplaquoll) on established tillage plots. Tillage systems included conventional (moldboard plow) and three reduced tillage systems (sweep, intertill, and no-till) with herbicides or herbicides plus cultivation for weed control. Climatic conditions resulted in differences among years in seed yield, seed weight, seed moisture, seed oil concentration, and seed oil yield. These seed variables were not significantly influenced by tillage system, weed control method, or cultivar maturity when grown in rotation with barley (Hordeum vulgare L.), but showed significant interactions. Cultivation for weed control depressed seed yield and weight of only the early cultivar. Early plant water stress (June and July) lowered yield of the early cultivar more than the late cultivar. Early cultivar no-till yields (1240 kg ha-1) were greater than tilled system yields (average 1070 kg ha-1), while late cultivar yields were similar among systems (average 1420 kg ha-1). An early maturing cultivar performed similarly to a late-maturing cultivar irrespective of tillage system unless early plant water stress was encountered. Fall application of granular herbicide provided good

weed control, but cultivation for weed control was not beneficial for the yields parameters measured. Agronomy journal. July/Aug 1989. v. 81 (4). p. 672-676. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Cohen, A.S. Morrison, I.N. New York, Academic Press. Pesticide biochemistry and physiology. Oct 1982. v. 18 (2). p. 174-179. ill. 23 ref. (NAL Call No.: SB951.P49).

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Effect of atrazine carryover on malting quality of barley (Herbicide, residues).
Brinkman, M.A. Langer, D.K.; Harvey, R.G.; Burger, W.C. Madison, Wis., Crop Science Society of America. Crop science. Nov/Dec 1981. v. 21 (6). p. 973-976. 12 ref. (NAL Call No.: 64.8 C883).

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Effect of environment and adjuvants on asulam phytotoxicity.
WEESA6. Nalewaja, J.D. Woznica, Z. Champaign, Ill. : Weed Science Society of America.
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WEESA6. Kim, J.C. Bendixen, L.E. Champaign, Ill. : Weed Science Society of America. Weed science. Nov 1987. v. 35 (6). p. 769-774. Includes references. (NAL Call No.: DNAL 79.8 W41).

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Excretion and placental and mammary transfer of hexachlorobenzene in the European ferret (Mustela putorius furo) (Preemergence fungicides for cereal grain seeds).
Bleavins, M.R.JTEHD. Breslin, W.J.; Aulerich, R.J.; Ringer, R.K. Washington : Hemisphere Publishing. Journal of toxicology and environmental health. Dec 1982. v. 10 (6). p. 929-940. Includes references. (NAL Call No.: RA565.A1J6).

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total nitrogen than theother fallow plots. The fallow plots with waste lime and manure each contained less total nitrogen than the plot fallowed with nothing added. The reverse was trueas regards nitrates. In general, there seemed to be an inverse relation between the amounts of total nitrogen. In the work in 1912, in the presence of a vigorously growing beet crop, the only treatment which showed decided increases in nitrification were cyanamid and manure plus ammonium sulfate. Aside from considerable weekly variations, there. Agronomy journal. Jan/Feb 1916. v. 8 (1). p. 10-22. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Soil tests for copper, iron, manganese, and zinc in histosols: 4. Selection on the basis of soil chemical data and uptakes by oats, carrots, onions, and lettuce.
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AGABB. Krizek, D.T. Foy, C.D. Madison, Wis. : American Society of Agronomy. Agronomy abstracts. Includes abstract. 1981. (73rd). p. 181-182. (NAL Call No.: DNAL 241 AM39).

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AGJOAT. Allison, R.V. Madison, Wis. : American Society of Agronomy. Experimental studies upon the availability of the nitrogen and potash of High Potash Nitrate have been carried out under both green-house and field conditions. The results in pot culture indicated the value of the nitrogen and potash of this compound as being fully equivalent to that derived from sodium nitrate and potassium sulfate. Because of the fact that the field plots responded strongly to applications of nitrogen and not at all to potash, it may be assumed that the nitrogen of the High Potash Nitrate was as effective as that of sodium nitrate. Agronomy journal. Jan 1924. v. 16 (1). p. 26-30. (NAL Call No.: DNAL 4 AM34P).

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JPNUDS. Riley, M.M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Paper presented at the "Tenth International Plant Nutrition Colloquium," August 4-9, 1986, Beltsville, Maryland. 1987. v. 10 (9/16). p. 2109-2115. Includes references. (NAL Call No.: DNAL QK867.J67).

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Characteristics of cadmium and zinc in four soils treated with sewage sludge.
JEVQAA. Mullins, G.L. Sommers, L.E. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Oct/Dec 1986. v. 15 (4). p. 382-387. Includes references. (NAL Call No.: DNAL QH540.J6).

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BCYCDK. Day, A.D. Solomon, M.A.; Ottman, M.J.; Taylor, B.B. Emmaus, Pa. : J.G. Press. BioCycle. Aug 1989. v. 30 (8). p. 72-75. Includes references. (NAL Call No.: DNAL 57.8 C734).

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Crop rotations and manure versus agricultural chemicals in dryland grain production.
JSWCA3. Sahs, W.W. Lesoing, G. Ankeny, Iowa : Soil Conservation Society of America. Journal of soil and water conservation. Nov/Dec 1984. v. 40 (6). p. 511-516. Includes 27 references. (NAL Call No.: DNAL 56.8 J822).

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Differential aluminum tolerance of winter barley varieties and selections in associated greenhouse and field experiments.
AGJOAT. Reid, D.A. Jones, G.D.; Armiger, W.H.; Foy, C.D.; Koch, E.J.; Starling, T.M. Madison, Wis. : American Society of Agronomy. Agronomy journal. Mar/Apr 1969. v. 61 (2). p. 218-222. ill. Includes references. (NAL Call No.: DNAL 4 AM34P).

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AGBOBO. Laughlin, W.M. Smith, G.R.; Peters, M.A. Fairbanks : The Station. Agroborealis - Alaska Agricultural and Forestry Experiment Station, Univeristy of Alaska-Fairbanks. July 1987. v. 19 (1). p. 31-33. Includes references. (NAL Call No.: DNAL S33.E2).

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Effect of manganese and soil pH on the iron content of crops grown on Podzol soils (Hordeum vulgare, barley, Pisum sativum, peas).
Gupta, U.C.JPNUD. New York : Marcel Dekker. Journal of plant nutrition. 1982. v. 5 (10). p. 1229-1239. 14 ref. (NAL Call No.: QK867.J67).

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Effect of nitrogen nutrition on quality of agronomic crops.
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The effect of powdery mildew on the response of barley to applied nitrogen.
Young, K.J. Khan, T.N. New South Wales : Dept. of Agriculture, 1987? . Proceedings, Australian Barley Technical Symposium : Wagga Wagga, 11-15th October 1987. p. 177-182. Includes references. (NAL Call No.: DNAL SB191.B2A9 1987).

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Effect of sample pretreatment on extractable soil potassium.
CSOSA2. Haby, V.A. Sims, J.R.; Skogley, E.O.; Lund, R.E. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. 1988. v. 19 (1). p. 91-106. Includes references. (NAL Call No.: DNAL S590.C63).

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Effect of seeding rate and time of N application on oat grain yield.
JPRAEN. Ahmadi, M. Wiebold, W.J.; Beuerlein, J.E. Madison, Wis. : American Society of Agronomy. Journal of production agriculture. July/Sept 1988. v. 1 (3). p. 242-244. Includes references. (NAL Call No.: DNAL S539.5.J68).

1722

The effect of surface applied soil amendments on barley root growth in an acid subsoil.
CSOSA2. Wright, R.J. Hern, J.L.; Baligar, V.C.; Bennett, O.L. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. Feb 1985. v. 16 (2). p. 179-192. ill. Includes 26 references. (NAL Call No.: DNAL S590.C63).

1723

The effect of thiosulfate on phosphorus availability and uptake by plants.
JPNUDS. Morden, G. Soper, R.; Huzel, V.; Swan, M. New York, N.Y. : Marcel Dekker. Journal of plant nutrition. Oct 1986. v. 9 (10). p. 1315-1321. Includes references. (NAL Call No.: DNAL QK867.J67).

1724

Effects of by-product sulfuric acid on phyto availability of nutrients in irrigated calcareous, saline-sodic soils (Barley, Hordeum vulgare).
Cates, R.L. Jr. Haby, V.A.; Skogley, E.O.; Ferguson, H. Madison, Wis. : American Society of Agronomy. Journal of environmental quality. Apr/June 1984. v. 13 (2). p. 252-256. Includes references. (NAL Call No.: QH540.J6).

1725

Effects of chloride fertilizer and systemic fungicide seed treatments on common root rot of barley.
PLDRA. Shefelbine, P.A. Mathre, D.E.; Carlson, G. St. Paul, Minn. : American Phytopathological Society. Plant disease. July 1986. v. 70 (7). p. 639-642. Includes 22 references. (NAL Call No.: DNAL 1.9 P69P).

1726

Effects of dried sewage sludge on forage production from barley genotypes in the Sonoran Desert.
Day, A.D. Thompson, R.K.; Swingle, R.S. Superior : University of Arizona. Desert plants. 1986. v. 8 (1). p. 17-19. Includes references. (NAL Call No.: DNAL QK938.D4D4).

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Effects of forage legumes on yield and nitrogen uptake by a succeeding barley crop.
AAREEZ. Abernethy, R.H. Bohl, W.H. New York : Springer. Applied agricultural research. 1987. v. 2 (2). p. 97-102. Includes references. (NAL Call No.: DNAL S539.5.A77).

1728

Effects of N, P, and K (nitrogen, phosphorus, potassium) fertilization on barley grown in a newly cleared subarctic soil (Alaska).
Michaelson, G.J. Loynachan, T.E ; Woding, F.J.; Mitchell, G.A. Madison, Wis., American Society of Agronomy. Agronomy journal. July/Aug 1982. v. 74 (4). p. 694-699. ill., map. 16 ref. (NAL Call No.: 4 AM34P).

1729

Effects of nitrogen fertilization on manganese concentration and yield of barley and oats (Hordeum vulgare, Avena sativa).
Petrie, S.E. Jackson, T.L. Madison, Wis. : The Society. Journal - Soil Science Society of America. Mar/Apr 1984. v. 48 (2). p. 319-322. Includes references. (NAL Call No.: 56.9 S03).

1730

Effects of nitrogen fertilizer rate, seeding rate, and row spacing on semidwarf and conventional height spring oat.
CRPSAY. Marshall, H.G. Kolb, F.L.; Roth, G.W. Madison, Wis. : Crop Science Society of America. Crop science. May/June 1987. v. 27 (3). p. 572-575. Includes references. (NAL Call No.: DNAL 64.8 C883).

1731

Effects of various salts on barley growth /H.E. Dregne.
Dregne, H. E. University Park, N.M. : Agricultural Experiment Station, New Mexico State University, 1962. Caption title. 5, 1 p. : charts ; 26 cm. (NAL Call No.: DNAL 100 N465R no.62).

1732

Ethephon application and nitrogen fertilization of irrigated winter barley in an arid environment.
AGJOAT. Pearson, C.H. Golus, H.M.; Tindall, T.A. Madison, Wis. : American Society of Agronomy. Lodging in barley (Hordeum vulgare L.) can result in grain loss, lower seed quality, increased disease, high grain moisture, reduced harvest efficiency, and lower milling grade. Application of N fertilizer to achieve high barley yields often results in increased lodging. Consequently, N applications are often reduced in order to lessen the potential for loding. Use of plant growth regulators may permit higher N application rates without increased lodging. Field studies were conducted in an irrigated arid environment during 1986 and 1987 on Fruita sandy clay loam (fine-loamy, mixed, mesic Typic Haplargid) soil. Ethephon (2-chloroethyl) phosphonic acid was applied at 0.42 kg a.i. ha-1 to irrigated winter barley that received 56, 112, 168, and 224 kg ha-1 of spring-applied N. The 1986 data indicated that, in the absence of lodging. ethephon did not affect barley grain yields. Ethephon increased grain yields in 1987 in association with reduced lodging. Plant height response to ethephon was similar across N rates. Ethephon shortened internode lengths on the upper portion of the culm and reduced lodging of winter barley grown at high N rates. Ethephon did not affect spikes m-2, kernel mass, kernels spike-1, or seed N content in either year. Application of higher N rates than traditionally used in irrigated winter barley increased grain yield and seed N content. In years when lodging occurred, ethephon was effective as an antilodging agent. Agronomy journal. Sept/Oct 1989. v. 81 (5). p. 7171-719. Includes references. (NAL Call No.: DNAL 4 AM34P).

1733

Exploitation of soil potassium in layered profiles by root systems of cotton and barley.
SSSJD4. Gulick, S.H. Cassman, K.G.; Grattan, S.R. Madison, Wis. : The Society. On vermiculitic soils of the San Joaquin Valley, cotton (Gossypium hirsutum L.) often responds to K fertilization where other annual crops do not. These soils have markedly higher available K in surface soil than subsoil. A pot study was conducted to compare rooting patterns, K uptake, and dry matter production of cotton and barley (Hordeum vulgare L.) in soil profiles with layered K availability. Topsoil (0.15 cmolc K kg-1) was layered to each of six depths above subsoil (0.09 cmolc K kg-1) in 17-L pots with a total soil depth of 45 cm in all treatments. Two irrigation regimes were imposed and nutrients other than K were adequately supplied. For both crops, plant dry matter and K uptake increased linearly with increased topsoil depth but K uptake per unit increase in topsoil depth was 6.5- and 3.6-fold greater by barley than for cotton with frequent and infrequent irrigation, respectively. Increased K uptake per unit increase in topsoil depth reflected coninicident root and K distribution: barley root length density (RLD) was 2.7 times greater than RLD of cotton in topsoil layers but little different in subsoil layers. Poor exploitation of topsoil layers by the cotton root system was attributed to greater sensitivity to low soil water potential. A root system with little compensatory root development in the surface soil when the subsoil is low in nutrients may limit K uptake and crop productivity on layered soils in the San Joaquin Valley and may require management systems designed to promote more congruent root and nutrient distribution. Soil Science Society of America journal. Jan/Feb 1989. v. 53 (1). p. 146-153. ill. Includes references. (NAL Call No.: DNAL 56.9 SC3).

1734

Fate of tagged urea N (nitrogen) in the field with different methods of N and organic matter placement (Broadcast and banded, barley).
Tomar, J.S. Soper, R.J. Madison, Wis., American Society of Agronomy. Agronomy journal. Nov/Dec 1981. v. 73 (6). p. 991-995. 18 ref. (NAL Call No.: 4 AM34P).

1735

Induction of barley leaf urease.
PLPHA. Chen, Y.G. Ching, T.M. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. Mar 1988. v. 86 (3). p. 941-945. ill. Includes references. (NAL Call No.: DNAL 450 P692).

1736

Interactions between calcium amendments and phosphate on the response of alfalfa and barley growing on acid soils.
CSOSA2. Soon, Y.K. New York, N.Y. : Marcel Dekker. Communications in soil science and plant analysis. May/Sept 1988. v. 19 (7/12). p. 1343-1353. Includes references. (NAL Call No.: DNAL S590.C63).

1737

Modifications of plant growth and ash content as effected by acids added to soils.
AGJOAT. Carr, R.H. Havercamp, H.G. Madison, Wis. : American Society of Agronomy. A comparison has been made of the effect upon the growth of soybean and buckwheat plants of adding an organic (acetic) and an inorganic (sulfuric) acid to a silt and a clay-loam soil. It has been found that both acids seriously interfere with plant growth, but that acetic was more deleterious than sulfuric acid. This is believed to be due to the effect of acetic acid in supplying more toxic aluminum and iron, etc., to the plant and in decreasing calcium and magnesium to a greater extent than was done by the sulfuric acid. In addition two other series of acids (phosphoric and silicic) were used, because they make compounds with aluminum and iron which seem to be harmless to the growing plant, regardless of the fact that the root is surrounded by a soil which is highly acid. The good growth of both kinds of plants obtained, even when rather large amounts of these latter acids were added, indicates that relatively insoluble compounds of aluminum and iron, etc., were formed and that the acid by itself did no harm. Agronomy journal. Apr 1924. v. 16 (4). p. 278-283. (NAL Call No.: DNAL 4 AM34P).

1738

Physiological responses of barley leaves of foliar applied urea-ammonium nitrate.
CRPSAY. Turley, R.H. Ching, T.M. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 987-993. Includes references. (NAL Call No.: DNAL 64.8 C883).

1739

Plant response to topsoil thickness on an eroded loess soil.
JSWCA3. Mielke, L.N. Schepers, J.S. Ankeny, Iowa : Soil Conservation Society of America. Journal of soil and water conservation. Jan/Feb 1986. v. 41 (1). p. 59-63. Includes 15 references. (NAL Call No.: DNAL 56.8 J822).

1740

Profitable small grain production in the Texas Gulf Coast.
TAEBA. Miller, T.D. Livingston, S. College Station, Tex. : The Station. B - Texas Agricultural Experiment Station. Nov 1987. (1587). 8 p. (NAL Call No.: DNAL 100 T31S (1)).

1741

The rate of absorption of nitrate of soda by oats and cotton when applied at different stages of plant growth.
AGJOAT. Appleton, W.H. Helms, H.B. Madison, Wis. : American Society of Agronomy. Experiments were conducted in the greenhouse to study the rate of absorption of nitrate nitrogen by oats and cotton when applied as nitrate of soda at different stages of plant growth. The general plan of the experiment was to add nitrate to a series of cultures at a certain stage of growth. Then, at intervals of a few days, part of the cultures were harvested and the amount of nitrate absorbed was determined by plant analysis and also by determining the nitrate content of the soil. Cultures that did not receive nitrate were used as checks to indicate how much nitrogen the plant secured from the soil. With oats these studies were made at four stages of plant growth. With cotton the study was made at three stages of plant growth. The results may be summarized as follows: When sodium nitrate at the rate of 400 pounds per acre was applied to oats 14 days after planting, absorption of the nitrate was very slow for three weeks. After the third week absorption increased and all nitrate was absorbed by the close of the seventh week. When the nitrate was applied to oats at later stages of growth, the rate of absorption was more rapid. Nitrate applied 42, 70, and 92 days after planting was completely absorbed in 20, 14, and 10 days, respectively. With both oats and cotton there was a close correlation between the rate of growth and the rate of nitrate absorption. Sodium nitrate at the rate of 600 pounds per acre was applied to cotton 14, 40, and 61 days after planting. Abs orption of the nitrate was complete in 36, 14, and 11 days, respectively. The results of both experiments indicate that the loss of soluble nitrogenous fertilizer by leaching may be reduced by delaying the application until the crop will absorb it rapidly. Agronomy journal. Oct 1925. v. 17 (10). p. 596-605. (NAL Call No.: DNAL 4 AM34P).

1742

Smut in oats, insecticides and fertilizer analyses / W.W. Cooke .
Cooke, Wells Woodbridge, 1858-1916.
Burlington : Vermont State Agricultural Experiment Station, 1888. Cover title. 5, 2 p. ; 22 cm. (NAL Call No.: DNAL 100 V59 no.9).

1743

Soil fertility and defoliation effects with arrowleaf clover and nitrogen fertilizer equivalence of crimson-arrowleaf clover combinations (Trifolium vesiculosum, Trifolium incarnatum, Secale cereale, rhizobium, nitrogen fixation by forage legumes, Oklahoma).
Lynd, J.Q.AGJOAT. Hanlon, E.A. Jr.; Odell, G.V. Jr. Madison : American Society of Agronomy. Agronomy journal. Jan/Feb 1984. v. 76 (1). p. 13-16. ill. Includes references. (NAL Call No.: 4 AM34P).

1744

Storage protein accumulation in 'Scio' barley seed as affected by late foliar applications of nitrogen.
CRPSAY. Turley, R.H. Ching, T.M. Madison, Wis. : Crop Science Society of America. Crop science. July/Aug 1986. v. 26 (4). p. 778-782. Includes references. (NAL Call No.: DNAL 64.8 C883).

1745

Studies on the effect of nitrogen applied to oats at different periods of growth.
AGJOAT. Gericke, W.F. Madison, Wis. : American Society of Agronomy. Agronomy journal. Nov 1922. v. 14 (8). p. 312-320. (NAL Call No.: DNAL 4 AM34P).

1746

Subsurface drip irrigation of cotton and small grains.
Tollefson, S. St. Joseph, Mich. : American Society of Agricultural Engineers, c1985. Drip/trickle irrigation in action : proceedings of the Third International Drip/Trickle Irrigation Congress, November 18-21, 1985, Centre Plaza Holiday Inn, Fresno, California, USA. p. 887-895. Includes 7 references. (NAL Call No.: DNAL S612.I5 1985).

1747

Toxic factors in acid soils.
Foy, C.D. Burns, G.R. Washington, D.C. : National Plant Food Institute. Plant food review. Fall 1964. v. 10 (3). p. 2-3, 16. ill. (NAL Call No.: DNAL 57.8 P694).

1748

Triallate phytotoxicity and nitrogen fertilization (Oats).
McKercher, R.B. McGregor, W.R. Champaign, Ill., Weed Science Society of America. Weed science. Nov 1980. v. 28 (6). p. 740-744. ill. 10 ref. (NAL Call No.: 79.8 W41).

1749

Alfalfa and oat yields as influenced by triazine herbicide residues in three tillage systems.
PNWSB. Lazowski, E.J. Hartwig, N.L.; Hall, J.K. Beltsville, Md. : The Society. Proceedings of the ... annual meeting - Northeastern Weed Science Society. 1986. v. 40. p. 10-15. Includes references. (NAL Call No.: DNAL 79.9 N814).

1750

Barley vs. oat companion crops. I. Forage yield and quality response during alfalfa establishment.
CRPSAY. Brink, G.E. Marten, G.C. Madison, Wis. : Crop Science Society of America. Crop science. Sept/Oct 1986. v. 26 (5). p. 1060-1067. Includes references. (NAL Call No.: DNAL 64.8 C883).

1751

Conservation-tillage and residue-management systems for interior Alaska.
AGBOB. Siddoway, F.H. Lewis, C.E.; Cullum, R.F. Fairbanks : The Station. Agroborealis - Alaska Agricultural Experiment Station, Fairbanks. Includes lists of species. July 1984. v. 16 (2). p. 35-40. ill. Includes 5 references. (NAL Call No.: DNAL S33.E2).

1752

Crop rotations and manure versus agricultural chemicals in dryland grain production.
JSWCA3. Sahs, W.W. Lesoing, G. Ankeny, Iowa : Soil Conservation Society of America. Journal of soil and water conservation. Nov/Dec 1984. v. 40 (6). p. 511-516. Includes 27 references. (NAL Call No.: DNAL 56.8 J822).

1753

Drills and seeders for heavy residues and untilled soils (Small grain planting equipment, minimum tillage farming, Kansas).
Powell, G.M. Manhatten : The Service. L - Cooperative Extension Service, Kansas State University. June 1982. June 1982. (634). 8 p. ill. (NAL Call No.: 275.29 K13LE).

1754

The effect of different times of plowing small-grain stubble in eastern Colorado /by O.J. Grace.
Grace, Oliver J. 1880-. Washington, D.C. : U.S. Dept. of Agriculture, 1915. Caption title. 15 p. : charts ; 24 cm. (NAL Call No.: DNAL 1 Ag84B no.253).

1755

Influence of rye-cover crop management on soybean foliage arthropods.
EVETEX. Smith, A.W. Hammond, R.B.; Stinner, B.R. College Park, Md. : Entomological Society of America. Environmental entomology. Feb 1988. v. 17 (1). p. 109-114. Includes references. (NAL Call No.: DNAL QL461.E532).

1756

Metsulfuron methyl--a new alternative for broadleaf weed control in cereals and reduced tillage fallow.
WSWPA. Warner, R.W. Kral, C.W.; Henson, M.A.; Saladini, J.L. Reno : The Society. Proceedings - Western Society of Weed Science. Paper presented at the annual meeting of the Western Society of Weed Science, March 18-20, 1986, San Diego, California. 1986. v. 39. p. 129-133. (NAL Call No.: DNAL 79.9 W52).

1757

An oats (Avena sativa)-soybean (Glycine max) rotation using ecofarming versus conventional tillage.
WEESA6. Moomaw, R.S. Champaign, Ill. : Weed Science Society of America. Weed science. July 1985. v. 33 (4). p. 544-550. Includes 29 references. (NAL Call No.: DNAL 79.8 W41).

1758

Performance of triallate as influenced by incorporation with various pieces of tillage equipment.
WSWPA. Ryerson, D.K. Reno : The Society. Proceedings - Western Society of Weed Science. Paper presented at the annual meeting of the Western Society of Weed Science, March 18-20, 1986, San Diego, California. 1986. v. 39. p. 136-138. (NAL Call No.: DNAL 79.9 W52).

1759

Reduced tillage systems for Montana (Small grain production, includes herbicides and pesticides application guidelines).
Rardon, P. Bozeman : The Service. Bulletin - Cooperative Extension Service. Montana State University. Mar 1983. Mar 1983. (1286). 28 p. ill. (NAL Call No.: 275.29 M76C).

1760

Residual effect of metsulfuron applied during the fallow year on barley and lentils.
Mashhadi, H.R. Evans, J.O. S.l. : The Society. Research progress report - Western Society of Weed Science. 1988. p. 258-259. (NAL Call No.: DNAL 79.9 W52R).

1761

Rhizoctonia root rot of small grains favored by reduced tillage in the Pacific Northwest.
PLDRA. Weller, D.M. Cook, R.J.; MacNish, G.; Bassett, E.N.; Powelson, R.L.; Petersen, R.R. St. Paul, Minn. : American Phytopathological Society. Plant disease. Jan 1986. v. 70 (1). p. 70-73. ill. Includes 35 references. (NAL Call No.: DNAL 1.9 P69P).

1762

Root-lesion nematodes, potassium deficiency, and prior cover crops as factors in apple replant disease.
JOSHB. Merwin, I.A. Stiles, W.C. Alexandria, Va. : The Society. Growth chamber evaluations of soil from an orchard replant site showed severe stunting of 'Northern Spy' apple (Malus domestica Borkh.) seedlings grown in field soil (FS) compared with pasteurized soil (PS) from the same site. The FS : PS seedling dry weight ratio of 0.44 indicated a serious replant problem. Leaf nutrient content was generally higher in PS than FS seedlings.
Multiple-regression analysis indicated that leaf K and root-lesion nematode (Pratylenchus penetrans Filipjev) primary inoculum accounted for 75% of the variation in FS seedling dry weight. Apple seedling dry weight in FS was 97% of that in PS following a marigold (Tagetes patula L. cv. Sparky) cover crop, and 75% following oats (Avena sativa L. cv. Saia). Root-lesion nematodes were nearly eliminated from the plots with marigold. Other cover crops and weed-free fallow period were less effective in controlling apple replant disease and/or phytonematodes. Journal of the American Society for Horticultural Science. Sept 1989. v. 114 (5). p. 728-732. Includes references. (NAL Call No.: DNAL 81 SO12).

1763

Rye residues contribute weed suppression in no-tillage cropping systems (Agroecosystems, biomass).
Barnes, J.P.JCECD. Putnam, A.R. New York : Plenum Press. Journal of chemical ecology. Aug 1983. v. 9 (8). p. 1045-1057. ill. Includes references. (NAL Call No.: QD415.A1J6).

1764

Seasonal establishment of bermudagrass using plastic and straw mulches.
AGJOAT. Sowers, R.S. Welterlen, M.S. Madison, Wis. : American Society of Agronomy.
Bermudagrass Cynodon dactylon (L.) Pers. is normally established vegetatively during the early summer in the transition zone, to allow sufficient establishment time before the onset of freezing conditions in the fall. Clear polyethylene covers and straw mulches cause changes in the turfgrass microenvironment that may influence the rate of sprig establishment. The objective of this study was to evaluate the effects of barley (Hordeum vulgare L.) straw and clear polyethylene plastic mulch (0.04-mm thickness) on the establishment of 'Midiron', 'Tufcote', and 'Vamont' bermudagrass from sprigs. Separate tests were conducted in the fall of 1983 and 1984 and the summer of 1984 and 1985. Summer spriggings were made in May, June, and July, months generally recommended for planting in the transition zone. Late-season spriggings were made in August, September, and October. Plantings were made on a Sassafrass sandy loam (fine-loamy, siliceous, mesic Typic Hapludult). Summer bermudagrass establishment was reduced under straw and polyethylene covers. Injury under plastic occurred to plantings made in May and June, which were exposed to mean soil temperatures above 41 degrees C during the 8-wk cover period. In contrast, plastic mulch stimulated early fall bermudagrass growth and delayed dormancy. August and September plantings remaining under plastic throughout the winter exhibited high winter survival in comparison to unmulched or straw mulched turf, and were nearly 100% established by 1 July of the following year. Spriggings under plastic planted after 20 September exhibited poor establishment by 1 July the following year. These studies showed that plastic covers can be used to extend the establishment season of bermudagrass into the fall; however, plastic covers are detrimental to summer bermudagrass establishment. Agronomy journal. Jan/Feb 1988. v. 80 (1). p. 144-148. Includes references. (NAL Call No.: DNAL 4 AM34P).

1765

Soybean cultivar response to reduced tillage systems in northern dryland areas.
AGJOAT. Deibert, E.J. Madison, Wis. : American Society of Agronomy. Information on response of soybean Glycine max (L.) Merr. cultivars to reduced tillage systems in northern dryland areas is limited. A 4-yr field study (1984 to 1987) was conducted to evaluate the effect of tillage system, weed control method, and cultivar maturity on soybean seed yield variables. An early and a late-maturing soybean cultivar were grown on a Fargo clay (fine, montmorillonitic frigid Vertic Haplaquoll) on established tillage plots. Tillage systems included conventional (moldboard plow) and three reduced tillage systems (sweep, intertill, and no-till) with herbicides or herbicides plus cultivation for weed control. Climatic conditions resulted in differences among years in seed yield, seed weight, seed moisture, seed oil concentration, and seed oil yield. These seed variables were not significantly influenced by tillage system, weed control method, or cultivar maturity when grown in rotation with barley (Hordeum vulgare L.), but showed significant interactions. Cultivation for weed control depressed seed yield and weight of only the early cultivar. Early plant water stress (June and July) lowered yield of the early cultivar more than the late cultivar. Early cultivar no-till yields (1240 kg ha-1) were greater than tilled system yields (average 1070 kg ha-1), while late cultivar yields were similar among systems

(average 1420 kg ha-1). An early maturing cultivar performed similarly to a late-maturing cultivar irrespective of tillage system unless early plant water stress was encountered. Fall application of granular herbicide provided good weed control, but cultivation for weed control was not beneficial for the yields parameters measured. Agronomy journal. July/Aug 1989. v. 81 (4). p. 672-676. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Spring interseeding of winter rye with cover crops.
JSWCA3. Edwards, L.M. Ankeny, Iowa : Soil Conservation Society of America. Journal of soil and water conservation. May/June 1986. v. 41 (3). p. 190-191. Includes 5 references. (NAL Call No.: DNAL 56.8 J822).

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Tillage effects on spring barley production.
Flom, D.G. Thill, D.C.; Callihan, R.H. S.l. : Western Society of Weed Science. Research progress report - Western Society of Weed Science. 1986. p. 198-199. (NAL Call No.: DNAL 79.9 W52R).

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Using crop diversity to manage pest problems: some California examples.
Flint, M.L. Roberts, P.A. Greenbelt, Md. : Institute for Alternative Agriculture. Moderate to large scale California growers (as well as small scale ones) manipulate cropping patterns in a number of ways to reduce pest problems. Crop rotation, which can be defined as diversifying crops over time, is used to manage selected pests, primarily weeds, pathogens, and nematodes. As a substitute for pesticides, crop rotation has been most rewarding in the control of nematodes; sugarbeet cyst and root knot nematode examples are detailed. Some pests that invade fields from nearby areas can be managed by modifying adjacent cropping patterns or practices; Pierce's disease of grapes, sugarbeet yellows and border harvesting of alfalfa are given as examples. Finally, multiple crops can be grown within a single field or orchard. Although this approach is not widely practiced by many California growers, two examples of systems where intercropping has been shown to limit pest numbers without the use of pesticides are described: intercropping of cotton with alfalfa and companion planting oats when seeding alfalfa. These examples show that using crop diversification to manage pests is feasible, but growers must be strongly motivated to make the necessary changes in cropping patterns. Most of the systems that have been widely adopted are those for which few other economically feasible methods were available. American journal of alternative agriculture. Fall 1988. v. 3 (4). p. 163-167. Includes references. (NAL Call No.: DNAL S605.5.A43).

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Brusko, M. Emmaus, Pa. : Regenerative Agriculture Association. The New farm. Feb 1987. v. 9 (2). p. 10-11. ill. (NAL Call No.: DNAL S1.N32).

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AGBOB. Siddoway, F.H. Lewis, C.E.; Cullum, R.F. Fairbanks : The Station. Agroborealis - Alaska Agricultural Experiment Station, Fairbanks. Includes lists of species. July 1984. v. 16 (2). p. 35-40. ill. Includes 5 references. (NAL Call No.: DNAL S33.E2).

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PLPHA. Pfanz, H. Heber, U. Rockville, Md. : American Society of Plant Physiologists. Plant physiology. June 1986. v. 81 (2). p. 597-602. Includes 38 references. (NAL Call No.: DNAL 450 P692).

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Briggs, S. P. (Blacksburg. Va.) Chemical, Drug and Pesticide Unit, Virginia Tech (1980?). Pesticide Applicator Training collection. 56 slides : col. + 1 sound cassette (17:50 min.) + 1 script. (NAL Call No.: Slide no.60).

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EVETEX. Peters, D.C. Kerns, D.; Puterka, G.J.; McNew, R. College Park, Md. : Entomological Society of America. Abstract: Greenbug, Schizaphis graminum (Rondani), biotypes B, C, and E, were monitored on susceptible 'Wintermalt' and resistant 'Post' barley to determine if there were benavioral differences among the biotypes when they fed on resistant and susceptible barley. All biotype-cultivar combinations were tested by observing feeding behavior, fecundity, and damage. Greenbug biotype B had shorter nonfeeding times on the host plant before probing than did biotypes C and E. Biotype B appeared to be less successful in feeding from the phloem of susceptible 'Wintermalt' but was relatively more successful than biotypes C and E on the resistant 'Post'. Development, reproduction, and particularly dry weight of biotype B were inferior to biotypes C and E on both resistant and susceptible plants. However, biotype B caused the greatest overall reduction in chlorophyll content of infested leaves and should be considered the most virulent but least biologically fit of the three biotypes in these comparisons. Environmental entomology. June 1988. v. 17 (3). p. 503-507. Includes references. (NAL Call No.: DNAL QL461.E532).

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EVETEX. Peters, D.C. Kerns, D.; Puterka, G.J.; McNew, R. College Park, Md. : Entomological Society of America. Abstract: Greenbug, Schizaphis graminum (Rondani), biotypes B, C, and E, were monitored on susceptible 'Wintermalt' and resistant 'Post' barley to determine if there were behavioral differences among the biotypes when they fed on resistant and susceptible barley. All biotype-cultivar combinations were tested by observing feeding behavior, fecundity, and damage. Greenbug biotype B had shorter nonfeeding times on the host plant before probing than did biotypes C and E. Biotype B appeared to be less successful in feeding from the phloem of susceptible 'Wintermalt' but was relatively more successful than biotypes C and E on the resistant 'Post'. Development, reproduction, and particularly dry weight of biotype B were inferior to biotypes C and E on both resistant and susceptible plants. However, biotype B caused the greatest overall reduction in chlorophyll content of infested leaves and should be considered the most virulent but least biologically fit of the three biotypes in these comparisons.
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JOSHB. Merwin, I.A. Stiles, W.C. Alexandria, Va. : The Society. Growth chamber evaluations of soil from an orchard replant site showed severe stunting of 'Northern Spy' apple (Malus domestica Borkh.) seedlings grown in field soil (FS) compared with pasteurized soil (PS) from the same site. The FS : PS seedling dry weight ratio of 0.44 indicated a serious replant problem. Leaf nutrient content was generally higher in PS than FS seedlings. Multiple-regression analysis indicated that leaf K and root-lesion nematode (Pratylenchus penetrans Filipjev) primary inoculum accounted for 75% of the variation in FS seedling dry weight. Apple seedling dry weight in FS was 97% of that in PS following a marigold (Tagetes patula L. cv. Sparky) cover crop, and 75% following oats (Avena sativa L. cv. Saia). Root-lesion nematodes were nearly eliminated from the plots with marigold. Other cover crops and weed-free fallow period were less effective in controlling apple replant disease and/or phytonematodes. Journal of the American Society for Horticultural Science. Sept 1989. v. 114 (5). p. 728-732. Includes references. (NAL Call No.: DNAL 81 SO12).

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AGJOAT. Francois, L.E. Donovan, T.J.; Lorenz, K.; Maas, E.V. Madison, Wis. : American Society of Agronomy. Although current rye (Secale cereale L.) grain production is concentrated mainly in the northern half of the USA and Canada, some rye grain is grown in the arid southwest. Soils in this area are, or have the potential to become, highly saline from the application of saline irrigation water. Since there is neraly a complete lack of information about the response of rye grown under saline conditions, a 2-yr field plot study was conducted. Six salinity treatments were imposed on a Holtville silty clay (clayey over loamy, montmorillonitic calcareous , hyperthermic Typic Torrifluvent) by irrigating with Colorado River water artifically salinized with NaCl and CaCl2 (1:1 by weight). Electrical conductivities of the irrigation waters were 1.1, 4.0, 8.0, 12.1, 16.0, and 20.1 dS m-1 the first year, and 1.1, 3.9, 7.5, 11.6, 15.6, and 19.8 dS m-1 the second year. Grain yield and vegetative growth were measured. Relative grain yield of two cultivars, Maton and Bonel, was unaffected up to a soil salinity of 11.4 dS m-1 (electrical conductivity of the saturation extract;k(e)). Each unit increase in salinity above 11.4 dS m-1 reduced yield by 10.8%. These results place rye in the salt-tolerant category. Yield reduction was attributed primarily to reduced spike weight and individual seed weight rather than spike number. Bread quality decreased slightly with increasing levels of salinity. Straw yield was more sensitive to salinity than was grain yield. Plant emergence was determined in greenhouse sand cultures. Both cultivars were slightly less salt tolerant during plant emergence than during subsequent stages of growth. Agronomy journal. Sept/Oct 1989. v. 81 (5). p. 707-712. Includes references. (NAL Call No.: DNAL 4 AM34P).

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Pomeranz, Y. St. Paul, Minn. : American Association of Cereal Chemists, 1982. Storage of cereal grains and their products, 3rd ed. / edited by Clyde M. Christensen. p. 145-217. 13 p. ref. (NAL Call No.: SB190.C43 1982).

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