Ornamental Research News

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PHYSIOLOGY

Why loblolly bay won't grow in deep sand
Dr. R.C. Beeson Jr., Ornamental Horticulturist

Loblolly bay *(Gordonia lasianthus* (L.) Ellis) is a native tree with showy white flowers which bloom throughout the summer. Demand for this species has increased due to its flowering habit and native classification. Though its natural habitat is wetlands, some nurserymen and homeowners try to grow this tree in well-drained sands, often without success. This problem was brought to my attention when container-grown trees transplanted into deep sand failed to grow under adequate production practices. Trees appeared healthy but roots had gall formations characteristic of root knot nematode damage. Loblolly bay was not listed as a host for nematodes, but it appeared susceptible to root knot nematodes when grown in deep sand.

To confirm the diagnosis, susceptibility of lobolly bay to five parasitic nematodes common in well-drained, sandy soils was tested. Of the nematode species tested, loblolly bay was not a host for either ring or lance nematodes. Populations of both species declined over a six-month period, indicating they could not feed. For the other nematode species of root knot, lesion and sting; populations increased tremendously over the six-month period. Shoot and root growth was not affected by sting nematodes, suggesting the damage they inflict is minimal or the time period was too short to see effects on growth. Both root knot and lesion nematodes, however, reduced shoot growth compared to trees grown in sterile soil within a six-month period. This indicates loblolly bay is very susceptible to both root knot and lesion nematodes. If loblolly bay is produced in well-drained soils, nematode populations must be controlled prior to planting. In landscapes, loblolly bay should be planted in swampy high organic soils rather than indiscriminately.

ON CENTER

How good are your records?

C.A. Conover, Center Director

One of these days you will have visitors. They may be from the EPA or the State Pesticide Division. They will want to review your records on pesticide usage. What will you have to show them? Will you have organized, concise records of what chemicals were applied, when they were applied, the rate applied and who applied them? Will you have current labels for each of the pesticides you used and proof of legal crops to which they were applied? I hope so! When fertilizing your crops, do you determine how many pots you are fertilizing with the 500 gallons of fertilizer solution containing 10 pounds of 20-20-20? Do you ever check behind your employees and remove and weigh the slow release-fertilizer at the soil surface to determine whether the rates applied are the ones you selected and if not, why not?

As of January 1, 1995 you must comply with all of the provisions of the Worker Protection Standards. One of the primary components of the Standard is the requirement for record keeping. However, the need for maintaining good records goes beyond providing proof of regulatory compliance.

Many problems associated with plant growth and development can be traced to inappropriate or excessive agrichemical use. This may be a result of overzealous growers or undocumented incompatibilities, but unless good records are kept it may be impossible to diagnose a leaf burn or root loss of a given crop.

Our plant clinic forms have spaces provided for listing the pesticides and fertilizers which have been applied to a crop when samples are brought in for diagnosis. This information frequently provides clues to the causes of the problems or rules out possible causes.

Good record keeping is as important when it comes to the use of agrichemicals as it is in the accounting office. If you use the requirements of the new Worker Protection Standard and other regulations to help track the use of pesticides and fertilizers, you may find that the additional information will help you achieve a more efficient growing operation.

In this day and age, keeping good records is one of the most important things you can do - don't forget!!!

SEASONAL WATCH

Powdery Mildew in Ornamental Crops

Dr. A. R. Chase, Professor Emeritus, Plant Pathology

Powdery mildew causes serious losses in many ornamental crops in greenhouses, shadehouses and outdoor production areas. Symptoms initially appear as small, white, powdery or dusty colonies that form in circular patches on upper or lower sides of leaves, stems, petioles and even flower petals. In severe infections, the entire surface can become covered with the white spores (conidia) of the fungal pathogen. Unless the undersides of leaves are examined, many early infections escape detection and disease can explode into an epidemic from one week to the next. Although all powdery mildew diseases are similar in many respects, the species that infects African violet will not infect roses. Powdery mildew fungi are parasites that cannot live without the presence of a susceptible plant. This makes it possible to eradicate the pathogen from a greenhouse if the infected crop is completely removed from the area. Leaving even one apparently disease-free plant is an invitation for the powdery mildew fungus to continue in that greenhouse.

Environmental monitoring, humidity control and scouting are each important portions of an integrated approach to powdery mildew control. Relative humidity can greatly influence the development of powdery mildew disease. Powdery mildew conidia can germinate over a very wide range of relative humidities but generally increases as humidity increases.

The first recorded fungicide applied to control powdery mildew, a combination of sulfur and soap, was used in 1824. Since that time, many other chemicals have been developed for control of powdery mildews. It is interesting, however, that some of the most recent techniques used to control powdery mildews in modern production of floral crops are soap products applied as sprays and elemental sulfur applied as a vapor. Sulfur can cause phytotoxicity on some plants and should be tested on all crops in the greenhouse for safety prior to extended use. Always read the label before using pesticides. Many labels recommend testing a small group of plants prior to application to an entire crop. Remember the label is the law.

NEW RESEARCH

Effect of Temperature and Daminozide on China Doll

Dr. A.R. Chase, C.A. Robinson and Dr. C.A. Conover

China doll, *Radermachera sinica*, is an evergreen tree, used as an in door houseplant that grows rapidly and becomes leggy and unsalable unless treated with growth regulators. Several research reports have been published since 1986 regarding growth of China doll as affected by temperature and fertilizer level. A series of experiments were conducted to evaluate growth of China doll under different temperature conditions to determine possible interactions between temperature and the growth regulator, daminozide. Seeds were planted at a rate of 100 per six-inch standard pot and placed in temperature control chambers

which were set to maintain soil temperatures of 68, 77, 86, or 95°F. Percent germination was determined weekly for one month, and at the end of the test period, pots were evaluated for overall appearance which took into account seedling density and size as well as color.

A second series of experiments used seedlings about three inches tall which had not been treated with any growth regulators. They were planted in 6-inch standard pots and top-dressed with a slow release fertilizer at the beginning of the test. Soil temperatures were the same as above. Half of the pots in each temperature were treated with daminozide at the recommended rate and half with water. Plant height was determined after one month and the percent difference in height at each temperature was calculated.

Soil temperature significantly affected germination and growth of China doll seedlings. Optimal germination and growth occurred with a soil temperature of 86°F. During the spring, plants may grow too rapidly and become unsalable without the use of growth regulators. The percent of height reduction achieved with the daminozide treatment was consistent regardless of time of year in our tests, making adjustments in rate of application apparently unnecessary. It is clear that a production schedule for China Doll seedlings must take temperature into account since the plants grew twice as fast during the spring test as they did during the winter or summer tests.

For more detailed information on this study, see Effect of temperature and daminozide on germination and growth of China Doll seedlings, by A.R. Chase, C.A. Robinson and C.A. Conover, CFREC-Apopka Research Report RH-94-1.

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