

Raptor, A New Herbicide FOR ALFALFA Weed Control

*W. Mick Canevari, Steve B. Orloff, Ronald N. Vargas, and Kurt J. Hembree
Farm Advisors, University of California Cooperative Extension, San Joaquin, Siskiyou, Madera,
and Fresno Counties, respectively*

Introduction

Weed control is generally the first major decision to be made once alfalfa has germinated. Managing weeds in a timely manner is necessary to provide maximum production of high quality alfalfa hay. A poor weed management decision can lead to stand loss, poor quality hay, unacceptable weed control, alfalfa injury and a loss of money.

Weeds compete with alfalfa seedlings for water, nutrients, and light. They retard seedling growth, impede root development, lower hay quality, and reduce the alfalfa yield. Weed free alfalfa improves quality, improves harvest efficiency by speeding the drying and baling time, expands marketing opportunities and commands higher prices. The presence of poisonous weeds such as Common groundsel *Senecio vulgaris*, Coast fiddleneck *Amsinckia intermedia*, Nightshade *Solanum*, and Poison hemlock *Conium maculatum* further reduce the value or make it completely unmarketable. Today, the economic incentive to produce supreme quality hay is substantial; weed free alfalfa is one important step to insure that profitability. Developing a new alfalfa field without weeds pays dividends from the beginning and continues throughout the life of the stand.

Controlling weeds effectively begins well in advance of herbicide use. Herbicides are considered an integral part of a total weed manage system that compliment cultural approaches. Herbicides are applied to 75% of newly planted alfalfa in California.² To minimize weed problems requires an integrated approach of crop rotations to reduce weeds and diseases, properly leveled fields to avoid standing water and drainage problems, soil amendments and a balanced fertilizer program will promote vigorous growth; together these are all important in maintaining a weed free field. Selecting a variety with good pest resistance will also ensure a stronger alfalfa plant to compete with weeds. Once weeds are present, proper identification of seedling weeds is essential for choosing the correct herbicide. The “Growers Weed Identification Handbook” is a good resource to identify the agricultural weeds of California. It is a university publication available through county cooperative extension offices, or online at: <http://anrcatalog.ucdavis.edu>.

²California Department of Pesticide Regulation Data Summary 2001

RAPTOR A NEW HERBICIDE

Imazamox is a new herbicide marketed by BASF Corporation under the name of Raptor® that is registered for use in alfalfa to control broadleaf and grassy weeds. Raptor is in the same chemical family as Pursuit and will become a primary herbicide choice for alfalfa growers in years to come.

Raptor is a *Selective* postemergence herbicide that can be applied to seedling alfalfa, which has reached the two trifoliolate leaf stage, and weeds 1-3" in size. It can also be applied to established alfalfa at any time for postemergence control. When applied between cuttings, harvest must be delayed for 20 days. When used in alfalfa seed production the pre-harvest interval is 70 days. Research across many locations in the state with Raptor has demonstrated the effective control of broadleaf and grassy weeds in alfalfa and the increase of forage quality. (Figure 1,2,3)

Many are familiar with Pursuit® herbicide in alfalfa weed control. Successful techniques and experiences learned with Pursuit would also apply to Raptor.

Comparisons between Pursuit and Raptor:

1. Raptor has a shorter soil life approximately half of Pursuit. Even though applied post emergence to weeds, both herbicides enter the soil and can persist for months. Raptor with a shorter plant back interval is important in areas with multiple cropping patterns.
2. The ai (*active ingredient*) rate per acre of Raptor ranges from .024-.047 Lb/A and is half that of Pursuit .047-.094 Lb/A. Under cold and foggy conditions when weeds are growing slowly, higher rates are generally needed. When temperatures are warmer particularly spring applications that favor vigorous growth, lower rates have been successful.
3. Raptor controls a similar spectrum of broadleaf weeds as Pursuit but many more grass weeds. Controlling a broader spectrum of weeds can eliminate the need for combining two herbicides. However, when tolerant species occur certain tank mixes are allowed and recommended. Pursuit being weaker on grassy weeds may be the choice when keeping a nurse crop of wheat or ryegrass in a seedling stand is desired.

Suggestions for obtaining best results with Raptor:

1. **Spray weeds at the smallest size allowable.** At the 1-3" height, 95 to 100% control can be achieved for most labeled weeds. Delaying applications beyond the small growth stage generally lowers the overall control.
2. **Applications should be targeted when all alfalfa has reached the two trifoliolate leaf size.** Generally, the smaller the alfalfa the younger the weeds. Weeds generally grow faster than alfalfa so delaying applications usually favors the weeds. Lower rates are effective and cost reducing on smaller weeds.
3. **Avoid spraying plants under stress.** Stress is often related to conditions of low soil moisture or environmental conditions that slow a plants metabolism. Raptor

chemistry relies on translocation of the herbicide moving through the weed to the site of action. Slowing this process reduces herbicide toxicity and leads to unacceptable control.

4. **Adjuvants are always needed.** Raptor needs to be combined with an oil adjuvant or non-ionic surfactant. In addition to the adjuvant, a nitrogen fertilizer (ammonium sulfate, UAN) added to the spray solution will enhance results particularly when environmental conditions are less than ideal and less susceptible weed species are present.

Raptor will also have a fit in established alfalfa weed control during the harvest season. This is especially important since the industry is limited in what is available for use between cuttings to control broadleaf weeds. The use of 2,4-DB *Butyrac*® is restricted in many locations especially where sensitive crops such as cotton and grapes are grown. Bromoxynil *Buctril*® is restricted to use on seedling alfalfa only. Paraquat *Gramoxone*® has a 60-day pre-harvest interval that results in the loss of at least one harvest. Raptor has a 20 day PHI that will fit the normal alfalfa harvest cycle. More information on alfalfa weed control, herbicide/weed susceptibility charts and pictures of herbicide symptoms on alfalfa can be found in the New UC Publication #21615 “*Postemergence Weed Control in Seedling Alfalfa and Phytotoxicity Symptoms*”.

Managing Herbicide Resistance

Each year there are more “ALS” (*Aceto lactate Synthase*) inhibiting herbicides are being register in the western states across many crops. This chemistry, which includes Raptor and Pursuit, is susceptible to developing herbicide resistance on weeds when used repeatedly. The reality is that once resistant weeds develop it takes years to rectify the problem and the effective reuse of the herbicide. Not only is the effectiveness of Pursuit and Raptor lost but also other herbicides with in the same chemistry can become ineffective in other crops. (cross resistance) The number of spray applications required before resistance problems develop is not known and weed species differ to their susceptibility for resistance. However, to avoid the problem a good rule of thumb (all pesticides) is not to over use any one product and rotate chemistries frequently, tank mix different herbicides that have different modes of action and use the lowest rate recommended by label for the pest.

Figure1

Broadleaf Weed Control with Imazamox

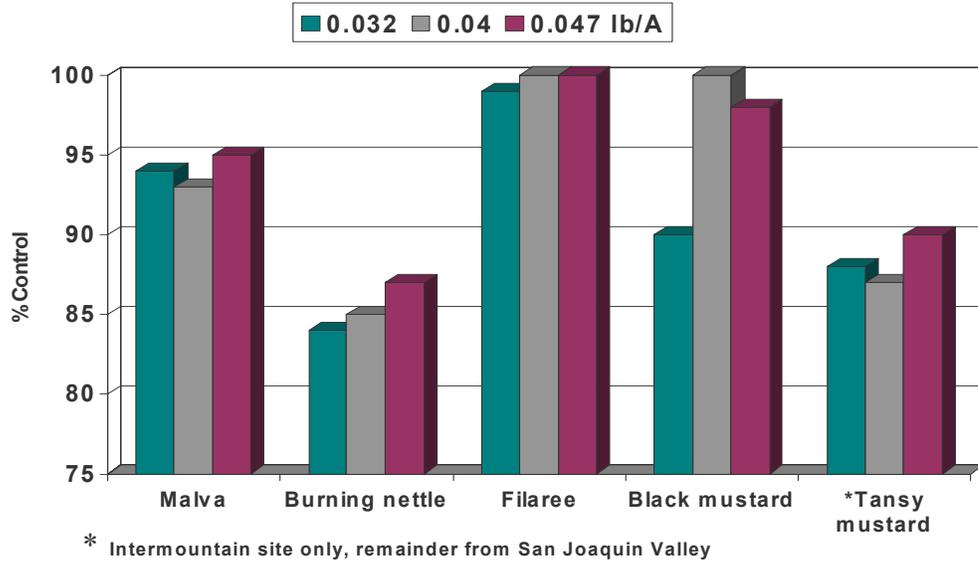


Figure2

Grass Control with Imazamox

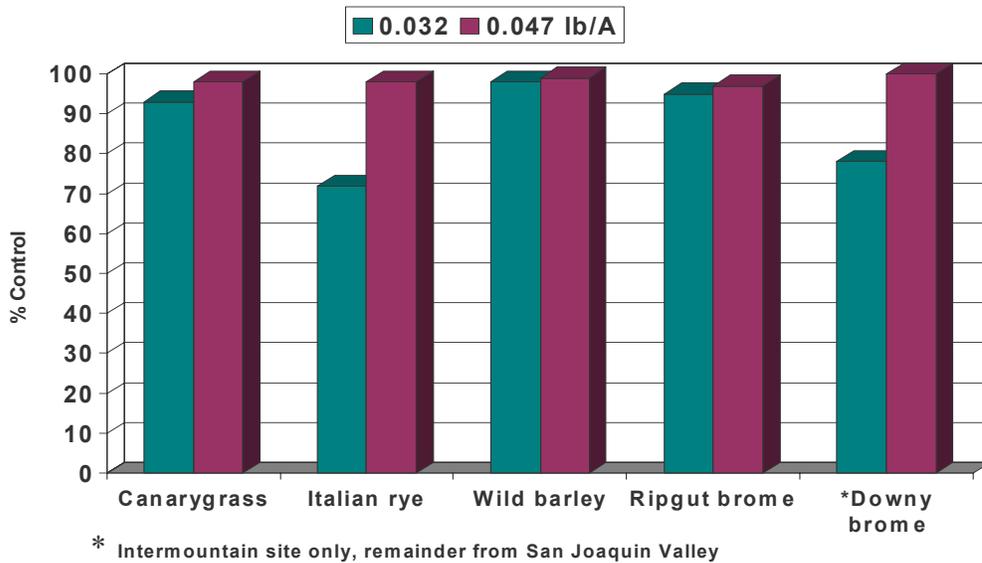


Figure 3

