



# OKLAHOMA FORAGES NEWSLETTER



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### BOOKMARKS

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### OKLAHOMA FORAGE NEWSLETTER

<http://forage.okstate.edu/oklahoma-forage-newsletter.htm>

[Oklahoma Alfalfa](http://alfalfa.okstate.edu/)  
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### Oklahoma Alfalfa Variety Test Results

We welcome contributions and suggestions. Comments about and contributions to the Oklahoma Forages Newsletter and/or our web sites are welcome and should be submitted to

[john.caddel@okstate.edu](mailto:john.caddel@okstate.edu) or  
[daren.redfearn@okstate.edu](mailto:daren.redfearn@okstate.edu)

*Everyone interested in forages is welcome to receive and contribute to the Oklahoma Forages Newsletter.*

## Grazing Alfalfa For Oklahoma

Grazing pure alfalfa stands through the growing season does not have much appeal for many in Oklahoma for various reasons (both good and not so good). Establishing and maintaining alfalfa in pastures along with grasses has long been desired. As the price of nitrogen fertilizer remains high and many producers are looking for ways to grow their own nitrogen, we should be looking at grazing alfalfa again.

Many attempts to establish alfalfa into tall fescue have been partially successful but maintaining the legume has been difficult at best. Establishing alfalfa into bermudagrass has been extremely difficult and usually futile. Two things have happened recently to make us look at grazing alfalfa again.

The transgene, Roundup Ready®, the initial biotech trait in alfalfa, provides tolerance to the herbicide Roundup® (glyphosate). ‘AlfaGraze’, released in 1991, was the first dual purpose alfalfa cultivar with high yield that persists under intensive grazing and led the way for future grazing tolerant cultivars. AlfaGraze 300 RR and AlfaGraze 600RR are Roundup Ready® varieties with tolerance to grazing and improved pest resistance.

In general AlfaGraze 600RR should be better suited for Oklahoma but was not available last spring when we initiated some interesting studies. The following is a preliminary report of an activity at the Eastern Research Station near Haskell, OK, just south of Tulsa.

The purpose of this research/demonstration is to investigate ways to utilize grazing tolerance and Roundup Ready® traits to improve the success of establishing alfalfa into grass stands in pastures. Once alfalfa is established and growing with grass, the next step is to identify ways to maintain the alfalfa for several years while grazing.

This is a qualitative interim report on the results of several different components of the methodology. Because no quantitative data was recorded and a picture is sometimes worth a thousand words, images on the web serve as the results of this activity. Links for are given below to particular sets of images for several different dates or subjects. These images may also be viewed by going to <http://alfalfa.okstate.edu> then “Images” → “Special Image Collection” → “Roundup Ready Alfalfa Spring & Summer 2006”. From there one can navigate to various dates and back.

## Methodology and Conditions

Alfagraze 300 RR was planted into existing stands of bermudagrass and tall fescue on 4 April 2006 at the Eastern Research Station near Haskell, OK. Roundup was applied in strips (1', 3', & 5' wide) on 17 May 2006 when the grasses were dormant due to dry soil conditions.

Alfagraze 300 RR was planted into a combination of droughty tall fescue and dormant bermudagrass along with cool-season annual grasses. The soil was just dry enough after the first rain of any significance since the previous fall (about 5 months). Seed went into moist soil and germinated quickly. Following planting was several weeks no rain and many hot (90F+) days with wind through the end of April. In mid May alfalfa plant counts in quadrats showed an average of a little more than 1 alfalfa plant per square foot, but highly variable (typical of pasture observations).

On 17 May 2006 Roundup was applied in strips, 1', 3', or 5' wide and 100+' long at the rate of 22 oz/acre and 44 oz/acre in the strips to kill or suppress competing vegetation. The strips of Roundup were made perpendicular to the drill rows of alfalfa. No difference in bermudagrass death (or suppression) between the 22 and 44 oz/acre could be observed as both were effective in spite of the dry weather and generally poor growing conditions.

Soil fertility and depth in these pastures are highly variable but adequate for reasonably good production. Soil pH was approximately 6.0 and soil test P and K were approximately 85% sufficient.

This was one of the hottest summers on record and rainfall was limited to about 60% of average.

### Temperature (F)

April - 5 days above 90

May - 8 days above 90

June - 17 days above 90

July - 29 days above 90 (10 days above 100)

### Rainfall (inches)

Jan 1.20

Feb 0.52

March 2.38

April 4.40

May 4.19

June 1.27

July 2.67

TOTAL = 16.63

## Results

Images showing the appearance of the pastures on 31 May 2006 are available at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR5-31-06/RRAlfalfaHaskellPastures.htm> If the Roundup had not been applied, essentially no alfalfa would have been present. Alfalfa was small but growing well where Roundup was applied.

Bermudagrass and tall fescue were again dormant due to dry weather at the end of June. Alfalfa plants without competition were growing well. Alfalfa plants in bermudagrass that was not sprayed were much shorter and fewer plants survived.

Images illustrating the conditions and progress as of 29 June 2006 are available at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR6-29-06/rralf-pasture6-29-06.htm>

Our next visit and photo session was 3 August 2006, it was dry, but rows of alfalfa could be seen where bermudagrass was sprayed with Roundup. Little or no alfalfa existed where bermudagrass was not sprayed with Roundup. Alfalfa plants that were still alive looked good after grazing for about 30 days and mowing to even out the vegetation in the area. Images illustrating the appearance of the pastures with alfalfa on 3 August 2006 are available at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR8-3-06/alf-grzRR.htm>

By 31 August 2006, our next visit and photos, bermudagrass had begun to grow back into the

sprayed strips. Horsenettle and silverleaf nightshade were not killed when sprayed with roundup in the early season. In some places the alfalfa stand was not as dense as desired. A little crabgrass encroached into sprayed areas where alfalfa was sparse. In some settings crabgrass is considered a weed but is a good warm-season annual forage species. Alfalfa plants and crowns were small but adequate for a spring-sown stand that had been grazed for two months. Alfalfa plants that became established in the non-sprayed bermudagrass are excessively small or dead. Alfalfa in the roundup-sprayed strips was clearly in drill rows. The stand was less than would probably be found in a clean-tilled field, but more than adequate for pastures. Views of the area on 31 August 2006 are available at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR8-31-06/alf-grzRR.htm>

By the end of September, with cooler temperatures and a few rains, the pastures were productive with alternating strips of bermudagrass and alfalfa. Some tall fescue was observed. Images of the spring-sown alfalfa in pastures on 29 September 2006 are available at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR9-29-06/AlfaGraze2006.htm>

### **Additional Plantings**

In early September Alfagraze 300RR was planted in additional areas with strips of Roundup to suppress grasses, giving a general comparison of fall-sown and spring-sown stands. Recently sown alfalfa was small with the most advances plants having two or three trifoliolates as seen at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR9-29-06/fall-sownalfagrazeRR9-29-06.htm> on 29 September 2006.

### **Weeds**

Prostrate spurge was the only serious weed observed to take advantage of bermudagrass suppression in areas where alfalfa did not grow (shallow and infertile soil). While this does not frequently cause problems in area pastures, it should be observed and may indicate the need for a different herbicide because prostrate spurge is not controlled with Roundup, see 29 September 2006 images at <http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR9-29-06/weeds-in-pasture-9-29-06.htm>

Some horsenettle plants, one of the most troublesome weed in these pastures, were apparently killed by the Roundup application in September. This was not the case where horsenettle and nightshades were sprayed in May. Cool-season grasses (primarily *Bromus* spp.) encroach into these pastures whenever there is little competition and moisture is adequate. This is a good source of high quality forage in some conditions, but these plants can hurt legume stands when moisture is inadequate. Images of weeds may be viewed at

<http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR11-1-06/RRAHaskellWeeds.htm>

### **Fall Growth**

By early November bermudagrass had stopped growing due to cold weather and was stockpiled for grazing later. Alfalfa was clearly productive and providing abundant forage in areas planted in the spring. Images of 1 November 2006 are available at

<http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR11-1-06/RRAHaskellAprilSown.htm>

Where grasses were suppressed with Roundup, September-sown alfalfa was small but growing well in early November. Images of 1 November 2006 are at

<http://alfalfa.okstate.edu/images/RRAlfalfa/AlfagrazeRR11-1-06/RRAHaskellSeptSown.htm>

Freezing temperatures stopped bermudagrass growth, but alfalfa continued to grow longer into the fall or winter. Grazing stockpiled bermudagrass along with alfalfa began in mid November

for both spring- and fall-sown stands. As bermudagrass regrows during next spring it will encroach into the alfalfa but can be suppressed again with Roundup as needed to maintain a mixture of grass and legume.

### Caution!!

These results look good and are the most promising thing I have seen for getting legumes into pastures. One should keep in mind that these results are qualitative and observational. It will take several years to determine if we can keep the alfalfa stands productive enough to add to the nutritional value of the pasture. Examining the economics of providing nitrogen with an interseeding method like this will take even more time. If someone wants to try to establish RR alfalfa in pastures using some of these methods, be careful and don't get too big too quickly. Be sure it will work on a relatively small area before overseeding and treating hundreds of acres.

Our pastures were well established pastures with reasonable fertility and were not over grazed. How important the role of these factors is not known.

-- John Caddel  
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The **OKLAHOMA FORAGES NEWSLETTER** is published in electronic format on an as needed basis throughout the year. To receive an a notice when a new version becomes available, send an email with "subscribe" as the subject line to [john.caddel@okstate.edu](mailto:john.caddel@okstate.edu)

#### CONTRIBUTIONS WANTED

Do you have a comment about some aspect of forage production that you would like to share?

Do you have a question about some aspect of forage production?

Have you read something that helped your forage production and want to share it with the readers of Oklahoma Forages Newsletter?

Send comments, questions, or articles you have seen and want to share to Daren Redfearn [daren.redfearn@okstate.edu](mailto:daren.redfearn@okstate.edu) To remain anonymous, just let us know.

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