

CONTROL STRATEGIES FOR FIDDLENECK AND COMMON GROUNDSEL IN ALFALFA HAY

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Winter annual weeds, of which fiddleneck (*Amsinca intermedia*) and common groundsel (*Senecio vulgaris*) are members of, can compete with alfalfa to such an extent that the first cutting is useless and in the case of seedling stands, entire stand loss can occur. Weeds reduce yields of alfalfa through competition for water, nutrients and sunlight and they lower the quality of forage. Weeds such as fiddleneck and common groundsel are toxic rendering hay unfit for livestock consumption.

Rarely do either fiddleneck or common groundsel occur as the only weed problem, but normally they will be associated with other winter annuals consisting of london rocket, sheperds purse, annual bluegrass and chickweed. Winter weeds may be a problem in even the best managed fields, however, managing cultural practices in such a way as to produce a healthy, vigorous stand of alfalfa will enhance competition with weeds and reduce the problem. Consideration also needs to be given to other pests, as weakened stands due to insect pressure or disease do not grow as fast or have as dense a leafy canopy; therefore its ability to compete with weeds is reduced.

Control methods for fiddleneck and common groundsel will vary somewhat as fiddleneck is normally a problem in first year seedling hay with common groundsel being a problem in established as well as seedling hay. Because these weeds normally occur in mixed stands identification is, and records of infested fields are essential to developing effective weed management strategies.

The most effective and probably the least expensive method of suppressing weeds including fiddleneck and common groundsel is producing a vigorously growing stand.

Select fields that have low weed pressure and are free of perennials such as johnson-grass and bermudagrass. Fields previously planted to a winter cereal such as wheat will have volunteer wheat as a problem. If a field is known to be infested with weeds difficult to manage in alfalfa, it may be better to rotate to a crop where effective weed management practices are available before seeding the field to alfalfa.

Land and seedbed preparation is especially important since the alfalfa will be intensely managed for at least three years. Careful attention to soil ripping and/or chistling, land leveling, construction of borders and a proper irrigation return system results in a vigorous growing alfalfa crop with few weed problems and higher yields. Pre-irrigation will settle the soil and eliminate low or high areas before planting. A pre-irrigation also germinates weed seed which are present. These seedlings then can be removed by subsequent cultivations prior to planting. Adequate moisture is provided allowing the alfalfa seedlings to grow vigorously and produce an even stand which can effectively compete with weeds.

Seedling alfalfa with a companion crop can reduce the winter weed problem. Small grains, such as oats, can reduce the growth of weeds at the same time yielding an economic return of forage while the alfalfa becomes established.

Weeds are usually less of a problem in early fall plantings (September and October) than winter or spring. With proper seedbed preparation, pre-irrigation, fertilization, and seeding rates, fall planted stands will grow vigorously and effectively competing with winter weeds. Late winter and spring plantings usually grow slower due to cold and freezing winter temperatures making the stand much less competitive with winter weeds, especially fiddleneck.

Poor water management also favors weed invasions. Over irrigating can lead to root rot disease problems causing death of alfalfa plants which create areas where weeds easily become established. Irrigating as close to the cutting date as possible encourages more rapid regrowth of alfalfa and decreases competition from weeds.

Cutting intervals can impact weed growth to a great extent. Harvesting too frequently, especially during the summer, does not give the alfalfa plants enough time to build up suf-

ficient stored food in the root system to initiate vigorous regrowth after a cutting. Extended harvest intervals can reduce weed problems, but hay quality will also be reduced

If alfalfa weevils are present; feeding of the larvae concentrated under the windrows severely stunts alfalfa regrowth giving a competitive edge to weeds in the effected areas.

Repeated wheel traffic from the harvesting equipment physically damages alfalfa plants giving the weeds a favorable environment to gain a "foothold". Alignment of wheels to eliminate the amount of damaged areas will certainly enhance the reduction of weed establishment.

Mowing or chopping and physically removing winter annual broadleaves, including fiddleneck, in a seedling stand of hay can help reduce the weed population. This practice retards weed growth and exposes the alfalfa seedlings to enough light so normal growth can be initiated. Caution must be exercised when considering this option as wheel traffic may damage the young plants and/or soil compaction may occur due to wet soils.

The use of herbicides is certainly a viable and necessary part to any weed management program, especially if fiddleneck or groundsel are going to be effectively controlled. Herbicides should always be used in combination with good approved cultural practices conducive to reducing weed population and never relied upon as the sole means of weed control

Identification of weed species is absolutely essential when considering the use of an herbicide. Records of weed infestation should also be kept (during winter and summer) which become especially important in the selection of an effective preemergence herbicide.

Several herbicides are available for use in alfalfa hay production, but no one herbicide controls all weeds that may be present in a particular field so identification is essential in selecting the most effective chemical (Chart 1 & 2).

When considering the use of herbicides for control of weeds in alfalfa the discussion needs to be divided into seedling and established stand of hay.

SEEDLING ALFALFA

Of the two weed species in question, fiddleneck is normally only a problem through the first cutting in seedling hay. Seldom does it occur after the first cutting or in established stands. Control can be approached with either the use of a pre or post emergence herbicide or a combination of the two. Fiddleneck infestations can be partially controlled with Eptam or Genep (EPTC) or Balan (benefin) when applied prior to planting as a pre plant incorporated treatment. EPTC is considered relatively short lived in soil; under cropping conditions it can be expected to last 6 to 8 weeks. Balan, on the other hand, has moderate life in the soil and may persist for 3 to 5 months. As with most herbicides, these two chemicals do not control other common occurring winter annuals such as black mustard and london rocket. Common groundsel will not be controlled by Balan. For escape and resistant weed species it will be necessary to use a postemergence to obtain control.

Timing is the key to the effective control of fiddleneck and common groundsel with the postemergence herbicides 2,4-DB ester, dinoseb and paraquat. Applications need to be made when the weeds are young seedlings, having only 2 to 3 true leaves. When the seedlings reach the rosette stage control becomes erratic and unsuccessful. But, because the post-emergence herbicides can only be used on alfalfa with a minimum of 2 to 3 trifoliolate leaves ideal timing of herbicide application for effective control may not be possible. Many times the fiddleneck and common groundsel will be beyond the rosette stage before the alfalfa is mature enough to be treated. 2,4-DB ester and dinoseb can be used when the alfalfa is in the 2 trifoliolate leaf stage whereas paraquat usage is limited to a minimum of 3 trifoliolate leaves and 60 days before harvest. Although not registered for use in seedling alfalfa bromoxymil does an excellent job in controlling fiddleneck without injury to the alfalfa.

A study conducted in Madera County in 1980 (Table 1) indicated 72 to 85 percent control of fiddleneck with bromoxymil at the .5 to 1 lb ai/A rate as opposed to 25 to 27 percent control with 2,4-DB, dinoseb and paraquat. Although control was unacceptable with 2,4-DB, dinoseb and paraquat, yields of the second cutting were significantly higher than the check. It must be noted though, that due to the fiddleneck contamination in the 2,4-DB, dinoseb and paraquat treatments, the hay was unsafe for livestock consumption.

ESTABLISHED ALFALFA HAY

Fiddleneck infestations are normally not found in established alfalfa hay fields having a good stand. Although it can invade established stands that are weak and have areas where the alfalfa has died for one reason or another.

Common groundsel, along with other winter annuals such as chickweed, shepherd purse and london rocket are much more prevalent and normally a persistent problem. Although, again it must be pointed out that this problem usually only exist the first cutting and in some cases may carry over to the second cutting.

Preemergence herbicides normally in combination with a postemergence herbicide can be applied to control these weeds during the dormant season. In the low desert valley of California where nondormant varieties of alfalfa grow throughout the year, the soil residual, preemergence herbicides cannot be used.

Karmex (diuron), Kerb (pronamide), Sencor (metribuzin), Princep (simazine), Sinbar (terbacil) and Treflan (trifluralin) are all available for control of winter annual weeds including fiddleneck and common groundsel. The use of some of these materials is restricted in some areas, so it is important to read and follow the label. Effective control of common groundsel can be obtained with Velpar. It is only partially controlled with the other preemergence herbicides. All of these herbicides are active through uptake by roots of germinating weed seed so rainfall or irrigation is essential to fix the herbicide in the upper 2 to 3 inches of soil.

Many times preemergence herbicides are applied in combination with dinoseb or paraquat to enhance control of existing seedlings. If common groundsel seedlings are present effective control can be achieved with Karmex and paraquat. Many other winter annual species are controlled also. Karmex and Velpar both have postemergence activity on small seedlings so if the timing is right a post emergence material may not be needed. Studies have indicated that effective control of common groundsel and many other winter annuals can be achieved with a combination of Velpar and Karmex.

Rarely are alfalfa fields infested with only fiddleneck or common groundsel. And, normally, fiddleneck is a problem in seedling hay whereas common groundsel is a problem in established hay. These two species are usually in combination with other broadleaf winter weeds. Effective control can only be achieved by keeping infestation records, field by field, properly identifying the weed species, growing a vigorous, competitive alfalfa stand and selecting the herbicide or combination of herbicides for the specific weed problem present.

CHART 1
SUSCEPTIBILITY OF SELECTED WINTER ANNUAL BROADLEAF WEEDS TO HERBICIDES
Seedling Alfalfa

Weeds	Herbicides				
	Eptam Genep (EPTC)	Balan (benefin)	2,4-DB	dinoseb	Paraquat (paraquat)
Chickweed	C	C	N	C	C
Common Groundsel	P	N	P	P	C
Cudweed	P	N	N	P	C
Fiddleneck	P	P	P	P	C
Filaree	C	P	P	P	P
Henbit	C	N	P	C	C
London Rocket	P	N	C	C	C
Mustard	P	N	C	C	C
Pineapple Weed	P	N	N	P	C
Red maids	C	C	C	C	C
Shepherd's Purse	P	N	C	C	C
Sowthistle	C	N	C	C	C

= Control, P = Partially Controlled; N = Not Controlled

CHART 2
SUSCEPTIBILITY OF SELECTED WINTER ANNUAL BROADLEAF WEEDS TO HERBICIDES

Established Alfalfa

<u>Weeds</u>	<u>Karmex</u>	<u>Velpar</u>	<u>Furloe</u>	<u>Kerb</u>	<u>Sencor</u>	<u>Treflan</u>
Chickweed	C	P	C	C	C	C
Common Groundsel	N	C	P	N	P	N
Cudweed	C	C	N	N	-	N
Fiddleneck	C	C	C	C	C	C
Filaree	C	C	N	N	-	N
Henbit	C	C	P	C	C	N
London Rocket	C	C	C	C	C	N
Mustard	C	C	C	C	C	N
Pineapple Weed	C	C	N	N	-	N
Red Maids	C	C	P	C	-	C
Shepherd's Purse	C	C	C	C	C	N
Sowthistle	C	C	P	N	-	N

C = Control; P = Partially Controlled; N = Not Controlled

TABLE 1
FIDDLENECK CONTROL IN SEEDLING ALFALFA
Madera County - 1980

APPLICATION DATE - December 8, 1980
AT TIME OF APPLICATION - Alfalfa - 3 trifoliolate leaves
Fiddleneck - 4-6" rosette; 10-18 leaves

<u>Treatments</u>	<u>#ai/A</u>	<u>Percent Fiddleneck Control 1/29/81</u>	<u>Dry Matter-T/A Second Cutting 5/9/81</u>
1. bromoxynil	.25	55	.56 a
2. bromoxynil	.5	72	.46 ab
3. bromoxynil	1.0	85	1.31 abc
4. 2,4-DB	.5	27	1.19 bc
5. 2,4-DB	.0	25	1.16 bc
6. dinoseb	1	22	1.08 c
7. dinoseb	1.5	25	.04 c
8. paraquat	.125	25	.97 c
9. check		0	.42 d
		LSD .05	.30
		.01	.41
		C.V.	18.5

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