

Updated Tough Questions: Engenia
11.15.17

QA

How was the survey conducted?

The survey was conducted over the phone with approximately 400 cotton and soybean growers who purchased and applied Engenia herbicide.

Did the survey ask growers whether they used other weed control products?

Yes. They were asked about other weed control products but the main focus was on Engenia herbicide.

What is BASF's position on the recent recommendation from the Arkansas Plant Board to prohibit dicamba applications in the state after April 15?

The decision by the Arkansas State Plant Board today is nothing short of a ban and a major step backwards for Arkansas farmers who are losing an essential weed management tool and will be at a competitive disadvantage to growers in neighboring states. We will await a decision from the Arkansas governor and legislature.

With the amount of dicamba drift complaints this summer, how is yield? Was there an impact?

Our field reps have been in contact with growers who reported symptomology, most of which have seen no impact on yield. However, in a few isolated cases yield may be affected where the terminal growth was inhibited.

While many growers are still harvesting crops, USDA forecasts 2017 soybean production at a record 4.43 billion bushels or 3 percent higher than last year. Soybean yields in key states such as Arkansas and Missouri are also projected to be at or above last year's record levels. And 2017 national cotton yields are expected to be higher than 2016, up 33 pounds from last year.

The USDA is reporting that soybean yields will be down 2.5 bushels from last year. Can this be attributed to this summer's drift issue?

There could be several reasons, including weather. A relatively dry and cool Aug/Sep'17 across most of the Corn Belt meant that bean pods didn't "fill" as much as in 2016, thereby creating a drag on overall yield totals. However, soybean yields in all the main states that introduced DT technology are at least at 2016 levels, and many, including Arkansas and Georgia, are significantly above 2016 yields.

Who will pay for yield loss where there is damage?

Our field reps have been in contact with growers who reported symptomology, most of which have seen no impact on yield. However, in a few isolated cases yield may be affected where the terminal growth was inhibited.

We believe many of these cases will be addressed between applicators and their insurance companies and affected growers.

You recently held a dicamba university symposium. Can you share what came out of that event?

Thirty university researchers representing 20 different universities in key corn and soybean growing areas met together along with their local BASF technical service representatives and field biologists to share knowledge and work together to identify best management practices to move towards a successful 2018 season. Feedback from the meeting has been very positive and many great ideas were shared. The results are still being summarized and BASF plans to follow-up with each university representative regarding the outcomes of the meeting.

Can you confirm that BASF only sold enough of Engenia to cover about half of the dicamba-tolerant acres planted in Arkansas state?

Based on Monsanto's publicly stated sales of 1.8 million acres of dicamba-tolerant soybean and cotton seed in Arkansas, when compared to our Engenia sales and application treatments per acre (assuming 1.2 sprays per acre), we estimate there was enough Engenia sold to cover 52% of dicamba-tolerant acres in Arkansas.

Do you plan on joining Monsanto in its lawsuit filed last week in Pulaski County Circuit Court against the Arkansas State Plant Board?

No. We have and will continue to focus on working together with state and local officials as well as farmers to develop a long-term solution.

Statement on EPA Restricted Use Label

BASF worked with the EPA on label updates. We are pleased growers will continue to have access to the benefits of Engenia® herbicide and remain committed to providing training and tools for proper application.

General Statement about Additional Use Restrictions/Label Changes

We could see some state-specific enhancements to labels depending on specific needs and uses in those states. We feel that whatever measures are adopted for the 2018 use season, it is important for growers to get the benefit of Engenia herbicide and we will be as flexible as possible to make that happen.

What is your position on maximum air temperature when spraying?

Based on past research leading up to registration of Engenia® herbicide we do not believe that temperatures within normal field situations influence the behavior of Engenia herbicide.

What is your position on a final cutoff spray date?

If a cutoff date is implemented it should be selected to balance allowing growers to effectively use Engenia herbicide and limiting exposure to soybeans in reproductive growth stage.

What is your position on allowable spray hours?

The EPA has addressed this in the recently updated label. Limiting spray hours could help simplify the label requirement of not spraying during a temperature inversion. It is important to select a time that excludes peak times for temperature inversion.

What is your position on downwind buffers and downwind sensitive species?

To reduce potential exposure and to simplify label requirements, we support an update that prohibits spraying if there are downwind neighboring sensitive soybeans.

What is your position on dicamba as a restricted use pesticide?

The EPA has addressed this in the recently updated label. This would enable enforcement of additional requirements including: record keeping, training and certified applicator license to purchase material. Applying this to all dicamba products labeled for agricultural uses (rather than just Engenia, Fexapan and Xtendimax herbicides) ensures purchasers are unable to circumvent this requirement through purchase and use of product not labeled for use in DT crops.

Have all of the products on Engeniatankmix.com been tested for volatility as well as driftable fine particle?

All approved tank mix partners have been evaluated for spray particle drift through wind tunnel testing. While not all have been evaluated for volatility, those that are known to have an effect, including AMS and some acidifiers, have been evaluated. Those that have shown issues have not been approved.

What have your investigations revealed so far?

BASF field reps investigated 787 soybean symptomology claims during the 2017 season, most of which had no impact on yield. However, in a few isolated cases, yield may have been affected where the terminal growth was inhibited. Main causes include:

- Incorrect nozzle and/or boom height
- Wind speed or direction
- Insufficient buffer
- Spray system contamination
- Use of unregistered product
- Application during temperature inversion

Any combination of these factors could influence off-target movement.

What is your response to recent volatility studies done by surrounding universities?

We are aware of research being presented by universities. Our findings, in fields we have walked show multiple factors are at play. We don't believe volatility is a driving factor based on past research and experience. BASF did conduct R&D and regulatory studies regarding Engenia® herbicide off-target loss parameters including volatility potential. These studies were evaluated by the EPA prior to Engenia® herbicide approval. Additionally, several university researchers also evaluated the off target impact and application parameters of Engenia® herbicide prior to commercialization.

How can we prevent future incidents with dicamba?

It is important for us all to work together to learn from 2017 to identify fact- and science-based solutions that have a positive impact on the 2018 season. Continuing education on proper application parameters is also very important as we move forward.

Would you support increased penalties and enforcement for off-label applications?

We are not an enforcement agency but we would like to cooperate to find ways to ensure the label is followed.

How can education be increased to help prevent future issues?

We will continue to collaborate with grower groups, state agencies and university extension offices to ensure effective education on proper stewardship practices.

How much Engenia was sprayed in Arkansas?

Based on Monsanto's publicly stated sales of 1.8 million acres of dicamba-tolerant soybean and cotton seed in Arkansas, when compared to our Engenia sales and application treatments per acre (assuming 1.2 sprays per acre), we estimate there was enough Engenia sold to cover 52% of dicamba-tolerant acres in Arkansas.

How do you explain the fact that complaints are so numerous in Arkansas State?

The number of complaints is of course very concerning to BASF and we are working with regulators and growers to address their concerns. That being said, a majority of growers in fields we've visited are seeing great results as they steward in dicamba-tolerant (DT) crops. We all share the same goal: clean fields, robust yields and good product stewardship. Developing a fact and science based recommendation that focuses on a long-term solution for farmers is critical to giving growers an effective tool to fight resistant weeds while safeguarding the fields of those who choose a non-dicamba tolerant solution.

You claim that Engenia demonstrated lower volatility than previous versions of dicamba herbicide. So what according to you would be the reasons for the problems of particle drift encountered by some farmers?

In most cases, the cause and source of off-label spray particle drift are clear in fields our BASF reps have walked. In other cases, the cause and source are not as clear because there appears to be multiple factors at play, including applications made during high winds or inversions, lack of adherence to buffer zones, incorrect nozzle selection or lack of proper sprayer system cleanout procedures.

It takes time to fully investigate each alleged off-target incident, especially when there is no apparent symptomology gradient and no clear source. Upon deeper investigation, many of these cases were a result of upstream contamination or inadequate spray system cleanout. Ensuring that lines and tanks are cleaned thoroughly throughout the process from bulk handling in warehouses to spray tank cleanout is critical in reducing the risk of exposure to sensitive crops.

Previous Questions from Tom Polansek

Does BASF expect U.S. farmers to plant more dicamba-resistant soybeans next year to protect themselves from drift damage?

The best estimate for next year's plantings would come from seed companies and as you are aware, BASF is not in the seed business. However, we're here to help growers who choose this new technology, as well as those who choose another technology, get the results they expect. We believe that weed control technologies that feature different modes of action can successfully coexist.

Does BASF expect this increase in plantings to lift demand for its dicamba herbicide, Engenia?

We have not considered "defensive planting" in our sales projections.

Can you please tell me BASF's estimates for sales of Engenia in 2017, 2018 and 2019?

BASF does not publicly release sales data for competitive reasons.

Is BASF involved in state investigations of cases of crop damage associated with dicamba? How?

This season we investigated claims received from growers who had concerns about their fields, many of which included growers who did not utilize the dicamba-tolerant technology. We're proud to say we have 400 reps in the field at any given time—from coast to coast. These reps worked to understand the affected growers' concerns and, where enough information was available, to help them find answers to their questions.

Has BASF offered support to the states doing these investigations?

We continue to support states in their research and investigations as needed. Our state regulatory group as well as our field team is in regular contact with their local state agencies to help in any way we can. We have also attended numerous state hearings and less formal meetings to share information and assist states in their investigations and regulatory inquiries.

What is BASF's reaction to the large number of complaints filed this year about damage linked to dicamba?

The number of complaints is of course very concerning to BASF and we are working with regulators and growers to address their concerns. With that said, a majority of growers in fields we've visited are seeing great results as they steward in dicamba-tolerant (DT) crops. It is extremely concerning to hear about non-dicamba-tolerant farms experiencing symptomology that may have come from the improper use of this new technology. We all share the same goal: clean fields, robust yields and good product stewardship. Developing a fact and science based recommendation that focuses on a long-term solution for farmers is a critical part of working together. We can only do that once we have further clarity on the ongoing investigations regarding crop damage presently being attributed

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to the new low volatility dicamba formulations approved for use with DT crops. We believe that weed control technologies that feature different modes of action can and must successfully coexist.

Is BASF responsible for the large number of complaints?

No. In some cases, the cause and source of off-label spray particle drift are clear in fields our BASF reps have walked. In other cases, the cause and source are undetermined because there appears to be multiple factors at play, including alternative causes of yield loss, inversions and the lack of adherence to buffer zones or possible tank contamination. We are continuing to fully investigate and understand off-target reports.

Does BASF expect that the new restrictions on dicamba use for 2018, announced last week, will prevent complaints next year?

Yes, when the label is followed. We are pleased to see an emphasis on training and we believe that when the label is followed, these updates will help address these concerns for next season. We look forward to working collaboratively with state agencies to help develop or enhance training programs so everyone can have a better experience in 2018.