The Exotic Plant Problem:
Defending Your Lands from an Unfriendly Takeover

By James H. Miller, Southern Research Station, USDA Forest Service, Auburn University

Exotic Vines and Grasses
(Part II of a two-part series)

Exotic pest plants are marching across the southern landscape and occupying our lands. These foreign invaders—often called non-native, alien, or noxious weeds—occur as trees, shrubs, vines, and grasses. Some have been introduced into this country accidentally, but most were brought here intentionally as ornamentals or for livestock forage. Some continue to be mistakenly planted in wildlife food-plots by uninformed owners and managers. These plants arrived without their natural predators of insects and diseases that tend to keep native plants in a natural balance. These invasive weeds are now essentially free to spread without too much opposition, except from control measures applied by landowners and managers trying to defend their property from an unfriendly takeover.

Other Treatments

Overgrazing is a way to reduce the vigor of palatable alien plants like kudzu, but this rarely yields eradication and may spread seeds (now occurring with tropical soda apple). Mechanical treatments and prescribed burning can assist eradication measures, but are limited in effectiveness. Mechanical root raking and disking can actually spread or aggravate a problem when dealing with plants having runners. Prescribed burning does not control runners and usually only kills small aboveground shoots, not the roots or runners, providing only temporary aboveground control.

Although ineffective by themselves, both mechanical and burning treatments can give added kill of herbicide-weakened plants and have a place in an integrated pest management program. Prescribed burning can kill or stimulate seed germination of troublesome plants permitting effective herbicide control of germinants. Burning can also prepare the site for effective herbicide applications by clearing debris and revealing application hazards, such as old wells and pits. Disking and root raking, if applied correctly, can dislodge herbicide-damaged woody roots and large runners, leaving them to dry and rot. It is however important that herbicide applications following burning or disking be delayed to permit adequate resprouting of target plants for maximum herbicide uptake and effectiveness. It is also important to take steps to prevent erosion when using mechanical and burning treatments. For example, burning in late winter just before spring leaf-out, minimizes the period of bare soil.

An eradication program for infestations of troublesome plants usually takes several years and surveillance for many more years to check for seed germination or new invasions. Doing this in a planned manner, and being persistent can protect your lands and the lands you manage from being choked out by useless alien plants. In this way, native plants and forest productivity can be safeguarded and wildlife can continue to have suitable habitat.

Exotic Vine Control

Exotic vines are some of the most troublesome invaders because they form some of the densest infestations. Kudzu, Chinese wisteria, and Japanese climbing fern can overtop even mature forests, while Japanese honeysuckle can form dense cover below tree canopies. Reforestation after harvesting infested stands requires high-cost treatments. A relative newcomer is Japanese climbing fern, which is extending its range rapidly by wind-blown spores. It can be found along forest roads, margins, and even within dense forest cover.

Kudzu (*Pueraria montana*)

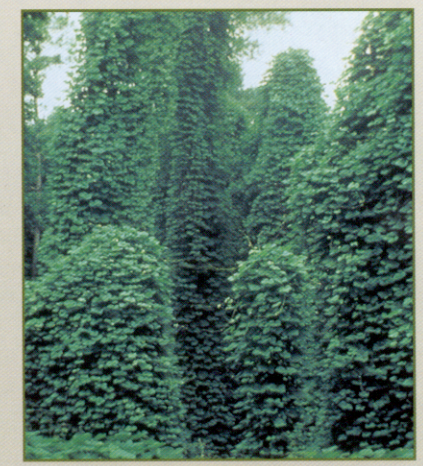
Nature: Semi-woody legume vine that spreads by vine growth, rhizomes, and seeds.

Origin: Introduced from Japan and China into MS, AL, GA, TN, NC, SC, and FL.

Range: Occurs on roadsides, fields, and forests throughout the Southeast and scattered north to IL and across to CT.

Uses: Erosion control, livestock feed, and folk art.

Herbicide control: Apply foliar sprays of Tordon 101 as a 3 % solution (12 ounces in 3-gal. sprayer) or Tordon K at 2% solution (8 ounces in 3-gal. sprayer), or Garlon 4 at 4% solution (15 ounces in 3-gal. sprayer) in water with a wetting agent and wet foliage until run-off in July to Oct. for successive years. When using Tordon, rainfall must occur within 6 days after application for needed soil activation. The soil activity of Tordon herbicides can kill or damage plants having roots within the treated area. Other options provide partial control and may be useful in specific situations. Specific for legume species and relatively safe to other plants, apply Transline as a 0.2% solutions in water (1 ounce in a 3-gal. sprayer) to thoroughly wet all leaves and stems in July to Sept. To treat kudzu in young pine plantations, apply Escort from 2-4 oz. per acre (0.6-1.2 dry ounces in 3-gal. sprayer) to foliage from July to September.



Kudzu

Japanese honeysuckle (*Lonicera japonica*)

Nature: Shade-tolerant, climbing and trailing semi-woody vine with semi-evergreen leaves that are opposite on the stem. It spreads by stolons and seeds. Forms dense cover after timber harvest to hinder regeneration in areas.

Origin: Introduced from Japan.

Range: Eastern U.S.

Uses: Valued as deer browse in Piedmont and erosion control.

Herbicide control: Apply Escort at 2 oz per acre (0.6 dry ounces in 3-gal. sprayer) in water and a wetting agent in May to June when pine tolerance is needed. Apply Accord or Roundup as a 2% solution in water (8 ounces in a 3-gal. sprayer) with a wetting agent to the leaves in middle to late summer, keeping spray off desirable plants.

Japanese Honeysuckle

Chinese wisteria (*Wisteria sinensis*)

Nature: Semi-woody, legume vine (or shrub) that spreads by rooting vine growth and less so by seeds. One of three species in the SE with one other being exotic but rare, Japanese wisteria (*Wisteria floribunda*), while the native or naturalized American Wisteria (*Wisteria frutescens*) is the more frequent but does not form extensive infestations like the exotics.

Origin: Introduced from Asia.

Range: Piedmont and Coastal Plain from TX to PA.

Uses: Traditional Southern porch vine.

Chinese Wisteria

Herbicide control: Apply foliar sprays of Tordon 101 as a 3 % solution (12 ounces in 3-gal. sprayer), Tordon K at 2% solution (8 ounces in 3-gal. sprayer), or Garlon 4 at 4% solution (15 ounces in 3-gal. sprayer) in water with a wetting agent and wet foliage until run-off in July to Oct. for successive years.

Japanese climbing fern (*Lygodium japonicum*)

Nature: Delicate viney fern with lacy finely-divided leaves and green to orange to black wiry vines, climbs and twines to cover and smother shrubs and trees. One of three species of climbing fern in the SE (the others-American climbing fern (*Lygodium palmatum*) and the exotic, old world climbing fern (*Lygodium microphyllum*) in FL-have once-divided leaves). All perennial plants from creeping rhizomes.

Origin: Native to Asia and tropical Australia. Introduced from Japan.

Range: Currently found scattered throughout TX up to AR and across to NC and FL.

Japanese Climbing Fern

Uses: Ornamental.

Herbicide control: Apply Accord, Roundup, or Garlon 4 as 2% solutions (8 ounces in a 3-gal. sprayer) or Arsenal AC as a 1% solution (4 ounces in a 3-gal. sprayer) in water with a wetting agent to thoroughly wet all leaves in July to Oct. Damage to surrounding plants may occur with these herbicides.

Trumpet creeper (*Campsis radicans*)

Nature: Although not an alien plant, this native species can spread under forest cover to become a nuisance. A trailing or climbing vine, with many small-toothed leaflets in paired rows on a leaf stalk with a leaflet at the end. Trumpet-shaped orange to red flowers appear in summer yielding long pods.

Origin: Native to U.S.

Range: Throughout Eastern U.S.

Uses: Widely used as an ornamental vine.

Herbicide control: Apply Arsenal AC as a 1% solution (4 ounces in a 3-gal. sprayer) or Accord as a 2% solution (8 ounces in a 3-gal. sprayer) (or combination of the two) in water with a wetting agent to thoroughly wet all foliage in June through July with multiple applications to regrowth. Do not treat during times of severe drought.

Exotic Grass Control

Exotic grasses have become one of the most insidious problems in the field of wildlife management. Most were imported and are still bred for livestock forage and are often considered naturalized. Other than Bahiagrass having limited value for turkey, imported pasture grasses have little wildlife value and totally dominate lands once established, leaving no room for native plants. Exotic grasses continue to spread and increasingly reside along highway right-of-ways and thus gain access to adjoining lands. Exotic grasses also present severe competition when establishing forest plantations on abandoned row-crop and pasturelands in the Conservation Reserve Program.

Cogongrass or japgrass (*Imperata cylindrica*)

Nature: Dense, erect perennial grass that spreads by prolific seed production and rhizome movement in fill-dirt. Has wide yellowish-green leaves with off-center midveins and finely saw-toothed margins. Spreads by wind-blown seeds in early summer. Invades roadsides, fields, new forests and under forest canopies yielding circular infestations.

Origin: Native to Southeast Asia and listed as the World's Seventh Worst Weed.

Range: Found in all MS and FL, lower half of AL, and isolated infestations in lower TX, GA and SC. Statewide eradication programs in GA and LA have been apparently successful, with a containment program soon to start in AL.

Uses: Improved forage initially projected but without success, and initially for soil stabilization.

Herbicide control: Apply Accord or Roundup as a 2% solution (8 ounces in a 3-gal. sprayer) or Arsenal AC as a 1% solution (4 ounces in a 3-gal. sprayer) (or combination of the two) in water with a wetting agent to thoroughly wet all foliage in Sept. or Oct. with multiple applications to regrowth. Apply these herbicides in spring before flowering to suppress seed production to prevent spread.

Japanese Grass

Cogongrass

Nepalese browntop

(*Microstegium vimineum*)

Nature: Dense, mat-forming annual grass that roots at nodes and is shade tolerant and occupies various habitats including creek banks, floodplains, forest roadsides and trails, damp fields, and swamps. Consolidates occupation and spreads by prolific seed production in late summer.

Origin: Native to temperate and tropical Asia, it was introduced near Knoxville, TN around 1919.

Range: Eastern U.S.

Uses: None

Herbicide control: Apply Accord, Roundup, or Vantage as 2% solutions in water (8 ounces in a 3-gal. sprayer) with a wetting agent in late summer. Repeat for several years to control abundant germinating seeds.

Bermudagrass (*Cynodon dactylon*), Tall fescue (*Lolium arundinaceum*), Bahiagrass (*Paspalum notatum*), and Johnsongrass (*Sorghum halepense*)

Nature: All these grasses have been widely planted and continue to provide excellent forage for cattle, horses and sheep, but can present problems for wildlife managers, forest landowners and right-of-way managers. They are difficult to control when converting old pastures to tree crops or wildlife habitat and continue to increase along right-of-ways to the exclusion of any native plants.

Johnson's Grass

Tall Fescue

Origin: Introduced from the Mediterranean area and Africa, and now widely distributed most everywhere in the world.

Uses: Improved pasture for livestock production. Bermudagrass is a turfgrass also. Fescue is commonly planted for wildlife openings and soil stabilization, but cannot be contained. Johnsongrass is now only a troublesome weed with limited use of seeds by birds.

Herbicide control:

Bermudagrass – Broadcast apply a mixture of Arsenal AC at 20-24 oz. + Roundup at 1 qt in 25 gal. water per acre on actively growing grass in late summer (consult the label for spray additives).

Fescue - Apply a mixture of Plateau at 10-12 oz. + Roundup at 1 qt in 20 gal. water per acre in late summer or spring (consult the label for additives).

Bahiagrass – Apply a mixture of Oust at 2 oz. + Escort at 1 oz. in 15 gal. water per acre in spring (needs a cover crop planted as follow-up) OR Plateau at 12 oz. + Roundup at 1 qt in 15 gal. water per acre in late summer.

Johnsongrass - Arsenal AC at 10-12 ounces per acre or Accord or Roundup 2% solution plus Oust at 2 oz. per acre to actively growing grass in early summer. Other grass control herbicides that may be useful in pasture situations are Vantage, Poast, Assure, and Select.

In Part I and II of this article, I have presented exotic plants that are the most severe threat to your lands and the best herbicide controls. Yet, there are many other non-native plants that are being promoted and sold reportedly "to improve wildlife habitat." Most do provide food and cover for certain game species, but at the same time, their establishment can invite an unfriendly takeover of your lands. Many of these plants appear to "stay in place" for considerable periods, but then will take advantage of any disturbance nearby to spread. Our ideas of good plants for supplementing wildlife food and cover are in a state of change. We continue to learn more about the negative impacts of these exotic plants that have been invited into Alabama's fields and forests. It is best to be cautious at this time and learn about native plants that can be used wherever possible. We want to keep and protect Alabama's bountiful plant communities and abundant wildlife inhabitants to pass on to our children and future Alabamians.

Caution

Pesticides used improperly can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife. Use all herbicides and pesticides selectively and carefully. Follow recommended practices for the disposal of surplus herbicides and pesticides and their containers.

Author's Note: Use of trade names is for reader's information and does not constitute official endorsement or approval by the U.S. Department of Agriculture to the exclusion of any suitable product or process.

To be successful, 1. *the most effective herbicide for the species should be used,* 2. *applied using a correct method, and* 3. *applied during an optimum time period.* Only herbicides registered by the Environmental Protection Agency for forestry and rangeland use in the Southeast are discussed here. Herbicides in other use areas (such as non-cropland, right-of-way, etc.) may be just as effective, or even contain the same active ingredient of those mentioned. Read and thoroughly understand the herbicide label and its prohibitions before and during use.