

Nursery News

February 2008

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Oregon
Department
of Agriculture

A pest is loose in California

By Karl Puls, ODA horticulturist

On February 6, 2007 a retired entomologist found a moth in his black light trap in Alameda County, California that fit the description of the light brown apple moth (LBAM), *Epiphyas postvittana*. He alerted the authorities and once they confirmed the identity of the pest California Department of Agriculture (CDFA) implemented a trapping program to determine its extent in California.

By March 2007 moths were caught in traps at various locations, most numerous in Monterey and Santa Cruz counties. By November 30, more than 15,000 moths had been caught from 42,479 traps. Over 3,000 moths were found in San Francisco County alone. USDA implemented a federal quarantine in May, 'requiring inspection and certification of all nursery stock and host commodities from eight counties in California, including Alameda, Contra Costa, Marin, Monterey, San Francisco, San Mateo, Santa Clara, and Santa Cruz counties.' Canada also implemented quarantine restrictions from these counties. A task force was formed to determine the most effective approach to eradicate LBAM. A mating disruption program was implemented in selected areas, and the biological insecticide *Bacillus thuringiensis* was sprayed in other areas.

LBAM is native to Australia and is currently established in New Zealand, New Caledonia, Hawaii, and the British Isles. The discovery in California is the first on the US mainland. LBAM belongs to a group of moths called tortricids, among which many are plant pests. The moth larvae, reaching a length of about 18 mm, can feed

on approximately 250 agriculture crops. It is a pest of nursery stock, the cut flower industry, the wine industry, etc. For further biological information, this Web site may be helpful: http://www.cdffa.ca.gov/phpps/PDEP/lbam/lbam_main.html.

How does this affect Oregon? Well, the cost to California has not yet been tabulated, but CDFA officials estimate that LBAM could cost \$640 million annually in damage (crop loss, pesticide treatment, quarantines, etc). That estimate is just for the few counties where the moth was found in 2007. Consider that the nearest moth is a few hundred miles from the Oregon border and could conceivably find its way here. A trapping survey in 2005 found no moths in California. Yet two years later, eight counties trapped significant numbers. Additional counties have found two or fewer moths from thousands of traps placed. The ODA trapped for LBAM in prior years, in addition to 2007, and found no moths. We will continue to monitor for its presence in the future.

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Exporting to European Union (EU) countries

By Sherree Lewis, ODA horticulturist

So you have a customer in a European Union country wanting to import your nursery stock, or you're thinking of opening your market to European countries. What are the requirements? It depends on the type of nursery stock. The regulations depend on the plant or plant part. There are four main categories: 1. Woody plants, 2. Herbaceous plants, 3. Bulbs, corms, tubers, and rhizomes, 4. Tissue culture. All plant exports require a federal phytosanitary certificate issued by your friendly nursery inspector. Please call for certification well in advance so that the inspector may research the requirements.

Woody species that are deciduous must be dormant and free of leaves, flowers, and fruits. The plants must also be free from signs or symptoms of harmful nematodes, insects, mites and fungi. In addition, the plants must also be found free from *Bemisia tabaci* (sweet potato whitefly), *Thrips palmi* (melon thrips), and various viruses. And finally, prior to export the plants are required to be treated for whitefly and thrips. Any insecticide labeled for these pests is acceptable, but we often recommend either Safer Soap or dormant oil. Note that export of malus (apple) and pyrus (pear) rootstock in the Rosaceae family will require the nursery to enter into a compliance agreement. It will be the responsibility of the nursery to establish, maintain, and document sanitation procedures for disease prevention. A map of disease host material grown in each field will also be required. It will be the responsibility of the horticulturist to conduct the required surveys. Rosaceae family plant material other than rootstock of malus and pyrus may be too restricted for export. Contact your area horticulturist before attempting to sell any plants to Europe because export requirements are subject to frequent changes.

The requirements for herbaceous species are similar to those for woody species, except that the plants do not have to be dormant or free of leaves. The plants must also be treated for *Thrips palmi*, but additional inspections of the plants and place of production for *Bemisia tabaci* must be conducted at least every three weeks during the nine weeks prior to export. The plants must also be found free of certain leafminers based on inspections at the place of production carried out at least monthly during the three months prior to harvesting, or immediately prior to export the plants must be treated for leafminers. It is important to contact your horticulturist at least three months in advance

if wanting to export herbaceous plants to allow for the proper inspections to take place.

If the plants cannot be exported without growing medium, then the mix must also be examined and found free from harmful organisms. Or, within two weeks prior to export, the plants must be shaken free from the medium leaving the minimum amount necessary to sustain vitality during transport.

Dormant bulbs, tubers, rhizomes, and corms must be inspected and found free from harmful organisms. No treatment or additional inspections are required. If **not** dormant, then the requirements listed above for herbaceous species applies.

The requirements for tissue cultures which are in vitro at the time of export are the same as for either woody species or herbaceous species above, except that no treatment is required.

While there are various restrictions, it is possible to export to EU countries if the shipping nursery plans ahead, maintains healthy, pest-free plants, and is willing to treat before export if it is required. With proper paperwork and healthy plants, the shipment should pass through customs with no problems.

Shipping pine out of Oregon

European pine shoot moth (EPSM) certification

EPSM certification is no longer required by Nevada to ship pines into that state. Currently California, Montana, and Hawaii have EPSM quarantines that require trapping and certification. Certification is based on placement of pheromone traps by Oregon Department of Agriculture (ODA) horticulturists in the nursery the previous growing season (May thru August). Pine growers must return the trapping request form, mailed out by ODA to all licensed nurseries, by May 1, if they wish to be certified. Also, California allows the transit of pine through their state in enclosed trucks, invoiced to another state, with no other off-loading, without an EPSM certificate. (See "Cereal leaf beetle" on page 8.)

Receiving plants at your nursery

John Ekberg, ODA horticulturist

The world is smaller today, due at least in some part to the ease of Internet access. It is very easy now to shop on-line and sometimes impulsively make purchases. You can reason that you can “sort the details out later.” I would like to point out a consequence of making such an impulsive decision when it comes to bringing plant material in from other states or countries.

Our industry in Oregon enjoys the benefits of ideal growing conditions and that has made us a leader in plant production and sales. The Oregon nursery industry is big business. It has been number one in agricultural valuation in the state for many years. Operating a nursery is not an easy job and a significant amount of time and money is spent on control of pests, diseases, and weeds. Many, if not most of these organisms that this time and money are spent on were introduced through the importation of plant material. No doubt other pests will be introduced in the future. Our ability to ship to other parts of the US and internationally is sometimes hindered by pests or diseases that are established here. We can all do our part in reducing or eliminating this threat by doing it right in the first place.

If you are thinking about bringing in plant material (rooted plants, cuttings) from another state or a foreign source, please talk to your local nursery inspector to inquire about any concerns. Parts of the United States have established populations of Japanese beetle, gypsy moth, imported fire ant, emerald ash borer, European brown garden snail... the list goes on and on. Many parts of the world have pests and diseases that would not only wreak havoc on our nursery industry but also on our forests and everything around us. For example, sudden oak death disease is now consuming an enormous amount of time and money, not only in this state, but in others as well.

If you are thinking about buying plants from a local nursery, make sure the source is licensed and inspected. It is entirely appropriate to ask for sudden oak death certification (for California, Oregon, Washington sources), a copy of their nursery license or other inspection/certification documents if you are unfamiliar with the nursery. If the nursery is not licensed it would be misleading and illegal to use any of your certification for an uninspected source. If they cannot provide any of this, don't buy from them. Don't put yourself out on a limb by thinking you are doing someone a favor. If bringing in plants from a private landscape, hold the material for inspection. If the location is convenient the inspector may be available to look at the material prior to digging.

Finally, when bringing in woody plant material from out of state, it is Oregon law to notify the Oregon Department of Agriculture (ODA) within two business days of its arrival by FAX (503-986-4564), or email (quarantine@oda.state.or.us). To head off any potential problems with the shipment give the department advance notice of its arrival date. Talk to your local inspector.

Communication through email

The nursery/Christmas tree inspection staff all have individual email addresses where we can be reached directly. This may be a preferable way of communicating a question or request by you, the licensee, rather than to get a call back by telephone. It may also be easier for us to reach you or to answer a question without playing “phone tag” or trying to reply through voice mail. Here is the best way to do this:

1. Shipping or urgent calls for certification—send the email directly to the inspector in your area and attach a “cc” to (plant-clerical...) so that a record of the request is filed with the ODA office. If you don't get a reply back from the inspector within 24 hours, he or she may be out of the area; so then you should call the office directly.
2. General consultation questions such as: “Can you come out and look at my pest problem?”, “Are pine shoot moths flying yet?”, “What can I spray to control whiteflies?”, “Can I ship spruce trees to Germany?” or other appropriate questions could be e-mailed directly and we could answer them and perhaps provide a Web site link to give you further information related to your question.
3. Email addresses for the inspection staff are available on our business cards, through our Web site <http://oregon.gov/ODA/PLANT> and are as follows:

- Salem office – plant-clerical@oda.state.or.us
- Melissa Boschee – mboschee@oda.state.or.us
- Christy Brown – cbrown@oda.state.or.us
- Bev Clark – bclark@oda.state.or.us
- Debbie Driesner – ddriesne@oda.state.or.us
- John Ekberg – jekberg@oda.state.or.us
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Phytophthora

ramorum

2007 update and 2008 highlights

By *Melissa Boschee, ODA horticulturist*

During the 2007 survey season, the P. ramorum program received a face-lift. While the majority of the program remained the same, several changes to staffing, sampling size and survey season time line were made. In 2006, the survey season extended from mid February through June, while the 2007 season ran from mid-February through mid-October. With the extension of the time line we reduced the number of survey technicians from 17 in 2006 to 6 in 2007.

To start the season, the nursery program renewed all federal compliance agreements in January. USDA required that Oregon: 1) harmonize its compliance agreement numbers with the numbers used by the Washington State Department of Agriculture and the California Department of Food and Agriculture and 2) add a growing location and county code to help locate and separate different growing locations. Currently 612 growing grounds or 479 nurseries are under compliance. These numbers are down from 2006 due to the removal of intrastate shippers from the inspection process.

During 2007, only nurseries that grew host plants of *P. ramorum* and shipped **interstate** were inspected and sampled. **Intrastate** shippers were inspected but not sampled for *P. ramorum*. This procedural change allowed our program to inspect and sample all interstate host shippers once to meet federal requirements and to complete two additional high-risk surveys at nurseries that ship interstate and grow rhododendrons and/or camellias. A high percentage of plants found infected with *P. ramorum* are rhododendron or camellia.

The horticultural inspection staff, as part of a nursery's annual inspection, completed non-host and intrastate host surveys. ODA completed 838 non-host nursery inspections and 196 intrastate host shipper inspections between January and December 2007.

Additional changes in sampling protocol also increased the number of samples collected at each nursery. In 2006, a minimum sample of 40 leaves was collected at each growing location. In 2007 the number of leaf samples was increased to a minimum of 200 leaf samples per growing location. This is five times the amount collected per nursery in 2006.

Of the 32,745 samples collected during 2007, five samples from three nurseries were found positive for *P. ramorum*. The disease has been eradicated at two of the nurseries. Eradication is in process at the third nursery. In comparison to previous years there were far fewer positive nurseries found. In 2004, 2005, and 2006 we found 19, 18, and 12 positives respectively.

The nursery staff also completed 78 trace-out inspections. Fifty-five samples were collected from 29 nurseries. No positives were found from the trace-out samples.

For the 2008 survey season we do not anticipate any major changes to the certification program. Some of the program highlights for 2008 include:

- Nurseries that do not ship plants out of state do not need to be certified and will receive one visual inspection.
- Nurseries that grow *P. ramorum* host plants and ship out of state will receive an annual certification inspection sometime between February 19, 2008 and October 15, 2008.
- Nurseries that grow non-host plants and ship out of state will receive an annual inspection during calendar year 2008.
- Because rhododendrons and camellias are high-risk host plants, nurseries that ship out of state and grow either will receive two additional inspections during 2008.
- Nurseries under a compliance agreement may only receive host plants from other certified nurseries, or, if that is not possible, the nursery must hold host plants from uncertified sources pending an ODA inspection. For an inspection please contact us at 503-986-4644.

For host growers who ship out of state only

Preparing for your *P. ramorum* inspection

Starting on February 19, 2008 our technicians will begin making phone calls to arrange appointments with your nursery. When they call please have the following information available:

1. Do you ship plants out of state?
2. Are you a host nursery?
 - a. A host nursery is any nursery which grows host or associated host material (for an up-to-date list please go to http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/index.shtml)
3. Have you used any fungicides in the last 30 days?
 - a. If no, please tell your technician
 - b. If yes, please have a list of what has been applied and the dates of application.
4. Do you have additional growing grounds?
 - a. If no, please tell your technician

- b. If yes, please have a list of your additional growing grounds and their locations including a physical address and zip code.

Once you have been contacted your technician will set up an appointment to inspect and sample your nursery. While it is not necessary, it would be helpful to our staff and will expedite your inspection if you could do/ provide the following:

1. Provide a map of the nursery layout with host and associated host material clearly marked.
2. Have all host and associated host material clearly labeled in the nursery
3. Furnish a staff member to answer the technicians' questions.
4. Please do not apply any pesticides to any area of your nursery for 72 hours prior to your inspection and sampling appointment time. By doing this we are assured of complete access to all nursery stock present without violation of pesticide reentry rules.

Thank you in advance for your cooperation. We look forward to working with you this next season. As always, if you have any questions please contact Melissa Boschee at 503-986-4777.

Your assessment fee dollars at work

The Nursery Research and Advisory Committee, in cooperation with the Oregon Association of Nurseries Research Committee, selected twelve projects to fund in 2008. The funds were collected through nursery research assessment fees. The following is a brief synopsis of the research that will be conducted this coming year.

1. Determining the effect of autumn foliar urea application on nitrogen (N) use efficiency and plant growth of container-grown herbaceous perennial plants. PI's: Carolyn Scagel, USDA-ARS-Horticultural Crops & Research Laboratory (HCRL), Corvallis, Les Fuchigami, Department of Horticulture, Oregon State University (OSU), Corvallis and Richard Regan, North Willamette R&E Center, Aurora.

This project will look at fall applications of foliar urea fertilization on nitrogen (N) use efficiency, root growth and plant performance the following spring in container grown herbaceous perennials. The investigators will measure (1) the optimum N needed for plant growth during production, (2) assess whether autumn foliar urea application influences N reserves, N uptake, internal cycling of N, and plant growth and flowering performance, (3) determine the optimum amount of urea (frequency

needed for optimum plant growth and performance), (4) compare the N uptake efficiency of foliar vs. soil N in relation to plant N status, and (5) investigate the effect of soil vs. foliar N applications on root growth. The results will provide growers with new methods of decreasing fertilizer use and production costs, while improving herbaceous perennial plant quality.

2. Production of handheld meter and database for determination of chlorophyll, nitrogen and water content of nursery plants. PI: Les Fuchigami, Department of Horticulture, OSU

The investigators will produce a handheld meter (based on ongoing research) that measures chlorophyll, water and nitrogen content of plants using near infrared (NIR) reflectance spectroscopy. They will be able to locate and draw a color-coded map of the sampling area in the nursery. The accuracy of the meter is dependent on development of a database for the major crops produced by the nursery industry. The investigators will work with nurserymen to identify the same and train them on the use of the handheld meter, software and mapping program. The meter will help nurserymen monitor plant nitrogen status and maximize crop performance by enabling site-specific nitrogen management.

3. Assessing the threat of exotic relative to endemic *phytophthora spp.* PI: Niklaus J. Grunwald, USDA-ARS-HCRL.

The investigator will assess the relative threat of exotic *Phytophthora* species by comparing disease severity and sporulation of four exotic *Phytophthora sp.* (*P. foliorum*, *P. kernoviave*, *P. nemerosa* and *P. ramorum*) to other *Phytophthora spp.* endemic to Oregon nurseries. This work will provide the first direct comparison of these phytophthora species, studied side-by-side, in controlled comparative experiments.

4. Effect of container architecture on growth and water use efficiency of coarse and fine rooted trees. PI: Dr Carolyn Scagel, Research Plant Physiologist, Agricultural Research Service (ARS), Corvallis, OR.

This project is a continuation of research started in 2007 that looked at container architecture on root and shoot growth of tree liners. This study has compared various liner and three-gallon container types using the same species and cultural practices to determine if there are any positive benefits in growth or water use in coarse or fine root tree liners. The study will continue to evaluate post-liner growth in traditional containers to determine if benefits from container architecture continue through the production cycle and sale.

5. Quantifying winter discharge of controlled-release fertilizers to determine environmental impact and plant uptake. PI: James Owen, Nursery Research and Extension, North Willamette R&E Center, Aurora, OR.

The objectives of this project are (1) to determine the extent of nitrogen and phosphorus release from controlled release fertilizers (CRFs) throughout fall and winter months in the Willamette Valley, (2) evaluate uptake of nutrients of deciduous and evergreen plants throughout fall and winter months and (3) assess environmental impact of nitrogen and phosphorus release from CRFs used in the Willamette Valley during the fall and winter months on experimental nursery sites.

6. Managing overhead irrigation to minimize phytophthora diseases: Phase II. PI: Jennifer L. Parke, Dept of Crop and Soil Science, OSU, Corvallis, OR.

Project objectives are (1) determine the duration of leaf wetness required for infection by four phytophthora species, (2) examine diurnal patterns of sporulation in *P. citricola*, and other phytophthora species, (3) determine if timing of irrigation affects disease incidence, (4) determine periods of natural leaf wetness due to dewfall and irrigation under actual nursery conditions and (5) based on the findings in Objective 1-4, determine the optimal timing of irrigation to reduce phytophthora inoculum in irrigation water.

7. Development of new, superior cultivars of landscape plants. PI: Harold Pellett, Landscape Plant Development Center (LPDC), Mound MN in cooperation with Sarah Doane, LPDC, Aurora, OR.

The LPDC is a non-profit corporation established in 1990. The objective of the LPDC is to develop stress tolerant landscape plants for all geographic climates. It is an ongoing program. Research activities of the Center are accomplished as a cooperative effort of participating scientists at many institutions.

8. Assessment of treatments for prevention of crown gall and leafy gall in herbaceous perennials. PI: Melodie Putman, Extension Plant Clinic, OSU, Corvallis, OR.

The PI will evaluate treatments for prevention of *Rhodococcus fascians* causing leafy galls and/or shoot proliferation on as many as 122 different host plants and *Agrobacterium tumefaciens* causing crown gall on a wide host range. *Argyranthemum spp.* will be used for the study. The plants will be sprayed with a known concentration of several agents followed by a challenge with the pathogens. If effective controls are found that can be applied in the nursery industry, they should result in reduced incidence of crown gall and leafy gall in herbaceous perennials.

9. Improved mineral nutrition for micropropagation of woody nursery crops. PI: Barbara M. Reed, USDA-ARS National Clonal Germplasm Repository, Corvallis.

Individual plant cultivars differ in their cultural requirements for plant nutrients in micropropagation. Developing growth media for specific and unique cultivars is time consuming, difficult and expensive. New media

is usually developed by making minor modifications to "standard" media formulations. This is not useful for recalcitrant species whose growth is suboptimal.

A systematic approach will be applied to efficiently evaluate the components in a typical formulation to grow *Pyrus spp.* (pear). The researchers will test a new medium optimization system to determine its applicability to woody plants. If the system is successful with pear, it could be applied to other difficult to propagate woody cultivars of interest such as apple, plum, peach, maple etc.

10. Investigation into the seasonal biology and economic importance of eriophyid mites in Oregon nurseries. PI: Robin Rosetta, N. Willamette R&E Center.

The investigators will continue with observations made during 2007 on eriophyid mite populations, their phenology and control in nursery systems, in order to make informed decisions about timely control measures. The ultimate result is to reduce pesticide use. The researchers will determine the seasonal phenology of eriophyid mites in the Oregon nursery industry and link the phenology with early warning signs on different plant species in order to establish management guidelines.

11. Influence of nitrogen fertilizer application rate and formulation on cold hardiness of deciduous and evergreen *Rhododendron* cultivars. PI: Dr Carolyn F. Scagel, USDA-ARS-HCRL, Corvallis.

The investigators will compare cold hardiness of roots, stems, and buds of plants fertilized using different N rates and methods. The results from the proposed research will be used to develop guidelines that allow growers to alter nutrient management strategies in nursery stock prone to winter injury.

12. Determining plant and cultural conditions to optimize storm water reduction of Oregon green roofs. PI: Erin Shroll and Dr David R. Sandrock, Dept of Horticulture, OSU.

Plant-based technologies are increasingly being used to help improve storm water management through planting of vegetative surfaces on rooftops of buildings in cities such as Portland. Little information is available on plant materials and water management practices that do well in this novel environment. This study will (1) provide information on plant choices for green roofs in the Pacific NW, (2) help us to better understand the complex physical environment facing plants on a roof, (3) provide best irrigation practices for green roofs in the PNW and (4) further determine the potential impact of green roofs on storm water runoff reduction.

Rootball diameter specifications for evergreens going to Colorado

It was brought to our attention that pyramidal, broad upright coniferous evergreens going into Colorado have a minimum ball diameter requirement that is different from that set by the American Standard for Nursery Stock. Colorado has determined that a larger ball diameter on coniferous evergreens is needed in order to ensure that the trees will establish and survive under the cold, arid growing conditions found in that state. The following table is found in the Rules and Regulations of the Colorado Nursery Act and refers specifically to pyramidal, broad upright coniferous evergreens such as pine, spruce and fir. If shipping to Colorado from Oregon, you will need to adhere to these standards. The second table is excerpted from the American Standard for Nursery Stock and is the recommended minimum ball sizes for conifers which are being grown in the nursery under favorable growing conditions and which have received the proper cultural treatment to develop a well branched root system.

For Colorado, the minimum ball diameter shall be determined by measuring both the height and caliper of the tree and determining the minimum ball diameter from each of the following two tables. The required minimum ball diameter for the tree shall be the larger of these two diameters.

HEIGHT	MIN BALL DIAMETER	CALIPER	MIN. BALL DIAMETER
1 1/2 –2 ft	12 in	1/2 TO 3/4 in	12 in
2 to 3 ft	14 in	3/4 to 1 in	14 in
3 to 4 ft	16 in	1 to 1 1/4 in	16 in
4 to 5 ft	18 in	1 1/4 to 1 1/2 in	18 in
5 to 6 ft	20 in	1 1/2 to 1 3/4 in	20 in
6 to 7 ft	24 in	1 3/4 in to 2 in	24 in
7 to 8 ft	26 in	2 to 2 1/2 in	26 in
8 to 9 ft	28 in	2 1/2 in to 3 in	28 in
9 to 10 ft	32 in	3 to 3 1/2 in	32 in
10 to 12 ft	36 in	3 1/2 to 4 in	36 in
12 to 14 ft	40 in	4 to 4 1/2 in	42 in
14 to 16 ft	54 in	4 1/2 to 5 in	48 in
16 to 18 ft	70 in	5 to 5 1/2 in	54 in
18 to 20 ft	84 in	5 1/2 to 6 in	57 in
		6 to 7 in	60 in
		7 to 8 in	70 in
		8 to 9 in	80 in

Ball sizes-Type 6 columnar coniferous evergreens from the American Standard for Nursery Stock¹

REGULAR GROWING		RAPID GROWING	
HEIGHT	MIN BALL DIA	HEIGHT	MIN BALL DIAMETER
12 in	10 in	12 in	8 in
18 in	10 in	2 ft	9 in
2 ft	12 in	3 ft	9 in
3 ft	13 in	3 ft	11 in
4 ft	14 in	4 ft	12 in
5 ft	16 in	5 ft	14 in
6 ft	18 in	6 ft	16 in
7 ft	20 in		
8 ft	22 in		
9 ft	24 in		
10 ft	27 in		
12 ft	30 in		
14 ft	33 in		
16 ft	36 in		
18 ft	40 in		

1. Rapid growing kinds such as: *Thuja orientalis*, *Juniperus communis* ‘Hibernica.’

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Cereal leaf beetle (CLB) certification

California requires CLB certification in order to ship Austrian (Pinus nigra), red (P. resinosa) and Scotch (P. sylvestris) pine into their state. Pines originating from some southern Oregon counties certified free of CLB can enter California with a 'certificate of origin' issued by ODA. These three species grown elsewhere in Oregon are not certified by ODA unless they are fumigated with methyl bromide or are one inch or less in caliper. All other Pinus spp. shipped into California do not require CLB certification.

In order to ship these three pine species into Nevada via California without a certificate of origin, the nursery must have a signed transit compliance agreement on file with the California border station. ODA issues these agreements every October.

For more details on these or other domestic or foreign shipping matters please contact your local ODA horticulturist. (See "Shipping pine" on page 2.)