Crop/Pest Profile for Christmas Trees in Florida

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Production Facts

- In 2003, average annual grower sales from fresh choose-and-cut Florida-grown Christmas trees was $32,500/grower. With approximately 100 growers in the state, annual revenue from this crop is estimated to be $3.2 million (1,2).

- Nationally, approximately 30 million live trees are sold for the holiday season. Florida growers market approximately 150,000 trees annually, less than one percent of the national sales. There are several thousands acres dedicated to this crop in the northern half of the state, with farm acreage of several acres to nearly 100 acres (2,3).

Production Region

The choose-and-cut Christmas tree producers are located in the northern half of the state, from Interstate 4 northward. Plants typically grown for the industry grow well in either sandy or clay soils, but do not flourish on the flatwoods of the southern part of the peninsula (2).

Production Practices

Species which have been grown in Florida for use as Christmas trees include eastern redcedar (*Juniperus virginiana*), southern redcedar *(J. silicicola*), Arizona cypress (*Cupressus arizonica*), Atlantic whitecedar (*Chamaecyparis thyoides*), Ocala sand pine (*Pinus clausa* var. *clausa*), Choctawhatchee sand pine (*P. clausa* var. *immuginata*), spruce pine (*P. glabra*), shortleaf pine (*P. echinata*), slash pine (*P. elliottii* var. *elliottii*), Virginia pine (*P. virginiana*), loblolly pine (*P. taeda*) and Leyland cypress, (*x Cupressocyparis leylandii)* (2,4).

The Choctawhatchee sand pine has become the dominant tree used in Florida choose-and-cut operations. In particular, Choctawhatchee sand pine is preferred because of five features: attractive compact foliage of sheared trees; rapid growth rate; adaptability to dry, infertile sandy sites prevalent in Florida; high level of natural resistance to pine tip moth (*Rhyacionia* spp.), mushroom root rot (*Clitocybe tabescens*), and other pests; and positive and rapid growth response to commercial fertilizers (4).

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There are several state and private nurseries that provide seedlings (liners) to the industry at a reasonable fee. These are grown in long, tapered pots so that the root system is healthy and ready for quick establishment once planted. Liners are approximately one to two feet tall when placed in the ground. It is customary to plant three trees for every one that will eventually be cut and sold (3,4).

After planting the liner, approximately three or four years are required to reach saleable height and form. The trees are shaped two to three times annually with a spinning disc blade. Other species of tree may not be shaped at all, as the natural shape is desired, especially if it is potted and intended for planting after the holiday season (2).

Worker Activities. Workers would generally perform field duties that include mowing (if grass is present) and trimming the trees. Most operations are conducted by the owner and are family run organizations. There are few hired workers. On average, a person can trim about an acre of trees a day. All tractor operations are open and applicators wear personal protective equipment (2).

Insect/Mite Management

As mentioned, the Choctawhatchee sand pine is well suited to the northern Florida environment and few insects affect it greatly. More important are insects which may become active in the house of a customer once the tree is brought home (aphids) and those that impair the selection process, namely fire ants and wasps. Tip moth, scales, and spider mites are key pests on the other species of trees used in the Florida choose-and-cut operations. Grasshoppers, twig borers, and bagworms can also occasionally become problematic (2).

Aphids. The aphid of greatest concern is in the genus *Cinara*. These are large aphids with rotund bodies. Their superficial resemblance to engorged ticks has caused concern on the part of some homeowners; however, all *Cinara* spp. feed only on their host plants and are harmless to humans and pets. They can be recognized by their large (adults >1mm in length) hairy bodies. Like all insects, *Cinara* spp. have six legs (and two antennae) as opposed to eight legs on ticks. Their siphunculi are pore-like and located on flattened truncated cones, completely unlike the "tail-pipes" found on many other species of aphids. The mouthparts of *Cinara* spp. are long, extending ventrally to the abdomen of the aphids. The ultimate segment is long and lance-like (5).

Cinara spp. can live for several generations on cut Christmas trees. The infestations may arise in two different ways. Either the overwintering eggs of the aphids hatch under warm south Florida conditions, or aphids persist late in the season due to an exceptionally warm fall in the areas where the trees are grown. In either case, as soon as an infested tree begins to dry out ever so slightly, the aphids leave their feeding sites in search of a more suitable host. Aphids are capable of building up huge populations

in a short time if conditions are right, so it is possible that there could be high numbers of aphids on some cut Christmas trees (5).

Nantucket Pine Tip Moth. The Nantucket pine tip moth, *Rhyacionia frustrana*, is a serious pest of young pine in plantations, such as Christmas tree plantings. Virginia, spruce, sand pines, and also loblolly and slash pines, are hosts. Growth loss and stem deformity, caused by larvae feeding inside growing shoots, buds, and conelets, can be considerable during the first five years when most damage occurs. The increasing population of a preferred host species, loblolly pine (*Pinus taeda*), in Florida poses an ever-increasing problem of Nantucket pine tip moth infestations and four to five generations per year are possible (6,7).

Foliage discoloration occurs as needles turn from green to reddish-brown and subsequently fall off the shoot. Dead or dying branch tips, often curved or tipped, may have resin beads/flakes and fine silk webbing. Damaged parts may also be hollowed out (6).

Scales. Pine tortoise scale (*Toumeyella parvicornis*) is evident as red, half-circles with hard shells attached to the limbs, while pine needle scale (*Chionaspis pinifoliae*) has an elongate white body with a yellowish-orange tip, averaging 3 to 4 mm in length. Stunted, curled, chlorotic needles that may appear white are observed if scales are numerous. Most of the scale organisms can be suppressed with biological predators if insecticide use is minor (7).

Spider Mites. Several species of spider mite infest Christmas trees. Color varies from dark green, brown, red, and pale yellow. Silk webbing may be present in between or on needles which may be curled, mottled, and yellowish or bronze in color. Mites attack pines and cedars, especially during warm, dry weather or when insecticides have been heavily used. They can have many generations in a year (7).

Cultural Management

Size of operation largely reduces heavy pest outbreaks by providing high amounts of refugia for natural predators. Managing the area for fire ant allows natural predators to attack aphid and scale populations.

Chemical Management

Approximately three-quarters of Florida Christmas tree growers reported use of at least one insecticide including abamectin (once/year), acephate (3-4X/year), diflubenzuron (twice/year), dimethoate (once/year), malathion (once/year), and insecticidal soap (once/year) (2). Other insecticides and miticides registered for Christmas trees in 2008 in Florida were: azadirachtin, bifenazate, B.t., carbaryl, chlorpyrifos, disulfoton, esfenvalerate, etoxazole, hexythiazox, imidacloprid, oils, oxydemeton, permethrin, phosmet, propargite, pymetrozine, pyrethrins +/- rotenone, spinosad, and tebufenozide. Methoprene and hydramethylnon are available for fire ant control.

Disease Management

As mentioned previously, the Choctawhatchee sand pine is prone to few diseases. However, cedar and cypress are affected by foliage disease occasionally. Fungi reported to be a problem on these trees include *Cercospora* (needle blight), *Cercosporidium* (needle blight), *Fusarium* (pitch canker), and *Phomopsis* (needle cast).

Cultural Management

Some localized pruning is conducted when disease pressure is low. Removal of some of the inner branches helps air to circulate and reduces free moisture which encourages growth and sporulation.

Chemical Management

Approximately ninety percent of Florida Christmas tree growers reported use of at least one fungicide including chlorothalonil (twice/year), copper (1-5X/year), mancozeb (once/year), and thiophanate (twice/year) (2). Other fungicides registered for Christmas trees in 2008 in Florida were: azoxystrobin, dicloran, ferbam, mefenoxam, myclobutanil, phosphites, triflumizole, and ziram.

Weed Management

Choose-and-cut operations are necessarily designed to allow people to walk around and select trees and this also allows a mower to pass near most trees. Many growers have established bahiagrass around the trees. Potted trees may be placed in rows. All of the Christmas tree growers reported grasses as problematic, while a third also listed broadleaf weeds as key weeds (2).

Chemical Management

In addition to mowing, approximately three-quarters of the growers used glyphosate (3X/year) and a small percentage used paraquat (once/year) for spot weed control (2). Other herbicides registered for Christmas trees in 2008 in Florida were: 2,4-D, asulam, benefin, clethodim, clopyralid, fluazifop, glufosinate, hexazinone, isoxaben, oryzalin, oxyfluorfen, pelargonic acid, pendimethalin, prodiamine, pronamide, sethoxydim, simazine, sulfometuron, and triclopyr.

Key Contacts

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