MN-CCA column for The Farmer
May-June 2009

Overreliance on glyphosate sets stage for weed problems

By Duane Rathmann, CCA

This spring, much of Minnesota's farmland is being planted to glyphosate-tolerant crops.

About 98% of soybean acres and 85% of corn acres will be sprayed with glyphosate this year, according to University of Minnesota Extension agronomist Jeff Gunsolus. And now that Roundup Ready sugar beet varieties are available throughout the state, an estimated 80% of Minnesota beet acres will also receive two or three applications of glyphosate.

This means that most Minnesota fields are receiving one or two glyphosate applications every year. Fields in a rotation of corn, soybeans and sugar beets may receive six or more glyphosate applications within four years. As Gunsolus says, "That's a lot of glyphosate!"

Meanwhile, use of preemergence herbicides is minimal on soybeans and sugar beets, and I estimate that less than half of corn acres will be treated with soil-applied residual herbicides.

A great tool

Of course, glyphosate is a great weed management tool, and growers love the safety, simplicity and flexibility of a total postemergence glyphosate program. Yet continuous reliance on this one herbicide, year after year, encourages glyphosate-resistant weeds and sets the stage for serious weed control problems.

That's beginning to happen in Minnesota. In the last two to three years, we've seen a sharp increase in the number of fields showing poor glyphosate performance — especially in soybeans. Growers throughout the state are struggling with giant ragweed, common ragweed and common lambsquarters; waterhemp is a growing problem in southern Minnesota.

Recently, glyphosate-resistant giant and common ragweed and waterhemp were confirmed in Minnesota, Gunsolus says. These biotypes appear to be resistant to four times the labeled use rate of glyphosate, he says.

If you've experienced poor glyphosate weed control in a field, try to find out why.

Often, poor application timing or errors in sprayer calibration or rate are to blame. Environmental factors beyond your control, such as rain-off, dust in the wheel tracks or drought, may hinder glyphosate performance. Extended or late weed flushes are harder to manage with a total POST program. And certain weeds, such as common lambsquarters, velvetleaf and wild buckwheat, are inherently tolerant of glyphosate.

If glyphosate has failed to control the same weeds in the same part of the field for several years, you may have glyphosate-resistant weeds. Scout 10 to 14 days after

spraying. If you see scattered living weeds next to dead ones, that's a pretty good sign that you have resistant biotypes developing.

When these surviving plants produce seeds, they may pass on the resistance traits. That has happened many times in the past. For example, waterhemp populations around the Midwest have evolved to withstand atrazine, ALS-inhibiting herbicides and PPO-inhibiting herbicides.

Diversification best strategy

Today, it's the long-term usefulness of glyphosate that's at stake.

The best way to preserve glyphosate technology is to diversify your weed control program. I recommend using a preemergence herbicide to better control early weed competition, target problem weeds and improve the effectiveness of your postemergence glyphosate treatment. In corn, tank mixes of broadleaf herbicides with multiple modes of action can also deter glyphosate resistance.

Just as important, adding a preemergence herbicide to your glyphosate program improves yields and gives more consistent returns. Look at it this way: diversifying your chemistry is more profitable, and you'll get better weed resistance management to boot.

Here are a few more tips for effective glyphosate management:

•**Apply full herbicide rates.** The level of glyphosate resistance in Minnesota is low, so "glyphosate can still have an impact on weed populations," Gunsolus says. But don't reduce rates. Normally, farmers have to manage several weed species at a time and setting the glyphosate rate too low can increase the chances for weed escapes and another application expense.

•**Spray when weeds are small.** Spraying glyphosate when weeds are 2 to 4 inches tall is more effective than spraying larger weeds.

•**Target problem weeds.** Gunsolus reminds growers that to deter glyphosate resistance, alternative herbicides must provide very effective weed control.

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Key points

•Most Minnesota cropland receives annual glyphosate applications.

•Overreliance on glyphosate encourages the development of glyphosate-resistant weeds.

•Adding a residual herbicide to your glyphosate program will provide better early weed control and help preserve the long-term usefulness of glyphosate.