

EXCERPT FROM MONSANTO 2018 TECHNOLOGY USE GUIDE
REGARDING ALFALFA WITH ROUNDUP READY® TECHNOLOGY
(see other links for Monsanto's full TUG)

Monsanto 2018 Technology Use Guide

Alfalfa

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Roundup Ready® Alfalfa

Roundup Ready® Alfalfa products have in-plant tolerance to the active ingredient glyphosate in Roundup® agricultural herbicides, enabling growers to apply Roundup® agricultural herbicides up to 5 days before cutting for unsurpassed weed control with excellent crop safety and improved forage quality potential.

Planting Limitation

Grower must not plant Roundup Ready® Alfalfa in any wildlife feed plots, and must not plant Roundup Ready® Alfalfa for the production of sprouts.

Fly-on planting Growers that choose to fly-on Roundup Ready® Alfalfa seed must control any resulting feral alfalfa.

Hay and Forage Management Requirements

Roundup Ready® Alfalfa must be managed for high quality hay/forage production, including timely cutting to promote high forage quality (i.e., generally before 10% bloom) and to prevent seed development.

- In areas where conventional alfalfa seed production or adventitious presence (AP) sensitive seed production is intermingled with forage production, Roundup Ready® Alfalfa must be harvested at or before 10% bloom to help minimize potential pollen flow from Roundup Ready® Alfalfa to conventional alfalfa, and grower is responsible to control any feral alfalfa resulting from Roundup Ready Alfalfa® use.
- In all other areas Roundup Ready® Alfalfa must be harvested no later than 50% bloom.

Growers who are unwilling to or who cannot make these commitments to stewardship should not grow Roundup Ready® Alfalfa.

An in-crop weed control program using Roundup WeatherMAX®, Roundup PowerMAX® or Roundup PowerMAX® II herbicide can provide excellent weed control in most situations. A residual herbicide labeled for use in alfalfa may also be applied postemergence in alfalfa. Contact a Monsanto Representative, local crop advisor or extension specialist to determine the best option for your situation.

Alfalfa In-Crop Rotation

Avoid planting alfalfa in a field from which an alfalfa crop has recently been removed. Recommended rotational crop sequences fall into two categories — grass crops (e.g., corn and cereal crops) and broadleaf crops.

Roundup Ready Alfalfa Stand Takeout

Use appropriate, commercially available herbicide treatments in reduced tillage systems, or in combination with tillage, to terminate a Roundup Ready® Alfalfa stand.

If necessary, use tillage and/or additional herbicide application(s) after stand takeout, and prior to planting of the subsequent rotational crop to manage any newly-emerged or surviving alfalfa.

Note: Roundup® agricultural herbicides are not effective for terminating Roundup Ready® Alfalfa stands.

Crop Product Export

Grower must lawfully plant Roundup Ready® Alfalfa, direct any product produced from Roundup Ready® Alfalfa seed or crops (including hay and hay products) only to those countries where regulatory approvals have been granted, and grow and manage Roundup Ready® Alfalfa in accordance with the information found in this TUG. In addition, due to the unique cropping practices do not plant Roundup Ready® Alfalfa in Imperial County, California until Forage Genetics International, LLC (FGI) grants express permission for such planting. It is a violation of national and international laws to move material containing biotech traits across boundaries into nations where import is not permitted.

For more information and the latest updates on Roundup Ready® Alfalfa, go to roundupreadyalfalfa.com or call 1-855-227-8917.

Management of Roundup Ready® Alfalfa Volunteers in Rotational Crop Fields

In a timely manner, use recommended and commercially available mechanical and/or herbicidal methods for managing volunteer Roundup Ready® Alfalfa in rotational crop fields.

- Implement treatments before volunteers become too large to control or begin to compete with the rotational crop.
- Herbicide alternatives are available for management of volunteer alfalfa in grass crops.
- Rotation with certain broadleaf crops is not advisable if the grower is not willing to implement recommended stand termination practices.
- In the event that no known mechanical or herbicidal options are available to manage volunteer Roundup Ready® Alfalfa in the desired rotational crop, you should change to a crop with established volunteer management practices for that rotation.

Note: Roundup agricultural herbicides are not effective for terminating Roundup Ready® Alfalfa volunteers.

Stewardship

All Roundup Ready® Alfalfa growers are required to sign the Monsanto Technology/Stewardship Agreement (MTSA) limited-use license which provides the terms and conditions for the authorized use of the product. The MTSA must be signed and approved before purchase or use of seed.

The MTSA explicitly prohibits all forms of commercial seed harvest on the stand. Every grower of Roundup Ready® Alfalfa agrees to only lawfully plant Roundup Ready® Alfalfa, and not to plant Roundup Ready® Alfalfa for the production of seed, unless under specific contract to produce seed.

Note: See Weed Management Recommendations in Alfalfa, page 4 of this section

Weed Management Recommendations

for Roundup Ready® Alfalfa and HarvXtra® Alfalfa with Roundup Ready® Technology

Recommendations

Subject to all pesticide label requirements, follow the recommendations below to help minimize the risk of developing glyphosate-resistant weed populations in Roundup Ready® Alfalfa and HarvXtra® Alfalfa with Roundup Ready® Technology:

- Scout fields before and after each herbicide application.
- To help control flushes of weeds in established alfalfa, make applications of Roundup WeatherMAX®, Roundup PowerMAX® or Roundup PowerMAX® II herbicide at 22 to 44 oz/A before weeds exceed 4" in height, up to 5 days before cutting.
- Use other approved herbicide products tank-mixed or in sequence with Roundup® agricultural herbicides as part of a Roundup Ready® Alfalfa or HarvXtra® Alfalfa with Roundup Ready® Technology weed control program, if appropriate for the weed spectrum present.
- Report any incidence of repeated non-performance of Roundup® agricultural herbicides or other glyphosate products on a particular weed to the appropriate company representative, local retailer, or county extension agent.

To preserve the quality potential of forage and hay in established stands, apply Roundup WeatherMAX® after weeds have emerged but before alfalfa re-growth interferes with application spray coverage of the target weeds.

Additional Recommendation

It has been reported that some growers of Roundup Ready® Alfalfa may have a limited, temporary crop response where glyphosate application is closely followed by freezing or near-freezing conditions, or by large temperature swings.

Because glyphosate-based herbicides are most effective in controlling actively growing weeds, application in these conditions is not recommended.

If freezing or near-freezing temperatures, or large temperature swings, are forecasted within 5 days after a planned glyphosate application to your Roundup Ready® Alfalfa and/or HarvXtra® Alfalfa with Roundup Ready® Technology, you should delay the application until those conditions are no longer forecasted.

Additional Information

- Always start with a weed-free field. In no-till and reduced-till systems, apply a Roundup WeatherMAX® burndown application to control existing weeds at least 1 to 2 weeks before planting.
- An initial application of 22 to 44 oz/A of Roundup WeatherMAX® should be applied at or before the 3 to 4 trifoliate growth stage.

Note: Due to the genetic diversity of alfalfa, up to 10% of the seedlings are susceptible and will not survive the first application of Roundup® agricultural herbicides. The initial application is necessary to eliminate the effects of stand gaps created by loss of plants that are not Roundup Ready® and to ensure adequate spray coverage of emerging weeds before crop canopy interference.
- Applications between cuttings may be applied as a single application or in multiple applications (e.g., two applications of 22 oz/A). Sequential applications should be at least 7 days apart.
- If using another approved glyphosate agricultural herbicide, you must refer to the label booklet or supplemental labeling for the use of that product on Roundup Ready® Alfalfa and HarvXtra® Alfalfa with Roundup Ready® Technology to determine appropriate use rates.
- Maximum use rates apply to the total amount applied of all glyphosate-containing products. See the Roundup WeatherMAX® label for more information on maximum use rates.
- If using Roundup PowerMAX® or Roundup PowerMAX® II, application rates are the same as for Roundup WeatherMAX®.
- In addition to those weeds listed in the Roundup WeatherMAX® label booklets, this product can suppress or control the parasitic weed, dodder (*Cuscuta spn.*) in Roundup Ready® Alfalfa and HarvXtra® Alfalfa with Roundup Ready® Technology. Repeat applications might be necessary for complete control.
- For tough-to-control weeds or weeds not controlled by Roundup® agricultural herbicides, use labeled rates of other approved herbicides, alone or in tank-mixtures, with Roundup® agricultural herbicides.

Various weed biotypes are known to be resistant to glyphosate. For the current weed control recommendations for glyphosate-resistant weed biotypes, refer to RoundupReadyPLUS.com or call 1-800-768-6387. A complete list of specimen labels can be located at www.monsanto.com/products/safety-information/sds. Approved labels, including supplemental labeling, for Roundup® agricultural herbicides must be in the possession of the user at the time of pesticide application and can be obtained by calling 1-800-768-6387 or by contacting your State Pesticide Lead Agency for more information.