

Recent Developments in Alfalfa Weed Control

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Weed control practices in alfalfa are continually evolving to develop more effective weed management systems. Recent developments in alfalfa weed control include the reintroduction of Roundup Ready (RR) alfalfa, research on the control of summer annual broadleaf weeds such as pigweed, and research on the use of Sharpen (saflufenacil) in established alfalfa.

Roundup Ready Alfalfa Survey Responses

The release of Roundup Ready alfalfa has been more contentious and disputed than the other RR crops. After its initial release and the subsequent injunction prohibiting further plantings, RR alfalfa was just released again in February of 2011. Alfalfa growers now have a full production cycle (3-6 years) of experience with the initial plantings and a season or partial season's worth of experience with the new plantings that have occurred in 2011. A survey was conducted in the fall of 2011 to better understand alfalfa-grower attitudes and perceptions regarding RR alfalfa. The full survey responses and background information can be found at: <http://alfalfa.ucdavis.edu/+symposium/proceedings/2011/11-332.pdf>.

Of the 381 people who completed the survey, 113 of them had grown RR alfalfa. The results indicated that a large majority (90%) were either satisfied, very pleased, or felt that the technology far exceeded expectations. Eight responded that they were disappointed, and two extremely disappointed. A majority (71%) said that they would plant it again, while 20% said maybe, and 9% said no. Better weed control, simplicity, and flexibility of weed management were the key advantages cited by respondents. Cost of seed was cited by 80% of all respondents as the major negative. This response was more than four times more popular than any of the other choices which included weed control was not effective, Roundup resistant weeds, don't like the technology use agreement, and varieties don't seem to yield well. The least popular response was difficulties in marketing RR alfalfa, indicating that this has not been a significant problem for those who have grown RR alfalfa.

It appears that alfalfa growers are becoming convinced of the risks of herbicide-resistant weeds. Forty-one percent of respondents indicated a concern for Roundup-resistant weeds as a consequence of the use of the technology, while only 25% indicated that it is not a concern. The rest indicated that they were not sure but that maybe resistant weeds are a concern.

The RR alfalfa system greatly simplifies weed management in alfalfa. Depending on the grower's philosophy toward GE crops, their market, and the weed pressure encountered, the RR system has been shown to have significant benefits for many producers. It has

proved to offer some important environmental benefits for those areas where traditional herbicides are problematic.

Pigweed Control in Established Alfalfa

Summer grasses, such as green and yellow foxtail and barnyardgrass, have been the most troublesome summer annual weeds in alfalfa fields. These weeds are still a major problem but there appears to be an increase in some broadleaf weeds as well, primarily pigweeds (both redroot and Palmer amaranth) and to a lesser degree lambsquarters. Winter dormant soil-residual herbicides generally do not persist long enough to adequately control these weeds. With center pivot irrigation some fields stay wetter between cuttings than they would with wheel-line or flood irrigation, allowing these broadleaf weeds to emerge and get a foothold between cuttings. For the same reason, rain between cuttings also encourages pigweed and lambsquarters infestations. Another major contributing factor is the use of manures. There are weed seeds in the manure and nitrogen in manure encourages weed growth.

A trial was conducted in the High Desert by UC Farm Advisor Andre Biscaro to evaluate pre- and post-emergence control of pigweed in established alfalfa. The most effective pre-emergence treatments were a split application of Prowl H₂O, a tank mix of Prowl and Chateau, and the longest lasting treatment was the herbicide prodiamine (not registered for alfalfa), which provided near perfect control for the entire season (Figure 1).

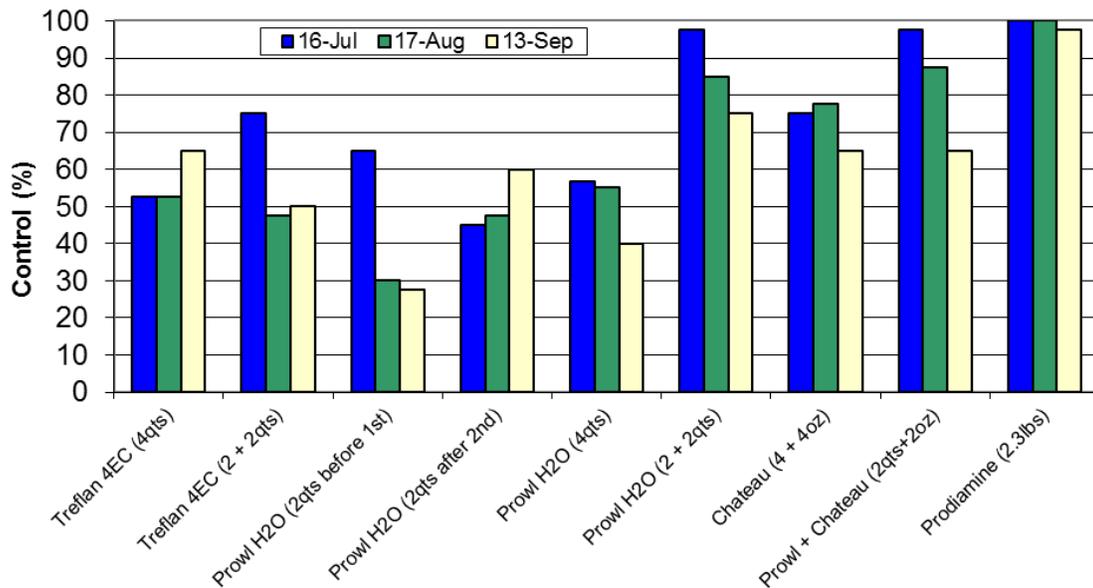


Figure 1. Pre-emergence control of pigweed in established alfalfa in Hinkley, CA. Andre Biscaro. 2010.

None of the post-emergence treatments were highly effective. Pursuit initially provided 80 percent control but as the season progressed, control fell to less than 40 percent. The best control, 90 percent early season and 80 percent mid- and late-season, was achieved with a tank mix of Raptor and Pursuit with each being applied at 3 oz. per acre.

Winter Weed Control in Established Alfalfa

There are few effective post-emergence herbicides to use in established alfalfa for broadleaf weed control. Paraquat (Gramoxone) is the primary herbicide, but oftentimes it does not adequately control some problem weeds, common groundsel being a prime example. Research was conducted by Mick Canevari, Farm Advisor Emeritus in San Joaquin County, to evaluate the use of Sharpen and standard dormant-season herbicides for controlling common groundsel and other problem weeds. Sharpen caused a high degree of initial necrosis and stunting, more than that observed with paraquat. These effects lasted longer than with paraquat or the other winter dormant herbicides, but the alfalfa recovered by harvest time. Sharpen was much more effective than Gramoxone for controlling common groundsel (Figure 2). Combinations of Sharpen with Chateau or Velpar were especially effective providing perfect control at all evaluation dates.

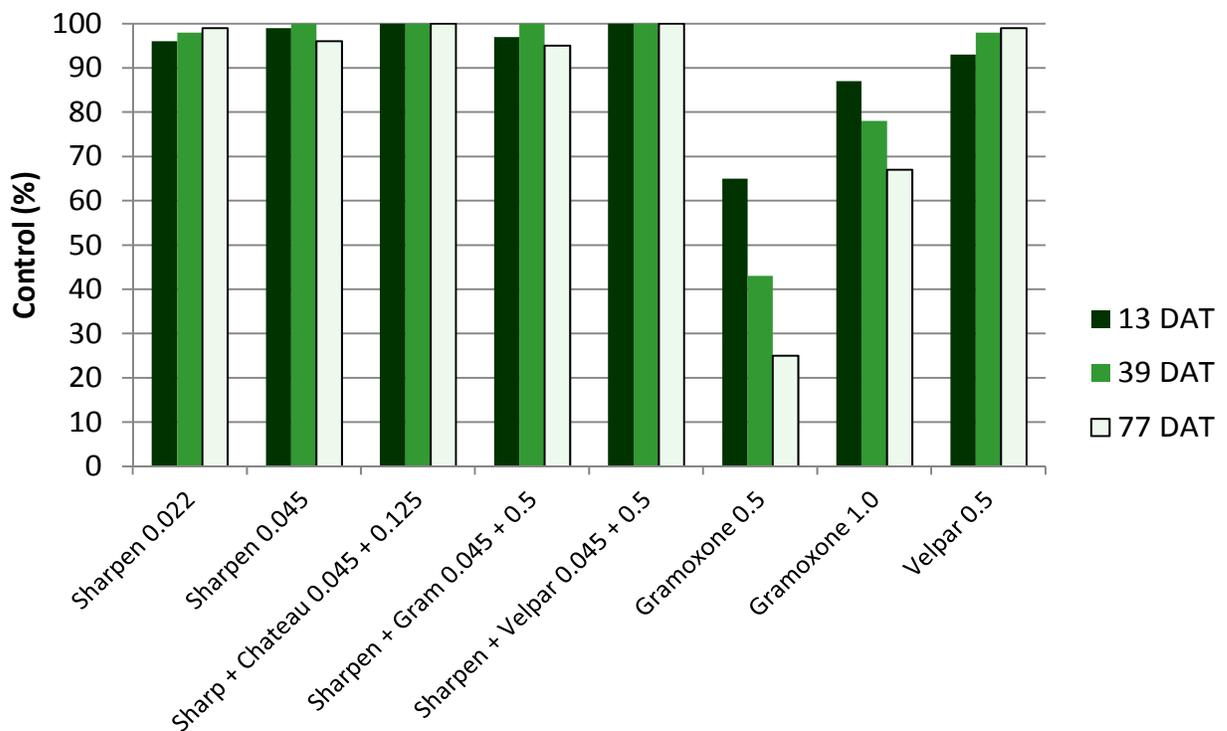


Figure 2. Common groundsel control in alfalfa in established alfalfa. San Joaquin County. Treated on 12/10/2010. Mick Canevari. 2011.

Sharpen was also effective for controlling annual sowthistle and hairy fleabane, however, late emerging plants escaped control. Sharpen alone did not adequately control shepherd's purse. A Sharpen plus Gramoxone tank mix was similar to Sharpen alone for groundsel control, but shepherd's purse control was improved. Sharpen, especially when combined with soil-active herbicides, shows potential for controlling groundsel and other problematic weeds in alfalfa.