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Nebraska Farm Bureau Tells EPA "Glyphosate Critical to Agriculture"

LINCOLN, NEB. – The Nebraska Farm Bureau says farmers, ranchers, and the environment would suffer the most if the Environmental Protection Agency (EPA) were to limit or take away the ability to use Glyphosate as a crop protection tool. The Nebraska Farm Bureau comments were shared with EPA in response to the agency initiating a formal review of the registration of Glyphosate under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA requires EPA to review pesticide registrations every 15 years to ensure the available science continues to support the safety of the product.

"Studies continue to show that Glyphosate is not only safe but is a critical crop protection tool that helps farmers and the environment by reducing on-farm fuel use and air emissions, through limiting the number of passes farmers need to make through a field to control weeds," said Jordan Dux, Nebraska Farm Bureau director of national affairs.

Glyphosate, an ingredient in Roundup® brand herbicides, as well as in other herbicides, was first registered for use in the U.S. in 1974. It is one of the most widely used herbicides in the United States, including use in agriculture and forestry, on lawns and gardens, and for weeds in industrial areas.

"Many of our members utilize glyphosate in their agriculture operations as it is proven to be an effective tool in controlling weeds in Nebraska's primary crops like corn, soybeans, and sugar beets. Losing access or limiting the ability to use Glyphosate would not only hurt productivity but could force farmers to look at higher cost weed control methods," said Dux. "We'll continue to relay the importance of Glyphosate as a tool for agriculture to the EPA as they work through the re-registration process."

The Nebraska Farm Bureau is a grassroots, state-wide organization dedicated to supporting farm and ranch families and working for the benefit of all Nebraskans through a wide variety of educational, service and advocacy efforts. More than 61,000 families across Nebraska are Farm Bureau members, working together to achieve rural and urban prosperity as agriculture is a key fuel to Nebraska's economy. For more information about Nebraska Farm Bureau and agriculture, visit www.nefb.org. (CAST – Friday Notes, 5/4/18)

Hole-Punch Technology Dramatically Reduces Herbicide Use

By Nathan S. Boyd and Arnold Schumann

The majority of vegetables grown in Florida are grown on raised, fumigated beds covered with plastic mulch. This production technique has been widely adopted because the combination of plastic mulch and drip tape improves water and fertility efficiency. The use of plastic mulches has many additional benefits, including improved crop quality, reduced water loss from the soil, soil temperature modification and improved weed control.

Historically, vegetable growers fumigated the soil prior to laying the plastic mulch with methyl bromide to control soil-borne pests, including weeds, insects, nematodes and pathogens. Methyl

bromide was banned and can no longer be used by vegetable growers. As a result, they have switched to a variety of alternative fumigants. The majority of the alternative fumigants do not control as broad of a spectrum of pests and tend not to adequately control broadleaf weeds and grasses.

CURRENT PRACTICES

To address the lack of weed control, a growing number of small fruit and vegetable growers have begun to apply pre-emergent herbicides to the bed top following fumigation and immediately prior to installing plastic mulch. In most cases, growers apply the herbicides using spray equipment attached to bed press equipment or they use a separate sprayer.

The pre-emergent herbicides used vary with the crop and grower preference. For example, strawberry growers tend to use Chateau (flumioxazin) or a tank mix of Goal 2XL (oxyfluorfen) and Devrinol (napropamide), whereas tomato growers tend to use products like Dual Magnum (S-metolachlor) or TriCor (metribuzin).

The use of pre-emergent herbicides can effectively reduce the number of weeds that emerge in the planting hole with the transplant. However, the herbicides are almost always applied to the entire bed top despite the fact that broadleaf and grass weeds cannot puncture the plastic mulch. This means they can only emerge where the mulch is punctured to place the vegetable transplant in the ground. As a result, a large portion of the herbicide applied is not needed because it is applied where weeds cannot emerge. Application of herbicides only where the plastic is punctured would dramatically decrease herbicide use.

PROMISING PRELIMINARY RESULTS

Combining forces to address this problem, we evaluated precision herbicide-application technology capable of applying pre-emergent herbicides only to the transplant hole at the time when the mulch is punctured in preparation for transplant. The technology can be used in conjunction with standard hole-punch equipment to reduce the number of trips in the field.

Preliminary results found that this technology can safely be used on tomatoes and peppers. No crop damage or yield reductions were observed in preliminary experiments. In addition, no differences in weed control were observed despite an 88 to 91 percent reduction in herbicide use.

Experiments are ongoing, but early results suggest that it is possible to substantially reduce herbicide use by applying the herbicides only where they are needed. This type of technology will benefit growers by reducing application costs while enhancing the environment via reduced agrochemical inputs. (VSCNews, 4/3/18)

Nathan S. Boyd is an associate professor at the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Gulf Coast Research and Education Center in Wimauma. Arnold Schumann is a professor at the UF/IFAS Citrus Research and Education Center in Lake Alfred.

University of Florida’s Institute of Food and Agricultural Sciences Researchers Will Try to Educate Public on Genetically Edited Food

Genetic improvement of food crops sometimes gets a bad rap, but University of Florida researchers plan to educate consumers so they can make more informed decisions at the grocery store.

To help combat misinformation, four UF Institute of Food and Agricultural Sciences researchers are going to better inform the public about the nuances of how plants are genetically adjusted to control traits, such as drought and disease tolerance. UF/IFAS researchers already know that providing scientific information about the safety of genetically modified crops is not enough to win public trust.

Brandon McFadden, a UF/IFAS assistant professor of food and resource economics, has received a $466,000, three-year USDA grant to lead UF/IFAS research into consumer perceptions of genetically edited crops.

The team will use focus groups to learn consumers' attitudes and knowledge of gene-edited crops. Results from focus groups will help them put together web-based national surveys, McFadden said. In the surveys, they will try to determine consumers' preferences for regulation and consumption of gene-edited crops.

In turn, the surveys will help researchers focus on their communication strategies, he said.

Researchers are doing the gene-editing project because they need a starting point to assess how much consumers know about the issue, McFadden said. One reason McFadden knows the project is needed is that he said many consumers don't understand the finer points of breeding techniques.

"Most consumers don't understand genetic improvement techniques, and gene editing is remarkably precise compared to traditional plant breeding and does not require DNA from another organism like most classical 'GMO' techniques," McFadden said. "Consumers may be more willing to accept gene-edited foods if the subtle differences between the genetic technologies are properly explained."

Here are some definitions of breeding terminology to help consumers, courtesy of Kevin Folta, UF/IFAS professor of horticultural sciences, and a member of McFadden's research team:

- Traditional breeding: Random cross-pollination between different plant types with the hope of producing a type of plant that contains many favorable traits.
- Genetic engineering: The use of specific laboratory approaches to move the genetic code associated with specific traits to new organisms.
- Gene editing: A precise technology where small, targeted genetic changes are created that emulate natural mutation.
- GMO: An imprecise description given to any attempts to use DNA techniques to improve crops.

Joining McFadden and Folta on the research grant are Joy Rumble and Katie Stofer, assistant professors in agricultural education and communication. (University of Florida, 5/29/18)

How Far Away Is Dicamba Resistance? A New Software May

Have the Answer

If you have two reasonable-sounding herbicide programs and are wondering if one might outlast the other, a new software from Syngenta should be able to give you a better idea.

It was developed by the company's full-time herbicide resistance modeler, Dr. Chun Liu, assisted by Dr. Joe Wuerffel, Syngenta Research and Development Scientist, who provided biology data and helped ensure that the biological parameters of the modeling made sense.

Originally the herbicide resistance modeling program was developed to be fairly broad spectrum, but eventually researchers narrowed its focus to Amaranthus species and specifically waterhemp, as globally it's one of the biggest herbicide resistance issues, Wuerffel explains in an interview with CropLife.

Wuerffel says that researchers started with scenarios built around Roundup Ready Xtend beans. Since more over-the-top spraying of dicamba-tolerant beans was widely expected, "we wanted to make sure that we had some data to reiterate the fact that we still need to use good residual herbicides with multiple effective sites of action to help control weeds."

The software, which was recently rolled out to Syngenta's technical service reps in the field, accounts for cultural factors such as crop rotation, and various herbicide options such as timing and rates can also be programmed in.

If you're wondering how long it will take to develop dicamba resistance in a field if a grower came in and sprayed nothing but dicamba for a few years, the program has a relatively reliable answer.

"If a grower solely relied on dicamba, had a low level of dicamba resistance and wasn't using residual herbicides, you're going to have a failure pretty quickly, says Wuerffel. "Of course, we don't have confirmed high-level of dicamba resistance in waterhemp yet. That's not to say that it couldn't happen."

Another scenario the researchers tested incorporated pre-emergence herbicides with several effective sites of action on waterhemp. The result was that dicamba became sustainable for a few more years over a couple of shots of dicamba applied at post-emergence, he says.

"Even just with a single residual herbicide with multiple effective sites of action, you're still spraying dicamba over the top a couple of times to control those weeds that escaped a pre-emergence herbicide. Then we wanted to know, what happens if we put a residual herbicide in with the dicamba? We essentially took away that second shot of dicamba. What we found is that it extended again a few more years."

The best-case scenario, he says, is going in with multiple, effective sites of action at pre-emergence, and before any weeds can come up, an applicator overlays another two herbicide sites of action. In the case of the modeling software, it used Prefix, which is a Group 14 and a Group 15.

"We found that that program was sustainable for an extremely long period of time. In that scenario, we had very few weeds that made it to the end of the season and very limited seed

production," Wuerffel says.

Because every field and scenario is going to be different, what the program can't do is give a grower an absolute prediction.

"What we can do is at least compare some herbicide programs, and say, 'We think this one is going to be more sustainable than this other program,'" he says.

WHY IT'S UNIQUE

Wuerffel explains that what sets this software apart from other modeling programs is that it accounts for every individual weed in the field by simulating a single field. If a user inputs that there are 100,000 waterhemp plants in a field, the model tracks every one of those. An array of biological parameters account for factors such as mortality rates due to insect predation of seeds and timing of germination and emergence.

Rather than rely on a back-of-a-napkin calculation, it tracks every weed, "which gives us a lot of power, and really is a very close simulation of what we might see in a real biological system like an 80-acre field," he says.

One of the challenges in trying to make decision about a weed management program, of course, comes down to economics.

"The benefit of this model is it gives us the long view," Wuerffel adds. "It's really hard to use long-term research studies that take 10 to 20 years where you look at what happens with herbicide resistance in a given field. What this herbicide resistance modeling allows us to do is use the best biological parameters we can, validate the model with what we know, and then run some different herbicide programs to try and get some relative estimate of how sustainable a program may be."

Syngenta is also using the model in research and development to make decisions on projects the company is working on in the face of multiple-resistant waterhemp and Palmer amaranth, in particular.

"The goal for us is to provide a tool that helps us look at relative comparisons of different weed management programs. Ultimately, the goal is to promote best management practices, and give us the long-term view," Wuerffel says. (CropLife, 5/29/18)

Herbicide Regulators Differ on Whether to Ban Dicamba

Arkansas and EPA take different approaches to regulating a controversial herbicide called dicamba.

As the weather heats up and summer gets into full swing, so does the growing season for major crops in America, bringing with it an enduring problem: weeds.

Chemicals that kill weeds—herbicides—serve as an important tool for weed control. The state of Arkansas, however, has banned the use of one herbicide—dicamba—during the upcoming growing season after it reportedly damaged millions of acres of crops last summer. The U.S. Environmental

Protection Agency (EPA) has also taken steps to prevent a repeat of the damage, but it did not go so far as to ban the herbicide.

Dicamba has been used for decades to kill certain groups of weeds, including dandelions, clover, and ground ivy. In 2016, EPA approved a version of the herbicide for use with crops specifically engineered to resist it. Instead of using dicamba to target weeds only before planting crops, farmers can spray it over an entire field of the resistant corn, soybeans, or cotton, and the weeds will die while the crops continue to grow.

Although this combination of herbicide and herbicide-resistant crops can effectively kill weeds later in the season, dicamba used in 2017 apparently damaged millions of crops in nearby fields.

In the early part of the season, the application of dicamba did not cause problems because it stayed where farmers sprayed it. Later in the summer—when farmers' applications coincided with high temperatures, which caused more of the herbicide to remain on the leaves of resistant soybeans instead of making it to the ground—enough of the dicamba evaporated and drifted to nearby fields to hurt the crops in those fields that were not dicamba-resistant. This drift reportedly impacted 3.6 million acres of soybeans, as well as residential gardens and other crops such as tomatoes, watermelon, cantaloupe, and pumpkins.

EPA has worked with states, universities, and dicamba manufacturers to make changes in application instructions that, if followed, the agency hopes will prevent a repeat of the damage caused in 2017. After the 2018 growing season, EPA will then make a determination about whether to allow the use of dicamba in the future.

EPA lauded its approach—which emphasized working with states and manufacturers to mitigate drift while still allowing growers to use dicamba and dicamba-resistant crops—as "an example of cooperative federalism leading to workable national level solutions."

Regulators in Arkansas, however, seem to disagree that EPA's required changes to product labels will provide a "workable solution." The state officials do not want to take the chance that dicamba will damage crops this year.

Of the states affected by dicamba drift in 2017, Arkansas had both the highest number of dicamba-injury cases reported, at nearly 1000 reports, and the largest reported soybean acreage affected, at an estimated 900,000 acres.

In response to this widespread damage, the Arkansas Legislative Council earlier this year approved a rule adopted by the Arkansas State Plant Board to ban the use of dicamba during summer months. The rule has exceptions for use on turf, ornamental plants, and pastures found one mile in any direction from sensitive areas or susceptible crops, but it otherwise prohibits spraying dicamba over resistant crops between April and October.

Monsanto, one of the producers of dicamba, sued the Arkansas State Plant Board to challenge the ban. The company argued that the decision was arbitrary and that it violated the Commerce Clause of the U.S. Constitution as well as Monsanto's constitutional right to due process.

In a brief decision delivered at the end of March, an Arkansas judge dismissed Monsanto's suit.

The judge found that, based on a recent Arkansas Supreme Court ruling, a sovereign immunity provision in the Arkansas Constitution barred Monsanto's claim. The judge dismissed the case without ever ruling on the merits of whether the dicamba ban exceeds the Arkansas State Plant Board's authority or violates Monsanto's rights.

Monsanto has filed notice that it will appeal the lower court's decision. In a recent court motion, Monsanto argued that the judge's dismissal of the company's lawsuit was "clearly erroneous" because it misapplied precedent.

As Monsanto's appeal moves through the courts, the Arkansas Agriculture Department has put out an official statement saying that until the court system provides more certainty, the Department will "at a minimum" enforce federal label requirements. That Department also reminded users that the state can impose civil penalties of up to $25,000 for use of dicamba that damages other crops.

It remains to be seen whether Arkansas's more cautious approach will prove necessary to protect crops this summer. Farmers in other states remain free to use dicamba as long as they follow the new application guidelines EPA and manufacturers agreed upon. Regulators from both the state of Arkansas and EPA will likely reevaluate their regulatory approaches to dicamba based on the results from this growing season. (The Regulatory Review, 5/28/18)

IFAS/FTGA Great CEU Round-Up (July 25, 2018 | 8:30 am – 4:00 pm EDT)

The Florida Turfgrass Association (FTGA) has teamed up with the Institute of Food & Agricultural Sciences (IFAS) to present The Great CEU Round-Up, a full day of education that will be simulcast to 20 locations around Florida from the University of Florida, Gainesville.

The Round-Up has been designed to award up to six licensed pesticide applicator CEUs to attendees in some of the most difficult to attain subject areas, including aquatic weed control, natural areas weed management, and right-of-way, among others. Continuing education credits are also available for Certified Crop Advisors (CCA) and those holding Florida Nursery, Growers and Landscape Association (FNGLA) certification.

For more information, including available CEUs, pricing, and to register, go to FTGA at https://www.ftga.org/page/CEURoundUp. Preregistration closes on July 20, 2018 with on-site pricing going into effect on July 21, 2018. (UF/IFAS Pesticide Information Office, 6/1/18)

Pesticide Registrations and Actions

- On May 16, FDACS accepted the revised labeling for TIGR® Herbicide (sethoxydim) for the selective control of invasive grasses such as torpedograss, West Indian marsh grass, para grass, and Tropical American water grass in ponds, lakes, swamps, riparian areas, wetlands, marshes, reservoirs, and other areas adjacent to aquatic sites (SLN FL-170006). The EPA registration number for the SePRO Corporation product is 7969-58. (FDACS letter, 5/16/18)

- The special local need registration for the use of aminopyralid (Milestone®) was approved on

March 15 for the control of broadleaf weeds in post-transplant longleaf pine plantations in Florida (SLN FL-180001). The EPA registration number for the Dow AgroSciences LLC product is 62719-519. (FDACS letter, 3/15/18)

- The special local need registration for the use of pinoxaden (Manuscript®) was approved on May 22 for the control of tropical signalgrass and other grass weeds on Bermudagrass and zoysiagrass sod farms in Florida (SLN FL-180003). (FDACS letter, 5/22/18)