



TEXAS A&M FOREST SERVICE

Forest Health: Giant Asian Dodder

An exotic parasitic plant known as giant Asian dodder has recently been introduced into Texas and threatens a variety of trees and landscape plants in Houston. Giant Asian dodder (*Cuscuta japonica* Choisy) is often cultivated in Asia for medicinal products and may have been intentionally introduced into Houston for similar purposes. The problem is that it has recently escaped and invaded street trees and landscape plants in several Houston neighborhoods. First detected by City of Houston crews in August 2001, dodder has since been found in half a dozen neighborhoods, primarily in southern residential districts of the city.

Giant Asian dodder is a yellow-green vine that resembles spaghetti. It is able to parasitize a wide range of hosts including many agricultural crops (alfalfa, tomatoes, and onions, among others). Giant Asian dodder has been observed parasitizing 20 host plants in southern Texas ranging from herbaceous plants to woody ornamentals (such as live oak, crape myrtle and Ligustrum).



Dodder is usually considered an annual plant, but in Texas, especially in the southern regions, dodder is believed to survive for more than one year. Dodder plants are hardy to a temperature of 9°F. Temperatures below 9°F will effectively kill the dodder plant. Temperatures in southern Texas rarely reach 9°F, though frosts do occur. When these frosts take place, the exposed foliage of the dodder plants is affected, but the entire plant is not killed. As a result, it will be able to continue to grow and parasitize its host when warm weather returns.



Dodder is yellow in color and lacks chlorophyll, thus it requires a living host in order to obtain the nutrients needed for survival. The dodder plant obtains nutrients from the host plant by producing specialized structures called haustoria, which attach themselves to the host plant. The dodder withdraws sugars, amino acids and certain nutrients from the host at the site of contact. This parasitic action drains the host of vital resources needed for healthy growth and may weaken and eventually kill it.

Giant Asian dodder grows at a rate of 6 inches per day and can rapidly spread from one infected plant to another nearby host. It can spread to a new area by two other methods. One method of spread involves seed production. In the spring, the dodder plant produces flowers and, if fertil-

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ized (usually by self fertilization or, rarely, by wasps or other insects), the flowers yield an abundant amount of seed.

Giant Asian dodder seeds are the size of coffee grains and have thick seed coats that are impermeable to oxygen and water. This allows the seed to remain viable until suitable conditions are present for germination. Dodder seed can remain viable in the soil for a period of 10-20 years. Usually most seed that is produced will germinate the following year.

Dodder seedlings have been reported to emerge from depths of 4 inches in the soil, although usually most seedlings originate from seeds located at a depth of ½ inch or less. Once the dodder seeds germinate, a rootless and leafless seedling is produced. The seedling absorbs water initially from the soil, in a manner similar to a root. The seedling uses the soil as an anchoring point for finding a nearby host to parasitize. Giant Asian dodder seedlings can survive for a period of several weeks without a host plant. In this time period, the seedling extends in length and rotates counterclockwise, seeking a host for a source of nutrients and water. If the seedling does not find a host within a few weeks, it dies.



The second method of overland spread is by fragmentation. This occurs when sections of the dodder vine itself are removed from the main plant and become established on another host. Haustoria are produced from these fragments, establish a connection to the host to obtain necessary nutrients, and continue to grow.

The methods used to control or eradicate dodder consist of post-emergence herbicides, pre-emergence herbicides, injected herbicides, roguing, and eradicated pruning.

Pre-emergent herbicides are used to prevent dodder seeds from germinating and seedlings from parasitizing available host plants.

Post-emergent herbicides may be used in conjunction with roguing infected plants, removing host material, and eradicated pruning. The post-emergent herbicides effectively kill the dodder in place, so the potential for spread of the parasite during host plant removal and transport is minimized. When utilizing eradicated pruning, such as in managed landscapes, a barrier treatment should be implemented as well. When possible, remove plants that are within 10 feet of the dodder-infected plants in order to create a host free barrier.

Herbicides injected into infected host plants are used in some locations when large trees are being attacked by the dodder or other unique difficulties are posed in safely dealing with the disease. A large tree will increase the likelihood of fragmentation and dispersal of the parasite while the host is being felled and cut for transport. Therefore, trees injected with systemic herbicides will rapidly kill the tree and the attached parasite.

Using the control methods described above, efforts are currently underway to eradicate giant Asian dodder from known sites in Houston, before this invasive plant can become established over a wider area. If you find giant Asian dodder within the City of Houston, contact the Integrated Pest Management Coordinator with the Houston Parks and Recreation Department (Phone: 713-742-1413). For more information on dodder and its control, contact Jim Houser, Texas A&M Forest Service, Austin, Texas (e-mail jhouser@tfs.tamu.edu).