Idaho Innovators

Targeting herbicide resistance

By CAROL RYAN DUMAS
Capital Press

KIMBERLY, Idaho — The newest weed specialist at the University of Idaho Kimberly Research and Extension Center crossed an ocean to further his studies in weed science.

Originally from Africa, Albert Adjesiwor earned a bachelor's degree in agriculture at a university in Kumasi, Ghana, and worked at the university as a teaching and research assistant for a year.

He then set out for the University of Wyoming where he earned a master's degree in agronomy and a Ph.D. in plant science. He stayed with the university for two years as a post-doctoral researcher, primarily working in weed science and the chemical control of weeds in corn, cereal crops, dry beans and sugar beets.

In July 2020, he started with the University of Idaho to research weed control in those same crops and alfalfa.

"My primary focus is weed management in agronomic crops," he said.

The work starts indoors screening weeds for resistance. People can fill out a form online and mail him samples to have weed seed tested at no cost. He also collects seeds from crop fields in the area. If he sees a weedy field, he stops the car, gets out, collects seeds and logs the field location with GPS.

Seeds are grown out and sprayed with different herbicides at different application rates to find out which might survive and determine resistance. If survival differs among the same weed species, he can send plants to the university's laboratory or to an outside facility to extract DNA to confirm the mechanism by which they are resistant.

Carol Ryan Dumas/Capital Press

Albert Adjesiwor, University of Idaho Extension weed specialist, explains how weeds are grown and treated with herbicides to screen for resistance at the Kimberly Research and Extension Center.

"We already have some weeds that have developed resistance to some commonly used herbicides," he said.

Kochia is resistant to glyphosate, 2, 4-D, and most group 2 herbicides such as Raptor. Pigweed is resistant to photosynthesis II inhibitors, such as Metribuzin. Some populations of lambsquarters are resistant to glyphosate, and he's currently testing to determine if the weeds are resistant to additional herbicides, he said.

He's also conducting weed-control trials in alfalfa, small grains, sugar beets and dry beans this season.

Those trials include getting good weed control in first-year alfalfa. Raptor is commonly used but doesn't always provide good control, so he'll be testing for what else can be used in the establishment year. Another trial will be pre-plant options for direct seeding or no-till small cereal grains, as well as determining the best time to terminate cover crops.

He'll also be testing a chemical labeled for use in Europe in sugar beets to analyze weed control and crop-rotation restrictions. He'll also be looking for alternative herbicides that can be used in dry beans, which have limited options.

Adjesiwor is also leading a new project funded by the Idaho Wheat Commission to find out what happens to weed seed in the soil in a wheat and alfalfa rotation, whether the weeds will come back when wheat is planted or what can be used to kill the seeds in alfalfa.

He and others at the university are also trying to set up a program that includes a website growers can go to with their weed problems and get recommendations on what they can try and what it would cost. The program would include shipping chemicals to growers to try on small areas.

"We think that would be a good way to address problems growers are having," he said.

The program is aimed at providing an integrated approach, with consultation on such things as weed control, best varieties, fertilizers and irrigation, to connect growers with the right people at the university.

"Growers could test out A, B and C and see what works best. If it works, growers are going to see the results; I don't have to convince them it works," he said.

He has also teamed up with researchers at the University of Wyoming and University of Nebraska-Lincoln to develop an interactive web application that would estimate the risk of herbicide resistance. Growers could select the weed and the crop and find out what herbicides are labeled for Idaho, the level of control, the cost, the risk of resistance and implications for crop rotation.

"I would like people to reach out if they have any weed-management questions," he said.

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ALBERT ADJESIWOR

Age: 32

Occupation: Assistant professor and extension weed specialist, University of Idaho

Location: Kimberly, Idaho

Education: Bachelor's degree in agriculture, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, 2013; master's degree in agronomy, 2015, and Ph.D. in plant science, 2018, University of Wyoming, Laramie

Associations: Weed Science Society of America; Western Society of Weed Science, public relations committee, diversity and inclusion ad-hoc committee.

Family: Wife, Lucinda

For more information: Including Adjesiwor's contact information and the form to submit seeds for screening, visit: www.uidaho.edu/weed-science