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Dicamba drift to non-Xtend soybeans

Most folks have probably heard or read about the problems with dicamba drift injury on non-Xtend soybeans from illegal applications in 2016. It was hoped that with the new formulations and strict application guidelines on the new approved dicamba products for Xtend soybeans, drift could be minimized. Unfortunately, drift injury on non-Xtend soybeans has already been a widespread problem in Arkansas, Tennessee and Missouri this year, even with the new lower volatility products. Arkansas has gone so far as to ban further dicamba use during the rest of the growing season.

We hadn't heard many complaints of dicamba drift to soybeans until the last couple of weeks. That is because we plant our soybeans later than the southeastern states and it takes a couple of weeks following application before the symptoms of drift or contamination injury become evident on the new soybean growth. Dicamba injury to soybeans is expressed as cupping of the new leaves (Figures 1 and 2) and if severe enough, twisting of stems and petioles and possible death of the terminal growing point.



Figure 1. Dicamba damage on beans that are now just beginning R1, or just beyond that stage. Most symptoms are found on the top two or three trifoliate leaves, but beans are still blooming and the

terminal still is green and growing. This photo was taken July 5 in Marshall County by Stu Duncan, K-State Research and Extension.



Figure 2. Significant cupping of leaves from dicamba drift on non-Xtend soybeans planted next to Xtend beans in research plots at the Ashland Bottoms farm near Manhattan. Photo by Dallas Peterson, K-State Research and Extension.

There appears to be some problems even where applicators were following the application guidelines and some of the problems appear to be vapor drift even with the new lower volatility formulations, but very difficult to know for sure.

The primary problem is that soybeans are simply very susceptible to very low rates of dicamba. Over the years, there has been quite a bit of research on drift injury to soybeans from dicamba. The impact of dicamba drift injury varies dramatically and depends on a number of different factors, including soybean stage at exposure, exposure rate, soybean variety, and environmental conditions through the rest of the season. Thus, it is nearly impossible to estimate yield loss based solely on symptomology.

Fortunately, the injury often looks more serious than it turns out to be in terms of yield loss, at least from early exposure before soybeans begin to bloom. Past experience and research in Kansas has indicated that yield loss will be minimal from early-season cupping, unless the growing point is killed. However, yield loss can increase dramatically if the exposure happens after soybeans begin to bloom. Most of the symptoms we are seeing now were from an early-season exposure. Applications at this point in time pose a much greater risk of yield loss as many of our earlier-planted soybeans are now blooming.

Below are the results from a simulated drift study conducted by K-State a few years back. Dicamba was applied to soybeans in the V2 to V3 growth stage at rates equal to 1/100, 1/33, 1/10, and 1/3 of the standard rate of 0.5 lb of dicamba per acre.

| Fraction of dicamba rate | % Visual injury 7 Days after Treatment | % Visual Injury 30 Days after Treatment | % Height Reduction 30 days after Treatment | % Soybean Yield Loss |
|--------------------------|--|---|---|-------------------------|
| 1/100 | 18 | 35 | 15 | 2 |
| 1/33 | 23 | 50 | 27 | 10 |
| 1/10 | 33 | 70 | 50 | 45 |
| 1/3 | 70 | 95 | 63 | 80 |

Research from the University of Arkansas has shown a 10% yield loss from dicamba at 1/1024 of the field use rate when exposure occurred at the R1 (early blooming stage) growth stage and yield loss was often twice as great from exposure at R1 vs earlier vegetative growth stages.

Assessing the severity of dicamba drift injury to soybeans and the source of the dicamba injury can be very challenging and contentious. Pesticide application complaints can be filed with the Kansas Department of Agriculture (785) 564-6700, but remember that once a complaint is filed it becomes official. It may be wise to try and resolve the problem amicably before proceeding with a complaint.

Further information and pesticide application complaints can be filed at the following KDA website: <http://agriculture.ks.gov/kda-services/complaint-form/pesticide-application-complaint>

This information was provided by Dr. Dallas Peterson, KSRE Weed Management Specialist, and Dr. Stewart Duncan, KSRE Northeast Crops and Soils Specialist, in the July 7th edition of the Extension Agronomy eUpdate.

For more information contact the Marais des Cygnes Extension District Offices in Paola (913-294-4306) or Mound City (913-795-2829).

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