DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

Agriculture and Natural Resources

FSA2161

Cogongrass: A Potentially Invasive Weed in Arkansas

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Cogongrass, [*Imperata cylindrical* (L.) Beauv.] is considered one of the top 10 worst weeds in the world. Cogongrass is a rapidly growing perennial grass that is widely adapted throughout the southeastern U.S. It is tolerant of shade, poor soils, high salinity, moisture and drought. Cogongrass can invade pastures, natural or planted forests, riparian areas, highway rights of way, urban areas, and wetlands. It is native to Southeast Asia and was introduced into the U.S. in 1911 near Mobile, Alabama as packing material in a shipment of orange saplings. Before the 1920s it was planted in Mississippi, Alabama, and Florida for forage and for soil stabilization. It was found to be unsuitable for forage as it accumulates silica in the leaves making it unpalatable for grazing except at very immature stages of growth. Due to dense shoot emergence and allelopathic properties, it displaces desirable forages in both hay and pastures.

Currently, cogongrass infestations cover over 1 million acres in the Southeast. Infestations are most widespread in Alabama, Florida, Mississippi, and Georgia, but also occur in Louisiana, South Carolina, Texas, Virginia, and Oregon (Figure 1). In 2021, cogongrass was found on a roadside in Phillips County, Arkansas. Steps were taken to eradicate the infestation, but the proximity of infestations in neighboring states and the potential for seed spread by storm and traffic patterns make constant

Cogongrass Distribution – Southern United States

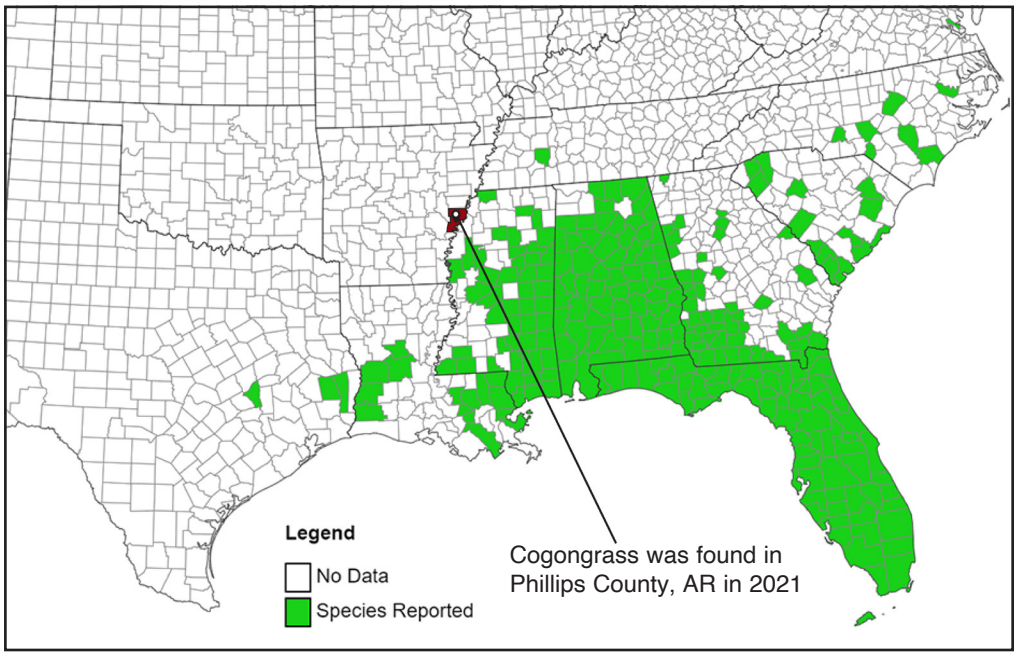

FIGURE 1. Distribution of cogongrass in the Southeast – 2010.

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surveillance necessary to prevent further establishment of this pest.

Unfortunately, cultivated selections of cogongrass are still sold by some nurseries as a reddish colored ornamental grass called Japanese bloodgrass or Red Baron bloodgrass. Unsuspecting homeowners discover that these plants can lose the red color and revert to the weedy and extremely invasive type of cogongrass that spreads into other areas of the landscape. The cultivated varieties are grown as far north as Michigan. A major concern is the potential hybridization of wild types and the cultivated forms, which could greatly expand the range of this invasive pest. ***Cogongrass and all of its ornamental cultivars are Prohibited Plants in Arkansas. It is illegal to grow, buy, barter, or give away any of these plants in the state.***

Description

Cogongrass infestations begin as circular patches that expand to crowd out existing vegetation. Evidence suggests that cogongrass is also allelopathic, meaning it produces chemicals in the soil that stunt growth of neighboring plants allowing it to outcompete neighboring vegetation.

Cogongrass colonies have a clumpy appearance (Figure 2). Plants have upright leaves that often grow 3 to 4 feet long. The leaves appear to arise directly from the ground and grow from the underground rhizomes. The leaf sheaths are overlapping giving the plant bases a rounded appearance with no apparent stem. The plants are often yellowish-green in color and may have a reddish cast in the fall before turning brown in winter. Leaves are about one inch wide with finely serrated edges. A common characteristic is the prominent white midrib that is offset to one side particularly toward the leaf tip (Figure 3). Cogongrass can have a membranous and hairy ligule at the base of the leaf or the ligule may be very small on some plants (Figure 4). The plants produce a dense mass of roots with extensive segmented rhizomes. A key time for identifying cogongrass is in winter when the circular patches often exhibit a distinct shade of brown compared to other grasses such as bermudagrass or johnsongrass.

Cogongrass spreads naturally by rhizomes and windblown seed. Burning pastures, hayfields, or woodlands in spring may increase the potential for spread as bare soil is exposed prior to cogongrass seed dispersal and distribution by wind. Seed may also be carried on vehicles, mowers, and other machinery. Rhizomes and viable vegetative plant parts may be spread through soil, on equipment, and fill dirt as well. The seed requires light for germination, which favors establishment in open and disturbed areas having little plant competition. Seedlings are frequently found in sites disturbed by clear cutting, burning, tillage, excavation, or grading.

FIGURE. 2. Cogongrass infestation. Note the leaves rising from the ground in clumps within the patch.

New plants grow quickly and begin to produce rhizomes about 4 weeks after emergence.

Unlike other warm-season grasses, cogongrass flowers at the start of the growing season often while the leaves are still dormant and brown or soon after spring growth begins (March to May). However, flowering may also occur following stresses such as frost, fire, mowing, or tillage. The feather-like seedheads range from 2 to 8 inches long. They are easily identified by the silvery or whitish silky hairs attached to the seed which create the appearance of a feathery plume (Figure 5). Each cogongrass plant can produce up to 3,000 seeds per season.

Early research suggested that cross-pollination is necessary for viable seed production. It was noted that infestations beginning from rhizomes only spread vegetatively until unrelated patches grow close enough for cross pollination to occur allowing viable seed production. But in Mississippi, seed germination from first-year cogongrass populations was over 95%. Cogongrass seed has little dormancy and research has shown it loses viability after one year.

FIGURE. 3. Cogongrass leaves have a prominent midrib offset to one side, especially toward the leaf tip.

FIGURE. 4. Cogongrass may have a large or small ligule and may or may not have a hairy leaf sheath.

FIGURE. 5. Cogongrass seedheads have a feathery plume appearance and may be 2 to 8 inches long.

Control

Effective control includes good sanitation to prevent spread of seed and rhizomes. Vehicles, ATVs, and machinery should be inspected for the fluffy seed and possible rhizome contamination after being used in infested areas. In Florida, spread along roadsides has been attributed to transport of seed and rhizomes on mowing, grading, and earth moving equipment. Use of biological controls has been largely unsuccessful.

Cogongrass does not persist under tillage and is not likely to infest cultivated fields. In areas not prone to erosion and that are free of rocks, young infestations can be controlled with repeated tillage over the season. Work in Mississippi indicated that repeated roto-tilling during the season gives effective control, but disking, moldboard plowing or infrequent tillage gave poor results. The initial tillage should begin in the spring (March through May) to a depth of at least 6 inches and should be repeated every 6 to 8 weeks. It is important to clean all equipment on site to prevent the spread of rhizomes. The site should be replanted with a suitable grass or cover crop as soon as the cogongrass infestation is under control. Mowing is not an effective control method. In Mississippi, close mowing done on a weekly or biweekly schedule in spring and summer only reduced stem numbers slightly after three years of mowing.

Cogongrass topgrowth is very flammable and can burn even when green. Dense stands of dry cogongrass burn intensely hot with temperatures that kill other vegetation including pine trees. In its native range cogongrass evolved with fire and burning stimulates its growth and spread. However, fire can be of use in control efforts for removing top growth to allow better herbicide coverage on regrowth.

Only two herbicides have been shown to be effective for controlling cogongrass. Those are glyphosate (example trade names: Roundup, Glypro, Accord, etc) and imazapyr (example trade names: Arsenal, Arsenal AC, Polaris, Polaris AC Complete, Ecomazapyr, Habitat, Chopper Gen 2, etc.). Glyphosate has only foliar activity, but imazapyr has both foliar and soil residual activity and can injure other susceptible plant species that are planted too soon after the last treatment. Tank mixes of these herbicides have not shown any increased control, however plants will show symptoms from glyphosate treatment much sooner than from imazapyr making it easier to identify skips or untreated areas. Imazapyr is more effective than glyphosate, but it's use depends

on proximity to desirable vegetation. Because of the soil activity of imazapyr, it should not be applied closer than two times the dripline diameter of desirable trees or other desirable vegetation. In general, the maximum labeled rates of either herbicide should be applied due to difficulty of controlling well-established cogongrass plants. The product label on all herbicides should be consulted for recommended rates, areas of use, and for restrictions on crop replanting or rotation. Imazapyr should be broadcast applied at 24 fl oz/acre (if using products having a 4 lb/gal. concentration) or as a spot spray of 1/2% solution (4 lb/gal. product) or 48 fl oz/A or 1% solution (2 lb/gal. product). It has been noted that cogongrass rhizomes extend about three feet beyond where upright leaves are visible, so imazapyr should be applied at least five to six feet beyond the perimeter of upright growth. A nonionic surfactant should be applied with imazapyr. If only glyphosate is used, an effective strategy is to apply a low rate (1/2% solution of 41% glyphosate) in early spring to suppress seedhead development, then follow up with a second application at the maximum labeled rate in mid-summer. Even at high rates and using tank-mix combinations, cogongrass often regenerates within a year following a single herbicide application. The most effective herbicide program begins with a fall application before the end of the growing season followed by a spring application on regrowth to kill remaining rhizomes. A minimum of two applications per year is needed, and older infestations may require 2 to 3 years of treatment to eliminate rhizomes. Cropping an infested area with Roundup Ready soybeans has shown good control in Mississippi.

If you suspect the presence of cogongrass, please notify The Arkansas Plant Inspection and Quarantine manager at (501-225-1598), the Arkansas State Plant Board http://www.plantboard.org/, or the State Plant Health Director's Office of USDA, APHIS, PPQ (501) 324-5258.

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Figure 1. Center for Invasive Species and Ecosystem Health. University of Georgia, Warnell School of Forestry and Natural Resources and College of Agricultural and Environmental Sciences. http://www.cogongrass.org/

Figure 2. Jeffrey W. Lotz, Florida Department of Agriculture and Consumer Services, Bugwood.org

Figures 3, 4 and 5. Chris Evans, River to River CWMA, Bugwood.org

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FSA2161-PD-1-2022RV