

Harvest Aid Products for Soybean

Soybean fields that remain green beyond soybean seed maturation or have green weeds may require a “harvest aid” or desiccant (Figure 1). The application of a harvest aid can help increase harvest efficiency, reduce the occurrence of foreign material in the harvested seed, maintain soybean seed quality, and reduce weed foliage.¹ Desiccants promote pre-mature leaf drop and drying of green tissue but do not speed crop maturity or make seed dry faster. The addition of sodium chlorate to a desiccant can help remove moisture from green soybean tissue, including seed, and provide additional weed management.

Roundup® brand agricultural herbicides including Roundup PowerMAX® Herbicide, Roundup PowerMAX® II Herbicide, Roundup PowerMAX® 3 Herbicide, and Roundup WeatherMAX® Herbicide are labeled for preharvest applications to soybean plants (conventional or glyphosate-resistant) after pods have set and lost all green color.

The herbicide label must be followed regarding application timing relative to soybean maturity. Additionally, the minimum days between herbicide application and harvest must be adhered to, which is 7 days when these four Roundup® brand agricultural herbicides are applied to conventional or non-glyphosate resistant soybean plants and 14 days if applied to soybean plants with Roundup Ready® technology or Roundup Ready 2 Yield® Technology. Restrictions also apply for the feeding or grazing of grain, hay, or fodder.

Application Timing

As described above, the Roundup® brand agricultural herbicide labels indicate applications cannot occur until pods have set and lost all green color. This coincides closely with the R8 growth stage (95% of the pods have lost green color and occurs about 5 to 10 days before the field is ready for harvest).² Glyphosate products are systemic; therefore, susceptible weeds and conventional (without glyphosate resistance) soybean products may not drop leaves for several days. Glyphosate resistant soybean products will not be affected by a glyphosate herbicide.



Figure 1. Soybean field with large escaped weeds may need a desiccant to help allow for a timely harvest. Weed management should be exercised early to mid-season with labeled herbicides to help avoid the weed growth in this picture.

To get the best harvest aid effectiveness, tank mixes of labeled herbicides may need to be considered. Table 1 provides information on Roundup brand agricultural herbicide preharvest application timing, rates, days before harvesting after an application, and grazing or feeding restrictions; however, **the herbicide product labels must be read and followed.**

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Labels for other herbicide products have similar restrictions (Table 1). Their labels must be read for application requirements. Other herbicides may include contact herbicides which kill the tissue the herbicides land upon. Activity is usually quicker than systemic herbicides; however, spray volume may need to be increased to help provide adequate plant coverage. These herbicides are likely to have activity on conventional and glyphosate resistant soybean products. To get the best harvest aid effectiveness, tank mixes of labeled herbicides may need to be considered.

Start sampling fields when soybean plants reach R6 (full seed) growth stage. The R6 growth stage is characterized by a pod containing a green seed that fills the pod capacity at one of the four uppermost nodes on the main stem.³ Verification of growth stage can be confirmed by randomly collecting pods from the top 1/3 of plants throughout the field to determine pod coloration and seed development within the pods. The R7 growth stage is characterized by one main-stem normal pod reaching its mature pod brown or tan color.³ Once seeds turn yellow, they begin to separate from the white membrane of the pod, which indicates that seed filling is reaching completion and a harvest aid application may be considered.

Weed Management

Research at Mississippi State University showed that even low weed populations at harvest had the potential to reduce combine and cylinder speed. Additionally, the amount of foreign material doubled, the percent of damaged seed increased, and soybean seed moisture increased compared to weed-free control plots.⁴

Many weeds that can be found in near-maturity soybean fields can have mature viable seeds. Therefore, if applied preharvest herbicides cause adversely large weeds to die and drop leaves, then the seeds that drop to the ground or run through a combine can grow. Cleaning harvest equipment can also prevent the spread of unwanted weed seed from field to field. Weed competition should be addressed early in the season to help protect crop yield potential and reduce weed seed production.

Harvest and Livestock Feeding

The minimum number of days prior to harvest or preharvest interval (PHI) after a preharvest application must be followed. Additionally, grazing may or may not be allowed depending on the herbicide. These restrictions appear in the respective labels.

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Table 1. Harvest aid herbicides. Herbicide labels must be reviewed and followed.

Herbicide	Application Timing	Ground Application Maximum Rate	Aerial Application Maximum Rate	Minimum Days between Application and Harvest	Do Not Graze or Harvest Hay or Fodder for Livestock in Treated Area
Roundup PowerMAX® Herbicide	After pods have set and lost all green color	Conventional or Non-glyphosate Resistant Soybean 3.3 qt/acre	Conventional or Non-glyphosate Resistant Soybean 44 fl oz/acre	7	> 22 fl oz/acre (25 Days) ≤ 22 fl oz/acre (14 Days)
Roundup PowerMAX II® Herbicide		Soybean with Roundup Ready® Technology 22 fl oz/acre	Soybean with Roundup Ready® Technology 22 fl oz/acre	14	14
Roundup WeatherMAX® Herbicide		Soybean with Roundup Ready® 2 Yield Technology 22 fl oz/acre	Soybean with Roundup Ready® 2 Yield Technology 22 fl oz/acre	14	14
Roundup PowerMAX® 3 Herbicide	After pods have set and lost all green color	Conventional or Non-glyphosate Resistant Soybean 3.1 qt/acre	Conventional or Non-glyphosate Resistant Soybean 40 fl oz/acre	7	> 20 fl oz/acre (25 Days) ≤ 20 fl oz/acre (14 Days)
		Soybean with Roundup Ready® Technology 20 fl oz/acre	Soybean with Roundup Ready® Technology 20 fl oz/acre	14	14
		Soybean with Roundup Ready® 2 Yield Technology 20 fl oz/acre	Soybean with Roundup Ready® 2 Yield Technology 20 fl oz/acre	14	14
Paraquat 2.0	Indeterminate Seed Products: At least 65% of pods are a mature brown color or when seed moisture is 30% or less. Determinate Seed Products: When seeds are fully developed, 1/2 of leaves have dropped and remaining leaves are yellowing.	8 to 16 fl oz/acre Minimum total spray/acre = 20 gal	8 to 16 fl oz/acre Minimum total spray/acre = 5 gal	15	Do not graze or feed treated hay or straw to livestock
Saflufenacil	Indeterminate Seed Products: Greater than 65% brown pods and greater than 70% leaf drop or when seed moisture is 30% or less. Determinate Seed Products: Seeds are fully developed, greater than 50% leaf drop, and remaining leaves are yellowing.	1.0 to 2.0 fl oz/acre Minimum spray volume/acre = 10 gal	1.0 to 2.0 fl oz/acre Minimum spray volume/acre = 5 gal	3	Do not graze or feed treated hay or straw to livestock
Carfentrazone-ethyl	Crop is mature and grain has begun to dry down.	1.0 to 1.5 fl oz/acre Minimum of 10 gal/acre, more may be needed for harvest aid	1.0 to 1.5 fl oz/acre Minimum of 3 gal/acre, more may be needed for harvest aid	3	Do not graze or feed treated hay or straw to livestock
Dicamba Diglycolamine Salt	Pods have reached mature brown color and at least 75% leaf drop has occurred.	8 to 32 fl oz/acre Use 3 to 50 gal/acre of spray solution	8 to 32 fl oz/acre Use 2 to 20 gal/acre of diluted spray	7	Do not graze or feed treated hay or straw to livestock

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Sources:

- ¹ Heatherly, L.G. 2015. Using harvest aids for soybeans. Mississippi Soybean Promotion Board (MSPB). <https://www.mssoy.org>.
- ² Davis, V.M. 2012. A review of glyphosate use for preharvest weed control. Integrated Pest and Crop Management. University of Wisconsin-Madison. <https://ipcm.wisc.edu/blog/2012/09/a-review-of-glyphosate-use-for-preharvest-weed-control/>.
- ³ Koger, T, Catchot, A., Allen, T., Zhang, L., Eubank, T., and Blessitt, B. 2010. Guide to soybean growth stages. P2588. Mississippi State University. <https://www.mssoy.org/>.
- ⁴ Ellis, J.M., Shaw, D.R., and Barrentine, W.L. 1998. Soybean (Glycine max) seed quality and harvesting efficiency as affected by low weed densities. Weed Technology 12(1): 166 - 173. doi:10.1017/S0890037X00042743. Cambridge University Press.

Web sites verified 9/2/21.

Legal Statement

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

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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