Cogongrass (*Imperata cylindrica*) has become a major problem for landowners, land managers, foresters, and governmental agencies since its introduction into Alabama. Known to many as "Japan grass," cogongrass was accidentally introduced into Alabama near Grand Bay about 1911 as seed in packing materials from Japan (4).

Purposeful introductions, primarily for forage production (1, 4), soon followed in other areas of Alabama, Mississippi, and Florida. Horticultural varieties of cogongrass continue to be sold under the name Japanese bloodgrass or Red Baron grass although its sale is illegal in the state of Alabama. Infestations of this perennial grass from Asia form exclusive colonies, displacing native vegetation with the exception of mature trees (5). Cogongrass is also a fire-adapted species, meaning that it thrives where fire is a regular occurrence (1, 4). As a result, cogongrass burns hot and readily, creating safety and property loss concerns. Wildfire in cogongrass can kill mature and seedling trees and native plants, furthering the cogongrass's domination. Rights-of-way managers loathe cogongrass for its unsightly growth habit, difficulty in mowing, and displacement of more manageable species.

Cogongrass spreads by both wind-blown seeds and underground creeping rhizomes. The rhizomes can form a dense mat in the upper 6 to 8 inches of soil and can comprise as much as 80 percent of the total plant mass (1, 2). It is the rhizome system that makes this plant particularly hard to control. Elimination of aboveground portions of the plant can be easily accomplished, but if the rhizomes are not killed or removed, rapid resprouting and regrowth will occur.

Conservative estimates put cogongrass-infested acreage between 500,000 and 1,000,000 acres in Alabama, Mississippi, and the Florida panhandle. In Alabama, cogongrass has been found in 32 counties and as far north as Winston County (Figure 8). Regionally, cogongrass can be found throughout Mississippi and Florida and in scattered infestations in Georgia, Louisiana, South Carolina, Texas, and Virginia. Once cogongrass gains a foothold in an area, it’s just a matter of time before it spreads from the infested site. Therefore, it is very important to recognize and eliminate cogongrass before it spreads and to understand ways to prevent its movement and introduction.

Identification

Cogongrass has some distinctive vegetative features that aid identification. Cogongrass rarely is found as a single plant, but it quickly forms patches or infestations, often circular in outline. Plants vary in height, even in the same patch, from 1 to 4 feet (1, 5). Taller leaves lean over in late summer. Leaves measure 1⁄2 to 1 inch wide and are commonly 12 to 30 inches long (Figure 1). They rarely have a lush green color; instead, they appear mostly yellowish green. A reddening of the leaves sometimes occurs in the fall and correlates to extreme changes in temperature. The whitish upper midrib of a mature leaf is often not centered on the blade as it is on most grasses. This makes identification somewhat easier. Also, leaf margins are rough to the touch due to tiny, sawlike serrations, a common trait of other grasses as well. This rough margin, which can cut the tongue of a grazing animal, and high silica content make cogongrass a useless forage crop. The leaves appear to arise directly from the soil, giving the impression that the plant is stemless, but short stems are present. A few short hairs can arise at the node, the place where the leaf arises from the stem, but otherwise the plant is hairless.

Another key identifying feature of cogongrass is its production of fluffy, white, plumelike seed heads in early spring (Figure 2). This spring flowering is contrary
of recently disturbed soil such as that found in road construction areas, industrial lands, mechanically site prepared forest land, and even in container-grown ornamentals. Cogongrass has never been a pest of row-crop agriculture in the United States, but the rapid adoption of reduced tillage practices could allow it to become a potential threat (Figure 6). Other industries potentially affected by cogongrass include sod production and wildlife. Increasingly, homeowners in forested areas are placed at risk by cogongrass-fueled wildfires.

Control Measures

Cogongrass control varies according to the age and rhizome mat density and depth. Young infestations are usually easier to control than are outbreaks in older, entrenched fields. For new patches, tillage can eliminate cogongrass from an area if it is continued during the course of a growing season. The initial tillage should begin in the spring (March through May) with an implement that inverts the soil to a depth of at least 6 inches. Perform additional tillage with a disk harrow or other appropriate implement every 6 to 8 weeks. Dry periods during the summer aid in the control of cogongrass. The area can be planted to a fall cover crop and then followed the next season with perennial or annual grass or broadleaf crops. Mowing can help reduce cogongrass stands, but to do so areas must be mowed frequently and at a low height.

Tillage may not be an option on many sites such as steep slopes, established tree plantings, or around dwellings. Out of dozens of herbicides tested for significant activity on cogongrass only two, the active ingredients glyphosate (Roundup®, Glypro, Accordb, etc.) and imazapyr (Arsenal, Arsenal AC, and Chopperc), have much effect on this grass (6). Even at high rates and combinations, cogongrass often regenerates within a year following a single application of either product. A minimum of two applications per year is needed with older infestations requiring 2 to 3 years of treatment to eliminate rhizomes. Glyphosate has no soil residual activity and permits planting replacement species after application. Imazapyr has both soil and foliar activity and can severely injure susceptible plant species that are planted too soon after the last treatment. Most vegetables, row crops, and ornamentals will be injured if planted within 24 months following an imazapyr application. As with all pesticides, proper handling and usage are of utmost importance. Always read and follow label directions.

Habitat

Cogongrass is opportunistic and invades a wide range of noncultivated habitats including rights-of-way, forests, pastures, orchards, and waste areas. Cogongrass thrives in full sunlight but may extend well into a mature forest stand, especially if there is no intermediate tree or shrub layer (Figure 5). Cogongrass will not grow in saturated soils but tolerates periodic flooding reasonably well. Although cogongrass will not tolerate continued soil disturbance, it is a rapid invader to most summer grasses, which flower later in the season. Cogongrass can initiate flowering at other times of the year in response to a disturbance such as herbicide application, fire, mowing, or the first hard frost (4). Seed heads range from 2 to 8 inches in length and can contain as many as 3,000 seeds. Each seed has silky, white hairs that aid in wind dispersal. Seed viability is variable, and seeds must land on bare ground for germination [3]. Rhizomes of cogongrass are white, segmented, and branched and have been found extending 48 inches below the soil surface (Figure 3). They more commonly completely occupy the upper 6 to 8 inches of the soil surface (2, 5). Rhizomes are sharp pointed and often pierce the roots of other plants and unprotected human feet and hands (Figure 4). Each rhizome segment can give rise to a new plant, which can occur with cultivation or partial herbicide control (4).
Small Area Infestations and Home Landscapes

Cogongrass in small (less than 20 foot diameter) patches can be treated with a glyphosate solution in early fall (August through October). A 2 percent solution of 41 percent active ingredient material (3 fluid ounces per gallon of water) or a 4 percent solution of a 21 percent active ingredient glyphosate (6 fluid ounces per gallon of water) sprayed on the green leaves and allowed to dry for 2 to 3 hours will kill the top growth of cogongrass. Regrowth must be treated the following spring and possibly the next fall to ensure rhizome kill. Caution: glyphosate herbicide spray mixtures should be considered nonselective when sprayed on green tissue. Keep spray and spray drift off any desirable plants. Treat larger infestations with glyphosate using a tractor-mounted boom sprayer calibrated to deliver 10 to 15 gallons of spray solution (water + herbicide) per acre. Use glyphosate at the rate of 3 to 4 pounds active ingredient per acre. This translates into 3 to 4 quarts of herbicide per acre for the 41 percent active material. Replacement species should be planted in the area following the last treatment (either in the spring or in the second fall) to suppress reinfestation. Plant crimson clover or ryegrass after the fall application of glyphosate to stabilize sloping areas through winter. Replace this cover crop with a perennial grass, such as bahiagrass, or with shrubs planted in a high-density pattern to provide shade over the area.

Rights-of-Way, Industrial Sites, and Other Noncrop Areas

Where selective treatment is not needed, tank mixes of glyphosate (3 to 4 pounds active ingredient per acre) plus imazapyr (Arsenal 1 to 4 pints per acre) are effective. Sulfometuron (Oust XPc) at 2 ounces per acre increases cogongrass control when applied with imazapyr, but it should not be applied as a stand-alone treatment. For selective treatment of cogongrass in unimproved bahiagrass and bermudagrass turf, apply Arsenal at a rate of 8 fluid ounces per acre. Do not apply imazapyr to bahiagrass after full green-up and do not apply to fields that will be grazed or cut for hay. Burning or mowing before herbicide application may increase chemical effectiveness by eliminating thatch and by causing the production of new growth, which better absorbs herbicides. A cogongrass fire is hot and fast. Proceed with extreme caution and careful planning and preparation. Always consult with local authorities on the rules concerning burning in your area.

Pine Plantations

Cogongrass management in southern pines is more difficult (Figure 7). For more effective applications, prescribe burn, if feasible, during winter before treatment to eliminate logging debris and cogongrass thatch at harvest. Chemically site prepare with Arsenal AC (2 pints per acre) or Chopper (4 pints per acre) plus glyphosate at 4 pounds active ingredient per acre in the fall before planting in late winter (at least 3 months after application). This combination may be applied aerially and should include a suitable surfactant not to exceed 0.5 percent. After planting, apply release treatments to seedling longleaf or loblolly pine that are not actively growing or initiating new buds, usually in late summer after rainfall resumes. Arsenal AC at 4 fluid ounces per acre is effective,
communities may naturally reinitiate succession after treatment. Light seeded native species are usually present in the seed bank while heavier seeded plants will gradually be deposited on a site by birds and other animals. In recent years, native plant seed and seedlings have become increasingly available for rehabilitation sowing and planting, but a limited number of species and absence of well-developed establishment procedures often hinder use. Tree nurseries operated by state forestry agencies are good sources of many species of native trees and shrubs. It is often necessary to establish fast-growing tree species during the later control phase to hinder reestablishment of cogongrass. Reestablishing native grasses and forbs is equally important. These species are available from commercial nurseries specializing in native plants. Utilize local sources when possible. Seedling native plants also can be collected and transplanted from suitable field sites. Their establishment will be more challenging than the commonly available non-native plants so often used for soil stabilization and wildlife food plots. Constant surveillance, treatment of new unwanted arrivals, and, finally, rehabilitation following control are critical to preventing reinfestation on a specific site.

References


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Use pesticides only according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label.

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