

GETTING CONTROL OF TOUGH WEEDS IN ALFALFA

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ABSTRACT

Most weeds are not a factor in alfalfa production, since it is a perennial crop with a rapid growth recovery following harvest. The weeds that are a problem have adapted to the frequent harvest schedule of every 30 days and are often perennial or biennial type weeds. Three weeds that are becoming more of a problem in the San Joaquin Valley are: Curly dock (*Rumex Crispus*), Cheeseweed (*Malva Parviflora*), Perennial Goosegrass (*Eleusine Tristachya*).

These weeds have adapted very well to alfalfa culture, and are not controlled by standard herbicide programs used in the dormant season. Two years of research has focused on studying an effective control program of best treatments and application timing of post emergence herbicides.

Key Words: curly dock, cheeseweed, perennial goosegrass, butryac, pursuit, poast, prism, EVO, NIS, UN 32

Curly dock: is a perennial distributed throughout the valley and foothill areas of California. It is a troublesome weed in alfalfa fields, pastures and sugar beets. Also referred to as sour dock, it can become a problem early in young alfalfa, especially in low areas of the field or at the ends where water collects. It reproduces by seed that matures in the winter and germinates in the spring. The mature plant is 2' to 5' tall with a large fleshy taproot. Once it has gained a foothold, it becomes immune to soil active herbicides used and continues to spread as alfalfa populations decrease. Its impact is from competition of a large foliage canopy and deep root system capable of pulling moisture and nutrients from alfalfa. Curly dock has been reported to accumulate oxalates and is suspected to have produced losses of livestock to poisoning.

BEST TREATMENTS AND APPLICATION TIMING FOR CONTROL OF CURLY DOCK

Treatment	Rate lb/A	Fall Application	% Control
Butyrac+Pursuit+EVO	.5+.094		97%
Butyrac+EVO	1.5		95%
Butyrac+Pursuit+EVO	1.0+.063		95%
Pursuit+EVO+UN 32	.094		75%
Pursuit+EVO	.094		40%
Pursuit+NIS	.094		33%

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Treatment	Rate lb/A	Spring Application	% Control
			77%
	.5+.063		63%
	.5+.047		53%
	.063		20%

Fall application treatment = December 16, 1996. % Control @ 95 days after treatment.
 Spring application treatment = February 6, 1997. % Control @ 20 days after treatment.
 EVO = HASTEN® @ 1 pt/acre
 NIS = Unifilm 707 @ .25% VV
 UN 32 = Liquid Fertilizer @ 2 qts/acre

Cheeseweed: is a broadleaf plant in the mallow family and a frequent problem in newly planted seedling alfalfa. In California's central valleys moderate climate, it will survive the winter months and continue into the summer, therefore classifying it as a biennial. Cheeseweed, once established, is a difficult weed to control in any crop. In seedling alfalfa it is very competitive, robbing the young alfalfa seedlings of light, moisture and nutrients. Once mature, one cheeseweed plant can reach 5' in height, 2' in diameter and have a large taproot. The entire plant is considered toxic, with horse, cattle and sheep having been affected. Two unsaturated fatty acids, malvalic acid and sterculic acid are considered the cause of the toxicity.

BEST TREATMENTS AND APPLICATION TIMING FOR CONTROL OF CHEESEWEED

Treatment	Rate lb/A	Early Timing	% Control
Pursuit+EVO+UN 32			100%
Pursuit+EVO+UN 32	.094		95%
Pursuit+Butyrac+NIS	.063+.75		81%
Pursuit+Butyrac+NIS	.047+.5		70%
Butyrac+NIS	.75		53%
Buctril+EVO	.375		33%

Cheeseweed size = 3 to 5 leaf, 2" to 5" diameter
 Treatment Date = January 7, 1997
 % Control @ 105 days after treatment
 NIS = Unifilm 707 @ .25% VV
 EVO = HASTEN @ 1 pt/acre
 UN 32 = Liquid fertilizer @ 1 qt/acre

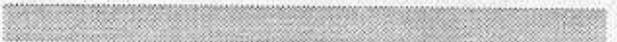
Treatment	Rate lb/A	Late Timing	% Control
Pursuit+Butyrac+ Buctril+NIS	.047+.5+.25		69%
Pursuit+COC+UN 32	.063		60%
Pursuit+Buctril	.063+.375		55%
Pursuit+NIS	.063		17%
Butyrac+NIS	.75		15%
Buctril+COC	.375		13%

Malva size = 6 to 12 leaf, 3" to 8" diameter
 Treatment Date = February 6, 1997 % Control @ 75 days after treatment

Perennial Goosegrass: is a native of South America and other sources indicate origin from Africa. Similar to annual goosegrass in appearance it develops into a clump spreading in size each year. In a three year alfalfa stand, clumps can range from 4" to 8" in diameter. New seedlings germinate in the early spring as soil temperature reach 60^F. This occurs during March and April in the Northern San Joaquin Valley in California. Seed heads begin to show in the summer months and continue to form viable seeds until winter. In the central valley mild climate, the plant remains green during the winter with little growth.

Once established it will crowd out alfalfa and is immune to most herbicides used. It produces small yields and low forage quality. It can be spread by equipment, irrigation water and animals. The best control is prevention through the use of pre-emergence soil active herbicides such as Trifluralin or EPTC. Post emergence herbicides can be effective if goosegrass becomes established.

BEST TREATMENTS AND APPLICATION TIMING FOR CONTROL OF PERENNIAL GOOSEGRASS

Treatment	Rate lb/A	Fall Application	% Control
Poast+COC	.5		88%
Prism+COC	.25		88%
Prism+Kerb+COC	.25+2.0		83%
Poast+Kerb+COC	.5+2.0		80%
Kerb	2.0		45%

Grass Size = 2" to 4" clumps
 Treatment Date = October 8, 1996 % Control @ 107 days after treatment
 COC = Herbicide activator @ 1 qt/acre

Spring Application		
Treatment	Rate lb/A	% Control
Prism+EVO	.25+.25	77%
Prism+COC	.25+.25	73%
Prism+COC	.125+.125	58%
Prism+EVO	.25	45%
Prism+COC	.25	27%
Prism+EVO	.125	0%

Grass size = 6" to 8" clumps
 Treatment Date = June 20, 1997 and July 14, 1997
 % Control @ 83 days after treatment
 COC = Herbicide activator @ 2 qts/100 gal
 EVO = HASTEN @ 1 pt/acre

SUMMARY

The best weed management strategies for cheeseweed, curly dock and goosegrass involves a crop rotation pattern where different cultivation practices and other herbicides can be used to prevent establishment of the weed or allow seed development. Once the target weed seed bank has been reduced, entering back into alfalfa production can successfully be achieved. Stressing the importance for a good seedbed, adequately fertilizing, land leveling for water management and proper variety selection prior to planting. These essential points are as important as any herbicide to control weeds.

CONCLUSION

To effectively control these tough weeds, one should select the best:

- Time of season to make the herbicide application
- Size of weed for maximum uptake
- Herbicide proven most effective on that weed
- Herbicide rate for a complete kill
- Quality surfactant or oil concentrate to maximize herbicides total absorption

Combining this information with label recommendation will provide satisfactory results in controlling some of alfalfa's toughest weed competitors.