



“Pest Plants:” Invasive Exotics in Alabama

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Tropical soda apple, left and below, has the potential to become one of the most destructive plants in Alabama. Infestations are usually associated with cattle.

Exotic plants are generally defined as plant species that originated outside of North America, and have been introduced in historic times through human activities. Plants are by no means objectionable simply because they are exotic. Most of our commercial crops such as citrus, potatoes, soybeans, cotton, and the cereal grains came to us from other parts of the world. A few imported plant species have been able to naturalize or become established outside of cultivation. When their numbers increase to the point that they interfere with human activities or cause damage to natural habitats, they become invasive exotic plant species. By developing a general understanding of invasive exotics — what they are and how they behave — landowners and managers may be able to deal more effectively with established infestations or new populations as they appear.

Most noxious invasive exotic plants are well-known to Alabama landowners. This short list also includes a couple of new threats, which should be of great concern to timber and agricultural interests and to those involved in protecting our natural resources.

Invasive Exotic Species of Major Concern in Alabama

Chinese privet, *Ligustrum sinense*. Olive family. Introduced in the 1850’s as a hedge plant. Opposite leaves and masses of small black, oblong fruits are used

for identification. If not controlled, will form dense, pure stands. Related and similar Japanese privet, *L. japonicum*, and European privet, *L. vulgare*, are also invasive in some areas.

Cogongrass, *Imperata cylindrica*. Introduced in 1911 into

Mobile County, Alabama as packing material for plants from the Orient. Showy white spring blooms, dense rhizome mat, and off-center leaf mid-veins are used to identify cogongrass. Infestations burn with extremely hot fires, particularly in winter, that can



Air potato forms massive infestations, similar to kudzu (above left), but more shade-tolerant. The round, potato-like bulbils will sprout (above right), to form new plants.





Above: Flowering cogongrass in April in a Baldwin County pine forest. The off-center midvein (inset) is a good field mark for identification of cogongrass.

damage pine trees and other native vegetation. Incredibly, red forms are sold as ornamental grasses.

Japanese climbing fern, *Lygodium japonicum*. A true fern. Introduced in 1932 as an ornamental from Japan. Leaves (fronds) are to 50 feet or more. Overwhelms small trees and shrubs; alters natural fire regimes by bringing hot fires high into trees.



Above: Popcorn tree is still planted as an ornamental for fall foliage color. The ripe fruits do resemble popcorn. Below: Japanese climbing fern overwhelms and shades out small trees and shrubs.



Kudzu, *Pueraria montana* (formerly called *Pueraria lobata*). Pea family. Introduced in 1876 as an ornamental. Massive infestations are unequalled by anything in our native flora.

Popcorn tree, *Sapium sebiferum* (also seen as *Triadica sebifera*). Spurge family. Introduced in the 18th century as an oilseed or as an ornamental. Still available and planted as an ornamental. Highly aggressive in some managed pinelands; shades out and out-competes native vegetation in natural areas, particularly wetlands.

Two Recent Introductions of Significant Concern

Air potato, *Dioscorea bulbifera*. True yam family. Introduced in 1905 into south Florida as an ornamental vine. Identification is by alternate, heart-

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Below: Very few plants can compete successfully with kudzu. Many people have never seen its pretty late-summer flowers (inset).



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shaped leaves to 8 inches long, and by numerous nearly spherical potato-like "bulbils" which form along the stems in late summer-fall. Also potentially invasive: winged yam, *D. alata*, is similar with opposite leaves, winged stems, and elongate bulbils, usually in pairs. Both species are planted as ornamental vines. Large, aggressive infestations of *D. bulbifera* have become established in recent years in coastal Alabama. The eventual northern cold limit is not known. ***Air potato should not be planted as an ornamental and existing plants should be uprooted and destroyed. Plants and bulbils should be burned and not placed in compost piles.***

Tropical soda apple, *Solanum viarum*. Nightshade family. First found in south Florida in 1988. An herbaceous shrub, to 3 or 4 feet tall. Leaves have a velvety sheen to about 8 inches long, 6 inches wide, with angular lobes. Leaves, stems, and flower bases are covered with sharp, white or yellowish prickles. Flowers are white, similar to tomato flowers. Developing fruits are greenish, striped, to about 2 inches across. Mature fruits are yellow. Not yet widely established in Alabama. Sporadic infestations are often associated with cattle, manure, or hay imported from other states. ***An eradication program is underway in Alabama. If a suspected infestation of tropical soda apple is found, call your local Agricultural Extension System Office immediately.*** This species has the potential to severely damage natural habitats, and it can reduce the carrying capacity of pastureland by up to 90 percent.

Invasive exotic plants — as a group — share a number of characteristics in common. For example, as the above list makes clear, many were introduced intentionally as ornamentals. Kudzu, to cite one, created a lot of interest when it was introduced during the Centennial Exposition in Philadelphia in 1876 as an ornamental "porch vine." It soon escaped cultivation to become what it is today: a destructive, highly invasive exotic species that has changed the look of the south.

Some Shared Characteristics of Invasive Exotics

Generalists - Able to invade and populate a variety of habitats: wet, dry, salty, fresh, sunny, shady.

Superior reproductivity - Produce copious seeds or spores; many also readily reproduce vegetatively, via rhizomes or other plant parts.

Superior dispersal - Very effective seed/spore transport strategies.

Most undergo a "lag phase" after introduction before absolute numbers begin to explode. Popcorn tree, for example, was here for decades before it was fully recognized as an invasive species. It apparently lurked in the background in timberland and other natural habitats until around 1940 when populations began to increase and spread dramatically.

Human activities encourage the spread of weeds, including invasive exotic species. Drained wetlands, agricultural fields, timber management areas, roadways, lawns, and flower beds all create openings for pest plants. Recently altered areas should be closely monitored for invasive exotics.

Invasive exotic plant species often have no significant predators. When invasive exotics enter a new area, they typically do not bring their predators with them: diseases, insects, etc. In natural areas, invasive exotics — without predators — do not exist within natural ecosystems. Their numbers explode as they overwhelm native plant communities, causing catastrophic reductions in diversity. *This characteristic sets invasive exotic plant species apart, from even our worst native weeds.*

A number of weapons and defense strategies have been developed to control invasive exotics. None is effective in all situations. Two or more control methods are often combined, such as mechanical or hand-clearing, followed by chemical herbicides.

Weapons in Our Arsenal to Control Invasive Exotic Plant Species

Hand clearing. Usually practical only for small infestations.

Mechanical clearing and cultivation. Often used in combination with chemical treatments. Heavy equipment should be used carefully to minimize damage to the land. Frequent tillage can be effective against cogongrass, but guard against plant parts on equipment which can infest new areas.

Fire. Ineffective or counter-productive when used alone, fire can enhance the effectiveness of chemical treatments.

Chemical herbicides. Often the only effective option. Expensive; usually multiple applications are required. Some herbicides require a license, and some can cause collateral damage. Applications can and should be tailored to the individual situation. ***Labels should be read and carefully adhered to.***

Natural/biological controls. Research is underway — may eventually provide the best long-term solutions.

Careful agricultural practices. Agricultural and mowing equipment and the movement of soil can contribute to the spread of invasive exotic species.

Prevention. Monitor the land; learn to recognize invasive exotics when they appear; and deal with them early before they become major infestations. This is probably our best defense.

For major infestations, assistance should be considered from a qualified expert in the control of pest plants. In any case, the site should be carefully assessed. A control prescription should be developed which takes into account such things as the species to be controlled, how the land is used, proximity to animal and human habitation, slope, and hydrology.

Identification and control of invasive exotic plants is a large, complex topic. The Alabama Cooperative Extension System has several excellent publications that delve much more deeply into this important subject. One especially informative and comprehensive reference is "Exotic Pest Plants of Southeastern Forests" by Dr. James Miller of the USDA Forest Service, Southern Research Station, Auburn. This publication is also available on-line at www.invasive.org/weeds/usfsr8/. ☞