

Dicamba Stewardship with Xtend Soybean Systems

Travis Legleiter and JD Green
Extension Weed Scientists
University of Kentucky

The introduction of Roundup Ready Xtend soybean and the ability to use dicamba in soybean to control troublesome broadleaves is a valuable new weed management tool for crop producers. The use of dicamba as a weed control tool in soybean also brings a large amount of responsibility and liability for the person applying the product. Dicamba is extremely active on many broadleaf plants including many of our commercial crops including non dicamba-tolerant soybean and tobacco. Broadleaf plants in home landscapes and other nearby sensitive vegetation can also be a concern. It is the responsibility of the applicator to assure that all label restrictions are followed and additional precautions taken to reduce the potential for off-target movement of dicamba during or after applications to Roundup Xtend Soybean or with applications on other labeled sites.

The following highlights the label guidelines and restrictions intended to reduce off-target movement of dicamba:

Use Only Approved Dicamba Products-there are only three dicamba-containing products approved for preplant, at-planting, or postemergence use in Roundup Ready Xtend soybeans. The approved products are **Xtendimax**, **FeXapan**, and **Engenia**. It is a violation of federal and state law to use non approved formulations of dicamba on Roundup Ready Xtend soybeans. On non-Xtend soybean these and other dicamba products can only be applied as an early preplant treatment if the appropriate waiting interval is followed per the label [eg. following a minimum accumulation of 1" rainfall after application allow at least 14 or 28 additional days prior to planting depending on use rate].

Record Keeping – Detailed records are required for each application of the product. Records are required to be made as soon as possible and must be generated within 14 days of an application. If requested by a Kentucky Department of Agriculture inspector records must be produced immediately even if kept electronically. Required record data includes wind speed at boom height and temperature not only at the start of application, but also at the end of the application.

Survey for Sensitive Crops – Applicators must survey the area surrounding the application site for any sensitive crops growing nearby including tobacco and non dicamba-tolerant soybean. It is the responsibility of the applicator to recognize sensitive areas and make reasonable judgments on whether to make an application.

Buffers - A frequent violation of the label in 2017 was failure to implement downwind buffers near sensitive areas. Sensitive areas differ from sensitive crops in that these are typically noncropland areas where threatened and endangered species may be present. Whereas, a sensitive crop are plants that are known to be susceptible to injury from off-target movement of dicamba. If the wind is blowing toward a sensitive crop, the buffer will not adequately protect that crop and the application must NOT be made in this situation.

Wind Direction – The labels state that a buffer is required if wind is blowing towards a sensitive area, and that dicamba should not be applied at all if the wind is blowing toward a sensitive crop. Realistically, if the sensitive crop is within a 0.5 mile or less of the target field, common sense would suggest it might not be a good idea to apply to that field.

Wind Speed - The labels allow spray applications when wind speeds are between 3 and 10 mph, and these wind speeds are to be measured at the boom height. This is more restrictive than the labeling in 2017. A key aspect overlooked by many was the speed of wind gusts, and many applicators may have focused more attention on average wind speed rather than wind gust speed. As a result, many spray applications were made during days when average wind speeds were less than 15 miles an hour, but in many instances wind gusts were in excess of 15 miles an hour. Avoid applications on days when wind gusts exceed 10 miles an hour even if sustained wind speeds are less than 10 miles an hour. It is not always easy to find a window with these lower wind speeds. The reality is that some years it can be challenging to make applications of dicamba products that have very strict label precautions with regard to wind.

Time of Day – The labels now allow applications to be made only between sunrise and sunset. This is to restrict applications when temperature inversions are more likely to occur. Temperature inversions occur frequently at night during the months of June and July, and often begin to setup prior to sunset and disperse after sunrise. Due to this our general suggestion is that applications be made between 2 hours after sunrise and 2 hours prior to sunset, which is more restrictive than the label, but further reduces the likelihood of spraying into a temperature inversion.

Temperature Inversion - During a temperature inversion, very small spray droplets remain suspended in the air and do not settle on the target area. These droplets can move with atmospheric wind currents. We recommend using a web resource or App for guidance to indicate, or forecast, if a potential temperature inversion is occurring within your area. If there is a temperature inversion, or one is likely, do not spray until the inversion has lifted.

Nozzles - Consult the dicamba product websites for the respective herbicides to find the list of approved nozzles and spray pressures to apply the approved dicamba products to Xtend soybeans. Use of the approved nozzles is critical to reducing driftable fines in the spray pattern that are more prone to long distance movement away from the application target area.

Boom Height - The maximum boom height is 24 inches above the target. Simply reducing the boom height from 48 to 24 inches has been shown to reduce the distance traveled by driftable spray particles by 50%. One of the most effective ways to safely lower the boom height without running the boom into the ground is to reduce sprayer travel speed. Also remember that any travel speed over 15 mph is off-label. The labels also recommend that travel speeds be reduced to 5 mph when making applications on the field edges.

Spray Additives and Tank-Mix Partners - The list of approved spray additives changes frequently, so it is important to regularly check the websites for updates. The use of a drift control agent also requires approval from list of spray additives on the product websites. The addition of any other product, including foliar fertilizers, insecticides, herbicides, or fungicides, that is not listed on the website for the respective herbicide constitutes a label violation.

Do Not Add Ammonium Sulfate – Additives such as ammonium sulfate produces dicamba acid, which is the more the volatile form of dicamba. There are approved non-ammonium sulfate based water conditioners to help reduce hard water that can antagonize glyphosate when tank-mixed with dicamba.

Spray Equipment Hygiene - Sprayers should be cleaned out before and after applications of dicamba following the triple rinse procedure outlined in the label. Clean out prior dicamba applications is critical to assure that any ammonium sulfate from previous applications is removed from the tank. Any mixing and loading equipment including transfer hoses should also be cleaned thoroughly before and after exposure to dicamba.

Additional Suggestions to Reduce Offsite Movement

The following are a number of additional suggestions to implement if you are concerned about offsite movement. Keep in mind that one can do everything “per the label” but still have potential for offsite movement. This happens because: 1) even these new dicamba formulations have the capability of volatilizing and/or moving on dust particles; 2) fine spray particles can remain suspended in inversions; and 3) dicamba can move with runoff water after heavy rainfall events. To reduce the probability of both primary and secondary dicamba movement events, consider the following recommendations:

1. Limit applications when temperature exceeds 85 degrees. Assuming that these dicamba products have some potential for volatility, the risk of this occurring increases with temperature.
2. Consider applying dicamba only preplant, at planting, or very early postemergence. Over 90% of the off-target movement complaints resulted from postemergence applications. Our assumption is that applications earlier in spring are less likelihood to cause problems even where dicamba moves, due to the absence in many cases of nearby sensitive vegetation and since temperatures are also likely to be lower during the early part of the season than with later postemergence applications.
3. Have conversations with neighbors to know what crops and technologies are being planted around Xtend soybean fields. Many offsite movement cases in 2017 occurred where neighbors planted Xtend and non-Xtend soybean adjacent to each other. Knowing what sensitive crops are in the vicinity of your Xtend fields will enable better decision-making about use of dicamba in a given field.

Websites for the approved dicamba products:

www.engeniatankmix.com

www.xtendimaxapplicationrequirements.com

www.fexapanapplicationrequirements.dupont.com

With permission of the authors, text in this document was adopted and modified from extension publication “Precautions for Dicamba Use in Xtend Soybean” developed by weed scientists at Purdue University, University of Illinois, and the Ohio State University.

January 2018