FOR185

UF UNIVERSITY of FLORIDA
IFAS Extension

A New Twist in Managing Cogongrass[1]

Rick Williams[2]

Introduction

An invasion of nonnative plants into our southern landscape continues to expand every year and goes relatively unchecked and unmonitored. Nonnative plants infest our forests, forest edges, roadsides, pastures and right-of-ways. These invasive plant infestations cause loss of productive forest areas, hinder forest activities and severely degrade wildlife habitat by replacing native plants. Invasive non-native organisms are one of the greatest threats to the natural ecosystems of the United States. According to the U.S. Fish & Wildlife Service, 42% of the nations endangered species have declined as a result of encroaching invasive species (Westbrooks 1998). Invasive species cause great economic losses, and billions of dollars are spent each year for control in agriculture and forestry, on range lands and along roadways.

An invasive species is one that displays rapid growth and spread, allowing it to establish over large areas. Sometimes these nonnative plants expand rapidly because their new environments lack the insects and diseases that keep them in check in their native countries. Many of these plants were brought over as ornamentals or as livestock forage and a few were introduced accidentally (Miller 2003).

Invasive nonnative plants are being moved around by people, wind, water, birds and other wild animals. People move invasive species by planting these nonnative plants around their homes or in their pastures. Many of these nonnative plants have small, wind-blown seed that, once established, grow rapidly into mature plants capable of producing additional seeds. Finally, some birds and animals eat the seeds or carry the seeds on their skin or fur from one location to another. One such invasive nonnative plant is cogongrass, a plant listed as a noxious weed by the Federal government and the State of Florida.

Cogongrass is considered to be one of the 10 worst weeds in the world. It is native to the warmer regions of the world. Cogongrass was accidentally introduced into Alabama about 1911 as seed in packing materials from Japan (Dickens 1974). Purposeful introductions primarily for forage production soon followed in Alabama, Mississippi and Florida (Bryson and Carter 1993). Cogongrass was introduced into Florida in the 1930s and 1940s as potential forage and for soil stabilization purposes.

1. This document is FOR185, one of a series of the School of Forest Resources and Conservation, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date May, 2008. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.

2. Associate Professor and Extension Forestry Specialist, University of Florida/IFAS, at the West Florida Research and Education Center, 5988 Hwy 90 Bldg. 4900, Milton, FL 32583.

However, people eventually realized that cogongrass was a poor forage plant and could become a serious pest. Consequently, it was placed on the noxious weed list, which prohibits new plantings (MacDonald 2006). Currently, cogongrass is estimated to infest between 500,000 and one million acres in Florida, Alabama and Mississippi. It has also been documented in Georgia, Louisiana, South Carolina, and Texas (Evans et al. 2005).

Cogongrass is an aggressive, colony-forming perennial grass. Leaf blades are narrow and erect; tips are sharp and pointed, have short fine hairs at the base, are flat and smooth above with a whitish midvein noticeably off-center, and the blade margins are finely toothed like a hack-saw blade. The flowers are white, silky and plume-like, cylindrical, and paired on unequal stalks, with each spikelet surrounded by long white hairs. Cogongrass often attains a height of 3 to 5 feet late in a growing season (Miller 2003). Cogongrass spreads primarily from rhizomes, rhizome fragments, and windborne seeds. Even a small rhizome fragment can develop into a fully functional plant. Cogongrass is highly flammable when mature and actually burns hotter than native grasses, but the roots and rhizomes are remarkably resistant to fire (Bryson and Carter 1993).

Herbicide Control Measures

For herbicide control of cogongrass, Miller (2003) recommends thoroughly wetting the leaves with a 1 percent solution of imazapyr (Arsenal® AC, Chopper® Gen II at 4 oz. per 3 gallon mix) or a 2 percent solution of a glyphosate-containing herbicide comparable to Roundup® or Accord® XRT II (8 oz. per 3 gallon mix). These herbicides should be mixed with water and a surfactant such as methylated seed oil (MSO) to improve absorption by the leaves. Miller recommends treating cogongrass in September or October. A second application may be necessary the following year before the plant produces flowers (April to May).

Several experiments were conducted at the University of Florida West Florida Research and Education Center to evaluate various herbicides used to control cogon grass. Figure 1 shows cogongrass growing in a 10-year-old longleaf pine plantation. This colony of cogongrass was treated in May 2004 with Roundup® Pro (48% active ingredient) plus Cogon-X™ at the rate of 1 quart of each per acre. That equates to 3.2 ounces of herbicide and 3.2 ounces of Cogon-X™ per gallon of water which is slightly higher than Miller's.

Figure 1. Cogongrass colony growing in a young longleaf pine stand.

Figure 2 shows the same area in Figure 1 one year after being treated with Roundup® Pro and Cogon-X™. **Note** that an application of glyphosate plus Cogon-X™ is not a release treatment for seedlings and it will damage or kill small pine trees if the mixture is sprayed on the foliage. As evident by these photos, this mixture can be used safely under larger trees as long as the foliage is not sprayed. In Figure 2 you can see that the cogongrass density has been reduced substantially and only a few stems and leaves of cogongrass remain. The Roundup® Pro plus Cogon-X™ treatment reduced the below ground rhizomes of cogongrass by 95 percent on this site. This area is still free from the dense stand of cogongrass, three years after treatment. Native plants such as blackberries are growing on the site now improving plant diversity and wildlife habitat.

In October of 2005 a replicated study was established in an area infested with cogongrass to test the effectiveness of Arsenal® AC, a glyphosate herbicide mixed with Cogon-X™ and a glyphosate herbicide without Cogon-X™ in reducing cogongrass. All three herbicides had MSO added as a surfactant. The herbicide effectiveness was determined by above ground visual observations and by measuring cogongrass root mass below ground with core samples. The soil was washed away from

the roots and they were separated into living or dead tissue. Living tissue appears whitish to pale brown with a greenish color near root junctions. Dead tissue appears dark brown or blackish and the roots are not firm.

Effectiveness of control was based upon comparing the amount of dead root material compared with the total amount of root tissue biomass. This site has an average of 8 tons per acre of below-ground cogongrass root mass. The Arsenal® AC and glyphosate provided excellent control for the entire year and the areas still has noticeable control twenty months after treatment, although cogongrass in surrounding areas may reinvade these treated areas.

Figure 2. Cogongrass colony treated with Roundup® Pro plus Cogon-X™. Note: The leaning and broken pine trees were damaged by Hurricane Ivan.

The greatest reduction of cogongrass root mass was observed for Arsenal® AC herbicide, where one year after treatment, live roots amounted to only 6 percent in the sampled cores taken from treated area. Glyphosate mixed with Cogon-X™ followed Arsenal® AC in root reduction and after one year only 11 percent of the root material was found to be alive and viable. Glyphosate herbicide alone had 35 percent live roots one year after treatment. Thus the addition of Cogon-X™ appears to improve the effectiveness of glyphosate herbicides in controlling cogongrass.

Conclusions

Cogongrass continues to be a major problem in Florida and the surrounding states woodlands, roadsides and farms. Prompt treatment with the proper herbicides when the cogongrass area is small and not unduly dense is the best alternative to controlling this plant. Complete eradication is very difficult and most areas will require additional treatments to eliminate cogongrass or keep cogongrass at a manageable level.

Recommendations to control cogongrass are to treat these infestations in the fall with glyphosate or imazapyr herbicides. These recommendations are consistent over a wide range of studies conducted across the South such as Miller (2003) and Faircloth (2005). Our studies indicate that glyphosate herbicides mixed with Cogon-X™ can be used to improve control on cogongrass. Spring treatments of glyphosate herbicides plus Cogon-X™ treatments also proved to be an effective treatment as demonstrated in Figure 2. The main point is, don't let invasive plants go untreated and continue spreading on your property. Instead, try one of the methods available to help you control them. If you have questions, contact the local county extension agent for information. As with all pesticides, handle properly and always follow the label directions.

Literature Cited

Bryson, C. T. and R. Carter. 1993. Cogongrass, *Imperata cylindrica*, in the United States. Weed Technology. 7:1005-1009.

Dickens, R. 1974. Cogongrass in Alabama after sixty years. Weed Science. 22(2):177-179.

Evans, C.W., D.J. Moorhead, C.T. Bargeron, and G.K. Douce. 2005. Identifying and

controlling cogongrass in Georgia. The Bugwood Network, The University of Georgia.

Tifton, GA BW-2005-04.

Faircloth, W. H., M. G. Patterson, J. H. Miller and D. H. Teem. 2005. Wanted dead not alive: cogongrass. Alabama A&M and Auburn

Universities, Alabama Cooperative Extension publication ANR-1241. 4 p.

MacDonald, G. E., B. J. Brecke, J. F. Gaffney, K. A. Langeland, J. A. Ferrell and B. A. Sellers. 2006. Cogongrass (Imperata cylindrica (L.) Beauv.) biology, ecology and management in Florida. SS-AGR-52, one of a series of the Agronomy Department, University of Florida, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, Gainesville, FL.

Miller, J. H. 2003. Nonnative invasive plants of southern forests: A field guide for identification and control. USDA Forest Service Southern Research Station General Technical Report SRS-62. Asheville, NC. 93 p.

Westbrooks, R. G. 1998. Invasive plants: changing the landscape of America Federal Interagency Committee for the Management of Noxious and Exotic Weeds, Washington, D.C., USA.

Trade Names

Accord® XRT II

Arsenal®AC

Chopper® Gen II

Roundup®

Roundup® Pro

Cogon-X™

PLEASE READ AND FOLLOW ALL HERBICIDE LABEL DIRECTIONS