

Indiana Weed Science Issues Induced by the 2012 Drought: Fall Edition

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The 2012 drought obviously had effects on the corn and soybean crop yields and presented many challenges to producers as far as controlling weeds. The drought has also had lingering effects into this fall that could effect the wheat crop and potentially next years corn and soybean crop. These challenges include potential herbicide carryover into this falls wheat crop and next springs corn and soybean crop, and the management of heavy volunteer corn stands prior to wheat planting.

Herbicide Carryover

The potential of herbicides applied this past summer to carryover into the wheat crop or next springs corn and soybean crop cannot be addressed at a whole state level, as differences in recent rainfall amounts and soil types are too variable. The breakdown of soil persistent herbicides is dependent on soil properties, soil moisture, and soil temperatures. In general during a typical year in which soil moisture and temperature are near normal, rotational restrictions set by herbicide labels should be followed. The lack of soil moisture during a year of drought will decrease the rate of herbicide dissipation and carryover of certain herbicides may exceed the labeled rotational restrictions. Although the recent increase in rainfall over the past month has decreased the level of concern of herbicide carryover for a majority of the state.

Producers planning on planting wheat this fall have expressed concern regarding herbicide carryover. The largest concern is the carryover of atrazine and subsequent injury on wheat. Although it is a practice that has been commonplace it is off label to plant any crop other than corn or sorghum during the same calendar year of an atrazine application. Labels will vary on exact rotational restrictions to wheat, but the majority of the atrazine premix labels range from 14 to 15 months. The only exception is Lumax that does allow wheat rotation at 4.5 months after application. This being said, we cannot condone or advise on the planting of wheat in any year if atrazine was applied in the previous corn crop with the exception of Lumax applications at the labeled rate.

The other potential herbicide that may injure fall planted wheat would be fomesafen (Reflex, Flexstar, Dawn, and Rhythm) applied post in soybeans. The wheat rotational restriction for fomesafen products is four months after application. Late post application or rescue applications in soybeans could negate this four-month rotational restriction to wheat. Producers who applied a fomesafen product to soybeans this summer and have not seen significant rainfall following application (SW Indiana), should be aware of the potential for fomesafen injury on emerging wheat.

With the increased rainfall this fall and consistent warm soil temperatures the concern for herbicide carryover into next spring's corn and soybean crop has declined dramatically. Producers who have not had these fall rainfalls should still be wary of atrazine and or HPPD inhibitor (Callisto, Laudis, Corvus, and Impact) carryover into soybean, especially in high pH and/or high clay content soils. Producers should also be aware of potential imidazolinone chemistry (Scepter and Pursuit) carryover into next years corn crop. Again the rains received this fall should have relaxed concern of herbicide carryover for the majority of the state, but those select areas where the drought was most severe and that are not receiving the fall rain events should still be wary of the potential for carryover.

Testing For Potential Herbicide Carryover

If you are concerned about carryover and would like to know the potential risk for injury to susceptible rotation crops you have two options: conduct a bioassay or have your soil analyzed for herbicide residues by a commercial lab.

A bioassay is conducted by planting susceptible crop seeds into your suspected soil and comparing growth and injury to plants planted in a non-herbicide treated soil. The use of a non-herbicide treated soil is key to avoid mistaking environmental stresses and insect or disease damage for herbicide injury. Keep in mind that soil types change across a field and multiple suspected soil samples should be tested to determine any hot spots in the field. A bioassay can be conducted in the field or soil samples can be placed in containers/buckets for closer observations and direct comparison to the non herbicide-treated sample. Conducting your bioassay in containers also allows you to easily water your soil samples and encourage plant emergence and growth of your susceptible crop.

The other option is to take soil samples from your suspected carryover fields and have them analyzed for herbicide residuals by a commercial lab. This is a rather expensive process and the results will likely be reported in a parts per million (ppm) format that is often nothing more than a useless number if you are unaware of the safe to plant levels. A list of labs in the Midwest that will conduct herbicide analysis is listed below along with a table that lists the safe to plant levels for triazine herbicides.

Both bioassays and lab analysis should either be done in late fall or early spring to allow for maximum herbicide degradation and provide a more representative result of potential injury at planting.

Management of fall volunteer corn

The effect of the drought on corn ear and kernel size can be observed by looking at a harvested corn field a couple of weeks following harvest. A large majority of fields are lush green with volunteer corn plants that emerged from grain that escaped the head rollers or combine sieves. Other than lost profit, a majority of producers will not be worried about these volunteer plants, as the winter frost will eliminate the plants before next spring. Although producers wishing to plant wheat following a corn crop that did not receive atrazine (see above) will need to kill volunteer corn prior to wheat planting. Volunteers will likely be tolerant to glyphosate (Roundup) and/or glufosinate (Liberty) depending on the traits that were present in the previous crop. Volunteers from crops that were either Roundup Ready or Liberty Link only can be controlled with the alternate non-selective herbicide, but if the previous crop was stacked with both traits then herbicide options are limited. Fields containing volunteers following a RR/LL crop can only be controlled with applications of gramaxone or by tillage. Grass herbicides cannot be used to control volunteer corn prior to wheat planting as rotational restriction to wheat vary from 30 to 120 days. If choosing to apply Gramaxone, be aware that applications can result in variable control. Gramaxone is a contact herbicide and must be applied at higher spray volumes to achieve complete coverage. Even with complete coverage of volunteer corn plants can result in poor control as the growing point at or below the soil surface may survive the application. Fields containing heavy volunteer corn populations that are glyphosate and glufosinate tolerance would be best managed with tillage prior to wheat planting

Commercial labs that offer soil herbicide residue analysis. Contact individual labs for pricing and specific soil sampling instructions.

Information listed here is based on research and outreach extension programming at Purdue University and elsewhere.

The use of trade names is for clarity and does not imply endorsement of a particular product, nor does exclusion imply non-approval.

Always consult the herbicide label for the most current and update precautions and restrictions. Copies, reproductions, or transcriptions of this document or its information must bear the statement:

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A & L Great Lakes Lab
3505 Conestoga Drive
Fort Wayne, IN 46808
219-483-4759
<http://www.algreatlakes.com/>

AgSource Harris Laboratories
300 Speedway Circle
Lincoln, NE 68501
402-476-0300
<http://www.agsource.com/>

Agvise Laboratories
PO Box 510, 604 Hwy 15
Northwood, ND 58267
701-587-6010
Or
902 13th St N
Benson, MN 56215
320-843-4109
www.agviselabs.com

APT Labs Inc.
1050 Spring St.
Reading, PA 19610
610 375-3888
www.aptlabsinc.com

Columbia Food Laboratories, Inc.
36740 E. Historic Columbia River Hwy
PO Box 353
Corbett, OR 97019
503-695-2287
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Can test for herbicide residue in plant tissue.

Drought Impact on Weed Science

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525 Science Drive
Madison, WI 53711
608-232-3300

Midwest Laboratories
13611 B Street
Omaha, NE 68144
402-334-7770
www.midwestlabs.com

Minnesota Valley Testing Laboratories, Inc.
326 Center Street
New Ulm, MN 56073
(800) 782-3557
Fax (507) 233-7127
Email: mnsoil@mvtl.com
Or
51 L Avenue
Nevada, IA 50201
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(800) 362-0855
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Montana State Analytical Laboratory
McCall Hall
PO Box 173620
Montana State University
Bozeman, MT 59717
406 994-3383

South Dakota Agriculture Laboratories
Brookings Biospace
Dr. Regina Wixon
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1006 32nd Ave #103 / #105
Brookings, SD 57006-4728
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Table 1. Safe to plant levels for triazine soil residue lab results

Triazine Residue Level (ppm)		Crops "Safe" to Plant
3 inch sample (no-till)	6 inch sample (moldboard plow)	
Less than 0.17	Less than 0.08	Oats and alfalfa
0.17 to 0.35	0.08 to 0.017	Soybean
Greater than 0.35	Greater than 0.017	Corn

