

CONTROLLING WEEDS IN NEW SEEDINGS AND ESTABLISHED STANDS

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The importance of weed control in forage production should not be overlooked, especially when you consider the high investment associated with alfalfa and other legume forages. Weeds may reduce forage yield by competing for water, sunlight and nutrients. For example, yield obtained from the first cutting of alfalfa can be significantly reduced by a heavy infestation of common chickweed. In addition to yield losses, weeds can also lower forage quality, increase the incidence of disease and insect problems, cause premature stand loss, and create harvesting problems. In some cases weeds are unpalatable to livestock or may be poisonous.

Weed management strategies in forage legumes should first focus on cultural practices and then on chemical weed control options. Vigorous, densely growing forage legume stands tend to have fewer weed problems. Thus, cultural and management practices that promote a highly competitive forage stand prevent many weed problems. These practices include: 1) liming and fertilizing fields based on soil test recommendations; 2) seeding well-adapted, vigorous, and long-lived varieties; 3) buying weed-free seed; 4) cutting forage at proper time intervals or growth stage; 5) timely control of insect and disease problems; and 6) rotating fields with other crops to interrupt the buildup of certain weeds.

Because of the aggressive nature of certain weed species, they can become established despite preventive efforts. Therefore, herbicide treatment may be necessary to combat some weed problems. The specific herbicides and control strategies available for use will depend on the type of forage you grow (alfalfa or alfalfa/grass mixture), whether your stand is a new seeding or an established stand, and the crop growth stage (dormant, non-dormant, or between cutting).

NEW SEEDINGS

Weed control is more critical during the first year than any other period of forage production. Forage seedlings grow slowly and are easily overcome by rapidly growing weeds. Research has shown that some broadleaf weed seedlings are capable of growing five times more rapidly than certain legume seedlings. Because alfalfa stands gradually decline with age it is important to start with a good stand. A uniform, dense stand is more likely to survive longer and have fewer weed problems than a thin stand.

Site Selection: Consider the field history when you select a field for alfalfa production. It may be difficult to establish and maintain a weed-free forage stand in fields known to be infested with weeds such as musk thistle, curly dock or yellow nutsedge. Also, remember that some

herbicides applied to a previously-grown crops have the potential to carryover and cause injury to newly-seeded forages. Alfalfa and other forage crops are sensitive to low concentrations of herbicides such as atrazine (i.e. AAtrex, Bicep, Bullet, Extrazine II, Guardsman, Harness Xtra, Surpass 100, or Sutazine), and clomazone (i.e. Command). More information on herbicides that have a potential to injure alfalfa and other forages can be obtained from your local county Extension office and on the label of herbicide products used in a previous crop.

Time of Seeding: Weed control is one of many factors that will determine whether you seed your fields in the spring or fall. As a general rule, the summer complex of weeds tend to overcome spring seedings; whereas, the winter weed complex tend to out compete forages seeded in the fall. Therefore, for optimum establishment of most forage crops, you should consider fall seedings in fields that have a history with such weeds as large crabgrass, foxtails, or lambsquarters; consider spring seedings in fields that are potentially infested with common chickweed, henbit, and yellow rocket.

Weed-Free Seed: Using weed-free seed is the first step to prevent the introduction of weeds. You should check the seed tag to determine the purity of the seed. Noxious weeds such as dodder or johnsongrass are required by law to be listed on the label if seed analysis has determined that they are a contaminant in the seed lot.

Liming and fertilization: Adjusting soil pH and nutrient levels according to soil test recommendations is important during the establishment phase and throughout the life of the forage stand. The objective is to achieve a competitive alfalfa stand which is capable of suppressing weed emergence and growth. Proper liming and fertility are not effective for eliminating weeds that have already become established, especially in areas where the forage stand is poor. Likewise, some weeds such as chickweed, curly dock, and crabgrass respond favorably to fertilization. Thus, other weed control methods are often needed in addition to proper fertility.

Clipping new seedings: Clipping or mowing can be an effective option for controlling some weeds such as common cocklebur or jimsonweed in legume forage stands. This method controls weeds by removing the leaves and lateral buds that develop new growth. Many annual broadleaf weeds have buds that develop above the soil surface. They are more easily controlled with clipping or mowing than grasses, which have crown buds near the soil surface. Mow as low as possible to be effective. Because alfalfa plants and other legumes have crown buds, they can tolerate low clipping. When you clip new seedings, be careful not to smother forage legumes with heavy residues; thus, remove clipped vegetation when weed infestations are heavy.

Herbicides for new seedings: Herbicides used for new seedings are designed to eliminate or reduce competition from rapidly-growing weeds during the establishment phase. In some instances herbicides that aid alfalfa establishment have also contributed to higher yields in subsequent years and greater longevity of stands. During seedling development forage grasses usually are susceptible to injury from herbicides used in legume establishment. Subsequently, no herbicides are registered for new seedings of legume-grass mixtures.

ESTABLISHED STANDS

Established forage legumes are capable of growing fairly rapidly and competing against many weed seedlings during the growing season. However, weeds gradually invade fields where forage stands decline with age. Timely mowing and the use of herbicides may aid in weed control and prolong the life of the stand.

Problem weeds that occur in field borders, along fence rows or in adjacent fields should be mowed or sprayed to prevent production and spread of weed seed from these areas into alfalfa and other hay fields. This is particularly important for such weeds as musk thistle, which is capable of producing a large number of seed that are easily spread to new areas.

Clipping established stands: The routine mowing of legumes for hay is sometimes effective in controlling some perennial weeds by reducing food reserves and plant vigor. However, in grazed forages, livestock often selectively graze and may leave such weeds as chicory or musk thistle. Mowing soon after livestock have been removed from the field can help control these weeds and prevent seed production and further spread of infestations.

Herbicides for established stands: Several herbicide options are available for established alfalfa stands. You can use many of the same herbicides available for new seedings. Furthermore, the deep root system of established plants such as alfalfa enables them to tolerate certain herbicides that are not suitable for new seedings. When selecting herbicides for forage legumes, consider such factors as 1) whether the alfalfa is a pure stand or alfalfa-grass mixture, 2) whether the herbicide can be applied when the crop is non-dormant, during the dormant season, or as a between cutting treatment, 3) effectiveness on weed species to be controlled, 4) feeding and grazing limitations, 5) rotational crop restrictions, and 6) cost of treatment. Table 1 is a guide to herbicides labeled for use in alfalfa. Before using a herbicide always read and follow label directions.

HERBICIDE OPTIONS

Preplant Incorporated: In alfalfa seeded by conventional-till methods pre-plant weed control options are somewhat limited. Summer annual grasses such as crabgrass and foxtails can be a problem with spring seeded alfalfa. BALAN or EPTAM can be applied as a preplant incorporated herbicide, to help curtail growth of these and other annual grasses. These herbicides should be incorporated immediately after application. Small grain nurse crops or other grasses seeded with the alfalfa will be injured by BALAN or EPTAM. The winter weed complex such as common chickweed and henbit can be more of a problem in alfalfa seeded in the fall. These preplant incorporated herbicides do not provide adequate control of winter annual weeds and are not often recommended with fall seedings.

Preplant Foliar: GRAMOXONE EXTRA and ROUNDUP ULTRA are herbicides that can be applied preplant to fields that will be seeded to alfalfa. They are often used in alfalfa seeded by no-till methods. Gramoxone Extra and Roundup Ultra provide foliar control or

suppression of many annual grasses and broadleaf weeds and certain perennials that are actively growing at time of alfalfa seeding. They should be applied before the crop emerges; plants emerged at time of application will be killed.

GRAMOXONE EXTRA (2 to 3 pt/A) is applied with a Non-Ionic Surfactant (1 pt/100 gal) or a Crop Oil Concentrate (1 gal/100 gal). It is a contact-type herbicide with no residual soil activity; therefore, it is essential to obtain complete coverage of the target weeds to get good control. Improper application techniques and/or applications to large, stressed, or mowed weeds will usually result in unacceptable weed control. Gramoxone Extra is a Restricted-Use pesticide product.

ROUNDUP ULTRA is applied at 1 to 3 qt/A depending on species and size of weeds present. It is a non-selective, systemic herbicide with no soil residual activity. It provides broad spectrum control of many annual weeds and is in general more effective for control of perennial weeds that are actively growing. Weeds may not be effectively controlled when growing under poor conditions such as drought stress or because of low temperatures.

After Crop Emergence: Good weed control is essential during the early establishment phase of alfalfa. Most herbicides can be used only on pure stands of alfalfa. Grass forage species seeded with the alfalfa will be killed or severely injured. A few herbicide options are labeled for use on the crop soon after emergence, during the first year of establishment. Herbicides labeled for use on new seedlings include BUCTRIL, BUTYRAC 200, POAST, PURSUIT and KERB. BUCTRIL should be applied only to alfalfa seedlings; whereas, other products listed can also be applied to established stands of alfalfa. After alfalfa becomes well established (generally defined as stands more than one year old), other herbicides that may be used include LEXONE, SENCOR, GRAMOXONE EXTRA, SINBAR, VELPAR, and ZORIAL. Timing of the application will depend on the stage of alfalfa growth.

BUCTRIL 2EC (1 to 1.5 pt/A) or BUCTRIL GEL (0.5 to 0.75 pt/A) can be applied in the fall or spring to **seedling alfalfa** when the crop is actively growing and the majority of plants have obtained a minimum of 4-trifoliolate leaves. It controls small annual broadleaf weeds (less than 2 inches tall). Unacceptable crop injury may occur if temperatures are expected to drop below 50 F or when they exceed 70 F for 3 days following application.

BUTYRAC 200 (1 to 3 qt/A) can be applied to **new seedlings** or **established alfalfa** in the fall or spring when the crop is actively growing. Apply after alfalfa is at the 2- to 4-trifoliolate leaf stage. It controls small annual broadleaf weeds (less than 4-leaf stage or rosettes less than 1.5" diameter). A spray adjuvant (crop oil or surfactant) should not be used unless specified by a tank mixture combination. Avoid applications when air temperatures are expected to be less than 40 F or greater than 90 F.

PURSUIT 70DG (1.08 to 2.16 oz/A) or PURSUIT 2S (3 to 6 oz/A) can be applied to **new seedlings** or **established alfalfa**. It provides broad spectrum control of various annual broadleaves and selected grasses. Use rate depends on species and size of weeds present. A spray adjuvant such as Surfactant (2 pt/100 gal) or Crop Oil Concentrate (1.5 to 2 pt/A) plus a Liquid Fertilizer Solution (1 to 2 qt/A) is recommended with the application. Apply Pursuit to

seedling alfalfa when the crop is at the 2nd trifoliate leaf stage or larger and the majority of weeds are 1 to 3 inches. Apply to **established stands** in the fall or in the spring when alfalfa is dormant, semi-dormant, or between cuttings. Any application on established alfalfa should be made before significant alfalfa growth or re-growth occurs (less than 3 inches). A temporary height reduction of alfalfa growth or slight leaf yellowing is occasionally observed soon after a Pursuit application. Avoid applications under cool weather conditions (40 F or less). Growth of perennial grasses (such as orchardgrass, fescues, bromes, or timothy) will be reduced if present in an alfalfa stand. A waiting period of 30 days is required before harvesting or feeding alfalfa treated with Pursuit. Consult the label for plant-back intervals before applying to alfalfa fields that will be rotated to other crops.

POAST PLUS (1.5 to 3.75 pt/A) or POAST (1 to 2.5 pt/A) can be applied to **new seedlings** or **established alfalfa**. It provides control of annual and perennial grasses such as johnsongrass. A spray adjuvant such as DASH or Crop Oil Concentrate (2 pt/A) is recommended with the application. Best control is obtained with grasses that are actively growing and within their optimum plant heights at time of application. For rhizome johnsongrass more than one application may be required. The waiting period before feeding treated alfalfa to livestock depends on whether the crop is harvested for [dry] hay (14 days) or as a green-chop [undried] forage (7 days).

GRAMOXONE EXTRA provides broad spectrum control of various annual weeds. Use rate depends on whether the crop is in a **dormant growth stage** or **between cuttings** and whether it is considered a **new seeding** or an **established stand**. A spray adjuvant such as Surfactant (1 pt/100 gal) or Crop Oil Concentrate (1 gal/100 gal) is recommended with the application. For **dormant alfalfa** apply GRAMOXONE EXTRA at 0.8 to 1.5 pt/A to **new seedlings** (*fields less than one year old*) or GRAMOXONE EXTRA at 1.5 to 2 pt/A to **established alfalfa stands** (*fields more than one year old*). Apply in the late fall or winter months when plants become dormant after the last fall cutting, but before alfalfa regrowth occurs in the spring (less than 2 inches). Applications to alfalfa that is not dormant, or has broken dormancy, may result in stand or yield reductions. A **between cutting** application of GRAMOXONE EXTRA (0.8 pt/A) can be made immediately after alfalfa has been removed for hay or silage. Do not treat alfalfa more than 5 days after a cutting. First year alfalfa stands and yields may be reduced if alfalfa is allowed to regrow more than 2 inches.

VELPAR L (1 to 2 qt/A) or VELPAR 90WSP (0.5 to 1.5 lb/A) provides broad spectrum control of various weed species depending on when treatment is applied. For best results apply when weeds have not germinated or are less than 2 inches tall or across. Apply VELPAR only to well **established alfalfa stands** either as a **dormant** or **between cutting** treatment (*alfalfa fields must be established for more than one year*). For **dormant** treatments make a single application in late fall or in winter months after the last fall cutting, but before alfalfa regrowth occurs in the spring (less than 2 inches). For **between cutting** applications apply to stubble following hay removal but before alfalfa regrowth exceeds 2 inches in the spring. It may be impregnated on dry bulk fertilizer for application. Consult the label for plant-back intervals before applying to alfalfa fields that will be rotated to other crops.

LEXONE 75DF (0.67 to 0.75 lb/A) provides control of annual broadleaf weeds. For best results apply to weeds that are less than 2 inches tall or 2 inches in diameter. Apply only to **established stands** (*fields more than one year old*) when alfalfa becomes **dormant** in the late fall or in the spring before new growth begins. LEXONE may also be applied to **alfalfa-grass mixtures** such as alfalfa interseeded with orchardgrass or fescue.

SENCOR 75DF (0.67 to 1 lb/A) or SENCOR 4F (1 to 1.5 pt/A) provides control of annual broadleaf weeds. For best results apply to weeds that are less than 2 inches tall or 2 inches in diameter. Apply only to **established stands** (*fields more than one year old*) when alfalfa becomes **dormant** in the late fall or in the spring before new growth begins. If SENCOR is impregnated on dry fertilizer, it may be applied after dormancy has broken, but prior to 3 inches of new alfalfa shoot growth. SENCOR may also be applied to **alfalfa-grass mixtures** such as alfalfa interseeded with orchardgrass or fescue.

Other herbicides which can be applied to **established stands** when alfalfa is **dormant** include KERB 50W (1 to 3 lb/A), SINBAR 80W (1 to 1.5 lb/A), or ZORIAL RAPID 80 (1.25 to 2.5 lb/A). Best results with these herbicide products are obtained when applied in the late fall or early winter, but before soil freeze-up. In general, they must be applied before weeds emerge.

Table 1. Guide to the Relative Response of Weeds to Herbicides

	Before Seeding		Non-Dormant				Dormant Season			Dormant or Between Cutting			Spot Treat
	Balan	Eptam	Buctril	Butyrac 200	Poast Plus/Poast	Pursuit	Kerb	Lexone / Sencor	Sinbar	Pursuit	Velpar	Gramoxone Extra	Roundup
Cool Season Annuals													
Common Chickweed	F	F	F	P	N	G	G	G	G	G	G	G	G
Henbit	P	F	F	P	N	F	F	G	G	F	F	F	G
Mustard, Wild	P	P	G	F	N	G	G	G	G	G	G	G	G
Field Pennycress	P	P	G	F	N	G	P	G	G	G	G	F	G
Shepherdspurse	P	P	F	F	N	G	G	G	G	G	G	G	G
Yellow Rocket ¹	P	F	F	G	N	F	F	G	G	F	G	F	G
Musk Thistle ¹	N	N	P	F	N	P	P	P	P	P	F	P	F
Warm Season Annual Grasses													
Crabgrass	G	G	N	N	G	F	F	F	F	F	G	F	G
Fall Panicum	G	G	N	N	G	F	F	F	F	F	F	F	G
Foxtails	G	G	N	N	G	G	F	F	F	G	G	G	G
Johnsongrass (seedling)	F	F	N	N	G	G	P	P	F	G	*	F	G
Warm Season Annual Broadleaves													
Cocklebur	N	P	G	G	N	G	P	F	*	G	F	F	G
Jimsonweed	N	P	G	F	N	F	*	F	*	F	G	G	G
Lambsquarters	F	F	G	G	N	P	F	G	G	P	G	F	G
Pigweeds	G	F	F	G	N	G	P	G	F	G	G	G	G
Ragweed, Common	P	P	G	G	N	F	P	F	F	F	F	G	G
Ragweed, Giant	P	P	F	F	N	G	P	F	P	G	P	F	G
Smartweed	P	P	G	F	N	G	P	F	F	G	F	F	G
Perennials													
Dandelion	N	N	P	F	N	*	N	G	P	*	G	F	G
Dock, Curly	N	N	P	F	N	F	P	F	P	F	P	P	G
Orchardgrass	F	F	N	N	F	*	G	F	F	*	F	F	G
Plantain	N	N	P	F	N	*	P	F	F	*	G	F	G
Quackgrass	N	P	N	N	F	*	G	P	P	*	F	P	G
Red Sorrel	N	N	P	P	N	*	G	P	F	*	P	P	F
Tall Fescue	F	F	N	N	F	*	P	P	P	*	*	F	G
Yellow Nutsedge	N	F	N	N	N	P	N	P	P	P	P	F	F
Johnsongrass (rhizome)	P	P	N	N	F	P	N	N	*	P	*	N	G

¹Biennial plant which emerges in late fall or early spring.

G = Good F = Fair P = Poor N = None * = Data Not Available

This table should be used only as guide for comparing the relative effectiveness of herbicides to a particular weed. Depending on weed size and/or under extreme weather conditions, a herbicide may perform better or worse than indicated in the table.