
SHIPPING AND HANDLING

Bert T. Swanson and David Kleinhuizen

Plant material is a living and perishable product. Growers spend countless hours and dollars developing specific and proper environments, purchasing liners and transplants, and conducts endless production and culture practices to obtain a salable crop of trees, shrubs, or perennials. However, before a financial return can be realized from a nursery or greenhouse crop or a landscape installation, each plant must pass from the seller to the buyer. This not only requires a change in location, it also often requires that the plant be entrusted to a third party which has no knowledge of, or interest in plant material. Therefore, significant planning, cooperation, and coordination by all parties involved are required to prevent plant damage and destruction. Plant material being shipped varies from soft, succulent annuals and perennials to dormant bare-root seedlings, whips or branched trees and shrubs, to large B & B trees, either dormant or in leaf, that weigh one ton or more.

Dormant BR plants must be maintained at 34-38°F and 95 percent RH at all times. Good coverage with wet straw, hay or shingle tow is required to properly protect these plants during shipment. Young plants in full growth must be protected from cold (40°F) and heat (90°F) as well as any physical abuse. Large B&B stock must have secured wire baskets and burlap to keep the ball in tack and they must have trunk protection to guard against trunk injury.

Enclosed vans or truck boxes are essential for most plant transportation; however, with larger B&B stock, this is not always possible. In this case they must be securely tied in place and totally tarped. Direct spaded trees should be tarped on top and the base of the machine holding the root ball should be socked or tarped. Water plants thoroughly before shipping, utilize rapid methods of transport, and ship on cool days if possible or refrigerate vehicles as required. Table 1 provides general requirements for successful shipment of greenhouse, nursery, and landscape plant material.

Shipments of “Less Than Truck Hold Lots (LTL)

should be well monitored during the transport period to ensure that the load is not side tracked or left sitting too long in route prior to the next stop. If possible, it is advantageous to receive full truck loads for a direct delivery route. However, it is also often advantageous to use **Just in Time (JIT)** delivery to spread out the material according to work loads or to accommodate a limited space. JIT is also advantageous to maintain a fresh supply of material and to reduce maintenance costs. It also serves to maintain a better inventory and a manageable financial investment.

Uniform Commercial Code

Buyers and sellers should familiarize themselves with the Uniform Commercial Code (UCC) to avoid legal problems resulting from lost or damaged plant material or supplies. The UCC is accepted as law in all states except Louisiana. Also, nurserymen should understand when ownership title for the plant material or other supplies passes from the buyer to the seller. This requires knowledge as to what “**Free on Board**” or “**FOB**” means since it is a standard abbreviation in almost all sales contracts.

FOB means the seller agrees to put the buyer’s merchandise on a truck and the buyer immediately takes title to the merchandise and is responsible to pay for the transportation charges. This is a common practice in the nursery industry.

FOB: Place of Destination means the title passes to the buyer when the seller **properly** delivers the merchandise to the location specified by the buyer. Under these terms, the seller pays the shipping costs.

FOB: Place of Shipment means the title passes from the seller to the buyer when the merchandise is delivered to a common carrier. The seller pays the transportation to the carrier.

FAS: Free Along Side Vessel means the title passes from the buyer to the seller when the merchandise is delivered to the dock along side the vessel or air port terminal.

Table 1. Suggested Moisture Control, Temperature, and Other Actions to Ensure Successful Shipping of Plant Material. From: Davidson, H., R. Mecklenburg and C. Peterson; as modified by Bert T. Swanson.

<u>Type of Plant Material</u>	<u>Moisture Control</u>	<u>Temperature</u>	<u>Comments</u>
<u>Dormant Stock</u>			
Bare Root (Roses, Shrubs, Fruit Trees, Shade Trees)	Damp shingle tow around roots or poly liner within package.	35-40°F	Shipped in nursery boxes.
Packaged (Roses, Shrubs, Trees, Small Fruit)	Damp shingle tow in in package around roots.	35-40°F	Individually packaged or shipped in nursery boxes.
Perennials	Poly liner within bare root package, packed in shingle tow.	28-35°F	Shipped in nursery boxes.
<u>Balled and Burlapped Stock (Trees, Shrubs)</u>			
Dormant	Moist root balls ¹ .	30-40°F	Tipped and tied.
In leaf	Water prior to digging, store in cool area with high humidity.	40-60°F	Tipped and tied.
<u>Evergreen Stock</u>			
Dormant	Moist root balls.	30-50°F	Stacked on balls, tarp if in open truck.
Non-dormant	Moist root balls, moisten tops prior to shipping.	40-60°F	Stacked on balls, tarp if in open truck.
<u>Container Stock</u>			
Small sizes (#1 - #10)	Watered and drained ¹ prior to shipping.	50-55°F	Decked or stacked 3-5 high on containers.
Large sizes (#15 and larger)	Watered and drained ¹ prior to shipping.	40-60°F	Tipped and tied, tarp if in open truck.

¹Water adds considerable shipping weight, 8.34 lb/gal. Root balls should be damp, never dry, and seldom wet to field or container capacity.

Buyer Responsibilities

Buyers must provide detailed information as to plant name; size; quantity; type such as container, BR, and B&B; shipping date; shipping instructions; and any special handling requirements. It is beneficial to the buyer and the seller to specify and confirm delivery dates. A lead time of two weeks is usually the minimum required to process a large order. Landscape contractors may need to specify the hour and exact location of a delivery to ensure that proper personnel and equipment are available for the receipt, acceptance and unloading of the material.

Plant material should be inspected and counted immediately upon receipt. Discrepancies from what was ordered in terms of quantity and quality must be brought to the attention of the carrier and the seller immediately. The discrepancies should be noted on the delivery receipt, dated, and signed by the buyer and the carrier. Material that is unpacked within a few days of delivery may contain what is called **Concealed Damage, or Shortage**. This discrepancy information must be sent in writing to the seller within ten days of receipt of the order. Plants that arrive in a frozen, dried, or pest-infected condition should be reported to the state plant inspector to obtain a professional judgment on the quality of the plant material received.

Seller Responsibilities

The seller is responsible for digging, assembling, packing or packaging, and shipping the plants in accordance with the size, grade, type, quantity, and quality specified in each order. All plants should conform to the latest requirements of the ANLA American Standard for Nursery Stock. The seller must make all arrangements to deliver the material via its own company vehicle or contract it to a common carrier, or arrange for some other transport system. This requires considerable advanced notice with carriers to insure proper delivery on time.

The seller is responsible for all legal and certification documents, stamps, and inspections of all plants, and the seller must provide such documents, including source of plant origin, to the buyer. The seller must coordinate shipping requirements with sales, production, pest management, and inventory personnel within the selling company. Plants must be properly watered and sprayed, but not shipped within the Restricted Entry Interval (REI) period. Plants cannot be shipped dry, or so wet they soak shipping cartons or add excess weight to the load. Shipping personnel must know how to pack, stack, separate, and secure plants of all types to totally prevent any injury to the

plants and to prevent the load from shifting in transit. If a plant is crushed, broken, or slightly damaged, it will be rejected upon receipt and the seller will not be paid for these plants.

To facilitate obtaining a reasonable and reliable carrier, the seller needs to load the truck or trailer as quickly as possible. Consider using carts, racks, and pallets rather than loading individual plants. It costs the carrier money to have the truck sitting still and this will be reflected in the shipping cost per mile, or in a surcharge. The seller must plan the route and load the truck accordingly. If loads and routes get mixed up, it can be very costly and time consuming for everyone involved.

Carrier Responsibilities

The carrier is responsible for transporting the plant material from the seller to the buyer. The carrier could be railroad, motor carrier, bus, UPS, U.S. mail, or Speedy Delivery. All of these are a third party to the transaction of delivery. In other instances, the seller may provide a delivery service or the buyer may send a vehicle to pick up the plant material. In any of these cases, they are all carriers and must comply with local, state, and federal laws relative to operation and maintenance of a motor carrier.

The Interstate Commerce Commission (ICC) is the agency of the federal government that regulates motor carrier transportation between states and across international boundaries. The ICC regulates motor transport by various economic regulations, which apply only to commercial carriers who do hauling for hire. Nursery managers who provide trucking, under a farm license, are exempt from the economic regulations. However, truck safety regulations, administered by the U.S. Department of Transportation (DOT) apply to all owners of trucks operating in interstate commerce. These regulations are contained in **Federal Motor Carrier Safety Regulations** published by the U.S. DOT. This document is available from the Superintendent of Documents in Washington, DC. Topics contained in the U.S. DOT regulations include:

1. Qualification of drivers.
2. Driving of motor vehicles.
3. Parts and accessories necessary for safe operation.
4. Notification, reporting and recording of accidents.

5. Hours of service of drivers.
6. Inspection and maintenance.
7. Driving and parking rules.

Each employee involved in interstate trucking should be provided with a copy of the regulations, be required to read and understand the regulations, keep an updated driver's log, and to turn it in for inspection on a regular basis.

Although nursery managers are exempt from some economic regulations of the ICC, they are subject to the Federal Highway Use Tax. This tax is imposed on all motor vehicles or vehicle-trailer combinations having a taxable gross weight of more than 26,000 lbs. The Internal Revenue Service (IRS) publishes a schedule showing taxable gross weight for various motor vehicles and vehicle-trailer combinations. The tax must be reported and paid to the District Director of the IRS. Weight restrictions vary from state to state and will vary with the time of year when road restrictions are in effect.

In addition to the federal regulations, many states and local communities have laws or regulations pertaining to the operation of motor vehicles. Nursery managers who transport nursery stock into other states should be acquainted with the applicable laws and regulations of those states. A Reference on the laws and regulations that drivers need to know is **Professional Truck Drivers Handbook**. Copies are available from Private Truck Council of America, 2022 P Street NW, Washington, DC 20036.

Interstate truckers are subject to the economic regulations of the ICC under the Federal Motor Carrier Act. They must obtain a license from the Interstate Commerce Commission, which also regulates rates, territories, routes, and insurance coverage. However, again some exemptions are made for agricultural and horticultural commodities. This allows truckers transporting plant material for nurseries, some flexibility in service and rates. However, the exemption holds only if the entire load is agricultural or horticultural. Any mixed load is subject to all economic regulations.

Communication between the seller, buyer, and carrier is paramount to successful shipping for all parties. If possible, it is best to work directly with a broker and get to know that broker very well. Make sure the broker knows the nursery products and business.

This will facilitate timely and properly cared-for shipments and may alleviate surcharges or other hidden charges. It is important to know the drivers **and** a key contact in the carrier's office.

Importing Nursery Stock in to Minnesota

In accordance with the Minnesota Nursery Law, plants, plant materials, or nursery stock distributed into Minnesota must be conspicuously labeled on the exterior with the name of the consignor, the state of origin, and the name of the consignee, and must be accompanied by certification documents to satisfy all applicable state and federal quarantines. Proof of valid nursery certification must also accompany the shipment. It is the shared responsibility of both the Consignee or receiver, and the Consignor or shipper, to examine all shipments for the presence of current and applicable nursery stock certifications for all plant material from all sources of stock in each shipment.

In accordance with Federal Law, the United States Department of Agriculture, Animal Plant Health Inspection Service (USDA APHIS) administers federal plant pest quarantines in cooperation with state regulatory officials. These quarantines are designed to facilitate the movement of regulated articles while preventing the spread of harmful plant pests from states or areas infested with plant pest problems to areas free of specific pests. Important quarantines affecting Minnesota include: Emerald Ash Borer, Gypsy Moth, Pine Shoot Beetle, Black Stem Rust on barberry and Japanese Beetles. For specific information on these and other federal quarantines, contact USDA APHIS in Minneapolis at 612-348-1657. The Federal Shields displayed in Figure 1 is issued by the USDA APHIS to nurseries indicating that the nursery stock has been inspected and that it meets specific quarantine requirements. Even though the shield indicates the nursery stock satisfies state and federal requirements, additional certification documents and stamps for other specific quarantines may be required depending on the state or country of origin and destination. Questions regarding certification requirements should be directed to the MDA (651-201-6619) or regulatory officials in the shipping or receiving state or country.

The Minnesota Nursery and Landscape Association and the Minnesota Department of Agriculture (MDA) have developed specific guidelines for importing nursery stock into Minnesota. The procedures described below must be followed for each shipment of plant material or related stock into the state.

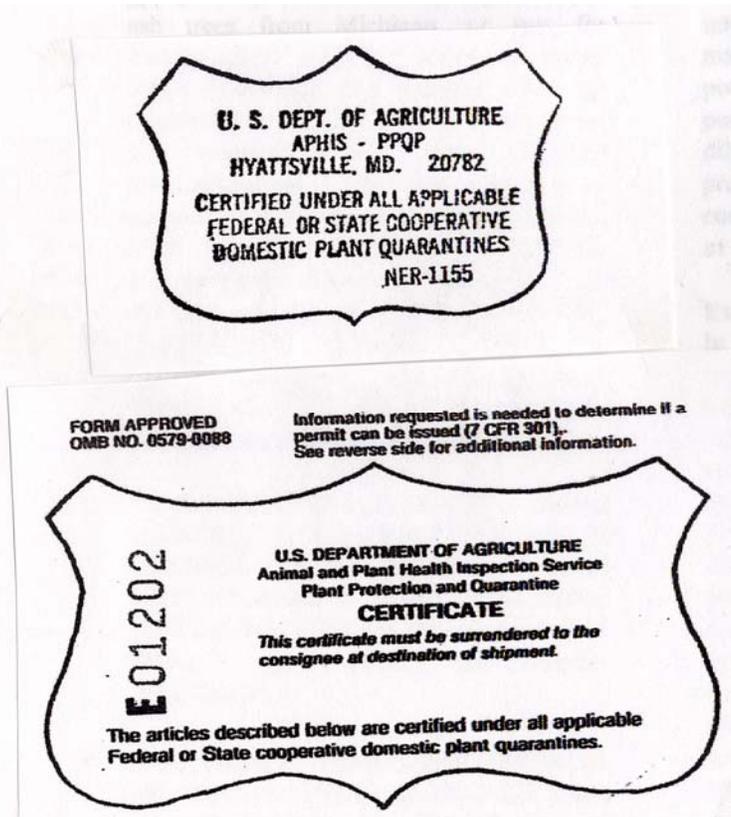


Figure 1. Examples of Federal Stamps required on shipping documents for specific nursery stock to certify that it has been properly inspected for shipment.

However, due diligence should be paid to these practices in all shipments of plant material whether it is in or out of state. By implementing these guidelines, Nurseries, Greenhouses, Garden Centers and Landscape Contractors protect Minnesota's environment from the potentially devastating effects of regulated or exotic plant pests. These guidelines also help protect Minnesota nursery, landscape, greenhouse, and related horticultural businesses from the costs associated with business disruption, pest control, and possible eradication of regulated or exotic plant pests.

1. Screen and select product sources carefully.
 - a. Be aware of regulated pest status in the state or counties of origin of stock being purchased. Contact MDA for current information.
 - b. Purchase products from areas known to be free of regulated plant pests to reduce

regulations and requirements.

- c. When purchasing through brokers, insist on knowing the state and country of origin of all products purchased.
 - d. Ask about pest monitoring and/or control programs. Select sources that use systems that ensure compliance with state and federal plant pest regulations.
2. Ensure product is adequately certified.
 - a. At the time of placing an order, indicate that proper state or federal certification will be required with all shipments as a condition of purchase. Failure to provide proper certification at the time of shipment may void a transaction. Request written evidence that products will be certified by state or federal authorities to be pest free at the time of shipment. **For federally regulated pests, a copy of a current nursery certificate or a license alone is not adequate.**
 - b. In order to minimize potential problems at the time of shipping, request sample documentation that will accompany each shipment from each vendor at the beginning of each new year. If there is any question regarding specific documentation required **contact MDA at 651-296-8507.**
 - c. Request state and county of origin information as part of order acknowledgement as this is a Minnesota state statute.
 - d. Request that **each shipment** of product be accompanied by all necessary certification documentation. If possible, have the shipper forward such documentation via fax or e-mail prior to receiving any shipment. Lack of proper documentation may void a transaction.
 - e. Fax any questions about any documents to **MDA (651-296-7386)** for review and approval.
 3. Receiving, handling, storage, and record keeping.
 - a. Upon product receipt, review certification

documentation prior to unloading the shipment. Certification documents must be dated the same year as the shipment or be validated based upon an expiration date. Growing season inspection reports may be dated up to 12 months earlier. If a product is not properly certified, contact the supplier prior to unloading. If certification is not possible, the shipment should be refused.

- b. If federal quarantines are involved such as plants originating from eastern states for gypsy moth, southern states for fire ant, ash trees from Michigan, or rust for barberry plants, **a federal stamp or sticky label affirming the plants meet all applicable state and federal quarantines is required on the shipping documentation. Do not accept any shipment without this documentation.** Until the plants are unloaded, they are covered under interstate regulations. In this situation, **call the USDA Office (612-725-1721) for assistance. Look for a Federal stamp or stamps as shown in Figure 1 and a Certificate of Quarantine Compliance as shown in Figure 2.**
- c. Conduct visual inspections during unloading. If a regulated plant pest is discovered, close the shipping container and notify the **MDA at 651-296-8507** and/or **USDA at 612-725-1721** for recommended action. Also contact the supplier immediately.
- d. **It is strongly recommended that firms importing products from regulated areas conduct training for identification of regulated pests with all employees who will be in a position to find such a pest.** Contact MDA for assistance with training materials and curriculum.
- e. Maintain all shipping records including packing lists and certification documentation for each shipment received. Maintain these records in an orderly fashion for a minimum of two seasons. These records must be available for inspection by MDA or USDA as needed.
- f. Maintain constant awareness among staff

throughout the year to be on the watch for signs of regulated or unusual pests.

- g. Maintain proper cultural practices and chemical pest control measures if applicable to control these pests.
- h. Cooperate with MDA and/or USDA efforts, including trapping, to monitor and prevent the spread of these pests.

The possible introduction of exotic plant pests is a growing threat to all businesses and to the environment. Prevention of this introduction via importation of plant material requires great care, and may result in changes to business practices. The potential costs associated with importation of these pests will more than justify an increased due diligence in all shipping, handling, and transportation procedures by all concerned. For further assistance, contact: the **Minnesota Department of Agriculture at 651-296-8507 or the USDA at 612-725-1721.**

Exporting Nursery Stock Out of Minnesota

In accordance with the Minnesota Nursery Law, nursery stock and plant material shipped internationally must be accompanied by a certificate indicating the stock meets all requirements of the receiving country. This certificate is called a **Phytosanitary Certificate** wherein “Phyto” means Plant, and “Sanitary” means clean. This Phytosanitary Certificate is issued to verify that all necessary inspections, surveys, and testing have been done to meet these requirements. Soil surveys to certify freedom from soybean cyst nematode, and virus indexing of fruit trees are examples of some import requirements. Requirements vary depending upon the receiving country, material to be shipped, production practices, and specific origin. The majority of nursery stock exports from Minnesota go to Canada. A copy of the State of Minnesota Phytosanitary Certificate and a copy of the US Department of Agriculture Phytosanitary Certificate are as shown in Figure 3 and Figure 4 respectively.

A quarantine established by USDA to stop the artificial spread of the Pine Shoot Beetle includes all of Minnesota and Wisconsin. Therefore, **all shipments of pine nursery stock leaving Minnesota and going to non-quarantine areas must be certified free of Pine Shoot Beetle.**

Shipments can be certified by two methods:

Shipment/Invoice # _____
(mandatory)

CQC-02-~~XXXXXXXXXX~~

Michigan Department of Agriculture
Pesticide and Plant Pest Management Division
PO Box 30017 Lansing, MI 48909



CERTIFICATE OF QUARANTINE COMPLIANCE

This is to certify that the commodities described below have been visually inspected and found in compliance with the National Plant Board standards of pest freedom.

(In accordance with Act 189, P.A. of 1931, as amended)

Dan Wyant, Director

Firm Name: _____
Firm Address: _____ MI 48117
Commodities: Annuals, Perennials

Additional Certification

Meets Requirements of:

The rooted plants (or crowns) were produced in an approved Japanese beetle free greenhouse or screenhouse and were grown in sterile, soilless media.

Meets CDFA Quar. No. 3263 (European Corn Borer)

Meets CDFA Quar. No. 3264 (Colorado Potato Beetle)

Meets CDFA Quar. No. 3277 (Cereal Leaf Beetle)

Meets CDFA Quar. No. 3280 (Japanese Beetle)

7CFR 301.45 (Gypsy Moth)

7CFR 301.50 (Pine Shoot Beetle)

TREATMENT

Date: _____ Chemical/Concentration: NONE

MDA Representative Name and Signature

Alexander James

Date Issued: August 19, 2002

Expires: October 31, 2003

Attach a completed copy of this certificate to the shipping document along with a copy of the Nursery Certificate/License

Figure 2. Michigan Department of Agriculture Certificate of Quarantine Compliance.

MINNESOTA DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
90 West Pike Boulevard
St. Paul, MN 55107
Phone: (612) 296-8507
FAX: (612) 296-7386

PHYTOSANITARY CERTIFICATE

THE PLANT PROTECTION ORGANIZATION OF:

FOR OFFICIAL USE ONLY

Place: _____
Date issued: _____
Date inspected: _____
No.: 14714

COPY

This is to certify that the plants, parts of plants or plant products described below or representative samples of them were thoroughly examined on the date shown above by an authorized representative of the Minnesota Department of Agriculture, Division of Plant Industry, and were found, to the best of their knowledge, to be substantially free from injurious diseases and pests; and that the consignment is believed to conform to the current phytosanitary regulations of the importing country both as stated in the additional declaration hereon and otherwise.

FUMIGATION OR DISINFECTION TREATMENT

Date: _____ Treatment: _____
Chemical and Concentration: _____ Duration and Temperature: _____

DESCRIPTION OF CONSIGNMENT

Name and address of the exporter: _____

Declared name and address of the consignee: _____

Name of commodity, quantity and botanical name: _____

Number and description of packages: _____

Distinguishing marks: _____

Place of origin: _____

Declared means of conveyance: _____ Declared point of entry: _____

ADDITIONAL DECLARATION



Name of Authorized Officer

Signature

No liability shall attach to the Minnesota Department of Agriculture or to any officer or representative of the Department with respect to this certificate.

Figure 3. Minnesota Department of Agriculture Phytosanitary Certificate.

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARANTINE		FOR OFFICIAL USE ONLY	
PHYTOSANITARY CERTIFICATE TO: THE PLANT PROTECTION ORGANIZATION(S) OF		PLACE OF ISSUE	
		NO.: FPC 0000000000	
		DATE INSPECTED	
CERTIFICATION			
This is to certify that the plants, plant product or other regulated articles described herein have been inspected and/or tested according to appropriate official procedures and are considered to be free from the quarantine pests, specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party including those for regulated non-quarantine pests.			
DISINFESTATION AND/OR DISINFECTION TREATMENT			
1. DATE	2. TREATMENT		
3. CHEMICAL (active ingredient)	4. DURATION AND TEMPERATURE		
5. CONCENTRATION	6. ADDITIONAL INFORMATION		
DESCRIPTION OF THE CONSIGNMENT			
7. NAME AND ADDRESS OF THE EXPORTER		8. DECLARED NAME AND ADDRESS OF THE CONSIGNEE	
9. NAME OF PRODUCE AND QUANTITY DECLARED		10. BOTANICAL NAME OF PLANTS	
11. NUMBER AND DESCRIPTION OF PACKAGES		12. DISTINGUISHING MARKS	
13. PLACE OF ORIGIN		14. DECLARED MEANS OF CONVEYANCE	
		15. DECLARED POINT OF ENTRY	
WARNING: Any alteration, forgery, or unauthorized use of this phytosanitary certificate is subject to civil penalties of up to \$250,000 (7 U.S.C. Section 7734(b)) or punishable by a fine of not more than \$10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. Section 1001).			
ADDITIONAL DECLARATION			
			
16. DATE ISSUED	17. NAME OF AUTHORIZED OFFICER (Type or Print)		18. SIGNATURE OF AUTHORIZED OFFICER
No liability shall attach to the United States Department of Agriculture or to any officer or representative of the Department with respect to this certificate.			

Figure 4. United States Department of Agriculture Phytosanitary Certificate.

1. Contact a Plant Protection and Quarantine Officer to conduct an inspection of each shipment and issue the certification just prior to each shipment's departure.
2. Nurseries can inspect shipments themselves if employees receive annual training and the nursery signs a compliance agreement.

The Pine Shoot Beetle is native to Europe and is thought to have entered the United States in solid wood packing material like pallets and dunnage. The beetle feeds on many different species of pine trees, but prefers Scotch Pine. The most damaging feeding by the beetle occurs in the summer when the beetle burrows into new shoots of the trees. The beetle does not attack spruce, fir or deciduous trees.

The Pine Shoot Beetle was first found in the U.S. in Ohio in 1992 and is now found in many states in the Great Lakes region. In the Summer of 2004, the Pine Shoot Beetle was found in several counties in Minnesota. The beetle was found in traps set to monitor exotic beetles as part of a cooperative effort by the US Department of Agriculture and Minnesota Department of Agriculture. The 2004 catches were the first detections of this pest in Minnesota.

To request an inspection, a compliance agreement, or for more information, contact:

Scott Smith
USDA APHIS PPQ
900 American Boulevard East, Suite 204
Bloomington, MN 55420
Phone: 952-853-1904
Fax: 953-853-1492
Cell: 612-759-5007
E-Mail: Scott.F.Smith@aphis.usda.gov .

Requirements for shipments of pine to Canada and other countries are affected by this quarantine and may be different than the requirements for domestic shipments. Contact an Expert Certification Official or Scott Smith with questions about international shipments.

Refer to the chapter on Laws, Regulations, Guides, Ethics and Professionalism, Part II: Minnesota Laws and Regulations Pertaining to Nursery Stock for additional regulatory information.