

Forage Weed Control

Livestock are produced on more than 13,000 farms in Mississippi, according to Mississippi Department of Agriculture and Commerce 2024 statistics. In addition, the USDA National Agricultural Statistics Service 2022 Census reported 1,550,222 acres in Mississippi are used for pasture and an additional 583,634 acres are used for hay, haylage, and grass silage, making forage production the second-largest agronomic crop land use behind soybeans in Mississippi.

Pastures and hayfields are often invaded with dogfennel (often called summer cedar), Carolina horsenettle, dewberry and blackberry, spiny amaranth (often called spiny pigweed), woolly croton, bitter sneezeweed (frequently called bitterweed), ironweed, smellmelon, wild roses (McCartney, multiflora, Cherokee), indianhemp (previously called hemp dogbane), prickly and arrowleaf sida, Cherokee sedge, and several species of smartweeds. Even weeds like smutgrass, marsh bristlegrass (previously called knotroot foxtail), barnyardgrass or goosegrass, and many of the sedges and rushes reduce overall pasture productivity. Weeds like perilla mint, the milkweeds, poison hemlock, wild cherry, mountain laurel, and yellow jessamine have the potential to cause livestock deaths if sufficient quantities are consumed.

Whatever the weed problems, producers should use an integrated approach to weed management.

- The first approach to an integrated weed management system is to establish and maintain a dense forage stand as a defense against weed invasion. Select and plant forages that are adapted not only to the region, but also to the site. Bahiagrass tends to be the dominant warm-season forage grass in southern Mississippi, while bermudagrass tends to be seen more frequently in central and northern Mississippi, although cool-season tall fescue can be found in some fields.
- Producers should also remember some plants (forages or weeds) grow best on drier soils, while others grow best on soils that hold more moisture. Dallisgrass, vaseygrass, and a wide spectrum of sedges and rushes seem to prefer areas that retain more moisture than other areas of the field. Presence of the weedy sedges and rushes often increases following prolonged intervals of excess rainfall. Drainage, although expensive, may be the best way to reduce populations of some of these weedy plants.

- Make timely applications of fertilizer and lime that are based on soil test recommendations to supply nutrient demands of the forage. Give the desired forages the nutrients necessary to maintain growth.
- Manage grazing pressure to maintain a healthy forage stand. Drag manure to recycle and redistribute nutrients across grazed areas.
- Mow to remove rank forage growth or seedheads not consumed by livestock and force new foliar growth.
- Manage insect pests to minimize stand losses, which open the forage canopy for weed invasion.
- Apply herbicides to remove undesirable weeds. Select herbicides that control the spectrum of weeds present. Calibrate spray equipment to apply only the rate needed for control.

Mississippi is fortunate to have a long summer growing season and mild winters. There are weeds that grow during winter and others that grow during summer. Weeds emerge at various times. Some emerge in the fall, while others emerge later in winter. Some weeds emerge in early spring, while others emerge in early summer and some even in late summer. This variety of emergence patterns makes timing weed management practices complicated. Rainfall is unpredictable. Most producers do not want to drive heavy equipment across water-logged fields. Extended periods of rainfall allow weeds to get larger, more mature, and more difficult to control, thus requiring higher herbicide application rates for satisfactory results.

Remember, the label is the law. When herbicides are part of your farm weed control program, always **read** and **follow** instructions on the label attached to the pesticide container. Restrictions on many herbicides have been added as a result of recent lawsuits against companies and the Environmental Protection Agency (EPA). Just because something was done several years ago does not mean it is allowed now. It is a violation of both state and federal law to ignore restrictions on pesticide labels. For example, several herbicide labels now prohibit the movement of hay treated with those products off the farm less than 18 months after the application.

MSMA is not labeled, and is therefore illegal, to apply to bermudagrass or other forage grasses grown for livestock consumption.

Table 1. Replanting restrictions for forages. See product labels for crops not listed.

Product	Legumes		Pasture Grasses			
	Alfalfa	Clover	Bahia	Bermuda	Fescue	Ryegrass
2,4-D + dicamba + metsulfuron at 0.25 oz/A plus 1 pt/A	4 m	4 m	–	4 m	4 m	4 m
2,4-D + picloram	1 y	1 y	3 w	3 w	3 w	3 w
2,4-D choline + picloram	36 m	36 m	ns	ns	ns	ns
2,4-D + triclopyr	3 w	3 w	3 w	3 w	3 w	3 w
Chaparral	bioassay	bioassay	ns	ns	fall	ns
Cimarron Plus at 0.25 oz/A	4 m	4 m	–	4 m	4 m	4 m
Dicamba, per pint applied per acre	120 d	120 d	30 d	30 d	30 d	30 d
Diuron	2 y	2 y	2 y	2 y	2 y	2 y
Duracor, <12 fl oz/A*	bioassay	bioassay	45 d	45 d	15 d	15 d
Duracor, >12–20 fl oz/A	bioassay	bioassay	45 d	45 d	45 d	45 d
Glyphosate	1 w	1 w	1 w	1 w	1 w	1 w
Grazon Next	12 m + bioassay	12 m + bioassay	fall	fall	fall	fall
Imazapyr	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay
Metsulfuron	bioassay	bioassay	ns	ns	fall	fall
Mezavue, before reseeding	bioassay	bioassay	21 d	21 d	21 d	21 d
Mezavue, after reseeding	–	–	tiller	tiller	tiller	tiller
Mezavue, after sprigging	–	–	–	6-inch stolons	–	–
Milestone	bioassay	bioassay	–	–	–	–
Maverick/Outrider	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay	12 m + bioassay
NovaGraz, ≤24 fl oz/A*	30 d	30 d	14 d	14 d	14 d	14 d
NovaGraz, >24 fl oz	30 d	30 d	45 d	45 d	45 d	45 d
Overdrive	30 d	30 d	30 d	30 d	30 d	30 d
Paraquat	0 d	0 d	0 d	0 d	0 d	0 d
Pastora	12 m	12 m	–	4 m	–	4 m
Pasturegard	1 m	1 m	3 w	3 w**	3 w	3 w
Pursuit	4 m	4 m	40 m	40 m	40 m	4 m
Redeem R&P	bioassay	bioassay	14 d	14 d	14 d	14 d
Rezilon	–	–	–	–	18 m + bioassay	18 m + bioassay
Triclopyr	3 w	3 w	3 w	3 w	3 w	3 w
Surmount	bioassay	bioassay	12 m	12 m	12 m	12 m
Telar	bioassay	bioassay	bioassay	bioassay	bioassay	bioassay
Velpar	2 y	2 y	2 y	2 y	2 y	2 y

d = days; m = months; w = weeks; y = years; ns = next season

*Crabgrass, pearl millet, sorghum-sudan, and teff can be replanted 30 days after 12 fl oz/A.

**Interval applies to seeded bermudagrass cultivars.

Table 2. Weed response ratings for forage herbicides.

[illegible]

Herbicides	Bahia grass	u	u	r	u	u	u
	Bitterweed	u	u	u	u	r	u
	Blackberry	u	u	u	u	u	r
	Bulrush	u	u	u	u	u	u
	Bullthistle	u	u	u	r	r	u
	Buttercup	u	u	u	u	r	r
	Chickweed	u	u	r	r	r	r
	Cogongrass	u	u	u	u	u	u
	Common Ragweed	u	u	r	u	r	u
	Crabgrass	u	r	u	u	u	u
	Curly Dock	u	u	u	r	u	u
	Dogfennel	u	u	u	u	r	u
	Eastern Red Cedar	r	u	u	u	r	u
	Foxtail	u	r	u	u	u	u
	Goldenrod	u	u	u	u	r	u
	Groundsel	r	u	r	r	r	u
	Henbit	u	u	r	r	r	r
	Horsenettle	r	u	u	u	r	u
	Horseweed	r	u	u	r	r	u
	Johnson grass	u	u	u	u	u	u
	Lanceleaf Ragweed	u	r	u	u	r	u
	Little Barley	r	u	u	u	r	u
	Mullein	r	u	r	u	r	u
	Multiflora Rose	u	u	u	u	u	u
	Nutsedge	u	u	u	u	u	u
	Osage Orange	u	u	u	u	u	r
	Red Sorrel	r	u	u	u	r	u
	Smartweed	u	u	u	u	r	u
	Smooth Pigweed	r	u	u	r	r	u
	Smutgrass	u	u	u	u	u	u
	Tall Fescue	u	r	u	u	r	u
	Tropical soda apple	u	u	r	u	u	u
	Vaseygrass	u	u	u	u	u	u
	Wild Garlic	u	u	r	u	r	u

h = highly recommended; r = recommended; n = not recommended

*Cut surface treatment

Table 3. Haying, grazing, and slaughter restrictions for livestock.

Product	Lactating Dairy Animals–Grazing	Lactating Dairy Animals–Haying	Nonlactating Dairy Animals–Grazing	Nonlactating Dairy Animals–Haying	Meat Animals–Grazing	Meat Animals–Haying	Slaughter
2,4–D amine*	7	30	7	30	0	30	3
2,4–D choline	0	14	0	14	0	14	3
2,4–D ester*	7	30	7	30	7	30	3
2,4–D + dicamba	7	37	0	37	0	37	30
2,4–D + picloram	7	30	0	30	0	30	3
2,4–D choline + picloram	7	30	0	30	0	30	3
2,4–D + dicamba + metsulfuron	7	37	0	37	0	37	30
Buctril, spring treatment	30	30	30	30	30	30	–
Buctril, fall/winter treatment	60	60	60	60	60	60	–
Butyrac, established alfalfa	30	30	30	30	30	30	–
Butyrac, seedling alfalfa, clover	60	60	60	60	60	60	–
Chaparral	0	0	0	0	0	0	–
Clethodim	15	15	15	15	15	15	–
Cimarron Plus	0	0	0	0	0	0	–
Dicamba, 0.5 qt/A or less	7	37	0	0	0	0	30
Dicamba, 1–2 qt/A	40	70	0	0	0	0	30
2,4–D + triclopyr, 2 gal or less/A	14	ns	0	7	0	7	3
2,4–D + triclopyr, 2–4 gal/A	ns	ns	14**	14	14**	14	3
Diuron	70	70	70	70	70	70	–
Duracor	14	14	14	14	14	14	–
Glyphosate, legumes, preplant, preemerg, at-plant <44 oz/A	0	0	0	0	0	0	–
Glyphosate, legumes, preplant, preemerg, at-plant >44 oz/A	56	56	56	56	56	56	–
Glyphosate, alfalfa preharvest	1.5	1.5	1.5	1.5	1.5	1.5	–
Glyphosate, spot treatment, <10% total acres	14	14	14	14	14	14	–
Glyphosate, renovation, < 44 oz	1.5	1.5	1.5	1.5	1.5	1.5	–
Glyphosate, renovation, > 44 oz	56	56	56	56	56	56	–
Glyphosate, grass pastures, preplant, preemerg, renovation	56	56	56	56	56	56	–
Glyphosate, grass pastures, spot or wiper treatment	14	14	14	14	14	14	–
Grazon Next	0	7	0	7	0	7	–
Imazapyr	0	7	0	7	0	7	–
Journey	0	7	0	7	0	7	–
Lineage Clearstand	0	7	0	7	0	7	–
Metribuzin	28	28	28	28	28	28	–
Metsulfuron	0	0	0	0	0	0	–
MezaVue	14	14	0	7	0	7	3
Milestone	0	0	0	0	0	0	–
Maverick/Outrider	0	14	0	14	0	14	–

Table 3 (continued)

Product	Lactating Dairy Animals–Grazing	Lactating Dairy Animals–Haying	Nonlactating Dairy Animals–Grazing	Nonlactating Dairy Animals–Haying	Meat Animals–Grazing	Meat Animals–Haying	Slaughter
NovaGraz	3	14	3	14	0	14	3
Overdrive	0	0	0	0	0	0	–
Paraquat, alfalfa/clover, dormant/clover	–	60	–	60	–	60	–
Paraquat, alfalfa/clover, between cuttings	30	30	30	30	30	30	–
Paraquat, bermudagrass, dormant	–	40	–	40	–	40	–
Pastora	0	0	0	0	0	0	0
PastureGard	ns	14	0	14	0	14	3
Pursuit	30	30	30	30	30	30	30
Prowl, alfalfa, ≤ 2.1 qt/A	28	28	28	28	28	28	–
Prowl, alfalfa, > 2.1 qt/A	50	50	50	50	50	50	–
Prowl, grass forage	0	0	0	0	0	0	–
Redeem R+P	14	ns	0	7	0	7	3
Rezilon	0	40	0	40	0	40	–
Sharpen	0	0	0	0	0	0	–
Sethoxydim	7	20	7	20	7	20	–
Surmount	14	7	0	7	0	7	3
Triclopyr choline	0	14	0	14	0	14	3
Triclopyr ester, 2 qt or less/A	14	ns	0	7	0	7	3
Triclopyr ester, 2–4 qt/A	ns	ns	14**	14	14**	14	3
Triclopyr ester, 4–6 qt/A	ns	ns	14**	ns	14**	ns	3
Telar	0	0	0	0	0	0	–
Velpar	0	38	0	38	0	38	–

ns = next season

*Restrictions vary among manufactured products. Refer to product label for specific restrictions.

**If the area treated is less than 25 percent of grazing area, there is no restriction for nonlactating or meat animals.

Table 4. Forage weed control recommendations. Weed resistance to recommended use rates of certain herbicides has been documented in Mississippi. Consult labels for approved adjuvants.

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Preemergence					
Bermudagrass, at planting	diuron at 0.8–2.4 lb/A	80 WP at 1–3 lb or 4L at 1.6–4.8 pt/A in 25 gal water	At sprigging	Many annuals including signalgrass and some seedling perennials	May temporarily burn emerged bermuda and permanently injure Alicia. For control of small emerged weeds, use low rate plus surfactant.
Sorghum-sudan hybrids	atrazine at 1.6 lb/A	1.8 lb 90DF or 2 lb 80WP or 3.2 pt 4L in 25 gal water	Sorghum should be completely germinated and emerged and weeds not more than 1.5 inches high	Annual grass and broadleaf weeds	Do not use on sand or loamy sand. May injure winter annuals that follow high rates.
Postemergence					
Alfalfa seedling	bromoxynil at 0.25–0.37 lb/A	1–1.5 pt/A	Fall or spring when majority of alfalfa has a minimum of four trifoliate leaves	Annual broadleaf weeds	Do not add surfactant or crop oil unless specifically recommended.
	pendimethalin at 1–2 lb/A	Prowl H20 at to 1.1–2.1 qt/A in 20–40 gal water	Before grasses and small-seeded broadleaf weeds start to germinate; after alfalfa has two trifoliate leaves but before it exceeds 6 inches tall	Annual grasses and small-seeded broadleaf weeds	Do not exceed 4.2 quarts per acre per season. Do not harvest alfalfa less than 28 days after applications of 2.1 quarts per acre or less.
Alfalfa only	clethodim at 0.094–0.125 lb/A	6–8 oz/A (2 lb/gal formulation) in up to 20 gal water with 1 qt/A crop oil concentrate	To actively growing annual or perennial grasses	Most grasses	Do not apply more than 32 ounces per acre to alfalfa. Do not apply a broadleaf herbicide within 1 day before or after application.
Alfalfa, clover, seedling and established	imazethapyr at 0.05–0.09 lb/A	Pursuit at 3–6 oz/A with 0.25% nonionic surfactant or 1 qt/A crop oil concentrate and 1–2 qt/A liquid N fertilizer or 2.5 lb/A spray grade ammonium sulfate	Seedling legumes with at least two fully expanded trifoliate leaves or established, dormant or semi-dormant alfalfa, or between cuttings	Broadleaf weeds and certain grasses	Do not exceed 6 ounces per acre per year. Do not apply during the last year of the stand. Do not feed, graze, or harvest alfalfa within 30 days of application. In the event of stand failure, do not reseed alfalfa within 4 months after application. This treatment will suppress growth of grasses, such as fescue, ryegrass, and small grains seeded with legumes.
	sethoxydim at 0.19–0.47 lb/A	1–1.25 pt/A (1.5 lb/gal formulation) in up to 20 gal water at 40–60 psi by ground; add 2 pt/A oil concentrate	To actively growing grasses	Most grasses	Apply no more than 5 pints per acre in one season.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Alfalfa, established	metribuzin at 0.38–0.75 lb/A	0.5–1 lb/A (75 DF) or 0.8–1.5 pt/A (4 lb/gal formulation) in 20–40 gal water	Winter-dormant established	Chickweed, henbit, and other winter annuals	Apply only to winter-dormant alfalfa no earlier than 12 months after seeding.
	paraquat at 0.28 lb/A	0.75 pt/A (3 lb/gal formulation) or 2.2 pt/A (2 lb/gal formulation) in 20–40 gal water	After cuttings	Annual grasses and broadleaf weeds	Apply to stands at least 1 year old and within 5 days after cutting. Add 1 quart of nonionic surfactant per 100 gallons of spray solution.
	pendimethalin at 1–4 lb/A	Prowl H2O at 1.1–4.2 qt/A in 20–40 gal water	Before grasses and small-seeded broadleaf weeds start to germinate and alfalfa reaches 6 inches tall	Annual grasses and small-seeded broadleaf weeds	Do not exceed 4.2 quarts per acre per season. Do not harvest alfalfa less than 28 days after applications of 2.1 quarts per acre or less or 50 days after applications of more than 2.1 quarts per acre. Pendimethalin can be applied fall, winter, spring, or between cuttings.
Grass pastures, established	2,4-D at 0.5–1 lb/A	1–2 pt/A (4 lb/gal formulation) in 10–20 gal water	To actively growing weeds	Buttercup, bitter weed, woolly croton, and others, except dogfennel, horsenettle, and smartweed	Do not treat during long droughts or to annual legumes until after seed production.
	2,4-D LV ester at 0.5–1 lb/A	1–2 pt/A (4 lb/gal formulation) in 10–20 gal water	November to March when crop is well established; when weeds are young but before they flower	Mustard, turnips, dock, buttercup, and others	Apply during a clear, warm, sunny period when weeds are young and tender. May injure young, tender ryegrass. Add 0.5–1 quart of surfactant per 100 gallons of spray solution for improved control especially when applied during cool weather.
	2,4-D at 0.38–1.4 lb/A plus dicamba at 0.12–0.5 lb/A	1–4 pt/A (3.87 lb/gal formulation) in 20–40 gal water	When weeds are young and actively growing	Most broadleaf weeds and some hard-to-control weeds, such as dogfennel and smartweed	Weeds should be less than 10 inches tall for lower rates. Same precautions as for dicamba alone. Clipping large weeds not dead in 2–3 weeks will improve control.
	2,4-D at 0.5–1.0 lb/A plus florypyrauxifen-benzyl at 0.008–0.16 lb/A	NovaGraz at 24–48 fl oz/A	Small, actively growing broadleaf weeds	Bitter sneezeweed, buttercup, marshelder, mayweed, pepperweed, plantain, thistles, vervain, wild carrot	Apply with 1% by volume methylated seed oil. Do not exceed 48 fl oz per acre per season. Manure and urine from animals eating treated forage may damage sensitive plants. Feed untreated forage 3 days before moving animals to areas that may contain or be planted to sensitive crops. Before mixing other pesticides with NovaGraz, refer to RinskorTankMix.com for a list of prohibited tank partners.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Grass pastures, established	2,4-D at 0.24–2 lb/A plus picloram at 0.06–0.54 lb/A	1–8 pt/A or 1–2% solution (2.54 lb/gal formulation) in 20–40 gal water	When weeds are actively growing and not stressed	Most broadleaf weeds and some hard-to-control weeds, such as dogfennel, horsenettle, and woody brush	Use lower rates early in the season when weeds are very small. Use higher rates for larger annual weeds, established perennials, or woody brush. Do not use grass or hay from treated areas or manure from animals grazing treated forage to compost desirable plants.
	2,4-D choline at 0.46–1.9 lb/A plus picloram at 0.12–0.5 lb/A	GrazonPD3 at 1.25–5.3 pt/A	Small, actively growing broadleaf weeds	Most broadleaf weeds and some hard-to-control weeds, such as dogfennel, horsenettle, and woody brush	Do not cut hay less than 30 days after treatment. Manure and urine of animals eating treated forage will damage sensitive crops. Remove from treated forage 7 days before transferring to areas with sensitive plants. Do not apply more than 10 pints per acre per year. Do not use grass or hay from treated areas or manure from animals grazing treated forage to compost desirable plants.
	aminopyralid at 0.04–0.13 lb/A plus metsulfuron at 0.006–0.02 lb/A	Chaparral at 1–3.3 oz/A for broadcast or 2.5–3.3 oz/100 gal for spot treatments	Use lower rate for young, annual weeds and higher rate for older or perennial weeds	Broadleaf weeds	Can be blended onto dry fertilizer. Treatments will severely injure legumes, bahiagrass, or fescue. Use nonionic surfactant at 1 quart per 100 gallons of spray; however, applications to tall fescue should not exceed 1 pint per 100 gallons. Do not rotate to any crop within 1 year after treatment. Do not plant forage legumes until bioassay verifies residues will not injure crop. Do not seed ryegrass within 4 months after application. Do not use treated plants or manure around desirable broadleaf plants. Do not move animals from treated fields onto fields with legumes without first moving into untreated field for 3 days. Grasses treated within 18 months cannot be exported as hay; manure from animals fed treated hay cannot be used for compost; grasses cannot be used for seed production.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Grass pastures, established	aminopyralid at 0.06–0.1 lb/A plus flopyrauxifen at 0.006–0.01 lb/A	DuraCor at 12–20 oz/A	Emerged weeds that are actively growing	Annual, biennial, and perennial broadleaf weeds	Can be blended onto dry fertilizer. Do not apply into water. Do not apply more than twice per year or exceed 20 ounces per acre per year. Allow 30 days between sequential applications. DuraCor residues in animal manure, urine, or hay may damage sensitive broadleaf plants. Do not plant sensitive broadleaf plants on treated sites without successful bioassay. Do not harvest hay less than 14 days after application.
	aminopyralid at 0.06–0.11 lb/A plus 2,4-D at 0.5–0.9 lb/A	Grazon Next at 1.5–2.6 pt/A in 20 gal water with 0.25% v/v nonionic surfactant	To actively growing weeds	Broadleaf weeds	Grazon Next will severely damage legumes. Do not plant legumes in treated areas until field bioassay proves herbicide residues will not damage crop. Manure and urine from animals grazed on treated sites or fed treated hay within the last 3 days will injure legumes or damage broadleaf plants. Manure should not be used in areas sensitive broadleaf plants will be placed. Treated hay can only be used on farm where applied unless permitted by supplemental label.
	aminopyralid at 0.4–0.11 lb ae plus picloram at 0.08–0.21 lb ae plus fluroxypyr at 0.08–0.21 lb/A ae	MezaVue at 12–32 oz/A	Emerged weeds that are actively growing	Annual, biennial, and perennial broadleaf weeds and woody plants	Do not exceed 32 ounces per acre per year. Do not apply within the root zone of desirable or sensitive trees. Do not reseed forage grasses less than 3 weeks after application or apply to newly seeded forage before tillering or stolons of sprigged bermudagrass grow 6 inches. Do not reseed legumes or broadleaf crops until soil bioassay indicates it is safe. Do not harvest hay within 7 days after application. Do not graze or harvest forage for lactating dairy animals less than 14 days after application. Remove livestock from treated forage or sites 3 days before slaughter. Treated hay can only be used on farm where applied unless permitted by supplemental label.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Grass pastures, established	aminopyralid at 0.06–0.11 lb/A	Milestone at 4–7 oz/A in 20 gal water with 0.25% v/v nonionic surfactant	To actively growing broadleaf weeds	Tropical soda apple, others	Milestone will severely damage legumes. Do not plant legumes until successful field bioassay proves concentrations will not damage crop. Manure and urine from animals grazed on treated sites or fed treated hay within the last 3 days will injure legume or broadleaf plants. Manure should not be used in areas where sensitive broadleaf plants are desired. Treated hay can only be used on farm where applied unless permitted by supplemental label.
	chlorsulfuron at 0.01–0.06 lb/A	Telar at 0.25–1.33 oz/A	Apply to young, actively growing annual weeds and while biennial or perennial weeds are still in rosette	Annual and some biennial and perennial	Make only one application per season. Do not exceed 1.3 ounces per acre per season. Add 1–2 quarts nonionic surfactant per 100 gallons of spray.
	dicamba at 0.25–2 lb/A	0.5–2 pt/A for broadcast or 25–50% solution in oil for individual stem or cut stump treatments (2.67 lb/gal formulation)	When weeds are actively growing for foliar treatments or prior to active spring growth for stem applications with oil	Most broadleaf weeds and small brush	Do not broadcast spray more than 1 quart per acre in one season. Do not exceed 1 pint per acre on small grains grown for pasture.
	diflufenzopyr at 0.005–0.01 lb/A plus dicamba at 0.015–0.03 lb/A	Overdrive at 4–8 fl oz/A	Apply to young, actively growing weeds	Annual and perennial broadleaf weeds	Use low rate for annuals, high rate for biennials and perennials. Add 1 quart of nonionic surfactant per 100 gallons of spray or 1.5–2 pints per acre of methylated seed oil. Do not exceed 8 ounces per acre per season. Do not plant any rotational crop within 30 days of application. Do not apply to small grains grown for grazing.
	imazapyr at 0.03–0.75 lb/A	2–48 oz/A spot broadcast or 0.5–5% solution for handgun spot treatment (2 lb/gal formulation) with 0.25% v/v nonionic surfactant	To actively growing weeds and woody species as foliar spray or to dormant trees and brush as injection, hack and squirt, or cut stump treatment	Several annual and perennial grasses and broadleaf weeds plus vines and undesirable woody plants	Do not treat more than 10% of the area grazed or cut for hay. Treatments will damage desirable forage species. Do not apply more than 48 ounces per acre per year.
	pendimethalin at 0.8–3.5 lb/A	Prowl H2O at 1.1–4.2 qt/A in 20–40 gal water	Apply to established cool-season grass forages (six or more tillers per plant) or warm-season forages that have been mowed or cut once	Annual grasses and small-seeded broadleaf weeds, such as spiny amaranth, bitterweed, and spurge	Do not apply to warm-season grass forage after spring green-up before first cutting. It may be applied in single application or in sequential applications 30 days apart. Do not apply if surface water is on field. Do not apply more than 4.2 quarts per acre per season.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Grass pastures, established	picloram at 0.44–0.89 lb/A plus fluoxypyr at 0.36–0.72 lb/A	Surmount at 3–6 pt/A or 0.5–2% solution for spot treatment	Apply to actively growing weeds	Many broadleaf weeds and hard-to-control perennial weeds and woody plants	Use lower rate for small annual weeds, higher rates for larger annuals or established perennials. Add 1–2 quarts of nonionic surfactant per 100 gallons of spray. Do not use grass or hay from treated areas or manure from animals grazing treated forage to compost desirable plants.
	saflufenacil at 0.02–0.08 lb/A	Sharpen at 1–4 oz in 20 gal water with 1% methylated seed oil (MSO); add AMS at 1–2% w/v for applications to dormant forage grasses	Before weeds exceed 3–6 inches high	Broadleaf weeds	Do not exceed 1 ounce per acre per application when applied to actively growing bermudagrass or apply to actively growing bahiagrass, buffalograss, or switchgrass. Do not apply more than 6 ounces per acre per season. Do not apply to annual grass forages, alfalfa, or clovers.
	triclopyr at 0.25–2 lb/A	1–4 pt/A broadcast, 1–1.5% solution for spot spraying weeds, or 20–33% solution with oil for dormant woody stem (4 lb/gal formulation)	When weeds are actively growing for broadcast or spot sprays or before bud break for applications with oils to woody stems	Broadleaf weeds and woody vines, shrubs, and trees	Add 1–2 quarts nonionic surfactant per 100 gallons with broadcast sprays.
	triclopyr at 0.42–1.1 lb/A plus clopyralid at 0.14–0.38 lb/A	Redeem R&P at 1.5–4 pt/A	To actively growing grasses	Broadleaf weeds	Use lower rates for weeds such as bitter sneezeweed, ragweed, thistle, marshelder, and croton, higher rates for spiny pigweed, horsenettle, and dogfennel.
	triclopyr at 0.38–1.5 lb/A plus fluoxypyr at 0.125–0.5 lb/A	PastureGard at 2–8 pt/A for broadcast applications, or 1–2% solution for spot treatment, or 50:50 mix with oil and 10% penetrant for individual woody stem or cut stump treatment	Apply foliar treatments to weeds that are actively growing and not stressed, and mixtures with oils to dormant stems	Broadleaf annual and perennial weeds, including tropical soda apple, or woody perennials, such as vines, brambles, shrubs, and trees	Use lower rates for small annual weeds, higher rates for large annuals or perennials. Add 1–2 quarts of nonionic surfactant per 100 gallons of spray for applications.
	triclopyr at 0.25–1 lb/A plus 2,4-D at 0.5–2 lb/A	1–4 qt/A or 1–1.5% solution with water for broadcast or 1–4% solution with oil (3 lb/gal formulation) for dormant woody stems	When weeds are actively growing for broadcast applications or just before breaking dormancy for woody stem treatments	Annual and perennial broadleaf weeds and some woody vines and shrubs	Adding 1–2 quarts of nonionic surfactant per 100 gallons of spray may enhance control. Do not reseed pastures within 3 weeks after treatment. Do not exceed 4 quarts per acre per season. Do not apply to newly seeded grasses until after tillering.

Table 4 (continued)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Bermuda and bahiagrass, established	hexazinone at 0.69–1.13 lb/A	Velpar L 2.75–4.5 pt/A	To actively growing smutgrass from May to October 15	Smutgrass and many broadleaf weeds	Do not apply near the root system of desirable woody plants such as oak trees. Apply with 1 quart of surfactant per 100 gallons of water.
	indaziflam at 0.04–0.07 lb/A	Rezilon at 3–5 oz in ≥15 gal/A	Before weed emergence	Annual grasses and small-seeded broadleaf weeds	Apply no more than 6 ounces per acre per year. Sequential applications must be separated by 60 days. Do not seed cool-season grasses before a bioassay done 18 months after application.
	sulfosulfuron at 0.06–0.09 lb/A	Maverick/Outrider at 1.3–2 oz in 20 gal water with 0.25% nonionic surfactant (v/v)	To actively growing weeds	Johnsongrass, sedges, ryegrass, mustards, and buttercup	Sequential applications can be made no sooner than 40 days after the previous treatment. Do not exceed 2.66 ounces per acre per year.
Bermudagrass, established	imazapic at 0.06–0.19 lb/A plus glyphosate at 0.1–0.4 lb/A	Journey at 10–32 oz/A broadcast or as 0.625–13% solution for spot treatments	To actively growing weeds	Vaseygrass, johnsongrass, crabgrass, signalgrass, barnyardgrass, sandbur, and nutsedge	Methylated seed oil is preferred over nonionic surfactant. Use 1.5–2 pints per acre for broadcast or 1% for spot applications. Do not apply during transition from dormant to active growth. Do not apply to World Feeder, Tifton 85, or hybrid bermudagrass. Do not exceed 21 ounces per acre on coastal bermudagrass. Do not apply within 30 days of aeration. Bermudagrass growth will likely be suppressed 30 days.
	metsulfuron methyl at 0.0038–0.015 lb/A	Metsulfuron at 0.1–0.4 oz/A in a minimum of 10 gal/A or 1 oz/100 gal for spot applications	To actively growing weeds; for bahiagrass control, use 0.3 oz after green-up and before seedhead formation	Pensacola bahia, wild garlic, buttercup, bitter sneezeweed, pigweed, and woolly croton	Add 0.5–1 quart of nonionic per 100 gallons of spray solution surfactant. Will not control Argentine bahiagrass. Do not apply to bahiagrass pastures. Following Cimarron applications at 0.1–0.3 ounce per acre, red, white, or sweet clover, bermudagrass, ryegrass, or tall fescue can be planted after 4 months; wheat after 1 month; barley or oats after 10 months. Do not apply more than 1.67 ounces per acre per season. Do not use on soils with pH above 7.9.
	nicosulfuron at 0.35–0.53 lb/A plus metsulfuron methyl at 0.009–0.014 lb/A	Pastora at 1–1.5 oz/A with 0.25% nonionic surfactant (v/v)	To actively growing annual grassy weeds less than 2 inches tall, annual broadleaf weeds less than 4 inches tall, and some perennial weeds	Johnsongrass, vaseygrass, ryegrass, and many broadleaf weeds	Crop oil concentrate at 1% (v/v) may increase weed control but may also increase potential for bermudagrass injury. Bermudagrass must be established for at least one season before application.

Table 4 (*continued*)

Crop, Weed, or Situation	Active Chemical per Treated Land Acre	Formulation Needed for 1 Acre Treated Broadcast	Time of Application	Weeds Controlled	Special Instructions and Remarks
Bermudagrass, dormant	paraquat at 0.25–0.5 lb/A	1–2 pt/A (2 lb/gal formulation), 0.8–1.6 pt/A (2.5 lb/gal formulation), or 0.6–1.3 pt/A (3 lb/gal formulation) in 20–40 gal water with 0.25% v/v nonionic surfactant	Mid-March	Emerged annual broadleaf weeds and grasses in dormant bermuda	Add 1 quart of nonionic surfactant per 100 gallons of spray solution. Must be applied prior to seed head emergence for satisfactory control of little barley.
Bermudagrass and bahiagrass, sod suppression	paraquat at 0.25–0.5 lb/A	1–2 pt/A (2 lb/gal formulation), 0.8–1.6 pt/A (2.5 lb/gal formulation), or 0.6–1.3 pt/A (3 lb/gal formulation) in 20–40 gal water with 0.25% v/v nonionic surfactant	Early fall to sods not exceeding 3 inches in height	Suppresses summer grass while winter annuals establish	Add 1 quart of nonionic surfactant per 100 gallons of spray.
Endophyte-infested tall fescue destruction	paraquat at 0.25–0.5 lb/A	1–2 pt/A (2 lb/gal formulation), 0.8–1.6 pt/A (2.5 lb/gal formulation), or 0.6–1.3 pt/A (3 lb/gal formulation) in 20–40 gal water with 0.25% v/v nonionic surfactant followed by a second application 10–21 days later at the same rate	When fescue is actively growing	Endophyte-infected fescue and annuals	Add 0.5–1 quart of nonionic surfactant per 100 gallons of spray solution. If new growth appears within 10–14 days, make a second application. Do not exceed 3 pints per acre.
	glyphosate at 0.75 lb/A	Glyphosate 4/5 lb/gal at 2/1.2 pt in 3–10 gal water plus 0.5–1% surfactant	When fescue is actively growing in the fall and plants are 6–12 inches tall	Endophyte-infected fescue and other annual plants	A sequential application of 1 pint plus surfactant will improve long-term control.

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