



Considering Roundup Ready™ Alfalfa
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Glyphosate-resistant alfalfa (“Roundup Ready” or RR alfalfa) can now be planted in Arizona following the USDA-APHIS decision in January 2011 to grant it non-regulated status. This technology adds a tool to the alfalfa weed control arsenal, but there are tradeoffs in using it (see table at right).

A healthy, vigorous alfalfa stand will suppress weeds. Growers in cooler parts of Arizona frequently do not need to use herbicides after establishment, because cutting and alfalfa competition suppress weeds. These growers may not be able to economically justify the greater seed cost of RR alfalfa. In warmer areas of Arizona, summer temperatures are greater than optimum for alfalfa growth, and weeds such as purple nutsedge and barnyardgrass compete with alfalfa (see photo). Growers in these areas may be able to justify the increased seed cost through higher quality hay and extended stand life.

Weed control during stand establishment is critical to assure a uniform, high density distribution of alfalfa plants that will maximize yield and quality. Due to the polyploid genetics of alfalfa, 3–7% of seedlings will not contain the RR gene. For weed control and to remove non-RR plants, the best time to apply glyphosate is at the 3–4 trifoliate leaf growth stage; apply 0.75–1.5 lb ae / A of glyphosate (see table at lower right). Our field research showed that this early application was sufficient given the competitive nature of alfalfa to provide weed control up to the first cutting in the spring following fall planting. A second application may be made up to 5 days before the first cutting.

RR alfalfa may be treated with glyphosate at rates of 0.75–1.5 lb ae / A per application; sequential applications should be at least 7 days apart. **The combined total of all in-crop glyphosate applications per calendar year may not exceed 4.64 lb ae / A.** Potential glyphosate rates and numbers of applications per year are: 5 applications at 0.93 lb ae / A, 4 applications at 1.16 lb ae / A and 3 applications at 1.54 lb ae / A or 26, 33, and 44 fl oz / A of a 4.5 lb ae / gallon glyphosate formulation. Research in western Arizona on purple nutsedge found that multiple applications at 1.16 lb ae / A provide better control than fewer applications at 1.54 lb ae / A. Often it is advantageous to use other postemergence and preemergence herbicides to manage weeds in alfalfa. As an alfalfa stand ages and density declines due to natural self-thinning, devote more attention to weed management to maintain quality.

Advantages	Disadvantages
Increased application flexibility	Significantly increased seed costs
Short pre-harvest interval (5 day PHI) for glyphosate	Lack of soil residual activity for weed control
Broad spectrum control of annual and perennial weeds	Loss of glyphosate as a tool for stand termination
Potential to make multiple applications per year	RR alfalfa volunteers may be a problem in following RR crops



Prior to First Cutting	Rate	Product Formulation Concentration	
	(lb ae/A)	3 lb ae/gal	4.5 lb ae/gal
Emergence up to 4 trifoliate leaves	0.75–1.5	32–64 fl oz	22–44 fl oz
From 5 trifoliate leaves up to 5 days before first cutting	0.75–1.5	32–64 fl oz	22–44 fl oz
After First Cutting			
In-crop application, per cutting, up to 5 days before cutting	0.75–1.5	32–64 fl oz	22–44 fl oz



Also see:

McCloskey, W. & L. Brown. 2011. <http://cals.arizona.edu/crops/cotton/files/GlyphosatevF.pdf>
 Tickes, B. & M. Ottman. 2008. <http://cals.arizona.edu/pubs/crops/az1266.pdf>
 Tickes, B. 2011. <http://cals.arizona.edu/crops/vegetables/advisories/more/weed34.html>

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