UT Extension

PB 1792

Identification and Control Methods for Cogongrass in Tennessee

COGONGRASS (*Imperata cylindrica)*
An aggressive invader of natural and disturbed sites such as:
Pastures
Forests
Rights-of-Way

THE UNIVERSITY of TENNESSEE
INSTITUTE of AGRICULTURE

What is cogongrass?

Imperata cylindrica, also known as cogongrass, is ranked as one of the 10 worst weeds in the world. Cogongrass is a species of grass in the genus *Imperata*.

It is sometimes sold in nurseries as an ornamental cultivar called 'Red Baron' or blood grass because of the rich red color the leaves take on in the fall. However, it can lose its color and quickly become an invasive plant problem in the landscape.

Red Baron cultivar sold as an ornamental.

Cogongrass is very aggressive and has the capability of invading a range of sites including pastures; orchards; fallow fields; forests; natural areas; and highway, electrical, utility, pipeline and railroad right-of-way.

It is also capable of disrupting ecosystems, reducing wildlife habitats and decreasing tree seedling growth because of its rhizome growth habits. Stands of this grass are highly flammable and create a severe fire hazard, burning extremely hot, thus altering fire regimes.

Cogongrass infestation of a pine forest.

This grass is a federal noxious weed and is on the Tennessee Pest Plant List. Any infestation must be identified by appropriate state or federal authorities. If you think you have cogongrass on your property, please contact the TN State Department of Agriculture at 615-837-5313 or e-mail anni.self@tn.gov

Where did it come from? (and where is it going?)

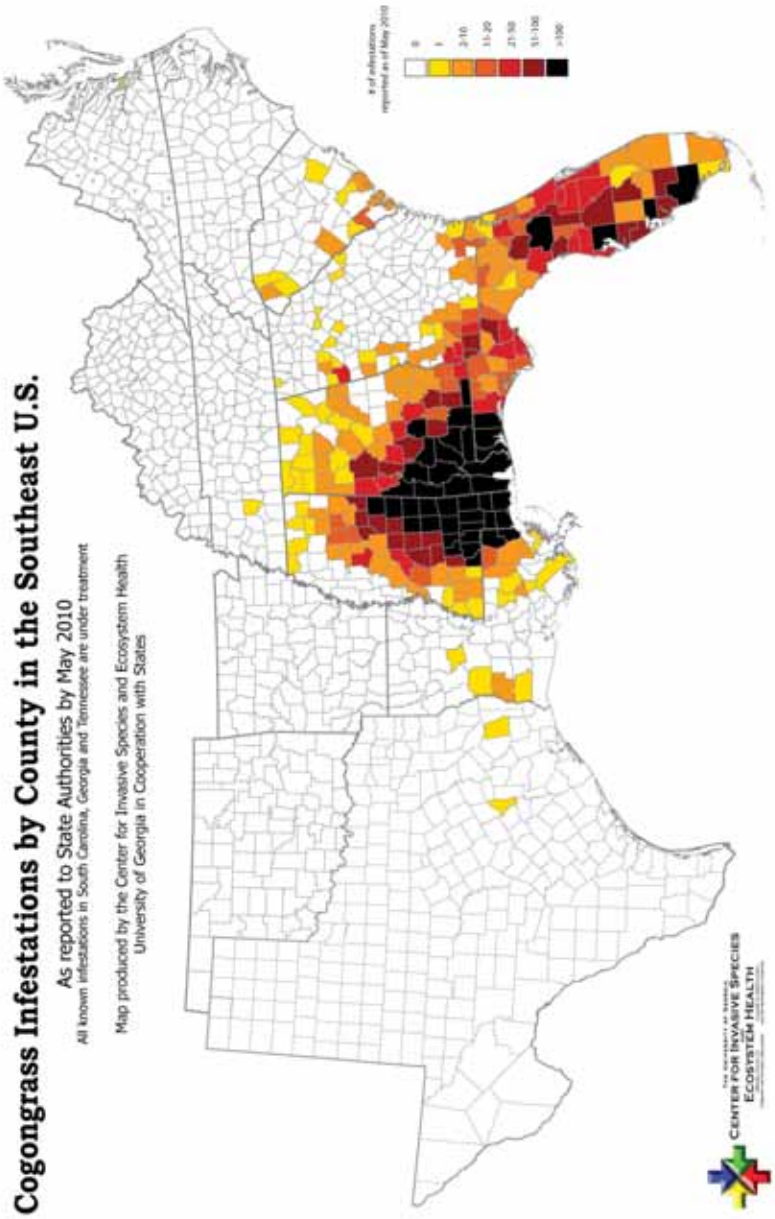
The exact center of origin for cogongrass is in doubt but it seems to have originated in east and southeast Asia, India, Micronesia, Australia and eastern and southern Africa.

It was accidently introduced into the United States in packing material in the early 1900s. It was also used intentionally as erosion control and for livestock forage.

Cogongrass sprouting from each node along a rhizome.

In the United States, cogongrass is established in Florida, Georgia, Alabama, Mississippi, Louisiana, South Carolina and Texas. More recently it has been found in one county in Tennessee that is undergoing eradication.

Cogongrass is very hardy, shade-tolerant and can thrive during droughts. It has also been found growing on sand dunes, along roadsides, in open fields and up to the edge of standing water. These characteristics make this grass extremely difficult to control.


Cogongrass Infestations by County in the Southeast U.S.
As reported to State Authorities by May 2010
All known infestations in South Carolina, Georgia and Tennessee are under treatment
Map produced by the Center for Invasive Species and Ecosystem Health
University of Georgia in Cooperation with States
# of infestations reported as of May 2010
0
1
2-10
11-20
21-50
51-100
>100
Center for Invasive Species
Ecosystem Health

How does it spread?

Cogongrass is a perennial grass that grows in very dense mats and shoots up to 6 feet high. It can reproduce both vegetatively (rhizomes) and from seed. A single plant can produce several thousand tiny seeds that can be carried great distances by the wind.

Massive, sharp-pointed rhizomes are very resistant to heat and breakage and may penetrate the soil up to 4 feet deep. Regeneration from rhizome segments as small as 1 inch has been observed, making control of this plant extremely difficult.

Seeds and rhizomes are also spread from field to field by farm equipment as well as utility equipment such as mowers along the highway system. Seeds are extremely small and are attached to a plume of long hairs. The fluffy plumed seeds can be picked up be the wind and carried long distances or can be moved by animals or humans. Over 3,000 seeds can be produced on a plant but they are relatively short lived (less than one year).

Cogongrass 'hitching' a ride on a farm tractor.

The rhizomes are the main survival structure. They are also alleopathic, in that they exude substances that retard the growth of other plants. The dense mat of rhizomes as well as the allelopathic nature of the structures gives cogongrass a great competitive advantage over other plants.

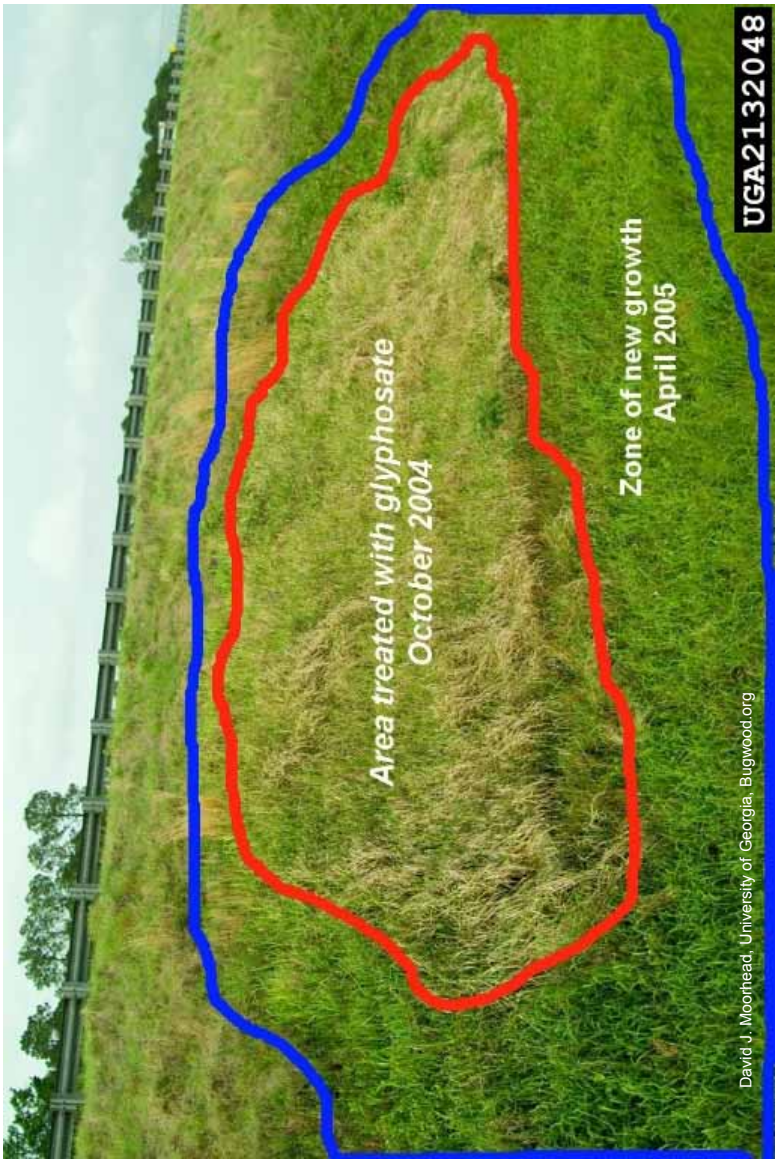
Cogongrass rhizome on the blade of a mower.

Rhizome spread along highway rights-of-way through road construction and other maintenance activities has resulted in widespread movement of this troublesome plant. Most infestations have been introduced by contaminated equipment used for site preparation, tree planting, wildlife food plot preparation, powerline installation and movement of rhizome contaminated fill dirt.

The following link has information and resources for training county road crews on protocols about identifying and reducing the spread of cogongrass during their maintenance activities. Preventing the spread is critical to combat this invasive weed.

http://www.cogongrass.org/roadcrew.cfm

Cogongrass treated in 2004, showing regrowth in 2005.



Repeated herbicide treatments are usually needed for control management. Dr. Gregory R. Armel, Assistant Professor, Extension Specialist for Invasive Weeds, University of Tennessee, recommends disking or mowing followed by an application of imazapyr 11.2 oz ai/A as being the most effective treatment.
http://www.utextension.utk.edu/publications/pbfiles/PB1785.pdf

What does cogongrass look like?

The leaves are about 1 inch wide near the base of the plant and narrow to a sharp point at the top. The margins are finely toothed and are embedded with sharp silica crystals. The main vein is a lighter color than the rest of the leaf and tends to be nearer to one side of the leaf. The upper surface is hairy near the base of the plant while the underside is usually hairless.

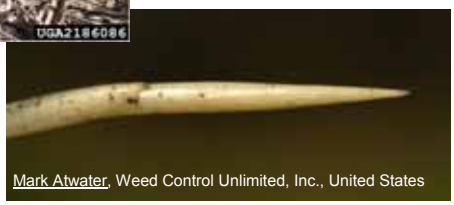
Plume-like seed head o f cogongrass.

Roots can be 3-4 feet deep, but in sandy soil 6-8 inches is typical root depth. The flowering seedhead is plume-like, cylindrical and silvery. Before the flowering seedhead is mature, observers say that the flowers have a pale purplish cast.

Main leaf vein

Leaves have an off-center, whitish midrib and finely serrated margins.

No apparent stem. Leaves seem to arise directly from the ground.



Rhizomes are white, branched, scaly and sharp at the tip.

Comparison of cogongrass to other grasses

FLOWER/ SEED HEAD

Ohio State Weed Lab Archive, The Ohio State University, Bugwood.org

BROOMSEDGE
Andropogon virginicus L.

Flower/seed head is thin and sparsely flowered, blooms late summer.

JOHNSONGRASS
Sorghum halepense (L.) Pers.

Flower/seed head—a large, open panicle with a purplish tint when mature.

VASEY GRASS
Paspalum urvillei

Flower/seed head—not fluffy, but loosely branched and spreading.

SILVER BEARDGRASS
Bothriochloa laguroides

Very similar in looks, but often somewhat branched and blooms later in the year (June-August).

Comparison of cogongrass to other grasses

PLANT BASE

BROOMSEDGE *Andropogon virginicus L.*

Plant base has a strongly bunched appearance, with very apparent stems. Base of plant is flattened.

JOHNSONGRASS *Sorghum halepense (L.) Pers.*

Plant base also rounded, but very thick in comparison to cogongrass. Plant does not appear bunched.

VASEY GRASS *Paspalum urvillei*

Thick base and flattened, often with a reddish-purple color. Plant is very bunched in appearance.

SILVER BEARDGRASS *Bothriochloa laguroides*

Plant base has a strongly bunched appearance with apparent stems.

Control measures for cogongrass

Top growth of cogongrass is easy to kill or eliminate, while it is the underground rhizomes that are more difficult to control and must be the target of eradication-control treatments.

The difficulty of cogongrass control varies according to the depth and density of the rhizome mat. Young infestations are usually easier to control than older, well-established infestations with intertwining rhizome mats deeper than 5 inches. Centers of infestations will have deeper mats and will be harder to kill (the bull's eye effect), while rhizomes extending past the edges will emerge if the soil above is not treated (the halo effect).

For newer patches, tillage can eliminate cogongrass from a small area if conducted during the course of one or more growing seasons. Small areas can also be hand dug and all plant material pulled out and destroyed.

Herbicide application of glyphosate (Accord) 35 days after treatment. Application in September using 20 gpa.

The use of tillage as a control measure on established areas is controversial, as it can spread the rhizomes. However, it also brings the deep underground rhizomes to the surface, allows them to sprout and then be killed by repeated herbicide applications.

When using this control method, take care not to spread the rhizomes to other locations on tillage equipment. Repeated treatments of herbicides will be required, especially for older infestations with rhizome mats that cover ground surfaces.

Deep disking to control underground rhizomes of cogongrass in fields.

Cogongrass is highly adapted to poor soils; however, it appears to do very well in low pH soils with low organic matter. The grass is extremely drought-tolerant due to the rhizomes, most of which are located in the upper 6-10 inches of soil, although they can be found as deep as 4 feet under the soil surface.

Cogongrass is also adapted to low-light environments (less than 5 percent sunlight), allowing the grass to compete well even in forested areas.

Control measures for cogongrass

Cogongrass can eliminate trees, shrubs and other grass species due to the denseness of the rhizomes and the ability to grow well in shade and droughty conditions.

It is also very tolerant of fire and burns 15-20 degrees C hotter than normal understory fires, also helping to eliminate trees and shrubs. Circular grassed areas often develop in forested areas where cogongrass has become established.

An integrated approach to controlling cogongrass: herbicide and fire.

Control Measure Methods Summary

- Manual—shovel and pull up the plants by hand
- Biological control—animal feeding helps somewhat-especially if it can't go to seed; also perhaps Rhizoctonia disease in the future
- Proscribed burning
- Mechanical—plowing and cultivating
- Herbicides

Biological control of cogongrass using Rhizoctonia disease (above) and with horses (below).

What else is being done ?

In response to the increasing problem of invasive plant species in Tennessee, particularly the new threat of the invasion of cogongrass from the southern states, the Tennessee Invasive Plant Species Steering Committee (TIPS) was formed in the winter of 2008.

In 2009, a project was formed in which several organizations become partners. This effort established a 41,220 square mile Cooperative Weed Management Area encompassing all of Tennessee. It constitutes a joint venture of land management and industry representatives as well as state, federal and county agencies, including all 95 counties of Tennessee.

http://eppserver.ag.utk.edu/Extension/TNCWMA/

UNIVERSITY OF TENNESSEE
Cooperative Agricultural Pest Survey

The University of Tennessee, TN Department of Agriculture and USDA Animal Plant Health Inspection Service have a joint collaboration called the Cooperative Agricultural Pest Survey (CAPS) program. This pest survey and detection program monitors for exotic and invasive insect, disease or weed species that are harmful to Tennessee agriculture, determined by a joint steering committee.

Cogongrass has been a target of surveys during routine work of the agricultural inspectors and local county Extension personnel for several years. One homeowner site with a small infestation of cogongrass is currently under eradication in Tennessee.

Who can I contact to help?

This grass is a federal noxious weed and is on the Tennessee Pest Plant List. Therefore, any infestation must be identified by the state authority.

If you think you have cogongrass on your property, please contact the TN State Department of Agriculture at 615-837-5313 or e-mail anni.self@tn.gov

Identification and eradication are key to containing the spread of this plant.

What do you need me to report ?

- Site or location of the cogongrass (county, city, street address, road name/mile marker, GPS coordinates)
- Size of infestation (approximately)
- Is it flowering?
- Your contact information

Web Resources

Entomology and Plant Pathology Department, University of Tennessee
http://web.utk.edu/~extepp/default.html

Tennessee Department of Agriculture
http://www.tennessee.gov/agriculture/

UT Crops.com IPM
http://www.utextension.utk.edu/fieldCrops/cotton/cotton_insects/ipmnewsletters.htm

UT Weed Management Information
http://forages.tennessee.edu/Page%206-%20Weed%20Management.html

Southeast Exotic Pest Plant Council
http://www.se-eppc.org/

Tennessee Exotic Pest Plant Council
http://www.tneppc.org/

Tennessee Cooperative Weed Management Area
http://eppserver.ag.utk.edu/Extension/TNCWMA/index.html#Otherdata

Cogongrass website
http://www.cogongrass.org/

AL Forestry Commission's Cogongrass Control Recommendations
http://www.alabamacogongrass.com/cogongrass/images/pdfs/cogongrass_recommendations.pdf

http://www.alabamacogongrass.com/cogongrass/images/pdfs/cogongrass_in_longleaf.pdf

Alabama Cogongrass Control Center
http://www.alabamacogongrass.com/cogongrass/

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Evans, D.W., D.J. Moorhead, D.T. Bargeron, and G.K. Douce. 2006. Field Guide to the Identification of Cogongrass: With comparisons to other commonly found grass species in the Southeast. The University of Georgia Bugwood Network, Tifton, GA. BW-2006-04. 20 p.
http://www.cogongrass.org/cogongrassid.pdf

Precautionary Statement
To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you mix, apply store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

Visit the UT Extension Web site at http://utextension.tennessee.edu

Cogongrass seeds on a tractor radiator. One plant can produce up to 3,000 seeds. Seeds can be moved long distances by wind, animals and humans to spread this invasive weed.

Cogongrass, PB 1792
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