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Dicamba Worries Drift into 2018

Key Points:

- Dicamba's off-target movement in 2017 affected approximately 3.6 million acres of non-dicamba-tolerant soybeans
- As a result, the EPA has updated its labels, several states have imposed additional restrictions, and several land-grant universities have issued new recommendations
- Uncertainty related to the cause of dicamba's off-target movement and the difficulties related to assessing damages have made it hard to determine liability and evaluate insurance claims
- Dicamba-tolerant soybean and cotton acres are slated to increase in 2018, setting up agricultural retailers for more application business with limited new information
- Custom applicators and agricultural retailers are seeking to raise application rates to defray higher costs and increased risk associated with dicamba

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Inside...

Introduction	1
Cause of dicamba's off-target movement	3
Dicamba's off-target movement: Liability and insurance	3
Agricultural retailer risks and opportunities	4
References	5

Introduction

With more dicamba-tolerant acres expected to be planted in 2018, the issues that plagued dicamba in 2017 are likely to persist. Many changes are coming, however, including new labels, university recommendations, and agricultural retailer policies aimed at mitigating the risks associated with applying dicamba.

Since the release of dicamba-tolerant soybean and cotton seed, reports of crop damage from spray drift onto neighboring fields have been widespread. Approximately 3.6 million acres of soybeans across the U.S. were injured by dicamba drift in 2017, according to University of Missouri estimates.¹ (*See Exhibit 1.*) The epicenter of dicamba issues has been Arkansas, where the state department of agriculture received nearly 1,000 dicamba-related injury complaints on an estimated 900,000 acres. The complaints have been highest in Arkansas due to its mix of soybean and cotton acres and weather conditions that can often exacerbate dicamba drift and volatility. While the new-formulations of dicamba were designed to reduce the risk of volatilization and drift, its introduction is off to a rocky start compared to previous herbicide-resistant seed introductions like Roundup Ready.²

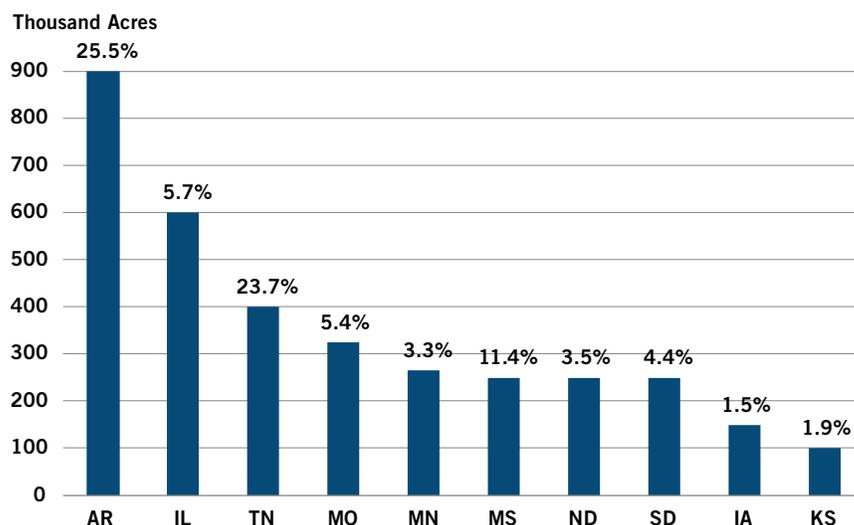


Small amounts of dicamba drift can have noticeable impacts on neighboring fields of soybeans not tolerant to the volatile herbicide. (See Exhibit 2.) And yield losses associated with dicamba injury are hard to determine. Manufacturers claim that substantial losses from dicamba damage in 2017 were rare and most injured soybeans did not experience significant long-term harm. A 2009 research study at Purdue University found yield losses were variable and dependent on several factors including weather, when the drift occurred, and exposure rate. The findings suggest a 10 percent yield loss occurs with just 20-30 percent visual injury.³

In response to grower reports, the EPA updated the 2018 label requirements for dicamba formulations. (See Exhibit 3.) Individual states have either proposed or implemented additional restrictions on dicamba's use in 2018. These include calendar cutoff dates before or during the growing season, temperature cutoffs, specific sprayer specifications, and additional paperwork requirements. (See Exhibit 4.)

Arkansas has implemented the most aggressive restrictions by banning all dicamba applications between April 16 and October 31. This effectively bans the use of dicamba during the growing season, rendering new dicamba-tolerant cotton and soybeans much less valuable. However, Monsanto has filed a lawsuit to challenge this ban and the first hearing is scheduled for February.

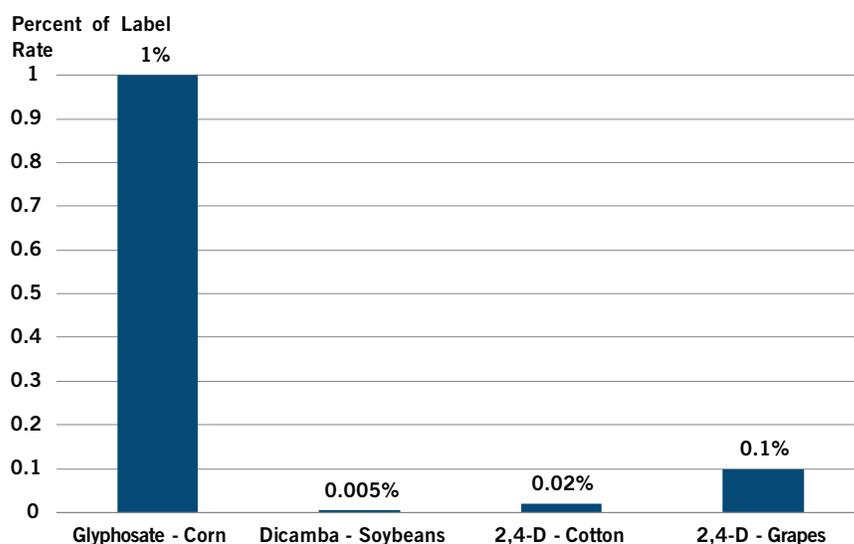
Exhibit 1: Reported Dicamba-Injured Soybean Acres by State



Source: University of Missouri, Integrated Pest Management; USDA-NASS; CoBank, ACB

Note: The percent of each state's planted soybean acres that were estimated to be injured by dicamba is printed above each bar. Only states with 100 thousand or more injured acres reported are shown. Full data can be found in the University of Missouri report.

Exhibit 2: Lowest Dose to Induce Significant Visual Response, Pesticide-Crop



Source: Iowa State University, Integrated Crop Management

Note: Lowest observed dose to cause a significant visual response.



Exhibit 3: Select EPA label changes for new dicamba formulations announced on Oct 13, 2017

The drawn-out regulatory process and lingering lawsuit puts farmers and agricultural retailers in a difficult position, with the main thrust of cotton and soybean planting quickly approaching in early April. In advance of the final outcome of Arkansas's decision-making process, some farmers are reported to have held back on purchasing or double-booked seed purchases. Additionally, some farmers will continue to purchase dicamba-tolerant seed as a defense against dicamba drift, especially for farms located near neighboring states like Missouri and Tennessee where in-season dicamba use is legal. It has yet to be determined how pre-purchased dicamba-tolerant seed purchases will be handled by farmers, retailers, and manufacturers with further litigation likely.

Cause of dicamba's off-target movement

The cause of dicamba's off-target movement is the subject of intense debate. Applicator error and volatilization represent the two main possibilities that frame this debate. Applicator error occurs when dicamba is applied in an improper way. This includes off-label applications of new formulations such as spraying when wind speeds have exceeded recommended levels or during temperature inversions that raise the risk of spray drift, spray equipment contamination, and the illegal use of

Category	Label specs used during 2017	Label specs used for 2018
Pesticide classification	General Use	Restricted Use
Wind speed restrictions	3 – 15 mph	3-10 mph
Time of day restrictions	None	Sunrise to sunset
Other	-	Additional tank clean-out language
	-	Additional recordkeeping

Source: U.S. EPA

Exhibit 4: Additional state-level restrictions for selected states as of January 2018

State*	Cutoff Date	Temp Cutoff	Time of Day Cutoff	Sprayer Restrictions	Extra Paperwork
AR	April 15**	-	-	-	-
TN	-	-	7:30 am - 5:30 pm	Hooded sprayer, Jul 15 - Oct 1	-
MO	June 1, July 15	-	7:30 am - 5:30 pm	Jul 15 - Oct 1	Yes
MN	June 20	85° F	-	Only certified applicators	-
ND	Earlier of June 30 or R1 growth stage	85° F	1 hour after sunrise - 1 hour before sunset	Sprayer speed ≤ 12 mph; No nozzles 80° or less	Yes

Sources: Arkansas Agriculture Department; Tennessee Department of Agriculture; Missouri Department of Agriculture; Minnesota Department of Agriculture; North Dakota Department of Agriculture

Notes:

* The following states who were estimated to have more than 1,000 acres injured by dicamba have not proposed or made an announcement regarding additional restrictions on the new dicamba formulations as of 1/3/18: IL, MS, SD, IA, KS, IN, NE, KY, OH, LA, NC, and OK.

** April 15 is the cutoff date that was passed by the Arkansas Legislative Council on Jan 19, 2018. Monsanto has filed a lawsuit challenging this ban.



old dicamba formulations. Volatilization occurs when dicamba, or any pesticide, lands on-target and then evaporates off the soil and the plant's leaves after being sprayed. This gas can then be blown across field borders to neighboring fields with the wind. Importantly, volatilization can occur when a dicamba application is performed in accordance with the label and even after the applicator has left the field. Volatilization is associated with the chemical makeup of dicamba, not with the application technique. The cause of dicamba's off-target movement is foundational to assigning liability for dicamba damage.

Dicamba's off-target movement: Liability and insurance

Generally, insurance companies analyze four issues when an applicator's pesticide application moves off-target and a claim is made. First, the applicator must have a "spray endorsement" in addition to the existing liability insurance policy. Basic liability insurance typically does not cover the off-target movement of pesticides. Second, the applicator must have accidentally let the off-target movement occur. Purposeful off-label applications are not covered. Third, the damage must be linked to the negligence of the applicator. If the applicator followed the label, the insurance company will deny a claim because liability now lies with the product manufacturer rather than the applicator. Lastly, damage must be determined and linked to the insured applicator. If no damage occurred, there is no claim to be made. Alternatively, if damage cannot be linked to a specific application by the covered applicator, the claim will be denied. In regions where dicamba-tolerant soybeans and cotton are common, finding liability with a single applicator is especially difficult.

The lack of consensus surrounding the cause of dicamba's off-target movement and its corresponding damage creates significant obstacles when determining liability and assessing an insurance claim. If an insurance company determines the applicator sprayed in compliance with the label, implying dicamba moved through volatilization, the claim will be denied. Insurance

policies, however, cover off-target movement if it is the result of applicator error. With some fields hit by dicamba multiple times, assigning damage to a single application by one applicator is difficult and may also result in a claim being denied. Additionally, yield loss due to a single application's off-target movement is contentious and ultimately difficult to determine.

Even with insurance, significant financial liability remains with the applicator. Pesticide drift insurance deductibles vary with the size of the agricultural retailer and the applicator's policy choices. Often these deductibles range between \$15,000 and \$50,000. To get a sense of the financial risk, assume the insured has a \$15,000 deductible per occurrence. With this coverage and assuming a soybean price of \$10/bu and a 5 bu/ac yield loss, insurance starts covering a claim when more than 300 acres have been damaged from a single dicamba application with the applicator paying for the first 300 acres of damaged soybeans. Applicators face higher financial risk in areas with diverse crop mixes and nearby specialty crops. Many fruit and vegetable buyers do not permit any dicamba drift. As a result, the damaged grower can claim 100 percent loss on an entire field of high-value produce.

Insurers are still assessing the risk associated with the off-target movement of dicamba. As a result, spray endorsement policy costs and coverage may change in 2018. With insurers much more reactive than proactive, policy changes that address dicamba's unique challenges are unlikely in the coming year.

Agricultural retailer risks and opportunities

Agricultural retailers will encounter a challenging operating environment in the 2018 growing season. Insurance is expensive and new, reliable risk-mitigating strategies remain elusive due to the uncertainty surrounding the cause of dicamba's off-target movement in 2017. Several land-grant universities have provided recommendations for spraying dicamba in 2018, and some agricultural retailers have come out with their own rules.



Complex new label requirements and the short lead time before the growing season will make applications more difficult in 2018. The changes increase costs and enhance reputation risk for agricultural retailers, and many are expected to pass on those costs to customers.

While the amount of pesticide application performed by agricultural retailers varies by region, many farmers expect their agricultural retailer to apply dicamba. If one agricultural retailer will not apply dicamba, the farmer will likely go somewhere else. However, there is an opportunity for agricultural retailers to achieve “trusted advisor” status with farmers that fully understand the risks and complexity

of applying dicamba. The key for agricultural retailers is executing well – applying dicamba with no issues.

Monsanto expects to sell enough Xtend soybean seed to plant approximately 40 million acres in 2018, so there is a risk that application issues will increase in the year ahead. Increasing and improving communication between applicators and farmers may be the simplest and most effective way to manage the risk of dicamba. More communication increases awareness of, and trust in, the agricultural retailer while the agricultural retailer gains valuable information about farmers and their operations. ■

References

- ¹ Bradley, Kevin. “A Final Report on Dicamba-injured Soybean Acres.” University of Missouri, Integrated Pest Management. October 30, 2017. [Available here.](#)
- ² Hartzler, Bob. “Dicamba: Past, present, and future.” in Proceedings of the 29th Annual Integrated Crop Management Conference, prepared by Pringnitz, Brent A., 71-76. Ames, IA: Iowa State University Extension and Outreach, 2017. [Available here.](#)
- ³ Ilkey, Joe, and Bill Johnson. “Response of Roundup Ready Soybean Yield to Dicamba Exposure.” Purdue Extension. August 4, 2017. [Available here.](#)

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