



## Burndown Applications and Soybean Planting

A spring-time weed burndown is an integral step toward maximizing weed control and soybean yield potential. Soybean yield potential can be reduced when weeds compete with soybean plants for nutrients, water, and light.<sup>1</sup> During early soybean growth, soybean plants and weeds can survive together without much, if any, reduction in yield potential; however, weed competition can quickly increase and become detrimental.

Weed control should not be a one-time event. Weed control activity can begin in the fall after harvest to control emerging winter annuals, in the spring as a preplant burndown or tillage operation, at planting, and during the growing season.

Successful spring burndown herbicide applications can provide control of winter annual, summer annual, and perennial weeds and are important in reduced-till and no-till systems (Figure 1). The benefits of weed removal prior to planting include:

- A clean seedbed for earlier planting.
- Removal of undesired growth that can inhibit uniform seed placement.
- Controlling established weeds as these weeds can become the most competitive with young soybean plants.
- Contributing to the management of difficult-to-control weeds.
- Removal of weeds that are hosts for diseases and insects.
- Providing an opportunity to use alternate mode-of-action herbicides for weed resistance management.

Spring burndown applications should be timely regarding weed growth and applied as soon as possible to help optimize weed control. Understandably, wet field conditions can cause delays in burndown applications. However, diligence is



**Figure 1. Seedling lambsquarters in residue.**

important as weeds greater than 4 inches in height can become increasingly difficult to control and as weed heights increase, herbicide rates may need to increase, which can increase overall weed control costs. Additionally, densely populated weeds with overlapping foliage may prevent herbicide penetration into the canopy for adequate control. Regardless of application timing, tank mixtures and residual herbicides should be used to provide different mode-of-action weed control to help reduce the potential for weed resistance development. Herbicide labels **MUST** be reviewed to determine if state or geographical restrictions apply, planting interval restrictions exist, and/or if there is any potential for crop injury. Please read and follow all label requirements and restrictions.

Herbicides with residual activity are essential for soybean weed management systems. Incorporating residual herbicides in a burndown application can help control early-emerging, competitive, and tough-to-control weeds so post-emergence herbicide applications can be made when weeds are small and weed populations are less dense. University research has demonstrated that weeds emerging with the crop may start to impact soybean yields as early as the

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V2 or V3 stage of development and can cause a one percent per day yield loss for each day weeds continue to compete.<sup>2</sup>

Herbicide application decisions should be driven by field scouting before and after applications to help:

- Determine the herbicides needed to control the weeds present
- Determine the weed sizes to make a properly timed application and the rate required
- Determine the effectiveness of an application.

Depending on geography, Bayer burndown herbicide products to consider are:

- Roundup PowerMAX<sup>®</sup> herbicide, Roundup WeatherMAX<sup>®</sup> herbicide, or Roundup PowerMAX<sup>®</sup> 3\* herbicide along with dicamba or 2,4-D ester and a residual herbicide such as Warrant<sup>®</sup> Herbicide. Please visit <https://www.roundupreadyxtend.com/Pages/Spray-Early.aspx> for burndown information.
- Roundup PowerMAX herbicide, Roundup WeatherMAX herbicide, or Roundup PowerMAX 3 herbicide plus XtendiMax<sup>®</sup> herbicide with VaporGrip<sup>®</sup> Technology, a restricted use pesticide, which must be used with VaporGrip<sup>®</sup> Xtra Agent (or an equivalent vapor reducing agent) plus a residual herbicide such as Warrant Herbicide. Please visit <http://www.xtendimaxapplicationrequirements.com/Pages/default.aspx> for important XtendiMax with VaporGrip Technology information.
- If Amaranthus species or PPO-resistant species are present, the addition of a metribuzin herbicide to the tank mix is recommended (Figure 2).

XtendiMax<sup>®</sup> herbicide with VaporGrip<sup>®</sup> Technology is part of the Roundup Ready<sup>®</sup> Xtend Crop System, is a restricted use pesticide and must be used with VaporGrip<sup>®</sup> Xtra Agent (or an equivalent vapor reducing agent). For approved tank-mix products (including VRAs and DRAs), nozzles and other important label information visit [XtendiMaxApplicationRequirements.com](http://XtendiMaxApplicationRequirements.com)

Environmental conditions can affect the rate of weed growth, crop development, crop tolerance to herbicides, and herbicide performance. The efficacy of a burndown herbicide application can



**Figure 2. Palmer amaranth seedlings grow rapidly and can quickly overtake seedling soybean plants.**

be reduced by cold temperatures; therefore, it is recommended to wait on applying herbicides until nighttime temperatures are above 40°F and daytime temperatures are at least into the 50s.<sup>3</sup> Additional information for burndown applications can be found at <https://www.roundupreadyxtend.com/Pages/Spray-Early.aspx>.

## Sources

<sup>1</sup> Hartzler, B. Managing weeds to protect crop yields. Encyclopedia Article. Integrated Crop Management. Iowa State University. <https://crops.extension.iastate.edu/>.

<sup>2</sup> Hartzler, B. 2003. Is your weed management program reducing your economic return? Weed Science. Iowa State University. <http://extension.agron.iastate.edu/>.

<sup>3</sup> Hartzler, B. 2016. Cold temperatures and burndown herbicides. Integrated Crop News. Iowa State University Extension and Outreach. <https://crops.extension.iastate.edu/>.

Web sites verified 12/7/20.

## Legal Statements

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ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Technology<sup>®</sup> includes glyphosate-based herbicide technologies.

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