

Pasture Weed and Brush Control

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Why Control Weeds?

Properly applied weed control is one of the most cost-effective management practices available to forage producers. Many weed control practices are relatively inexpensive when compared to other pasture improvement methods.

Will weed and brush control always produce more grass? Not always. There must be a population of desirable plants present to exploit the reduced weed competition. If a pasture has 20 to 30 percent bermudagrass cover and a dense stand of broadleaf weeds, spraying with a broadleaf herbicide can help the bermudagrass spread. However, with bermudagrass, nitrogen fertilization and follow-up weed control must be part of the program.

Will weed and brush control increase profit? Some weed and brush control treatments can be expensive. Consider the cost of the initial treatments, the life of the treatment and the cost of maintenance treatments to avoid losing what was gained by the initial application. Research the projected forage response and the financial outlay involved. Weed control is not always motivated by potential profit. Farmers may spray weeds simply because it makes their fields look better.

Weed Control Methods

Mowing. One of the most effective ways to use mowing as a means of weed control is to reduce seed production and dispersal. For example,

a timely mowing during bloom has been effective in reducing seed production of weeds like biennial thistles, cheat and downy brome. Mow in the bud stage or earlier to prevent weed seed production. Timing mowing is critical because the time between flower initiation and viable seed set is often a matter of days for many weeds. One disadvantage of mowing is the lack of selectivity. Another problem with mowing is that by the time the weeds are large enough to cut, they have done most of their competitive damage.

Following a schedule is necessary if mowing is to have any effect on weeds, especially perennials. Research at the University of Missouri showed that mowing three times per year for two years reduced goldenrod and western ironweed density by 80 percent. Dogfennel (also known as cypress weed or Texas cedar) responds very well to mowing. Studies conducted in Florida found that a late summer mowing reduced dogfennel regrowth by 81 percent. Herbicides plus mowing reduced regrowth by 94 percent.

Which is cheaper, mowing or spraying? It depends on the herbicide, rate per acre and application equipment cost. Using moderate rates of herbicides such as 2,4-D, Grazon and Weedmaster is usually cheaper than mowing. Spraying one quart of Grazon P+D will be about \$7 per acre for herbicides plus about \$5 per acre for equipment cost. These figures will vary with application method, tractor size and sprayer type. Mowing runs about \$12 to \$18 per acre depending on equipment.

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Fertility. My soil is poor and is grown up in weeds, should I spray or fertilize first? Control weeds before fertilizing because weeds will aggressively compete for any added nutrients. Soil testing, liming if necessary and keeping potash and phosphorous levels up to soil test recommendations are key parts of any pasture management program. Proper fertility is essential to get the most benefit from other weed control practices.

Grazing. When small and tender, many weeds are readily eaten by livestock and often contain levels of protein comparable to that of desirable forage species. Little barley is palatable for a time in the spring, then, as seed heads start to emerge, cattle tend to avoid it. The same is true for cheat and downy brome. Mowing at seed head formation makes these winter grass weeds more attractive to cattle. The most effective way to use weeds as forage is to graze weeds heavily for a short time and then take the livestock off to allow desirable plants to recover.

Herbicides

See Table 1 to compare the effectiveness of pasture herbicides on various weeds. Herbicides are the most selective and often the most economical way of controlling pasture weeds. Herbicide selection depends on weeds present and the forage species growing in the field.

Are herbicides a miracle cure for pastures? No, they are just one tool that can be applied in a combination approach to pasture management. It is important to realize that herbicide treatments do not produce the same results every time. Herbicide performance is affected by many variables including weather before and after spraying, weed size and application methods. To derive the maximum benefit from a herbicide application, overall pasture management must improve.

Is one herbicide application enough to do the job? Weed and brush control treatments are not permanent; in fact, many are short lived. There is a tremendous reservoir of weed seeds in the soil which retain the potential to emerge over long periods of time. Many brush species, which appear dead a few months after spraying, will start to regrow one or two years after the initial treatment. Thus, it is important to make periodic maintenance treatments as part of a long-term weed control program.

Pastures With Legumes

2,4-D amine can be used safely in lespedeza or white clover. Rates of 0.5 to 0.75 pound per acre of 2,4-D amine will control buttercup, bitterweed and ragweed in white clover or lespedeza. Legumes such as arrowleaf, crimson and red clover will be severely damaged by 2,4-D. Butyrac (2,4-DB) is safer on legumes but is also safer on weeds. However, 2,4-DB controls buttercup, woolly croton and bitter sneezeweed.

Bermudagrass Sprigging

Amine 2,4-D (2 to 3 qts/A) may be applied for preemergence weed and grass control at sprigging or just as weeds begin to emerge. Weedmaster is also labeled for this use. Weedmaster at 1 to 2 quarts per acre will provide more residual control than 2,4-D alone. However, both products provide relatively short-term (one to three weeks) preemergence control. Weedmaster application may be delayed a few days after sprigging but must go out before weeds exceed 1 inch in height. The Karmex brand is no longer labeled for use in forage bermudagrass, but some other diuron labels still retain the recommendation. Drexel Diuron, Griffin Direx and Platte Diuron still have forage bermudagrass on the label. Apply diuron at 1.0 to 1.5 lbs/ai/A after sprigging and before weeds are 1 inch tall.

Spot Treating Pasture Brush

Individual plant treatment or spot spraying is an effective way to control isolated brush problems. Two of the most appealing aspects are excellent control and cost effectiveness (up to a point). Spot spraying also greatly reduces the possibility of herbicide drift. Individual plant treatment fits well with the many part-time farmers in Arkansas because it does not require a large investment in application equipment. Herbicide applications to foliage should be done during periods of active weed growth when the plants are not under stress. Individual plant treatment is done on a spray-to-wet basis. As the name suggests, this method means that you spray until the majority of the leaves are wet. Coverage should be similar to that resulting from a light rain. Overwetting or spraying until runoff wastes herbicide and does not improve control. Follow the label recommendation. Excessive rates may defoliate plants too fast, resulting in less root kill. Beware of coffee shop herbicide recommendations. Word through the grapevine is often wrong. When a neighbor or the salesperson at the local dealership makes a recommendation, consult the label or University of Arkansas Cooperative Extension Service to determine whether it is accurate, safe and legal.

Which is easier to kill, small brush or big brush? Go after brush when it is small. Small brush lends itself to individual plant treatment which is the most effective method. However, the cost of individual plant treatment goes up as the density and size of the target plants increase.

Foliage wetting sprays are best used to control brush less than 8 feet tall. This type application is commonly done with a lever-operated backpack sprayer equipped with a spray wand and a flat fan or adjustable cone nozzle. There are several brands of lever- or electric-powered backpacks available including Shur-Flo, Solo, Cooper-Pegler, Birchmeier and Field King. A Spraying Systems 5500-X8 or 5500-PPB-X8 adjustable Conejet® nozzle is a good choice for spraying leaves. The Conejet allows adjustment of

TABLE 1. Response of pasture weeds to herbicides.

	2,4-D	Banvel	Cimarron	Cimarron Max	ForeFront	Gramoxone	Grazon P+D	Milestone	PastureGard	Remedy	Glyphosate	Spike 20P	Surmount	Tordon 22K	Weedmaster
Bitter Sneezeweed	E	E	E	E	E		E	E	E	E					E
Blackberry	P	F	G-E	G-E	P	P	F		G-E	G-E		G			F
Buttercup	E	P	E	E	E	G	E	G-E	F	G-E	G		G		E
Buckbrush (coralberry)	F-G			F-G						G		G			F-G
Cedar	P		P	P	P		G		P	P		P	E	E ¹	P
Chickweed	E	P	E	E	E	E	P	F	E	E	G		G-E		E
Curly Dock	F	E	E	E	G-E	P		E	F	E			G		E
Dogbane, Hemp	P-F									F			F-G		F
Dogfennel	F	E	P-F	F	P-F	P	G-E	P	E	E			E		G
French Mulberry							F		G	G-E					F
Greenbrier	P	F	P	F			P	P	F-G	F-G					F-G
Hemlock, Poison	F-G	G	F				G								F
Henbit	P	E	E	E	P-F	G	P-F	F-G	G-E	E	P		G		P
Honeysuckle, Japanese	F	F	G							F	G	G			F
Horsenettle	F	F	P	F	G-E	P	G-E	E	F	F	P		G-E		F
Horseweed	G	E	F	E	E	P	E	G	G	G					E
Locust (Thorn Trees)	P						G-E					G			
Maypop	P					P	P-F								P
Oaks	F						F		G	F-G		E			F
Osage Orange									G	G					F
Perilla Mint	P-F	F-G		G		F-G		P	F-G	F-G			F		F-G
Persimmon	P	G	P	P	P	P	F	P	F	F			G-E	G-E ¹	F
Pigweeds	F-G	G-E	G-E	E	G-E	F-G	G-E	G	F				G-E		E
Plantain, Buckhorn	G	F	E	E	G-E	P	G-E	P	F	F			F		G
Pokeweed	P-F	G	P	G	E	P	E		P	P			G		G
Prickly Pear	P	P	P	P	P		F-G		F	F			G-E	G-E	
Ragweeds	E	E	P	G	E	P	E	E	E	E			E		E
Red Sorrel	P	G		E			E		F	P			E		G
Roses, Wild	F	F							G			F			F
Sericea Lespedeza			F						G-E	G-E					
Smartweeds	F		E	E	E	P	E	E							G
Sumac	G											G			
Thistles	E	G	F	G	E	F	E	E	G	F-G			E		G
Trumpet Creeper	P	P	P	P	P	P	F	P	F	F	G	F			P
Wild Garlic	G-E	G	G-E	G-E	G	E		G	P						
Woolly Croton	G-E	E	G	E	G-E	P	E		F	G			E		E

E = excellent, G = good, F = fair, P = poor, blank = no data.

¹Soil applied

TABLE 2. Herbicide/Water Mixing Ratios to Achieve Various Concentrations

% Concentration Desired	Amount to Add to 1 Gallon of Water	Amount to Add to 3 Gallons of Water	Amount to Add to 100 Gallons of Water
0.25%	1/3 oz	1 oz	1 qt
0.5%	2/3 oz	2 oz	2 qts
1.0%	1 1/3 oz	4 oz	1 gallon
1.5%	2 oz	6 oz	1.5 gallons
2.0%	2 2/3 oz	8 oz	2 gallons

the spray pattern to reach the top of taller brush. Other suitable sprayers include 1- to 3-gallon garden pump-up sprayers and electric-powered sprayers mounted on 4-wheel all-terrain vehicles.

For mixed brush, try a tank mix of 1% Grazon P+D plus 0.25% Remedy. This creates a three-way mix (2,4-D + picloram + triclopyr) which increases the chances of controlling several types of brush. Add 0.25% to 0.5% nonionic surfactant to the spray mixture when using brush herbicides. See Table 2 for information on making percent solutions.

Cut Stump and Basal Bark Treatment

One of the drawbacks of treating big brush with herbicides is that you are left with standing dead brush that may remain for many years. Cutting the brush and treating the stumps is hard work but leaves a better looking site. Many herbicides such as glyphosate and 2,4-D are somewhat effective for cut stump treatment. However, Remedy RTU is one of the most convenient and effective products because no mixing is needed. Another approach is to create your own mix of one part Remedy to four parts diesel fuel or vegetable oil. JLB Oil Plus from Brewer International is a good substitute for diesel when making basal bark or stump treatment applications. Treat stumps soon after cutting, preferably within four hours. Treat the entire surface of small stumps. Treating the outer edge (cambium) of large stumps will prevent regrowth and save time and money. Remedy RTU, Remedy and PastureGard may also be used in combination with oils for basal bark and other stem-wetting treatments to control brush with stem diameters less than 4 inches. A mix of 75% JLB Oil plus 25% Remedy Ultra is a good choice for basal bark treatments. Use a Spraying Systems 5500-X1 or 5500-X3 adjustable Conejet® nozzle to prevent waste. See the Remedy Ultra label for more details.

Control of Common Weeds in Pastures

Read This First

These recommendations are based on results obtained in Arkansas field trials. In our research plots, broadcast applications are applied at 15 gallons/A using a boom sprayer equipped with

Spraying Systems 8002 flat fan nozzles on 20-inch spacing. We add 0.25% nonionic surfactant to the spray mix. **Use a boom sprayer when making broadcast applications of Cimarron Plus, Metsulfuron 60 DF, Roundup, Panoramic, Outrider and Maverick.** Boomless nozzles (Boom Buster, Boomjet, etc.) have many uses but will not deliver the precise application needed with these herbicides. When making broadcast herbicide applications, use a water volume between 10 and 40 gallons/A.

In our individual plant treatment brush trials, soil spot treatments are applied with a Spraying Systems Meterjet applicator. Leaf spraying is done with a Conejet 5500 X-6 or X-8 nozzle. Basal bark and stump applications are done with a Conejet 5500 X-1 or X-3 nozzle.

Banvel, Cimarron Plus, Cimarron Max, Clarity, Grazon P+D, Grazonnext, Metsulfuron 60DF, PastureGard, Remedy, Surmount, Tordon 22K and Weedmaster will kill all clover. White clover has some tolerance for 2,4-D amine at rates up to 1.0 lb ai/A. Other clovers (red, crimson, arrowleaf, etc.) do not. Metsulfuron 60DF and Cimarron Plus are intended for use in bermudagrass. They will damage tall fescue, ryegrass and bahiagrass.

Bahiagrass (*Paspalum notatum*)

This recommendation is for use in established bermudagrass to control 'Pensacola' bahiagrass. In late May, apply 60DF Metsulfuron or Cimarron Plus at 0.5 to 1.0 oz/A plus 0.25% surfactant. Make a second application three to four weeks later. It is important to follow up the herbicide application with a fertility program to encourage the bermudagrass growth. Metsulfuron is safe on bermudagrass and has no grazing or haying restrictions. Metsulfuron also controls many broadleaf weeds and some brush species.

Bitter Sneezeweed, Bitterweed (*Helenium amarum*)

Spray bitter sneezeweed before it flowers. Bitter sneezeweed is readily controlled with 2,4-D amine at 1 to 2 pts/A applied in May or early June. Cimarron Plus, Metsulfuron 60DF, Grazon P+D, Grazonnext and Dicamba + 2,4-D also control bitter sneezeweed.

Blackberry and Dewberry (*Rubus* spp)

Use Metsulfuron 60DF or Cimarron Plus at 0.5 to 1 oz/A plus 0.25% nonionic surfactant. Apply in May or June while blackberry and dewberry are actively growing. Remedy at 3 pts/A applied during or after bloom has been effective for blackberry and dewberry. Surmount at 2 qts/A is another option. Apply Surmount after fruit drop. Do not mow during the year of application. Regardless of treatment choice, plan on making a follow-up treatment the next year to control escapes.

Brush, Mixed

Apply a mixture of 0.25% Remedy plus 1% Grazon P+D as a leaf spray to individual plants. Add 0.25% v/v nonionic surfactant. Spray between May and October while brush is actively growing.

Buttercup (*Ranunculus* spp)

Spray buttercup in late February or early March before it flowers. This weed is easily controlled with 2,4-D amine at 1 to 2 pts/A. Metsulfuron 60DF, Cimarron Plus, Grazon P+D, Grazonext and Dicamba + 2,4-D also control buttercup. In dormant bermudagrass, either glyphosate or paraquat will control buttercup at normal use rates.

Cedar, Eastern Red (*Juniperus virginiana*)

Apply undiluted Tordon 22K to the soil prior to periods of expected rainfall. Apply directly to the soil within the drip line and on the upslope side of the tree. Application to trees taller than 12 feet is not recommended. Apply 3 to 4 mls (cc's) per 3 feet of plant height in either spring (April-May) or fall (September-October). Soil spot treatments with Velpar are also effective on cedar less than 6 feet tall. Use a Spraying Systems Meterjet applicator or a livestock worming gun to apply a precise amount of the herbicide. DuPont offers a spot gun that will attach directly to the Velpar jug. Leaf sprays of Surmount or Tordon 22K will control cedar.

Crabgrass (*Digitaria sanguinalis*)

Glyphosate may be applied between cuttings to control crabgrass in established bermudagrass hayfields. Apply 4 to 8 fluid oz/A of 3 lb/ae/gal glyphosate as soon as the hay is removed after cutting. Be warned that glyphosate should not be used in this manner unless bermudagrass stunting, yield reduction and possible stand reduction can be tolerated. Applications made after regrowth is well under way will result in increased damage to the bermudagrass. We have tested this practice many times, and the amount of bermudagrass injury is unpredictable. Injury ranged from almost none up to 50 percent stunting. 'Tifton 44' bermudagrass seems to be more susceptible to glyphosate damage. These

rates are not effective on big sandbur and foxtail. Broadleaf signalgrass and barnyardgrass will be partially controlled. No waiting period is required between application and grazing or harvesting for feed.

Dogfennel, Cypressweed, Texas Cedar (*Eupatorium capillifolium*)

Spray dogfennel when it is 6 to 12 inches tall. At this height, Grazon P+D or Weedmaster at 1 qt/A will give 90 to 100 percent control. Research has shown that Remedy (triclopyr) and PastureGard (triclopyr + fluroxypyr) are also highly effective for controlling dogfennel. PastureGard at 3 pts/A is the preferred treatment for dogfennel that is more than 3 feet tall.

Hemp Dogbane (*Apocynum cannabinum*)

Surmount at 3 to 6 pts/A is the best treatment we have found for hemp dogbane. Apply when the weeds are 18 to 24 inches tall. Add 0.25% nonionic surfactant. In areas where picloram cannot be used, apply 2 qts/A Weedmaster + 1 oz/A Metsulfuron 60DF plus 0.25% nonionic surfactant. Follow up next spring to control escapes.

Honeylocust (*Gleditsia triacanthos*)

Spray the leaves with a 1% solution of Grazon P+D. Add 0.25% nonionic surfactant. Apply after full leaf out when conditions are favorable for plant growth. Make a follow-up application the next spring.

Honeysuckle (*Lonicera* spp)

Metsulfuron 60DF or Cimarron Plus at 1 oz/A provides excellent honeysuckle control. For individual plant treatment, add 1 oz of product per 100 gallons of water and spray to wet. A 2% solution of 3 lb/ae/gal glyphosate or 4 lb/gal triclopyr, applied in the fall, also controls honeysuckle. Follow-up treatments will be needed.

Horsenettle (*Solanum carolinense*)

Grazon P+D (3 to 4 pts/A) or Grazonext (2 pts/A) are good choices for horsenettle control. Time herbicide applications to occur between bloom and fruit set. Complete horsenettle control will not be achieved with a single herbicide application. Spray for three consecutive years to reach the 90 to 100 percent control range.

Horseweed, Maretail (*Conyza canadensis*)

Spray horseweed when it is less than 12 inches tall. A properly timed application of Grazon P+D or Weedmaster at 1 qt/A will give 90 to 100 percent control. Metsulfuron 60DF or Cimarron Plus at 0.5 oz/A will also provide 90 to 100 percent control.

Foxtail (*Setaria* spp)

Foxtail is a late-germinating summer grass that becomes obvious in July. Panoramic at 4 to 6 fl oz per acre does a fair job of foxtail control if it is in the seedling stage. Add 0.25% nonionic surfactant. Control of large plants will be poor. Application timing will typically be from late May to early June. Panoramic (imazapic) will stunt bermudagrass. Damage varies, but the loss of one hay cutting is typical. Expect 30 to 45 days of bermudagrass suppression after application. Do not apply to drought-stressed bermudagrass. Do not apply during spring transition. Do not apply to newly sprigged or seeded bermudagrass or to Jiggs or World Feeder varieties.

Groundsel, Prairie Ragwort (*Senecio* spp)

Metsulfuron 60DF or Cimarron Plus at 0.5 to 1.0 oz/A has proven to be the most effective herbicides for groundsel control. Apply in May. Add 0.25% nonionic surfactant. Grazon P+D at 2 to 3 qts/A provides partial control.

Johnsongrass (*Sorghum halepense*)

Use 1.33 oz/A of Outrider with 0.25% nonionic surfactant in 10 to 40 gallons of water per acre as a broadcast application. Apply to actively growing johnsongrass that is at least 18 to 24 inches tall and up to the heading stage. Weeds to be treated should not be mowed or grazed for two weeks before or after application. Bermudagrass may be harvested after the two-week period without any effect on Outrider performance. Weed response to Outrider is very slow. It may require up to one month for weeds to become brown. Tank mixing Outrider with herbicides formulated as amines (including 2,4-D) may decrease the effectiveness of Outrider on johnsongrass. For spot treatment, mix 1.33 oz/A of Outrider in 100 gallons of water with 0.25% nonionic surfactant. Apply this as a spray to wet application. Panoramic at 4 fl oz/A plus 0.25% nonionic surfactant will provide about 80 percent johnsongrass control. Panoramic will stunt bermudagrass. Damage varies, but the loss of one hay cutting is typical.

Maypop, Passion Flower (*Passiflora incarnata*)

Control data is scarce for maypop. One greenhouse study indicates that Remedy or 2,4-D amine at 2 qts/A will provide good initial control. Clarity at 1 pt/A also performed well in this trial. Expect regrowth the next year.

Oaks (*Quercus* spp)

It is possible to achieve partial control of some oak species using 2,4-D alone at 2 qts/A. Improved control can be achieved by using a mixture of 1% Grazon P+D plus 0.25% Remedy as an individual

plant leaf spray. Add 0.25% nonionic surfactant. Basal bark treatments are very effective on oaks with stem diameters of 4 inches or less. Mix 1 qt Remedy Ultra with 3 qts diesel fuel, vegetable oil or light mineral oil and apply to the lower 18 inches of the stems with a Conejet 5500 X-1 or X-3 nozzle. Agitate the mixture before spraying. JLB Oil Plus is a ready-to-use basal oil carrier that may be used in place of diesel fuel.

Osage Orange, Bois d'Arc (*Maclura pomifera*)

Apply 1% Remedy plus 0.25% surfactant as a leaf spray to individual plants. For Osage Orange with stems less than 4 inches in diameter, mix 1 qt Remedy Ultra with 3 qts diesel fuel, vegetable oil or light mineral oil and apply to the lower 18 inches of the stems with a Conejet 5500 X-1 or X-3 nozzle. Agitate the mixture before spraying. JLB Oil Plus is a ready-to-use basal oil carrier plus surfactant.

Palmetto, Dwarf (*Sabal minor*)

Apply a 4% solution of Remedy Ultra as an individual plant treatment. Add 0.25% v/v nonionic surfactant. Be patient.

Perilla Mint (*Perilla frutescens*)

Grazon P+D at 1.0 qt/A or Weedmaster at 1 qt/A will control perilla mint. Apply in late May or early June when weeds are actively growing. Spray before the weeds are 12 inches tall. Add 0.25% nonionic surfactant to the spray mix. Bush hog large plants that have already formed flowers.

Persimmon (*Diospyros virginiana*)

Persimmon is one of the more difficult brush species to control. The most effective treatment is undiluted Tordon 22K applied to the soil as a spot concentrate prior to periods of expected rainfall. Apply directly to the soil within the drip line and on the upslope side of the tree. Application to trees taller than 12 feet is not recommended. Apply 2 to 4 mls (cc's) per inch of stem diameter in spring (April-May). Use a Spraying Systems Meterjet applicator or a livestock worming gun to apply a precise amount of the herbicide. A leaf spray using a 1% Surmount solution is slightly less effective.

Pigweed, Carelessweed (*Amaranthus* spp)

Pigweeds are prolific seed producers. Single plants are capable of producing thousands of seeds. Given adequate rainfall, pigweed seeds germinate throughout the summer. All emerged pigweed may be killed by a herbicide treatment only to be replaced by another flush of seedlings. Repeat applications will be needed for full-season control. Spray when the pigweeds are less than 12 inches tall. Cimarron Plus, Metsulfuron 60DF, Grazon P+D, Grazonext and

Dicamba + 2,4-D and 2,4-D amine all provide good control of seedling pigweed.

Plantain, Buckhorn and Broadleaf (*Plantago spp*)

Two proven treatments for buckhorn plantain are Grazon P+D at 1.5 qt/A or Cimarron Max at 1 qt/A + 0.25 oz/A. These products provided 90 to 100 percent control of buckhorn plantain. Add 0.25% nonionic surfactant to the spray mix. Apply in late May or early June when weeds are actively growing. Metsulfuron 60DF or Cimarron Plus at 0.5 oz/A are also effective herbicides for this weed.

Poison Hemlock (*Conium maculatum*)

Spray poison hemlock when it is less than 18 inches tall and before it flowers. Grazon P+D and Grazonext at 1 qt/A are very effective for poison hemlock control when applied in May or early June.

Pricklypear (*Opuntia spp*)

Use the individual plant treatment method when spraying pricklypear. Apply a 1% Surmount solution plus 0.5% nonionic surfactant. Use Hi-Lite Blue Dye to avoid spraying the same plant twice and show the extent of the coverage on treated plants. Apply during active growth. Do not spray under desirable trees. Do not spray wet pads. Be patient; Surmount works very slowly. It may take 1 to 3 years for complete control.

Ragweed, Common (*Ambrosia artemissifolia*) Lanceleaf Ragweed (*Ambrosia bidentata*)

The key to effective ragweed control is spraying when the weeds are small (2 to 4 inches tall). Small ragweeds are readily controlled with 2,4-D amine at 1 qt/A. Grazon P+D, Grazonext and Dicamba + 2,4-D also control ragweeds at 1 qt/A. Cimarron Plus and Metsulfuron are not effective on ragweed.

Red Sorrel (*Rumex acetosella*)

Grazon P+D at 1 qt/A provides excellent control of red sorrel. Metsulfuron or Cimarron Plus at 0.5 oz/A is also very good. Treat anytime the red sorrel is actively growing. Remedy is not effective on red sorrel.

Rose, Wild (*Rosa spp*)

Spray the leaves with a 1% solution of Grazon P+D. Add 0.25% nonionic surfactant. Apply after full leaf out when conditions are favorable for plant growth.

Ryegrass (*Lolium spp*)

Glyphosate must be applied in January or February while the ryegrass is small to achieve

effective control in dormant bermudagrass. A good rule of thumb is waiting for the high to reach 50 degrees three days in a row. Glyphosate works very slowly in cold weather. Delaying application into March and April results in big ryegrass that is very difficult to control regardless of the rate applied. In two years of testing at six locations we have gotten excellent ryegrass control with glyphosate at 1.0 lb/ai/A applied in January or February. Another important factor in ryegrass control is adequate spray coverage. Our research herbicides are applied with a boom sprayer at 15 gal/A using 8002 flat fan nozzles on 20-inch spacing.

Sandbur (*Cenchrus spp*)

Sandbur is usually considered to be a summer annual, but it may overwinter and emerge from crowns. Most sandbur germinates during May and June. However, it may emerge throughout the summer, making timing of postemergence herbicide applications difficult. Spraying sandbur while it is small is not easy because, without a seed head, it is difficult to identify the sandbur among the other grasses. The easiest way to identify a sandbur seedling is by gently digging it out of the soil and looking for the bur which is usually still attached. Seedling sandburs have flattened stems with a reddish base. The leaf margins have a rough feel. This can be detected by running your fingers down the edge of the leaf blade. While not perfect, the best treatment we have found is an early postemergence application of Panoramic (imazapic) at 6 fl oz/A. Add 0.25% nonionic surfactant. Panoramic will stunt bermudagrass. Damage varies, but the loss of one hay cutting is typical. Expect 30 to 45 days of bermudagrass suppression after application. Do not apply to drought-stressed bermudagrass. Do not apply during spring transition. Do not apply to newly sprigged or seeded bermudagrass or to Jiggs or World Feeder varieties.

Sawbrier or Greenbrier (*Smilax spp*)

Greenbrier control is difficult regardless of the methods or herbicides used. Broadcast herbicide applications are not effective. For individual plant treatment, mix 1 qt Remedy Ultra with 3 qts diesel fuel, vegetable oil or light mineral oil. Apply this mix to the lower 12 inches of the greenbrier stems with a Conejet 5500 X-1 or X-3 nozzle. Agitate the mixture before spraying. Best results are achieved in the winter when more basal stems are exposed. Expect about 75 percent control one year after treatment. Follow-up applications are essential.

Sedges (*Cyperus spp*)

Use 1.33 oz/A of Outrider with 0.25% nonionic surfactant in 10 to 40 gallons of water per acre as a broadcast application. Apply to actively growing sedges with enough leaf area to intercept the spray.

Weeds to be treated should not be mowed or grazed for two weeks before or after application. Bermudagrass may be harvested after the two-week period without any effect on Outrider efficacy. Weed response to Outrider is very slow. It may require up to one month for weeds to become brown. Tank mixing Outrider with herbicides formulated as amines (including 2,4-D) may decrease the effectiveness of Outrider on sedges. For spot treatment, mix 1.33 oz/A of Outrider in 100 gallons of water with 0.25% nonionic surfactant. Apply this as a spray to wet application. Panoramic at 4 to 6 fl oz/A plus 0.25% nonionic surfactant will provide sedge control. Panoramic will stunt bermudagrass. Damage varies, but the loss of one hay cutting is typical.

Sericea lespedeza (*Lespedeza bicolor*)

Apply 1.5 pts/A PastureGard in the late spring to early summer before bloom. The plants should be 12 to 15 inches tall with full-developed leaves. Increase the rate to 2 pints per acre for dense stands or later stages of growth. Use a minimum spray volume of 10 gallons per acre. Higher application volumes are preferred. For spot application, mix 6 pints PastureGard per 100 gallons of water or 1 fl oz PastureGard per gallon of water. Apply the spray uniformly and thoroughly wet the *Sericea lespedeza* foliage.

Sumac (*Rhus* spp)

Sumac is one of the few brush species that is readily controlled with 2,4-D amine. Apply at the rate of 1.5 to 2 qts/A. Other herbicides effective for sumac include Grazon P+D, Remedy, PastureGard and Surmount.

Thistles (*Carduus*, *Cirsium* spp)

The key to effective thistle control is spraying while the thistles are in the rosette stage of growth

(before the flower stalk appears). Biennial thistles in Arkansas are readily controlled with a properly timed application of 2,4-D amine at 1.5 qt/A. Spring applications should be made from late February to early March. Fall applications from late October through November will enhance a thistle control program. Grazon P+D, Grazonnext and Dicamba + 2,4-D also provide excellent control of thistles at 1 qt/A.

Trumpet creeper, Cow-Itch Vine (*Campsis radicans*)

As with many perennial vines, it is virtually impossible to control trumpet creeper with a single herbicide application. Banvel or Clarity at 2 qts/A, or the combination of 2,4-D with a lower rate of Banvel or Clarity, will provide from 60 to 100 percent control of this weed. Spot treatments of a 2% glyphosate solution are also an effective means of controlling small infestations of trumpet creeper.

Wild Garlic, "Wild Onion" (*Allium vineale*)

In tall fescue, 2,4-D ester at 2 qts/A will provide fair wild garlic control. Apply from December to March. Repeat the application the following year. In bermudagrass, Metsulfuron 60DF or Cimarron Plus at 0.5 oz/A are the preferred treatments. Add 0.25% nonionic surfactant to the spray mix.

Woolly Croton, Doveweed, Goatweed (*Croton capitatus*)

Along with bitterweed and buttercup, woolly croton is one of the easiest pasture weeds to control with herbicides. Apply 2,4-D amine at 1 to 2 pts/A in May or early June when woolly croton is less than 12 inches tall. Cimarron Plus, Metsulfuron 60DF, Grazon P+D, Grazonnext and Dicamba + 2,4-D also control woolly croton.

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