

## Witchweed: A Parasitic Pest

Witchweed (*Striga asiatica*) is a parasitic plant that attacks some of the most important crops in the United States—corn, sorghum, sugar cane, and rice. It also parasitizes certain weedy grasses.

Unlike most weeds, which merely compete with crops, parasites like witchweed do their damage more directly. They rob nutrients and moisture from host plants by tapping directly into their root system. Consequently, the host plant spends energy supporting witchweed growth at its own expense. While a parasitized host, such as a corn plant, may be less productive (produce fewer seeds or biomass), each witchweed plant produces as many as 50,000 seeds.

The exotic witchweed currently found in infested areas of the United States likely originated from somewhere in the weed's native range, which includes Africa, India, the Middle East, and China. In these native areas it has been known to completely ruin agricultural productivity in infested lands. No one is sure how or when witchweed first came to the United States; however, the slender, red-blossomed parasite was first identified on corn in 1955 by a graduate student from India who knew it as the pest that had ruined sorghum production in his country.

Witchweed will grow on grassy weeds as well as grass crops, so cotton, peanut, and soybean fields—and even home gardens or idle land—that contain these host plants may harbor the invasive pest. Witchweed emerges from the soil beginning in late June and flowers about 2 weeks later. Swollen seed pods follow within a few days, liberating thousands of dust-like seeds, which can live in the soil for at least 10 years.

Witchweed's prolific nature and its potential for devastating important American host crops led to a decision to eradicate this pest. Congress first allocated funds for this purpose in 1957. The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) established a research station and farm where it developed control methods.

Since its discovery in North and South Carolina, witchweed's spread has been halted, and the acreage supporting it has been reduced by 99 percent (from 450,000 acres to 2,000 in 2010). Eradication is

accomplished in three phases:

- Survey activities to find and map all infestations;
- Quarantine activities to prevent human spread of witchweed beyond the infested region; and,
- Control activities to prevent existing plants from producing seeds and to destroy seeds already in the soil.

These activities involve the cooperative efforts of Federal and State governments as well as the general public.

### Survey

APHIS and State cooperators have taken steps to prevent this dangerous weed from spreading from infested areas in North Carolina and South Carolina. APHIS is offering a monetary reward to eligible parties who report the weed. To learn more about the reward, call one of the phone numbers listed below in the "Report Witchweed" section. After receiving a report, officials remove the plant to stop its reproduction and then destroy seeds already in the soil.

Finding every specimen of the slender, foot-tall witchweed plant is not without obstacles. The cooperation of landowners is essential. Survey officials are sent out on foot, in vehicles, and on horseback to find infested sites. People are asked to check their own land and to report the presence of witchweed to an agricultural extension agent or witchweed personnel.

### Containment through Quarantine

Although the tiny witchweed seeds can be spread by wind or water, people are the chief means of dispersal. To prevent the spread of this pest, agricultural quarantines specify conditions for moving soil, plants, or machinery out of infested areas. The most current information regarding witchweed movement requirements can be found on APHIS' Web site at [www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/weeds/nwregs.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/nwregs.shtml).

### Eradication

Eliminating witchweed requires finding and killing plants before they go to seed and eliminating seeds already in the soil. Herbicides are used on fields infested with witchweed. Extensive field research has provided information on the best chemical or combination of chemicals for the given crop, weed species, and field conditions.

Eliminating the miniscule seeds is another important part of eradication. Some seeds die of

natural attrition or sprout only to be killed by an herbicide. However, since witchweed seeds can persist in the soil for at least a decade, efficient eradication requires accelerating the natural rate that seeds in the soil are depleted.

Witchweed seeds can be eliminated from the soil by creating conditions that cause them to germinate when no host is present. This phenomenon is known as suicidal germination. Ethylene gas, a natural ripening agent produced by fruits, vegetables, and flowers, is injected into the soil under proper environmental conditions. It stimulates seed germination, but lacking a host, the seedlings die. In addition, pesticides are used on occasion to ensure seed destruction and eliminate grassy weeds that could be witchweed hosts.

### **Eradication within Reach**

The large number of acres involved and the high seed production of this pest have made eradication a slow process. However, this parasite has been eradicated from 99 percent of the infested land. In 1995, the North Carolina Department of Agriculture assumed responsibility for eradication activities in that State. APHIS personnel continue eradication activities on the remaining infested acres in South Carolina. APHIS will continue to provide support to these States for surveys to verify eradication and for post-eradication treatments.

### **Report Witchweed**

Report any suspect witchweed plant by calling 1-800-206-WEED in North Carolina or (919) 855-7360 (APHIS' Regional Program Manager) in any other State.

### **Additional Information**

Please visit [www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/weeds/index.shtml](http://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/index.shtml) for more information on witchweed and other noxious weeds, as well as for contact information concerning additional questions. To receive updates from APHIS on witchweed and other noxious weeds, join APHIS' Plant Protection and Quarantine Stakeholder Registry at <https://web01.aphis.usda.gov/PPQStakeWeb2.nsf> and select "Noxious Weeds" as a topic of interest.

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