

Weeds and brush can be and in many cases are serious problems in pastures in southwest Missouri. Reasons for controlling weeds and brush in our pastures and hay fields include the fact that they can reduce the quantity and quality of the desired forage species. Certain species such as blackberries, dewberries and thistles may exclude livestock from grazing certain areas or consuming contaminated hay.

Control Methods

There are several methods to control weeds and brush including cultural, mechanical, biological and chemical. These methods can be used alone or in most cases in combination with each other.

Cultural methods are basically management practices that promote a vigorous, healthy stand of the desired forage. They include proper forage variety selection, good fertilization practices, maintaining an adequate pH and good harvest management, whether by grazing or haying. Soil testing to insure the soil pH, phosphorus and potassium levels are adequate for the forage species is essential.

Mechanical control most often refers to mowing or brush hogging. In combination with other control methods such as good fertilizer and liming practices and herbicides, mowing can be an effective tool in weed and brush management. When used alone, mowing hides a problem but rarely gives good control. Mowing brush like sumac, hedge (Osage Orange) or honey locust can actually make the problem worse. A person can gain slow control over blackberries by timely mowing; namely, from full leaf to blossom in the spring. Even with proper mowing, one should expect control to take several years to make meaningful progress. A late-season mowing of blackberries or other species of brush is only cosmetic and will give no long-term control.

Biological control can be used to control targeted weed species. The targeted species in southwest Missouri is the musk thistle. The introduction of the musk thistle head and rosette weevils has been very effective in reducing the population in Southwest Missouri.

Chemical control involves the use of selective herbicides, and generally provides the most effective control of troublesome weeds once they have become established. Before using any herbicide, read and follow label directions to determine appropriate rates, carrier volume and spray additives.

Caution: The herbicides listed are safe on most grasses when used at labeled rates but will kill or injure legumes in a mixed (grass/legume) pasture.

Application

Four methods of herbicide application will be mentioned in this section. They include foliar spray, spot treatment, basal bark and cut stump applications. With any application method utilizing a sprayer, be sure to take the time to calibrate the sprayer and ensure that the sprayer is in good working condition.

Foliar broadcast is the use of a boom type sprayer, boom-buster nozzle, airplane, or helicopter to treat larger weed infestations. Herbicides are usually mixed with water.

With the foliar broadcast, good coverage is essential. Generally, a spray volume of 15 to 20 gallons per acre by ground or 3 to 10 gallons per acre by air is desirable. Check the herbicide label for recommended spray volumes. Foliar applications may not be effective if plants are under stress from drought or other conditions. Do not use diesel as a carrier with foliar applications.

Spot treatment is treating the foliage of individual plants or small areas of infestation. It is usually accomplished with a hand sprayer or handgun. Thorough coverage is essential with many species and herbicides and some desirable vegetation can be damaged if contacted by the spray.

Basal bark treatment is applying herbicide to the lower 12 to 18 inches of the trunk. This type of treatment works best on trees 6 inches or less in diameter. Herbicides will be mixed with oils or diesel and applied until bark is saturated.

Cut stump is the application of herbicide to the freshly cut surface of the brush or tree. Apply treatment immediately after cutting for maximum effectiveness. On trees larger than three inches in diameter, only the outer cambium layer next to the bark will need to be treated.

Selected Species

Timing of application is crucial for successful control. Refer to Table 1 for a calendar of best times to control specific weeds. The following scenarios are based on experience and do not include all possible treatments.

Thistles (*Musk, Bull, Tall*) – Cimarron¹, Cimarron Max, Banvel, Grazon P+D, Milestone, Forefront and Tordon 22K have provided good results. If application is made during the rosette stage of growth (fall or early spring), 2,4-D gives good control but offers no residual activity. Do not spray thistles after flower buds begin to develop. At that stage, leave control to the musk thistle weevil.

Chickweed – Use 2,4-D or Grazon P+D in the fall or Grazon P+D in the early spring

Henbit – Use Banvel or Clarity in the fall or early spring.

Poison Hemlock – Use Tordon 22K (1 pt/A) or Grazon (1 qt/A) before it bolts in the early spring. It may also control it in the fall in the rosette stage.

Spotted Knapweed – Use Milestone (5 oz/A) or Tordon 22K (1 pt/A) in the rosette to bud stage. Treat before it gets 12” tall.

Plantain (*Broadleaf, Buckhorn, Bracted*) – Use 2,4-D ester or Grazon P+D (1 qt/A) in the fall or early spring

Buckbrush – Spray plants before leaves reach full size, typically mid to late April. Herbicides effective on buckbrush are Cimarron¹ (0.4 oz/A or 1 oz/100gal), the various forms of 2,4-D (1-2

qt/A or 2% v/v mix) and other formulations containing 2,4-D. Do not use spray additives or soaps with 2,4-D as they may reduce the level of control.

Perilla Mint – Use 2,4-D, Grazon P+D or Remedy¹ while actively growing.

Blackberry / Dewberry – Foliar applications of Cimarron¹ (0.4 oz/A or 1 oz/100gal) and Remedy¹ (1-2 pt/A or 1% v/v mix) have given best results. Banvel is recommended at the rate of 1 to 2 quarts per acre broadcast. Best results have been found with 1 pt/A Remedy¹ tank mixed with 1 qt/A Grazon P+D. Treat when blackberries are flowering. Canes should have two or more years of growth. Spraying one year will not give good control of blackberries. It generally takes three or more applications to get adequate control.

Honey Locust – Foliar applications of Grazon P+D (1-2 qt/A or 2% v/v mix) give excellent control of small sprouts. Total coverage of the leaves is essential. Multiple mowings (3 to 4 per year over several years) can give acceptable levels of control. For larger trees, basal bark treatments with Pathfinder II or cut stump treatment with Tordon RTU give acceptable levels of control to smaller trees.

Horsenettle (Bullnettle) – Tordon 22K (1 pt/A) or Grazon P+D (1 qt/A) have given best results on the control of horsenettle. Seed in the ground can make it a perennial problem.

Osage Orange (Hedge) - Remedy¹ is somewhat effective as a foliar treatment. Best control may be achieved with basal bark treatments of Pathfinder II or cut stump treatments with Tordon RTU. Double girdling the tree near the base about an inch deep and then treating the girdled area with Tordon RTU or Pathfinder II can be effective.

Oaks – Use Remedy¹ when oaks are actively growing after new leaves have expanded in the spring. May be difficult to control.

Sassafras – Very difficult to control. Use Remedy¹ as basal treatment. Tordon 22K will do a fair job as a foliar treatment.

Persimmon – Use Grazon P+D or Tordon 22K in May or early June. Very difficult to control.

Sumac – Use Crossbow or Remedy¹ when actively growing.

Red Cedar – Although a few herbicides have been used to control red cedars, the most common and cost effective means of control are cultural or mechanical. Because the bark is very thin, red cedar is extremely sensitive to fire. Prescribed fires are the easiest and most cost-effective control method for red cedar. Small trees are killed if enough fuel surrounds the tree. For trees larger than three feet in height, any form of cutting below the lowest branch, girdling or removing all of the needles will kill the tree.

Sericea Lespedeza – Pasturegard, Cimarron¹(0.4 oz/A or 1 oz/100 gallons of spray solution) and Remedy¹ (1-2 pt/A or 1% v/v mix) are recommended for control of sericea lespedeza. Apply when sericea is 12 or more inches in height which usually occurs sometime in June. May also apply from bud to flowering. This usually occurs in late August to early September. Do not apply if sericea is under drought stress. Seed in the ground can make it a perennial problem for a few years.

Spiny pigweed (*Amaranth*)—Use a mixture of 2,4-D and (Banvel /Clarity) Grazon P+D (1 qt/A)s. Residual activity of Grazon P+D keeps the remaining seeds from sprouting that year.

Multiflora Rose—For a broadcast application, spray Tordon 22K (1 pt/A). Spot treat with a 1% solution of Remedy¹, Tordon 22K or Pasturegard when in full bloom. Soil treatment with Spike pellets.

Tall Ironweed—Spray Grazon P+D (2-3 pt/A) or Tordon 22K (1 pt/A) just prior to or at bud stage. Control will be enhanced with the addition of Remedy.

Prickly Pear Cactus – Use Surmount (2-3 pt/A) or Tordon 22K. Effectiveness of the treatment may be enhanced if the leaf surface area is damaged by mowing or running a light harrow over the plant prior to treatment. Some labels prefer a fall treatment.

Effective control of many pasture weed species such as pigweeds, common and giant ragweed, asters, dog fennel, plantains, bitter sneezeweed and woolly croton (goat weed) may be achieved with 2,4-D if applied during good conditions for weed control.

Below are recommended MU Guides that can be obtained through MU Extension Centers:

G4852	Cleaning Field Sprayers to Avoid Crop Injury
G4970	Plants Poisonous to Livestock
G9110	How to Get a Good Soil Sample
G9111	Using Your Soil Test Results
G9112	Interpreting Missouri Test Reports
IPM 1010	Biological Control of the Musk Thistle in Missouri
M 169	A Guide to the Common Forages and Weeds of Pastures
MP581	Weed and Brush Control Guide for Forages, Pastures and Non-Cropland.

1. Use a non-ionic surfactant at the rate of 1/4 % of total spray volume. That would equate to 1/3 ounce per gallon or one quart per 100 gallons spray mix.
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Table 1. Restrictions for pasture weed and brush herbicides.

Herbicide	Grazing and Haying Restrictions Following Application (Days)					Interval Between Application and Planting	
	Beef		Lactating Dairy		Removal of meat animals before slaughter	Forage Grasses	Alfalfa / Clovers
	Grazing	Haying	Grazing	Haying			
2,4-D amine or ester	0	0	7	30	3	NGS	NGS
Banvel / Clarity							
up to 1 pt / ac	0	0	7	37	30	see label	see label
up to 2 pt / ac	0	0	21	51	30		
up to 4 pt / ac	0	0	40	70	30		
Cimarron (0.1-0.2 oz)	0	0	0	0	0	fescue 18 mo.	12 mo.
Cimarron Max (Rate 1)	0	0	7	37	30	fescue 18 mo.	12 mo.
Crossbow	none	14	<2 gal - 14	next season		21 days	NGS
ForeFront R&P	-	7	-	7	-	-	FB
Glyphosate*							
renovation	56	56	56	56	0	anytime	anytime
spot application	14	14	14	14	0	anytime	anytime
Grazon P + D	0	30	7	30	3	FB	FB
Tordon 22K	0	>1 qt. - 14	14	14	3	FB	36 mo.
Milestone	0	0	0	0	-	-	FB
Pasturegard	0	14	next season	14	3	4 mo.	1 year
Remedy							
up to 2 qt / ac	0	7	14	1 year	3	1 year	1 year
> 2 qt / ac	14	14	1 year	1 year	3	1 year	1 year
> 4 qt / ac	-	1 year	-	-	3	1 year	1 year
Spike (spot treatment)	0	1 year	0	1 year	0	> 2 years FB	> 2 years FB
Surmount	0	7	14	14	3	1 year	FB
Weedmaster	0	37	7	37	30	see label	see label

The label is the final word on all restrictions. Verify all information with the label on your container.

FB – Field bioassay required prior to establishment

NGS – Next Growing Season

* A variety of trade names exist. Check product labels for specific restrictions.

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Table 2. Best times to control specific weeds with herbicides.

	February*	March*	April	May	June	July	August	September	October*	November*
Multiflora Rose				—————	—————				
Oaks					—————				
Sumac					—————				
Burdock**			—————						—————	
Chickory			—————							
Daisy Fleabane			—————							
Henbit/Chickweed		—————							
Horseweed			—————							
Ironweed						—————				
Milkweed						—————				
Mullein**			—————						—————	
Musk Thistle			—————						—————	
Passion Flower				—————					
Perilla Mint				—————						
Plantains		—————							—————	
Poison Hemlock		—————							—————	
Queen Ann's Lace			—————						—————	
Ragweeds				—————					
Sericea Lespedeza					—————		—————		
Spiny Pigweed				—————						
Spotted Knapweed		—————							—————	

* Observe temperature restrictions on herbicides

** Treatment should be applied in the rosette stage of growth



Optimum period for control



Reduced control or higher rates of herbicide required