Office of
INDIANA STATE CHEMIST AND SEED COMMISSIONER
Protecting Indiana's Agriculture and Environment - Feed, Fertilizer, Pesticide and Seed

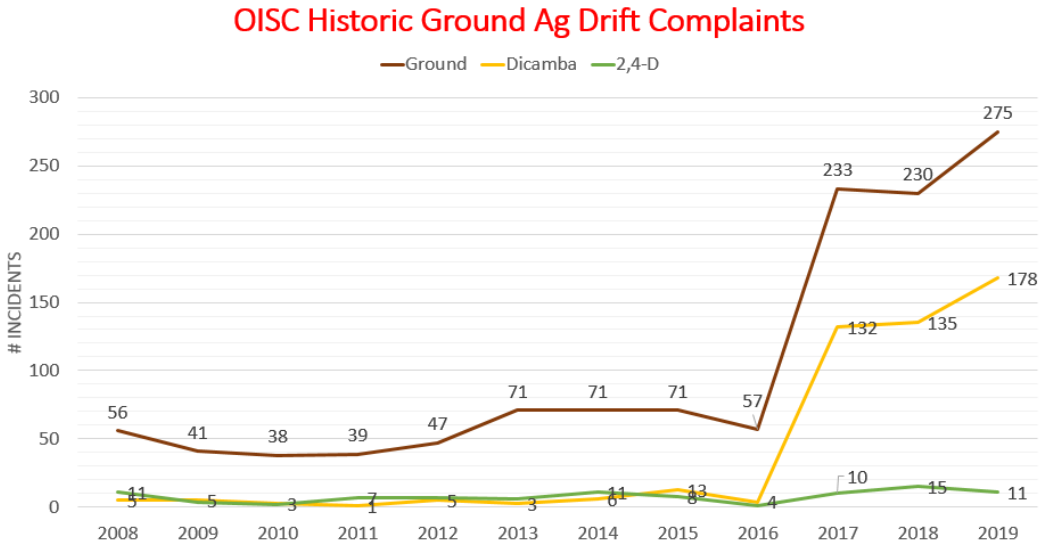
Purdue University • 175 South University Street
West Lafayette, IN 47907-2063
Telephone (765) 494-1492 • Facsimile (765) 494-4331
www.oisc.purdue.edu

Robert D. Waltz, Ph.D.
State Chemist &
Seed Commissioner

October 30, 2019
Analysis of Off-Target Movement of Dicamba Herbicides in Indiana

The Office of Indiana State Chemist (OISC) has done a detailed review and analysis of off-target movement incidents of dicamba herbicide in Indiana for a period covering more than a decade, up to and including 2017 through 2019. These products include Engenia Herbicide (EPA Reg. No. 7969-345), DuPont Fexapan Herbicide with VaporGrip Technology (EPA Reg. No. 352-913), Xtendimax with VaporGrip Technology (EPA Reg. No. 524-617), and Tavium Plus VaporGrip Technology Herbicide (EPA Reg. No. 100-1623). As a result, OISC has determined that dicamba-containing herbicides intended for post emergence application are not adequately labeled to sufficiently prevent unreasonable adverse effects from occurring to non-target crops and plants. The OISC analysis included the following:

1. Annual off-target movement complaints to OISC for agricultural ground applications of dicamba herbicides for the period of 2008 -2016 averaged five but never exceeded 13. By contrast, since the introduction of the post emergence use of dicamba on soybeans, the period 2017-2019, the annual average number of dicamba complaints investigated by OISC has risen sharply to 153, with the highest number 178, occurring in 2019. This unprecedented triple digit increase in the number of off-target movement complaints and investigations appears to continue to be trending upward each year since the formal introduction of these product uses in 2017.



2. Mandatory annual product-specific applicator and handler training and other product stewardship activities conducted by product registrants, pesticide state lead agencies, the Cooperative Extension Service, university weed scientists, and other stakeholders since the introduction of these products in

2016-2019 have not been successful in significantly reducing the incidents of off-target movement in Indiana and most other major soybean producing states.

3. Exhaustively detailed and specific drift management restrictions on the current labels of these products have not been successful in normalizing the incidence of off-target movement of dicamba to a reasonable level comparative with other herbicide applications, including the application of older formulations of dicamba. Some of the more critical drift management requirements on the label, including: 1) precise and continuous wind speed and direction monitoring throughout an entire application; 2) field level prediction and measurement of temperature inversion conditions; 3) extensive application equipment cleaning; 4) identifying all sensitive downwind crops and plants; and 5) determining how far damaging levels of dicamba may move from the target site, are not technically feasible or practical for many dicamba applicators, regardless of the applicator's level of training and competency.

4. Several attempts by U.S. EPA to refine label use restrictions on the dicamba products beyond the 2017 and 2018 restrictions have not markedly mitigated the incidence of off-target movement in Indiana or most other major soybean producing states. Based on the minimal formal engagement of U.S. EPA with impacted states during the 2019 application season, it appears that that the U.S. EPA is unwilling or unable to recognize and react to the fact that these products have not been adequately labeled to minimize adverse effects from occurring in most of the nation's top soybean producing states.

5. Since 2017, OISC has increased product application compliance scrutiny and the level of enforcement response for non-compliant applications, but this has been largely unsuccessful in reducing the incidence of off-target movement.

6. University research conducted since 2016 for some of these products is demonstrating or suggesting the following: 1) some common label-permitted tank mixes may increase volatility of applications of these products; 2) application of these products to low pH soils may increase the likelihood of post application volatility and off-target movement; 3) field level temperature inversions are more common than previously realized by pesticide applicators and are difficult to measure and document with any precision; and 4) some glyphosate resistant weed species are also developing resistance to dicamba.

7. Several glyphosate resistant weed control options and technologies other than dicamba are currently available in the marketplace. Rotating between herbicide chemistries and modes of action is currently highly recommended on most dicamba and other herbicide labels.

8. Based on application dates of dicamba complaints investigated by OISC in 2017 through 2019, setting an application cut-off date of June 20, 2020 could reduce dicamba off-target movement incidents in 2020 by a projected 50% or more. While a 50% reduction would represent a step in a positive direction, it might still be inadequate in achieving the objective of normalizing dicamba off-target movement incidents to a scale similar to that of other widely used ground applied agricultural herbicides in Indiana.

References:

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