

**Kentucky Agricultural Experiment Station**

**UNIVERSITY OF KENTUCKY**

**THOMAS P. COOPER, Director**

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**Some Plant and Insect Problems of Kentucky Nurserymen  
During the Year Ended June 30, 1944**

**W. A. PRICE and HOWARD G. TILSON.**

Some of our most troublesome and destructive insect pests and plant diseases are of foreign origin. Many of these were introduced through the usual channels of trade before the people of this country realized the need for quarantine and for inspection of imported commodities likely to carry insects and plant diseases. Among the insects and plant diseases so introduced were the European corn borer, the hessian fly, the oriental fruit moth, gypsy moth, imported cabbage worm, San Jose scale, Japanese beetle, chestnut bark disease, and white pine blister rust.

The European corn borer, probably introduced in shipments of broomcorn from Italy or Hungary, was found in certain northeastern states since 1917; it has now spread over most of the corn-belt states and is rapidly spreading throughout Kentucky. The hessian fly is thought to have been introduced from southern Russia in straw bedding used by the Hessian soldiers who fought in the Revolutionary war. Oriental fruit moth, now established in many of the important peach-growing areas in the United States, was imported from the Orient on nursery stock previous to 1915. The imported cabbage worm, first discovered in Canada in 1860, is now a common pest of cabbage throughout this country. San Jose scale, a native of China, is thought to have been introduced into California about 1870 on a shipment of fruit trees; and Japanese beetle, a native of Japan but now found over a large portion of Northeastern United States, was imported into New Jersey on the roots of plant materials around 1914. The chestnut bark disease, first discovered in New York state in 1904, was introduced on plant material from China. This destructive plant

disease has completely laid waste the native chestnut stands of the eastern states. The white pine blister rust, introduced into this country before 1900, is well known in Europe and was probably brought into this country on white pines from Germany. It is not known to be present in Kentucky.

The Kentucky Nursery Inspection Law is designed to enable the state to (1) control and eradicate insect pests and plant diseases discovered within the state but not yet widely distributed throughout the state—for example, phony peach disease and Japanese beetle; (2) enforce quarantines to prevent the introduction of new insects and plant diseases known to occur in other states and territories, such as alfalfa weevil and potato tuber moth; (3) conduct nursery inspections to insure the distribution of plants free from injurious insects and plant diseases, and (4) provide voluntary inspection and certification service whereby persons other than nurserymen may ship plants and plant products into other states in compliance with plant quarantines regulating the movement of such products from the state of Kentucky.

### Definitions

For the purpose of carrying out the provisions of the Kentucky Nursery Inspection Law some terms are defined as follows:

*Nursery Stock*—Nursery stock includes all trees, shrubs, and vines having a persistent woody stem, whether cultivated or native; herbaceous perennials and roots; roses; strawberry, raspberry, blackberry plants and other brambles; ornamental bulbs, corms, tubers and rhizomes; and all parts of the aforementioned classes of plants capable of propagation, except seeds.

*Nursery*—A nursery is any land, ground or premises on or in which nursery stock is propagated or grown for sale, or any land, ground or premises on or in which nursery stock is being treated, packed or stored.

*Nurseryman*—A nurseryman is any person who owns, leases, manages or is in charge of a nursery.

*Nursery dealer*—A nursery dealer is any person, not a grower of nursery stock (a) who buys nursery stock for resale (b) who both makes landscape plans and plants nursery stock (whether nursery grown or native) or who negotiates in the purchase of nursery stock for his clients, or (c) who transplants or moves nursery stock from place to place in this state for other persons for a consideration in payment of the nursery stock, or the planting of same.

*Nursery Agent*—A nursery agent is any person who has been authorized to represent a nurseryman or nursery dealer in soliciting orders for nursery stock. A nursery agent does not keep a supply of nursery stock on hand, obtaining stock only from the nurseryman or dealer represented.

*Person*—The term "person" shall include corporations, companies, societies, associations, partnerships, or any individual or combination of individuals.

### **Requirements of the Kentucky Nursery Inspection Law**

(1) It shall be unlawful to sell or offer for sale uninspected or uncertified nursery stock. A certificate of inspection indicates freedom from certain injurious insects and plant diseases but does not vouch for trueness to variety nor for grade and conditions of any nursery stock.

(2) Growers of nursery stock for sale or shipment shall apply in writing before June 1st of each year to the State Entomologist, Kentucky Agricultural Experiment Station, Lexington, for inspection services.

(3) Every dealer in nursery stock shall secure a nursery dealer's permit. Before this is issued, however, he must furnish an affidavit that he will buy and sell only stock that is certified and will maintain with the State Entomologist a correct and complete list of all sources from which he secures his stock.

(4) Every nursery dealer and agent must carry his permit when soliciting orders for or delivering nursery stock. Nursery agents' permits are secured only upon the request of the nurseryman or dealer to be represented.

(5) All packages or bundles of nursery stock shipped by common carrier must have attached a copy of the inspection certificate or permit.

(6) Certificates and permits may be revoked for cause.

(7) Fees shall be paid as follows: Inspection certificate, \$5; dealer's permit, \$5; agent of nonresident nurserymen, \$5; nonresident nurseryman's certificate, \$5. Fees shall accompany application. Application blanks may be obtained from the State Entomologist.

(8) Nonresident nurserymen shall file copies of their state certificate when applying for a permit to sell nursery stock in Kentucky.

(9) All certificates and permits automatically expire June 30 following date of issuance.

### Requirements for Interstate Shipments of Nursery Stock

Many changes have been made in recent years governing interstate shipments of nursery stock. One of the uniform requirements of all states as well as of the federal government is for a copy of an official certificate of inspection to be attached to each shipment of nursery stock. Before making shipments of nursery stock into any state, nurserymen should familiarize themselves with the requirement for shipping into that state. Correspondence should be directed to the officer in charge in the state concerned. For convenience a list of these officers is given on the following page. As a handy reference some of the major requirements for shipments of nursery stock into the several states are given in the following table.

State	State of Origin Certificate Filed	Nurseryman's Filing Fee	Agent's Fee	Special Tag	Posted Bonds
Alabama	Yes	\$10 or reciprocal	\$1	Reciprocal	\$2500 <sup>3</sup>
Arizona	No	None	None	No	None
Arkansas	Yes	None	\$1	Yes	Reciprocal
California	No	\$5 or reciprocal	None	No	None
Colorado	Yes	None	None	No	None
Connecticut	No	None	None	No	None
Delaware	No	Reciprocal	None	No	None
Florida	Yes	None	None	Yes	None
Georgia	No	\$5 or reciprocal	\$1	No	None
Idaho	Yes	\$5 to \$15	None	No	\$1000 <sup>1</sup>
Illinois	Yes	None	None	No	None
Indiana	Yes	\$1	\$1	No	None
Iowa	Yes	Reciprocal	None	No	None
Kansas	Yes	Reciprocal	None	No	None
Kentucky	Yes	\$5	\$5	No	None
Louisiana	Yes	None	None	No	None
Maine	Yes	\$1	\$1	No	None
Maryland	Yes	Reciprocal	None	No	None
Massachusetts	Yes	None	None	No	None
Michigan	Yes	\$15 or reciprocal	\$1	No	None
Minnesota	Yes	Reciprocal	Reciprocal	No	None
Mississippi	Yes	Reciprocal	None	No	Reciprocal
Missouri	Yes	\$1 <sup>2</sup>	None	No	None
Montana	No	\$25	\$25	No	None
Nebraska	Yes	\$10 or reciprocal	\$1	No	None
Nevada	No	None	None	No	None
New Hampshire	No	None	None	No	None
New Jersey	Yes	Reciprocal	None	No	None
New Mexico	Yes	\$10	\$25	Yes	None
New York	No	None	None	No	None
North Carolina	Yes	Reciprocal	None	No	\$1000 <sup>3</sup>
North Dakota	Yes	Reciprocal	\$10	No	\$500
Ohio	Yes	Reciprocal	None	No	None
Oklahoma	Yes	\$10 or reciprocal	\$1	Yes	None
Oregon	No	None	\$1	No	None
Pennsylvania	Yes	None	None	No	None
Rhode Island	Yes	None	None	No	None
South Carolina	Yes	None	None	Yes	None
South Dakota	Yes	\$1	\$1	No	None
Tennessee	Yes	None	Reciprocal	No	\$5000 <sup>3</sup>
Texas	Yes	\$5 or reciprocal	None	Yes	None

State	State of Origin Certificate Filed	Nurseryman's Filing Fee	Agent's Fee	Special Tag	Posted Bonds
Utah .....	Yes	\$10	None	No	None
Vermont .....	No	None	None	No	None
Virginia .....	No	\$10 or reciprocal	\$1 or reciprocal	No	None
Washington .....	No	\$5 to \$15 or reciprocal	\$1	No	None
West Virginia....	Yes	\$15	Reciprocal	Yes	None
Wisconsin .....	Yes	\$10 or reciprocal	Reciprocal	No	None
Wyoming .....	Yes	\$15	None	No	\$500

<sup>1</sup> Only for fruit-stock shippers.

<sup>2</sup> Only to sweetpotato plant shippers.

<sup>3</sup> For nurserymen who promise maintenance.

#### STATE OFFICERS IN CHARGE OF INSPECTION

Alabama .....	B. P. Livingston, Chief, Division of Plant Industry, Montgomery.
Arizona .....	J. L. E. Lauderdale, State Entomologist, Phoenix.
Arkansas .....	Paul H. Millar, Chief Inspector, State Plant Board, Little Rock.
California .....	..... Chief, Bureau of Entomology and Plant Quarantine, Department of Agriculture, Sacramento.
Colorado .....	F. Herbert Gates, State Entomologist, 20 State Museum, Denver.
Connecticut .....	Roger B. Friend, State Entomologist, Box 1106, New Haven.
Delaware .....	S. L. Hopperstead, Plant Pathologist, Newark.
Florida .....	J. C. Goodwin, Nursery Inspector, State Plant Board, Gainesville.
Georgia .....	C. H. Alden, Director of Entomology, Atlanta.
Idaho .....	Paul T. Rowell, Director, Bureau of Plant Industry, Boise
Illinois .....	H. F. Seifert, Chief Plant Inspector, 200 State Bank Building, Glen Ellyn.
Indiana .....	Frank N. Wallace, State Entomologist, Indianapolis.
Iowa .....	Carl J. Drake, State Entomologist, Ames.
Kansas, North .....	George A. Dean, Entomologist, Kansas Agricultural College, Manhattan.
Kansas, South .....	H. B. Hungerford, Entomologist, Lawrence.
Kentucky .....	W. A. Price, State Entomologist, Agricultural Experiment Station, Lexington.
Louisiana .....	W. E. Anderson, State Entomologist, Baton Rouge.
Maine .....	S. L. Painter, State Horticulturist, Augusta.
Maryland .....	E. N. Cory, State Entomologist, College Park.
Massachusetts .....	R. H. Allen, Director, Division of Plant Pest Control, State House, Boston.
Michigan .....	C. A. Boyer, Bureau of Orchard and Nursery Inspection Service, Department of Agriculture, Lansing.

Minnesota .....	T. L. Aamodt, State Entomologist, University Farm, St. Paul.
Mississippi .....	Clay Lyle, Entomologist, State Plant Board, State College.
Missouri .....	J. Allison Denning, State Entomologist, Department of Agriculture, Jefferson City.
Montana .....	George L. Knight, Chief, Division of Horticulture, Missoula.
Nebraska .....	L. M. Gates, Entomologist, Department of Agriculture and Inspection, Lincoln.
Nevada .....	George G. Schweis, Director, Division of Plant Industry, P. O. Box 1027, Reno.
New Hampshire .....	W. C. O'Kane, Deputy Commissioner, Department of Agriculture, Durham.
New Jersey .....	Harry B. Weiss, Chief, Bureau of Plant Industry, Trenton.
New Mexico .....	R. F. Crawford, Head of Biology, College of Agriculture and Mechanic Arts, State College.
New York .....	A. B. Buchholz, Director, Bureau of Plant Industry, Department of Agriculture and Markets, Albany.
North Carolina .....	C. H. Brannon, State Entomologist, Department of Agriculture, Raleigh.
North Dakota .....	J. A. Munro, State Entomologist, Fargo.
Ohio .....	John W. Baringer, Specialist in Charge, Insect and Plant Disease Control, Department of Agriculture, Columbus.
Oklahoma .....	Clyde A. Bower, Chief Nursery Inspector, State Board of Agriculture, Oklahoma City.
Oregon .....	Frank McKennon, Chief, Division of Plant Industry, Agricultural Building, Salem.
Pennsylvania.....	Thomas L. Guyton, Director, Bureau of Plant Industry, Harrisburg.
Rhode Island .....	Bryton Eddy, State Entomologist, State House, Providence.
South Carolina .....	J. A. Berly, Chief, Division of Entomology and Zoology, Clemson College.
South Dakota .....	Charles S. Weller, Chief, Division of Horticulture and Entomology, Pierre.
Tennessee .....	G. M. Bentley, State Entomologist and Plant Pathologist, 65 Biology Building, University of Tennessee, Knoxville.
Texas .....	J. M. Del Curto, Chief, Division of Plant Quarantine, Department of Agriculture, Austin.
Utah .....	Earl Hutchings, State Agricultural Inspector, State Board of Agriculture, Salt Lake City.
Vermont .....	M. B. Cummings, State Nursery Inspector, Burlington.
Virginia .....	G. T. French, State Entomologist, 1112 State Office Building, Richmond.
Washington .....	F. E. DeSellem, Supervisor of Horticulture, Department of Agriculture, Olympia.
West Virginia .....	F. Waldo Craig, Department of Agriculture, Charleston.

Wisconsin .....	E. L. Chambers, State Entomologist, Department of Agriculture, Madison.
Wyoming .....	B. Thomas Snipes, State Entomologist, State Department of Agriculture, Powell.
U. S. D. A. ....	P. N. Annand, Chief, Bureau of Entomology and Plant Quarantine, Washington, D. C.
Dominion of Canada...	W. N. Keenan, Secretary, Destructive Insect and Pest Act Advisory Board, Department of Agriculture, Ottawa.

### Japanese Beetle

No trapping for Japanese beetles was carried on in Kentucky during 1943. No new traps were available and of the 55,354 traps used by the Bureau of Entomology and Plant Quarantine throughout the United States in 1942, only 41,993 were serviceable for 1943. Trapping was performed in 17 states and was restricted to 161 localities.

The only extension this year of the Federal quarantine on Japanese beetle will be two election districts in Maryland and two cities in West Virginia.

In North Carolina during midseason a heavy infestation was discovered at Blowing Rock. Over 17,000 beetles were trapped in this small resort town in the northwestern section of the state.

During the trapping season of 1943 Japanese beetles were captured in every state bordering Kentucky. This fact indicates the necessity of exerting every known prevention to delay as long as possible the time when Japanese beetle will become a common pest in Kentucky.

### White-Fringed Beetle

Extensions of regulated areas under federal quarantine number 72, on account of white-fringed beetle, were made to include parts of three additional counties in North Carolina; two in Alabama and two in Mississippi. There were no extensions of the infested areas in Florida and Louisiana.

### Elm Disease

Reports of dead and dying elms continue to come in from many parts of Kentucky. Upon investigation most of the dying trees show symptoms of phloem necrosis (for description, see Kentucky Regulatory Series Bulletin 32, 1942), a virus disease which has become

quite prevalent throughout the lower Ohio valley. No satisfactory treatment of the disorder has been found and the only recommendation at the present time is to cut out and burn all affected elms as soon as it is evident that the trees are dying.

### INSECTS AND PLANT DISEASES FOUND IN KENTUCKY NURSERIES, 1943-44

Diseases	Insects
Cedar rust	Bagworms
Sweetpotato stem rot	Oriental fruit moth
Sweetpotato black rot	Red spider
Birch leafspot	White pine bark aphid
Iris leafspot	Dogwood borer
Iris root rot	Gladioli thrips
Fire blight	Holly leaf miner
Cherry leafspot	Pine tip moth
Delphinium crown rot	
Peony blotch	
Weeping willow canker	
Phloem necrosis	

#### Directions for Pest Control and Plant Treatment

Given herewith is a list of dangerous and destructive insects and plant diseases. The instructions for their control or eradication is the result of uniform recommendations agreed upon by the members of the "Central Plant Board" composed of plant regulatory officials of 13 states—Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. In so far as practicable, the suggested treatment for the appended troubles will be followed.

1. **San Jose Scale** (*Aspidiotus perniciosus*).—All stocks on which the inspector detects the San Jose Scale by a plant-to-plant inspection shall be destroyed or quarantined and treated, and all trees and shrubs of the following genera and species: *Amelanchier*, *Aronia*, *Cornus*, *Crataegus*, *Cydonia*, *Prunus*, *Pyrus*, *Rhamnus*, *Ribes*, *Rosa*, *Sorbus*, *Spirea sorbifolia*, *Spirea billardi*, exposed to infestation, must, before they are removed from the nursery, be treated in one of the following ways: Dip tops down to roots in a dip consisting of 1 gallon of miscible oil and 15 gallons of water, or 3½ gallons of a standard lubricating-oil emulsion and 96½ gallons of water, except that where shipment is going to a state where fumigation is required such stock must be fumigated.

A report of the amounts and kinds of stock dipped, and the dip used, must be filed in the office of the inspection official. Premises outside the nursery must be kept free from the scale.



2. **Cherry Scale**, also known as **Forbes Scale** (*Aspidiotus forbesi*), Putnam's Scale (*A. ancylus*), Walnut Scale (*A. juglans-regiae*), Fernald's Scale (*A. fernaldi*), etc. Trees and shrubs visibly infested with the Forbes scale, the Putnam's scale, the Walnut scale, the Fernald's scale, etc., shall be dipped in or thoroughly sprayed with a miscible oil or boiled lubricating-oil emulsion, as for San Jose scale, before being sent out from the nursery.

3. **Scurfy Scale** (several species, but not the Pine-Needle Scale). Trees and shrubs badly infested with any of the scurfy scales must not be sent out from the nursery. Trees and shrubs slightly infested may be sent out after being dipped in or sprayed with a miscible oil or lubricating-oil emulsion, used 1 to 10.

4. **Pine-Needle Scale** (*Chionaspis pinifoliae*).—Trees infested with Pine-Needle scale must be destroyed or the block quarantined and treated with at least a 1 to 7 mixture of dormant lime-sulphur application. In addition, if the permanent evergreen trees in the general vicinity are infested with Pine-Needle scale, there shall be established a conifer-free zone at least 15 rods wide around all evergreen nursery stock which is to be moved.

5. **Lecanium Scale** (*Toumeyella numismaticum*), **Hemlock Scale**. (*Aspidiotus abietis*). Infested trees in nurseries shall be destroyed, because no effective means of control are as yet known, and a conifer-free zone at least 15 rods wide shall be established around susceptible blocks of stock, if an infestation is found in the surrounding area.

6. **Oyster-Shell Scale**. (*Lepidosaphes ulmi*). A plant-to-plant inspection shall be made, and trees and shrubs infested with the Oyster-Shell scale must be destroyed and the block quarantined until freed from scale. Nursery stock of species of plants susceptible to oyster-shell scale shall not be grown within 15 rods of oyster-shell-infested orchard or other permanent or native plants.

7. **Rose Scale** (*Aulacaspis rosae*). A plant-to-plant inspection shall be made, and bushes badly infested with the Rose scale must be destroyed or quarantined, and no infested plants shall be sold and delivered until freed from the scale.

8. **European Elm Scale** (*Gossyparia spuria*). Infested trees shall be destroyed and the remaining trees dipped, before shipment or delivery, under the supervision of an authorized plant regulatory

official, in 5 per cent Dendrol or any other oil that has been proven by recognized experimental work as equally effective. Blocks of trees from which infestations have not been removed must be quarantined and treated.

9. **Cottony Maple Scale** (*Pulvinaria vitis*). Trees in infested blocks of maple shall be dipped in or sprayed with a winter-strength miscible oil or lubricating-oil emulsion before being delivered.

10. **Wooly Apple Aphis** (*Eriosoma lanigera*). Trees whose roots bear knots or galls caused by the Wooly Aphis shall not be sent out from the nursery. Other trees visibly infested with the Wooly Aphis, but not showing knots or galls, shall not be sent out until treated in one of the following ways: Tops and roots dipped in blackleaf 40 (or any 40 per cent nicotine solution) 9 ounces, boiled lubricating-oil emulsion  $\frac{1}{2}$  gallon, and water 50 gallons; or in blackleaf 40, nine ounces, soap  $1\frac{1}{2}$  pounds, and water 50 gallons.

(a) It is suggested that a solution of Nicotine Oleate be tried to ascertain whether it is practical as a dipping solution for tree roots infested with the Wooly Aphis.

11. **Strawberry Root Aphis**. (*Aphis forbesi*). No strawberry plants from patches generally infested with this insect shall be sent out under certificate. Infested areas and plantings shall be condemned.

12. **Strawberry Root Worms** (several species). No strawberry plants from patches generally infested shall be certified. Before delivery, all soil shall be removed from the roots of plants taken from slightly infested patches.

13. **Strawberry Crown-Borer** (*Tyloderma fragariae*). Patches showing over two per cent infestation shall not be certified. All soil must be washed from the roots of plants taken from lightly infested patches. Each state shall establish a date consistent with the earliest spring appearance of the adult beetle beyond which no plants shall be allowed to move from fields showing infestation.

14. **Xanthosis, Witches' Broom, Strawberry Yellows, or Any Virus Degeneration Diseases of Strawberries**. All strawberry plants showing any signs of Xanthosis, Witches' Broom, or Strawberry Yellows, or any virus degeneration diseases shall be eliminated from plantings before they are certified.

15. **Strawberry Crimp** (*Aphelenchus fragariae*) and **Other Nematode Infestations**. Patches in which the Crimp disease and other Nematode diseases are found shall not be certified.

16. **Strawberry Leaf-Spot** (*Mycosphaerella fragariae*). Care shall be taken to select plants free from disease. More than slightly infected fields shall not be certified.

17. **Peach-Tree Borer** (*Aegeria exitiosa*), **Round-Headed Borer** (*Saperda candida*), **Flat-Headed Apple Tree Borer** (*Chrysobothris femorata*), **Poplar and Willow Borer** (*Cryptorhynchus lapathi*), and **Other Borers in Trees and Shrubs**. Trees or shrubs infested with borers must not be sent out from the nursery.

18. **Pear Blister Mite** (*Eriophyes pyri*). Infested trees shall be thoroughly sprayed with or dipped in winter-strength lime-sulphur, this treatment to be applied to dormant stock after the leaves have fallen. Special care shall be taken to cover thoroughly the terminal buds.

19. **Spruce Budworm** (*Harmoloba fumiferana*). Trees infested with the Spruce Budworm must not be sent out from the nursery. Small trees in which it is practicable to remove infested parts by hand, may be set out after the infested parts have been removed.

20. **European Pine-Shoot Moth** (*Rhyacionia buoliana*) and **Other Pine-Shoot Moths**. Infested shoots shall be cut out and burned before trees are allowed to leave the nursery.

21. **White Pine Blister Rust** (*Cronartium ribicola* Fisch.) The movement of white pine shall be permitted (1) between infested states only from nurseries that have established sanitation zones and (2) into those states maintaining such sanitation zones around their own nurseries growing white pine. Nurseries desiring to make such shipment shall file an affidavit to this effect with their certificate.

22. **Pine Bark Aphis** (*Pineus strobi*). Trees infested with this insect shall not be allowed to leave the nursery, and infested trees shall be quarantined and treated.

23. **Cedar Rust** (*Gymnosporangium juniperi-virginianae*). No cedars carrying cedar rust diseases of apple shall be allowed to go out of the nursery, and all cedar apples must be picked from infected trees.

24. **Pear Blight, or Twig Blight of Apple** (*Bacillus amylovorus*). Nursery trees, the bodies of which are affected with this disease, must not be sent out from the nursery.

25. **Anthracnose** (*Gloeosporium venetum*). Raspberry and blackberry canes more than slightly affected with Anthracnose must not be sent out from the nursery. Patches more than slightly affected shall not be certified.

26. **Mosaic Bramble Streak, Leaf Curl.** Certification of raspberries and other bramble fruit planting shall be in accordance with the recommendations previously approved by the Central Plant Board for raspberries, such recommendations being that no planting shall have over 2 per cent of the plants infected with the mosaic, either mild or any of the other types of virulent mosaic, at the first inspection, and must have less than 1 per cent at the second inspection.

27. **Orange Rust** (*Gymnoconia interstitialis*). All infected plants must be grubbed out and destroyed as soon as the rust appears.

28. **Poplar Cankers** (*Dothichiza populea* and *Cytospora chrysosperma*). All diseased trees must be destroyed.

29. **Crown Gall, Hairy Root, and Callous Growths.** Trees or plants bearing galls, either hard or soft, on trunks, crowns, or main roots, must be destroyed. Slight malformations, when the tree has made a good growth, should not condemn the tree.

30. **Apple Blotch** (*Phyllosticta solitaria*). Trees, the bodies of which are affected with blotch, must not be sent out from the nursery.

31. **Crown Elongation Disease of Peonies.** All infected plants shall be dug and destroyed immediately.

32. **Nematode of Clematis, Strawberries and Other Plants in Nurseries** (several species). No plants infested with Nematodes shall be allowed to go out of the nursery.

(a) *Nematode of Peony.* Heavily infested plants shall not be sent from the nursery. Infested fibrous roots must be removed from lightly infested plants before they are shipped. No visible sign of Nematode infestation shall be allowed to remain on the plant.

33. **Peony Diseases.** Peony roots infected with any of the fungous root rots (*Fusarium* spp. *Botrytis* spp. and *Schlerotium* spp. or the *Mosaic* disease) shall not be tolerated in certified shipments.

34. **Iris Root-Borer** (*Macronoctua onusta* Grote.). No spring shipments shall be allowed from gardens showing infestation of the Iris Root-Borer. During the regular shipping season (July-October) the grower can eliminate all borers from plants sent out, if he is careful. In case of heavily infested gardens, where the grower is careless, certificate should be withheld.

35. **Sclerotinial Crown Rot and Root Rot of Perennials** (*Sclerotium delphinii*, *S. rolfsii*). Perennial plants showing more than (2) per cent of this infection shall not be certified.

36. **Gladiolus—Diseases and Thrips** (*Taeniothrips simplex* M. & S.). Field inspection shall be made during blooming season for thrips infestation and storage inspection after corms are cleaned for thrips and disease. No shipments of corms under certificate are to be permitted showing more than 2 per cent infection of any diseases. Where thrips are present all corms, if certified, are to be treated by one of the following methods: Fumigate with cyanogas, using not less than 3 oz. to 1000 cu. ft., making a total of three fumigations at 10-day intervals with a constant temperature maintained during the entire period of not less than 60° F.; or fumigate with a mixture of 1 part ethylene dichloride, and 3 parts carbon tetrachloride—14 lbs. to 1000 cu. ft., at a temperature of 60° F.; or place naphthalene flakes among the corms at the rate of 1 oz. to 100 number 1 corms for a period of at least 4 weeks.

37. **Any newly introduced pests, and any other pest injurious to plants**, which may be found in a nursery and which may be distributed on nursery stock, shall be considered dangerous, and adequate precautionary measures shall be required.

When the precautionary measures prescribed above shall require the destruction of plants, the satisfactory performance of the work will be verified by a personal visit of the inspector. The nurseryman may be permitted to take other precautionary measures, provided he signs a statement specifically agreeing to do so faithfully, and, provided he has an approved, adequate fumigating, spraying and dipping equipment and the proper chemicals and insecticides for treating stock, when treatment by fumigation, spraying or dipping is required.

38. All inspections made for insect pests and plant diseases covered in these recommendations shall be made by a row-by-row or plant-by-plant method or a thorough sampling method depending upon the insect pest or plant disease concerned.

**KENTUCKY NURSERYMEN WHO RECEIVED CERTIFICATES  
OF INSPECTION, 1943-44**

Name	Address	Acreage	Kind of Stock
Arterburn, Paul .....	St. Matthews	5	General
Bellefonte Nursery, Orval Lycan .....	Ashland	5	General
Big Sandy Nursery, W. S. Burris .....	Buchanan	½	General
Blankenbeker, S. H. ....	Jeffersontown	2	General
Byrn Landscape Service, Inc., .....	Mayfield	1	Ornamental
Carter Nursery, H. V. Pack .....	Carter	1	General
Clark, Joe A. ....	Webster	¼	Fruits
Clyffty Evergreen Gardens, Crawford, I. T. ....	Catlettsburg	1	Ornamental
Crume Nursery and Land- scape Co., T. C. Crume	Murray	2	Gladioli
Curry, J. G. ....	Florence	25	General
DeJarnette, L. H. ....	Hawesville		Sweetpotato plants
Dieterich, C. P. and Bro.	Chambers		Sweetpotato plants
Dixie View Nursery, A. L. Heger .....	Maysville	1	Ornamental
Donaldson Nurseries, J. F. Donaldson .....	Florence	65	General
Dressman, J. A. ....	Sparta and Warsaw	120	General
Durrett, R. J. ....	Covington, R. 3.	¼	Tulip bulbs
Evans Brothers .....	Louisville, R. 4	1	Ornamental
Evans Gardens .....	Christine	½	Fruits
Fike Nurseries, J. W. Fike	Lexington	2	Ornamental
Gardner, Boone, Nurser- ies, Dan Gardner .....	Hopkinsville	50	General
Gramse Nursery .....	Louisville, R. 6	10	General
Grant Gardens, Dr. Henry L. Grant .....	Paducah	5	General
Green, T. W. ....	412 Olean Road		
Green River Home Nur- sery, W. A. Sandefur ....	Louisville	½	Iris
Haag, Nursery, R. L. Haag	Bowling Green	2	Ornamental
Highland Place Nursery..	Robards	10	General
Hill, William .....	Jeffersontown	30	General
Hillenmeyer Nurseries...	Versailles	10	General
Howell, Asbery .....	Warsaw	11	Ornamental
Humphreys' Landscape Service, A. G. Humphreys .....	Warsaw	11	Ornamental
Immegart Nursery, Fred J. Immegart .....	Lexington	260	General
Johnston, Allie .....	Bowling Green, R.3	¼	Fruits
Junior Club Nursery, A. C. Herrin .....	Mount Sterling	5	General
Kelly, Asa .....	Newport	2	General
Kentucky Forest Nursery	Calvert City	1	General
Kirch Gardens .....	Shopville	¼	Fruits
	Fordville	2	Fruits
	Louisville	5	Tree seedlings
	818 Perennial Dr.		
	Louisville	1	Ornamental

**KENTUCKY NURSERYMEN WHO RECEIVED CERTIFICATES  
OF INSPECTION, 1943-44**

Name	Address	Acreage	Kind of Stock
Kistler, Mrs. Belle M. ....	Anchorage, R. 1	1	Iris and peony
Klein Nursery and Floral Co., Theo R. Klein .....	Crestwood	35	General
Korfhage Nursery and Florist .....	Shively	10	General
Kroboth, Karl .....	Lexington	2	General
Leeming Nursery, W. H. Leeming .....	Shively	10	General
Lindberg Nursery and Landscape Co., .....	915 S. Limestone Lexington	15	General
Lockett Florist .....	Owensboro		Greenhouse
McCutchen's Greenhouses	Paducah		Greenhouse
Martin's Nursery, Robert Martin .....	Carrollton	35	General
Metcalfe Florist .....	Hopkinsville		Greenhouse
Mt. Pleasant Gardens .....	1810 N. Ft. Thomas Ave., Ft. Thomas	10	General
Murray Nursery and Florist, Mrs. W. P. Roberts .....	Murray	2	Ornamental
Nick's Nursery, Nick and Jeff Verburg	Anchorage	25	General
Noble, G. R. ....	Paducah		Greenhouse
Patterson, A. C. ....	Centertown	3	Gladioli
Piper, Bernard .....	Clinton	$\frac{1}{4}$	Fruits
Pomona Nurseries .....	Bowling Green	8	General
Pullam-Threlkeld Nursery .....	Clay	5	General
Reynolds, A. D. and Son..	Harrodsburg	3	General
Richardson Plant Co., ....	Murray		Sweetpotato plants
Ridgeway Nurseries, Theo Zollinger .....	St. Matthews	5	General
Sanders Bros. Nursery ....	Paducah	5	General
Schneidman Greenhouses	Paducah	5	General
Shupe Nursery .....	Sedalia	5	General
Singer Gardens, J. W. Singer .....	Stamping Ground	1	General
Smith, Bert R. ....	Bowling Green	$\frac{1}{4}$	Chrysanthemums
Smits Greenhouses .....	Paris	5	General
Soil Conservation Service	Paducah	25	Tree seedlings
Springhill Nursery, Roscoe Johnson .....	1722 Greenup Ave., Ashland	2	General
Todd County Nursery, J. M. Green .....	Trenton	1	Ornamental
Valentine Nurseries .....	Keavy	5	Hemlock
Wakefield Realty Co., ....	Louisville, R. 6	50	General
Walker, Kingsley, Co.....	Louisville, R. 4	5	Ornamental
Walnut Lawn Farm, Robert L. James .....	Lexington	5	General
Webb's Evergreen Nursery .....	Warsaw	1	Ornamental
Webb, Clifton .....	Hawesville		Sweetpotato plants

**KENTUCKY NURSERYMEN WHO RECEIVED CERTIFICATES  
OF INSPECTION, 1943-44**

Name	Address	Acreage	Kind of Stock
Wettstain, H. C. ....	Chambers		Sweetpotato plants
Whittinghill, Lonnie M. ..	Love	1	Fruits
Whittinghill, Samuel D....	Love	1/2	Fruits
Willadean Nurseries, A. L. Kidwell .....	Sparta	75	General
Yopp Nursery, M. J. Yopp .....	Paducah	5	General

**NURSERY DEALERS**

Alexander, I. P. ....	Campbellsville
Barnett, A. E. ....	Murray
Best, C. T. ....	Flemingsburg
Bick Bros. ....	Chicago, Illinois
Bomar-Summers .....	Louisville
Bunton Seed Co. ....	Louisville
Dixie Gardens .....	Lexington
Furnish, Ray .....	Fort Thomas
Gallaher Drug Co., The .....	Ashland
Green, H. L. Co., Inc. ....	Louisville
Hall Seed Co. ....	Louisville
Haupt, Fred .....	Louisville
Hines, W. T. ....	Bowling Green
Kresge, S. S. Co. ....	Louisville
Kresge, S. S. Co. ....	Lexington
Kresge, S. S. Co. ....	Covington
Kresge, S. S. Co. ....	Newport
Kresge, S. S. Co. ....	Owensboro
Kresge, S. S. Co. ....	Paducah
Kresge, S. S. Co. ....	Louisville
Kress, S. H. and Co. ....	Ashland
Kress, S. H. and Co. ....	Hopkinsville
Kress, S. H. and Co. ....	Winchester
Kroger Store .....	St. Matthews
Kroger Store .....	Louisville, 2230 Bardstown Rd.
Kroger Store .....	Louisville, 2312 Preston
Kroger Store .....	Shively
Kroger Store .....	Owensboro
Kroger Store .....	Danville
Kroger Store .....	Lexington, Short and Broadway
Kroger Store .....	Ashland
Kroger Store .....	Pikeville
McCrary Store .....	Louisville
McCullough, The J. Chas., Seed Co. ....	Cincinnati, Ohio
Mink, William H. ....	Corbin
Montgomery Ward and Co. ....	Hopkinsville
Montgomery Ward and Co. ....	Lexington
Montgomery Ward and Co. ....	Middlesboro
Murphy, G. C. Co. ....	Ashland
Murphy, G. C. Co. ....	Maysville
Murphy, G. C. Co. ....	Pikeville
Murphy, G. C. Co. ....	Paintsville



## NURSERY DEALERS—Continued

Murphree, Carrie F.	Richmond
Newberry, J. J. Co.	Owensboro
Newberry, J. J. Co.	Central City
Newberry, J. J. Co.	Henderson
Newberry, J. J. Co.	Corbin
Newberry, J. J. Co.	Louisville
Newberry, J. J. Co.	Mayfield
Newberry, J. J. Co.	Frankfort
Newberry, J. J. Co.	Harrodsburg
Newberry, J. J. Co.	Paris
Newberry, J. J. Co.	Mt. Sterling
Newberry, J. J. Co.	Winchester
Newberry, J. J. Co.	Versailles
Newberry, J. J. Co.	Harlan
Newberry, J. J. Co.	Somerset
Newberry, J. J. Co.	Pineville
Newberry, J. J. Co.	Hazard
Newberry, J. J. Co.	Lebanon
Newberry, J. J. Co.	Shelbyville
Newberry, J. J. Co.	Richmond
Newberry, J. J. Co.	Elizabethtown
Newberry, J. J. Co.	Lawrenceburg
Newberry, J. J. Co.	Glasgow
Newberry, J. J. Co.	Danville
Newberry, J. J. Co.	Cynthiana
Newberry, J. J. Co.	Bardstown
Newberry, J. J. Co.	Frankfort
Nickles, B. J.	Louisville
Ostrander, John O.	Louisville
Powell Seed Store	Lexington
Purcell Co., The	St. Matthews
Ray, Carl	Beaver Dam
Renfrow, H. E.	Louisville
Ruysenaars, John C.	Hazard
Scott Stores	Harlan
Scott Stores	Ashland
Scott Stores	Middlesboro
Scott Stores	Lexington
Sears, Roebuck and Co.	Louisville
Sears, Roebuck and Co.	Owensboro
Sears, Roebuck and Co.	Jeffersonville
Setters, James	Louisville
Silver's Five and Ten	Louisville
Stewart Dry Goods Co., The	Louisville
Stoke, Louis Jr.	Paducah
Woolworth, F. W. Co.	Owensboro
Woolworth, F. W. Co.	Henderson
Woolworth, F. W. Co.	Bowling Green
Woolworth, F. W. Co.	Madisonville
Woolworth, F. W. Co.	Hopkinsville
Woolworth, F. W. Co.	Mayfield
Woolworth, F. W. Co.	Louisville
Woolworth, F. W. Co., No. 34	Lexington
Woolworth, F. W. Co.	Covington
Woolworth, F. W. Co.	Newport
Woolworth, F. W. Co.	Frankfort

**NURSERY DEALERS—Continued**

Woolworth, F. W. Co. ....	St. Matthews
Woolworth, F. W. Co. ....	Richmond
Woolworth, F. W. Co. ....	Danville
Woolworth, F. W. Co. ....	Ashland
Woolworth, F. W. Co. ....	Maysville
Woolworth, F. W. Co., No. 1702 .....	Louisville
Woolworth, F. W. Co., No. 1908 .....	Louisville

**NONRESIDENT NURSERYMEN**

Arcadia Rose Co .....	Newark, New York
Armstrong Nurseries .....	Ontario, California
Arp Nursery Co. ....	Tyler, Texas
Athens Nursery Co., .....	Athens, Alabama
Banner, George M., and Linnie Norman.....	Newland, North Carolina
Bass Pecan Co. ....	Lumberton, Mississippi
Baxter Nursery Co. ....	Baxter, Tennessee
Bobbink and Atkins .....	East Rutherford, New Jersey
Boyd Nursery Co. ....	McMinnville, Tennessee
Breedlove Nurseries .....	Tyler, Texas
Brown Bros. Co. ....	Rochester, New York
Cedar Grove Nursery .....	Smithville, Tennessee
Central New York Nurseries .....	Geneva, New York
Chase Nursery Co. ....	Chase, Alabama
Commercial Nursery Co. ....	Decherd, Tennessee
The Conard-Pyle Co. ....	West Grove, Pennsylvania
Couch Brothers Nursery Co. ....	McMinnville, Tennessee
Cumberland Valley Nurseries, Inc. ....	McMinnville, Tennessee
Davis, E. C. & Co. ....	Hagen, Virginia
Denton Farm & Nursery Co. ....	Calera, Alabama
Dixie Rose Nursery .....	Tyler, Texas
East Nashville Landscape Co., .....	Madison, Tennessee
Economy Nursery Co. ....	Little Silver, New Jersey
Emmons & Co. ....	Newark, New York
Emlong Nurseries .....	Stevensville, Michigan
Empire Nursery and Orchard .....	Baileyton, Alabama
Empire Nursery Products Co., Inc. ....	Newark, New York
Evergreen Nursery Co. ....	Sturgeon Bay, Wisconsin
Flower City Rose Co. ....	Manchester, Connecticut
Flowerfield Bulb Farm .....	Flowerfield, L. I., New York
Forest Nursery Co. ....	McMinnville, Tennessee
Fruitland Nurseries .....	Augusta, Georgia
Gillett Fern & Flower Farm .....	Southwick, Massachusetts
Glendale Nurseries .....	Glendale, Ohio
Graham-Charlton, Inc. ....	Geneva, New York
Harding Brothers Nursery .....	McMinnville, Tennessee
Harrisons' Nurseries, Inc. ....	Berlin, Maryland
Heller Brothers Co. ....	Newcastle, Indiana
Hill, D., Nursery Co. ....	Dundee, Illinois
Howard Rose Co. ....	Hemet, California
Huntsville Wholesale Nurseries, The .....	Huntsville, Alabama
Inter-State Nurseries .....	Hamburg, Iowa
Jackson and Perkins Co. ....	Newark, New York
John's .....	Apopka, Florida
Johnson's Truck Farm .....	Ironwood, Michigan
Kahn, S. ....	Staten Island, New York

## NONRESIDENT NURSERYMEN—Continued

Kallay Brothers Co., The .....	Painesville, Ohio
Kingsville Nurseries, Inc. ....	Kingsville, Maryland
Klyn, Gerard K. ....	Mentor, Ohio
Knight and Bostwick, Inc. ....	Newark, New York
Kohankie, Henry & Son .....	Painesville, Ohio
McIlhenny, A. E. ....	Avery Island, Louisiana
McUmbler, R. R. ....	Greenfield, Tennessee
Maloney Bros. Nursery Co., Inc. ....	Dansville, New York
Mason Kentucky Wonder Nursery Co. ....	Smithville, Tennessee
Maxwell-Bowden, Inc. ....	Geneva, New York
May, Earl E., Seed Co. ....	Shenandoah, Iowa
Missouri Nurseries .....	Louisiana, Missouri
Moore, William C. and Co. ....	Newark, New York
Mount Arbor Nurseries .....	Shenandoah, Iowa
Mulford, Hewett P. and Co. ....	Lebanon, Ohio
Nagle's Nursery .....	Benton Harbor, Michigan
Neperville Nurseries, Inc. ....	Chicago, Illinois
Naughton Farms .....	Waxahachie, Texas
New Fruit Nursery Co. ....	Smithland, Tennessee
Onarga Nursery Co. ....	Onarga, Illinois
Owen, T. G. & Son, Inc. ....	Columbus, Mississippi
Paramount Nurseries .....	West Grove, Pennsylvania
Pharr Nurseries .....	Pharr, Texas
Pine Creek Nursery Co. ....	Smithville, Tennessee
Portland Nursery .....	Portland, Tennessee
Potter, H. R. Company .....	Madison, Tennessee
Quaker Hill, Inc. ....	Newark, New York
Riverdale Nurseries .....	Riverdale, Georgia
Rocky Mountain Evergreen & Nursery Co. ....	Evergreen, Colorado
Rosemont Nurseries .....	Tyler, Texas
Scarff's Sons, W. N. ....	New Carlisle, Ohio
Shenandoah Nurseries .....	Shenandoah, Iowa
Shumway, R. H. Seedsman .....	Rockford, Illinois
Smith Brothers Nursery Co. ....	Concord, Georgia
Southern Nursery & Landscape Co. ....	Winchester, Tennessee
Southern States Nurseries .....	Macclenny, Florida
Southland Gardens, Inc. ....	Mobile, Alabama
Southland Rose Nurseries .....	Tyler, Texas
Spring Hill Nurseries Co. ....	Tipp City, Ohio
Standard Nursery Co. ....	McMinnville, Tennessee
Stark Brothers Nurseries & Orchards Co. ....	Louisiana, Missouri
Stern's Nurseries .....	Geneva, New York
Stringer, H. R. ....	Moselle, Mississippi
Stuart, C. W. and Co. ....	Newark, New York
Studley, Walter A. Nursery .....	Fennville, Michigan
Stumpp & Walter Co. ....	New York, New York
Sunny Ridge Nursery .....	Swarthmore, Pennsylvania
Texas Nursery Co. ....	Sherman, Texas
Tri-State Nurseries .....	Ironton, Ohio
Universal Bulb Corporation .....	Yonkers, New York
Upton Nursery Co. ....	Goodrich, Michigan
Ustler Brothers .....	Apopka, Florida
Valentine Nurseries .....	Cosby, Tennessee
Vaughan's Seed Store .....	Chicago, Illinois
Verhalen Nursery Co. ....	Scottsville, Texas
Waxahachie Nursery Co. ....	Waxahachie, Texas

## NONRESIDENT NURSERYMEN—Continued

Wayside Gardens Co., The .....	Mentor, Ohio
Weller Nurseries Co., Inc. ....	Holland, Michigan
Willis Nursery Co., The .....	Ottawa, Kansas
Wilson County Nursery Co. ....	Martha, Tennessee
Wilson, C. E. Nurseries .....	Jacksonville, Texas
Winter Garden Ornamental Nursery, Inc. ....	Winter Garden, Florida
Yoder Brothers .....	Barberton, Ohio

## NURSERY AGENTS REPRESENTING NONRESIDENT NURSERIES

Name	Address	Nursery Represented
Allan, John M.	Louisville, Ky.	Quaker Hill, Inc., Newark, New York
Angle, Mrs. Sarah	Louisville, Ky.	C. W. Stuart and Co., Newark, New York
Brown, J. B.	Baxter, Tenn.	Baxter Nursery Co., Baxter, Tennessee
Brown, W. J.	Augusta, Ky.	Empire Nursery Products Co., Newark, N. Y.
Blackshaw, W. E.	Louisville, Ky.	Empire Nursery Products Co., Newark, N. Y.
Carlyle, R. J.	Louisville, Ky.	Empire Nursery Products Co., Newark, N. Y.
Christian, W. M.	McMinnville, Tenn.	H. R. Potter Nursery, Madison, Tennessee
Denton, J. H.	Cincinnati, Ohio	Quaker Hill, Inc., Newark, New York
Fleming, John H.	Virgie, Ky.	Quaker Hill, Inc., Newark, New York
Fuston, S. D.	Murfreesboro, Tenn.	Standard Nursery Co., McMinnville, Tenn.
Hovekamp, Albert J.	Covington, Ky.	Brown Brothers Co., Rochester, New York
Knudsen, Knud N.	Louisville, Ky.	Quaker Hill, Inc., Newark, New York
Lyons, Mrs. Asenath	Ashland, Ky.	Graham-Charlton, Inc., Geneva, New York
McKnight, O. P.	Murfreesboro, Tenn.	Standard Nursery Co., McMinnville, Tenn.
Massie, Wm. S.	Cincinnati, Ohio	Quaker Hill, Inc., Newark, New York
Maxwell, Lorman A.	Evansville, Ind.	Quaker Hill, Inc., Newark, New York
Milligan, Earl	Indianapolis, Ind.	Quaker Hill, Inc., Newark, New York
Priest, John R.	Calhoun, Ky.	Quaker Hill, Inc., Newark, New York
Roush, Fred	Louisville, Ky.	Quaker Hill, Inc., Newark, New York
Sagely, R. C.	Murfreesboro, Tenn.	Commercial Nursery Co., Decherd, Tenn.
Stout, John A.	Louisville, Ky.	Quaker Hill, Inc., Newark, New York
Toepfer, Charles	Cincinnati, Ohio	Empire Nursery Products Co., Newark, N. Y.
Vick, Macon C.	Louisville, Ky.	Quaker Hill, Inc., Newark, New York
Waddell, John H.	Covington, Ky.	Quaker Hill, Inc., Newark, New York
Walker, John Stewart	Pikeville, Ky.	Quaker Hill, Inc., Newark, New York
Young, Charlie	Smithville, Tenn.	Cedar Grover Nursery, Smithville, Tennessee
Young, G. M.	Smithville, Tenn.	Cedar Grover Nursery, Smithville, Tennessee

## SUMMARY OF NURSERY INSPECTION

Inspections of Growing Stock .....	84
Inspections of fruit stock only .....	7
Inspections of perennials, bulbs, etc. ....	8
Inspections of sweetpotato plants .....	6
Inspections of greenhouses .....	4
Acres of all nursery stock .....	118½
Acres of fruit stock only .....	3½
Square feet of sweetpotato plant beds .....	11,220
Kentucky growers certificates issued .....	79
Nonresident nurserymen's licenses issued .....	110
Nursery dealer permits issued .....	105
Nonresident nursery agents permits issued .....	26
Miles traveled, July 1, 1943, to June 30, 1944 .....	16,749
Number of counties visited .....	120