

# Weed Scientists Tackle Glyphosate Resistance Problems

LEXINGTON, KY.

In recent years, glyphosate-resistant weeds common north and south of Kentucky have appeared in the state. While glyphosate-resistant marestail is widespread in Kentucky, Palmer amaranth and waterhemp are new problems in certain counties. Weed scientists in the University of Kentucky College of Agriculture are exploring different methods of control for these weeds with the hopes of containing them to the already-infested areas.

Palmer amaranth and waterhemp share many similarities. They are in the pigweed family, are similar in appearance, produce male and female plants that must cross to reproduce and are problems in soybeans. Although both species have been in Kentucky for more than 10 years, problems controlling them with glyphosate did not appear until the past few years.

Fulton County growers were the first to observe control problems with Palmer amaranth. A recent survey found that glyphosate-resistant Palmer amaranth is now in all four Kentucky counties that border the Mississippi River. Native to the Southwest, Palmer amaranth has spread across the Southeast. In states to the south, it's a major problem in cotton as well as in soybeans.

"Kentucky is different from the states to our south, in that most of our grain crop acreage is rotated; so our growers have used multiple weed management practices on the fields. It's kept us from having a lot of weed problems," said Michael Barrett, UK weed scientist.

The ground in Fulton County with the greatest concentration of Palmer amaranth is in the Mississippi River bottom lands. It is not conducive to traditional Kentucky crop rotation, because annual floods from the river cover the ground well into the spring. Only soybeans have been successfully raised on this ground, said Cam Kenimer, Fulton County extension agent for agriculture and natural resources.

Palmer amaranth can grow 6- to 7-foot tall, and each plant produces thousands of seeds. The weed takes moisture away from the crop, which can reduce yields, Kenimer said.

Barrett began a weed management trial for Palmer amaranth at Jim Major's farm along the Mississippi River bottoms in Fulton County this year.

"We've had Palmer amaranth on a limited basis for the last three or four years, but last year, it mushroomed out of proportion," Major said. "It's spreading out more to upland ground."

To minimize the spread of Palmer amaranth, growers need to control the weed before it goes

to seed.

"We are still gathering information, but we should have specific recommendations shortly," Barrett said. "It appears it's going to be a combination of a soil-applied herbicide and a post-emergence herbicide. These two things should reduce the likelihood that the plant develops resistance to one of the treatments. We are considering adding information on both Palmer amaranth and waterhemp into the 2011 edition of AGR-6, Weed Control Recommendations for Kentucky Grain Crops."

Waterhemp is a common weed in the Midwest and has been in Kentucky for many years. But glyphosate-resistant plants only started showing up in the past few years. Glyphosate-resistant waterhemp is found in Western Kentucky from Hancock County to Fulton County but is most prolific along the Green and Ohio rivers. Like Palmer amaranth, glyphosate-resistant varieties may have entered the state on field equipment. In Illinois, weed specialists have found some waterhemp plants that are resistant to several different herbicide classes.

Waterhemp can be anywhere from 4- to 12-foot tall and produces thousands of seeds.

"It's a weed that can get out of hand really quickly because of the number of seeds it produces," said William Witt, UK weed scientist.

Witt and graduate student, Blake Patton, have confirmed the weed is glyphosate resistant in several counties and are working to determine if it is resistant to any other herbicides at a trial in Union County.

"Most of the worst cases of glyphosate resistance are in fields along the Ohio River, but glyphosate-resistant weeds are also found further back from the river," said Rankin Powell, Union County extension agent for agriculture and natural resources.

Witt believes growers will be able to control both Palmer amaranth and waterhemp, but it will require a different weed-management plan.

"We controlled weeds before we had products containing glyphosate, and we will control them again," he said.

While control trials for this weed are just beginning, growers can do a couple of things to minimize the spread of glyphosate-resistant waterhemp including removing the weeds while small to prevent seed production and rotate the field with corn. There is an effective herbicide against glyphosate-resistant waterhemp, but it's only available for use in corn.

Producers, who believe they have either weed on their property, should contact their county agriculture and natural resources extension agent, so the weed can be identified. Δ



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