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Prescriptions for Tough Vegetation Problems

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Most tough forest vegetation problems are caused by non-native plants. These foreign invaders—often called exotic, 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 for livestock forage or as ornamentals. They arrived without their natural predators of insects and diseases that tend to keep most plants in a natural balance. They are now essentially free to spread without too much opposition, except from control and eradication measures applied by landowners and managers trying to defend their property from an unfriendly takeover.

Most alien plants come to your property from their migration along right-of-ways and stream margins. Some are widely scattered by bird- and animal-dispersed seeds, while others are actually planted by unsuspecting or poorly informed landowners and land managers.

The first line of defense against an alien plant takeover is a constant surveillance of adjoining right-of-ways, stream banks, and internal roads and trails for any new arrivals. With the first sign of an unwelcome plant, effective control measures should be started. Early detection and treatment will minimize efforts and costs that come with treating well-established plants or full-blown infestations. More effort is required for successful eradication of established infestations, but it still can be accomplished with proper treatments described here.

Troublesome Plants and Effective Herbicide Treatments

If an alien plant infestation is spotted or already occurs on your land, then proper and effective eradication measures should be undertaken or spread is inevitable. Continued treatments and retreatments will probably be necessary to be successful. Most alien and troublesome plants are perennials, having extensive tough runners or roots. This means that effective herbicide applications offer the best means of containment or eradication, because herbicides can kill roots.

To be successful, the most effective herbicide for the species should be used, applied using the correct method, and during the optimum time period. Only herbicides registered by the Environmental Protection Agency for forestry use in the Southeast will be discussed here. Herbicides in other use areas (such as non-cropland, right-of-way, pastures and rangeland, 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.

Many herbicides and some target plants require the addition of a good non-ionic surfactant to the spray tank to be effective. Another important point is to always use clean water and mix your spray solution thoroughly before applying. Forgo applications during periods of severe drought as herbicide effectiveness can be greatly reduced during these times. And, always wear your personal protective equipment prescribed on the label or in supplementary materials.

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 rootraking 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 above-ground shoots, not the roots or runners, providing only temporary above-ground control.

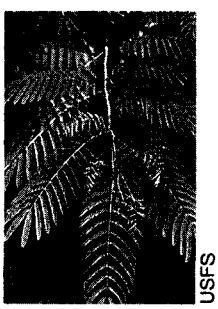
Although ineffective by themselves, both mechanical and burning treatments can give additional kill of herbicide-weakened plants and have a place in an integrated pest management program. Burning can kill or stimulate seed germination of troublesome plants permitting effective herbicide control of germinants. Prescribed 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 rootraking, if applied correctly, can dislodge herbicide-damaged woody roots and large runners, leaving them to dry and rot. It is 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 for preventing erosion when using mechanical and burning treatments.

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. By doing this in a planned manner, and being persistent, your lands and the lands you manage can be protected 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 Tree Control with Herbicides

Exotic tree species hinder reforestation as well as stand and right-of-way management. Some occur as scattered trees while others occur in dense infestations. Silktree is continually spreading along stream networks, chinaberry is appearing more in new forests, and tallowtree has extensive infestations in wet forests, replacing native species. All use roadsides for gaining access to your lands and often occur together.

Silktree or **mimosa** *(Albizia julibrissin)*
Nature: Small legume tree, growing 30-40 ft. tall, that reproduces by seeds and root sprouts. It has feathery deciduous leaves, showy pink blossoms, and smooth light brown bark.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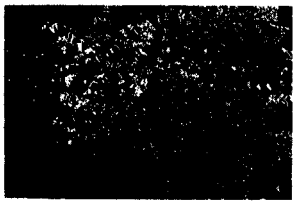
Origin: Native to Tropical America.
Range: Found along roadsides and forest borders from MS to FL and north to KY and VA.
Uses: A traditional ornamental with infestations originating from old home-site plantings.
Herbicide control: Apply Accord™, Roundup™, Garlon 3A™, or Garlon 4™ as 2% solutions in water (8 oz. in a 3-gal. sprayer) with a wetting agent to thoroughly wet all leaves in July to October. Apply Transline™ as a 0.2% solutions in water (1 ounce in a 3-gal. sprayer) to thoroughly wet all leaves, stems, and bark in July to September. Transline controls only legumes and is often safe on surrounding non-leguminous species.

Chinaberry *(Melia azedarach)*
Nature: Medium tree growing to about 50 ft. tall that spreads by prolific seeding. It has lacy, bipinnate leaves that are dark green and blue flowers that yield sticky yellow fruit.



Origin: Introduced from Asia and traditionally planted at home sites in the Southeast.
Range: Grows along forest borders and in disturbed habitat throughout the Southeast, but rare at high elevations.
Uses: Traditional ornamental, with potential uses of its extracts for natural pesticides.
Herbicide control: Apply Garlon 3A or Garlon 4 as a 2% solution in water (8 oz. in a 3-gal. sprayer) with a wetting agent to thoroughly wet all leaves in July to Sept.

Popcorn tree or tallowtree *(Sapium sebiferum)*
Nature: Shade-tolerant, small tree growing to 40 ft. tall that spreads by bird-dispersed seeds. It has light-green heart-shaped leaves that have bright fall colors, long drooping flowers, and bundles of white waxy seeds.

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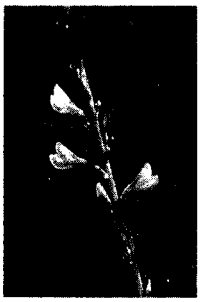
Origin: Introduced from China to the U.S. Gulf Coast in early 1900s.
Range: Occurs in the coastal plain from NC south to FL to TX with severe infestations on wet forest sites and coastal prairies in east TX to FL. Occurs as an ornamental in OK and AR and is spreading into all upland areas.
Uses: Ornamental. Waxy seeds traditionally used to make candles. Honey plant for beekeeping.
Herbicide control: Apply Garlon 4 in diesel, mineral or vegetable oil with a penetrant (check with herbicide distributor) to young bark completely around the trunk up to 16 inches above the ground in spring. Use a 5% solution (18 oz. in 3-gal. sprayer) when less than 6 inches dbh, up to a 20% solution (2 quarts in 3-gal. sprayer) when greater than 6 inches dbh. Apply Arsenal AC™ to the foliage of seedlings in July to October, as a 1% solution in water (3 oz. in 3-gal. sprayer) plus a wetting agent. For large trees, make stem injections using Arsenal AC or Garlon 3A in dilutions and cut spacings specified on the herbicide label (anytime except March and April). Apply Velpar L™ to the soil surface within 3 ft. of the stem (one squirt of spotgun per 1 inch dbh).

Exotic Shrub Control with Herbicides

Exotic shrubs often occur with exotic tree species and present similar problems. The most extensive invader of bottomland hardwoods is Chinese privet, with infestations stopping regeneration of hardwood-pine forests. Exotic shrubs have some value as wildlife forage, and are often established by misinformed hunter groups.

Bicolor *(Lespedeza bicolor)* and **Serecia lespedeza** *(Lespedeza cuneata)*
Nature: Although still planted for quail food, these plants will quickly invade surrounding forests, replacing native plants. Bicolor is a shade-tolerant, 3-leaflet, legume shrub up to 10 ft. tall that spreads by bird- and animal-dispersed seeds. Serecia is not really a shrub, but a semi-woody plant to 3 ft. tall with many small 3-leaflet leaves feathered along erect stems. Bicolor has small purple flowers and serecia has tiny cream-colored flowers during the summer. Both will form dense stands that prevent pine and hardwood regeneration or land access.

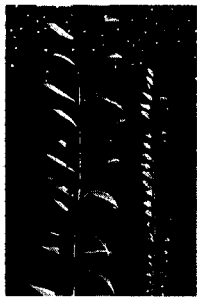
Bicolor lespedeza



Serecia lespedeza

Origin: Introduced from Japan.
Range: Found as infestations throughout the Piedmont and Coastal Plain in the Southeast.
Uses: Wildlife food for birds and soil stabilization.
Herbicide control: Apply Accord, Roundup, Garlon 3A, or Garlon 4 as 2% solutions in water (8 oz. in a 3-gal. sprayer) with a wetting agent to thoroughly wet all leaves in July to Oct. 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.

Chinese privet *(Ligustrum sinense)* and **Japanese privet** *(Ligustrum japonicum)*
Nature: Shade-tolerant, tall shrubs or small trees growing to about 30 ft. tall, with evergreen leaves, that spread by bird-dispersed seeds and by underground runners. Both species have leafy stems with opposite leaves. Chinese privet leaves are less than 1 inch long and Japanese privet leaves are 1-3 inches long. Both have clusters of small white flowers in spring, yielding large clusters of round, dark-purple berries during fall and winter. Both will form dense stands that prevent pine and hardwood regeneration or land access.



Japanese privet (left) and Chinese privet

Origin: Both introduced from China.
Range: Scattered throughout MS north to TN and KY; east to AL, GA, SC, and NC.
Uses: Traditional Southern ornamental shrubs.
Herbicide control: Apply Accord or Roundup as a 3% solution (12 oz. in a 3-gal. sprayer) or Arsenal AC as a 1% solution (4 oz. in a 3-gal. sprayer) in water with a wetting agent to thoroughly wet all leaves in August through Sept. For stems too tall for foliar sprays, apply Garlon 4 to the young bark completely around the trunk up to 16 inches above the ground in Jan. to Feb. or May to Oct. using a 20% solution (2 quarts in 3-gal. sprayer) in

diesel, mineral or vegetable oil with a penetrant (check with herbicide distributor).

Multiflora rose *(Rosa multiflora)*

Ted Bodner

Nature: An open-growing thorny rose, having been planted widely 20-40 years ago for living fences, wildlife cover, and windbreaks. It has cluster of white roses in spring, unlike our native single roses. Multiflora rose reproduces by seeds, root sprouts, and rooting at the ends of arching branches. It forms dense thickets that prevent tree regeneration and land access.
Origin: Introduced from Japan and Korea.
Range: Most of the Eastern U.S.
Uses: Some wildlife value.
Herbicide control: Apply Escort™ at 2 oz. per acre (0.6 dry oz. in 3-gal. sprayer) in water and a wetting agent in May, wetting foliage to run-off. This may damage fescue and bahiagrass.

Exotic Vine Control with Herbicides

Exotic vines are some of the most troublesome invaders because they form the most dense infestations. Kudzu and Chinese wisteria 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, which is extending its range rapidly by wind-blown spores. It can be found along forest roads, margins, and within even dense forest cover.

Kudzu *(Pueraria lobata)*
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, and SC.
Range: Occurs on roadsides, fields, and forests throughout the South-east and scattered north in OH to CT.
Uses: Erosion control, livestock feed, and folk art.

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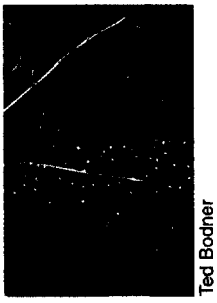
Herbicide control: Apply foliar sprays of Tordon 101™ (1 pt in 3 gal. sprayer) or Tordon K™ (0.5 pt in 3-gal. sprayer) and wet foliage until run-off in June to Sept. for successive years. Tordon herbicides are soil active and can kill or damage plants having roots within the treated area. Other options 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 oz. in 3-gal. sprayer) to foliage in July or August.

Japanese honeysuckle *(Lonicera japonica)*
Nature: Shade-tolerant, climbing and trailing semi-woody vine with evergreen leaves that spreads by stolons and seeds. This is the only exotic of seven species of honeysuckle in Southeast. Forms dense cover after harvest to prevent regeneration in areas.


Ted Bodner

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 oz. in 3-gal. sprayer) in water and a wetting agent in May when pine tolerance is needed. Apply Accord or Roundup as a 2% solution in water (8 oz. in a 3-gal. sprayer) with a wetting agent to the leaves in middle to late summer.

Chinese wisteria *(Wisteria sinensis)*
Nature: Semi-woody legume vine (or shrub) that spreads by vine growth and seeds. One of four species in the SE with one other being exotic but rare, Japanese wisteria (*Wisteria floribunda*), while the native or naturalized, *Wisteria frutescens,* is the more frequent.

Ted Bodner

Origin: Introduced from Asia.
Range: Piedmont and Coastal Plain from VA to LA and north to AR and TN.
Uses: Traditional Southern porch vine.
Herbicide control: Apply foliar sprays of Tordon 101 at 3 % solution (12 oz. in 3-gal. sprayer), Tordon K at 2% solution (8 oz. in 3-gal. sprayer), or Garlon 4 at 4% solution (15 oz. 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, climbing and twining to form clumps that can cover shrubs and trees. One of three species of climbing fern in the SE (the others—

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Lygodium palmatum in the Blue Ridge and *Lygodium microphyllum* in FL—are native). Climbing and twining perennial vine with lacy leaves, and black and wiry vines.
Origin: Introduced from Japan
Range: Currently found scattered throughout the lower halves of AL, MS, LA, SC, GA, and central FL.
Uses: Ornamental.
Herbicide control: Apply Accord, Roundup, Garlon 3A, or Garlon 4 as 2% solutions (8 oz. in a 3-gal. sprayer) or Arsenal AC as a 1% solution (4 oz. 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.

Trumpetcreeper *(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.
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 oz. in a 3-gal. sprayer) or Accord as a 2% solution (4 oz. 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 with Herbicides

Exotic grasses present severe competition for establishing forest plantations on abandoned row-crop and pasture lands.

Some of these are generally considered naturalized—like bermudagrass (Cynodon dactylon), crabgrass (Digitaria spp.), and giant fescue (Festuca arundinacea)—but are still troublesome for forestry. Most exotic grasses spread and reside along highway and utility right-of-ways since eradication treatments are not applied.

Cogongrass *(Imperata cylindrica)*
Nature: Dense, erect perennial grass that spreads by prolific seed production and rhizome movement in fill-dirt. Has light yellow-green foliage. Invades new forests and prevent establishment of planted seedlings.

Ted Bodner

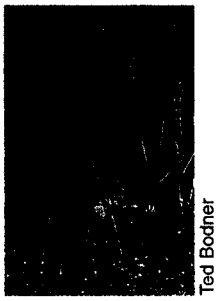
Origin: Native to Southeast Asia and listed as the world's seventh worst weed.
Range: Found in all MS, lower AL, and isolated infestations in southwest GA and SC. Eradication program in LA apparently successful.
Uses: Improved forage initially projected without success and initially for soil stabilization.
Herbicide control: Apply Arsenal AC as a 1% solution (1.3 oz. in a 3-gal. sprayer) or Accord as a 2% solution (8 oz. 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.

Japanese grass or stiltgrass *(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.

Ted Bodner

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 or Vantage™ as 2% solutions in water (8 oz. in a 3-gal. sprayer) with a wetting agent in late summer.

Bermudagrass *(Cynodon dactylon)*, **Giant fescue** *(Festuca arundinacea)*, **Bahiagrass** *(Paspalum notatum)*, and **Johnsongrass** *(Sorghum halepense)*
Nature: All these grasses have been widely planted and continue to provide excellent forage for cattle and sheep, but can present problems for forest landowners and right-of-way managers. They are difficult to control when converting old pastures to tree crops and continue to increase along right-of-ways to the exclusion of any native plants.
Origin: Introduced from the Mediterranean and Africa, and now widely distributed most everywhere in the world.
Uses: Improved pasture for livestock production. Bermuda grass is a turfgrass also. Fescue is commonly planted for wildlife openings and soil stabilization. Johnsongrass is now only a troublesome weed.


Ted Bodner
Giant fescue

Herbicide control: Apply Accord as a 2% solution in water (8 oz. in a 3-gal. sprayer) with a wetting agent in late-summer before planting trees. Then over sprays with mixtures of 1% Arsenal AC (4 oz. in a 3-gal. sprayer), 1-2 oz. Oust (0.3-0.6 dry oz. in 3-gal. sprayer), and 1 ounce Escort (0.3 dry oz. in a 3-gal. sprayer) in water and a wetting agent in May when pine tolerance is needed.

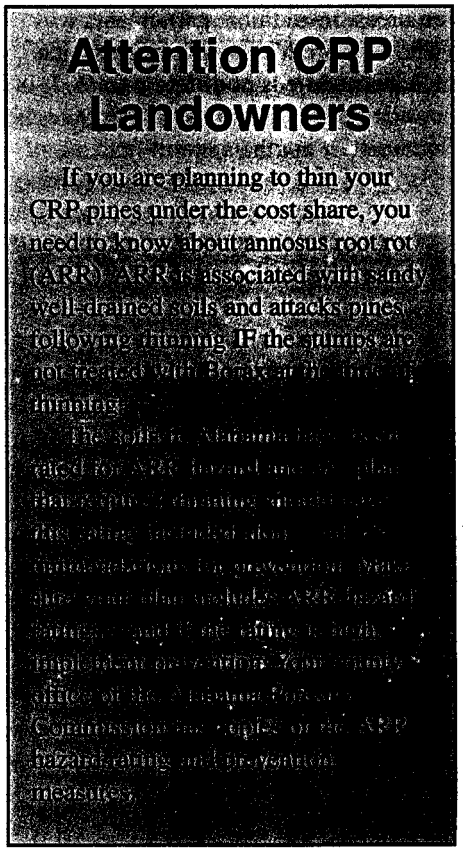
Ted Bodner
Johnsongrass

The Rehabilitation Phase

The most important final part of an eradication and rehabilitation program is the establishment of fast growing native plants that will out-compete with any surviving unwanted plants. Actually, this often means planting genetically-improved Southern pine seedlings and ensuring their initial rapid growth through cultural means. Another option is the planting of improved forage grasses, but most of these are actually introduced plants that can spread through your lands.

Native plants are increasingly becoming available for planting for rehabilitation, but limited seed supplies and the absence of well-developed establishment procedures hinders their current use. In the near future, with the commendable efforts of organizations like the Alabama Wildflower Watch, native plant seeds will become commercially available in adequate supplies. This will leave the development of proper establishment procedures as the last barrier that will require intensive study. Native plants do have native predators and require proper seed treatments to assure timely germination, thus their establishment will be more challenging than the commonly available alien plants.

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.

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