

MANAGING GENUITY® ROUNDUP READY® ALFALFA



WHAT YOU'LL LEARN

- Genuity® Roundup Ready® Alfalfa provides growers an advantage by offering higher yield potential and improved forage quality and digestibility over conventional alfalfa.
- Genuity Roundup Ready Alfalfa contains Roundup Ready® technology, which incorporates genetic tolerance to Roundup® agricultural herbicides.
- This technology provides growers with broad spectrum weed control and flexible application timing (Figure 1).



Figure 1. Regrowth of Genuity® Roundup Ready® Alfalfa (left) compared to conventional alfalfa (right).

Stand Establishment

Profitable alfalfa stands are the result of careful field and product selection, proper soil and nutrient management, and good planting practices.

Site Selection

Successful alfalfa production requires well drained soils. Sandy loam, silt loam, and clay loam soil types are the most ideal. These soil types provide the best combination of water infiltration, water holding capacity, and aeration.

Steeply sloped fields (more than 12% slope) should be avoided, as newly seeded alfalfa stands can be prone to soil erosion.

Soil Fertility

Alfalfa stands remove high quantities of nutrients from the soil because the above-ground portion of the crop is normally harvested 3 to 5 times per growing season.



Soil tests should be used to estimate nutrient requirements, especially phosphorous (P), potassium (K), and soil pH levels. Soil pH should be between 6.8 and 7.0 for optimal nutrient availability and nodulation. If soil pH is below this range, lime should be applied at least one year prior to seeding, for optimum performance. Alfalfa responds well to fertilization with P and K. Split applications of P and K, based on yield goals, are recommended after the first cutting and again in late summer. Maintaining optimum K levels in the fall is particularly important for winter survival.

Autotoxicity

Alfalfa plants produce toxins that reduce the germination and establishment of new alfalfa seedlings. Autotoxicity is generally a problem with stands that are two years or older. After complete removal of an established alfalfa stand, consider growing a different crop for one season before returning to an alfalfa crop to allow time for the toxic compounds to degrade or leach out of the root zone.

Seeding Considerations

Alfalfa can be planted either in the spring after the last day of frost or in late summer, when moisture and temperature conditions are favorable for adequate seedling establishment. Late-summer seeding occurs because of the opportunity to plant alfalfa after another crop. A late summer seeding will need at least 6 to 8 weeks to establish before the first frost.

The optimal seeding rate for alfalfa is between 15 to 20 pounds of seed per acre, depending on soil and moisture conditions. Recommendations may run much higher in the irrigated regions of the west. The best practice is to utilize recommended rates from a local Extension office.

In general, alfalfa seeds should be planted at a depth of about 0.25 to 0.5 inch into a very firm soil bed. Planting deeper than this can result in spotty germination and weak seedlings, except in sandy soils where a slightly deeper planting depth is acceptable.

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Companion Crops

Alfalfa can be planted as a monoculture or with a companion crop such as annual ryegrass, oats, barley, or triticale. Check local Extension recommendations for grass species that work best in your location. Companion crops can protect alfalfa seedlings from damage due to low temperatures, provide better erosion control, and minimize weed competition during establishment. Forage quality will be reduced with a companion crop but total forage yield may increase.

Companion crops are not recommended for late summer seeding because moisture limitations at this time can create competition and hinder alfalfa seedling development.

Weed Management

Fields should be free of weeds before seeding. For detailed information on weed management see: *Weed Resistance Management in Genuity Roundup Ready Alfalfa* online at: www.roundupreadyplus.com/Pages/Article.aspx?article=Weed-Resistance-Management-in-Genuity-Roundup-Ready-Alfalfa.

Forage Quality and Yield Factors

Alfalfa forage quality is greatest in early vegetative stages when leaf weight is greater than stem weight. For producers who seek higher quality alfalfa, such as dairy operations, the optimum time for harvest may be at the pre-bud stage. When alfalfa is harvested at later stages of maturity, after flowering, higher yields can be expected; however, the quality decreases due to a greater quantity of low-quality stems. An early first harvest, at pre-bud stage, followed by a short cutting interval can give a high yield of quality forage. To increase root reserves and stand persistence, wait to make one cutting after early flowering. Use a longer cutting interval for maximum stand persistence.

Fall Management

Assess the level of risk for winter injury when considering a late-fall cutting. After the final harvest, alfalfa requires a six to eight week rest period prior to the first killing frost in preparation for winter dormancy. Depending on the severity of a typical winter, stand age, and the season's cutting schedule, it may be better to avoid fall cutting. Managing soil fertility (most importantly potassium levels) and cutting height can reduce the risk of winter damage after a fall cutting. Leave a 6-inch stubble and uncut strips after a late-fall harvest to catch snow and insulate the roots. Late-fall cuttings in northern states can increase winterkill losses and decrease the initial spring cutting yields, but can

be useful for decreasing the number of overwintering insects.

Stand Life and Rotation Timing

Yields often begin to decline in the third year of production in the Midwest, the Northeast, and many irrigated fields in other regions. Weed, insect, and disease pressure may become greater in older stands, requiring increased pesticide applications. Growers who consider shorter rotations may see greater profits with higher yields, higher forage quality, reduced pesticide use, greater nitrogen credits, and an increased corn yield potential of 10 to 15% when rotated after alfalfa.

Genuity® Roundup Ready® Alfalfa vs. Conventional Alfalfa

In the vast majority of trials comparing Genuity Roundup Ready Alfalfa vs. conventional alfalfa (treatments with glyphosate vs. conventional herbicides), there was a significant establishment year advantage in both yield potential and forage quality. This is a result of the improved weed control and crop safety provided by the Roundup Ready system. Grower satisfaction with Roundup Ready Alfalfa ranks at 97%.

Sources: Orloff, S.B. 2007. Irrigated alfalfa management: choosing appropriate sites for alfalfa production. University of California.

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American Society of Agronomy. <https://www.agronomy.org/>.

Undersander, D., Hall, M., and Vassalotti, P. 2011. Alfalfa germination and growth. University of Wisconsin Extension. A3681. <http://learningstore.uwex.edu/>.

Web sources verified 2/12/15.

Do not export Genuity® Roundup Ready® Alfalfa seed or crop, including hay or hay products, to China pending import approval. In addition, due to the unique cropping practices do not plant Genuity® Roundup Ready® Alfalfa in Imperial County, California, pending import approvals and until Monsanto grants express permission for such planting. Monsanto Company is a member of Excellence Through Stewardship® (ETS). Monsanto products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with Monsanto's Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. Commercialized products have been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying position for this product. Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Roundup Ready® crops contain genes that confer tolerance to glyphosate, the active ingredient in Roundup® brand agricultural herbicides. Roundup® brand agricultural herbicides will kill crops that are not tolerant to glyphosate. Genuity Design®, Genuity Icons, Genuity®, Roundup Ready® and Roundup® are trademarks of Monsanto Technology LLC. All other trademarks are the property of their respective owners. ©2015 Monsanto Company. 140328013702 030415SMK