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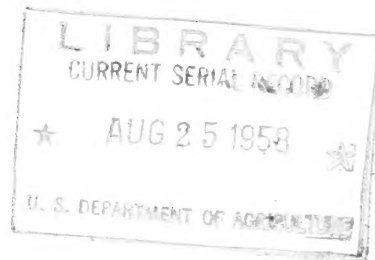
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FEDERAL-GRANT RESEARCH

at the

STATE AGRICULTURAL

EXPERIMENT STATIONS



Projects on
ORNAMENTAL AND DRUG PLANTS

Part 16

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

Compiled January 1, 1958 by

the State Experiment Stations Division, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D. C., for use of workers in agricultural research in the subject-matter areas presented. For information on specific research projects write to the Director of the Station where the research is being conducted.

Issued May 1958

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INTRODUCTION

This compilation is one of a series providing information on State agricultural experiment station research supported by Federal-grant funds appropriated annually by Congress under authorization of the Hatch Act of 1887, as amended and approved Aug. 11, 1955, and Section 204(b) of the Agricultural Marketing Act of 1946. It is prepared for use by research workers in the subject-matter areas presented. Only that part of each State's research program supported by Federal-grant moneys is included.

In addition to the Federal-grant moneys, the State experiment stations receive some Federal support through cooperative agreements or contracts with the U. S. Department of Agriculture. Information on such research, along with other departmental research, is available in the Central Project Office, Agricultural Research Service.

A substantial part of each State agricultural experiment station's research is supported with moneys appropriated by the respective State or Territorial Legislatures and through other forms of private and public financing. Information on current agricultural research at the stations which is not financed under the Federal-grant program or through USDA cooperation can be obtained from experiment station directors.

The information given in the series of Federal-grant compilations includes the title and objectives of each Federal-grant project pertaining to the subject given on the cover. The identification of each project gives the department(s) conducting the research, the station number of the project, and the number of the regional project if it is a contributing project.

Relevant regional projects, if any, appear at the end of the compilation. States having projects contributing to regional projects are indicated. The Roman numeral (and capital letter) refer to the location in the summary of the contributing project title and objectives. The States are grouped into four major regions. These are designated NC-North Central, NE-Northeastern, S-Southern, and W-Western. The capital letter "M" following the letters for the region indicates regional marketing projects.

ORNAMENTAL PLANTS

Breeding

Storrs
(Conn.)

Cytology and Genetics of Floriculture Crops. (1) Carnations. Work on effects of ionizing radiation in production of mutants in existing commercial clones and new seedlings. Develop analytic techniques for study of somatic mutants and chimeras. Chemically study various breeding types of known genotypes. Further study polyploidy, to develop diploid and tetraploid parent genotypes capable of producing suitable triploids. (2) Orchids. Make further cytological studies correlated with suitable cultural conditions to learn what degree of ploidy is most likely to provide maximum returns and best means of achieving desired degree of ploidy. Make careful meiotic studies of mega- and microsporogenesis of selected types to learn if orchids (not considered as being parthenogenetic) may, under certain conditions, reproduce parthenogenetically. (3) Delphiniums. Test validity of results of studies of origin of D. Belladonna Hort which has indicated that triploids or otherwise sterile hybrids are better keepers for cut flowers than fertile forms, and how these forms can most readily be produced. (4) Lilies. Further study chimeras obtained from use of colchicine administered several years earlier. Continue irradiating commercial clones and new seedlings at suitable dosage rates to learn how readily mutants can be obtained.

Pl. Sci. 169

Conn.

Genetic and Cytological Study of Hereditary Characters in Plants With Special Attention to Genes Controlling Pollen Production in Combination With Sterile Cytoplasm. Further information is needed concerning number, location in the chromosomes, and the time and mode of action of these pollen-restoring genes.

Genet. 501

Conn.

Variation in Cytoplasmic Components of the Cell With Special Attention to Pollen Abortion in Maize, Tobacco, and Petunia. Further information is needed concerning the possible differences between sterile plants of different sources, the stability of the pollen abortion under different environments and in different genotypes.

Genet. 505

- Hawaii Propagation and Culture of Orchids. Cytology of Orchids.
To determine chromosome numbers and to study chromosome behavior
in orchid species and hybrids.
Hort. 171.1
- Hawaii Breeding for Quality and Productivity in Anthuriums. To
(1) improve quality in color, form, texture, size, and glossiness
of the flowers; and (2) increase productivity of plants.
Hort. 177.1
- Minn. Breeding Hardy Ornamental Trees and Shrubs for Minnesota.
(1) Develop through breeding: hardy varieties of small to
medium sized trees for landscape purposes that combine hardiness
with other desirable characteristics as showy bloom, good texture,
attractive fruits, good autumn color, and winter interest; (2)
hardy varieties of dwarf compact shrubs possessing characteristics
as above.
Hort. 2129
- N. H. Improvement of Ornamental Plants. To (1) survey characters
of selected species and horticultural varieties of ornamentals,
(2) study inheritance of these characters, (3) produce through
breeding and selection new varieties superior in vigor, disease
resistance, beauty and adaptability, and (4) improve cultural
methods.
Hort. 38
- N. Y.
(Cornell) Cytogenetic Studies of Horticultural and Crop Plants. To
apply fundamental principles of cytology and genetics to develop-
ment of new and improved varieties of horticultural and crop
plants such as corn, iris, rye, cantaloupes and Cattleya orchids
and to eliminate defects of certain varieties such as partial
sterility which are cytological in nature.
Pl. Brdg., Pl. Path., Flor., Bot. 77
- Pa. The Breeding and Improvement of Ornamental Shrubs of the
Caprifoliaceae. To develop improved varieties of the Caprifoliaceae.
including such characters as dwarf to medium height; upright,
spreading, evergreen growth; attractive types of inflorescences;
consistency of fruiting, large size, etc.; cold tolerance; and
disease and insect resistance and tolerance.
Hort. 1210 A
- Va. Develop, Procure, Propagate, and Test Dwarf, Woody Ornamental
Plants. To (1) use certain ornamentals now at VPI Arboretum and
produce dwarf types from other sources; (2) develop new forms through
hybridization, selection and use of X-ray, chemical, etc. to induce
gene mutations; (3) study methods of propagating dwarf plants and
response to different chemical fertilizers; and (4) test dwarf
ornamentals in various soils and exposures for hardiness, rate of
growth and resistance to pests.
Hort. 86044

- W. Va. A Survey of Multiflora Rose Plantings in West Virginia, With Special Reference to Growth Characteristics and Spreading Tendencies. To (1) determine rate of growth which occurs under various site conditions and treatment, with multiflora rose planted in W. Va.; (2) collect all available data on values and effectiveness of multiflora rose as a living fence and as wildlife cover and food; (3) secure information on objectionable characteristics of multiflora rose, particularly spreading and becoming a noxious weed; and (4) assemble data as a basis for setting up experimental plots on which research can be handled under controlled conditions.
For. 42 Coop. SCS

- W. Va. Selection, Breeding and Propagation of Nursery Crops. To (1) improve variety, quality and adaptability of Ilex, Rhododendron and Amelanchier as ornamental nursery crops through breeding and selection; (2) devise cheaper methods for propagating ornamental crops suitable to W. Va.; and (3) collect rare or highly marketable varieties and clones to be propagated by methods devised.
Hort. 59

Varieties

- Ga. A Comparison of Different Rootstocks of Certain Ornamentals with Particular Reference to Date of Flowering, Resistance to Unseasonable Cold, and Resistance to Diseases and Insects. (1) To determine the effects of different, compatible rootstocks on date of flowering, resistance to unseasonable cold, disease and insect resistance, and general adaptability of certain ornamentals. (2) To improve existing varieties of ornamentals by utilizing information obtained.
Hort. 332
- Mass. Hardiness in New England of Commercially Available Rhododendrons and Azaleas. Learn (1) hardiness and garden value of commercially available azaleas and rhododendrons; (2) factors bringing about injury to hardy species and varieties and how environmental factors or cultural practices can be altered to prevent injury.
Landsc. A. 85

- Nebr. The Improvement of Ornamentals and Fruits for Nebraska Through Selection, Breeding and Cultural Practices. To (1) select and develop varieties of ornamentals and fruits of possible value in Nebraska; (2) test such selections in cooperation with Great Plains Nurserymen, Garden Clubs and other interested Experiment Stations; (3) provide information and materials for educational programs conducted by Extension Service; and (4) coordinate research by facilitating exchange of ideas and materials between workers, and by making all work done throughout the State parts of a single plan rather than several separate investigations unrelated to each other.
Hort. 461 (NC-7-See ARS-23-8-12)
- N. Mex. Woody Ornamental Plants and Outdoor Floral Crops. To (1) determine adaptability of new and untried species and varieties of ornamentals under Mesilla Valley conditions; (2) evaluate more popular and useful species for a. tolerance to extremes of sun and shade, b. adaptation to light and heavy textured soils, and c. resistance to iron chlorosis in alkaline soils; and (3) conduct preliminary investigation of problems and potentialities in commercial production of cut flowers.
Hort. 57
- N. Dak. Culture, Testing and Breeding of Hardy Ornamentals.
(1) Learn best methods for establishment and culture of hardy ornamentals. (2) Select species and varieties best adapted to State conditions by systematic testing of existing varieties. (3) Produce new hardy varieties through breeding programs.
Hort. 12-7
- Tenn. Kind and Variety Investigations of Ornamentals. To learn (1) climatic and ecological conditions necessary for optimum development of varieties of herbaceous or woody plants under investigation; (2) varieties adaptable to climatic conditions in Knoxville and other areas where substations or individual cooperators are available.
Hort. 154
- Tenn. Management and Evaluation of Plants for Hedges, Screens and Windbreaks. (1) Learn ability of certain woody shrubs to provide barriers to movement, shelter from wind, screening of views, and visual privacy under various management practices. (2) Establish aesthetic relationships between land areas and enclosing shrubbery plantings.
Hort. 157
- S. Dak. Selection of Adapted Species and Strains of Trees and Shrubs for South Dakota Farms. (1) Learn adaptability and growth of various species, strains, and varieties of trees and shrubs in State. (2) Develop improved types through tree breeding and perfect methods of propagating. (3) Learn more effective windbreak designs for better use of improved trees and shrubs.
Hort., For. 142

Culture

- Ala. Study of Environmental Factors as They Influence the Growth and Development of Lanceleaf Greenbrier, Southern Magnolia and Fetterbush Lyonia. (1) Characterize environment of said flora in native habitats; (2) learn influence of temperature, light intensity, and moisture on propagation of same and (3) influence of fertility and moisture in soil, cultural practices, and pruning on growth and ornamental qualities.
Hort. 424
- Calif. Micro-Climatic Influences on House Orientation and Design and On the Related Problems of Landscape and Interior Design. (1) Develop guides determined by micro-climatic and other environmental conditions for designing economical and livable rural homes. (2) Learn how environmental conditions can be modified to improve living comfort.
Home Econ. 1536 (W-8-See ARS 23-8-3c) Coop. ARS
- Calif. Engineering Studies of Floriculture and Plant Nursery Practices. Determine design data for greenhouse heating, cooling, humidity control and air purification. Develop methods and equipment for improvement of unit operations of floral, turf grass and plant nursery practices.
Agr. Engin. 1675
- Storrs
(Conn.) Physiology and Floral Induction With Reference to Floriculture Crops. Discover (1) empirically the photoperiods, thermoperiods, and chemical treatments which lead to floral induction in Connecticut area so recommendations may be made to growers; (2) biochemical and morphological changes of plants induced to floral initiation; (3) which of biochemical and morphological changes is the trigger mechanism of floral induction; (4) ways of exploiting this trigger mechanism at will so as to produce floral induction.
Flor. 255
- Storrs
(Conn.) The Control of Growth of Woody Plants by Photoperiodic Treatment. Provide a program whereby recommendations can be made to growers on how to apply photoperiodic treatments in production of trees and shrubs most effectively by: (1) Learning which are responsive to changes in day length and learn morphological nature of their response. (2) Learning critical intensity and duration of light that would prevent induction of a dormant condition. (3) Learning date when plants should be removed from long day treatment to allow sufficient time to permit hardening of tissues in preparation for winter; and (4) effect of day length on rooting of cuttings and on germination of seed.
Pl. Sci. 268

- Del. Soil Fertility in Greenhouse Soil Mixtures. To (1) evaluate the fertility of various soil mixtures for greenhouse flower production, (2) find a practical method for maintaining greenhouse soils at optimum fertility levels, (3) simplify soil testing procedures for greenhouse soils and correlate them with crop responses, and (4) study the nutrient requirements of various greenhouse crops on a synthetic soil mixture.
Hort. 54-H
- Fla. Native and Introduced Ornamental Plants. To obtain information on climatic and soil adaptability, methods of propagation, nutritional requirements, time of flowering and ornamental uses of native and introduced ornamental plants.
Orn., Flor. 52
- Ga. An Evaluation of Cultural Practices Affecting the Year-Around Production of Cut Flowers in Georgia. To determine effects of varieties, dates of planting, shading, misting in lieu of shading and irrigation, and other practices on outdoor, shade house, plastic house, and glasshouse production of asters, carnations, larkspurs, snapdragons and roses.
Hort. 331
- Ga. Mist Propagation of Ornamentals Indoors and Outdoors. Learn most practical and effective method of reducing loss of cuttings rooted under mist, when they are transplanted to more severe conditions in greenhouse or outside in rows.
Hort. 333
- Hawaii Culture of Anthuriums. To improve on present methods of culture, with particular attention to suitable growing media and fertilization.
Hort. 178.1
- Hawaii Culture of Carnations. To improve on present methods of culture and management of carnations.
Hort., Pl. Path. 178.3
- Ill. Nutrition of the Greenhouse Rose in a High Boron Soil. Learn best levels of N, P, and K for growth of greenhouse roses in a soil containing high to toxic qualities of B. "Best levels" takes into consideration number of marketable flowers, size and appearance of blooms, their color and ability to keep well in both commercial storage and home, as well as resistance to insects and diseases.
Hort., Soils 65-351

- Ill. Nutrition of Floricultural and Ornamental Crops. (1) Study the relations between varying soil nutrient levels, flower production, and quality of carnations and (2) soil nutrient requirements of floricultural pot plant crops.
Hort. 65-353
- Md. The Relationship of the Mineral Nutrients and of Nutrient Levels to the Growth and Flowering of the Azalea Under Greenhouse Conditions. To (1) determine growth and flower bud production under various levels of nutrition with controlled environmental conditions; (2) correlate nutritional findings with growing and forcing practices to improve rapidity and habit of growth and subsequent flowering; and (3) study causes and conditions under which "iron" chlorosis develops and methods of prevention or control.
Hort. I-79-H
- Md. The Balance and Intensity of Inorganic Nutrient Elements as They Affect the Growth, Flowering, and Quality of Hydrangea Macrophylla Thunb. Under Greenhouse Conditions. To (1) study effects of major elements and their intensities on growth of the plant; (2) study deficiency symptoms of this crop as to minor elements and response to minor element fertilization; (3) develop more definite means of flower color control; (4) develop better means of correcting iron deficiencies in hydrangeas; and (5) study effects of ratio, intensity, frequency, and time of fertilizer applications during growing and forcing period, to develop a fertilizer program for this crop under florist's conditions.
Hort. 1-79-I
- Mass. Use of Sewage Sludge in Composting. Investigate sewage sludge as a source of composting micro-organisms with particular reference to the decomposition of cellulosic material.
Bact. 18
- Mass. The Effect of Iron Chelators on Nutrition of Roses. To determine the effect of iron chelators on foliar chlorosis and nutrition of roses, grown in soils with different levels of phosphate.
Hort. 60
- Mass. Effect of Nutrient Elements, Light and Temperature on Growth of Carnations. To study (1) B requirements of carnations and identify deficiency symptoms, (2) interaction of Ca and B in nutrition of carnations and establish a satisfactory B-Ca ratio for carnation production, (3) interaction of K and Mg in nutrition of carnations, and effect of high levels of K in inducing Mg deficiency in carnations, (4) effect of P levels on carnation production in soils prepared with relatively large quantities of peat moss, (5) effect of supplementary light on growth and production of carnations, (6) relationship of light duration and night temperatures for carnation production.
Hort. 61

- Mass. The Effect of Steam Sterilization of Massachusetts Greenhouse Soils. To determine effect of steam sterilization of greenhouse soils on soil nutrients, and on proper time limit for planting commercial floricultural crops after steam sterilization.
Hort. 64
- Mass. The Effects of Temperature and Daylength on the Flowering of Anemone Coronaria. Learn exactly whether temperature or daylength factor causes Anemone coronaria to produce flowers abundantly for a period and then become dormant. This knowledge might help produce artificial conditions to make plant maintain a consistent production of flowers over a longer period.
Hort. 65
- Mass. Control of Weeds in Nursery by Chemical Sprays. Find chemicals or combinations of chemicals that will control without injury to ornamental plants.
Landsc. Arch. 84
- Mich. Fundamental and Applied Colloid-Chemical Aspects of Agricultural Chemistry. To (1) improve or devise new wax emulsions for treating nursery stock and plant materials so as to reduce their cost of production and increase usefulness in horticultural and other practices, and (2) develop new or improved formulations and methods for the production of colloidal iodine.
Chem. 1
- Mich. Effect of Photoperiod (Day Length) and Temperature on Root Initiation, and Growth of Ornamental Plants. (1) Condition plants to an otherwise unfavorable environment by use of photoperiod and temperature adjustment of environment. (2) Extend and improve vegetative propagation of ornamental plants by use of photoperiod and temperature and adjustment of environment.
Hort. 846
- Minn. Growing and Handling Ornamentals. To (1) overcome the iron chlorosis problem through selecting plants resistant to this type of injury and where this is not possible, by correcting the soil condition through improved drainage, soil treatments, foliar sprays and other treatments; (2) effectively control weeds in nurseries and ornamental plantings by chemical means; (3) improve propagating techniques for plants that are difficult to propagate such as varieties of Cotoneaster, Viburnum, Prunus, Ilex, Juniperus, and Thuja; (4) find suitable, non-suckering rootstocks for varieties of Prunus and Roses; (5) reduce shipping weight of nursery stock by means of lighter weight packing and wrapping materials; (6) improve techniques for wintering tender plants such as roses and chrysanthemums; and (7) determine what varieties of trees, shrubs and evergreens can be successfully transplanted in the fall.
Hort., Soils 2120

- Minn. The Establishment and Maintenance of Lawns in Minnesota.
To determine (1) best lawn grass mixtures for different soil types and degree of shade; (2) best means to start a new lawn using surface mulches; (3) amount and kind of topsoil needed over sandy subsoils to establish a permanent lawn; (4) best way to control crabgrass, chickweed, creeping charlie, etc.; (5) what types of soils should be aerated and best means of doing so; and (6) best fertilizer ratio, rate of application, and best times and methods of application.
Hort., Soils 2121
- Miss. Factors Affecting the Production of Forcing Ornamentals (Or Flowering Pot Plants). To develop methods of growing (1) and storing azaleas to provide flowering pot plants for marketing at specific times, (2) and storing hydrangeas to provide flowering pot plants for marketing at specific times, (3) kalanchoe to provide flowering pot plants of high market quality at specific times.
Hort. HK-7
- Miss. A Study of Media and Fertilizer Applications for Container-Grown Nursery Stock. (1&2) Study effect of various potting media and various fertilizer treatments on growth of nursery plants. (3) Determine best method for transplanting to containers.
Hort. HK-8
- Miss. Camellia Propagation and Growing Studies. To (1) develop better methods of propagating camellias; (2) study methods of growing camellia nursery stock in containers with various treatments; (3) determine winter hardiness of flower buds and of vegetative growth of various varieties; (4) study growth performance and flowering characteristics of various varieties; and (5) develop structures and procedures for winter protection of flowering-age plants.
Hort. HK-15
- Mo. Greenhouse Flower Crop Production. (1) To learn relation of soil analysis to flower production and quality. (2) Study greenhouse cooling and its effects on flower production. (3) Learn factors affecting keeping qualities of cut flowers.
Hort. 293
- N.H. Cultural Studies with Horticultural Crops. To determine best cultural practices for fruits, vegetables, and flowers, including fertilizers, soil amendments, insect control, disease control, planting dates, methods, depths and distances, cultivation practices, and weed control.
Hort. 39

- N. H. Effects of Light Quality on Plant Growth. To determine effects of light from various white and colored fluorescent lamps, alone and in combinations with light from incandescent lamps, on plant growth.
Bot. 91
- N. J. Evaluation of Greenhouse Soil Testing Methods. To learn (1) method of analysis most suitable for evaluating available nutrient content of a wide assortment of greenhouse soils; (2) extent of variation in available nutrient content caused by methods of sampling, rate of watering and leaching the soils; time of sampling with reference to time of watering, effect of applications of fertilizer materials on displacement of nutrients from soils.
Hort. 336
- N. J. An Investigation of the Use of Intermittent Mist for Propagation of Ornamental Plants by Cuttings and/or Grafting. Study possibilities of extending use of mist to rooting of other types of cuttings (dormant evergreen and deciduous cuttings) and also to grafting and budding procedures.
Hort. 350
- N. J. Photoperiodic Response of Woody, Ornamental Plants. (1) Stimulate or force additional growth on container-grown nursery stock. Learn (2) proper timing for light application on individual species, giving maximum vegetative growth and adequate hardening off so winter injury will be at a minimum; (3) period when supplemental lights are effecting the additional growth to occur; (4) photoperiodic response of a wide variety of plants to supplemental lighting during growing season.
Hort. 364
- N. Y.
(Cornell) Establishment and Maintenance of Permanent Grass Sod on Home and Institutional Grounds, Parks, and Highways. (1) Establish tests for adaptability of new grasses to climatic conditions, disease, and suitability in different soils. In Kentucky Bluegrass, there is a possibility that commercial seed from 1 producing area may be superior in turf producing ability to that from other areas. (2) Test mixtures of basic turf grasses with varying amounts of less expensive "temporary" grasses at varying seasons and with varying degrees of soil preparation and after-care.
Hort., Agron. 103

N.C.

Winter Hardiness in Woody Ornamental Plants. Learn (1) number of applications of N that can be made in a growing season to safely obtain maximum growth and a healthy condition in woody ornamentals, without risk of cold injury caused by fall freezes; (2) effectiveness of different concentrations of maleic hydrazide in bringing about a hardening of tissues for protection against low winter temperatures; (3) effects of P and K applied on September 1 and October 1 in promoting resistance of plants to low temperatures; (4) compare N sources in relation to plant response; i.e., a source of readily available N (NH_4 , NO_3), and 1 known to release N at a much slower rate (not readily available), Uramite.

Hort., Expt. Sta., Chem. 133

Ohio

The Effects of Various Cultural Practices on the Growth and Flowering of Greenhouse Roses. To (1) determine causes of blind wood; (2) observe effects of soil additives on soil structure and plant development; (3) determine relationship between heating, ventilation and relative humidity throughout the day for various seasons of the year; (4) determine causes of flower malformation or "bullheading"; (5) investigate cultural conditions that affect keeping qualities; and (6) observe effects of fertilization, temperature, light and pH on color of Golden Rapture rose.

Hort. 54

Ohio

The Production and Marketing of Cut Flowers and Flowering Plants in Small Pots. To (1) produce, obtain and evaluate varieties of chrysanthemums, azaleas, hydrangeas, and other plant species that are suitable for forcing in small pots or can be adapted to that type of production by cultural methods; (2) determine production procedures for producing cut flowers of such type that are suitable for packaging; (3) determine cost of packaging small potted plants and cut flowers at the grower level; (4) determine acceptance of packaged potted plants and cut flowers by consumers; (5) determine most acceptable package to the customer and ones holding up best throughout marketing channels; (6) determine prospective sales of these potted plants and cut flowers lending themselves to sale in packages; (7) determine losses involved in such packaging and marketing; (8) determine most effective methods of display to customer in the store; and (9) determine volume of sales per square foot of space in the store compared to other products.

Agr., Econ., Hort. 115

Ohio

Production of Nursery Stock in Metal Containers. (1) Obtain, produce by cultural techniques, and evaluate woody deciduous and evergreen plant species and varieties as to suitability for container production. (2) Learn production procedures for plants growing in various sizes of containers. (3) Evaluate various types of containers (4) Learn cost of producing nursery stock in containers, and (5) extent of production losses of container grown stock.

Hort., Agr. Econ. 149-1

- Okla. A Study of Chlorosis of Certain Woody Ornamentals in Oklahoma. To find the most satisfactory combination of chemicals and concentrations, and methods of application to correct the conditions causing chlorotic foliage of Pin Oaks, Thunberg spireas, and other affected plants under Oklahoma climatic and soil conditions.
 Hort. 866
- Pa. Factors Influencing Asexual Propagating of Horticultural Crops. To (1) investigate influence of parent materials on the quality of propagating stock; (2) the influence of soil and air temperatures, soil moisture and atmospheric humidity; and light intensity and duration on asexual propagation responses; (3) influence of various chemical treatments on propagation responses of various plant species; and (4) determine usefulness of anti-transpirants in asexual propagation of various species and strains.
 Hort. 1231-A
- Pa. Light and Temperature Effects on the Growth of Greenhouse Roses. To study the effect of various night temperatures in relation to natural light conditions upon the flower production and keeping quality of greenhouse roses.
 Hort. 1232-B
- Pa. The Physical and Chemical Properties of Greenhouse Soil Mixtures. Learn (1) particular chemical and physical properties of greenhouse soil mixtures as a basis for soil preparation and fertilization; (2) effects of various soil amendments on the chemical and physical properties of greenhouse soil mixtures and on leaching of nutrients from these mixtures; (3) study the interaction of various soil amendments and cultural practices on yield and quality of floricultural crops.
 Hort. 1313-A
- Pa. The Nutrient Requirements of Floricultural Crops. Learn (1) the balance between and degree of saturation of various nutrient elements and their effects on yield and quality; (2) critical values for nutrient elements where deficient symptoms occur; (3) establish liquid fertilization programs; (4) learn relationship between rapid soil tests and fertilization programs.
 Hort. 1313-B
- S. C. A Study of the Effect of Herbicides on Weeds in Some Ornamental Nursery Stock. To learn (1) herbicides most effective in weed control, and (2) which are least injurious to nursery stock.
 Hort., Bot. 90

Tenn. Propagation of Fruit and Ornamental Plants. Investigate effects of maturity of tissues, supplementary nutrients, length of photoperiod and intensity of light in propagation of difficult species; Rosaceae, especially Rubus, Pyrus, and Malus; Aquifoliaceae, Ilex; Berberidaceae, Mahonia, Nandina and Berberis; Ericaceae, Rhododendron; Oleaceae, Osmanthus.
Hort. 128

Wis. The Effect of Excessive and Deficient Nutrient Supplies on the Anatomy of Selected Horticultural Crops. (1) Learn effect of different nutrient levels on growth of stem, leaves and roots; leaf symptoms and flowering; (2) study anatomical structure of stem and leaves.
Hort. 319

Harvesting and Storage

Ala. Packing and Shipping of Horticultural Specialty Crops. To (1) determine influence of packing and shipping methods on cost of shipping and on condition and survival of horticultural specialty crops; (2) study methods currently used by shippers; in packing and transporting and costs involved; (3) study influence of various methods of packing, materials used, and transportation methods on condition of products at terminal markets.
Hort., Ent. 544 (SM-12) Coop. AMS

Calif. Handling and Packaging Cut Flowers and Ornamentals in California. Improve efficiency and reduce costs in preparation of cut flowers and ornamentals for market; develop improved packages and packaging methods; test packages from standpoint of quality of product, cost of marketing and trade acceptability.
Agr. Econ., Orn. 1676 (WM-24) Coop. AMS

Fla. Gladioli Precooling, and Transit Investigations. Investigate effect of precooling, transit refrigeration, and types of containers, on quality of flower to learn associated operating costs.
Agr. Engin. 860

Hawaii Factors Affecting the Keeping Quality of Cut Flowers, Foliages, Ornamentals, Fruits, and Vegetables in Relation to Quarantine Sterilization Requirements for Export. To (1) determine what factors, pre- and post-harvest, contribute to keeping quality of Hawaiian-grown cut flowers, foliages and other ornamentals, fruits and vegetables in relation to shipment and marketability following quarantine sterilization; and (2) develop best methods of maintaining or improving keeping quality and marketability of these plants under treatments found necessary to destroy insect larvae and eggs which might contaminate them.
Pl. Physiol. 660

- Hawaii Studies on Post-Harvest Physiology of Hawaiian-Grown Fruits, Vegetables and Ornamentals as Applied to Quality, Storage Life and Marketability. Investigate basic requirements of harvesting, transporting, handling, and storage necessary to assure high quality and marketability of various plant commodities from various areas.
Pl. Physiol. 663
- Iowa Packaging of Nursery Stock for Shipping and Retail Markets. To (1) reduce weight of shipping containers and provide better preservation of plant material in distribution of nursery stock; and (2) develop containers for retail store display sales which will preserve the plant for a period of time under unfavorable temperatures and humidities common to sales outlets in which stock is held.
Hort. 1214, ES 175
- Mass. Factors Affecting the Rates of Respiration, Water Absorption and Transpiration of Cut Flowers. To determine effect of various factors on (1) respiration rate of cut flowers, and (2) rates of water absorption and transpiration of cut flowers.
Hort. 62
- Mass. Low Temperature Storage of Cut Flowers and Cuttings. To determine (1) effect of growing temperatures on production of carnation cuttings in "Mother Blocks" and on storage of these cuttings at 31°F.; (2) various factors in storage of chrysanthemum cuttings; (3) use of various materials for storage containers; (4) effect of pre-storage foliar sprays on storage of rooted and unrooted carnation cuttings; and (5) effect of different concentrations of carbon dioxide and oxygen on storage of cut flowers and cuttings at 31°F.
Hort. 63
- N. J. Low-Temperature Storage of Rooted and Unrooted Cuttings of Ornamental Plants. To study (1) possibility of rooting cuttings of narrow-leaved evergreens twice during fall-winter-spring period; (2) rooting response of low temperature stored cuttings with cuttings not stored; (3) growth in field of stored cuttings with those handled by established methods; (4) storage requirements as temperature, treatment to prevent disease, measures for reducing water loss, respiration, etc. for best maintenance; (5) changes in food reserves during rooting and storage.
Hort. 347

- Pa. Factors Affecting the Keeping Quality of Cut Flowers.
To learn (1) effects of chemical preservatives, growth regulators, and pH levels of solution on keeping quality of cut flowers at room temperature; (2) influence of humidity, air temperature, air movement, ethylene, and CO₂ accumulation in storage chambers on subsequent keeping quality of cut flowers.
Hort. 1280

Disease Control

- Calif. Insect Vectors and Their Relation to Virus Diseases of Ornamental Plants. To (1) study insect vectors, properties, host range and symptoms of nasturtium viruses in order to distinguish them and evaluate their respective incidence and importance; and (2) determine the insect vector of orchid mosaic virus, properties of the virus and its relation to such vectors.
Ent. Parasitol. 1365-C
- Hawaii Bacterial Diseases of Orchids in the Territory of Hawaii.
(1) Characterize diseases on the various genera and species of orchids; (2) identify causal agents; Learn (3) host ranges; (4) environmental factors necessary for infection and development of diseases; (5) practical means of prevention and control.
Pl. Path. 701.4
- La. Cause and Control of Root, Stem, Leaf, and Flower Diseases of Certain Ornamental Plants. To study the diseases of ornamental plants and methods for their control, in answer to demand for information in Louisiana and the South on this subject.
Pl. Path., Hort. 511
- Md. The Nature and Control of Root Rots Involved in Decline of Boxwood and Other Woody Ornamental Plants in Maryland.
Learn if decline and death of boxwood and other woody ornamentals is caused primarily by a soil-borne organism or a fungus-nematode complex.
Bot. J-99

- Mass. Properties and Importance of Some Fungous and Virus Diseases of Carnations and Their Control Measures. To (1) determine fungous and bacterial pathogens in commercial propagating stock, including determination of (a) prevalence of pathogens in commercial propagating stock, (b) actual value of a culturing technique as a means of detecting and eliminating infection and (c) whether method and effort involved in culturing can be shown to represent an improvement over current cultural patterns as may be shown in measurable differences in disease and yield of flowers; (2) determine effectiveness of various chemicals upon control of Fusarium dianthi, determining action both as therapeutics and as soil treatments; (3) determine effect of carnation virus disease upon quantity and quality of flowers produced; (4) determine properties of carnation mosaic virus as follows: (a) effect of H-ion concentration on stability of carnation mosaic virus, (b) optimal pH for inoculation by carborundum technique, (c) concentration of carnation mosaic virus in diseased plants, (d) effect of aging upon infectivity of carnation virus, and (e) thermal inactivation time of carnation mosaic virus; and (5) evaluate diagnostic tests for detection of virus infected plants.
Bot. 23
- Mich. Insect Vectors of Crop Plant Diseases. To (1) determine insect vectors of aster yellows on potatoes, lettuce, carrots, gladiolus, etc.; (2) study bionomics of species concerned; including life history, migration, food plants, ecology, and control; (3) study mechanics of disease transmission by species under study; (4) make inoculation experiments with various virus diseases, using accurately determined species or races of insects; and (5) by mass transfers of infected insects to non-infected plants of the same and of different species.
Ent. 78
- Minn. Diseases of Ornamental Crops
Pl. Path., Bot. 2205
- Miss. Studies on Diseases of Ornamental Plants in Mississippi.
To (1) ascertain and define major disease problems of importance to ornamental culture and study inciting agents concerned; and (2) determine practical measures for control of these diseases, the type depending on nature of the disease; including determination of phytotoxicity and compatibility of various fungicides on ornamentals, evaluation of various fungicides for control of more prevalent diseases, development of disease resistant varieties, etc.
Hort., Pl. Path. HK-5, HL-7
- Mont. Diseases of Selected Ornamental Plants in Montana. To give special attention to the diseases of economic crops such as sweet peas, asters, gladiolus, geraniums, stocks and carnations, including (1) nature of the disease; (2) predisposing factors of susceptibility of the hosts, and (3) control of diseases.
M.S. 904, B&B 36, Hort. 61

N. Y.
(Cornell)

Investigations on the Effect of High-Humidity Cultural Techniques on the Development of Diseases of Ornamental Plants. Learn effects of using a high pressure fog system or an intermittent mist system with propagation of cuttings and growing of plants.

Pl. Path. 189

Ohio

Diseases of Carnations (*Dianthus Caryophyllus*), Their Control and Related Cultural Practices. To (1) determine relative susceptibility and resistance of carnation varieties to (a) bacterial wilt and root rot caused by *Phytophthora caryophylli*, (b) Fusarium wilt caused by *Fusarium dianthi*, and (c) virus diseases (mosaic, streak, and yellows); and (2) develop practical procedures for controlling these diseases in the commercial production of carnations.

Bot., Pl. Path., Hort. 49

Oreg.

Relation of Crop Residues to the Development of Certain Root Rot Diseases of Nursery Crops. To learn (1) effect of certain crop residues on development of root diseases of ornamental plants, caused by *Phytophthora cinnamomi* and *P. lateralis*; (2) influence of soil temperature and moisture on effects of crop residues in suppressing or stimulating disease development; (3) if suppression of disease associated with certain crop residues is biological, chemical or physical.

Pl. Path. 196 (W-38-See ARS-23-8-17a)

Pa.

Survey and Post-Planting Chemical Control of Plant-Parasitic Nematodes in Pennsylvania. (1) Learn species of plant-parasitic nematodes present in State; (2) establish range of various nematodes in State; (3) learn extent in which nematodes are involved in plant disease problems of State; (4) seek chemicals which can be applied to plants or soil as post-planting treatments.

Bot., Pl. Path. 1292 (NE-34-See ARS-23-8-17a)

R. I.

Biology and Control of Nematodes Associated with Plant Diseases, with Major Emphasis on Ornamental and Forage Crops.

(1) Learn role of nematodes as inciting agents of plant disease, their relationships in plant disease complexes and their control; (2) improve nematocides as contact disinfectants and chemotherapeutants.

Pl. Path., Ent. 610 (NE-34-See ARS-23-8-17a)

Wash.

Symptoms and Effects of Fluoride Fumigation on Various Ornamental and Crop Plants. To learn (1) and record photographically the sensitivity of forest, ornamental, vegetable, and agronomic plants to small quantities of atmospheric fluoride; (2) effects of exposure-period on plant response to small amounts of atmospheric fluoride; (3) rate and extent of fluoride up-build in plants exposed to fluoride-contaminated air; (4) fluoride content of forest, horticultural, and agronomic plants grown in Spokane area; and (5) by terminal and/or radial growth studies if any common fruit or ornamental tree species in Spokane area have been adversely affected by fluoride from local industrial operations.

Pl. Path. 1143 (W-39-See ARS-23-8-18)

Wash.

The Nature of Resistance to Fluoride Fumigation Found Among Ponderosa Pine, Prunes, Apricots and Gladiolus. (1) Correlate stomatal numbers, size, and position with reaction of Pinus ponderosa, Prunus armeniaca, Prunus domestica and Gladiolus plants to fluoride fumigation; (2) correlate cutical thickness, epidermal thickness and other morphological features of given plants with reaction of those plants by hydrogen fluoride; (3) learn influence of 30 species of Prunus rootstock on response of 4 commercial prune varieties and 4 commercial apricot varieties to fluoride fumigation.

Pl. Path. 1322 (W-39-See ARS-23-8-18)

Wis.

Diseases of Ornamental Plants. Increase quality and marketability of greenhouse and of nursery ornamental plants by prevention or control of plant diseases. Learn any necessary modifications for State growing conditions in described control of diseases on ornamental plants. Plans will vary with individual problems, but procedure in most such cases involves: Examination of affected plants; tests to learn presence and identity of any bacterial, fungal, or viral agents; inoculations to healthy plants to test pathogenicity; development of suitable control measures.

Pl. Path. 981

Insect Control

Ariz.

Insect Parasites and Predators of Insect Pests of Arizona Crops. To (1) learn: identity, distribution, and relative abundance of insects belonging to families generally recognized as containing species parasitic or predatory on other insects; and where needed descriptive, biological, and ecological information is lacking; and suggest where future work might be profitably done; (2) evaluate effectiveness of the more common species of insect parasites and predators as control agents. Make related biological and ecological observations for more detailed work.

Ent. 404

Calif.

Biological Control of Red, Yellow, Purple and Other Diaspine Scales on Citrus, Avocado, Walnut and Ornamentals. To (1) search for, introduce, rear in quarantine and study biological and natural enemies new to California; (2) colonize, recover, and evaluate effectiveness of introduced natural enemies; (3) evaluate effectiveness of already established natural enemies and develop methods to increase efficiency, if needed; and (4) evaluate effect of sprays, dusts, and fumigants on natural enemy-host population interactions in field and develop methods to reduce to a minimum the adversity of such materials.

Biol. Control 1493

- Ind. Insect Problems of Shade Trees, Shrubs, and Fruit Trees in the Nursery. To (1) develop a complete annotated bibliography of insects attacking nursery plantings; (2) determine the major pest problem occurring in Indiana; (3) investigate the life history and habits of these major pests; (4) determine cultural and related practices in plantings and nurseries which may be factors in the presence or absence of pests, or which may affect their economic importance; and (5) to find chemical and/or mechanical means of completely controlling pests in nurseries so that pest free plants can be grown and shipped inter- or intra-state.
Ent. 477
- Kans. Insects Attacking Shade Trees and Ornamental Plants. (1) Obtain fundamental information on biology, ecology, distribution, and habits of insects; (2) study control measures; (3) study relationship between drought, insect populations, and damage to shade trees and ornamentals.
Ent., Hort. 477
- Mass. Materials and Methods Which Promise Value in Control of Insects and Mites on Ornamental Shrubs and Shade and Forest Trees. Study value of newer insecticides and miticides, and applications for control of insects and mites on ornamentals and forest trees.
Ent. 56
- Miss. Control of Arthropod Pests Attacking Greenhouse and Ornamental Plants. To determine (1) satisfactory insecticidal or cultural controls for the more important greenhouse and ornamental pests; (2) species and varietal tolerance of plants to effective insecticides; (3) value of plant nutrition and varietal resistance; and (4) most practical application equipment for various conditions.
Ent. HH-5
- N. J. Systemic Insecticides for the Control of Insects and Spider Mites Attacking Greenhouse Flowers, Ornamental Shrubs and Flowers and Nursery Plants. (1) Learn mechanics of action of systemic insecticides on ornamentals by determining: methods and rate of absorption through roots, stems, seeds and forages, parts of plant to which systemics are translocated; length of effectiveness of systemics. Determine (2) types of insects and spider mites which are controllable by systemics; (3) economics of control by systemics as compared with previous control.
Ent. 213

- N. Y. Diseases of Forage Crops.--Survey of Forage Crops Diseases in New York. To determine severity of said disease.
Pl. Path., Agron. 114-4
- Oreg. The Symphylid Scutigera Immaculata Newport, Its Biology and Control on Truck, Nursery, and Greenhouse Crops. To study effects of (1) different methods of soil tillage on soil pests; (2) soil fumigants on pests; and (3) combinations of tillage and soil fumigants on symphylid and other pests.
Ent. 109-1
- Pa. An Investigation of Methods for Controlling Certain Insects and Mites Affecting Greenhouse Ornamental and Vegetable Crops. To determine most effective and economical measures for control of insects and mites causing injury to roses, chrysanthemums, snapdragons, carnations, orchids, etc., as well as greenhouse tomatoes and other food plants.
Zool., Ent. 957 Coop. ARS
- R. I. A Study of Insects and Mites Affecting Nursery Stock, Forest and Ornamental Trees and Shrubs in Rhode Island. To (1) obtain essential information on seasonal occurrence and economic importance of insect and mite pests of nursery stock, ornamental trees and shrubs and forest trees; (2) investigate biology of insect and mite species when such information has not been heretofore reported; (3) determine relative effectiveness of various new synthetic organic chemicals as insecticides and acaricides for control of the species of economic importance; (4) investigate comparative vulnerability of insect and mite species in various stages of development under R. I. conditions.
Pl. Path., Ent. 604
- W. Va. The Fungicidal Efficiency and Phytotoxicity of Orchard Sprays as Influenced by Methods of Application, Timing and Environmental Factors. (1) Study effectiveness of various spray materials, mixture formulations and methods of application on disease control and phytotoxicity resulting from applications of same; (2) Learn spray mixture formulation, time of formulation and method of application best suited.
Pl. Path., Bact., Ent. 30 Coop ARS

Economics and Marketing

- Calif. Requirements for Maintaining and Expanding the Sales of California Grown Horticultural Specialties. Analyze existing marketing practices and channels for State floriculturals and ornamentals, appraise impact of various social and economic forces on the industry, and outline most likely conditions for expanding markets.
Agr. Econ. 1774 Coop. AMS

- Colo. Improving the Retailer Acceptance of Colorado Carnations.
Learn features of present marketing methods that are acceptable and undesirable to retailers, develop more efficient and reliable methods of marketing, and learn additional services and marketing methods which retailers desire.
Agr. Econ., Orn. 233 (WM-24)
- Storrs
(Conn.) The Competitive Position of the Retail Flower Shop in Merchandising of Cut Flowers, Flowering Plants and Foliage Plants.
To provide growers, wholesalers and retailers of floricultural products with information on economic relationships required for more effective understanding and use of their resources employed in merchandising by: (1) learning trends in sales volume and prices of above items sold through retail flower shops and through alternative retail market outlets; (2) relating sales trends to trends in population and in consumer income; (3) learn intended use of floral items bought from different kinds of retail flower outlets; and (4) appraising effects on total consumption and on market outlets of recent changes in quantities of pot plants that now are available at wholesale and non-florist stores.
Agr. Econ., Farm Mgt. 241 (NEM-8) Coop. AMS
- Fla. Marketing Practices of Florida Flower and Ornamental Plant Growers. To learn (1) type and extent of use of various selling practices and their effectiveness; (2) scope of distribution of flowers and ornamental plants.
Agr. Econ., Orn. ES 236 Coop. AMS
- Fla. Expanding the Market for Florida Floricultural and Ornamental Horticultural Crops. (1) Learn possibility of expanding market for and increasing net income from Florida floricultural and ornamental horticultural crops.
Agr. Econ., Orn. 700 (SM-12) Coop. AMS
- Hawaii Competitive Position of Hawaiian Floral Products in Mainland Markets. Examine marketing process through which Hawaiian and competing floral products are distributed in mainland markets; investigate and report trade attitudes toward floral products and trade reaction to procedures used in marketing said products on mainland; analyze supply and demand factors for Hawaiian and competing products in mainland market.
Agr. Econ., Hort. 363 (WM-24) Coop. AMS
- Ill. Merchandising Cut and Potted Flowers in Retail Outlets.
Increase sales of cut and potted flowers. Test consumer acceptance of cut and potted chrysanthemums from retail outlets under various merchandising techniques. Recommend procedures for applying results to other plants.
Agr. Econ., Hort. 05-350

- Iowa Market Grades and Standards for Floriculture Crops.
For market grades and standards of pot chrysanthemums: (1) develop and recommend a set of uniform market grades and standards; and (2) test acceptability of these grades and standards.
Hort. 1362 (NEM-22-See ARS-23-8-14b)
- La. Marketing Horticultural Specialties. (1) Complete summarization of survey of marketing practices and prepare results for publication; (2) learn relative advantages of various packing and packaging materials for handling and marketing flowers and plants; (3) discover new outlets and merchandising methods and test adaptability of selected marketing practices successfully used on other commodities to these products.
Agr. Econ., Hort. 868 (SM-12)
- Mass. Problems in Marketing New England Flowers Through Wholesale Channels. To (1) analyze scope and functions of Boston wholesale flower market; (2) define and analyze trade practices of wholesalers in Boston Flower Market; and (3) study physical facilities of Boston Flower Market with respect to handling of flowers and the maintenance of quality.
Agr. Econ. 125 (NEM-8)
- Mass. Improved Marketing for Ornamental Nursery Products in New England. Analyze marketing institutions and procedures, and location and characteristics of market supply. Learn effects of new merchandising techniques on utilization of crop.
Agr. Econ., 128 (NEM-15)
- Mich. Sales Experiments in Retail Florist Shops. To (1) learn about consumer preferences for flowers; and (2) study factors affecting success of sales in retail florist shops.
Hort. 108
- Miss. Camellia Cut Flower Marketing Studies. To develop packages, packing procedures, and handling and storage requirements for the marketing of camellia flowers of various varieties.
Hort. HK-20
- Miss. Studies of Consumer Preference in Mississippi for Pot Plants and Cut Flowers. Study consumer preference for blooming pot plants, cut flowers and foliage plants.
Hort. HK-28
- Mo. Floricultural Standards and Grades. To (1) develop and recommend a set of uniform market standards and grades for cut pompom chrysanthemums; (2) test commercial acceptability of these grades and standards.
Agr. Econ. 328 (NEM-22-See ARS-23-8-14b)

- N. H. Opportunities for the Small Nurseryman in Developing Market Outlets. To learn (1) publicity and merchandising methods used in State with special attention to problems of small and part-time operators; (2) effectiveness of specific merchandising and publicity practices with special attention to use of cooperative procedure.
Agr. Econ., Orn. 101 (NEM-15) Coop. AMS
- N. J. Development of Expanded Retail Sales of Flowers. To study a wide range of marketing techniques in floriculture, working with growers, retail florists, retail stores, variety stores and others in marketing various kinds of flowers in mass market outlets.
Agr. Econ. 37 (NEM-8)
- N. J. Improved Marketing of Ornamental Nursery Products. Analysis of roadside marketing will be made to determine sources of supply, pricing techniques, types of containers, kinds of material sold, volume sold, etc.
Agr. Econ., Orn. 41 (NEM-15)
- N. Y.
(Cornell) Development of Expanded Retail Sales of Flowers. (1) Further explore potential market for cut flowers in food, variety and department stores; (2) conduct selling tests with different kinds and grades of flowers; (3) develop more satisfactory methods of supplying and packaging cut flowers for mass market outlets; and (4) test effects of certain merchandising techniques in retail florist shops.
Agr. Econ. 25 (NEM-8)
- N. Y.
(Cornell) Development of Improved Selling and Service Methods for Ornamental Plants. (1) Learn pattern of distribution and services associated with sales of ornamentals in New York industrial and suburban areas; (2) estimate consumer wants for changes in or additions to products and services currently available, by means of consumer surveys; (3) conduct selling tests based on consumer preference indicators, making use of improved packaging and other merchandising techniques.
Agr. Econ., Hort. 30 (NEM-15) Coop. AMS
- Oreg. Improving the Marketing of Oregon Horticultural Specialty Crops. (1) Learn areas of production; market structure and channels; trade practices and marketing methods; market information and prices; and other factors affecting marketing of ornamental plants, nursery products, flowers and bulbs. (2) Identify and evaluate marketing problems associated with products. (3) Develop improved methods and techniques of marketing these products and test their economic advantage from standpoint of costs and returns.
Agr. Econ., Hort. 260 (WM-24)

- Pa. Marketing Methods for Cut Flowers and Potted Plants in Pennsylvania. To learn factors influencing demand for cut flowers and potted plants and to discover how sales of these products may be increased.
Hort., Agr. Econ., Sociol. 1172-D (NEM-8)
- Pa. Merchandising Ornamental Nursery Products. To learn (1 & 2) types of ornamental plants and landscaping services desired by home-owners; appeals that motivate consumers to make ornamental plantings and to find obstacles to increase use; (3) develop suggested merchandising techniques for increasing volume of ornamentals marketed.
Agr. Econ., Rural Sociol., Hort. 1266 (NEM-15)
- P. R. Marketing Ornamentals in Puerto Rico. To (1) analyze and evaluate the existing methods and systems of marketing ornamental plants and flowers in P. R.; and (2) appraise major problems of selling ornamental crops in local and outside markets.
Agr. Econ., Rural Sociol. 82 (SM-12)
- P.R. Expanding the Market for Ornamental Crops in Puerto Rico.
(1) Learn practicability of selling flowers, green and foliage plants through super markets, grocery and variety stores; (2) find out best merchandising practices for selling these.
Agr. Econ., Rural Sociol. 114 (SM-12)
- R. I. Marketing Practices for Cut Flowers and Potted Plants in Rhode Island. To learn (1) consumer attitudes and buying behavior; (2) marketing practices, services, and channels used in distributing cut flowers and potted plants and extent to which said practices influence prices and quality at wholesale and retail levels.
Hort., Agr. Econ. 510 (NEM-8) Coop. AMS
- R. I. Improved Marketing of Woody Ornamental Plants. Learn outlets using new techniques in merchandising of woody ornamental plants and individual methods of handling them, together with technological difficulties encountered. Learn adaptability of various species and varieties of said plants and said techniques. Test techniques for said plants and their economic consequences to industry.
Agr. Econ., Orn. M 511 (NEM-15)
- S. C. Marketing Horticultural Specialty Crops in South Carolina. Learn (1) scope, location, and operating practices of floriculture and nursery products industry; (2) existing methods and systems of marketing ornamental shrubs, cut flowers, and foliage plants; (3) type and extent of use of various wholesale and retail marketing practices; (4) major problems in improving market for horticultural specialty crops.
Agr. Econ., Hort. 426 (SM-12) Coop. 426

- Tenn. A Study of the Marketing Methods of the Horticultural Specialty Industry in Tennessee. (1) Define in economic terms the existing marketing practices of the horticultural specialties industry and develop ideas with reference to modifications resulting in economic gains; (2) learn major problems strategic to improving market for Tennessee-produced horticultural specialty crops.
Agr. Econ., Hort., Rural Sociol. 13 (SM-12) Coop. ARS
- Tenn. Expansion of Demand for Horticultural Specialties. (1) Analyze consumer preference structures of different soci-economic groups for horticultural specialties under existing and prospective price situation and marketing methods; (2) explore avenues through which latent consumer preferences may be activated: innovations in advertising, consumer education, merchandising practices, price and credit policies.
Agr., Econ., Hort., Rural Sociol. 24 Coop. AMS
- Tex. Improving the Market for Texas Horticultural Specialty Crops. To (1) determine seasonal variations in volume and price at wholesale and retail for individual horticultural specialty crops; (2) improve use of labor, transportation and storage at nursery and florist establishments by improving handling methods, and smoothing out seasonal fluctuations; and (3) increase demand and improve distribution of individual horticultural specialty crops, determining (a) nature and suitability of grading system now in use, and (b) demand response to experimental pricing system, advertising, and other methods for increasing volume.
Agr. Econ., Flor., Landsc. Arch. 930 (SM-12)
- Wash. Marketing Washington Horticultural Specialty Crops. (1) Describe extent of market, marketing channels and methods of sale of horticultural specialty crops in State; (2) evaluate merchandising and pricing practices used in sale of same in State.
Agr. Econ. 1308 (WM-24) Coop. AMS
- W. Va. Marketing Nursery Crops in West Virginia. Learn marketing structure, practices, volumes, trends in demand, and needs for improving marketing practices.
Agr. Econ. 93 (NEM-15)
- W. Va. Improved Marketing for Cut Flowers and Potted Plants. Test new merchandising techniques in terms of consumer responses and economic consequences to industry.
Agr. Econ. 95 (NEM-8)

DRUG PLANTS

- Ind. Control of Diseases of Peppermint and Spearmint. Study (1) control of important diseases of said plants through disease resistance; (2) value of foliar and soil application of chemicals in combination with other cultural practices for control of Verticillium wilt; (3) value of new fungicides for control of mint anthracnose, rust, mildew, and other foliar and root diseases; (4) mechanisms of pathological wilting of plants infected with Verticillium albo-atrum.
Pl. Path., Bot. 842
- Mich. Investigations on the Verticillium Disease of Mint. To produce by breeding a new strain of peppermint resistant to the Verticillium wilt disease of mint.
Bot., Pl. Path. 37
- Oreg. Control of Mint Diseases. (1) By annual survey, learn current extent and severity of Verticillium wilt; by field test learn best practical rotation to nonsuscept crops, practicability of chemical soil treatment for control, effect of adding specific crop residues to soil on spread and severity of wilt, if cultural practices are contributing to spread and severity of wilt; by laboratory and greenhouse experiments test promising soil chemicals for wilt control and systemic chemicals for control; (2) complete field testing of nematocides having shown outstanding control in two years of preliminary tests; (3) develop varieties of peppermint and spearmint resistant to rust and wilt-resistant varieties developed by USDA.
Bot., Pl. Path. 120

REGIONAL PROJECTS

NEM-8

Improved Marketing for Cut Flower and Potted Plant Crops.

(1) To determine marketing organization and procedures; (2) to evaluate consumer attitudes and buying behavior; (3) to test new merchandising techniques in terms of consumer responses and economic consequences to the industry.

Cooperating stations and agencies: Federal-grant projects - Storrs (Conn.), Mass., N. J., N. Y. (Cornell), Pa., R. I., W. Va., I-G, AMS

NEM-15

Improved Marketing for Ornamental Nursery Products.

(1) To analyze the marketing structure and procedures; (2) to measure the present trend in demand and the potential demand for nursery products and associated services; (3) to test new merchandising techniques in terms of consumer responses and economic consequences to the industry.

Cooperating stations and agencies: Federal-grant projects - Mass., N. H., N. J., N. Y. (Cornell), Pa., R. I., W. Va., I-G, AMS

SM-12

Improving the Market for Horticultural Specialty Products of the Southern Region. (1) To determine the present and potential market for southern horticultural specialty products; (2) to improve the efficiency of the handling and marketing of southern horticultural specialty products.

Cooperating stations and agencies: Federal-grant projects - Ala. I-D, Fla., La., P. R., S. C., Tenn. I-G

WM-24

Marketing Horticultural Specialty Crops.

(1) To assemble basic data on areas of production; on types and seasonal quantities of products marketed; on marketing channels, practices and methods of sale; on market areas and outlets; and on prices and market information which will permit an evaluation of the marketing problems for these crops. (2) To appraise the impact of improved practices and techniques such as product preparation; packages and packaging methods; grades and grading methods; and merchandising methods on the costs, returns and market acceptance of horticultural specialty products. (3) To determine the market potentials (including demand) for these products and the factors which may contribute to the expansion or limitation of markets.

Cooperating stations and agencies: Federal-grant projects - Calif. I-D, Colo., Hawaii, Oreg., Wash. I-G



LIST OF COMPILATIONS OF FEDERAL-GRANT RESEARCH PROJECTS
AT STATE AGRICULTURAL EXPERIMENT STATIONS

ARS-23-8: Part : Numbers :	Subject-Matter Area	Title of Section
1	Agricultural Chemistry	Agricultural Chemistry
2	Agricultural Economics	<ul style="list-style-type: none"> a. Prices, Incomes, & General Studies of Commodities & Industries b. Farm Management c. Land Economics d. Farm Finance & Taxation
3	Agricultural Engineering	<ul style="list-style-type: none"> a. Land & Water Use & Development b. Power Machinery & Equipment c. Farm Structures & Materials
4	Animal Husbandry	<ul style="list-style-type: none"> a. Beef Cattle b. Sheep & Goats c. Swine
5	Dairy Husbandry	Dairy Cattle
6	Dairy Technology	Dairy Technology
7	Entomology & Economic Zoology	<ul style="list-style-type: none"> a. Field Crop Insects b. Fruit, Nut & Vegetable Insects c. Miscellaneous Insects & Economic Zoology d. Insecticides
8	Field Crops	<ul style="list-style-type: none"> a. Cereal Crops b. Oil, Fiber, Tobacco & Sugar Crops
9	Food Science & Technology	<ul style="list-style-type: none"> a. Food Chemistry, Microbiology, Sanitation & Public Health b. Food Engineering, Processing, Product and Process Development, Utilization and Waste Disposal c. Food Quality & Standards, Acceptance, Preference, & Marketing
10	Forage Crops, Pastures & Ranges	Forage Crops, Pastures & Ranges
11	Forestry	Forestry

ARS-23-8:		
Part :	Subject-Matter Area	Title of Section
Numbers :		
12	Fruits & Nuts	Fruits & Nuts
13	Home Economics	a. Human Nutrition b. Housing c. Clothing & Textiles d. Foods-Consumer Quality & Utilization e. Household Economics & Management
14	Economics of Marketing	a. Field Crops b. Fruits & Vegetables c. Livestock, Meats & Wool d. Dairy Products e. Poultry & Poultry Products f. Forest Products & Ornamental & Drug Plants g. Cross-Commodity & Functional Studies
15	Meteorology	Meteorology
16	Ornamental & Drug Plants	Ornamental & Drug Plants
17	Plant Pathology & Bacteriology	a. Plant Pathology, Botany, & Diseases of Miscellaneous Crops b. Diseases of Field Crops c. Diseases of Fruit Crops d. Diseases of Vegetable Crops
18	Plant Physiology & Nutrition	Plant Physiology & Nutrition
19	Poultry Industry	Poultry Industry
20	Rural Sociology	Rural Life Studies
21	Soils	a. Soil Chemistry & Microbiology b. Soil Fertility, Management & Soil-Plant Relationships c. Soil Physical Properties, Conservation & Classification
22	Vegetables	a. Vegetable Crops b. Potatoes
23	Veterinary Science	Veterinary Science
24	Weeds	Weed Control



