

## Alternative spring burndown/postemergence strategies when herbicides are in short supply

Note: This article represents the combined thinking of weed scientists from Indiana, Kentucky, Michigan, Ohio and Pennsylvania

There is a lot of speculation about herbicide shortages for the 2022 growing season, and some products are apparently getting more expensive and/or scarce now. This will affect herbicide buying and weed management decisions for the 2022 season. The two main active ingredients that we're hearing about right now are glyphosate (Roundup, others) and glufosinate (Liberty, others), for which prices have increased substantially. There will likely be limited supplies of other pesticide active ingredients as well, but in the short term, a shortage of these two active ingredients poses some major challenges for corn and soybean production. The purpose of this article is to discuss ways to minimize the impact of herbicide shortages, primarily glyphosate, on corn and soybean production. As you search for alternatives to these two herbicides and others, the weed control guides and technical guides produced by University Extension and industry are an important tool for planning weed management programs and herbicide purchases. Links to the university publications are at the end of this article.

Some guiding principles based on our experience that may help with decisions, especially where glyphosate will not be in all applications:

1. Spring tillage is an option to replace herbicide burndown. Can cause long-term compaction problems if tilled when too wet. Waiting until weeds are large makes tillage less effective. Weeds that survive tillage will be difficult to control with POST herbicides. In other words, till when soil conditions are fit and before weeds are huge.

2. Where it's only possible to use glyphosate once, it may be needed most in the burndown. Saflufenacil can be added for enhanced control of rye and ryegrass, and marehail. ACCase herbicides (e.g. clethodim, quizalifop) can then be used for POST grass control in soybeans. Glufosinate, Enlist Duo, or XtendiMax/Engenia can be used for many broadleaf weeds, especially the glyphosate-resistant ones. Where residual herbicides are omitted, or do not provide enough control, we would expect POST treatments to struggle more in the absence of glyphosate with weeds such as lambsquarters. So use residuals. Glyphosate is still more than just a grass herbicide.

3. If glyphosate is omitted from burndown, grasses become a bigger issue than broadleaf weeds. Options for annual grasses: Gramoxone; rimsulfuron – if small, corn only; ACCase herbicides – clethodim (wait 7 days to plant corn), quizalifop (soybeans only) – need 60 degree days, apply alone if possible, weak on winter annuals under cold conditions. Where trying to reduce glyphosate rates, a rate of 0.38 lb ae/A will control most annual grasses.

4. Burndown programs typically contain two to three "burndown" herbicides in order to ensure control of a diversity of weeds under various environmental conditions. This is why glyphosate is not used alone in burndown programs, but mixed with 2,4-D, dicamba, or Sharpen. We

suggest following this same strategy when glyphosate is omitted – try to have at least two herbicides with substantial burndown activity in the mix. Increasing rates of components of the burndown mix should be generally helpful, in accordance with label guidelines for soil type, weed size, time until planting, etc. There are also other herbicides that can improve control in some mixes although we don't consider them "burndown" herbicides on their own – chlorimuron, atrazine, metribuzin.

5. There are generally more options for burndown and POST applications in corn compared with soybeans, so it might make sense to save a limited supply of glyphosate and glufosinate for use in soybeans.

6. Control of little barley and annual (Italian) ryegrass in a burndown requires glyphosate, ACCase herbicides are not effective enough in spring. For annual bluegrass – ACCase can work - 60 degree day, no tank mixes. High rates of metribuzin can provide fair control of bluegrass.

7. For burndown of a legume cover prior to corn, clopyralid and dicamba are the most effective herbicides. For cereal rye, Gramoxone plus atrazine or metribuzin may be best option in the absence of glyphosate.

8. It's possible to chop and bale a cover, then use glyphosate POST to kill regrowth. The addition of an ACCase herbicide may help control regrowth in soybeans. POST corn herbicides will not kill the rye, including nicosulfuron, rimsulfuron, and Group 27 herbicides (Impact, Shieldex, Laudis etc).

9. Mixing ACCase herbicides with dicamba or 2,4-D (no glyphosate) can cause reduction in grass control due to antagonism. Apply separately to avoid this.

10. Increasing the number of applications can help with weed and herbicide management when certain products are short or glyphosate rates need to be reduced. For example, three applications instead of two: 1) Fall or early spring burndown when weeds are small; 2) residuals plus possibly additional low-rate burndown at planting; 3) POST.

11. Best opportunity to omit glyphosate or reduce the rate will be: 1) in fields treated the previous fall, or those with a low population of small weeds; and 2) where the POST program is comprehensive enough to control weeds that escape the burndown – Enlist, XtendiFlex, LL GT27 (their effectiveness also depends upon whether glyphosate is being used POST).

12. Take all necessary steps to maximize herbicide activity - optimize adjuvants and sprayer parameters (nozzles, volume, pressure, speed) per label guidelines.

13. Check on availability of premix herbicides that may contain glyphosate or another herbicide that is unavailable as a single ingredient product. Examples that contain glyphosate – Sequence, Halex GT, Acuron GT, Extreme, Flexstar GT.

Burndown programs that deemphasize use of glyphosate – pros and cons.

Can be used in corn and soybeans

Gramoxone + 2,4-D + metribuzin/atrazine (atrazine – corn only)

Strengths: best non-glyphosate option for rye burndown; adequate for general spring weeds including marestail <6" tall; can be applied before either corn or soybeans (depending on rate); has activity on grasses

Weakness: perennial weeds; large marestail; annual ryegrass; special training required to apply

Comments: Metribuzin rate for corn varies by soil type and is limited to a maximum of 5.33 oz of 75DF.

Sharpen + glyphosate (low rate 0.38 - 0.56 lb ae/A) + 2,4-D

Strengths: adequate cereal rye and other cover crop burndown; marestail control; can be applied before either corn or soybeans (depending on rate)

Weakness: large weeds; overall weed control is fair due to low glyphosate rate

Comment: Rates higher than 1 oz require wait of 15 to 30 days to plant soybeans. Must wait 2 weeks to plant soybeans if 1 oz is mixed with flumioxazin or sulfentrazone product.

Sharpen + 2,4-D + metribuzin/atrazine (atrazine – corn only)

Strengths: good foliar and residual marestail control; good initial Palmer/waterhemp control; burndown and residual in one pass

Weakness: does not control grasses (atrazine control grass up to an inch when applied with oil); must wait 2 weeks to plant soybeans if mixed with flumioxazin or sulfentrazone product.

Metribuzin rate for corn varies by soil type and is limited to a maximum of 5.33 oz of 75DF.

Basis Blend/other rimsulfuron products + 2,4-D + metribuzin/atrazine

Comments: some grass control; limited burndown activity on several key species; better used in corn due to long wait to plant soybeans (15 to 60 days)

Harmony Extra/similar products + 2,4-D + metribuzin

Comments: average (70-80%) control on many key broadleaves; no grass control; additional residuals and POST products necessary for in crop weed control; can be used in corn or soybean

Corn only

Acuron/Lexar/generic equivalents/Resicore + atrazine

Strengths: winter and summer annuals; burndown and residual in one-pass; can add more atrazine or 2,4-D

Weakness: poor control of cereal rye and ryegrass; corn only

Soybeans only

2,4-D + metribuzin + clethodim

Strengths: some grass suppression including cereal rye and ryegrass;

Weakness: 2,4-D antagonizes clethodim activity; cool weather limits clethodim activity; use rate of clethodim is not high enough if used before corn planting

Metribuzin + 2,4-D + chlorimuron product

Comments: good fit in fields that were treated prior fall; Some chlorimuron products contain metribuzin – suggest supplementing with additional metribuzin so total is the equivalent of 6 to 12 oz of 75DF. Does not control grasses. Canopy/Cloak Ex contains tribenuron, which improves control of chickweed.

Resources (some may be temporarily unavailable until the 2022 edition is being sold)

[“Weed Control Guide for Ohio, Indiana, and Illinois”](#)

[“Mid-Atlantic Weed Control Guide”](#)

[“MSU Weed Control Guide for Field Crops”](#)

[“2022 Weed Control Recommendations for Kentucky Field Crops”](#)