Field Seed Facts

LOUISVILLE SEED CO.
104 S. SECOND ST.
LOUISVILLE, KY.

GOLD MEDAL FIELD SEEDS

LEGAL WEIGHT AND QUANTITY PER ACRE

	WEIGHTS	QUANTITY PER ACRE
Clover Red	60 lbs.	8 to 10 lbs.
Clover Alfalfa	60 "	15 " 20 "
Clover Alsike	60 "	6 " 8 "
Clover Crimson	60 "	10 " 15 "
Timothy	45 "	10 " 12 "
Red Top	14 "	5 " 7 "
Blue Grass	14 "	" 1 bu.
Orchard Grass	14 "	1½ " 2 "
Millet	50 "	1½ " 2 "
Hungarian	48 "	1 " 2 "
Rape	50 "	8 " 10 lbs.
Cane Seed	50 "	¼ " 1 bu.
Stock Peas	60 "	1 " 1½ "
Buckwheat	50 "	¾ " 1 "
Rye	56 "	1½ " 2 "
Oats	32 "	1½ " 2 "
Barley	48 "	1½ " 2 "
Wheat	60 "	1½ " 2 "
Corn	56 "	8 " 10 qts.

Seed Facts.

THIS booklet is not designed as a Cyclopedia of Farming or of Field Seeds. Its publication is prompted by no such lofty ambition. It is intended merely to present in a condensed form some of the leading facts concerning a few of the principal field crops of the country, and to impress upon the Trade the desirability of insisting upon the use of High-Grade Seeds.

If it succeeds in doing this in even a small measure its mission will have been accomplished and we shall feel abundantly repaid.

Louisville Seed Co.
Gold Medal Seeds

Our Guarantee

If any shipment of seeds is not as good as sample or better;

If any shipment of seeds is not sound, clean and good;

If we do not fulfill every written or verbal promise;

In a word, if you are not thoroughly satisfied with GOLD MEDAL SEEDS, ship them back to us immediately AT OUR EXPENSE.

We take all the risk; we stand all the costs.

Doesn't this Guarantee offer you ample protection against loss?

Quality First.

FARM management has attained the dignity of a profession, the practice of which requires broad knowledge and the application of scientific principles. The successful farmer must be a close student of new methods of cultivation, improved machinery and other branches of agricultural economics, always with a view to increasing his profits through increased production and the elimination of waste. Indeed, the elimination of waste constitutes the chief element of success. Nothing contributes more to this end than care in the selection of seed. Farmers generally recognize the wisdom of this policy, as is apparent in the ever increasing demand for seeds of the highest quality. The price is only a secondary consideration.

Of course the seed trade finds cause for gratification in this improved attitude of the farmer. The seed dealer, in common with the merchant in any other line, takes pride in the fact that his goods are of the highest quality and that his customers will not accept anything inferior. When complaint is made that poor seed has been sold as high grade, it is usually due to the fact that the dealer himself has been imposed upon and is not aware of the inferior quality of his stock. Not every dealer is a competent judge of quality. In many cases he is compelled to depend wholly upon the integrity of those from whom he procures his supply.

It is apparent, therefore, that where assurance of high quality is desired, prudence would require that the dealer obtain his stock only from those whose mature experience and accurate judgment enable them to offer a binding guarantee of the quality of the seeds

sold, and whose integrity and responsibility are beyond question.

Quality first and the highest quality always are the standards which govern the selection of Gold Medal Seeds. Long experience and accurate judgment enable us to maintain this standard, and when we offer seeds under the Gold Medal brand they carry a guarantee which protects the dealer against loss and assures the farmer that the seeds he buys are absolutely the best of their kind.

Read the guarantee. It gives our customers positive assurance of safety.

What Gold Medal Means.

WHEN the seeds you buy bear our Gold Medal brand it means that they are of the highest quality.

It means that they have been selected and graded by seedsmen whose long experience has made them experts in their profession and whose accuracy of judgment has been so perfected that they can unhesitatingly offer a binding guarantee of the quality of the seeds.

It means that every shipment of seeds is sound, clean and as good as the sample, or better.

It means that if you are not fully satisfied with them you may ship them back to us immediately at our expense.

It means that you are assured of satisfaction and that you assume no risk whatever.

Could any proposition be fairer?

Our aim is to substantiate every claim and to give every customer an absolutely square deal. That is the principle upon which our business has been established and upon which we shall continue to conduct it. That our patrons appreciate and approve our methods is conclusively shown in the large and consistent increase in our sales annually throughout the six years during which we have sold seeds under our Gold Medal brand with a binding guarantee.

Red Clover

Is the one standard crop necessary to the routine of every profitable farm.

Its value as a soil improver, no less than as a forage crop, makes it an indispensable feature of every rotation.

This prominence in the farm economy makes the quality of the clover seed used a matter of the highest importance.

Probably no question demands more serious consideration or more vitally affects the profits of the farmer.

Our GOLD MEDAL SEED is of the highest quality and we recommend it without reservation.

RED CLOVER has always been the principal leguminous field crop of the eastern half of this country and, despite the rapidly increasing interest in alfalfa and other legumes, its popularity is undiminished. It is adaptable to a great variety of soils, but does best on good, well drained clay loam in which lime is a prominent constituent. To insure success with acid soils it is necessary to apply an additional dressing of lime. This not only corrects the acidity, but makes more readily available the potash, which is the chief element required by clover. Lime and wood ashes are among the best and cheapest fertilizers for clover, while barnyard manure is without a superior.

Early and thorough preparation of the seedbed is advisable, and where difficulty in securing a good catch has been encountered it should be seeded without a nurse crop at the rate of ten to twelve pounds per acre and lightly harrowed in. As red clover recurs in rotation at intervals of from three to five years on the greater portion of the best farm lands of this country, it occupies a position of unusual importance in the routine of successful agriculture, which makes it imperative that great care be exercised in the selection of seed. With the possible exception of timothy, red clover is sold in more different grades than any other seed,

ranging from the practically pure, containing over ninety-five per cent of good germinable seed, to the very poor quality which may contain less than twenty per cent of germinable seed, with the remainder made up of screenings, dirt and weed seeds which are not only valueless to the farmer, but cause him a heavy loss. These figures taken from official tests doubtless represent an extreme case, but they illustrate the necessity of great care in buying seeds, and are conclusive proof that the best is the cheapest regardless of price.

Seeding in the Spring.

In the northern states clover is seeded in the spring, because of its liability to be winter-killed, but in more southern localities it should be sown in the fall, early enough to become well rooted before frost. The surface soil should be well pulverized, the seed sown broadcast and rolled to prevent too rapid evaporation. The first cutting can usually be made in May for hay, while the second crop may be cut for either hay or seed. Bumblebees are necessary to cross-fertilize the blossoms and, as they are not numerous in the early part of the season, the second crop receives their attention with the result that the heads are more abundantly filled with seeds.

When seeded with timothy in the proportions of three quarts of clover to six quarts of timothy, the first year's growth will show a heavy predominance of clover. The proportions will be reversed in the second year, after which the clover will practically disappear, leaving the timothy alone.

Cutting for Hay.

Red clover should be cut for hay when in full bloom, as it has then attained its highest feeding value.

A larger amount of dry matter is found at the end of the blooming period, but it is then more woody and poorer in the nitrogenous constituents. In making hay great care should be exercised to preserve the leaves, which contain two-thirds of the feeding value. Clover hay possesses a feeding value equal to corn, oats or barley, and greater than timothy or corn fodder. It is an excellent roughage for growing animals, particularly cattle and sheep, but should form only a part of the roughage fed to horses. All kinds of stock do well on clover pasture, though cattle and sheep should not be turned on it when they are empty or when the clover is wet with dew or rain, as it is likely to cause bloat.

Clover stands next to corn as a silage crop and in this form it is better liked by stock than clover hay, being more palatable and more nutritious, as the leaves, rich in food value, are not lost, as they frequently are in haymaking. Clover for silage should be cut at same period of growth as for hay and put immediately into the silo before it has wilted. It should be run through a cutter so that it will pack closely, thus preventing the admission of air, which is the main cause of spoiled silage. For this purpose clover may be cut and packed when wet without fear of deterioration. As a soiling crop also clover has few equals.

For green manure there is no better crop than clover. Occasionally the entire plant is plowed under, but it is considered wiser economy to cut and feed the hay, return the manure to the soil and turn under only the roots and stubble.

Clover usually follows a small grain in the farm rotation, remaining for one or two seasons and being repeated after three or four years. Practically every standard farm crop will do well after clover.

Mammoth Clover

Also called Sapling Clover, is in many respects similar to Red Clover, but is stronger and coarser.

It makes excellent pasturage and fine hay, which is much relished by all kinds of farm stock.

Valuable as a soil improver, through its ability to store nitrogen in the soil, and as a green manure.

Sure to prove a profitable crop where pure seed is used.

There is nothing superior to our GOLD MEDAL SEEDS.

MAMMOTH CLOVER is in many respects similar to red clover, particularly in the form of its leaves, the shape and color of its blossoms and in its general habit of growth. It differs, however, in the greater size of its stems, heads and roots, and the greater depth to which it penetrates the soil. It also matures later, produces but one crop of hay and provides a less abundant pasturage after the time of seed production. It will grow in any soil that will produce red clover, and even on poorer land, as it is a stronger plant and has more power to gather plant food from the soil. Like red clover, it is a biennial, though on soils especially suited to it, and when pastured to hinder the production of seed, its life may be prolonged. Owing to its greater depth of root, it is better able to withstand drouth, as well as the effects of heaving caused by freezing and thawing.

The soil should be prepared as for red clover, but it is more important that mammoth clover follow a cultivated crop that has been plowed deeply. This enables the roots to push their way more readily into the soil, and is not inconsistent with firming the surface after seeding, particularly in the case of spongy soils.

Methods of Seeding.

The methods of seeding mammoth clover are the same as for red clover. When sown alone not less than ten pounds of seed per acre should be used, and if conditions are not altogether favorable a larger quantity is advisable; or, if sown in combination with other seeds the quantity should be reduced in proportion. If combined with red clover, using equal parts of each seed, more pasture will be produced, as the red clover grows vigorously in the spring and fall, while the mammoth clover is at its best in the late spring and early summer. It is more satisfactory than red clover for mixing with timothy for a hay crop, as the plants mature more nearly together.

Mammoth clover provides excellent pasturage for all kinds of farm stock, but, as in the case of red clover, cattle and sheep should not be run on it when hungry or when the clover is wet. Animals may be pastured on it as soon as it attains sufficient growth to supply them with enough food, as it is of great importance that the clover shall not grow beyond the power of the stock to crop it back. It will not furnish much pasturage in the fall, whether it has been grazed during the season or cut for hay.

Cutting for Seed.

When the clover is to be cut for seed it is often advisable to graze it off closely in the early spring to prevent its running too much to stem, and this precaution is especially necessary where the soil is peculiarly suited to the growth of clover. While the pasturing should be close, it should not be long continued, lest the plants be so retarded as to prevent the production of the greatest amount of seed, a condition certain

to be realized if a drouth should follow prolonged pasturing. It is more prudent to risk excessive development of the plants than the reverse, since the loss would probably be less, and on some soils such pasturing may not be necessary at all.

Since it is not usually perennial in its habit of growth, mammoth clover is not well suited for permanent pastures, but when sown in combination with other seeds it may be expected to live two years and possibly longer, its position in the farm rotation being the same as that of red clover.

Mammoth clover makes an excellent green manure, because of the abundance of the green product as well as of the vegetable matter in the root growth. When grown for this purpose it is frequently advisable to let it grow until nearly ready to blossom, then pasture off the more palatable portions of the plants and plow under the remainder.

Alfalfa

A good stand of Alfalfa is better than a bank account

It will produce heavy crops continuously for many years, and will pay more net profit than any other crop that can be produced with an equal outlay of cash and labor.

The chief requisites are thorough preparation of the soil and seed of high quality. The first is the farmer's duty to himself in the case of any crop, while the use of good seed is of prime importance in a crop that may not be plowed under for many years.

Our GOLD MEDAL Alfalfa is unsurpassed. Try it.

THOUGH of comparatively recent introduction into the United States, alfalfa is one of the oldest forage plants known, being native to the valleys of western Asia, where it has been cultivated for twenty centuries. Coming to Mexico with the Spanish invaders, it passed thence to the Pacific coast of South America, whence it was brought to California in 1854. It spread rapidly over the western half of this country, where it is universally recognized as the most profitable forage crop grown, and in recent years has grown greatly in the esteem of farmers of the states east of the Mississippi river, where it is now regarded as a standard crop if not an absolutely indispensable one.

The principal requisites for alfalfa are lime, potash, magnesium and phosphoric acid. Lime is necessary to insure rapid growth, and a profitable crop should not be expected from soil that is deficient in this element. The land should be well drained. If the sub-soil is stiff, heavy and impervious to water, alfalfa will not be a permanent success, no matter how well the surface soil has been prepared.

Fall Seeding is Best.

While alfalfa has been sown in the United States during every month in the year with entirely satisfactory results, the concensus of opinion is that the best results, both in stand and in yield, follow an autumn sowing. Fall seeding is always advisable where grass and weeds are likely to choke out the young plants, and this obstacle is almost sure to be encountered if the rainfall is heavy. The best time for fall seeding is after the rains have put the ground in good condition and there is still time for a good growth before cold weather. Well established, strong rooted alfalfa will withstand the most rigorous climatic conditions, but very young plants may be seriously injured by a slight frost or killed by a severe freeze. It is apparent, therefore, that the time of sowing may be varied in accordance with the probable arrival of freezing weather.

Preparing the Seed Bed.

Because of the smallness of the seed the seedbed should be carefully prepared, the surface soil being finely pulverized and the seed covered to a depth of about one inch. After seeding the soil should be firmed by rolling to conserve the moisture until the plants become established. Since the young plants are easily choked out by weeds, the seeding should be done at a time that will give them the longest and most favorable season in which to become well rooted. September has been found to be an excellent time for this purpose, as seed sown at this time become firmly established before cold weather. It is very important that the plants get a good footing and develop good root systems the first season.

The quantity of seed used is usually from fifteen to twenty pounds to the acre if put in with a drill, or, if sown broadcast, from five to ten pounds more is advised. The first crop can be mowed when the alfalfa is from twelve to sixteen inches high, and subsequent cuttings may be made as often as it reaches a sufficient height. As a soiling crop alfalfa is used probably more than any other plant, and on favorable soils its yield is heavy and continues a long time. The average life of alfalfa in the South can not be definitely determined, but it will persist as long as the field can be kept clean and, with good care, should yield in excess of a ton per acre at each cutting and produce from three to five cuttings each year.

Curing the Hay.

As a hay plant alfalfa is without an equal, though the making of the hay requires considerable skill. If put into the barn or stack before the stems are cured it is liable to heat and mold, and if left on the ground too long after cutting the leaves will get brittle and drop off, and much of the most valuable part of the forage will be lost. Alfalfa that is cut when the first flowers begin to appear makes the best hay. It should be stacked when it is sufficiently cured to keep without heating, and still green enough to hold the leaves. The ability to judge this condition accurately can be acquired only by experience, and it should be given the most serious consideration, as the value of the hay will depend upon its being well cured before the leaves begin to fall off.

Alfalfa hay is fed profitably to all kinds of farm stock. Young cattle and horses, hogs and sheep thrive on it, while the addition of a small amount of grain

makes it an excellent ration for working horses. Alfalfa and corn silage, two of the best feeds for dairy cattle, make a practically complete or balanced ration in themselves, while alfalfa alone is unequaled as a green forage for growing pigs. The great feeding value of alfalfa is shown by the fact that a yield of four tons per acre contains twice as much protein as clover at three tons per acre, and three times as much as corn at sixty bushels per acre.

Soils too much exhausted or too barren to produce a fair yield of corn or cotton should not be expected to grow good crops of hay, and fertilizers may be used as profitably in the hay field as elsewhere. A dressing of compost, cottonseed meal or a commercial fertilizer rich in lime, potash and phosphoric acid will greatly increase the yield of hay and green forage. Barnyard manure may be applied the second year and each year thereafter, as the alfalfa will then be better able to resist the weeds which might choke out younger plants, and, as a further precaution against weeds, it is better to apply this dressing in the fall or early winter than in the spring.

While some farmers have not been successful with alfalfa, the failure in nearly every case has been due to neglect of the details necessary to assure proper conditions of growth. Those who have had the longest experience with alfalfa are the most enthusiastic in its praise, and they are practically unanimous in advising those who fail in their first attempt to plow the ground and try it again, feeling assured that persistence will ultimately bring success and substantial profit.

Alsike

Equal to any and superior to most clovers, and is rapidly growing in favor.
Especially adapted for use in damp situations, and will thrive in soils too wet for other clovers.
Well suited for mixing with other seeds for permanent pastures or for hay.
Withstands freezing, excels as a honey plant and is a fine soil improver.
Gold Medal Alsike always gives satisfaction.

THIS species of clover is a native of Sweden and is extensively grown throughout the European countries, where it is regarded as one of the most valuable crops, particularly for pasturage and soiling, and to a less extent for hay. As its use becomes more general it is rapidly growing in the esteem of American farmers, many of whom regard it as the equal of any clover grown and possessing many points of superiority exclusively its own. It is perennial rather than biennial in its habit of growth, and for this reason is not so well adapted for a rotation crop, but is excellently suited for permanent pastures. When grown alone the treatment for alsike is the same as for red clover, and the hay is similarly cured. It sometimes fails to grow sufficiently large for a good hay crop, making it rather more difficult to cut and cure than other clovers, but it makes fine pasturage and is an excellent mixture for sowing with red top on damp places in a permanent pasture. While it will grow in dry situations, it is best adapted to moist soils and will thrive on land that is too wet for other clovers. For marshy land, the borders of swamps or seepy hillsides it is unequaled, the profusion of strong, fibrous roots being a perfect preventive of washing, and if the flowers are per-

mitted to mature it will reseed itself and persist for many years. It withstands freezing well and will not heave out, but does not resist drouth so well as red clover.

Soil and Seeding.

The preparation of the soil for alsike is essentially the same as for red clover, though the seed should be covered less deeply because of their smaller size. When seeded alone five pounds of seed per acre is sufficient for most soils, but when sown with other grasses the quantity will vary in proportion to the other seed used. For pasture alsike is frequently sown with timothy, orchard grass, Kentucky bluegrass and red clover. Where orchard grass will flourish it may be combined with alsike and bluegrass with excellent results, since the two grasses grow both early and late in the season, while the clover is at its best in the early summer.

Alsike is superior to red clover in providing honey for bees. It is also better adapted for growing with timothy, because it crowds the timothy less and because they mature at the same time. Alsike sown with timothy produces an exceptionally choice hay, and the two crops will do well together for the first two years. The alsike remains green and tender after being cured and imparts a flavor to the timothy which horses find especially palatable, and it is therefore more readily assimilated by them. On moist fertile lands it is not difficult to secure a good catch, particularly when oats are first sown as a nurse crop at about two bushels per acre, and then five quarts of timothy and three quarts of alsike per acre sown broadcast and lightly harrowed in. A good stand of alsike and timothy insures a crop that is practically free from weeds and other undesirable growths.

Restores Exhausted Soils.

Like red clover, alsike is an excellent crop to restore land that has been planted to grain or other crops that exhaust the nitrogen and vegetable matter, both of which the clover roots will replace in abundance. If the crop preceding the alsike has been a cultivated one, well cared for, the soil will be in a condition to grow the clover without fear of injury from weeds. Cereal crops or corn following alsike will show a substantial increase in production, though this clover is not regarded as a good rotation crop. Because of its perennial habit, whenever a good stand is obtained it is customary to pasture it or cut it for hay for several years. Whether used for pasture or fed as hay, alsike is greatly relished by all kinds of farm stock.

When alsike is grown for seed it may be pastured for a time after the spring growth is well started, thus securing uniformity in the crop and preventing an overgrowth of stem to the detriment of seed production. The duration of such pasturing can not be fixed in a definite way, as it will vary in each particular case. On some soils no pasturing will be necessary and should not be long continued in any case, as it may diminish the production of seed, but where practiced it should be close.

Alsike may be seeded in either spring or fall, the best results usually being obtained from seeding done in September or March, though dates a little earlier or later frequently produce entirely satisfactory results.

Crimson Clover

Unsurpassed for pasture, hay, soiling or silage, or for green manure.

Possesses greater feeding value than Red Clover, will grow on poorer land and adds more fertility to the soil.

Matures very early and is particularly well suited to the southern and southwestern states.

CRIMSON or scarlet clover is so called because of the beautiful rich color of its bloom. It is an erect, tufted annual, but has a semi-biennial habit of growth, being sown usually in the summer and coming to maturity the following spring. It grows from one to two feet high and may be cut early enough to permit the use of the land for some other kind of crop the same season. It is not suitable for permanent pasture or meadow and, being easily winter-killed, is most successfully grown south of the Ohio and Potomac rivers and in the southwestern states. While the best crops are produced on well drained, fertile loams, crimson clover will grow on poorer, thinner soils than red clover and is more effective in restoring such soils to a fertile condition. This is especially true of poor soils that are given a moderate application of fertilizer containing phosphoric acid and potash, but no nitrogen. Lime and wood ashes are quite as beneficial to crimson clover as to red clover.

How to Sow.

Crimson clover requires from twelve to fifteen pounds of seed per acre, which may be drilled or sown broadcast. Where it is to follow a cultivated crop, such as corn, cotton or potatoes, it is customary to

broadcast it immediately after the last cultivation of these crops, and without covering. When crimson clover occupies the ground alone it should be lightly harrowed or rolled in. When sown in the spring it makes small growth, comes rapidly to maturity, ripens its seed and dies. In the South it is the practice to sow between the middle of July and the middle of September, the seed lying partially dormant during the winter, completing its growth in the spring and maturing three or four weeks earlier than red clover.

Crimson clover should be cut for hay as soon as it is in bloom. If delayed beyond this time the hairy formations become stiff and hard and are likely to prove injurious to animals, sometimes causing death. When harvested for seed it should be cut as soon as ripe, to prevent shattering, and it should be put under cover and threshed as soon as dry, as it may sprout in the head if exposed to rain.

As a Soiling Crop.

Properly cut and cured crimson clover hay is much liked by stock. It is especially well adapted for working animals, being richer in protein, and therefore more nutritious than even red clover. For the same reason, it ranks high as a soiling crop, tests having shown that the green forage contains seventeen per cent more protein than red clover and fifty-nine per cent more than green rye. It also makes one of the earliest and best pasture crops, and as a silage crop is equal to red clover, being cut and put up in the same manner.

As a green manure crimson clover has one of its most valuable uses. The roots are abundant and penetrate the soil deeply and the herbage is profuse, providing together a vast quantity of vegetable matter,

which not only improves the physical condition of the soil greatly, but adds much nitrogen and other valuable elements of plant food that will be highly beneficial to the succeeding crops. For this purpose crimson clover is preferable to cowpeas, as it decays more rapidly, thus becoming more quickly incorporated with the soil and therefore less likely to burn.

Crimson clover is one of the best cover crops. Seeded in corn, sorghum, potatoes or other crops at the time of last cultivation, or when these crops are removed, it will occupy the land through the fall and winter and may be pastured off or plowed under in the spring in time for planting the next crop. Used in the orchard it provides the nitrogen required by the trees, aids greatly in keeping down the weeds, and if not needed for fertilizing it can be cut for hay, silage or soiling.

White Clover.

THIS is a low, creeping perennial with a white bloom, and is suitable only for pastures. Though quite widely distributed through the southern states, it is not held in as high esteem as the other clovers, being uncertain and unreliable in its growth, sometimes thickly covering the ground with vigorous plants and then disappearing for several seasons. It often fails to appear because of dry weather in the spring, and it is likely to disappear suddenly if the moisture fails in the summer.

White clover is seldom seeded alone, but usually forms part of a general mixture, being especially suited to grow with bluegrass. It is excellent in mixtures for sowing lawns and of great value as a plant for

providing honey for bees. It is especially valuable because of its early appearance in the spring, when it is eagerly eaten by all kinds of stock, and permits the opening of the grazing season on natural pastures/much earlier than otherwise would be possible. It is a good grazing plant for cattle and sheep, but is thought by some to be injurious to horses and mules, though this danger is minimized by the presence of grasses or other forage plants in the pasture. Even when present in considerable quantity it does not interfere with the growth of later pasture or meadow grasses, though it is quick to occupy any spots that are but thinly covered with other plants.

White clover, when seeded alone, requires from seven to ten pounds of seed per acre, the amount being proportionally reduced when used in combination with other seeds. When grown for seed under favorable conditions of soil and season, the yield is usually between two hundred and three hundred pounds of seed per acre.

Sweet Clover.

SWEET CLOVER, also known as Bokhara clover and melilotus, is distinguished by its profusion of small white flowers, and is not to be confused with the yellow-flowered species, which are but weeds and without value. It is a rank grower, even on hard, poorly cultivated soils where other legumes would fail, and will do well on almost any soil that is rich in lime. It is exceptionally valuable as a green manure and is often used to prepare very poor lands for a more valuable legume, probably having no superior for this purpose.

Sweet clover is generally regarded as an excellent pasture plant, though as a rule cattle do not eat it readily at first, but if turned on it in early spring before other grazing is accessible they soon acquire a taste for it.

The seedbed should be well prepared and the seed sown in February or March, at the rate of two pecks per acre, when sown alone. Ordinarily no covering is required. When sown with oats the seeding may be done in either spring or fall. If sown in the spring a crop may be cut in the fall, and two or three crops the following season. Although classed as a biennial, it is often treated as a perennial and, under favorable conditions, may persist for several years. Where it is desired to keep the land in sweet clover for more than two years, only two crops should be cut for hay each year and the third crop allowed to form seed.

Kentucky Bluegrass

Has no superior as a pasture grass. It forms a compact sod which withstands trampling unusually well.
It is an admirable drouth resistant and is unsurpassed for fall and winter pasture.
May be sown at any time and should form a part of every mixture for permanent pastures or for lawns.
GOLD MEDAL SEED insures a successful stand.

KENTUCKY BLUE GRASS, though grown in all parts of this country and as far north as Alaska and Labrador, attains its best growth in the limestone regions of Kentucky and Tennessee, and doubtless has been the chief influence in making these sections the most famous stock-raising centers in the world. It is not so satisfactory for hay as some of the other grasses, because of its lighter yield, but is without a superior as a pasture grass on soils to which it is adapted. Its culture has not been attended with much success on the dry clay hills or the sandy pine-woods soils of the South, though in North Carolina, northern Georgia, and on the lime soils of northern Mississippi it has been grown with profit.

Blue grass is a perennial, growing from one to two feet tall, with many long, narrow root leaves. It spreads rapidly by means of seed and various runners or suckers, forming a very compact sod which withstands grazing and trampling exceptionally well. Though making little or no growth in midsummer, it is an admirable drouth resistant, and grows rapidly with the first fall rains, furnishing an abundance of rich green pasturage which lasts throughout the winter if the weather is not unusually severe.

Soil Preparation.

A good stand of blue grass may be expected to follow either spring or fall seeding; indeed, it may be

sown with good results at any time of the year, though preferably in September or October, and lightly brushed in. If not seeded by that time it is usually wiser to wait until spring, when it should be done as early as it is possible to prepare the ground. The importance of a thorough preparation of the soil can not be too strongly impressed, as satisfactory results can not reasonably be expected if it is done carelessly. The seedbed for a permanent pasture should be prepared with as much care as for wheat, and the additional labor and expense will be fully repaid in the increased value of the pasture. The seedbed should be firm and compact and the seed sown broadcast. The quantity of seed required depends almost wholly on the quality, which varies greatly. Of the ordinary cheap grades, much of which will not germinate, from two to three bushels per acre will be necessary, while of high grade guaranteed seed, such as our Gold Medal brand, from three pecks to one bushel should be sufficient to insure a good stand.

Blue grass is rather slow in taking possession of the ground, sometimes requiring two or three years in which to become firmly established, but eventually taking almost complete possession of soils to which it is well adapted and persisting for many years. It may be profitably combined with Japan clover or Bermuda grass, either of which will grow well in hot weather when the blue grass is dormant. In some instances white clover has been found beneficial in blue grass, as it conserves the nitrogen in the soil and adds variety to the pasturage, but care should be taken that it be not too abundant. Blue grass is a favorite for lawns, and when used for this purpose careful preparation of the soil and extra heavy seeding are of the utmost importance.

Orchard Grass

Is one of the most valuable grasses grown for both hay and pasturage, and will grow wherever any grass will grow.

Kentucky grows the most and the best of this grass, and Louisville is the principal market for the seed.

Our facilities for supplying the trade with orchard grass seed are unequaled, and we invite the inquiries of all buyers.

BEING well adapted to every section of the temperate zone, orchard grass is one of the most popular as well as one of the most profitable grasses grown in America. Growing vigorously, furnishing rich pasturage and providing excellent hay, it is a favorite grass in every state east of the Mississippi river and in many western states. It attains its best growth on the moist or heavier clay soils, but does not do so well on thin or light sandy soils. It is a hardy perennial, thriving equally well in sunshine or shade, and is superior to any other grass for woodland pastures. Starting early, it grows rapidly, furnishing excellent pasturage in the spring, and, though its growth is checked during the hottest weather, it renews its vigor with the early fall rains and makes exceptionally fine grazing throughout the winter. It may be sown with good results at any time from January to April, inclusive, or in August, and should make good pasture the first season. As it resists drouth admirably, endures trampling well, and will succeed in any soil or climate where other grasses will grow, it is especially desirable for permanent pastures.

Hay made from orchard grass is highly nutritious, though its tendency to grow in clumps or bunches is regarded by some as an objectionable feature in a hay

crop. However, this may be overcome by seeding it thickly or mixing it with other seeds. It should be sown broadcast and lightly harrowed in. When sown alone thirty to forty pounds of seed per acre should be used, and when combined with red clover the usual proportions are twenty pounds of orchard grass and ten pounds of clover. It may also be used profitably in combination with red top or alsike. Orchard grass is about two weeks earlier than other grasses and it furnishes later pasturage in the fall. A favorable season will permit two or three cuttings, which should be made when in bloom or just before, and the yield may vary from one to three tons per acre. With a week's growth after cutting it provides an abundant aftermath which makes excellent pasturage for all kinds of stock.

When orchard grass is to be cut for seed instead of hay, the crop should be cut with a reaper and the bundles placed in shocks like wheat, except that no cap sheaf is required. It should not be stacked, but threshed directly from the shock, which will greatly reduce the loss from shattering. In growing orchard grass for seed it is customary to use only about half as much seed as is used when the crop is intended for pasture or hay, as this method has been found to produce seed of better quality and in greater quantity than is the case when heavy seeding is practiced.

Timothy

Is too well known to require description, and so universally popular as to need no recommendation.

It is the standard hay grass of America, and the farmer who desires to market his hay must grow it.

The one indispensable element of success is good seed, and our GOLD MEDAL Brand has no superior.

TIMOTHY is a perennial grass growing from two to four feet tall. It succeeds best in the rich moist loams of the lowlands, preferring clay loams to sandy loams, and is less prolific in yield on lighter soils and dry uplands. Growing in stools, it does not form a very compact sod and, because of the shallow feeding of the root system, does not withstand drouth so well as some other grasses. It is very responsive to top dressings of barnyard manure or commercial fertilizers, especially to nitrate of soda and sulphate of ammonia. Phosphoric acid, also, may be used to advantage in some instances, and an application of lime will prove beneficial on acid soils.

Timothy is pre-eminently a hay crop, will not stand heavy pasturing and, except under unusually favorable conditions, does not persist more than five or six years. If desired for pasture it should be mixed with red clover in the proportions of ten pounds of timothy to four pounds of clover, which will not only make good pasturage, but will greatly prolong the life of the pasture. Where there is an excess of moisture, alsike may be substituted for the red clover with good results.

Marketing the Hay Crop.

Timothy may be sown broadcast or with a seeder, using from twelve to fifteen pounds per acre when

sown alone. If the hay is intended for market it should be pure timothy, as that is the quality required of commercial hay in every American market, and it constitutes the standard by which the grades and values of all other hays are fixed. Any mixture tends to depreciate the selling value in proportion to the amount of other hay contained in it, though for feeding on the farm the addition of clover is an advantage, both in point of palatability and in nutritive value to the stock, as well as on account of improvement of the land.

Soil prepared as for wheat will produce the best results with timothy. A compact seedbed is desirable, and rolling is commended for the lighter soils. Timothy may be seeded either with or without a nurse crop, good results being obtained by either method, though the latter is regarded as preferable in dry years. In the eastern and northern states it is customary to sow with wheat in the fall and with oats in the spring. In localities where dry weather prevails late in the fall it is better to seed in the spring, when the ground contains more moisture. In the central states September or early October seeding usually gives the best results. Owing to the wide variation in quality, only the highest grade of seed can be relied upon to produce satisfactory results, the use of poor seed being an extremely wasteful policy.

Timothy should be cut for hay after the blooms have begun to fall. If grown for seed it should stand until the seeds are fully ripe and the heads turn brown. It should then be cut with a reaper and the bundles placed in shocks, where it should remain a week or more to cure. It should be threshed from the shock to avoid loss of seed from frequent handling.

Redtop, or Herd's Grass

Is almost equal to Timothy for hay and superior to it for pasture.

Thrives in soils too wet for Timothy and possesses remarkable soil-binding qualities.

One of the most valuable grasses known, and highly profitable where good seed is used.

IN the northern and central states red top, also known as herd's grass, ranks next to timothy among the perennial grasses grown for hay, and is superior to it as a pasture plant. Indeed, it takes first rank in certain localities, notably in southeastern Illinois and the adjacent portions of Kentucky. In the southern states, along the border of the timothy region and beyond, it is especially popular for both hay and pasture, as well as for its soil binding qualities. It thrives on land that is too wet for timothy, being decidedly the best substitute for that grass in such situations, and will grow fairly well in dry clays, but not in dry sandy soils. In the Gulf states it is highly esteemed as a pasture plant for damp land, as it is not injured by overflow even when the water stands for fifteen or twenty days, and is more persistent and productive than other grasses under like conditions.

Thrives in Damp Soil.

Red top is one of the best grasses for winter and early spring grazing, and should be used on the damp places in every pasture. It makes a fair yield of palatable and nutritious hay, a good crop of which can be taken from the land each spring, and is especially valuable for mixing with orchard grass, alsike and other moisture loving plants. It makes a good growth

the first season, but it grows stronger and more dense with age and holds its place well against other grasses and weeds.

Red top is sown in September or October, using four or five pecks of seed to the acre, and it is advisable to add half a bushel of perennial rye grass, which will occupy the ground the first year and then disappear, while the red top will persist in abundance. It will make a fair growth in ordinary winter weather and a very rapid growth during the spring months, at which times it is of exceptional value for grazing purposes. It should be much more widely grown for winter forage as well as for a spring hay crop, and it is particularly useful in holding sloping soils that are liable to wash during rainy seasons. Red top deteriorates rapidly if permitted to stand after reaching maturity. It ranks lower than timothy as a commercial hay, but chemical analysis and digestion experiments have shown that it is the more nutritious of the two, and therefore of greater value for feeding on the farm.

Value of Good Seed.

This grass is grown in many varieties, the kind generally grown for hay having erect stems and broad leaves, and the seed usually sold is of this type. Growers should exercise extreme care in buying and accept only seed of the highest quality, as cheap seed always proves most expensive in the end. To illustrate this fact we need only cite the government test which showed that of two lots, one costing four times as much per bushel as the other, the cheaper grade was so poor in quality that the germinable seed in it actually cost five times as much per pound as it did in the case of the higher grade.

Meadow Fescue

or English Bluegrass

Remains green all winter and furnishes excellent pasturage throughout the year.

Yields heavily and makes a nutritious hay much relished by animals.

Well suited for use in mixtures for permanent pastures and should be more extensively sown.

The seed now offered is much superior to that of former years and adds greatly to the profits from this crop.

MEADOW FESCUE is often called English bluegrass, though it is not a near relative of our blue grass. In Virginia and contiguous territory it is known as Randall grass, and in many localities it is confused with the tall fescue, which it strongly resembles. It is one of the most important grasses grown in England and on the continent of Europe, but its culture in America has been confined to a few widely separated localities until quite recently. This condition may be attributed to the poor quality of the seed, most of which was imported, and the consequent loss to many who attempted to grow it. Within the last few years, however, the quality of the seed has been greatly improved, and the increased success attending the growing of this grass has caused it to advance so rapidly in favor that in many sections it is now regarded as one of the most profitable crops. It is a perennial, growing from two to five feet tall, with an abundance of leaves from one to two feet long, and strong, fibrous roots. It is treated in the same manner as timothy or blue grass, and does not become fully established the first year. On good soils it will yield from a ton to a ton and a half per acre the first year and double that amount the second year, being cut for hay when in flower.

Fine for Winter Pasture.

Meadow fescue is an excellent grass for hay or pasture and, since it remains green throughout the winter, is of especial value for fall and winter pasturage, besides being a spring and summer grass of more than ordinary worth, usually making a more abundant leafage than other grasses grown under similar conditions. It is highly nutritious, yields well and will succeed in nearly every section of the South, growing best on moist, rich alluvial or clay soils such as are usually found along creek bottoms. Overflows are said to increase its vigor, though it yields fairly well on the drier soils. It should be more extensively used in mixtures for both pasturage and hay, being particularly well adapted for sowing with red top or timothy for hay, or with these and orchard grass and tall oat grass for permanent pastures. Meadow fescue, red top and alsike grow well on the same kinds of soil, and the three may be very profitably combined for either hay or permanent pasture. The tendency to grow in bunches, which is apparent when sown alone, is corrected by heavy seeding or by mixing with other seeds.

Meadow fescue may be sown in either spring or fall, using thirty to thirty-five pounds per acre when seeded alone. An excellent combination for hay consists of fourteen pounds of meadow fescue, five pounds of red top and six pounds of timothy per acre, while by adding to the above a half bushel each of orchard grass and tall oat grass a fine mixture for permanent pasture is obtained. With this, as in the case of all other farm crops, the principal element of success lies in the use of good seed, and the farmer who sows poor seed may expect a crop of corresponding quality.

Bermuda Grass

The only pasture grass that will make good sod on very thin land. Excellent soil-binder. Prevents washing on slopes.

Grows in any soil that is not too wet. Excels as a drouth resistant and thrives in the hottest sunshine.

Makes a heavy yield of the finest pasturage and is less injured by trampling and grazing than other grasses.

BERMUDA GRASS is a low, creeping perennial which roots at the joints and forms a compact sod. The upright flower stems vary in height from a few inches to two feet, according to the richness of the soil. The leaves, which are short and numerous, grow near the base of the plant. It prefers rich, sandy and alluvial soils, but will make a satisfactory growth on almost any soil that is not too wet, and is the only pasturage grass that will make a good sod on the light soils found in many parts of the South. It resists heat and drouth most admirably and thrives in the hottest sunshine, but will not grow in the shade. Though a native of the tropics, it is grown profitably as far north as Kentucky and Virginia, but is more prolific in the production of hay in the states further south. It does not produce seed north of Florida.

Splendid for Grazing.

Bermuda grass is most remarkable as a summer pasture crop, growing vigorously when other grasses are parched and dead, and resisting the effects of grazing and the trampling of stock better than any other grass. For this purpose it is without an equal,

and in the Gulf states it may well be made the foundation for all permanent pastures. While the quality of the herbage is probably not quite equal to blue grass, its abundance is often sufficient to support two head of cattle per acre from April to October, and not infrequently three head per acre are grazed on it during the early summer. On the best alluvial soils in the warmer parts of the South, one acre of good Bermuda grass pasture will keep ten sheep in good condition for eight months in the year. For best results the pasture should be subdivided, and after the first enclosure has been grazed closely the stock should be turned into the second, being returned to the first lot before the grass has become tough and wiry. If the stock is grazed on one large field, some of the grass will become so wiry by midsummer that they will not eat it readily.

Bermuda grass is the best grass known for covering washed hillsides and its soil binding qualities make it very useful for holding the banks of streams and ditches. On good soils it grows large enough to cut for hay, furnishing two or more cuttings and frequently yielding four tons per acre each year. It should be cut for hay before the stems get hard, and many advise cutting every time it grows large enough.

When once well established Bermuda grass is difficult to eradicate, though, since its chief use is for permanent pasture, this would appear to commend rather than to condemn it. However, its eradication is by no means impossible, and may be accomplished in a single season, if proper methods are adopted. Shallow plowing in early winter, followed by a thick seeding of cowpeas, velvet beans, or some similar crop that will heavily shade the ground, will effectually prevent the growth of Bermuda grass, though some regard deep

plowing as preferable. This treatment has also produced great improvement in the soil, and excellent crops have followed it on lands that previously were almost barren.

The ground for Bermuda grass should be well prepared with a good, firm seedbed, as the seed is small, and seeded broadcast at the rate of six to eight pounds per acre. The seed should be lightly rolled in to a depth of not more than half an inch. The seeding should not be done too early, as the seed will not germinate if sown before the weather and ground have become warm.

Cowpeas

Are Wealth Producers. They make poor land rich and good land better. Will grow anywhere.

We offer all the standard varieties, including the

WHIPPOORWILL BLACK CLAY
NEW ERA MIXED

Unsurpassed in feeding value, whether fed as Hay, Green Forage or Silage.

THOUGH grown with some success as far north as Massachusetts and Wisconsin, the cowpea is far more prolific in the South, where it constitutes one of the most profitable crops. It is grown to some extent for table use and very extensively for forage, being highly nutritious as pasturage or when fed as hay or used for soiling or ensilage, but its greatest value probably lies in the fact that it grows well in worn out soils and exercises a marvelous power to renovate them. This renovating power is manifested in many ways, including the gathering of nitrogen from the air and storing it in the soil, furnishing an abundance of vegetable matter in its roots, as well as in the vines when plowed under, and in greatly improving the mechanical condition of the soil.

At one time it was the custom to plow under the entire plant, which seemed good in theory, but in practice it was found more profitable to utilize as much as possible for feed, returning the manure to the land, and plowing under the residue of the crop for fertilizing. Besides, the turning under of so great a quantity of watery green herbage is often injurious, causing a too rapid decay and consequent burning or souring of the soil. When cowpeas are grown for green manure it is good practice to turn hogs into the field when the

first peas are ripening. Young pigs feed ravenously on both pods and vines, and the quality of the pork is much improved. This is a profitable way of preparing hogs to be finished on corn, the green vines being more succulent than red clover or any of the grasses, and containing less dry matter in proportion to the weight. An acre of ripening cowpeas will pasture from fifteen to twenty hogs for several weeks, and the gain in fertility from the droppings will more than compensate for the fertilizing value of the forage eaten.

When to Cut.

Cowpea hay, when well cured, is more nutritious than hay made from any other plant, two tons being equal to three tons of the best timothy. It should be cut for hay when the peas are well formed and the leaves and pods are beginning to turn yellow. After wilting on the ground or in windrows for twenty-four or forty-eight hours, the hay is placed in small thin piles, or cocks, and allowed to cure for several days, when it may be hauled to the barn or stacked under sheds. The hay must be put into cocks before the leaves become brittle, and the piles must be small enough to permit a free circulation of air to the center of each. The process is a difficult one, requiring more care than red clover because of the amount of water in the plant, but good, clean cowpea hay is well worth the trouble, being equal to that made from the best red clover. Another method is to stack the vines in a pen or rack made of rails so arranged as to give the air free access to every part of the pile. This plan is best for the trailing sorts, or where the vines are pulled. The erect kinds, however, are best for hay, as they hold their leaves better and are more easily handled. In the extreme southern states the average yield is from

two to three tons per acre, though from four to six tons is not infrequently produced. Further north the average yield decreases gradually to about a ton and a half in states north of the Ohio river. As a rule, the varieties making the heaviest yield of vines also produce large crops of peas.

Grown in Many Varieties.

Cowpeas are annuals, growing in great variety. Some are erect, stocky and compact, with a single stem about one foot tall and short lateral branches. Others are prostrate, lying as flat as the vines of melons or sweet potatoes, their trailing stems extending fifteen or twenty feet. The pods vary from four to sixteen inches in length, while the peas are of every imaginable shade of color, either solid or variegated, and of varying forms and sizes, from the large kidney-shaped to round ones smaller than the garden pea. Of the erect varieties the New Era, Whippoorwill and Clay are strong favorites, the first named being of unusually rapid growth and early to mature. The Whippoorwill also is an early kind, though a little less rapid in growth, and is probably more used than any other variety, while the Clay matures somewhat later and is highly esteemed as an "all purpose" crop. All of these varieties are prolific in yield of both peas and vines, and make an abundance of palatable and nutritious dry forage. The Black is the standard of excellence among the trailing varieties. It matures early, makes a prolific growth of vines and leaves and a good yield of peas. It is without a superior for field grazing for cattle and hogs, and is especially valuable in improving the land. Many farmers sow a mixture of these varieties, as they usually grow thicker and produce a heavier crop of forage than a single variety sown alone.

In Crop Rotation.

In the farm rotation the cowpea may occupy almost any position, though it usually follows a grain crop and precedes a cultivated one. In the South the long growing season permits its use as a catch crop, or to follow such winter crops as rye, rape or oats, or any other crop that is harvested early. In some instances two crops of cowpeas are grown, either for pasturage or for soil renovation, or for both. Despite the fact that this plant will grow well on poor soils and has great value in restoring fertility, the results are often made more satisfactory by the previous application of a fertilizer, such as superphosphate, but a fertilizer containing nitrogen is not usually deemed desirable.

The method of preparing the soil may vary according to season or other conditions, but in any case the aim should be to secure fine tilth, a firm seedbed and sufficient moisture to start growth. The time for sowing will depend largely on climatic conditions, but in no case should it be done before the soil and the weather have become warm, nor when the soil is too wet, as the seed will rot quickly under such conditions. Cowpeas may be sown broadcast, but this is not considered the best practice. If sown in drills eighteen to thirty inches apart, less seed is required than when sown broadcast and the yield of both peas and hay increased, particularly if cultivated once or twice. The quantity of seed to sow depends chiefly on the size of the peas and the manner of seeding. If seeded broadcast, from one bushel of the smaller to two bushels of the larger varieties will be required. If drilled in, from *one to two* pecks should be sufficient.

Canada Field Peas

Resemble Cowpeas in many respects and serve much the same purpose as a forage crop and as a soil improver.

They mature early and may be cut in ample time to be followed by a crop of Cowpeas or Soy Beans the same season.

Prolific in yield and a decidedly profitable crop from any point of view. Should be more generally sown.

IN the United States the field pea is commonly called the Canada field pea, regardless of variety, though probably very few of the different kinds originated in that country. It is extensively grown in Europe and in Canada, the earlier importations into the United States having come from the latter country, which doubtless accounts for the designation. It is also known in some localities as the Russian pea. It is essentially a northern plant, at least in its use as a summer crop, succeeding best in a cool, moist climate where the summer temperature is not extreme in its variations and where the nights are cool. It has been grown with some success as a winter and spring crop in the South, where it withstands the winter weather well and makes a good growth. Very likely it would prove a satisfactory summer crop in certain southern localities having sufficient elevation to approximate the northern summer climate.

How and When to Sow.

It may be sown in the fall or as late as January in the southern states, preferably with oats or some other cereal in the proportions of four to six pecks of peas and three to four pecks of oats per acre. The seed

may be sown broadcast and should be harrowed or plowed in to a depth of from two to three inches, though in many sections it is drilled in. Grown in this way with oats or rye, it will produce an early spring crop of hay of excellent feeding value, or it may be grazed and then turned under for green manure.

The growth of the field pea is upright for a time, after which it falls and completes its growth in a prostrate position. It is because of this habit that the pea is sown with a cereal, which serves to support the vines and thus makes the crop more accessible as well as more palatable as pasturage for sheep. When sown alone the trailing habit makes it unsuitable for grazing by any stock except hogs. Horses and cattle are seldom pastured on peas because of the waste from trampling, though they relish the feed when it is used for soiling.

Sheep may be pastured on peas and oats when the plants are six or eight inches high, and if removed after grazing them down the crop will grow and provide pasturage a second time, but sheep should not be put on such pasture when it is wet. Hogs may be pastured either before or after the plants are matured, but if turned on them just before the peas are ripe they will glean more completely and cause but little waste. They should not remain long in the field at first, but when accustomed to the forage may feed at will.

Field peas are similar in many respects to cowpeas, requiring much the same treatment and serving a like purpose as a forage crop, as well as in improving the soil.

Soja, or Soy Beans

Possess unusual fattening qualities and constitute a balanced ration in themselves, besides being a fine soil improver.

Unexcelled as a crop for cleaning the land and of the highest value for use as a green manure. Stand drouth well.

The best of the Legumes for the silo and second to none for soiling or for dry forage.

DURING the last fifteen or twenty years the soy, or soja, bean has rapidly increased in favor and is now one of the staple leguminous crops. It is grown for the grain, for soiling, for ensilage, for green manure and to some extent for pasture. It is an erect annual from two to three feet tall, with heavy foliage resembling the common field bean, but more hairy. The stems alone are too coarse to make good hay, but are so densely covered with leaves and beans that the hay is an unusually valuable feed, particularly for dairy cows and for fattening animals. If the plants are cut or pulled when the first pods begin to open, and threshed as soon as dry enough, the stalks are broken up and mixed with the leaves so that nearly all will be eaten. It is probably the best of the legumes for the silo, as it is more easily handled for the cutter than clover or cowpeas, and furnishes an excellent soiling food late in the summer when but few plants are available for this purpose.

Use in Crop Rotation.

So far as climatic conditions are concerned, the distribution of the soy bean does not differ greatly from that of the cowpea, though it requires better land and stands drouth better. It can be grown in its greatest perfection in all the states south of the Ohio river

and east of the Mississippi. In the farm rotation its place is much the same as that of the cowpea, following a grain crop and preceding a cultivated one, or coming between two grain crops, but, owing to its longer period of growth, it is less desirable as a catch crop.

The warm loams suitable for corn are best for soy beans, and a deep, fine seedbed that is firm and moist is required. Where a fertilizer is required, well rotted barnyard manure mixed with a complete commercial fertilizer has been found to greatly increase the yield.

Seeding is usually done with a drill in rows thirty inches apart, preferably after corn planting time, as this bean is a warm weather plant and should not be planted until the ground has become warm. From two to three pecks per acre is the quantity usually sown, and the plants should be given shallow cultivation soon after they appear and a few times after rains, but not when the plants are wet.

The crop may be pulled by hand or cut with a scythe, mower or bean harvester. When grown for seed the plants are cut, raked together in windrows to dry out a little, and then stored or stacked in a dry place. For hay they should be allowed to wilt and dry out a little in the swath, then put in small, loose piles to cure, and handled like clover hay. The dry beans are highly nutritious, ranking with linseed meal, gluten meal and cottonseed meal in feeding value for all kinds of farm stock. They may be fed to hogs whole or ground, or on the stalks unthreshed. When fed with Kaffir corn they should be mixed and wet just before feeding. Soy beans are too rich in protein for a whole grain ration, but should be fed with a starchy grain like corn or Kaffir corn. Three or four pounds of soy bean meal make an admirable addition to the usual grain ration for dairy cows.

Millet

Makes a superior hay and is a fine soiling crop for dairy cows, young stock and sheep. Yields heavily and is highly nutritious.

Is easily cured and its rapid growth makes it especially valuable as a catch crop.

The most popular varieties are

Tennessee German **Fancy German**
Hungarian

MILLET is fed principally as a hay and soiling crop, and in palatability, digestibility and nutritive content compares favorably with other coarse grasses, being especially useful for feeding dairy cows, young stock and sheep. It is widely grown as a hay crop and is rapidly growing in favor for soiling. The value of millet as a soiling crop rests upon the fact that it is an excellent feed for milk production, that it yields well on good land, and that it may be grown as a catch crop after another crop has failed, or after an early crop has been harvested. Its only weak point as a soiling crop seems to be the short season during which it can be fed, but, owing to its rapid growth, this objection may be overcome by two or three seedings at intervals of two or three weeks during the growing season. This plan has been found entirely practicable and often utilizes land that otherwise would be temporarily idle. Under very favorable conditions some varieties may be cut for soiling five or six weeks after seeding, and continuously thereafter until the crop is consumed. Millet is also excellent for use in the silo, being of especial value in this respect when conditions are not favorable for growing corn for the purpose.

For best results this crop should be grown on fertile, mellow loams with but little clay and not too much sand, though sandy loams produce well when well drained. Heavy clays require much working to bring the soil into proper condition

Preparing the Soil.

Seeding should not be done until settled warm weather has arrived, usually after corn is planted, and in the southern states may be delayed as late as August, if moisture conditions are favorable. The seedbed should be well prepared and free from clods. If the land is plowed some time before seeding, and alternately rolled and harrowed a few times in the interval, the process will aid greatly in conserving the moisture throughout the period of growth. The seed may be sown broadcast or drilled in, the latter method being preferable, using from three to four pecks per acre, and if rolled immediately after seeding the results are likely to be more satisfactory, particularly in a dry season. Being a shallow feeder, millet draws its plant food from near the surface of the soil, and because of this fact it is greatly benefited by a dressing of well rotted stable manure, or a commercial fertilizer containing the same elements in a readily available form.

Millet should be cut for hay after complete heading and before the late bloom. If delayed until the seeds are formed the stalks become hard and the hay of poorer quality and likely to prove injurious to horses. There is no danger in feeding the green or ensiled millet or hay made before the seed is formed, and for soiling or ensilage it may be cut a little later than for hay. After cutting for hay the millet should be allowed to wilt for a few hours, then tedded once or twice, after

which it should be put into small cocks to cure for two or three days before being stacked or hauled to the barn. The crop is cut greener than most hays and requires more drying, chiefly in the cocks. Otherwise it is not more difficult to cure than clover, and will stand more rain and dew without injury. It is often cut with a self-binder and the bundles cured by setting them up two and two in long shocks running north and south, so as to expose them to the full sunshine. The yield varies from one and a half to three and a half tons per acre of cured hay which is almost, though not quite, as valuable as timothy.

Harvesting.

When cut for seed millet is harvested like any small grain crop. A good method is to cut with a self-binder when the seed is in the dough stage, and stand the bundles two and two in long shocks, as described above. When dry enough thresh from the shock. An average crop is from twenty to twenty-five bushels to the acre, though a much larger quantity is often obtained. The seed should be ground before being fed to animals. Fowls and young stock thrive on the seed, hogs especially being very fond of it.

The millet most generally grown in this country is the foxtail species, the favorite varieties being the German and the Hungarian. German millet grows quickly, matures in from six to eight weeks after seeding, and makes a heavy yield of palatable and nutritious hay which is easily cured. It is also highly esteemed as a green forage because of its abundant growth, the crops grown from selected southern seed being remarkably prolific. Among our own trade a strong predilection is shown for the Fancy German and the Fancy Ten-

nessee German, these being unusually satisfactory varieties which we can recommend without reservation.

Hungarian millet is more widely grown in northern localities than in the South, though it resists drouth rather better than some other varieties, and under favorable conditions of soil and moisture it produces heavy crops of superior hay. It is recommended for good low grounds or rich soils, but on uplands or light soils it is not so highly regarded as the German varieties for the South.

Sorghum

Though grown largely for Syrup, is equally valuable for Forage. Unsurpassed for Rapid Growth and Heavy Yield.

May be cut two or three times each season. Makes Excellent Green Feed or Fodder which is greedily eaten by cattle.

Finest Summer pasture for hogs or cattle. Stands Drouth well and should be a staple crop on every southern farm.

Possesses unusually high feeding value and may be grown successfully in any part of the United States.

The Principal Varieties are **EARLY AMBER, EARLY ORANGE, RED TOP**

CANE or sorghum, as it is more generally called, has been grown in this country for more than fifty years, but it is probable that all of its wonderful possibilities are not yet fully known. Grown at first solely for the syrup made from its juices, it has since proved itself to be one of the most valuable forage crops ever discovered. It is one of the best soiling crops we have and makes an excellent quality of fodder for stock, particularly when fed in the fall and early winter. The seed also is much relished by all kinds of farm animals. Indeed, it is now used quite as extensively for forage as for syrup, and it can be grown successfully in every state in the Union. Sorghum is pre-eminent as a summer pasture. It grows well throughout the hot weather and furnishes an abundance of green feed at a time when but little is available from other sources. It may be grazed down before it reaches the stage at which it generally is cut for soiling, usually from one to two feet high, and will immediately start a second growth more prolific than the first, because of the increased number of sprouts

that spring from the roots. It will withstand hot, dry weather which would cause corn to shrivel and curl in the leaf, and when checked by long continued drouth will revive promptly with the first rains.

Can be Grown on Corn Land.

Sorghum will succeed on any land that will produce corn. Like corn, it does best on rich, sandy loams, but, being a stronger feeder than corn, gives better results on thin lands. It is sometimes grown with other forage crops to give variety to the pasturage, but it is the more general practice to grow it alone, as it will fully occupy the ground if seeded thickly enough, and will quickly grow again when eaten down.

Since sorghum plants are more delicate than young corn plants, it is more important that the seedbed be thoroughly pulverized and with moisture near the surface. The land should be plowed in the fall or early spring, and, after spring opens, should be stirred on the surface a few times before the seeding is done. This will thoroughly clean the land, and rather than neglect it it would be wiser to postpone the seeding two or three weeks. Where sorghum follows a potato crop the land should be rolled as soon as plowed, in order to conserve the moisture. Fertilizers suitable for corn are equally well adapted to sorghum.

Drilling or Broadcasting.

Seeding should be done only after the ground has become warm, usually later than corn is planted; otherwise there may be much loss of seed. Even if the seed should germinate, the growth would be so slow during the cool weather that nothing would be gained by early planting. When intended for soiling or fodder it is

often sown broadcast and harrowed in, though this method requires more seed, owing to the imperfect covering, and is advisable only for level lands. Drilling is preferable, using all the tubes as a rule, but when moisture is likely to be scant the use of only alternate tubes is better. In any case the seed should be covered to a depth of from one to two inches. When sown broadcast it is customary to use from one to one and a half bushels to the acre, though sometimes more seed is required. If drilled in rows like corn, planting one seed for each inch in the row, the use of from ten to twenty pounds of seed should prove satisfactory. Where seed has been sown broadcast light cultivation with the harrow should be given when the plants are from three to five inches high, care being taken to give the teeth of the harrow the greatest possible backward slant to prevent injury to the plants. Sorghum planted in hills or drilled in rows may be given much the same cultivation as corn.

Sorghum may be cut for soiling from the time it is two feet high until nearly ripe, the feeding value being greatest when the heads appear. It will sprout from stubble more quickly if cut quite young than if permitted to become more nearly mature, and the second crop will mature more quickly than a crop from seed, as the root system is already established.

Cutting for fodder is usually done with a corn binder, though a corn knife will serve for small patches, and occasionally a mower is used when the stalks are not too heavy. When a corn binder is used the bundles are made small to facilitate handling and curing. These bundles are allowed to cure on the ground for a few days, or set up in small shocks to cure, after which a number of these small shocks are put together to

form a large one. The large shocks may be hauled to the barn or stacked near the feed yard, or they may be left in the field and hauled as needed. The large shocks should be well tied at the top or capped to exclude water. When cut but once sorghum yields from five to ten tons per acre on good land, or twelve to fifteen tons from two or more cuttings. The yield is usually about one-third heavier than from corn on the same soil.

Varieties Grown With Best Results.

The varieties of sorghum grown with best results for both syrup and feed are the Early Amber, Early Orange and Redtop. The Early Amber is the earliest, the seeds being oblong, slightly flattened and of an amber color. They resemble Early Orange, but the husk usually adheres to the Early Amber and is very dark. The syrup is lighter in color than that of the other varieties, but is not of quite so good quality and does not keep so well, being more liable to ferment. This variety matures about ten days earlier than the Early Orange.

The seed of the Early Orange sorghum resembles that of the Early Amber, but is darker and the husk is less adhesive. Early Orange yields more and better seed, syrup and feed than Early Amber, and the syrup is less liable to ferment.

Redtop seed is small, nearly round, and usually dark red. This variety is the latest to ripen and the syrup is less liable to ferment than other kinds.

For making syrup the cane should be cut when the heads are ripe, the juice pressed out and boiled to the consistency of New Orleans molasses.

Dwarf Essex Rape

One of the most valuable crops known. Has double the feeding value of Red Clover and produces twice as much to the acre.

Most economical crop to grow and will succeed in any part of the United States.

Has no superior as pasturage for hogs, sheep and calves, or as a soiling crop for the larger animals.

Unequaled for poultry. Grows quickly. Nothing better for a catch crop or for green manure.

RAPE is unquestionably one of the most useful plants grown in the United States, and, as it becomes better known and its value more fully appreciated, is yearly assuming a more important position in agricultural economy. Being naturally a cool weather plant, its earlier and greater development was found in the northern states, but later experiments have shown that it may be grown successfully in all parts of the continent, and it can scarcely be doubted that its distribution will soon become practically universal. It may be grown under many conditions, frequently without reducing the area devoted to other crops, and furnishes an abundance of the finest pasturage for hogs, sheep or calves. For larger stock it is usually cut and fed as a soiling crop to prevent waste from trampling in the field, though such waste is largely eliminated by drilling the seed, in which case the animals feed principally between the rows. A good plan is to sow rape broadcast in corn just before the last cultivation, so that when the corn is husked out the rape can be pastured off with the corn stalks, though it is more frequently grown alone. It may also be

grown as a catch crop and has great value as a green manure.

High Feeding Value.

The feeding value of rape, pound for pound, is about twice that of green clover, and it will usually grow about twice as much to the acre. It will fatten stock grazing on it, and for dairy cows will maintain a good flow of milk through the fall and winter, when green feed is usually scarce. As a precaution against bloating all animals, except hogs, should be guarded against excessive feeding at first, and should not be permitted to run on the rape when it is wet. A supply of salt should be provided for animals pasturing on this crop, and it is recommended that they have access to some other pasture crop at the same time. Aside from its abundant yield, one of the most valuable characteristics of this plant is its rapid growth, five or six weeks in summer being sufficient to bring it to a condition suitable for soiling purposes.

Rape thrives best in rich, moist loams, but will grow well in any soil except light sands and heavy clays, which are always deficient in vegetable matter. The land should be plowed deep and well pulverized before the seed is sown, the principal requirement being a deep, mellow seedbed as free as possible from weeds. The seed may be sown broadcast or drilled in rows twenty-four to thirty inches apart, each method having advocates whose judgment is entitled to consideration. With a moist climate, strong soil and clean land, broadcasting is entirely satisfactory. The drier the climate, the poorer the soil and the more foul the land, the greater the necessity for sowing in drills and for subsequent cultivation. Drilling should always be prac-

ticed where the cleaning of the land is a principal consideration. Under other conditions, the advocates of broadcasting claim that the advantages gained from drilling seldom compensate for the extra labor involved.

Seeding Time May Vary.

The time of seeding may vary according to locality and the purpose for which the crop is grown. In the North, when intended for sheep pasture, rape usually is not sown until after the corn planting season. For hogs it is sown early and followed at intervals by later sowings, to provide continuous pasturage. In the South, where it is largely grown as a winter crop, the seeding is often done in September or early October. It will endure quite cold weather, and the late planted seed will come up with the fall rains and continue to grow throughout the winter, though the growth under these conditions will not be as rapid as when it is grown as a summer crop.

The Dwarf Essex variety is the only kind of rape recommended. It has given universal satisfaction under all conditions and wherever sown. The quantity of seed generally used is four or five pounds per acre when drilled, or twice that much when sown broadcast.

Buckwheat

A desirable and profitable crop for late summer. Heavy producer of grain and a fine Honey plant for bees.

Makes good Flour and excellent feed for stock or poultry. Stimulates production of Eggs.

A good cleaning crop and very valuable in conserving moisture in the soil when plowed under.

The most profitable varieties to sow are the Japanese and the Silver Hull.

BUCKWHEAT is grown primarily for human food, though it has other important uses which materially increase its value as a farm crop. It is prized as a poultry feed, being regarded as a stimulant to egg production, and when ground is profitably fed to hogs and other stock. Buckwheat middlings when fed with hay and silage are greatly relished by dairy cows, resulting in a greater production of milk and butter, and at a lower cost than from the use of a mixture of corn and bran, or cottonseed and linseed meal. The use of this ration should be limited, however, as an excess of the buckwheat middlings may injure the quality of the milk and butter, and when used as the sole grain ration for hogs tends to produce soft pork and lard, though this is not the case when fed judiciously in a proper mixture. Buckwheat hulls possess very little feeding value, though they are often mixed with the middlings and fed as buckwheat bran.

Buckwheat straw, when well cured, makes a fair quality of fodder for sheep and cattle. It is also an excellent fertilizer, and when used for bedding and incorporated with the manure becomes especially valuable.

Besides the uses mentioned, buckwheat is highly esteemed as a honey plant, and is often grown chiefly for this purpose.

Suited to Poor Lands.

Buckwheat yields best on fertile, well drained, sandy loams, but will grow on lands too poor for almost any other crop. It will not do well on wet lands or heavy clays. It is often turned under as green manure, thus making humus in the soil and increasing its power to retain moisture, though adding little or nothing to its fertility. For this purpose two crops may be grown in one season, being plowed under when it begins to blossom. It also makes a fair soiling crop.

In the northern states seeding is usually done from June 15 to July 15, but in the South the planting season may extend from May to September. As it grows rapidly, maturing in about ten weeks from seeding, it is frequently grown as a catch crop. The seed is planted from two to three inches deep, either drilled or broadcast, the latter method being most common. The quantity of seed varies from three to five pecks per acre, the average being about one bushel, and the heavier seeding being done on the richer soils. The elements required in a fertilizer for buckwheat are potash and lime, which can be best applied in the form of unleached wood ashes, using from twenty to fifty bushels per acre, according to the poorness of the land. Barnyard manure, or other nitrogenous fertilizers, should not be used as a rule, though a light dressing of barnyard manure may be profitably used on soils deficient in humus.

Should be Harvested Promptly.

Buckwheat should be harvested when the first seeds are mature, as much grain will shell out and be lost if delayed longer. Owing to the difficulty of harvesting, much buckwheat is still cut with the cradle, though the self-rake reaper is probably the best implement for the purpose. Where it is used the buckwheat is not bound, but is stood in shocks like corn fodder. The self-binder also may be used, in which case the bundles are placed in long shocks, without caps, and threshed from the shock as soon as dry. It is not advisable to stack buckwheat or to store it in the barn. The grain will keep better when carried over from one season to another if put in bags and stored loosely than if stored in bins.

The most popular varieties of buckwheat are the Japanese and the Silver Hull, each of which holds the record for greatest production in different localities, and are of about equal value for flour. The Japanese is preferred in many localities, the claim being made that it yields more heavily, has larger seed and stalk and stands up against storms better than other kinds, besides being more thrifty in dry, hot weather and maturing somewhat earlier.

The Silver Hull is, however, a strong favorite, being prolific in yield and making a superior quality of flour. It has quite superseded the common buckwheat, to which it is decidedly superior.

Owing to the great differences in the quality of soils used for buckwheat, the yield may vary from ten to fifty bushels per acre, though thirty bushels may be regarded as rather a large yield, and twenty to twenty-five quite satisfactory.

Grains

We sell annually thousands of bushels of Seed Wheat, Oats and Rye.

Our Grains have given universal satisfaction because of their cleanliness and excellent growing qualities.

They are selected by experienced seedsmen, and our Reputation and Guarantee are behind Every Shipment.

Wheat.

OF the cereals grown in the United States, wheat stands second in acreage and third in yield. Its primary use is for human food, the demand for this purpose making it too valuable for general use as a feed for stock, though all kinds of farm animals are fond of it, whether fed whole or ground, wet or dry. When the price permits such use it is found to be a healthful and desirable stock feed, though possessing little, if any, greater feeding value than corn, pound for pound, and gives best results when forming only half of the grain ration. In view of these conditions the grain, in the form of flour, may be considered exclusively as an article for human consumption, only the by-products, such as bran, shorts and middlings, being generally used as stock feed. However, as fall sown wheat continues its growth fairly well throughout the winter, it may be pastured in the same manner as oats with good results.

Need of Early Plowing.

For its best growth wheat requires a very fertile soil. Rich clays and heavy loams, when well drained, give the heaviest yields, though good results are often obtained from lighter soils when conditions are favorable. The character of the soil affects the quantity

rather than the quality of the yield. Early plowing for fall wheat is desirable, the yield in some instances being twice as great as from late plowing, other conditions being equal. The best practice is to plow for wheat as soon as possible after the previous crop has been removed. This permits the soil to become compact, prevents weeds from going to seed, conserves moisture by hindering the growth of vegetation and promoting the absorption of rainfall. By harrowing after each rain between plowing and sowing, the evaporation of surface moisture will be much retarded and the seedbed greatly improved. Experience indicates that the depth of plowing is of less importance than a firm seedbed, the upper three or four inches of which is mellow and in fine tilth. On the lighter soils rolling may be desirable to firm the seedbed, thus insuring more certain contact of the seed with the soil water and a more even germination, but on heavy lands the practice is of doubtful value.

The time for seeding fall wheat varies considerably according to locality, the period extending from early September in the North to November in the more southerly states, the aim in any locality being to give the plants a good start before freezing weather begins. It may even be delayed until there has been a killing frost in localities infested with the Hessian fly, though this is generally too late to produce best results. Close drilling, as usually practiced in this country, yields better returns than broadcasting, the seed being covered from one to three inches deep. From six to eight pecks per acre seems to be about the proper quantity of seed, the more liberal quantity being required when sown broadcast, and the usual tendency being to use too little rather than too much seed.

Special Fertilizing not Needed.

Except on depleted soils, commercial fertilizers are seldom profitable. Nor should coarse, unfermented barnyard manure be applied to wheat, though a dressing of finely composted manure may be used to advantage. When wheat follows corn, as it often does, the liberal application of manure to the corn crop usually leaves the land in fine condition for wheat without further fertilizing. The elements chiefly required by this crop are nitrogen and phosphoric acid, potash being of less importance. Where necessary to supply them by means of a commercial fertilizer it may be done to advantage by using the following formula, recommended by the Georgia Experiment Station: At seeding time apply two hundred pounds of acid phosphate, fifty pounds of muriate potash and three hundred and fifty pounds of cottonseed meal per acre. In the spring broadcast seventy-five pounds nitrate of soda per acre about ten days before heads appear, preferably when the plants are dry, but just before or just after a rain, so that it will be dissolved quickly. At the New Jersey Experiment Station one hundred and fifty pounds of nitrate of soda per acre, applied broadcast soon after growth started in the spring, nearly doubled the yield.

Much valuable information on this subject may be obtained by consulting the nearest experiment station. Clover stubble or any of the legumes turned under add much nitrogen and humus to the soil, and thus increase the yield of a following wheat crop. Such catch crops as cowpeas or beans are excellent preparatory crops for wheat.

Harvesting Begins Early.

Harvesting should begin when the grain is in the dough stage, that is, when soft enough to be indented

with the thumb nail, but too hard to be easily crushed between the fingers, and completed by the time it is fully ripe. If harvested as soon as the grain is mature there is little loss in the feeding value of the straw, but if delayed until dead ripe the straw deteriorates and much of the grain is lost by shattering. Where the wheat is bound in sheaves, as is the case throughout the eastern half of the United States, the bundles are placed in shocks of from twelve to sixteen bundles, with two cap sheaves to exclude rain. After becoming well cured it may be threshed from the shock, or stacked or stored in the barn to await a more suitable threshing season. There is little more danger that the grain may heat in the bin if threshed from the shock, and if care is taken that the grain is thoroughly dry heating will not occur. In storing wheat the chief considerations are ease of handling and the freedom from dampness, insects and vermin.

Wheat is not injured by cold, and insects do not thrive in a low temperature, therefore the more exposed the granary is the better. The larger the bulk of the grain and the smaller its surface exposure the less will be the injury from insects. Bins should have perfectly smooth surfaces to prevent lodgment of insects, and no hay nor other substance affording a place of concealment should be placed against them. Bins made of a single thickness of planed boards, preferably oiled or painted, and fully exposed on all sides, will not be seriously menaced by rats or mice. Granaries should be thoroughly cleaned each time before grain is stored, and infested grain should be treated to destroy insects before being put in the granary.

Owing to the importance of the wheat crop the necessity of providing good seed is the chief consider-

tion, and because of the fact that few farmers are expert wheat breeders, it is always advisable to buy the seed from a reliable dealer whose supply is obtained from experienced growers who make a specialty of growing wheat for seed.

Rye.

THE principal use of rye in this country is for bread and forage, though the grain is utilized to some extent for malting and the straw is extensively used in paper making, as well as for packing and for bedding for animals. Indeed, the many uses for the straw make it almost as important as the grain. The composition of the grain is very similar to wheat, but when fed to dairy cows is likely to give an undesirable flavor to the butter. Fed to hogs it makes a good quality of pork, being about equal to barley for this purpose. Rye, especially when ground, is relished by animals, and may be substituted for corn whenever the price will justify it. Its rapid growth and ability to withstand severe weather make it particularly valuable for winter pasture, and its use for this purpose, if properly managed, causes but little loss of yield in the crop of grain. It may also be plowed under for green manure, after pasturing and before acquiring too much growth in the spring, and thus greatly improve the soil by the addition of organic matter.

As a Soiling Crop.

Used as a soiling crop, rye gives excellent results, the green feed being readily eaten by all kinds of stock, and when fed to dairy cows increases the flow of milk with no bad effect on the flavor of the butter, which may result from feeding the grain. It should be cut

for soiling from just before heading until in full bloom. In the North this period is limited to two or three weeks in the spring, but in the South it is sometimes possible to make three or four cuttings at intervals of about a month during the fall and winter, resulting in a total of eight or ten tons per acre of excellent green forage. Tests have shown that as an addition to a grain ration for dairy cows, forty pounds of green rye is superior to twenty-five pounds of corn silage.

How to Seed.

Rye will succeed on poorer soil than any other cereal, and will survive more severe weather than wheat, though the best rye for bread requires a rather dry, sandy soil of medium fertility. The quality of the seed is of far greater importance than the quality of the land or condition of the seedbed, though best results always demand thorough preparation of the soil. The seedbed for rye should be prepared in the same manner as for wheat, and the sowing may be done somewhat earlier. Early seeding permits the plants to become well rooted before cold weather, and is particularly advisable for poor soils. Light soils should be rolled after seeding. Drilling is preferable to broadcasting and the seed should be buried from one to two and a half inches deep, according to the lightness and dryness of the soil. For early seeding on poor soils about one bushel per acre will be required, while for better soils or late sowing from one and a half to two bushels is necessary. When grown for forage three or even four bushels is desirable.

Winter rye ripens before wheat and is ready to cut when the straw changes color and the grain passes into the hard dough stage. It is harvested and handled in the same manner as wheat. Special machines are

in use for threshing out the grain without breaking up the straw, which is a decided advantage where the straw is to be used for packing or paper making. Both winter and spring varieties of rye are grown, the former being more generally sown because of its greater yield and more profitable results, the amount of forage being greatly increased if grown after a legume, such as soy beans, cowpeas or clover. The average yield of the grain for the United States is about fifteen bushels per acre, though twenty-five to thirty bushels is not uncommon on good soils. There is no fertilizer superior to well rotted barnyard manure for rye, but good seed is the chief essential to profitable results.

Oats.

OF the four leading cereals grown in America, oats are used more extensively than all the others combined. They are probably the most nutritious of all the cereals for human food, being particularly well adapted to the use of people living in northern climates or those having much outdoor exercise, and their use for this purpose has increased enormously in recent years. They constitute the chief grain feed for horses and are equally well suited to cattle and sheep, but are used less for these latter classes of stock for the reason that, as a rule, cheaper feeds are available for the purpose. They are not so well adapted to hogs, because of the high percentage of fibre in the hulls. They are grown both for the grain and for the winter pasturage, though the latter is a secondary consideration, and very largely as a hay crop. For both pasturage and hay they are frequently seeded with other plants in a great variety of combinations. In the northern states oats are often grown with field peas

for soiling or dry fodder. In using this combination best results are usually obtained by planting the peas about four inches deep and broadcasting the oats about a week later. In the South good returns have resulted from seeding oats with hairy vetch for both pasture and hay. Rape also may be profitably combined with oats. By sowing one pound of rape with six pecks of oats the Iowa Experiment Station produced sixty bushels of oats, while in October the rape produced eighteen tons of green feed per acre, though this no doubt was an unusual yield. To avoid interference with harvesting the oats, the rape should be sown two or three weeks later than the oats. The rape may be cut for soiling, pastured off or plowed under for green manure.

Kinds of Soil.

Oats will yield best on well drained, fertile clays or clay loams, but the character of the soil is of less importance for this crop than for any other cereal, with the possible exception of buckwheat or rye. Almost any tillable land will produce fair crops of oats if climatic conditions are favorable, and the results seem to be less influenced by rotation with leguminous crops than either wheat or corn. Fertilizers are seldom required, the applications to the previous crop usually proving sufficient.

The seedbed should be prepared by plowing rather than by disking or harrowing, though it need not be so deep for oats as for other grains. Sometimes oats are sowed broadcast on unplowed land and covered with the disk harrow or corn cultivator, but this practice is not recommended. Heavy lands, especially in the North, have generally given better results when fall

plowed. A fairly compact seedbed is desirable, and rolling, either before or after seeding, is advisable for light soils, but is not recommended for heavy clays.

Time of Planting.

The time of planting will vary with the locality and the season. In the South the winter varieties usually give best results when sown between October 1 and November 15, though seeding is often delayed until December. Spring seeding in that section may be done in January, February or March, according to locality, February being generally the preferable time, though fall seeding is recommended in preference to spring seeding in the South. In the northern states the seed should be sown as early in the spring as possible, experience having shown that a marked decrease in yield results from delayed seeding. Tests made at all northern stations indicate that best results are obtained from seed sown between April 1 and May 15, according to latitude and weather conditions. The quantity of seed used varies from two to three bushels per acre, according to the fertility of the soil, the larger amount being used on the better soils.

As a general rule, oats should be harvested when the lower part of the stalk has turned yellow, as the plant has then ceased to draw food from the soil and further growth is devoted wholly to maturing the grain. Cutting in the hard dough stage and slow curing in round shocks is usually desirable, but when weeds abound or other causes make rapid curing necessary, long shocks are preferable. When the grain is in the early dough stage and half the leaves are still green the cutting may be done without materially affecting the quality or yield of the grain, and the yield and

quality of the straw will be better, provided the sheaves are shocked and capped at once to permit slow curing and ripening. Oats for hay may be cut with a mower when the grain is in the milk stage and treated like any other hay crop, or it may be cut with a self-binder and put in round shocks of six bundles each with one bundle for a cap. The methods of harvesting, threshing and storing oats are similar to those of wheat. The yield per acre varies all the way from ten bushels in some of the South Atlantic states to one hundred bushels in some parts of Canada. Sixty to seventy-five bushels is considered a good yield in the northern states, and forty to fifty bushels quite satisfactory. The average annual yield in the United States for a period of ten years was slightly less than thirty bushels per acre.

Soil Renovation.

IN view of the universal interest in the question of renewing and maintaining the fertility of run-down soils, some valuable information may be gleaned from the following extracts from an article entitled, "How to Produce Big Yields on Worn-out Soils," written by Mr. William C. Smith, of Indiana, and published in *Successful Farming* for July, 1910. In relating his personal experiences Mr. Smith writes, in part, as follows:

"Soil ventilation is the first thing needed to restore worn-out soils. This is secured by drainage, deep tillage and plowing in of coarse organic matter.

"Worn-out soils should be filled with drains of the proper depth and levels, and both mouth and source of the drains brought to the surface and properly screened. Drains constructed in this manner are valuable working ditches and constitute the first aid to worn-out soils.

"Any vegetation plowed under is of great benefit to worn-out soils, but, of course, the legumes are best because of their nitrogen-gathering capacity. The de-

struction of corn stalks, weeds and other vegetation by burning constitute each year an enormous loss of soil fertility.

"Green rye is equal, ton for ton, to stable manure, with one small exception; manure has half a pound of phosphoric acid a ton more than rye. A ton of green rye contains eleven pounds of nitrogen; a ton of green clover twelve pounds. It can be sown in corn or in wheat stubble, and in the following spring plowed under in time for corn. May first I plowed under a fine field of rye, waist high, for corn. In plowing this rye to a depth of seven inches I notice that it turns over like heavy sod, that the soil is filled with rye roots.

Invaluable for Worn-Out Soil.

"After plowing under this rye I first roll with a roller, following the roller with a harrow. Then drag with a heavy drag and harrow again. After this the field is like a garden and in splendid condition for planting corn. In the spring of 1909 I plowed under, on worn soil, rye that was heading out, and produced a big yield of corn. The varied conditions of soil, weather and season seem to have no effect upon rye; it always produces big crops of roots and foliage which are invaluable for worn-out soils if plowed under.

"The king of soil-building plants is winter, or hairy, vetch, my experience with which has extended over a period of five years on clay, sandy and run-down black soils. My first experience was on sandy land that was absolutely worn out; so poor that it had not for years produced twenty bushels of corn to the acre. The land was plowed in August and planted to vetch, sowing fifty pounds of seed to the acre. By winter the plants covered the ground. With the first warm days of spring the vetch began to show life, and by May 1 the

plants were five or more feet in length. The spring was wet and I did not get the vetch plowed under until the last of May. The plowing under of this mass of vegetation was a difficult job and was not very artistically done. By rolling and dragging the field of twenty-one acres was put in fairly good shape for planting and was planted to field corn June 2, 3 and 4 Neighbors predicted failure, saying that all the moisture in the soil would be absorbed by the vetch and none left for the corn, which would wither and die. The corn made no perceptible growth for two weeks after it came up, but it suddenly began to grow, and what a wonderful growth it was! The corn was of the same height throughout the field and the color was magnificent. It endured seven weeks of drouth just after it tasseled and silked, but was bright and green and not a hill fired. The corn produced seventy-two bushels to the acre, a yield that had not been known on this field in thirty years. The stalks were plowed under in the spring, and, after the destruction of an early crop of peas by storm, the field was broken up in August and planted to alfalfa, which made a splendid stand and at this writing is in fine condition.

Planting Vetch Annually.

"The farm is a typical Indiana clay farm with a gravelly sub-soil, and was worn out when it came into the writer's possession. It was naturally and artificially well drained. The system of plowing under every corn stalk, particle of straw, manure, weeds and organic matter produced on the farm was established. Rye and sorghum were planted and plowed under. Fifty acres of vetch was planted in the fall of 1908 and plowed under the next spring and planted to corn. On this field the corn had been averaging about thirty

bushels to the acre. The corn following vetch made over seventy bushels to the acre. It is now a fixed rule upon this farm of two hundred and forty acres to plant one hundred acres of vetch each year. Ten acres of alfalfa followed vetch in the fall of 1908 and resulted in a fine stand.

"I have a field of black soil which, by continuous cropping without the addition of organic matter, had become so worn as to produce a very low yield of corn. I planted this field to vetch in the fall of 1908, plowed it under in the spring of 1909 and planted field corn which produced ninety bushels to the acre. In 1909 I plowed under heavy crops of vetch on some of my poorest land and planted to potatoes, which made a yield of 150 to 200 bushels to the acre.

"This fertilizing crop can be grown between crop seasons when no time will be lost and when it will do the soil the most good. After five years' experience with it I am convinced that the claim of the Department of Agriculture that an acre of it plowed under is equivalent in value to from twenty to forty dollars is not extravagant; that it is the greatest soil builder ever discovered, alfalfa not excepted; that with it and ditches the American farmer can reclaim any poor or worn-out soil; that he can make his soil produce as it has never produced since it was rescued from the wilderness, and that vetch is the remedy for clover-sick soil. If alfalfa is the most valuable forage plant ever discovered, vetch is the most valuable fertilizing plant ever discovered. Vetch builds on its roots so many little homes for the busy nitrogen gatherers, which so mysteriously draw from the great store-house of nitrogen in the air above the soil, that great quantities of this precious element are added to the soil in which it grows."

GRASS SEEDS

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TIMOTHY—Most valuable of all grasses. The standard for commercial hay.

REDTOP, or Herd's Grass—Excellent for pastures and makes fine hay. Well suited to poor soils and moist lands.

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KENTUCKY BLUEGRASS—A perfect lawn and pasture grass. Thrives on limestone soils and resists severest cold weather.

MEADOW FESCUE, or English Bluegrass—Fine hay and pasture grass; green all winter. Heavy in yield and very nutritious.

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To fulfill these requirements has been the sole aim of our house from the day it began business.

The wisdom of this policy is evident in our large and growing list of regular customers and the substantial annual increase in our sales.

Follow the example of those who have acquired Profit through Experience, and Buy where the Buying is Good.

Contents

Harvests of the World.

January—New Zealand, Australia, Chile, Argentine.

February—New Zealand, India.

March—India, Upper Egypt.

April—Mexico, Cuba, Lower Egypt, Syria, India, Persia, Asia Minor, Cyprus.

May—Algeria, China, Japan, Central Asia, Morocco, Texas, Florida.

June—Turkey, Greece, Italy, Spain, California, Central and East United States.

July—France, Austria, Hungary, Roumania, Bulgaria, Germany, Switzerland, South England, Northern United States, Ontario, Quebec.

August—England, Belgium, Holland, Germany, Central Russia, Denmark, Poland, Canada.

September—Scotland, Sweden, Norway, Russia.

October—Finland, Northern Russia.

November—Peru, South Africa.

December—Burmah, Australia.


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