A lot of attention is being devoted to weeds that appear to be escaping glyphosate (Roundup, Touchdown, Glyphomax, others) treatments. While we do have pockets of glyphosate-resistant marestail in southeast IN, we are becoming more concerned about giant ragweed plants that do not appear to be controlled by glyphosate. In some cases, when the plant stems are split open with a knife, stalk boring insects and their tunnels are observed, particularly on plants 18 inches tall or larger. In some cases, I have split open small (less than 12 inch tall plants) and have not been able to find insect boring. By and large though, most of the escapes are large plants and in almost every instance, a stalk boring insect is present.

Photo provided by Dan Childs, Monsanto.
In response to this issue, we initiated greenhouse studies to look at the influence of stalk boring insects on glyphosate efficacy in giant ragweed. We have completed a couple of runs of this experiment and I wanted to share some of our findings to date.

Methods:
Giant ragweed seedlings (cotyledon to 2-leaf stage) were collected from the Purdue University ACRE Farm near West Lafayette and brought into the greenhouse. Individual plants were placed in plastic pots and watered as needed to bring them back to health after transplanting. European corn borer larvae were obtained from a commercial source and 2-4 larvae were placed on the plant leaves when the plants were 4 inches tall. When the plants were either 6 or 18 inches tall, Roundup Weathermax was applied at 16, 22, or 44 oz/A to these plants with a track sprayer. At 3 weeks after herbicide treatment, plants were harvested at the soil surface and the length of tunnels measured and dry weights recorded.

Preliminary Results:
Insect tunneling was observed in all plants infested with ECB larvae. Unfortunately, these insects are somewhat mobile and tunneling was also observed in non-infested plants. So, we made the decision to plot plant dry weight versus the length of tunnel on a graph. On plants treated with glyphosate when they were 6 inches tall, we observed no correlations between tunnel length and glyphosate efficacy. On plants treated with glyphosate when they were 18 inches tall, we observed a negative correlation between tunnel length and glyphosate efficacy on plants treated with 16 oz/A of Roundup Weathermax. We did not observe any relationships between tunneling and herbicide efficacy on plants treated with higher rates of Roundup Weathermax.

We planning to continue to work on this issue and have also initiated field studies to study this interaction with natural insect infestations. Stay tuned for more details.

In the meantime we are interested in these interactions in production fields and developing an informal database. If you are interested in how to collect data for this database, contact Bill Johnson, John Obermeyer, or Ron Blackwell. We would like to get a feel for both the number of escapes and plants controlled by glyphosate that contain stalk boring insects.