

WEED SCIENCE
SOCIETY OF AMERICA



WSSA

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Scientists Advocate a Community-Based Approach to Herbicide Resistance Management

LAWRENCE, Kansas – JUNE 8, 2015 – Weeds resistant to glyphosate and other herbicides can become a costly problem – crowding out valuable crops, dramatically reducing yields and increasing weed control expenses. But scientists with the Weed Science Society of America (WSSA) say growers can regain the upper hand, especially if they are willing to partner with their neighbors in community-based weed control programs.

“While there are steps individual growers can take to battle herbicide resistance by varying the weed control tactics they use, seeds from resistant weeds can still be transported from farm to farm and make the job harder,” says Lee Van Wychen, Ph.D., science policy director for WSSA. “Resistance management works best when *all* farmers in a community band together – especially those who grow similar crops and face the same weed control challenges.”

Community-based approaches are proving their worth in Arkansas where cotton and soybean producers are battling herbicide-resistant Palmer amaranth, commonly known as pigweed. Pigweed grows prolifically and can have a devastating financial impact. [Studies show yield losses](#) of nearly 70 percent when pigweed is allowed to compete with cotton. In addition, a single pigweed plant can produce hundreds of thousands of seeds, making early control a must.

Some farmers are now banding together to adopt a “zero tolerance” policy towards pigweed and remove the weed wherever they can find it – hopefully before it can set seed.

One successful community-based, zero-tolerance program is found in Clay County, Arkansas. Farmers on the eastern side of the county agreed to work together to battle pigweed. With

support from Clay County extension specialists, field days and production meetings quickly became a forum for education, problem-solving and mutual encouragement.

Participating growers have broadened their weed management program to incorporate a variety of new management tactics designed to battle resistance. One example: They have reintroduced preemergence and postemergence herbicides previously abandoned in favor of the sole use of glyphosate. Spot spraying and hand weeding have become the tools of choice to remove pigweed plants that escape controls and are found amid crops, under irrigation lines, along field borders, in ditch banks and in turn rows.

Jason Norsworthy, professor of weed science at the University of Arkansas and a member of WSSA, says the results have been impressive. After a single year of the zero tolerance approach, the time required to hand-weed escaped plants in a single 50-acre cotton field dropped from 110 hours to five hours. In another field, seed presence in the soil was reduced by 65 percent in a single year. By the second year, seeds could no longer be detected.

Those positive results have kept the program on track, along with peer pressure and cheerleading by the Clay County extension team.

“We haven’t beaten pigweed, but our fields are much cleaner,” says Andy Vangilder, Clay County extension chair. “You see far less pigweed in the eastern half of the county where we have a community-based approach than you do in the western half where resistance management remains an individual effort.”

Tips for forming your own community-based program

David Ervin, professor emeritus of environmental management and economics at Portland State University and a senior fellow of the Institute for Sustainable Solutions, says farmers in other communities can learn from the Clay County experience. During a summit on herbicide resistance sponsored by WSSA, he presented several guiding principles gleaned from the efforts of similar communities around the world.

- Clearly define the boundaries of the zone where a community-based initiative will be of benefit. Know who is in and who is out.
- Plan and implement a science-based program for resistance management that responds to local conditions. There simply is no “one size fits all” approach that will apply across all weeds, all crops or all communities.
- Involve farmers and others who influence weed control in a “bottom-up” process that uses their local knowledge and assures broad participation of key stakeholders.
- Engage university researchers, extension personnel, industry experts and others who may be able to support your efforts and provide insights.

- Establish graduated sanctions that will apply to rule violators, backed by easy-to-follow procedures for resolving conflicts.
- Stay the course over time. Resistance management isn't a one-shot fix. It will require ongoing commitment to new integrated approaches to weed control.

"Most farmers are very independent and self-reliant, but if they overcome those tendencies and collaborate with their neighbors, they can produce larger net gains and help sustain their operations for the long term," Ervin says.

A University of Arkansas fact sheet on community-based, zero-tolerance Palmer amaranth initiatives is available at www.uaex.edu/publications/pdf/FSA2177.pdf. Additional information on herbicide resistance management techniques can be found at <http://wssa.net/weed/resistance>.

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 Society 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.