CENTER FOR FOOD SAFETY

June 3, 2024

U.S. Environmental Protection Agency
Office of Pesticide Programs
1200 Pennsylvania Ave., NE
Washington, DC 20460-0001

RE: Docket EPA-HQ-OPP-2024-0154
Receipt of Application for "New Use" of Dicamba Herbicide

On behalf of itself and its 970,000 members and supporters, Center for Food Safety appreciates the opportunity to comment on this application for new use of dicamba herbicide and the associated proposed label. Center for Food Safety (CFS) is a public interest, nonprofit membership organization with offices in Washington, D.C., San Francisco, California, and Portland, Oregon. CFS's mission is to empower people, support farmers, and protect the earth from the harmful impacts of industrial agriculture. Through groundbreaking legal, scientific, and grassroots action, CFS protects and promotes the public's right to safe food and the environment.

Introduction

Bayer has applied for registration of a dicamba product for use with dicamba-resistant soybeans and cotton (FR 89: 36816, May 3, 2024). EPA states that the application involves "an application to register new uses for a new pesticide product containing a currently registered active ingredient." The proposed label lists the name of the new product as KHNP0090 HERBICIDE. EPA should clarify any differences between this product and Bayer's previously registered, over-the-top dicamba formulation, XtendiMax.

Proposed Reductions in Maximum Application Parameters Will Have Little or No Impact in Reducing Dicamba Drift Damage in Light of Historical Use Patterns

The proposed label would reduce the maximum annual number of permissible dicamba applications and the maximum amount that could be applied per acre per year to dicamba-resistant soybeans and cotton by half: from 4 applications and 2 lbs/acre/year to 2 applications and 1 lb/acre/year. However, this change would have little or no impact on the spray and vapor drift damage that dicamba has caused over the past seven years, in light of historical use patterns. As the table below shows, use of the diglycolamine and BAPMA salts of dicamba (encompassing the over-the-top formulations) on soybeans has averaged less than 30% of the hitherto prevailing application maxima, and less than 60% of the proposed limits of 2

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applications and 1 lb/acre/year. Average use of the OTT formulations on cotton, while somewhat higher and more variable, still comes to roughly just 40% of the former limits and 75% of the proposed maxima (~1.5 applications and ~0.75 lbs/acre/year).

Thus, the historically unprecedented drift damage caused by over-the-top formulations of dicamba over the past seven years has occurred despite the vast majority of farmers applying far less than they legally could have applied, and still significantly less than would be permitted under the proposed label. Therefore, there is no reason to expect that the proposed reductions in maximum application parameters would result in any meaningful reduction in dicamba drift damage.

Average Use of OTT Dicamba on Dicamba-Resistant Soy and Cotton: 2017 to 2023			
Year	**Crop**	**No. Appl's/Year**	**Lbs./Acre/Year**
2017	Soy	1.15	0.58
2018	Soy	1.20	0.59
2020	Soy	1.15	0.55
2023	Soy	1.15	0.56
2017	Cotton	1.55	0.70
2019	Cotton	1.75	0.96
2021	Cotton	1.30	0.60

Average of the mean values for the diglycolamine and BAPMA salts of dicamba for Program State farmers surveyed by USDA Agricultural Chemical Use reports for the respective years.

Summertime Use of Dicamba on Cotton Will Continue to Cause Unacceptable Crop Damage

The proposed label contains no change with respect to the cutoff date for dicamba application to Xtendflex cotton, which would remain July 30th. Dicamba would still be legally sprayed far into summer, ensuring spray and vapor drift damage to crops in the vicinity of dicamba-using cotton growers. By EPA's latest estimate, Xtendflex cotton is grown on three-fourths of national cotton acreage, with two-thirds sprayed one or more times with dicamba (EPA 2021, pp. 10-11). Therefore, with on average 12.5 million acres planted to cotton since 2017,[1] roughly half (6.3 million acres) has been sprayed with dicamba; and with approximately 1.5 applications of an OTT product to cotton per year (see table above), half of that (3.2 million acres) has been sprayed twice with dicamba. Thus, soybeans and other crops in the vicinity of over 6 million cotton acres will be subject to dicamba drift and damage from cotton use alone; and fields grown in regions near the over 3 million cotton acres sprayed twice, and hence later into the summer, will be still more highly impacted.

These facts help explain why some of the worst dicamba injury to soybeans, other crops, trees and natural areas has occurred in the mid-South region where cotton and soybeans are grown in close proximity: northeastern Arkansas, the Missouri Bootheel and western Tennessee. They also explain why an EPA analysis in 2020 found that a July 30th cutoff date in

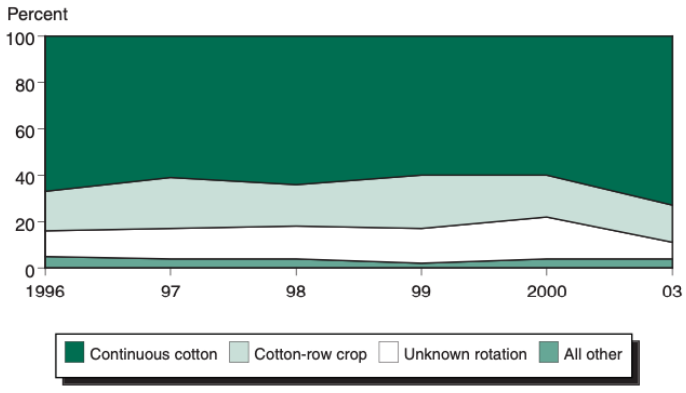
[1] See https://www.nass.usda.gov/Charts_and_Maps/graphics/cotnac.pdf.

cotton is so late that it would have prevented less than 5% of the dicamba damage episodes reported by registrants in 2018 and 2019 (EPA 2020, Figure 2, p. 15). EPA's contention that dicamba damage has been limited in cotton growing states (EPA 2021, p. 40) clearly represents a case of cherry-picking states (e.g. Georgia), while ignoring the major cotton-producing states cited above. The major reason for lower incident reporting in cherry-picked states is that soybeans, by far the most widely-planted of dicamba-sensitive crops, are very little grown in the southern tier of cotton-growing states. As noted above, where soybeans and cotton co-occur, there is massive dicamba damage to soybeans. And the greater intensity and far later permissible application date for dicamba use in cotton strongly implicates OTT dicamba in cotton as a disproportionately major cause of injury.

Established with the 2020 registration, this cutoff date thus has nothing to do with preventing dicamba drift injury, and is purely a concession to the U.S. cotton industry, to help facilitate continued unsustainable practices. In perhaps no other crop are fundamental tenets of sustainable weed management flouted so blatantly as in cotton. It is well-known that some of the earliest and most intractable glyphosate-resistant weed populations arose in cotton, and this was due in part to excessive reliance on glyphosate in Roundup Ready varieties. Another contributing factor that receives all too little attention is the fact that nearly three-fourths (73%) of U.S. cotton acres are cultivated as continuous cotton (USDA 2006, pp. 97-100, see Figure 4.2.4, reproduced below). It is well established that a continuously-grown crop provides ideal conditions for weeds that are well-adapted to the crop to flourish, while crop rotation contributes to weed suppression (Liebman and Dyck 1993). Continuous cotton thus contributes to larger weed populations than would occur were the crop to be grown in rotation, and these larger weed populations redouble crippling reliance on the herbicide and herbicide crop system du jour. This means that continuous cotton not only exacerbates weed populations, but when that cotton is herbicide-resistant (the vast majority), those weeds are under tremendous selection pressure to evolve resistance thanks to the unhealthy reliance on herbicide-resistant crop-associated herbicides.

Figure 4.2.4

Cropping patterns on cotton for 5 major production States, 1996-2003



Source: USDA, ERS, Agricultural Resource Management Surveys.

Source: USDA (2006).

The proposed July 30th cutoff date would thus permit continued unacceptable drift damage across millions of acres of cropland in the name of a short-term technological fix that ends up exacerbating the problem it provides temporary relief from. For instance, dicamba-and glyphosate-resistant Palmer amaranth were discovered in Tennessee cotton as early as 2020,[2] while recent reports demonstrate high levels of dicamba resistance in waterhemp in the state.[3]

Barring post-emergence dicamba use in soybeans will not be effective

The proposed label prohibits dicamba use in soybeans after June 12th or crop emergence, whichever comes first. While this provision might at first glance appear promising in terms of reducing dicamba vapor drift, a data-driven analysis shows that it would not even come close to reducing dicamba drift damage to "acceptable" proportions.

First, however, it should be underscored that there would be massive non-compliance with this application restriction. From the rollout of the full dicamba-resistant crop system seven years ago in 2017, growers have become accustomed to apply dicamba post-emergence. This is understandable, since the Xtend weed control system was developed to facilitate weed control weeks to over a month after crop emergence, as expressed in the moniker "over-the-top." In fact, EPA has so fully associated this crop system with post-emergence use that it has applied that very term – over-the-top, OTT – to the XtendiMax, Engenia and Tavium dicamba formulations registered for use with dicamba-resistant crops, and did so prior to their limitation to use with Xtend crops.

Farmers have been conditioned to apply herbicides post-emergence ever since the practice became nearly universal with Roundup Ready crops. While it is true that Xtend soybeans make preemergence crop treatment more convenient (by eliminating the two- to four-week preplant waiting period required with conventional soybeans to permit dicamba residues to dissipate before crop emergence), this feature is far overshadowed by the post-emergence application predilection of most field crop farmers.

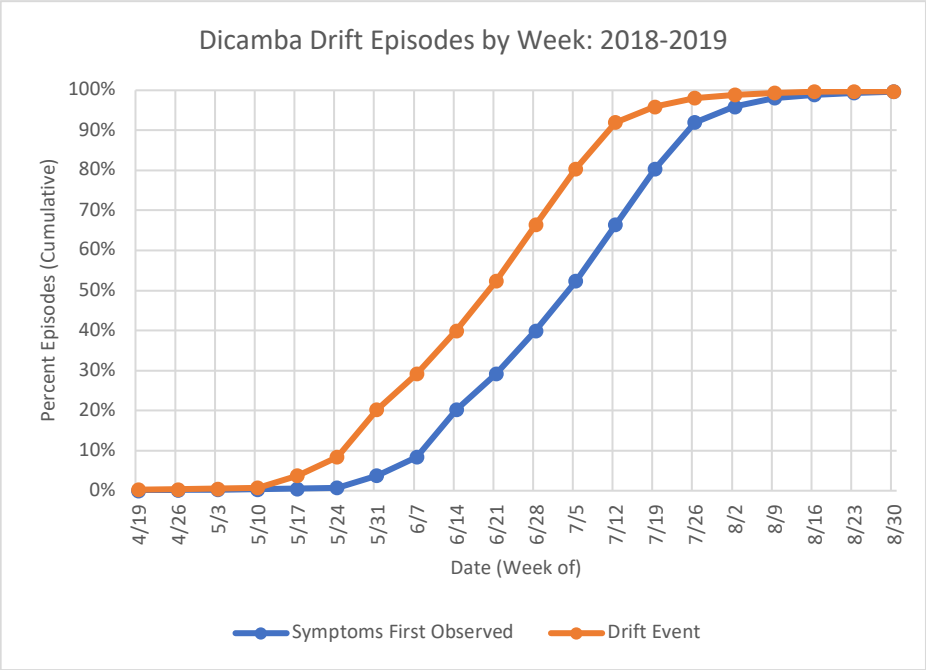
However, even assuming that soybean growers would comply with the proposed label's restriction to preemergence use, it would not begin to reduce dicamba vapor and spray drift damage sufficiently to justify this "new use."

First, consider the effect of the proposed calendar date cutoff of June 12th. In the graph below, CFS has re-created and corrected an analysis conducted by EPA (EPA 2020, Figure 2, p. 15). The blue curve represents EPA's analysis of registrant off-target injury data reported under FIFRA Section 6(a)(2). The data plotted represent the dates that farmers first observed symptoms of dicamba injury to their crop (predominantly soybeans), as reported to the registrant. However, dicamba injury symptoms typically appear on new growth only 1 to 3 weeks after exposure; at lower levels of exposure typical of many vapor or spray drift episodes, symptoms take a longer period of time to manifest (Jeschke 2021). The dates plotted in the orange "drift event" curve take this time lag between exposure and manifestation of symptoms

[2] See http://www.weedscience.com/Pages/Case.aspx?ResistID=19221.

[3] See https://news.utcrops.com/2023/10/multiple-herbicide-resistant-waterhemp-in-tennessee/

into account in a conservative manner. The date of each plotted injury episode is displaced to two weeks prior to the date symptoms were first observed, the date of the presumed drift event that gave rise to the damage. The graph shows that roughly 30% of dicamba injury episodes resulted from drift events that occurred up to and including the week of June 7th (through June 13th). Given the unprecedented scope of dicamba drift injury, which affected from 4 to over 15 million acres of soybeans alone in 2018 (EPA 2020, Table 8, p. 31), a label restriction that – even if followed – would still permit a third of those episodes to occur is not nearly good enough.

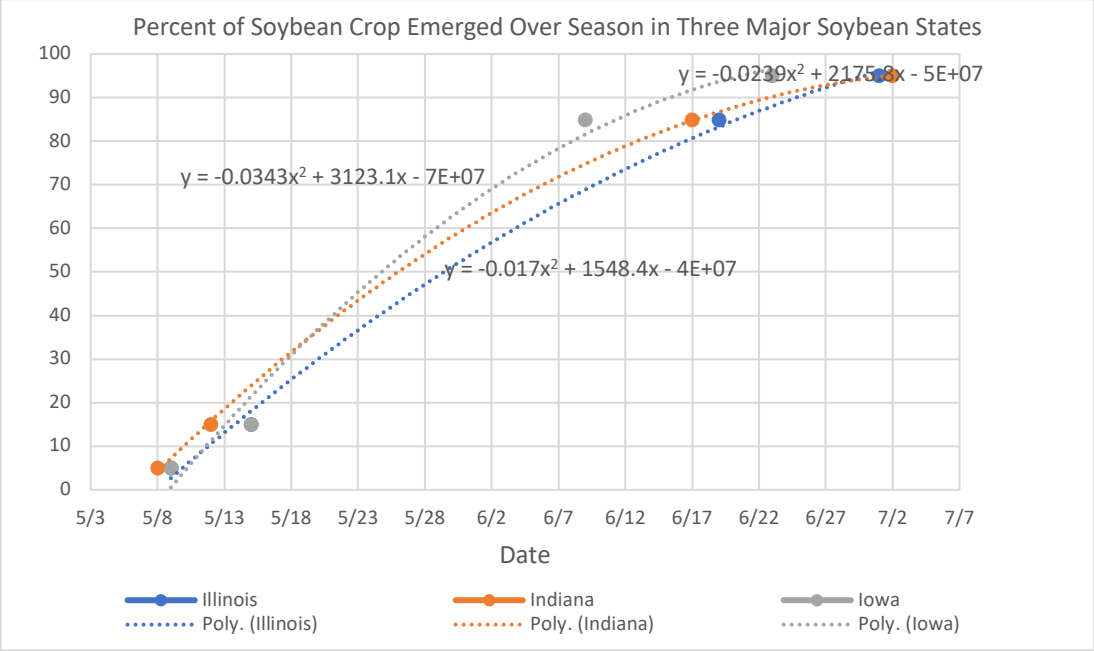


Source: CFS analysis of data on dicamba drift injury episodes reported by registrant Bayer for 2018 and 2019. BASF data for the corresponding years not included because the datasets lacked information on date of application or emergence of symptoms.

It should be emphasized that the data portrayed above are derived from just two years of data, and may not represent dicamba damage before or since, given factors such as weather and rainfall that strongly influence dicamba drift and volatility, and that vary greatly in various regions of the country from year to year. Moreover, the data are derived from a registrant, Bayer, that has a long track record of concocting junk science and deceiving regulators and farmers with respect to the threats posed by its dicamba system. Thus, it is entirely possible that Bayer has not fully reported dicamba damage data it has knowledge of, or in other ways skewed the data to present a less troubling picture of dicamba damage.

Second, consider the crop emergence cutoff. The efficacy of this cutoff is undermined by the large range of soybean planting dates in any given region, the substantial number of crops and wild plants and trees susceptible to dicamba drift injury early in the year, and the greater plant injury from compression of the permissible dicamba spraying period. Each factor is addressed in turn below.

The fundamental weakness of a crop emergence cutoff is that it encompasses a broad calendar range depending on the management practices of individual growers. With respect to soybeans, it takes no account of variability of soybean emergence dates for farmers in a given region. Based on USDA crop planting data, an Xtend grower's soybean emergence date may well differ by several to as many as six weeks from that of another farmer growing a dicamba-susceptible soybean variety in his/her vicinity, as depicted below in the graph plotting the cumulative percentage of soybean acres emerging in Illinois, Indiana and Iowa over the course of a typical planting season.



Source: USDA (2010). USDA reports state-specific planting dates for soybeans in terms of the dates by which specified cumulative percentages of the state's crop are planted (5%, 15%, 85% and 95%, corresponding to Begin, Most Active and End dates). We have added one week to these planting date milestones to account for the typical time it takes for soybeans to emerge, thus transforming planting dates into crop emergence dates for Illinois, Indiana and Iowa.

While some of the variability in planting dates will be attributable to climatic variation across the state (with farmers in the milder region of the state tending to plant earlier, versus later planting in the colder region), much will also depend on myriad factors associated with individual growers' management practices, including crop rotations, which practices are employed to prepare a field for planting (e.g. whether moldboard plowing, various forms of rotational no-till, other variants of conservation tillage, or burndown herbicide use), whether cover crops have been planted and decisions about when and how to end them, among many others. Unlike the climatic factors that influence planting date, management practices will vary among farmers in a given locale, and cannot be predicted.

If one takes the dates corresponding to 5% and 85% of soybean acres emerged to represent the range for the earlier-planting, milder portion of a state, and the dates corresponding to 15% and 95% acres emerged to represent the range of dates for the colder region, one can see that soybean emergence dates for growers in any particular locale will still

differ by as much as four to six weeks (see graph above). Consequently, Xtend growers who plant in the later part of the respective ranges will see their crops emerge several to many weeks later than their neighbors', whose soybeans will thus be vulnerable to dicamba drift injury from legal applications by those Xtend growers.

Some have noted that there is an increasing tendency in recent years to plant soybeans earlier in the season, around the time corn is planted. Louis Nelms has observed this in Illinois (Louis Nelms comment to this docket), and I have seen soybean fields here in Pennsylvania that are emerging at the same time and stage as corn. Thus, the 2010 planting date data upon which the soybean emergence graph above is based may well skew late relative to current trends in soybean planting, meaning greater potential for early-season dicamba spraying and drift injury than indicated there.

A second factor that undermines the efficacy of the restriction to pre-emergence dicamba use on soybeans is the plethora of plants that emerge and thus are susceptible to damage early in the season. Louis Nelms of Illinois has followed dicamba drift damage in Illinois for many years, and each year since 2017 has begun observing dicamba symptoms (severe cupping) on leaves of his white oak trees in the last week of April, with dicamba-typical downward cupping on sycamore leaves in early May (personal communication). The photo below shows red clover damaged by dicamba taken by Nelms around May 24th of this year (personal communication). See also similar dicamba damage to red clover in a video posted May 22, 2020 by Geiger Farm (https://www.youtube.com/watch?v=f_cvV39nxig). These are just random snapshots of early-season dicamba drift injury to non-soybean plants – an issue that deserves far more careful attention and analysis than EPA has devoted to it thus far.

Photo by Louis Nelms of dicamba-injured red clover, taken around May 22nd, 2024.

Finally, there are several problems associated with compressing the permissible dicamba spraying window for soybeans to pre-emergence or June 12th. An earlier soybean cutoff compresses more dicamba into a shorter early season window that is already crowded with applications of dicamba and other drift-prone auxins to other crops. The early-season dicamba damage to plants alluded to above would be exacerbated under the proposed label, as applications formerly permissible through June 30th are squeezed to the extent possible into a much shorter window ending in the latter part of May to no later than June 12th. Because dicamba can indeed volatilize at air temperatures in the 70s (with soil and likely crop tissue temperatures 10 to 20 degrees higher), atmospheric loading and subsequent long-distance drift injury would be exacerbated.

Applicators under time pressure to complete applications by the cutoff would be more likely to violate label restrictions. April and May are generally windier than June, meaning a higher likelihood of dicamba spray drift damage. This earlier application period also coincides with more frequent rainfall, including increasingly common high rainfall events, which gives rise to a greater threat of runoff and resulting damage from runoff.

To sum up, the proposed label would not substantially reduce dicamba drift injury, for many reasons. Intensive dicamba use on cotton through July 30th will continue to wreak havoc on soybeans and many other plants. The restriction for use on soybeans until crop emergence or June 12th will likely not be followed by many growers long accustomed to post-emergence use, for which the Xtend crops were explicitly designed. Even to the extent the new soybean cutoff is followed, a substantial minority of past incidents have occurred prior to June 12th, while soybean emergence varies so widely in any given locale that there will practically always be susceptible soybeans emerged when an Xtend grower sprays before this cutoff. The compression of dicamba spraying by nearly three weeks (June 12th from June 30th) will exacerbate early-season atmospheric loading and subsequent plant damage, squeeze more dicamba into a time of season that is windier and rainier, increasing the potential early season spray drift and runoff damage.

Label Inconsistency and Infeasibility

As discussed above, the proposal to continue allowing dicamba to be sprayed on cotton through July 30th is purely a political concession to an unsustainable cotton industry. Farmers are not mindless, label-obeying automatons. Like all of this, they are far more likely to comply with rules and regulations that accomplish their intended purpose and are fair. The multitude of changing dicamba label restrictions largely dictated by dicamba registrants have entirely failed to achieve their intended purpose of reducing dicamba drift injury to anything approaching acceptable bounds. Regulations that both do not work AND are perceived to be unfair are particularly prone to eliciting anger and non-compliance.

The one-month disparity in cutoff dates for soybeans and cotton (June 30th vs. July 30th) written into the 2020 registrations was widely felt to be unfair in farm country, and provoked frustration, as even EPA has acknowledged (EPA 2021, pp. 33, 35). EPA needs to better understand how irrational, politically-motivated regulatory decisions such as this one

erodes not only compliance with this specific rule (among soybean growers), but more broadly undermines faith in and compliance with EPA pesticide regulatory decisions overall. The proposed label increases the discrepancy in dicamba application windows for soybeans and cotton from one month to seven weeks or more, and will be received by farmers as still more unfair and cynical. As retired weed scientist Ford Baldwin of Arkansas put it in his comment to this docket:

> "I also ask how the Agency can reconcile a proposed preemergence only label for soybean with a June 12 cut-off while allowing two in-crop applications in cotton with a July 30 cutoff. This makes absolutely no sense when cotton and soybean are intercropped in the midsouth with the same farmers growing both crops. These proposed labels do nothing to reduce the amount of potential damage in the most heavily affected area in the country.

As the Ninth Circuit Court of Appeals ruled in 2020, citing agronomic experts, the then prevailing, 2018 dicamba registrations imposed weather-related and other restrictions on use that made it impossible to consistently control weeds without violating the label, a problem EPA finally acknowledged in 2021 under the name of product usability (EPA 2021, pp. 33-34). Those restrictions failed to reign in drift, despite their infeasibility. EPA loaded on more stringent restrictions in the 2020 registrations (e.g. replacing growth stage with calendar date cutoffs), which it acknowledged made compliance still more infeasible (Ibid.). The proposed label's further restriction on soybean use will likewise fail to achieve its intended purpose, and only succeed in giving Bayer a pretext to shift the blame for dicamba injury from its defective dicamba formulation and crop system to growers and applicators for presumed violations of labels that are impossible to follow.

Endangered Species Act (ESA) Considerations

CFS endorses the Center for Biological Diversity's discussion of the need for full compliance with the ESA in making any decision on the proposed application, in their comments to this docket.

Conclusion

For all of the reasons discussed above, CFS urges EPA to reject the proposed application for "new use" of an herbicide that has wrought entirely unacceptable crop injury over the past seven years. No prior label amendments have come anywhere near reducing dicamba vapor and spray drift to "acceptable" bounds, and neither would this one. Over seven long years, EPA has failed abysmally in its duties to follow the science, and to protect the environment and the farming community from dicamba. It is time for EPA to put an end to this dicamba debacle once and for all.

Sincerely,

Bill Freese, Science Director
Center for Food Safety

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