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Controlling Saltcedar Leaf Beetle on Athel

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Saltcedar (*Tamarix* spp.) is a shrub or small tree that was introduced into the United States more than a century ago for erosion control. However, saltcedar has proven to be an extremely invasive and noxious plant that forms dense monocultures along rivers, streams and lakes in the western U.S. Because it is so invasive, saltcedar causes severe environmental consequences. It depletes water resources in arid regions, increases soil salinity, displaces native vegetation, and degrades wildlife habitat.

To control saltcedar, scientists with the U.S. Department of Agriculture/Agricultural Research Service (USDA/ARS) introduced saltcedar leaf beetles (*Diorhabda* spp.) into the U.S. as biological control agents. Saltcedar leaf beetles are considered desirable biological control agents because they feed only on *Tamarix* spp. and there are no plants native to North America that are closely related to tamarisks.

There is one species of exotic saltcedar called athel (*Tamarix aphylla*) that is not a target of biological control. Athel has aesthetically pleasing growth characteristics, grows to 50 feet or more, and is commonly used as a shade tree and wind break in southwestern Texas and northern Mexico. Athel grows no farther north than along the Rio Grande River in southwestern Texas.

USDA/ARS scientists found that saltcedar leaf beetles prefer the noxious saltcedar but will feed and lay eggs on athel when beetle populations are high. Their feeding causes athel leaves to turn brown and fall. Browning and leaf loss (defoliation) does not mean the tree is dead. Trees attacked by leaf beetles will grow new leaves once beetle numbers decline, although the upper branches of trees that are repeatedly defoliated may die back. Repeated defoliation may kill small trees. Saltcedar leaf beetles are present only in west and southwest Texas.

Identification and Biology

Both adult and immature saltcedar leaf beetles feed on saltcedar and athel, although most of the feeding is by the immature stages. Adult beetles are about ¼ inch long and light yellow to brownish green, though some adults can be nearly black. Light-colored individuals have dark markings on the head and thorax and a faint darker patch on each wing cover (Fig. 1).

Figure 1. Saltcedar leaf beetle adult.

Figure 2. Egg cluster.

Eggs are oval, cream to yellow, and laid in clusters (Fig. 2). Each cluster contains up to 20 eggs that are glued to the foliage.

Larvae hatch from eggs in about 5 days. Small larvae are black. Larlarger larvae have a light yellow stripe along each side of the body (Fig. 3). Larvae feed on the foliage and tender bark of new growth for about 3 weeks. Larvae and adults do not consume the entire leaf, but chew away the surface tissue, causing the remaining tissue to turn brown and finally drop from the tree (Fig. 4). Fully grown larvae crawl or drop to the ground where they enter a pupal stage.

Larvae may or may not construct a cocoon in which to pupate. The pupae are immobile, about ¼ inch long, and yellow (Fig. 5). The transformation from larva to adult requires about 1 week.

Figure 3. Larva.

Figure 4. Feeding damage.

In the southwestern regions of Texas, saltcedar leaf beetles may complete four or more generations per year. Last generation adult beetles overwinter in soil and ground litter. Beetles enter overwintering sites from October through early November. When days become longer and warmer in the spring, adult beetles emerge and mate, and the females lay eggs on new foliage of host trees. Adults generally become active in March.

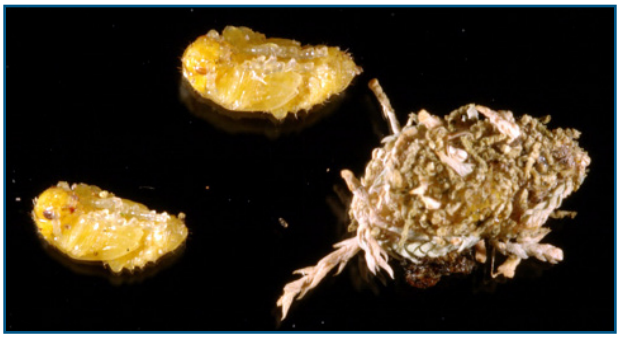

Figure 5. Pupae.

Control

Remember that saltcedar leaf beetles are attracted to and survive best on saltcedar, not athel. Saltcedar is very common along most waterways in West Texas. As the beetles continue to feed on saltcedar, these trees will become less abundant and so will the saltcedar leaf beetles. So over time, saltcedar leaf beetles should become less common and a less frequent pest of athel.

Two main methods for controlling saltcedar beetles on Athel are available—curative and preventive. Curative control involves treating an existing pest problem, while preventive control involves treating before a pest problem develops. Both methods should be equally effective for controlling saltcedar leaf beetle infestations on athel.

Curative control: This method requires frequent examination of the tree to determine whether the pest is present. Athel trees should not be noticeably affected when saltcedar leaf beetle adults first emerge in early spring because saltcedar foliage is abundant at that time. But as beetle numbers increase and saltcedar foliage becomes less abundant, beetles may begin moving to athel. This can occur any time from June to October and coincides

Table 1. Insecticides for controlling saltcedar leaf beetles on athel.	
Active ingredient	**Trade name**
Foliar application (curative)	
*azadirachtin	Azatin®XL Azatrol®
carbaryl	Sevin®
gamma-cyhalothrin	Spectracide® Triazicide® Insect Killer Concentrate
permethrin	Green Light® Conquest Insecticide Concentrate
*rosemary, peppermint and wintergreen oils	EcoExempt® IC^2
*spinosad	Ferti·lome® Borer, Bagworm, Tent Caterpillar and Leafminer Spray Green Light® Lawn and Garden Spray with Spinosad
Soil application (preventive)	
dinotefuran	Green Light® Tree and Shrub Insect Control with Safari®
imidacloprid	Bayer® Advanced Tree and Shrub Insect Control Ferti·lome® Tree and Shrub Systemic Insect Granules or Drench Ortho Max® Tree and Shrub Insect Control
*Low-impact insecticides (pesticides with minimal impact on people or on beneficial organisms).	

with the defoliation of saltcedar. Athel trees should be routinely examined for beetle adults and larvae during this time. If larvae and adults are found, a foliar pesticide application may be needed. Foliar insecticides generally provide 5 to 10 days of residual activity. Because saltcedar leaf beetles will be present throughout the summer and fall, additional insecticide applications may be needed to control them. A foliar insecticide is effective only when it thoroughly covers the tree's foliage. Therefore, it may be best to hire a commercial pesticide applicator who has the proper equipment to treat large athel trees.

Preventive control: This method may be more practical for homeowners because trees do not have to be routinely examined for pest infestations and no special pesticide application equipment is required. The need for pesticide application is based on the past history of pest infestation. A single pesticide application, preferably applied in February, is all that is needed to provide season-long control. The insecticides used are applied to the soil near the tree trunk and watered into the soil. The tree roots then absorb and circulate the insecticide throughout the tree. Depending on the size of the tree, it will take a few days to several weeks for the insecticide to move throughout the tree and begin to kill saltcedar leaf beetles feeding on the leaves.

Insecticide labels are subject to change and changes may have occurred since this publication was printed. The insecticide user is always responsible for the effects of insecticides on his own property, as well as problems caused by drift from his property to that of others. *Always carefully read and follow the instructions on the insecticide label.*

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