

BEFORE THE ARKANSAS STATE PLANT BOARD

In Re: Monsanto Company’s Request)
for Rulemaking pursuant to § 25-15-204(d)) **Docket No. _____**
of the Arkansas Administrative Procedure Act)
to Amend the Arkansas Regulations on)
Pesticide Use)

MONSANTO COMPANY’S PETITION FOR RULEMAKING

Monsanto Company (“Monsanto”) submits this petition to the Arkansas State Plant Board (“Plant Board”) for the purposes of: (1) opposing the recommendation of the Arkansas Dicamba Task Force (“Task Force”) to ban the use of all dicamba-containing products after April 15th in Arkansas for the 2018 soybean and cotton growing season; and (2) formally petitioning the Plant Board to amend the Arkansas Regulations on Pesticide Use to allow growers to use low-volatility formulations of dicamba, including Monsanto’s XtendiMax[®] with VaporGrip[®] Technology herbicide (“XtendiMax”), in 2018 and beyond.

INTRODUCTION

While dicamba herbicides have been registered and used since the 1960s, 2017 is the first year dicamba herbicides were approved for in-crop applications in soybeans and cotton. This advance was made possible by Monsanto’s development of dicamba-tolerant soybean and cotton seeds, Roundup Ready 2 Xtend[®] soybeans and Bollgard II[®] XtendFlex[®] cotton (“Xtend seeds”), and the development of new, low-volatility formulations of dicamba herbicides, including Monsanto’s XtendiMax and BASF’s Engenia[®]. Monsanto developed this technology to provide farmers with a new tool for controlling glyphosate-resistant weeds, such as Palmer amaranth, which have increased in recent years. Although the U.S. Environmental Protection Agency (“EPA”) registered XtendiMax for use, and 33 states followed suit, the Arkansas Plant Board arbitrarily prohibited the in-crop use of XtendiMax during the 2017 growing season, so the only low-volatility dicamba formulation available to Arkansas farmers for in-crop use with their Xtend crops in 2017 was Engenia.

In 2017, Arkansas saw an unusually high number of reports to the Plant Board of alleged dicamba symptomology in a confined area of the State covering eight contiguous counties, particularly during a two-week period in June. The rest of the soybean-growing counties in Arkansas – counties producing over 50 million bushels of soybeans annually – experienced either no increase in reports of dicamba symptomology, or experienced only a slight increase consistent with the widespread adoption of a new herbicide technology in the State. While several soybean-producing counties in Arkansas reported zero complaints of dicamba symptomology to the Plant Board through August 23, 2017, one of the eight affected counties reported 240 complaints. But as the Plant Board has acknowledged, “[t]he 2017 Case Files are

still being investigated and we do not have final determinations for products that were used, or even if dicamba was involved.”¹

Responding to the reports, on August 7, 2017, Governor Hutchinson directed the Secretary of Agriculture and the Director of the Plant Board to convene and co-chair “a task force to review the dicamba technology, investigate current problems with its use and application, and make long term recommendations for the future.” Specifically, the Task Force was “to reach consensus on a set of recommendations for the use of dicamba products in Arkansas as quickly as possible in order to provide certainty for the 2018 growing season.”² But instead of developing a set of targeted, consensus, and science-based recommendations to improve outcomes for the 2018 growing season—whether through additional training, enhanced recordkeeping, increased penalties for illegal use and misuse, heightened enforcement, or other measures—the Task Force recommended that the Plant Board simply impose a flat ban on over-the-top use of all dicamba formulations after April 15th in 2018. The recommended ban would apply state-wide despite the fact that the allegations of dicamba symptomology were highly localized. And the Task Force failed to meaningfully consider many other more tailored options that could address specific local concerns without depriving all farmers—including those farming the more than 300,000 acres of dicamba-tolerant cotton in the State with great success—of a critical tool to fight resistant weeds.

The Task Force’s recommendation should be rejected for several reasons:

- **First**, the recommended ban is not based on scientific data, much less on any scientific consensus, but instead on unsubstantiated product volatility theories that are not supported by empirical or modeled data and are contradicted by actual scientific data the Task Force failed to meaningfully consider;
- **Second**, successful use of the new, low-volatility dicamba herbicides in many counties in Arkansas—including several of the major soybean-producing counties—demonstrates that there is nothing inherent in the technology, when used properly, that prevents its safe and effective use in the State;
- **Third**, the Task Force failed to identify, and thus its recommendation is not tailored to addressing, the actual cause(s) of the aberrational number of dicamba symptomology reports coming from the affected eight-county area;
- **Fourth**, weed scientists who investigated the reports of dicamba symptomology in the eight affected counties predicted that the mild symptomology that was reported there is unlikely to produce much if any yield reduction; indeed, it appears that even affected counties may again see record soybean yields this year.

¹ Arkansas Agriculture Department, Frequently Asked Questions: Dicamba (available at <http://www.aad.arkansas.gov/arkansas-dicamba-information-updates>) (last visited Sept. 3, 2017).

² See Ark. State Plant Board Press Release, *Arkansas Dicamba Task Force Members Announced* (Aug. 7, 2017), attached as Ex. 1.

- **Fifth**, the recommendation is extremely short-sighted, and ignores the devastating reduction in soybean and cotton yields it may produce in the coming years through the promotion of additional weed-resistance; and
- **Finally**, the recommendation is tainted by the involvement of an individual who is currently serving as a retained expert witness against Monsanto in dicamba-related litigation, and skewed by the involvement of another researcher who has endorsed a competing product and presented study data to the Task Force in support of banning dicamba that was conclusory and subjective.

Arkansas law requires that the Plant Board adopt a science- and fact-based approach to addressing the unusually high incidence of reports of dicamba symptomology received from certain areas of the State in June of 2017.³ While certain facts surrounding those reports are still being investigated, the Task Force’s recommendation does not consider (or even seek information regarding) hundreds of scientific studies indicating that properly-formulated dicamba herbicides can be safely applied. Indeed, the Task Force has not even attempted to differentiate between the effects of illegally applied older formulations of dicamba (which are known to present drift and volatility issues), and the specialized new formulations which are specifically engineered to minimize volatility and specifically labeled to prevent drift. Similarly, the Task Force ignored evidence of dicamba-contamination in glufosinate herbicides (in retail packaging of certain generic formulations, bulk tanks, and/or applicator tanks), evidence of product misuse, as well as other issues which may explain the aberrant number of symptomology reports received from the affected eight-county area.

Likewise, the Plant Board has failed to consider relevant scientific data in addressing Monsanto’s XtendiMax herbicide (which has never been sold in Arkansas), and cannot sustain its ongoing ban on application of that herbicide from April through October. Consequently, the Plant Board should: (1) reject the Task Force’s recommendation of a complete ban on the use of dicamba in Arkansas during the 2018 soybean and cotton growing season; and (2) amend its rules to allow growers to make in-crop applications of low-volatility formulations of dicamba, including XtendiMax, subject to specific and appropriate application conditions in 2018 and beyond.

BACKGROUND

A. Soybean and Cotton Cultivation in Arkansas

Approximately 3.3 million acres of soybeans are planted in Arkansas each year. They are grown in 41 of the state’s 75 counties, with most of the production occurring in the Arkansas Delta region.⁴ Monsanto estimates that 1.5 million acres of dicamba-tolerant soybean seeds were

³ See Ark. Code Ann. § 25-15-204(b)(1) (requiring that rules be “based on the best reasonably obtainable scientific, technical, economic, or other evidence and information available”).

⁴ Univ. of Arkansas, Coop. Extension Service, *Soybean Production in Arkansas*, at <https://www.uaex.edu/farm-ranch/crops-commercial-horticulture/soybean/> (last visited Aug. 31, 2017).

planted in Arkansas in 2017. Approximately 80% of the soybean-producing counties in Arkansas saw little or no increase in the number of dicamba symptomology complaints received by the Plant Board in 2017. Those counties include some of the highest soybean-producing counties in the State.

However, the Plant Board did report an unparalleled increase in the number of dicamba symptomology complaints received in eight contiguous counties in the northeastern region of the State. Those eight counties (Mississippi, Crittenden, Craighead, Poinsett, St. Francis, Cross, Lee and Phillips) are responsible for 90% of all dicamba symptomology complaints received by the Plant Board statewide through August 23, 2017.⁵ In fact, those eight counties in Arkansas made 62% as many complaints as were made to the state departments of agriculture in *all other states in the nation combined*.⁶

University researchers and other investigators who walked the fields in this area following the reports found that most of the reported symptomology consisted of mild to moderate leaf-cupping. Thus, even in this eight-county area, the University of Arkansas Extension expects minimal, if any, yield loss due the reported dicamba exposure.⁷ Soybean yields have been climbing, on average, for the past five to seven years in these counties,⁸ and this trend is expected to continue in 2017 in spite of the reported symptomology.

Arkansas is also a leader in the production of cotton. “In the 2016 Arkansas Crop Production Annual Summary released on January 12, 2017 by the USDA-NASS, 375,000 acres of cotton were harvested” in Arkansas.⁹ Monsanto estimates that over 300,000 acres of its dicamba-tolerant cotton seeds were planted in Arkansas in 2017. Arkansas farmers are experiencing good results with Monsanto’s dicamba-tolerant cotton. Monsanto’s field trials conducted in Arkansas in 2016 showed a statistically significant 50-pound yield advantage for the seed.

⁵ Those eight counties reported 853 of the 950 complaints made to the Plant Board statewide.

⁶ Those eight counties reported 853 complaints of dicamba symptomology to the Plant Board in 2017. *See* Arkansas Agriculture Dept., Current Alleged Dicamba Misuse Complaints (950) (reporting through Aug. 23, 2017) (attached as Ex. 2). Nationwide, there were 1366 complaints of dicamba symptomology reported to state departments of agriculture (excluding Arkansas) through Aug. 10, 2017. *See* K. Bradley, Univ. of Missouri, Official Dicamba-related Injury Investigations as Reported by States Departments of Agriculture (reporting through Aug. 10, 2017) (attached as Ex. 3).

⁷ Tom Barber, *Damage Reports From Dicamba Pouring in Over the Last 2 Weeks*, June 12, 2017, at <http://www.arkansas-crops.com/2017/06/12/reports-dicamba-pouring/> (last visited Sept. 1, 2017) (“Most of the injury I have walked appears to be lower rates of dicamba drift at young vegetative growth stages. This should result in minimal if any yield losses.”)

⁸ *See* Ex. 4, compiling yield data for the 8 affected counties, compiled from National Agricultural Statistics Service Quick Stats webpage at <https://quickstats.nass.usda.gov/> (last visited Sept. 1, 2017).

⁹ *See* <https://www.uaex.edu/farm-ranch/crops-commercial-horticulture/cotton/> (last visited 9/3/17).

B. Use of Dicamba in Arkansas in 2017

Based on the Plant Board's actions in 2016, XtendiMax was not available for use in Arkansas during the growing season in 2017, and Monsanto did not sell XtendiMax in the state. Thus, the dicamba symptomology reported in Arkansas in 2017 certainly did not result from applications of XtendiMax. Engenia was available to growers, however, and records indicate that Engenia was indeed used and applied over a significant amount of acreage in Arkansas this year.

The evidence that has been collected thus far indicates that a combination of factors other than the volatility of the new, lower volatility dicamba formulations are likely to have played an important role in producing the symptomology seen in 2017. Those factors include **contamination** of herbicides, **illegal use** of older, more volatile formulations of dicamba, **localized weather** conditions, and **applicator misuse** of new, lower-volatility dicamba. Reports from the field in 2017 indicate that the most common symptomology in the eight most-affected counties in Arkansas was “[m]ild to moderate leaf cupping throughout the field.”¹⁰ This uniform symptomology, sometimes referred to as the “landscape effect,” is consistent with contamination. Contamination can happen in several ways. Three likely causes of contamination that may be associated with the symptomology in northeastern Arkansas are: (1) generic glufosinate or other herbicides contaminated with small amounts of dicamba (or other herbicides that can cause symptomology in soybeans, such as triclopyr) at the manufacturing facility;¹¹ (2) contamination of tank mixes at retail facilities due to insufficient wash out of bulk mixing tanks; and (3) contamination on the farm from improper or inadequate tank cleaning. In each situation, dicamba (or another herbicide such as triclopyr) is inadvertently sprayed over non-resistant crops (as a part of another herbicide mix) creating a uniform pattern of symptomology across the field. These issues are correctible with additional training and education.

In addition, there is also strong supporting evidence that illegal spraying of old formulations of dicamba may have played a role in causing the concentrated reports of symptomology in the eight-county area. Monsanto estimates that 1.5 million acres of dicamba-tolerant soybeans and over 300,000 acres of dicamba-tolerant cotton seed were planted in Arkansas in 2017. Assuming two applications of dicamba herbicide on cotton acres and a single application on soybeans, Arkansas would have required sufficient low-volatility dicamba herbicide to cover 2.1 million acres. Yet, BASF reported to the Task Force that it did not sell enough Engenia in Arkansas to cover nearly that many acres, and predicted a shortfall of hundreds of thousands of acres. This fact alone strongly suggests that large quantities of older, cheaper, and more volatile dicamba may have been sprayed illegally over the top of resistant soybeans causing widespread

¹⁰ See, e.g., Letter from J. Arthur, BASF Mgr. of U.S. Registrations, to Office of Pesticide Programs, U.S. Environmental Protection Agency (Aug. 3, 2017) (providing incident reports pursuant to FIFRA § 6(a)(2) for Engenia) at 4-6 (attached as Ex. 19).

¹¹ See Letter from D. Simpson, Monsanto Gov't Affairs, to W. Ward, Sec. Ark. Dept. of Agriculture, Aug. 24, 2017, attached as Ex. 5 (confirming independent lab results showing dicamba contamination of certain generic glufosinate products).

symptomology. In addition to being more volatile, these older formulations are not approved or labeled for in-crop applications and, thus, do not provide instructions for preventing off-target drift during in-crop use. Despite the record number of crop symptomology reports, the Plant Board has not fully used its authority under Ark. Code. R. § 209.02.04(B)(5) to collect extensive records concerning the formulations of dicamba sold and used in Arkansas in 2017. These data suggest that enhanced penalties and enforcement may go a long way toward ensuring a better experience in 2018.

Localized weather conditions may also have played an important role in causing the dicamba symptomology reported in Arkansas in 2017. Local researchers have opined that persistent wind conditions in the State this growing season may have led some applicators to improperly apply dicamba during inversions, which can lead to off-target movement. These issues may be addressed through enhanced applicator training and education.

Finally, experience from other states suggests that applicator misuse of the newer, lower-volatility dicamba formulations also may have played a role in reports of off-target dicamba symptomology in 2017. Monsanto has investigated hundreds of inquiries made to Monsanto concerning potential off-target movement of XtendiMax in other states and found that in approximately three-fourths of those cases applicators self-reported errors with respect to one or more key label requirements. These results suggest that additional applicator training on the use of these new low-volatility dicamba formulations will significantly reduce instances of off-target movement in 2018.

C. EPA and Arkansas Approval of Low Volatility Dicamba Formulations

The U.S. Environmental Protection Agency (“EPA”) reviewed research data supporting Monsanto’s new dicamba technology for nearly 7 years prior to its approval of XtendiMax in November 2016. In support of the registration of XtendiMax, Monsanto submitted several studies evaluating the product’s volatility for EPA’s review. Those studies and supporting data show that XtendiMax is significantly less volatile than older dicamba herbicide formulations. Monsanto has conducted over 1,200 controlled tests and field studies regarding dicamba volatility since 2009. These studies have produced significant data showing that volatility is not the primary component of the offsite movement of dicamba formulations. The EPA analyzed this data and reached the same conclusion: “off field exposure is more likely to be a result of spray drift and runoff.”¹² Starting with early trials in 2009 and 2010, researchers found that formulations of diglycolamine salts (“DGA”/“Clarity”) were generally half as volatile as older dicamba formulations containing dimethylamine salts (“DMA”/“Banvel”).¹³ Monsanto followed this initial volatility testing with field trials in 2012, which tested Clarity formulations, and

¹² U.S. EPA Office of Chemical Safety and Pollution Prevention, Addendum to the Environmental Fate and Ecological Risk Assessment for the Section 3 New Use of Dicamba-Tolerant Soybean, May 20, 2013, at 11, attached as Ex. 34.

¹³ See Thomas C. Mueller, et al., *Effect of Formulation and Application Time of Day on Detecting Dicamba in the Air under Field Conditions*, 61 *Weed Science* 586, 590 (2013).

forerunners of Roundup Xtend (a premix of low-volatility dicamba and glyphosate), under real-world conditions. Importantly, these trials controlled for spray drift in order to collect clear data on volatility. The results showed that the low-volatility dicamba products, including Clarity, caused less symptomology to adjacent soybeans compared with Banvel. The studies also confirmed that physical drift was by far the major factor in off-target movement when compared with volatility.

The VaporGrip discovery was made in Monsanto laboratories in 2012. Monsanto worked to incorporate this into dicamba formulations and developed the XtendiMax formulation during 2012 and 2013. Monsanto moved it from the laboratory into test fields and conducted two large field studies with XtendiMax in Georgia and Texas in 2015. The trial locations were located in cotton and soybean growing areas by design. The data from these trials confirmed that XtendiMax was significantly less volatile in the field than Clarity. Measurements of volatility from these field studies, along with information obtained regarding the dose-response relationship between dicamba vapor concentrations and plant response, led to the conclusion that XtendiMax is expected to produce far less symptomology in adjacent cotton and soybeans than Clarity under a full range of environmental conditions present in cotton and soybean areas. These trials also again confirmed that volatility is a minor component of dicamba off-target movement.

The Georgia and Texas studies were submitted to EPA in the Spring of 2016 and the results were presented to the Plant Board's Pesticide Committee in August of 2016.¹⁴ Monsanto used this field data, along with the results of humidome studies, as inputs for extensive computer modeling (using standard EPA models) to predict and evaluate the potential impacts from volatility from the application of XtendiMax. These EPA-approved models showed that XtendiMax did not pose a risk to non-target plants due to volatility.¹⁵ Based on the models and supporting research, EPA approved XtendiMax for use on November 9, 2016.

Following EPA's approval, 34 states, including Arkansas, considered EPA's findings and approved Monsanto's new, low-volatility dicamba formulation for in-crop use.

Yet, after registering XtendiMax in 2016, the Plant Board subsequently adopted a rule preventing its in-crop use within the State.¹⁶ As a result, Monsanto did not sell XtendiMax in

¹⁴ See Minutes of Pesticide Comm. Mtg., at 2 (Aug. 8, 2016), attached as Ex. 6.

¹⁵ U.S. EPA Office of Chemical Safety and Pollution Prevention, M-1691 Herbicide, EPA Reg. No. 524-582 (Active Ingredient: Dicamba Diglycolamine Salt) and M-1768 herbicide, EPA Reg. No. 524-617 (AI: Diglycolamine Salt with VaporGrip™) – Review of EFED Actions and Recent Data Submissions Associated with Spray and Vapor Drift of the Proposed Section 3 New Uses on Dicamba-Tolerant Soybean and Cotton, Nov. 3, 2016, Docket No. EPA-HQ-OPP-2016-0187-0955, attached as Ex. 7.

¹⁶ Minutes of the 407th Ark. Plant Bd. Mtg., at 9-10 (Nov. 21, 2016), attached as Ex. 8; Minutes of the 408th Ark. Plant Bd. Mtg., at 3 (Dec. 12, 2016), attached as Ex. 9 (revising and readopting rule changes passed at Nov. 21st meeting); see also Ark. Code. R. § 209.02.04(B)(2) (prohibiting the use of products containing DGA, which includes XtendiMax, from April 15 through September 15 each year).

Arkansas for the 2017 growing season. The Plant Board did, however, approve Engenia, which uses a different dicamba salt—N,N-Bis-(3-aminopropyl)methylamine salt of 3,6-dichloro-o-anisic (“BAPMA Salt of Dicamba”)—but operates in a manner similar to XtendiMax.¹⁷ Like XtendiMax, Engenia was developed as a low-volatility dicamba formulation designed to significantly reduce off-target movement. Both products received EPA approval. But despite the presence of more research on XtendiMax (demonstrating its low volatility) compared to Engenia, and XtendiMax carrying a more detailed and thorough EPA label than Engenia,¹⁸ Arkansas arbitrarily and capriciously rejected XtendiMax and approved Engenia on the sole basis that the University of Arkansas conducted some (albeit extremely limited) research with Engenia, but not with XtendiMax.¹⁹

ARGUMENT

Arkansas law requires that Plant Board rules be “based on the best reasonably obtainable scientific, technical, economic, or other evidence and information available.” Ark. Code Ann. § 25-15-204(b)(1). In addition, the Plant Board may not take actions that are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.” *Ark. Residential Assisted Living Ass’n v. Ark. Health Servs. Permit Comm’n*, 364 Ark. 372, 377 (Ark. 2005). In addition, the U.S. Constitution requires that individuals be given “notice and opportunity to be heard prior to the deprivation of a property interest.” *United States v. Monsanto*, 924 F.2d 1186, 1192 (2d Cir. 1991).

I. THE PROPOSED STATEWIDE BAN ON ALL DICAMBA FORMULATIONS AFTER APRIL 15TH IS ARBITRARY AND CAPRICIOUS.

The facts do not support a state-wide ban on the in-crop use of all dicamba herbicides in 2018. The new low-volatility dicamba herbicides were used successfully across millions of acres of

¹⁷ Minutes of the 407th Ark. Plant Bd. Mtg., at 9-10 (Nov. 21, 2016), attached as Ex. 8; Minutes of the 408th Ark. Plant Bd. Mtg., at 3 (Dec. 12, 2016), attached as Ex. 9 (revising and readopting rule changes passed at Nov. 21st meeting); *see also* Ark. Code. R. § 209.02.04(B)(3) (allowing the use of BAPMA with restrictions).

¹⁸ Compare XtendiMax label requirements, attached as Ex. 10, with Engenia label requirements, attached as Ex. 11.

¹⁹ Monsanto began sharing information with the Plant Board in 2011 concerning its dicamba product development. *See* Minutes of the Pesticide Comm. Mtg., at 3 (Oct. 18, 2011), attached as Ex. 12. Subsequently, Monsanto met with Plant Board staff and appeared before both the Pesticide Committee and the full Plant Board to provide updates and present research on Clarity and XtendiMax. Monsanto presented significant data and study conclusions to the Plant Board on drift and volatility in both 2014 and 2016. Monsanto also commissioned efficacy research with Dr. Jason Norsworthy at the University of Arkansas on Clarity. Monsanto began the regulatory approval process with EPA in 2010 and over the course of submitting data and research, developed XtendiMax in 2012. Monsanto conducted volatility studies under GLP with third party labs, per EPA requirements, and did not work with state university researchers on volatility at that time. When EPA approved the registration, Monsanto turned to state researchers, including Dr. Norsworthy, to continue field testing XtendiMax in 2017. Leading up the EPA registration, Monsanto shared its data with the Plant Board. The only thing it did not do was turn over its product, which was developed mid-stream in the EPA regulatory process, to the University of Arkansas. As Monsanto related to the Plant Board in 2016, this was based on the timing of the EPA regulatory process – not an attempt to hide the product from Arkansas.

cropland in the United States in 2017, including Engenia in most of Arkansas. This is a new tool Arkansas farmers need to control increasingly resistant weeds, like pigweed, that reduce yields. Depriving Arkansas farmers of the use of new, low-volatility dicamba herbicides – based on an unusually high number of reports of alleged dicamba symptomology in a confined area of the state during a limited period, not caused by proper use of new low-volatility dicamba – would not only be arbitrary and overbroad, it would hurt Arkansas farmers.

A. A Statewide Ban Would Be Overbroad Because the Available Evidence Shows that 90% of Reported Symptomology Occurred in a Confined Geographic Area, Mostly During a Limited Timeframe.

The available facts do not support a statewide ban on all dicamba herbicides, for several reasons. First, the facts demonstrate that the extensive reporting of dicamba symptomology in parts of Arkansas was an aberration limited to a confined area of the State during a relatively short period of time. At this point, it is clear that: (1) Arkansas saw an unusually high number of reports of dicamba symptomology in only a small, confined area of the State, covering eight contiguous counties; (2) Arkansas saw an unusually high number of reports in those counties mostly after June 11, 2017, with nearly half of all reports made within a two-week period in June; (3) eighty percent of all soybean-growing counties in Arkansas used dicamba technology successfully and experienced no per acre increase in reports of dicamba symptomology to the Plant Board in 2017; (4) nearly two-thirds of the highest soybean-producing counties in Arkansas successfully used dicamba technology in 2017; and (5) low-volatility dicamba formulations were used successfully on millions of acres of cropland across the country in 2017.

- *Arkansas saw unusually high reporting of dicamba symptomology in only a small, confined area of the State*

Nearly half of all reports of dicamba symptomology made to the Plant Board come from two contiguous Arkansas counties—Mississippi and Crittenden. There were a total of 950 complaints of dicamba symptomology made to the Plant Board through August 23, 2017. Of those, 424 reports (45%) came from Mississippi and Crittenden Counties.²⁰ Through mid-August, Mississippi County alone had more complaints to a state agriculture department than any state in the nation, save one.²¹

Broadening the analysis to include the three Arkansas counties with the next highest reporting, adds three counties that are contiguous to Mississippi and Crittenden—Craighead, Poinsett, and St. Francis. Those five contiguous counties account for nearly 75% of all reports of dicamba symptomology in the State. Of the 950 complaints received by the Plant Board, 693 (73%) came

²⁰ See Current Alleged Dicamba Misuse Complaints (950). Counties with alleged dicamba misuse complaints (26). As of 8/23/2017, provided by Arkansas Agriculture Department, State Plant Board (attached as Ex. 2).

²¹ See Official Dicamba-related Injury Investigations as Reported by State Departments of Agriculture (as of August 10, 2017) (showing Missouri as the only state with more complaints of dicamba symptomology than the 240 reported in Mississippi County, Arkansas) (attached as Ex. 3).

from Mississippi, Crittenden, Craighead, Poinsett, and St. Francis Counties.²² Through mid-August, these five Arkansas counties made 51% as many complaints of dicamba symptomology as the total number of reports received by the state departments of agriculture in all other states combined.

Broadening the analysis again to include three more counties with the next highest reporting, adds three more counties contiguous to the other five—Cross, Lee, and Phillips. Those eight contiguous counties in Arkansas account for 90% of all dicamba symptomology reports within the state. Of Arkansas’s 950 complaints, 852 come from Mississippi, Crittenden, Craighead, Poinsett, St. Francis, Cross, Lee and Phillips Counties.²³ Through mid-August these eight contiguous counties in Arkansas made 62% as many complaints as were made to state departments of agriculture in all other states combined.

- *Arkansas saw unusually high reporting of dicamba symptomology only after June 11, 2017, and nearly half of all reports were made within a two-week period in June*

Materials provided in advance of the final Task Force meeting indicate that the Plant Board received only 27 reports of dicamba symptomology prior to June 11, 2017.²⁴ Those Task Force materials also provide dates for 939 complaints of dicamba symptomology, and show that nearly half of all complaints were received between June 16-30, 2017.

- *Eighty percent of all soybean-growing counties in Arkansas used dicamba technology successfully and experienced no per acre increase in reports of dicamba symptomology in 2017*

Dicamba technology was used successfully in 33 of the 41 soybean-growing counties in Arkansas in 2017, including some of the highest soybean-producing counties.²⁵ Of the 41 soybean-growing counties in Arkansas, 15 counties had zero (0) complaints of dicamba symptomology in 2017,²⁶ and another 16 had fewer than 10 complaints.²⁷ Two other soybean-

²² See Current Alleged Dicamba Misuse Complaints (950). Counties with alleged dicamba misuse complaints (26). As of 8/23/2017, provided by Arkansas Agriculture Department, State Plant Board (attached as Ex. 2).

²³ See Current Alleged Dicamba Misuse Complaints (950). Counties with alleged dicamba misuse complaints (26). As of 8/23/2017, provided by Arkansas Agriculture Department, State Plant Board (attached as Ex. 2).

²⁴ See Arkansas Dicamba Cases Filed Per Week, provided by Arkansas Agriculture Department, State Plant Board (attached as Ex. 13).

²⁵ See *supra* note 4 (soybeans are grown in 41 Arkansas counties); see also Ark. Soybean Promotion Bd., Soybean Production Map, at <http://www.themiraclebean.com/soybean-statistics> (same) (last visited Sept. 4, 2017) (attached as Ex. 14).

²⁶ The fifteen Arkansas soybean-producing counties with zero complaints of dicamba symptomology are: (1) Crawford; (2) Sebastian; (3) Logan; (4) Johnson; (5) Yell; (6) Pope; (7) Perry; (8) Conway; (9) Faulkner; (10) Drew; (11) Lafayette; (12) Hempstead; (13) Clark; (14) Hot Spring; and (15) Prairie. Compare Current Alleged Dicamba

growing counties had slightly higher reporting, with 22 and 15 complaints,²⁸ but that increase in reporting is likely attributable to widespread adoption of new herbicide technology with detailed application requirements, and should reduce with additional applicator experience and training.

The 33 soybean-growing counties that successfully used dicamba technology in 2017 include some of the highest soybean-producing counties in the State. For example, Prairie County, Arkansas produces nearly five million bushels of soybeans annually, yet it had zero (0) reports of dicamba symptomology in 2017.²⁹ Similarly, Arkansas County produces more than eight million bushels of soybeans annually, and it had only two complaints of dicamba symptomology in 2017.³⁰ Jackson County produces nearly five million bushels of soybeans annually and it had only two reports of dicamba symptomology in 2017. Lawrence County produces nearly two million bushels of soybeans per year and it had only two reports of dicamba symptomology in 2017.³¹

Of the 41 soybean-growing counties in Arkansas, only eight counties (20%) had an aberrational and unexplained increase in reports of dicamba symptomology in 2017.³² The other 33 soybean-growing counties in Arkansas (80% of all soybean-growing counties) experienced no increased incidence of reports of dicamba symptomology in 2017, after accounting for the increased

Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (attached as [Ex. 2](#)), with Soybean Production Map (attached as [Ex. 14](#)).

²⁷ The 16 soybean-producing counties with fewer than ten complaints of dicamba symptomology are: (1) Randolph; (2) Lawrence; (3) Jackson; (4) Greene; (5) White; (6) Woodruff; (7) Pulaski; (8) Lonoke; (9) Jefferson; (10) Arkansas; (11) Lincoln; (12) Desha; (13) Chicot; (14) Ashley; (15) Little River; and (16) Miller. *Compare* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)), with Soybean Production Map (attached as [Ex. 14](#)).

²⁸ Those counties are Monroe and Clay Counties. *Compare* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)), with Soybean Production Map (attached as [Ex. 14](#)).

²⁹ *Compare* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)), with United States Department of Agriculture, National Agricultural Statistics Service, *Arkansas Soybeans – Crop Acreage, Yield, and Production* (attached as [Ex. 15](#)).

³⁰ *Compare* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)), with United States Department of Agriculture, National Agricultural Statistics Service, *Arkansas Soybeans – Crop Acreage, Yield, and Production* (attached as [Ex. 15](#)).

³¹ *Compare* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)), with United States Department of Agriculture, National Agricultural Statistics Service, *Arkansas Soybeans – Crop Acreage, Yield, and Production* (attached as [Ex. 15](#)).

³² The eight soybean-growing counties that had unusually high reporting of dicamba symptomology are: (1) Mississippi, 240; (2) Crittenden, 184; (3) Craighead, 92; (4) Poinsett, 89; (5) St. Francis, 88; (6) Lee, 67; (7) Phillips, 48; and (8) Cross, 45. *See* Current Alleged Dicamba Misuse Complaints (950), provided by Arkansas Agriculture Department, State Plant Board (reporting through 8/23/2017) (attached as [Ex. 2](#)).

acreage on which dicamba applications were permitted in 2017. In 2016, no in-crop applications of dicamba were legal and there were 32 reports of dicamba symptomology in Arkansas. In 2017, Arkansas allowed in-crop applications of dicamba for soybeans and cotton – which Monsanto estimates would have added approximately 2.1 million acres on which dicamba applications were allowed.³³ Yet, leaving aside the eight counties with unusual reporting, there were only 66 more reports of dicamba symptomology in 2017 than there were in the entire state in 2016.³⁴ This increase in reporting appears consistent with the addition of approximately 2.1 million additional acres to which dicamba herbicides were applied, and should reduce with additional applicator experience and training.

- *Nearly two-thirds of the highest soybean-producing counties in Arkansas successfully used dicamba technology in 2017*

Arkansas has 21 counties that each produce over two million bushels of soybeans per year.³⁵ Only eight of those counties had unusual reporting of dicamba symptomology in 2017.³⁶ The other 13 major soybean-producing counties in Arkansas had dicamba symptomology reports within expectations for the use of a new herbicide product with several specific label requirements. For example, Prairie County, Lincoln County, Arkansas County, and Jackson County all produce more than two million bushels of soybeans annually, yet all had two or fewer reports of dicamba symptomology in 2017. Lawrence County produces just under two million bushels of soybeans per year, and it also had only two reports of dicamba symptomology in 2017.

- *Low-volatility dicamba formulations were used successfully on millions of acres of cropland across the U.S. in 2017, and will be again in 2018*

The new low-volatility dicamba herbicides were used successfully, not only in many counties in Arkansas, but by farmers across the United States in 2017. For example, farmers in the soybean-growing states of Georgia, Kentucky, Virginia, North Carolina, Michigan and Pennsylvania

³³ Monsanto estimates that 1.5 million acres of its dicamba-tolerant Xtend soybeans were planted in Arkansas in 2017, which it expects received a single in-crop application of dicamba. Monsanto also estimates that more than 300,000 acres of its dicamba-tolerant XtendFlex cotton seeds were planted in Arkansas in 2017, which it expects received two in-crop applications of dicamba.

³⁴ See Current Alleged Dicamba Misuse Complaints (950). Counties with alleged dicamba misuse complaints (26). As of 8/23/2017, provided by Arkansas Agriculture Department, State Plant Board (attached as [Ex. 2](#)).

³⁵ The 21 Arkansas counties that produce more than 2 million bushels of soybeans per year are: (1) Clay; (2) Craighead; (3) Greene; (4) Jackson; (5) Mississippi; (6) Poinsett; (7) Arkansas; (8) Crittenden; (9) Cross; (10) Lee; (11) Lonoke; (12) Monroe; (13) Phillips; (14) Prairie; (15) St. Francis; (16) Woodruff; (17) Ashley; (18) Chicot; (19) Desha; (20) Jefferson; and (21) Lincoln. United States Department of Agriculture, National Agricultural Statistics Service, *Arkansas Soybeans – Crop Acreage, Yield and Production* (attached as [Ex. 15](#)).

³⁶ Those counties are: (1) Craighead (92 complaints); (2) Mississippi (240 complaints); (3) Poinsett (89 complaints); (4) Cross (45 complaints); (5) Crittenden (184 complaints); (6) St. Francis (88 complaints); (7) Lee (66 complaints); and (8) Phillips (48 complaints).

reported to their state agriculture departments a total of only 24 complaints of dicamba symptomology in 2017, *combined*.³⁷ Monsanto estimates that enough dicamba-tolerant seed was sold into those states to plant approximately 1.8 million acres of dicamba-tolerant crops.³⁸

Other states with dicamba-tolerant soybean acreage comparable to Arkansas³⁹—like Iowa, Kansas, and Indiana—also experienced a successful launch of the new low-volatility dicamba herbicides in 2017. Those states reported approximately 90% fewer complaints of dicamba symptomology than Arkansas.⁴⁰ In fact, farmers in Arkansas (the only soybean-growing state that did not allow the in-crop use of XtendiMax in 2017) reported nearly half of the nation’s complaints of dicamba symptomology that were made to state agriculture departments, despite having only approximately 7% of the dicamba-tolerant acres planted. These facts do not support implementing a statewide dicamba ban in Arkansas. Rather, they support undertaking investigative work to isolate the actual cause(s) of the unusually high number of reports of dicamba symptomology in a confined area of the State in 2017, so that all Arkansas counties can experience success in 2018 similar to that already being experienced in other states, and in other parts of Arkansas.

B. The Proposed Ban is Arbitrary Because it is Based on Unsubstantiated Theories Regarding Product Volatility that Are Contradicted by Science.

The proposed statewide ban on in-crop use of all dicamba formulations is arbitrary for the additional reason that it sweeps in low-volatility dicamba herbicides (XtendiMax) known not to have been involved in any of the reports of dicamba symptomology seen in Arkansas in 2017 (because it was not sold in the state), and furthermore because the proposed ban includes low-volatility dicamba herbicides despite evidence indicating that causes other than the proper use of low-volatility products were responsible for the unusually high reporting seen in those eight Arkansas counties.

³⁷ See Official Dicamba-related Injury Investigations as Reported by State Departments of Agriculture (as of August 10, 2017) provided by Dr. Kevin Bradley, Univ. of Missouri (attached as Ex. 3).

³⁸ The total acreage of dicamba-tolerant crops planted in these states will be higher, because companies other than Monsanto also sell dicamba-tolerant seed.

³⁹ Monsanto estimates that, in 2017, Iowa had 1.03 million acres of Xtend soybeans planted; Kansas had 1.26 million acres of Xtend soybeans; Indiana had 1.3 million acres of Xtend soybeans planted. Other companies also may have sold dicamba-tolerant seeds into those states.

⁴⁰ Iowa reported 86 complaints of dicamba symptomology; Kansas reported 93 complaints; Indiana reported 102 complaints; and Arkansas reported 950 complaints. See Official Dicamba-related Injury Investigations as Reported by State Departments of Agriculture (as of August 10, 2017) provided by Dr. Kevin Bradley, Univ. of Missouri (attached as Ex. 3)

- *Field research shows that symptomology is caused by factors other than volatility*

Monsanto has conducted over 1,200 controlled tests and dozens of field studies related to dicamba volatility since 2009. These studies have produced significant data showing that volatility is not the primary component of the offsite movement of dicamba formulations. Starting with early trials in 2009 and 2010, researchers found that formulations of diglycolamine salts (“DGA”/“Clarity”) were generally half as volatile as older dicamba formulations containing dimethylamine salts (“DMA”/“Banvel”).⁴¹ These trials used air monitors to detect the amount of volatilized dicamba in the air at specific time intervals after application. The research confirmed that in the field, just like in the lab, DGA combinations like Clarity were much lower volatility than older DMA compounds under actual field conditions. In addition, peer-reviewed studies conducted at Pennsylvania State University during the same time period found that DGA dicamba formulations reduced vapor drift by 94% relative to DMA formulations.⁴²

Monsanto followed these initial trials with field volatility studies conducted in 2012. Where the prior studies had looked at just the amount of dicamba released into the ambient air from volatilization, the follow-up trials focused on measuring crop symptomology from volatility—specifically looking at symptomology to adjacent soybeans. Importantly, the trials also controlled for and compared symptomology from spray drift versus symptomology from volatilization. (Researchers were able to control for drift versus vaporization by totally covering plots of adjacent beans with plastic tarps during herbicide application.) Researchers tested four dicamba formulations on 50’ x 50’ plots cut into a 50 acre soybean field. The four dicamba formulations were Banvel, Clarity, and two proprietary low-volatility experimental dicamba-containing mixtures. The researchers applied Banvel and Clarity in a mix with glyphosate to simulate actual grower applications. The findings from these trials were straightforward: volatility does occur, but physical drift is by far the major component of off-site movement. In fact, the test soybeans that were adjacent to the application of the Clarity mixture (and were covered during application to isolate them for volatility effects) showed only minimal symptomology: 5% leaf cupping to approximately 16 feet, and no plant height effects beyond 9 feet, from the application plot. The EPA conducted its own analysis of the data and concluded that drift and runoff are more likely the primary route of off-field exposure from dicamba – not volatility.⁴³

These robust field trials show that volatility is not the primary driver of off-site movement. They also show that the volatility that did occur caused very little symptomology and no appreciable

⁴¹ See Thomas C. Mueller, et al., *Effect of Formulation and Application Time of Day on Detecting Dicamba in the Air under Field Conditions*, 61 *Weed Science* 586, 590 (2013)

⁴² See J. Franklin Egan and David A. Mortensen, *Quantifying Vapor Drift of Dicamba Herbicides Applied to Soybean*, 31 *Environ. Tox. & Chem.* 1023, 1029 (2012).

⁴³ U.S. EPA Office of Chemical Safety and Pollution Prevention, Addendum to the Environmental Fate and Ecological Risk Assessment for the Section 3 New Use of Dicamba-Tolerant Soybean, May 20, 2013, at 11, attached as [Ex. 34](#).

yield loss. Further, these trials were conducted with dicamba formulations without Monsanto's VaporGrip Technology, which, as set forth below, has dramatically lower volatility than Clarity. This is hard evidence that volatility of the newer low-volatility dicamba formulations is not the cause of the unusually high reports of dicamba symptomology seen in the eight county area of Arkansas.

- *Independent research shows that dicamba does not accumulate in the atmosphere*

The Task Force's recommendation is predicated on the notion that multiple applications of dicamba herbicides, and subsequent volatilization of those applications, is causing "atmospheric loading" of dicamba in northeast Arkansas.⁴⁴ The claim is that if a significant amount of dicamba is applied in a concentrated area over a short period of time, those applications, and the subsequent volatilization, will create a high concentration of dicamba in the air above a field such that a dicamba cloud can then move off-target and cause widespread "landscape effect" symptomology to all non-dicamba resistant plants in the surrounding area. This theory was presented during the Task Force meetings in a conclusory fashion, but no data or research was provided to support this assertion and the Task Force did not request any.

In fact, independent research exists that refutes this unsupported hypothesis. Specifically, a 2007 European Union study looked at the fate and transport of Banvel in the atmosphere and concluded the following:

[D]ue to the short degradation half-lives estimated in the atmosphere, dicamba is not expected to accumulate in the atmosphere. As dicamba is soluble in water, long range transport in the atmosphere is not expected to occur.

EU Review Programme, *Dicamba: Vol. 3 Annex B8: Fate and Behaviour* 112 (Feb. 2007).

The study notes that, after the application of Banvel, between 1.2% and 0.12% of the dicamba evaporated over the course of 24 hours.⁴⁵ By comparison, Monsanto's own research indicates that XtendiMax would lose just 0.028% of its dicamba formulation over the same 24-hour period.⁴⁶ This indicates that low-volatility dicamba products like XtendiMax will not accumulate in the atmosphere and will not produce widespread landscape symptomology as a result of volatility.

⁴⁴ Winthrop Rockefeller Inst., Dicamba Task Force Meeting Report 2-3, Aug. 17, 2017, attached as Ex. 16; Dr. Jason Norsworthy, *Dicamba: What Do We Know*, presented at Aug. 17, 2017, Task Force Mtg., attached as Ex. 17.

⁴⁵ EU Review Programme, *Dicamba: Vol. 3 Annex B8: Fate and Behaviour* 107-109 (Feb. 2007).

⁴⁶ Joy L. Honegger, *Study Profile for MRID 49888501, Field Volatility of Dicamba Formulation of MON 119096 Following Pre-Emerge Application Under Field Conditions in the Southeastern USA* (April 7, 2016), attached as Ex. 18 (EPA Registration Study No. MRID 49888502).

C. The Proposed Ban is Arbitrary Because it Ignores Evidence that Symptomology Reported in the Affected Counties Was Caused By Something Other than Proper Use of Low-volatility Dicamba Products.

Investigators who walked fields in the eight affected Arkansas counties reported seeing uniform symptomology—most often mild to moderate leaf cupping—across entire fields of soybeans in many cases. Certain of those reports are described in BASF’s August 3, 2017 FIFRA § 6(a)(2) report to the Office of Pesticide Programs at the U.S. Environmental Protection Agency. That submission included several reports from farmers in Mississippi and Crittenden counties in Arkansas. It describes reports of “[m]ild to moderate leaf cupping throughout field” on various fields in Crittenden County and Mississippi County.⁴⁷ It also includes reports of “[m]ild to moderate leaf cupping in multiple fields throughout the county” in “multiple locations/Mississippi.”⁴⁸ It also reports “[m]ild leaf cupping and slightly stunted growth across entire field” for several fields—some exceeding 1000 acres—in Mississippi County.⁴⁹

That pattern of symptomology – uniform, mild symptomology across large fields – is suggestive of contamination or possible widespread use of older, more volatile dicamba formulations, and is inconsistent with symptomology from herbicide drift.⁵⁰ Herbicide drift produces symptomology patterns that taper from the site of application. Drift produces a gradient of symptomology ranging from more to less severe moving away from the site of the herbicide application. Uniform, mild symptomology across entire fields is suggestive of low-levels of dicamba (or other herbicide) contamination in other herbicides applied directly to non-dicamba tolerant soybeans, or possibly of high levels of volatilization and drift from the illegal use of older, more volatile dicamba formulations, the labeling of which does not permit in-crop applications (and, thus, also does not provide instructions for how to make such applications while avoiding off-target movement).

- *Available data demonstrate the need to investigate possible herbicide contamination, illegal use of higher volatility products, localized weather conditions, and applicator errors as causes of the unique experience in this eight-county area.*

The actual cause of the unusually high reporting of dicamba symptomology in those eight Arkansas counties is presently unknown. However, the extreme localization of this adverse

⁴⁷ Letter from J. Arthur, BASF Mgr. of US Registrations, to Office of Pesticide Programs, USEPA (Aug. 3, 2017), attaching incident reports for unexpected drift or offsite movement per 40 C.F.R. § 195.195(a)(2), attached as Ex. 19.

⁴⁸ *Id.* at 4, 5.

⁴⁹ *Id.* at 6.

⁵⁰ See Thomas B. Orr, et al., Summary of Investigations of the Potential for Off-Site Movement through the Air of the Herbicide MON 54140 Following Ground Applications (July 16, 2012), attached as Ex. 20 (EPA Registration Study No. MRID 48876001).

event reporting (within a single, contiguous eight-county area nationwide) eliminates the possibility that the volatility profile (or any other aspect) of low-volatility dicamba formulations used in 2017 is responsible for the reports currently being investigated there. Only approximately 7% of all dicamba-tolerant acres planted in the U.S. in 2017 are in Arkansas, and only approximately 3-4% of total U.S. acres are in the affected eight counties. Despite the widespread use of low-volatility dicamba formulations in the other 97% of dicamba-tolerant acres planted across the entire United States, nowhere else did farmers report a similar number of complaints as did farmers in this limited area of Arkansas. Presumably, if low-volatility dicamba products were responsible for the symptomology reports in that approximately 3-4% of dicamba-tolerant acres, they would have produced similar reporting somewhere else in the remaining 97% of those acres. But that is not the case.

While the localization of reports suggests that low-volatility dicamba products are not the cause, it does support, along with other available data, other possible causes:

- Bulk retailers serving this area may have failed to properly clean bulk tanks and nurse tanks between mixing dicamba applications for growers and non-dicamba applications, thus providing dicamba-contaminated herbicide mixes to growers in the area;
- Insufficient segregation processes at herbicide processing/packaging facilities may have caused dicamba-contamination in entire lots of non-dicamba herbicides shipped into this region;
- Significant illegal use of older, higher volatility dicamba herbicide formulations in this area may have produced much higher volatilization and drift rates than those found in areas using the new lower-volatility dicamba products;
- Localized weather conditions may have resulted in widespread misuse of newer low-volatility formulations of dicamba during inversions; and
- Misuse of approved, lower-volatility dicamba formulations.

There is evidence to support all five possibilities, and all five possibilities are readily correctible through additional training, education, and enforcement. First, the localized symptomology reports are consistent with contamination occurring at one or more bulk retailers servicing this region. Bulk retailers utilize mixing tanks to prepare customized applications for growers. These tanks must be thoroughly rinsed between mixes to prevent contamination from the last load. If tank cleaning is inadequate, dicamba from a previous mix could end up in a subsequent load and be unknowingly applied to non-resistant crops. Monsanto was recently made aware of reports that one retailer discovered a defective valve that had released dicamba into other herbicide products, resulting in dicamba symptomology in several fields in an unidentified state. This type of contamination may have occurred in this region of Arkansas.

Second, multiple reports of dicamba symptomology concentrated in a confined geographic area are also consistent with contamination of entire lots of non-dicamba herbicide shipped into this region. Following the high level of reporting in Arkansas, Monsanto pulled samples from

various retailers and found contamination in several generic, non-dicamba herbicides. Those results were verified by an independent outside laboratory and submitted to the State of Arkansas.⁵¹

Third, there is good reason to believe that farmers in certain areas of Arkansas illegally used significant amounts of older, more volatile dicamba herbicides in 2017. Monsanto estimates that 1.5 million acres of dicamba-tolerant soybean seeds and over 300,000 acres of dicamba-tolerant cotton seeds were planted in Arkansas in 2017. Yet, BASF, the only company selling a dicamba herbicide approved for over-the-top use in Arkansas has reported that it did not sell enough low-volatility dicamba herbicide in Arkansas in 2017 to cover nearly that many acres.⁵² Some of the reporting may also have been caused by burndown uses of older dicamba formulations. For example, there was at least one confirmed report of aerial applications of dicamba being made in Mississippi County, Arkansas, the county with the highest number of dicamba symptomology reports (240 reports) in 2017.⁵³

Fourth, localized weather conditions may have led to a significant misuse of Engenia during inversions, according to Tom Barber, extension weed scientist for the University of Arkansas System Division of Agriculture:

The weather may have had something to do with at least some improper applications, Barber said.

“Bad weather makes it very difficult to get in the fields and make proper applications,” Barber said. “A lot of farmers or applicators may have sprayed in conditions that were not ideal for spraying, but were ideal for drift, but we rely on the Plant Board to make these final determinations.”

Because of high winds during the day, Barber said he had heard that some may have chosen to spray at night when there was no wind. But temperature inversions are common when there’s no wind at night, holding the volatile spray above the canopy. Drift can then occur when wind returns in the morning.”

F. Miller, Univ. of Arkansas System Division of Agriculture, *Dicamba Drift Complaints up Sharply, Release by UAEX* (June 14, 2017), at <http://www.aad.arkansas.gov/arkansas-dicamba-information-updates> (last visited Sept. 3, 2017).

⁵¹ Letter from D. Simpson, Monsanto Gov’t Affairs, to W. Ward, Sec. Ark. Dept. of Agriculture, Aug. 24, 2017, attached as Ex. 5 (confirming independent lab results showing dicamba contamination of certain generic glufosinate products).

⁵² Statements made by BASF representative Jeff Burke during an untranscribed Dicamba Task Force meeting attended by members of the Plant Board.

⁵³ See Case Number 17-027, Request for Investigation Information (reporting 2,4-D/Dicamba symptomology from an aerial application made by “Empty Pocket Flying Service” near Osceola/Wilson, in Mississippi County, Arkansas) (attached as Ex. 35).

Dr. Barber's statements were echoed by Dr. Bob Scott, another weed scientist with the University of Arkansas, just days later:

Bob Scott, professor and weed scientist at the University of Arkansas Cooperative Extension Service, spent about two weeks on the road when the complaints started coming in to take a look at the damaged fields and offer growers help Scott blames the drift problems in Arkansas primarily on wind movement and possibly inversions, as opposed to volatility....

Jackie Pucci, *Arkansas Plant Board Votes to Ban Dicamba - Now What?*, Crop Life, June 23, 2017, at <http://www.croplife.com/crop-inputs/arkansas-plant-board-votes-to-ban-dicamba-now-what/> (last visited Sept. 3, 2017).

Finally, there is evidence suggesting that applicator misuse of the new low-volatility dicamba formulations may have played some role in the dicamba symptomology reported in northeastern Arkansas. The Plant Board has not completed its investigations of the symptomology reports from 2017, but experience from other states suggests that applicator misuse of the newer, lower-volatility dicamba formulations may have played a major role in reports of off-target dicamba symptomology in 2017. Monsanto has investigated hundreds of applicator reports made to Monsanto of potential off-target movement of XtendiMax in states other than Arkansas and found that in approximately three-fourths of the cases applicators have self-reported errors with respect to one or more of the first 7 of 10 key label requirements. Those requirements are: (1) required buffer, (2) approved nozzles, (3) boom height, (4) application rate, (5) wind speed, (6) application volume, and (7) ground speed. Monsanto is continuing to evaluate compliance with three additional key label requirements: (8) approved tank mixes and use of DRAs, (9) nozzle pressure, and (10) no sensitive crops downwind. These results suggest that additional applicator training on the use of these new low-volatility dicamba formulations will significantly reduce instances of off-target movement in 2018.

- *Monsanto's low-volatility dicamba herbicide was not involved in any of the reports of dicamba symptomology seen in Arkansas in 2017*

None of the complaints in Arkansas in 2017 involves Monsanto's XtendiMax product. Monsanto did not sell XtendiMax in Arkansas in 2017, because the Plant Board prohibited any in-crop use of the product within the State. The available data also indicates that the unusually high reporting seen in that confined area in Arkansas may not have been caused by proper applications of other low-volatility products, which were used successfully in other areas of the country.

D. The Proposed Ban is Arbitrary and Overbroad Because it Will Cause, Rather than Prevent, Soybean Yield-Losses for Arkansas Farmers.

- *Even in the affected Arkansas counties, little to no yield loss is expected*

The mild symptomology seen in the high-reporting counties in Arkansas is expected to cause little to no yield loss. In fact, a noted weed scientist from the University of Arkansas, Division of Agriculture, who visited these counties to view the reported symptomology, wrote: “As we have seen in our research, a very low rate (1/30,000X) of dicamba can cause soybean leaves to cup. No, there will not be any yield loss at this low of a rate, but you will still see the injury on the beans ... [m]ost of the injury I have walked appears to be lower rates of dicamba drift at young vegetative growth states. This should result in minimal if any yield losses.”⁵⁴

- *The proposed dicamba ban would cause yield loss by denying Arkansas farmers an important weed-control tool and accelerating weed-resistance*

The Task Force’s recommendation also fails to consider how banning dicamba will affect weed-resistance problems in Arkansas. A total ban on the use of dicamba during the growing season has significant potential to make Arkansas’s weed problems worse. A dicamba ban would leave growers with few options for post-emergence control of palmer amaranth and other resistant weeds. For chemical control, if dicamba is not available, growers will be forced to turn exclusively to a very limited few broad-spectrum herbicides, including glufosinate. Without available dicamba products, Arkansas’s growers will essentially be left with a single mode of action against problem weeds.

It is well-established that using one herbicide with a single mode of action produces a “high risk” environment for accelerating weed resistance.⁵⁵ A decision to ban the use of dicamba for the foreseeable future creates a worst-case scenario for increasing resistance by forcing growers to apply the same mode of action, to the same crops, in the same way, over multiple seasons. This is contrary to the fundamentals of modern weed management practice, which prioritizes diversification of herbicide modes of action.⁵⁶

⁵⁴ Tom Barber, *Symptomology Reports From Dicamba Pouring in Over the Last 2 Weeks*, June 12, 2017, at <http://www.arkansas-crops.com/2017/06/12/reports-dicamba-pouring/> (last visited Sept. 1, 2017).

⁵⁵ See Resistance Risk Assessment, Herbicide Resistance Action Committee, <http://hracglobal.com/prevention-management/best-management-practices> (last visited Sept. 6, 2017).

⁵⁶ See William K. Vencill, et al., *Herbicide Resistance: Toward an Understanding of Resistance Development and the Impact of Herbicide-Resistant Crops*, *Weed Science* (Sp. Issue) 2-24 (2012).

E. The Dicamba Ban Was Not Recommended by Disinterested Researchers.

- *The Task Force erroneously relied on the views of Dr. Ford Baldwin, a retained expert in litigation against Monsanto*

The Task Force failed to consider the potential conflicts of interest that compromise the views of Dr. Ford Baldwin. Dr. Baldwin spoke at the first Task Force meeting in support of a statewide ban on dicamba herbicides in 2018. Dr. Baldwin works as a paid consultant for Bayer CropScience, the manufacturer of glufosinate, an herbicide technology that competes with dicamba.⁵⁷ And Dr. Baldwin is also currently serving as a retained expert witness for plaintiffs in a dicamba lawsuit currently pending against Monsanto in Missouri.⁵⁸

In connection with his role as an expert witness in the litigation, Dr. Baldwin submitted a 25 page, 107 paragraph Affidavit in support of Plaintiffs' positions.⁵⁹ In it he explained that he was already participating in (and influencing) the Arkansas Plant Board, specifically relating to issues regarding dicamba:

In 2016, the Arkansas State Plant Board asked me (sic) attend all pesticide committee meetings involving dicamba, including meetings on complaints, fines and penalties for illegal dicamba spraying.

Aff. at ¶ 10. Given Dr. Baldwin's paid engagements on behalf of a competing product, and his work as an expert witness in pending dicamba litigation, this is troubling. The Task Force should have disregarded his biased views and opinions, and instead sought disinterested advice. The Plant Board should do the same.

- *The Task Force also improperly relied on input from Dr. Jason Norsworthy*

Like Dr. Baldwin, Dr. Norsworthy also publicly endorses a competing weed control technology (glufosinate), and has since at least 2016.⁶⁰ His glufosinate endorsements occurred both before

⁵⁷ See *Bader Farms, Inc. et al. v. Monsanto Company*, Case No. 1:16-cv-00299, U.S. Dist. Ct., Eastern District of Missouri, Affidavit of Dr. Ford L. Baldwin at ¶¶ 7-8 (excerpts attached as Ex. 21).

⁵⁸ See Aug. 22, 2017 email from A. Splittgerber of Randles Splittgerber, counsel for plaintiffs in *Bader Farms, Inc., et al v. Monsanto Company*, to J. Miller of Thompson Coburn LLP, counsel for Monsanto Company in *Bader Farms, Inc., et al v. Monsanto Company* (stating "Ford Baldwin is an expert witness retained by Plaintiffs. All of his knowledge regarding this case has been developed in his role as an expert.") (attached as Ex. 22).

⁵⁹ See *Bader Farms, Inc. et al. v. Monsanto Company*, Case No. 1:16-cv-00299, U.S. Dist. Ct., Eastern District of Missouri, Affidavit of Dr. Ford L. Baldwin (April 27, 2017) (excerpts attached as Ex. 21).

⁶⁰ Dr. Norsworthy has endorsed a competing weed control technology for soybeans, Bayer CropScience's glufosinate-based Liberty Link technology. See, e.g., Liberty Link Flyer (comparing LibertyLink with Monsanto products and including the following quote from Dr. Jason Norsworthy: "The next best technology is already available in the LibertyLink system") (attached as Ex. 23); <https://www.cropscience.bayer.us/news/blog/2016/september/09082016-weed-resistance-panel-on-rural-america-live> (Bayer website promoting "a live show to discuss the LibertyLink® system on a segment of Rural America

and during the time that Dr. Norsworthy was supposed to be conducting an objective examination of dicamba.

Dr. Norsworthy provided a summary presentation—without substantial scientific data—at the first meeting of the Arkansas Task Force, advocating a complete statewide ban on dicamba in 2018. Dr. Norsworthy recommended a flat ban on dicamba based solely on a PowerPoint presentation that did not disclose his methodology, failed to provide sufficient data analysis, and did not provide evidence of quality and accuracy controls. As discussed further below, Dr. Norsworthy’s presentation materials are an outlier and stand in stark contrast to the great weight of technical evidence that has been developed around XtendiMax and other low-volatility dicamba products. In light of this, it was unreasonable for the Task Force to rely almost exclusively on Dr. Norsworthy’s summary opinions in recommending a ban. Dr. Norsworthy’s endorsements of competing weed control technology for several years, combined with his outlier findings concerning XtendiMax, warrant skepticism of Dr. Norsworthy’s objectivity in this situation.

F. The Task Force Failed to Meaningfully Consider Alternatives to a Ban.

- *The Task Force did not meaningfully investigate the current problems and consider more targeted remedies*

The Governor directed the Task Force to “review the dicamba technology, investigate current problems with its use and application, and make longer term recommendations for the future.”⁶¹ The Task Force did not follow the Governor’s directive. It failed to undertake an independent investigation into the dicamba-related complaints from northeast Arkansas and did not take an in-depth look at the facts in the eight most affected counties. As explained above, an independent investigation is warranted in light of the fact that the dicamba symptomology complaints from those eight counties alone equals 62% of the total number of dicamba symptomology reports made to state departments of agriculture *in all other states in the nation combined*. Further, the Task Force did not make long term recommendations that growers, regulators, and businesses can rely on in the future. Instead, the Task Force defaulted to an overbroad ban.

The Task Force could have, but did not, meaningfully consider more targeted approaches to addressing the increased reports of dicamba symptomology in the State. Approaches such as:

Live,” during which Jason Norsworthy will “discuss the rise of weed resistance, control with the highest-performing active ingredient and unique site of action,” which will air on September 12, 2017); <https://www.cropscience.bayer.us/Learning-Center/Articles/Weed-Resistance-Recent-History> (Bayer website describing a presentation Jason Norsworthy made at a banquet following Bayer’s “Respect the Rotation tour” in 2011, stating: “Norsworthy noted one Arkansas grower who faced a devastating outbreak of *Palmer amaranth*. He was able to save his farm by turning to the LibertyLink® trait and Liberty® herbicide....”).

⁶¹ Press Release, Arkansas Agriculture Dept., Arkansas Dicamba Task Force Members Announced (Aug. 8, 2017), attached as Ex. 1.

(1) immediate investigation to identify the actual cause(s) of the unparalleled number of complaints received in the confined eight-county area; (2) regulations targeted to addressing the actual cause(s) of those complaints, whatever it/they might be; (3) additional education and training for applicators; (4) more stringent record-keeping requirements; (5) additional enforcement of existing restrictions; (6) a ban on dicamba only in those eight counties; (7) increased fines for illegal or off-label use of dicamba herbicides; (8) restricting applications during the period in June that saw the highest number of reports; (9) enhancing the label to address local weather conditions; or (10) any number of other more targeted approaches.

A total ban on the use of all dicamba-containing products after April 15th in Arkansas for the 2018 soybean and cotton growing season is unwarranted, unreasonable, and arbitrary and capricious unless and until the Plant Board or other regulatory body addresses these factors and considers these alternatives. *See* Ark. Code Ann. § 25-15-204(a)(3)(E) (requiring agencies to consider reasonable alternatives).

II. ARKANSAS SHOULD ALLOW THE USE OF LOW-VOLATILITY DICAMBA HERBICIDES, INCLUDING XTENDIMAX, IN 2018 AND BEYOND.

The facts support new rulemaking allowing the use of low-volatility dicamba herbicides, including XtendiMax, in Arkansas in 2018 and beyond: (1) research data show that XtendiMax is significantly less volatile than other dicamba herbicide formulations; and (2) the Plant Board's prior decision to prohibit the in-crop use of XtendiMax was arbitrary and capricious.

- *Research data show that XtendiMax is orders of magnitude less volatile than other formulations containing dicamba*

Monsanto's early research and testing of Clarity and related products showed that diglycolamine salt ("DGA") formulations of dicamba are significantly less volatile than older formulations of dicamba and thus drastically reduce off-target movement.⁶² Yet, in an effort to continue to improve the tools available to growers, Monsanto worked to further decrease the volatility of DGA. The result was XtendiMax—a low volatility version of DGA that helps keep the molecules where they are applied.

Monsanto has exhaustively tested XtendiMax relative to Banvel and Clarity and found that XtendiMax is three orders of magnitude less volatile than Banvel and over one order of magnitude less volatile than Clarity.⁶³ Further, data collected from field research trials in 2015 show that, of the small amount of dicamba that does volatilize from XtendiMax, the vast

⁶² Joy Honegger, et al., *Off-Target Movement Due to Potential Volatility of M1691 Herbicide Poses No Risk to Threatened and Endangered Species* 3, Feb. 4, 2016, attached as Ex. 24 (Summarizing studies completed during EPA registration process).

⁶³ Walter K. Gavlick, *Determination of the Relative Volatility of Dicamba Herbicide Formulations* 13 (Nov. 17, 2015), attached as Ex. 25 (EPA Registration Study No. MRID 49770303).

majority volatilizes in the first 24 hours, providing more certainty for growers when looking at application conditions like temperature, anticipated wind speeds, and precipitation.⁶⁴ Monsanto has also conducted full field trials and used EPA-required computer models to anticipate and address spray drift issues and volatility. This research was developed in part for the FIFRA registration process and submitted to EPA for extensive review and approval.⁶⁵

As a part of its research for EPA registration, Monsanto conducted large scale volatility studies using research plots in Texas and Georgia.⁶⁶ These studies were conducted under varied environmental conditions (high temperatures, varied relative humidity, and different soil types in Texas and Georgia), and application rates and agronomic conditions (in-crop and pre-emergence) that are consistent with typical applications in cotton and soybean growing regions, including Arkansas. The data collected from these studies confirmed that XtendiMax exhibits significantly lower volatility than Clarity when applied in real-world conditions.⁶⁷ These field trials also confirmed what Monsanto's 2012 field trials concluded—that volatility plays a minor role in off-target movement as compared to physical drift.

On two occasions, Monsanto invited Dr. Norsworthy and others from the University of Arkansas to observe the Georgia and Texas field studies in person and inspect the field trials. However, these invitations were declined.⁶⁸ Monsanto also presented the results and methodology of these field trials during an extensive presentation to the Pesticide Committee of the Plant Board on August 8, 2016.

Monsanto worked with academics from across the country to continue field testing XtendiMax in 2017. Monsanto commissioned drift and volatility field trials with researchers from the University of Tennessee, Mississippi State University, the University of Nebraska, Purdue University, and Dr. Norsworthy with the University of Arkansas, among others. The full complement of this data is not yet available, but the preliminary data—with the exception of Dr. Norsworthy's findings at the University of Arkansas—are consistent with Monsanto's prior findings that XtendiMax exhibits significantly lower volatility than both Banvel and Clarity.

⁶⁴ See Honnegger, *Off-Target Movement Due to Potential Volatility*, at 4 & n.2.

⁶⁵ See Dicamba: New Use on Herbicide-Tolerant Cotton and Soybean, EPA Docket No. EPA-HQ-OPP-2016-0187 at www.regulations.gov/docket?D=EPA-HQ-OPP-2016-0187 (last visited September 5, 2017).

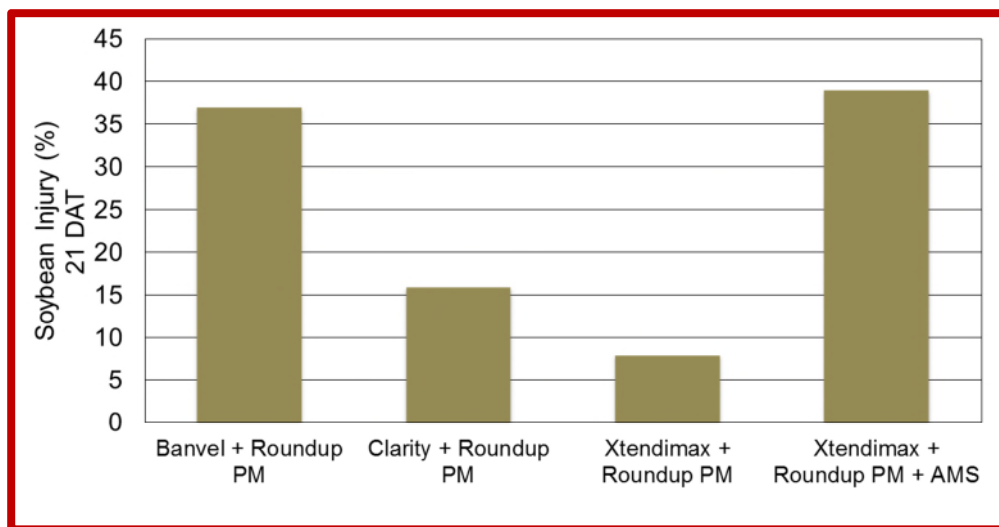
⁶⁶ Brian Jacobson, et al., *Field Volatility of Dicamba Formulation MON 119096 Following a Pre-Emerge Application Under Field Conditions in the Southeastern USA* 1-315 (Mar. 30, 2016), attached as Ex. 26 (EPA Registration Study No. MRID 49888501) (“Georgia Field Study”); Brian Jacobson, et al., *Field Volatility of Dicamba Formulation MON 119096 Following a Post-Emerge Application Under Field Conditions in Texas* 1-308 (Mar. 30, 2016), attached as Ex. 27 (EPA Registration Study No. MRID 49888503) (“Texas Field Study”).

⁶⁷ See Georgia Field Study at 27-32, Texas Field Study at 27-31 .

⁶⁸ Letter from T. Schmidt, Monsanto, to Otis Howe, Chair. Ark. Plant Bd. (Oct. 12, 2016), attached as Ex. 28; Ark. State Plant Bd., Nov. 21, 2016 Public Hearing and Comments Summary and Board Resp. at 2 & Attach. 1, attached as Ex. 29.

Purdue University’s preliminary field volatility results, for example, show that XtendiMax is approximately half as volatile as Clarity and five times less volatile than Banvel.⁶⁹ The data also confirm that the addition of ammonium sulfate (“AMS”) fertilizer to XtendiMax significantly increases volatility. Growers sometimes include fertilizer, particularly AMS, in tank mixes when applying herbicides. This is strictly prohibited by the XtendiMax label and the Purdue results show why this is important.

Purdue University Preliminary Results



Purdue’s preliminary results are consistent with field tests conducted in 2009 and 2010, 2012, and 2015, and are consistent with the EPA-approved modeling Monsanto performed in 2016, which found XtendiMax to have very low volatility. Monsanto expects that when the full 2017 field results are available, the weight of this already overwhelming evidence will grow. Further, the experience of other states with XtendiMax in 2017 is consistent with these findings.

Dr. Norsworthy’s preliminary findings presented to the Task Force, however, are an outlier. Dr. Norsworthy presented his findings to the Task Force in a conclusory PowerPoint presentation that failed to set forth his study methodology and did not reference any data controls. Further, his slides are unclear and raise serious questions that the Plant Board should review before giving evidentiary weight to Dr. Norsworthy’s opinions. For example, he appears to use soybean indicator plants that are at differing growth stages. This raises the potential for skewed symptomology data. He also does not provide information concerning the location of the indicator plants, their relative distance from the sprayed plots, and whether the plants were within the buffer zones set forth on the product labels. It is also unclear if the study controls for potential variables other than symptomology caused by vapor, like surface contact.

⁶⁹ Data provided by Dr. Bryan Young, Purdue University. Results based on low tunnel experiment in the field.

Dr. Norsworthy told the Task Force that the symptomology observed in the studies he conducted was all attributable to volatility.⁷⁰ Yet, his presentation included data contrary to this assertion. Specifically, his slides show that no symptomology was observed beyond the area affected by physical drift at the time of application. They also indicate that no additional movement of dicamba was measured beyond the point where physical drift caused symptomology. In addition, the data showed no upwind symptomology. These data points show that the injury could have been caused by either drift or volatility. Thus, physical drift cannot be ruled out as the driving factor of symptomology as Dr. Norsworthy suggests.

Importantly, Dr. Norsworthy's assumption that 5% visual damage results in significant yield loss is unfounded and contradicted by other field studies. Soybeans are sensitive to dicamba and therefore can exhibit significant visual injury. But that visual injury does not necessarily lead to yield loss. For example, a 2016 field study conducted by Kevin Bradley at the University of Missouri found that soybean yield loss did not begin until 40% or more visual injury was observed.⁷¹ In fact, in the field observation study conducted by Dr. Bradley, soybean yields actually increased over the average yield despite the fact that the soybeans exhibited visual injuries of 10%, 20%, 30% and 40%. The table below shows the relationship between visual damage and the ultimate yield observed by Dr. Bradley:

Soybean yield		
% of visual injury	% of historical average	Bushels per acre
0-20%	115%	55
21%-40%	104%	49
41%-60%	68%	32
61%-80%	35%	17
81%-100%	2%	1

Based on this data, 5% visual symptomology would have no negative effect whatsoever on yield.

⁷⁰ Winthrop Rockefeller Inst., Dicamba Task Force Meeting Report 2-3, Aug. 17, 2017, attached as Ex. 16.

⁷¹ Mindy Ward, Does Dicamba Drift Cause Soybean Yield Loss?, Missouri Ruralist (July 12, 2017), at <http://www.missouriruralist.com/herbicide/does-dicamba-drift-cause-soybean-yield-loss> (last visited Sept. 4, 2017).

This difference between visual symptomology and yield loss can be explained by two well understood principles:

- 1) Yield loss increases when the herbicide exposure occurs closer to the time of soybean reproductive development, and
- 2) Yield loss increases as the dose of the herbicide increases. For example, a high dose exposure during early vegetative development may not result in a yield loss, but exposure of the same or lower dose during the flowering stage is more likely to cause soybean yield loss.

See Kevin Kelley, et al., *Plant Growth Regulator Injury to Soybean*, University of Illinois Extension Report, at <http://weeds.cropsci.illinois.edu/extension/factsheets/PGR.pdf> (last visited Sept. 4, 2017). The timing and dose of exposure are significant and interrelated factors that can impact yields. (That's why the XtendiMax label accounts for this agronomic condition by restricting applications when nearby crops are in reproductive stages.)

By using 5% visual symptomology as his benchmark, Dr. Norsworthy completely ignores these principles. Further, because yield is unlikely to be dramatically impacted, using 5% symptomology as justification for a statewide ban is patently unreasonable.

- *The State of Arkansas's prohibition on the use of XtendiMax for 2017 was arbitrary and capricious*

The Plant Board's rulemaking in 2016 banning the use of XtendiMax during the 2017 growing season was arbitrary and capricious, and failed to comply with the requirements of the Arkansas Administrative Procedure Act ("APA"). See Ark. Code Ann. § 25-15-204. Section 204(a) of the Arkansas APA provides the procedures for public notice of rulemaking and the requirements for accepting public comment on proposed rules. § 25-15-204(a)(1), (2). This section also provides a number of specific requirements that agencies "shall" consider prior to promulgating a new rule or amending an existing one, including: whether the action is required by statute, whether the action impacts existing statutes or rules, the specific nature and significance of the problem being addressed by the action, whether existing rules created or contributed to the problem, whether reasonable alternatives exist, and the financial impact of the proposed action. § 25-15-204(a)(3). Furthermore, subsection (b) of Section 204, clearly states that an "Agency shall not adopt, amend, or repeal a rule unless the rule is based on the best reasonably obtainable scientific, technical, economic, or other evidence and information available concerning the need for, consequences of, and alternatives to the rule. § 25-15-204(b)(1). By mandating the consideration of these factors, the APA sets up the conditions for reasoned and fact-based decisionmaking by administrative bodies, including the Plant Board. See § 25-15-202(2)(A) (defining a board of the State of Arkansas, including the Plant Board, as an "Agency" under the APA). Conversely, an agency that ignores these requirements runs the risk of reaching decisions that are not supported by evidence, are vague, overbroad, and arbitrary and capricious. See *Dept. of Human Servs. & Child Welfare Agency Rev. Bd. v. Howard*, 238 S.W.3d 1, 6 (Ark. 2006).

Instead of using these procedures to reach a clear-eyed and reasonable determination concerning XtendiMax, the Plant Board arbitrarily focused on a single narrow factor – whether Monsanto had previously allowed Dr. Norsworthy and specific colleagues of his at the University of Arkansas to conduct research on XtendiMax prior to EPA approval. The administrative record is replete with examples of this unreasonably narrow focus.⁷² For example, the audio recording of the July 25, 2016, Pesticide Committee meeting provides the following exchange between a Pesticide Committee Member and Dr. Boyd Carey, a Monsanto researcher who provided testimony on the results of Monsanto’s volatility and drift trials with Clarity and Banvel:

Pesticide Committee Member: How long have you had the product that we’re going to be using over this crop that we’re doing right now?

Dr. Carey: I’m not exactly sure but I think it’s been the last couple of years that we’ve had those formulations actually available.

Pesticide Committee Member: I just don’t understand. If you’ve had it for a couple of years, how come these guys [referring to Dr. Norsworthy and his University of Arkansas colleagues] haven’t had it for a couple of years? I mean, we’re going to be getting the data from people that y’all are paying to do the research. I’d like to see it from these guys who we’ve put faith in.

Dr. Cary: I understand.

Pesticide Committee Member: I think that is horrible.

Audio Recording at 02:19:07, July 25, 2016 Pesticide Comm. Mtg. Later, in the same meeting, the Pesticide Committee again showed that it was not interested in *any* data other than that created by the University of Arkansas:

Pesticide Committee Chairman: And I reiterate what [Pesticide Committee Member] said of BASF and Dow that have worked really closely with these guys over here [referring to University of Arkansas Weed Scientists]. Y’all need to understand, these are the guys we’re looking to – we’re not looking through third party data y’all. That’s not going to be well accepted in this body. I know it’s not your decision [referring to Monsanto Government Affairs Representative] but you need to take that back to St. Louis and make them understand it. We’re going to want to hear, these are our experts and nobody else.

Pesticide Committee Chairman: Y’all are the messenger.

⁷² Minutes of Pesticide Comm. Mtg., at 5, 6 (July 25, 2016), attached as Ex. 30; Minutes of Pesticide Comm. Mtg., at 3 (Aug. 8, 2016), attached as Ex. 6; Letter from Ark. Plant Bd. to T. Schmidt, Monsanto, Oct. 20, 2016, attached as Ex. 31; Ark. State Plant Bd., Nov. 21, 2016 Public Hearing and Comments Summary and Board Resp., at 2-3, attached as Ex. 29.

Audio Recording at 03:00:18, July 25, 2016 Pesticide Comm. Mtg. These are just a few of the many examples during Pesticide Committee and Plant Board Meetings indicating that the Plant Board would not consider any data or research that was not specifically produced by the University of Arkansas.

The Plant Board reaffirmed its unreasonably narrow focus on University of Arkansas research in the Plant Board's response to comments document concerning the XtendiMax ban. In the response to comments, the Plant Board premised its adoption of the ban – not on facts and findings specific to the ban – but rather by disregarding Monsanto's research as “not ... unbiased” without justification and relying solely on the absence of testing by Dr. Norsworthy and the University of Arkansas.⁷³ In addition, the Plant Board relied exclusively on Dr. Norsworthy to respond to Monsanto's comments, simply attaching them to its response to comments document without discussion or verification.⁷⁴

This exclusionary approach to rulemaking is contrary to the provisions of Section 204 of the Arkansas APA, and is violative of the APA's requirement that rules be based on the “best reasonably obtainable scientific, technical, economic” or other information concerning the need for the rule. *See* Ark. Code § 20-20-204(b). It was arbitrary and capricious for the Plant Board to disregard all other data presented by Monsanto. It was also arbitrary and capricious and an abdication of its statutory mandate as a rulemaking body to essentially delegate all information collection and analysis to the University of Arkansas and Dr. Norsworthy. *See* Ark. Code § 2-16-406.

Also, while the Plant Board places a hyper-focus on obtaining research from the University of Arkansas, it seemingly cares very little about how robust that research is. The Plant Board lauded other companies for conducting research with the University of Arkansas and pointed out on more than one occasion that Dr. Norsworthy had tested Engenia for drift and volatility. Yet, Dr. Norsworthy's study was less than robust. In fact, the Plant Board approved Engenia based on data from a single University of Arkansas trial, conducted over 1/3 of an acre.⁷⁵ Conversely, the Plant Board criticized Monsanto for not conducting research with the University of Arkansas, but largely ignored the large-scale drift and volatility study results that Monsanto presented to the Pesticide Committee. This is proof once again that the Plant Board's rule banning the use of XtendiMax was arbitrary and capricious.

Further, the lack of detailed findings supporting the Plant Board's decision is itself arbitrary and capricious. *See Wagon v. Arkansas Health Servs. Agency*, 40 S.W.3d 849, 853 (Ark. Ct. App.

⁷³ Ark. State Plant Bd., Nov. 21, 2016 Public Hearing and Comments Summary and Board Resp. at 1-3, attached as Ex. 29.

⁷⁴ *See* Attachment 1 to Nov. 21, 2016 Public Hearing and Comments Summary and Board Resp. (Email from Jason Norsworthy to Susie Nichols, Dec. 11, 2016), attached as Ex. 29.

⁷⁵ Winthrop Rockefeller Inst., Dicamba Task Force Meeting Report 2-3, Aug. 17, 2017, attached as Ex. 16.

2001) (finding commission’s emergency rule invalid because of failure to make findings). In fact, in its response to comments, the Plant Board did not make any affirmative findings in favor of the ban. Instead, the response to comments merely states that “the Board agreed with the comments [in favor] and voted to approve the proposed regulations as written.”⁷⁶

- *The Plant Board’s research requirement is arbitrary and capricious*

While the Plant Board was resolute in its unreasonable and narrow position that XtendiMax could not be approved without providing research data created by the University of Arkansas, it at the same time struggled with determining whether this stance was an actual “rule” of the Plant Board in the first place. An analysis of the administrative record shows that no such rule existed before August of 2016, and the Plant Board’s attempts to impose such requirements on Monsanto retroactively as justification for banning XtendiMax are unfair and unlawful.

The Plant Board first dealt with this issue at the August 8, 2016, Pesticide Committee Meeting. Plant Board staff brought the Committee a draft regulation codifying the Plant Board’s purported authority to require research from a specific entity—*i.e.*, the University of Arkansas—before a pesticide could be approved for use in the state.⁷⁷ The audio recording of the meeting indicates that Ms. Susie Nichols, the head of the Plant Board Pesticide Division, stated that the reason the rule was being introduced was because “I have been asked lately where [it] is written.”⁷⁸ Subsequently, the Committee confirmed that the “policy” was not a written policy, but rather implemented by “previous acts and precedence (sic).”⁷⁹ The Committee went on to adopt the rule *via* voice vote without discussion. The Pesticide Committee’s recommendation was subsequently adopted by the Plant Board on September 30, 2016, and set for a public hearing. In response to the new proposed research requirement rule (“Regulation 7”) Monsanto submitted a letter seeking clarification regarding whether the new requirement would be retroactive to XtendiMax, essentially requiring Monsanto to complete University of Arkansas research before it could be approved.⁸⁰ The Plant Board responded and took the position that the requirement was not “newly determined” or “retroactive” and that Monsanto was aware of the requirement, despite the fact that the policy was unwritten.⁸¹

The full Plant Board went on to adopt Regulation 7 at its November 21, 2016, special meeting, with Ms. Nichols and Chairman Howe making specific statements that this was not a new

⁷⁶ Ark. State Plant Bd., Nov. 21, 2016 Public Hearing and Comments Summary and Board Resp. at 1, attached as Ex. 29.

⁷⁷ Minutes of Pesticide Comm. Mtg., at 4 (Aug. 8, 2016), attached as Ex. 6.

⁷⁸ Audio Recording at 02:16:43, Aug. 8, 2016 Pesticide Comm. Mtg.

⁷⁹ Audio Recording at 02:24:17, Aug. 8, 2016 Pesticide Comm. Mtg.

⁸⁰ Letter from T. Schmidt, Monsanto, to Otis Howe, Chair. Ark. Plant Bd., Oct. 12, 2016, attached as Ex. 28.

⁸¹ *See* Letter from Ark. Plant Bd. To T. Schmidt, Monsanto, Oct. 20, 2016, attached as Ex. 31.

practice and that the rule was promulgated “just to formalize the process.”⁸² However, instead of sending the proposed rule to the Governor, the Plant Board voted to withdraw the rule at its December 12, 2016 meeting based on a discussion between Ms. Nichols and the Attorney General’s Office. The meeting minutes reflect that the Attorney General’s office advised that the Plant Board has the “option of determining what information is used” to make determinations on pesticides under The Arkansas Pesticide Classification and Use Act.⁸³ (Notably, the Pesticide Classification and Use Act provision merely states that the Plant Board “shall give consideration” to research and findings from other “agencies of this state, the federal government, or other reliable sources;” it does not give the Plant Board authority to rely exclusively on research from the University of Arkansas. *See* Ark. Code § 20-20-206(a)(2).) The Plant Board withdrew Regulation 7 without discussion. The Rule was revived, however, in January of 2017, when Governor Hutchinson issued a letter stating that the Plant Board’s rulemaking concerning the introduction of new pesticide technologies must be “more clearly defined” including clarifying the “methods that are used and the research on which the Plant Board relies.”⁸⁴ The Governor specifically asked the Plant Board to provide him with a solution “within forty-five (45) days, which provides clear rules to industry as to what the Plant Board expects in terms of prior study and testing by independent third party research.” In response, at its January 20, 2017 meeting, the Pesticide Committee reopened discussion on Regulation 7, created impromptu amendments during a 10 minute recess, and subsequently adopted a revised regulation.⁸⁵ The audio transcript from the January 20, 2017, meeting indicates that the intention of the Committee was to send the revised regulation to the Governor’s office.⁸⁶ However, because the amended version has not been adopted by the full Plant Board, it cannot be formally promulgated and the status of Regulation 7 remains unclear.

What this record does make clear, however, is that the Plant Board did not have the legal authority to ban the use of XtendiMax during the growing season based on the absence of University of Arkansas research data. The Plant Board’s requirement for research was, at best, a protocol known to only a select few staff, and, at worst, a myth used to justify the denial of XtendiMax. The Plant Board’s *ad hoc* evaluation and approval process is unclear and broken. Monsanto and other companies bringing new technology to Arkansas growers did not and do not have any set of rules to rely on concerning what needs to be prepared, submitted, or researched. That fact was made clear by Governor Hutchinson’s January 4, 2017 letter. Furthermore, occasional and inconsistent pronouncements of “requirements” at quarterly meetings by Plant Board members is not a sufficient, reasonable, or fair process when dealing with technologies that are complex and expensive in terms of data collection and research.

⁸² Minutes of the 407th Special Ark. Plant Bd. Mtg., at 3 & 7 (Nov. 21, 2016), attached as Ex. 8.

⁸³ Minutes of the 408th Ark. Plant Bd. Mtg., at 7 (Dec. 12, 2016), attached as Ex. 9.

⁸⁴ Letter, A. Hutchinson, Gov. of Ark., to O. Howe, Chair. Ark. Plant Bd., Jan. 4, 2017, attached as Ex. 32.

⁸⁵ Minutes of Pesticide Comm. Mtg., at 1-3 (Jan. 20, 2017), attached as Ex. 33.

⁸⁶ Audio Recording at 01:18:27, Jan. 20, 2017 Pesticide Comm. Mtg.

In sum, the Plant Board based its 2016 decision to ban the use of XtendiMax during the growing season on the absence of “required” University of Arkansas research data. The Plant Board’s decision was (and is) arbitrary and capricious because the administrative record shows that no such requirement ever existed – and still does not exist. *See McLane Co., Inc. v. Davis*, 110 S.W.3d 251, 259 (Ark. 2003) (finding an action by State Tobacco Control Board “arbitrary, ultra vires, and unenforceable” because Board failed to show action complied with statute or regulation).

III. Formal Petition for Rulemaking to Amend Arkansas Regulations on Pesticide Use

Pursuant to Section 25-15-204(d) of the Arkansas Administrative Procedure Act, Monsanto requests that the Plant Board amend the Arkansas Regulations on Pesticide Use to provide for the following:

1. Allow the use of low-volatility formulations of dicamba products (“low-vol dicamba”), including those that contain diglycolamine salt and sodium salt of dicamba and carry the trade name XtendiMax[®] with VaporGrip[®] Technology (hereinafter “XtendiMax”), for in crop use;
2. Allow low-vol dicamba, including XtendiMax, to be used during the growing season for over the top use without date restrictions; and
3. Allow the use of low-vol dicamba and XtendiMax with restrictions no greater than those included on the EPA- approved labels for the products.

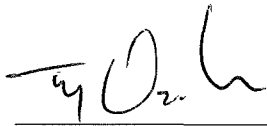
Monsanto submits this request for rulemaking to serve as an administratively complete petition pursuant to the Arkansas Administrative Procedure Act and has provided evidence in support of this request in the sections above. Under Section 25-15-204(d), within 30 days of receipt of this petition, the Plant Board is required to either deny the petition and issue a statement of reasons in support of the denial, or initiate rule-making procedures consistent with the petition. Should the Plant Board initiate rule-making, Monsanto intends to participate fully in those proceedings and reserves its full rights to offer additional evidence, comments, and testimony in support of this petition. Monsanto further reserves all of its rights to seek judicial review upon denial of this petition or any other final agency action taken by the Plant Board or other administrative bodies regarding these issues.

WHEREFORE, Monsanto respectfully submits this petition and requests that the Arkansas State Plant Board initiate rulemaking accordingly.

Date: September 7, 2017



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