



Herbicide Carryover Issues

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INTRODUCTION

The question asked several times this summer, "Will it be safe to plant small grains following soybean or corn, where products containing fomesafen or atrazine were applied, given the drought condition we have had this season?" A&L Analytical Laboratories in Memphis, TN has testing that can help you make this decision.

DEGRADATION & ADSORPTION

The concern is highly justifiable. Making a decision should involve knowledge of how atrazine and fomesafen residuals are affected by different conditions. For this, it is important to understand the terms *degradation* and *adsorption*. *Degradation* refers to the breakdown of the chemistry of the compound by light, microbes, water, etc. *Adsorption* refers to the strength with which it adheres to the soil particles and consequently affects the amount that the compound will move from a certain area of activity down into the profile.

ATRAZINE

In the East, South and Midwest, atrazine normally *degrades* with the abundant rainfall the region receives during the season. Atrazine is moderately *adsorbed* to soils and *adsorption* is increased with lower soil pHs. The rate of atrazine *degradation* can speed up in lower pH soils (5.5-6.5). Texture and various other factors affect the adsorption and persistence of atrazine. In monoculture systems where atrazine is applied

continuously each year, biological *degradation* can decrease the residual time. Average half-life of atrazine is approximately 60 days but higher soil pHs or dry soil conditions or higher soil pHs can allow atrazine to persist for 1 year, entering into the next cropping season.

FOMESAFEN

Fomesafen can persist for a longer period of time. Fomesafen *degrades* slowly under normal field conditions and its persistence increases with higher levels of organic matter. It has an average half-life of 100 days however it commonly can persist for more than 1 year, affecting next season's susceptible crops. Fomesafen is *adsorbed* to soil particles comparably to atrazine. Under flooded conditions (anaerobic), fomesafen can *degrade* in approximately a week.

TESTING

It is highly probable that these two herbicides can still exist at levels harmful to the following crop given the dry conditions throughout the region this year. To make a more informed decision, A&L Analytical Laboratories in Memphis, TN offers herbicide residual analyses. A herbicide residual analysis can help confirm the presence or absence of these compounds. If the analysis detects any level of these herbicides then it is likely that a susceptible crop will be injured. If the analysis detects these herbicides, then it can be determined



if the concentration found, is likely to injure a susceptible crop. Too many variables influence herbicide persistence to accurately predict carry over for the following crop. Testing at A&L Analytical Labs helps eliminate any doubts.

Samples for these analyses are taken and submitted in the same fashion as for soil fertility sampling. For this testing, the

laboratory requires 2-4 cups of soils. The samples should be clearly labeled and should be sent along with a soil sample information sheet that requests the fomesafen or atrazine analysis in large legible letters. Turnaround time is approximately 10 working days. If you have any questions, please do not hesitate to call the laboratory before you sample the soil.

References:

Senseman, S.A. 2007. Herbicide Handbook. 9th ed. Weed Science Society of America.