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Fertilizing Weeds: It's More Costly Than You Think

Everybody knows that weeds compete with a crop for water, nutrients, and sunlight. But the question is, "How much do these weeds really compete?" A two-year study conducted by University of Wisconsin weed and soil scientists took a look at the nutrient aspect of this question and found some interesting results.

In 2006 and 2007, a study was conducted to see how the timing of weed removal influenced the economic optimum nitrogen rate (ENOR). Nitrogen was applied at rates ranging from 0 to 200 pounds per acre. The four weed control timings were:

1. A weed free preemergence timing

2. Weeds controlled with glyphosate when they reached 4 inches

3. Weeds controlled with glyphosate when they reached 12 inches

4. No weed control (weedy check)

As expected, delaying the weed control timing had a significant impact of the final grain yield. Although there was no difference in yield between the weed free and 4-inch timing treatments, yield was reduced by nearly 10 percent (approximately 20 bu/a) when treatments were delayed until weeds reached 12 inches. When no herbicide was applied, yields were reduced by nearly 50%. In both years, there was only six days between the 4-inch weed removal timing and the 12-inch weed removal timing. So a timely application of your postemergence herbicide treatment is critical.

How did the timing of weed control affect the amount of nitrogen fertilizer needed to obtain optimum economic yields? To determine this, the EONR was calculated using a nitrogen fertilizer cost to corn price ratio of 0.15. For the weed-free and 4-inch weed removal timings, yield was maximized at about 120 pounds of nitrogen per acre. For the 12-inch weed removal timing and the weedy check, grain yield continued to increase all the way up to 200 pounds of nitrogen per acre. Thus, there was still not enough nitrogen provided to compensate for the weed pressure, even at 200 pounds of nitrogen per acre. The ENOR rates for the 12-inch weed control timing and weedy check were 100 pounds of nitrogen per acre or more compared to the preemergence timing and the 4-inch weed control timing in both years. At current nitrogen prices, the cost of increased nitrogen required to meet the optimum economic yield would be a minimum of $50 per acre.

While the 12-inch weed removal had the least amount of weeds at harvest, a significant reduction in yield occurred as a result of delayed weed control. Thus, good weed management is more than just good weed control. Considering the cost of nitrogen and herbicides, using a preemergence herbicide followed by a postemergence herbicide as needed, is a profitable strategy to increase the efficiency of nitrogen use.

For additional information, contact the UW-Extension, Jefferson County Office at 920-674-7295.

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