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50-Year War against Witchweed May Be Nearing its Final Skirmish

Eradication program has reduced infested U.S. acres by more than 99 percent

LAWRENCE, Kansas – December 7, 2010 – For the past 50 years, areas near the border between North and South Carolina have been ground zero for a fierce battle in the war against a devastating weed. Federal and state officials and local farmers have been fighting the only known U.S. infestations of witchweed (*Striga asiatica*), an invasive plant that has crippled key segments of the agricultural industry in countries around the globe.

The parasitic weed is a danger to some of our nation's most important crops, including corn, sorghum, sugarcane, rice and other plants belonging to the grass family. It taps directly into a plant's root system to rob it of nutrients and moisture – dramatically reducing yields.

Unfortunately witchweed also is very prolific. A single plant can produce as many as 50,000 dust-like seeds that can live in the soil for a decade or more, making eradication a tough and time-consuming process.

But for farmers battling the weed in North and South Carolina, the end seems tantalizingly close.

"We're 99 percent of the way there," says Alan Tasker, national noxious weed program manager with the USDA's Animal and Plant Health Inspection Service (APHIS). "Not only have we halted the spread of witchweed over the past five decades, but we've dramatically reduced the number of infested acres as well – down from 450,000 in the 1950s to about 2,000 today. Our goal is to eradicate it once and for all."

Witchweed is native to Africa, India, the Middle East, and China. So how did it make its way to the Carolinas? No one is sure. A graduate student from India first spotted the slender, red-blossomed pest in 1955. He knew it well because of its devastating impact on his own country's sorghum crops.

To avert a similar disaster for U.S. growers, Congress created an eradication program in 1957 led by a USDA program that later became the Animal and Plant Health Inspection Service. The agency established a research station and farm where it developed the science-based control methods that have produced outstanding results. The successful program is built around three critical phases – each involving close collaboration among federal and state officials and farmers in the Carolinas:

1. Locate and map all infestations.

Since witchweed is so prolific, finding each and every specimen of the foot-tall plant is vital. In addition to farmers checking their own land, scouts are sent out to locate infested sites – traveling on foot and on horseback early in the program and later in all-terrain vehicles. There are penalties for failing to report the weed...and bounties paid for sightings by eligible parties. “We typically have great cooperation from local farmers, who know the danger witchweed poses to their crops,” Tasker said.

2. Quarantine.

Though tiny witchweed seeds can be spread by wind or by water, human activity is often the most common culprit. For that reason, the areas where witchweed is found are quickly quarantined. Machinery used at the site and any crops harvested with soil attached must be cleaned thoroughly to remove witchweed seeds. Growing the grass crops favored by witchweed is strictly prohibited until the pest is totally eradicated in the quarantined segment of a field. Instead, farmers must leave the land fallow or convert to crops that are harvested well above the soil line.

3. Control.

Officials remove witchweed plants when they are found and use both foliar-applied and soil-applied herbicides for deterrence. Destroying the tens of thousands of microscopic seeds that may already be in the soil, though, is tougher and more time-consuming. Some seeds sprout right away and are killed by the herbicide. But others can lurk for years.

“Allowing grassy weeds to grow in the area or planting a crop that is susceptible to witchweed can actually trigger dormant seeds to germinate, even if they are deep underground,” Tasker says. “We have examples of parasitic weed seeds remaining dormant in a fallow field for 50 years and then sprouting as soon as the preferred host crop is planted.”

One effective technique for controlling dormant seed is “suicide germination.” Ethylene gas – a natural ripening agent produced by fruits, vegetables and flowers – is injected into the soil and causes the seeds to sprout. Without a host plant to attach to, the new seedlings wither and die. Another approach is to fumigate the soil with chemicals to destroy any seeds that remain.

“Regardless of the technique used, we spot-check the fields for years afterwards to make certain the weed is truly eradicated,” Tasker says.

Dr. Tasker and Dr. Jim Westwood of Virginia Tech have organized a special day-long symposium on the witchweed program and other parasitic weeds that will be featured during the [51st annual meeting of the Weed Science Society of America](#). The event is scheduled for February 7-10, 2011, in Portland, Oregon. To register or to find out more, visit www.wssa.net.

About the Weed Science Society of America

The Weed Science Society of America, a nonprofit scientific society, was founded in 1956 to encourage and promote the development of knowledge concerning weeds and their impact on the environment. The Weed Science Society of America promotes research, education and extension outreach activities related to weeds, provides science-based information to the public and policy makers, fosters awareness of weeds and their impact on managed and natural ecosystems, and promotes cooperation among weed science organizations across the nation and around the world. For more information, visit www.wssa.net.

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