

# SUMMER WEED CONTROL IN ALFALFA – LOW DESERT

Barry Tickles<sup>1</sup>

## ABSTRACT

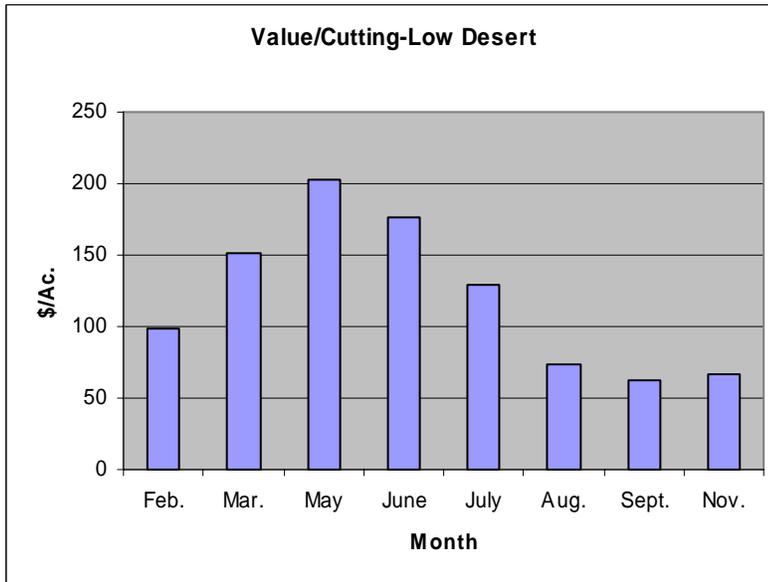
The highest per acre returns for alfalfa grown in the low deserts are during the summer months when grasses are the predominant weeds. Cultural practices are useful in keeping weeds in check although herbicides are also needed. Preemergence herbicides account for almost two thirds of the herbicide usage although postemergence herbicides are also popular. There are advantages and disadvantages of both pre and post emergence applications. Weed shifts have occurred that reflect herbicide use patterns. One incidence of herbicide resistance has been documented in the Imperial Valley, CA, although herbicide resistance is rare in the low desert.

**Key words: alfalfa, weed control, herbicides**

## INTRODUCTION

Extremely non-dormant varieties of alfalfa are grown in the southwestern low deserts. Typically, alfalfa is cut 8 to 10 times per year to produce 8 to 10 tons per acre per year. Although the highest market prices are received in the fall and spring when the highest quality is produced, the highest per acre returns are received during the summer cuttings. The reason for this is that yields during the summer are 1.5 to 2.25 tons per acre while they are only half this at other time of the year. (Graph 1)

Graph 1

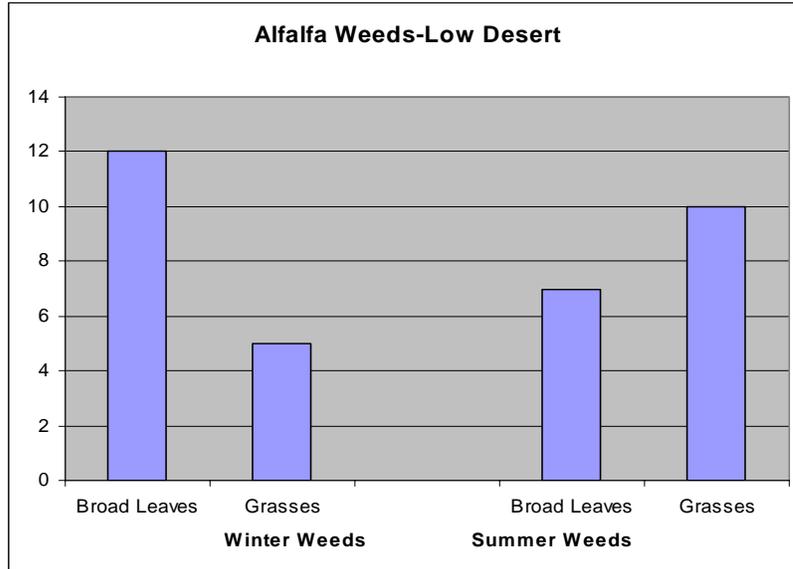


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<sup>1</sup>B. Tickles, Univ. Of AZ Cooperative Extension, Area Agent, 6425 W 8<sup>th</sup> St., Yuma, AZ, 85364. Email: [Btickles@ag.arizona.edu](mailto:Btickles@ag.arizona.edu). In: Proceedings, National Alfalfa Symposium, 13-15 December 2004, San Diego, CA; UC Cooperative Extension, University of California, Davis 95616. (See <http://alfalfa.ucdavis.edu> for this and other proceedings).

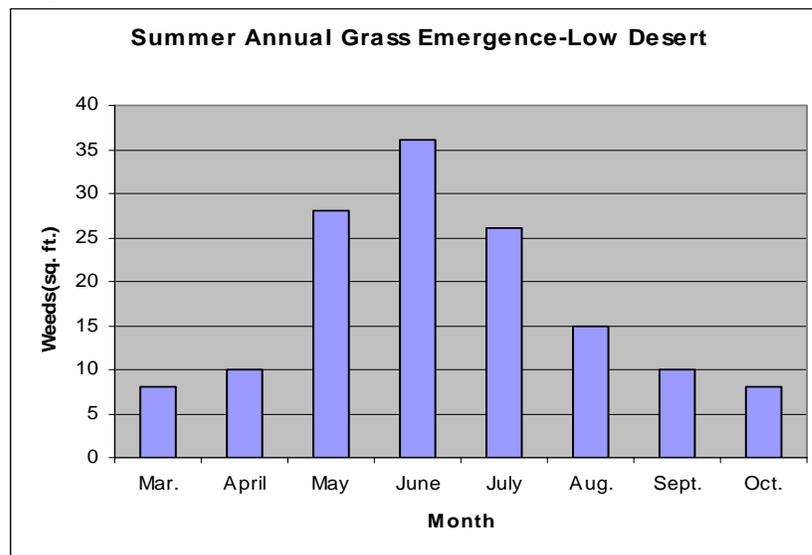
Weeds are a problem year round. During the summer months the predominant weeds are grasses while broadleaf weeds predominate during the winter. Perennial weeds, such as nutsedge and Bermudagrass are actively growing during the summer. (Graph 2)

Graph 2



Summer annual weeds, especially grasses, emerge continually with each irrigation and after each cutting. A test was conducted to determine weed germination times and the results are presented in Graph 3. During the year that this test was conducted, grasses began to emerge in March, reached a peak in June but continued to emerge until October. This will vary from field to field and year to year but these results were thought to be typical.

Graph 3



Weed control practices in the low desert involve both cultural practices and herbicide use. These control practices will be reviewed in this paper.

### **CULTURAL PRACTICES**

Growing alfalfa year round in the low deserts involves many variable management practices. Any practice that gives the crop a competitive edge over weeds can be effective and there are many of them. Timely sheep grazing, cutting, fertility, irrigation management, wheel traffic, insect control and other practices can have a significant impact on weeds. Cultural practices to control weeds are least effective during the late summer months, however, when alfalfa goes into “summer slump” and becomes less competitive.

Unlike many broadleaf weeds, grasses, which predominate in the summer, can be cut repeatedly and will continue to recover and tiller. Perennial weeds such as bermudagrass and nutsedge also become more competitive in the late summer when the crop is becoming least competitive. At these times, chemical control is often required.

### **CHEMICAL CONTROL**

Both pre and postemergence herbicides are used effectively in the low deserts. Arizona Department of Agriculture 1080 pesticide reporting forms indicate that almost two thirds of the herbicides used in alfalfa are preemergent applications. There are both advantages and disadvantages to using preemergent treatments. The principal advantage is that weeds can be controlled before they become a problem with one or two applications per year. The principal disadvantage is that weeds that have overwintered or become established will not be controlled with these herbicides. Because these treatments are active in the soil, they must get on the soil and be incorporated. In the low desert, where non-dormant varieties are grown, there is almost always foliage present to intercept applications that are sprayed on. Because of this, granular formulations and water-run application often result in increased weed control and decreased crop injury.

Postemergence herbicides can be applied when and where weeds emerge. In general, crop safety is not as good as with preemergent treatments and more applications are required. Poast and Select/Prism are effective on most annual grasses, for instance, although multiple applications are necessary to achieve season long control.

**Table 1**

**Preemergence Herbicides**

	Grasses			Broadleaves			Perennials	
	Watergrass Barnyardgrass Cupgrass	Sprangletop	Sandbur	Pigweed	Sunflower	Dodder	Nutsedge	Bermudagrass
Eptam	▮	▮*	●*	●	▮	○	▮	▮
Trifluralin	●	●*	●*	●	○	●	○	○
Kerb	○	○	○	○	○	▮	○	○
Solicam	●	●*	●*	▮	○	○	▮	▮
Sencor	▮	▮	▮	●	▮	○	○	○

○ No Control, ▮ ½ Control, ●Excellent Control

\*Only from seed, will not control overwintering weeds

**Table 2**

**Postemergence Herbicides**

	Grasses			Broadleaves			Perennials	
	Watergrass Barnyardgrass Cupgrass	Sprangletop	Sandbur	Pigweed	Sunflower	Dodder	Nutsedge	Bermudagrass
Pursuit	○	○	○	●	●	○	▮	○
Raptor	▮	▮	▮	●	●	○	▮	○
2, 4-DB	○	○	○	●	●	○	○	○
Gramoxone	▮	▮	▮	●	●	○	○	○
Senecor	▮	▮	▮	●	●	○	○	○
Poast	●	○	○	○	○	○	○	●
Buctril	○	○	○	●	●	○	○	○
Select	●	●	○	○	○	○	○	●

○ No Control, ▮ ½ Control, ●Excellent Control

**WEED SHIFTS**

No single herbicide controls all the weeds that occur during the summer growing season. Although new and highly effective herbicides have been developed over the past 30 years, growers are continually selecting for those weeds that escape their control practices. Examples of this in the low deserts have been the shift to sprangletop, sandbur, bermudagrass and nutsedge during the summer months and sowthistle and lambquarters in the winter.

Prior to the mid 1980's, Eptam was the standard preemergent treatment for summer weeds. Eptam was only marginally effective on many weeds but did suppress the spread of bermudagrass and nutsedge. In the mid 1980's, trifluralin granules and Poast were

registered and growers quickly switched to these products from Eptam. As a result, bermudagrass and nutsedge became more prevalent. The use of trifluralin granules and Poast also caused sprangletop and sandbur to become more troublesome. These weeds are summer annuals but some plants will survive even very cold winters. These survivors are not controlled by the preemergent application of trifluralin. They are also tolerant of Poast and Select/Prism. As a result, bermudagrass, nutsedge, sprangletop and sandbur are some of the most widespread and troublesome weeds in the low deserts today.

### **HERBICIDE RESISTANCE**

Agriculture in many regions of the low deserts is very diversified with the production of several annual and perennial crops. This, along with the availability of more than 13 herbicides, has kept herbicide resistance from becoming a serious problem. There are some regions, however, where alfalfa has been grown continually for many years. In one of these areas, the Imperial Valley of California, an incident of herbicide resistance has been documented.

Poast has been used for summer annual grass control since the mid 1980's in the Imperial Valley. About 6 years ago, growers and pest control advisors began to report that it had become less effective on littleseed canarygrass, a winter annual weed in alfalfa and several other crops grown in that region. Seed was collected in 2001 from the suspected population in the Imperial Valley and from a susceptible population in Yuma Arizona. Tests conducted by Joe DiTomaso and Guy Kyser at Davis, California indicated that the Imperial Valley population was 12 times more tolerant of Select/Prism than the Yuma population; that is, it required 12 times as high a rate to produce a 50% reduction in plant vigor. The resistant population was 320 times more tolerant of Puma and almost 2000 times more tolerant of Poast.