We have received a number of herbicide injury reports during the past 2 weeks. In most cases, the cause of the injury is related to stressful weather conditions which have reduced the plant’s ability to metabolize or degrade the herbicide. In some cases, because corn was planted at such a rapid rate in late April and early May before rainy weather set in, growers and custom applicators were not able to spray soil-applied herbicides before the crop emerged. As a result, many soil-applied products were put on emerged corn. This resulted in the corn plant receiving a much higher dose of herbicide than if the products were applied to the soil, and diluted before being absorbed by the corn plant.

The most common injury cases observed thus far.

Atrazine/chloroacetamide injury.

A few cases of this type injury have been observed when the products were applied to emerged corn and adjuvants, 2,4-D, simazine (Princep, others) were added to the mixture to control emerged weeds. In other cases the atrazine/chloroacetamide premix was applied in a liquid fertilizer solution to emerged corn. Symptomology observed is short, stunted corn with necrotic tissue on the leaf edges and lower leaves may be burned off. In addition, larger plants will show ‘buggy whipping’ and twisted whorls that were discussed by Bob Nielsen in another article. Although some stand loss has been observed in certain fields, in most cases the corn will grow out of this injury when warm, sunny days return. Key points for future consideration of this issue:

1) Princep is not labeled for applications to emerged corn

2) Most labels indicate that mixtures of 2,4-D with atrazine premixes should be applied 7-14 days before planting or 3-5 days after planting, but before corn emerges.

These precautions are for two reasons: First, 2,4-D is very water soluble, but has a relatively short half live. Applications at corn planting can result in the product being washed down into the seed furrow if enough precipitation is received. This results in a high concentration of herbicide around the corn seed and injury. Second, 2,4-D formulations tend to be somewhat oily and can function as a crop oil concentrate and increase uptake of other herbicides.
3) The use of liquid fertilizer solutions as the carrier is discouraged on most of the labels of these products if corn has emerged. Liquid fertilizer solutions can also act as adjuvants to increase uptake of herbicides. Liquid fertilizer solutions will also cause injury symptoms on corn in addition to acting as an adjuvant.

**Lumax/Callisto and Balance Pro injury.**

Callisto is one of the components in Lumax. We have observed a few cases of bleached corn caused by these products. Injury is typically located in low or wet areas on the field and on sandy soils. Symptomology observed is short, stunted plants with chlorotic tissue on older leaves with new leaves appearing normal in color. Injury is occasionally more severe when these products were applied with higher rates of atrazine (1.5 lb ai/A or more). Injury from these herbicides is typically more noticeable than most other herbicide families. Recovery and yield potential is good if less than 30% of the plant tissue is affected (chlorotic).

Key points for future consideration of this issue:

1) The bleaching or chlorosis injury can also occur on emerged plants if hard rains drive the corn leaf tips into the soil. Both Balance Pro and Callisto have relatively high water solubilities and can be taken up by corn foliage after corn emergence.

2) Balance Pro injury potential is higher on sandy soils with high pH. The Balance Pro label has very specific instructions regarding appropriate use rates on various soil textures and organic matter contents. The use rate
matrix reminds me of the table in the Bladex label from years past. Essentially, we should think of Balance Pro in a similar manner as Bladex and pay very close attention to the rate instructions. This issue of use rate can be particularly difficult to interpret on the sand/muck soils in northern Indiana.

3) The activity of both herbicides is increased when used with atrazine. Although the synergistic activity of these combinations is valuable in terms of weed control, it can also cause higher incidences of crop injury.

In both cases, corn plants will usually lose one or two of its lower leaves. If one will be using postemergence herbicides in these fields, it is advisable to be sure to correctly estimate the corn growth or “V” stage to avoid more injury problems.
Information on staging corn growth is available in past issues of the newsletter and on the “Chat and Chew” website at http://www.agry.purdue.edu/ext/corn/cafe/.

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Information listed here is based on research and outreach/extension programming at Purdue University and elsewhere. The use of trade names is for clarity to readers of this site, does not imply endorsement of a particular brand 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 ‘Produced and prepared by Purdue University Extension Weed Science’ unless approval is given by the author.