January 6, 2012

WEED RESISTANCE DEVELOPMENTS

At the 2012 Crop Production Clinics this past week, there were two underlying themes. First it was the weather. It was really unusual to watch golfers tee off at Classics, Beatrice Country Club, at the Crop Clinic on January 4th. That doesn't happen very often the first week in January. Second, there have been significant developments in weed resistance in Nebraska that are of concern.

Populations of giant ragweed and kochia in Nebraska were confirmed resistant to Roundup® or glyphosate herbicide. A population of waterhemp was confirmed resistant to 2,4-D and a different population was confirmed hppd resistant. Examples of hppd herbicides are Laudis®, Impact® and Callisto®.

In all of these cases, heavy reliance on a single active ingredient over a number of years led to the evolution of resistant weed populations. Granted the pockets of problems are isolated right now, it is a wakeup call. We need a more diversified weed management approach to maintain the effectiveness of the currently available weed management tools.

Marestail or horseweed was the first weed species in Nebraska to be confirmed of resistance in 2006. Greenhouse studies last year confirmed giant ragweed resistance to glyphosate from seed collected from multiple counties including Butler, Nemaha, Richardson and Washington Counties. The greenhouse studies showed a resistance level of 3 to 11 times the normal rate. For example the 32 oz rate killed 90% of the normal ragweed plants. The suspected resistant ragweed plants required 100 or 200 oz/A when the weeds were 4 to 8 inches tall to achieve the same level of control. Ragweed seeds from Butler and Richardson Counties were the worst as no labeled rate of glyphosate would give good control anymore.

Because of the characteristics of glyphosate, our normal response is increase the rate. This is your wakeup call. This strategy will lead to increased selection pressure and the approach will fail like in Richardson and Butler County fields.

The more successful management approach is know the weed biology and use effective herbicides other than or in combination with glyphosate. For instance, ragweed emerges ahead of soybean planting in April, continued through the first week in May, in most years. Controlling this weed early with 2,4-D would have solved the issue in the short-term without tillage.

Because glyphosate is low cost, effective, has excellent crop safety and is easy to use, it can be too easy to become over reliant. This is the closest thing to a magic bullet in agriculture we have ever had, with broad spectrum reach and little known residual impact on the environment.

Duane Beck at SDSU says it's like taking a weight reduction pill rather than eating healthier and exercise. He boils it down to farming techniques that are too easy for pests to predict. You have to be smarter than the bug which is a challenge! Creating new chemicals won't solve the longer-term problem of why and how herbicide resistant weeds develop. And while he's not against technology, he said farmers could benefit by focusing on improved farming methods.

In summary, today's technology will last the longest on producers fields that utilize a diversity of pre-emergence and post-emergence tank mix partners and different crop rotation schemes. The key is diversity and integrated approaches.

Randy Pryor, Extension Educator
University of Nebraska-Lincoln Extension in Saline County
306 West 3rd Street, Wilber, NE 68465
Phone (402) 821-2151 . Fax (402) 821-3398 . e-mail: randy.pryor@unl.edu