

PERENNIAL GRASS

PERENNIAL GRASS INSECT CONTROL

(Including bermudagrasses, bahiagrasses, fescues, and other perennial pasture grasses)

Will Hudson, Extension Entomologist and David Buntin, Research Entomologist

PEST	MATERIAL AND FORMULATION ¹	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS
Bahiagrass borer, billbug larvae, white grubs, white-fringed beetle larvae			No effective insecticides labeled for control of these insects in pastures. If practical, rotate fields to crops where preplant or at-planting insecticides can be used to control these insects. <u>Exception:</u> Deep turning of infested pastures usually reduces bahiagrass borer populations to the point that bahiagrass or other grasses can be reseeded into the pasture.
Chinch bug	Mow or burn.		WHEN TO TREAT FOR INSECTS IN PERENNIAL-GRASS PASTURES
	Karate	1.28 to 1.92 ozs.	
	zeta-cypermethrin (Mustang Max)	2.24 to 4.0 ozs.	
Cutworms	Materials applied for armyworms will give helpful control.		APHIDS: Treat if heavy infestations are causing leaf discoloration over large areas of the field.
Armyworm, Caterpillars, Fall armyworm, Striped Grass Looper	carbaryl (Sevin) 80S 50WP	1¼ to 1 7/8 lbs. 2-3 lbs.	CHINCH BUGS: Treat if populations are causing grass leaves to wilt over large areas of the field.
	chlorantraniliprole (Coragen)	3.5 - 5.0 oz.	CUTWORMS, FLEA BEETLES, GRASSHOPPERS: Treat if heavy populations appear to be defoliating grass excessively.
	cyfluthrin (Baythroid XL)	2.6 - 2.8 .	FIRE ANTS: Treat in pastures where heavy livestock birthing will occur. In hay pastures, treat when mounds are so numerous they interfere with haying operations.
	Karate	1.28 to 1.92 ozs.	GREEN JUNE BEETLE LARVAE: Treat when populations average 1 larva per square yard.
	methoxyfenozide (Intrepid) 2F	4 to 8 ozs.	LEAFHOPPERS: Treat if heavy infestations are causing the grass to appear off-color or unthrifty.
	spinosad (Tracer)	1 to 2 ozs.	SPITTLEBUGS: Treat when 1 or more adult spittlebug is found per square foot.
	methomyl (Lannate) 2.4 LV 90SP (Use methomyl on bermudagrass only.)	1 to 2 pts. ¼ to ½ lb.	THRIPS: Treat if heavy infestations are causing discolorations and damage over large areas of the field.
	Dimilin 2L	1-2 ozs.	PESTICIDE USE PRECAUTIONS
	zeta-cypermethrin (Mustang Max)	2.24 to 4.0 ozs.	Apply any of the pesticides listed in this table with aerial or ground equipment as label directs. Where a range of rates is given for a material, use the low rate on low-growth grass or small larvae and the high rate on dense grass growth or large larvae.
	Voliam Express	5.0 - 9.0 oz.	<u>Amdro</u> : 7 day PHI for hay. Okay for grazing. <u>Baythroid</u> : 0 day PHI for hay and grazing, see label for other restrictions. <u>carbaryl (Sevin, etc.)</u> : Do not graze or cut for hay for 14 days after application. <u>cypermethrin (Mustang MAX)</u> : 0 day PHI for hay or forage; Do not apply more than 0.10 lb. per acre per season. <u>diflubenzuron (Dimilin)</u> : 0 day for grazing; 1 day PHI for hay; no more than 2 ozs. per cutting.
Fire ants	Hydramethylnon (Amdro)	1-1½ lb.	<u>Intrepid</u> : 0 day grazing interval, 7 day PHI for hay. One application per cutting. <u>Karate</u> : 0 day grazing restriction, 7 day PHI for hay, see label for application restrictions.
	Methoprene (Extinguish)		<u>methomyl</u> : Do not cut for hay within 3 days, or graze or feed treated crop within 7 days of last application. Do not apply more than 0.9 lb ai/acre/crop. Do not make more than 4 applications per crop.
	spinosad (Justice)	mound treatment only	<u>methyl parathion</u> : Do not graze or cut for hay within 15 days of application.
	fenoxycarb (Award)	horse pastures only	<u>spinosad (Tracer)</u> : Do not harvest hay or fodder for 3 days. Do not graze until spray has dried. Do not apply more than 6 ozs. per season. <u>Voliam Express and Coragen (chlorantraniliprole)</u> : 0 day PHI for forage or grazing; 7 day PHI for hay.

PERENNIAL GRASS INSECT CONTROL (continued)

PEST	MATERIAL AND FORMULATION ¹	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS
Flea beetles	Carbaryl (Sevin) as applied for armyworm may give helpful control.		
	Karate	1.28 to 1.92 ozs.	
Grasshoppers	malathion 8EC	20 fl. ozs.	
	cyfluthrin (Baythroid XL)	2.6 to 2.8	
	Karate	1.28 to 1.92 ozs.	
	Sevin 4L Sevin 80S	1 qt. 1.5 lbs.	
	zeta-cypermethrin (Mustang Max)	2.24 to 4.0 ozs.	
Green June beetle larvae	carbaryl (Sevin) 80S 50WP	1 7/8 lbs. 3 lbs.	
	Voliam Express	5.0 - 9.0 oz.	
Leafhoppers	Karate	1.28 to 1.92 ozs.	
	zeta-cypermethrin (Mustang Ma x)	2.24 to 4.0 ozs.	
Mole crickets	No economically effective materials currently labeled.		
Sod webworms	carbaryl (Sevin) 80S 50WP	1 ¼ lb. 2 lbs.	
	Dimilin 2L	1-2 ozs.	
	Karate	1.28 to 1.92 ozs.	
Spittlebug adults	carbaryl (Sevin) as applied for armyworm may give helpful control. (Control of immatures may require cut and burn approach.)		
	Karate	1.28 to 1.92 ozs.	
	zeta-cypermethrin (Mustang Ma x)	2.24 to 4.0 ozs.	
¹ Abbreviations used are: EC = emulsifiable concentrate, M = microencapsulated material, SP = soluble powder, L = liquid, S = sprayable powder, WP = wettable powder Numbers following liquid formulations indicate lbs. active ingredient per gallon; those following solids indicate percent active ingredient.			

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS

(Including bermudagrasses, bahiagrasses, fescues, and other perennial pasture grasses)

Tim R. Murphy, Extension Agronomist-Weed Science

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS												
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT													
NEWLY SPRIGGED BERMUDAGRASS															
diuron (Direx 4 L) (Diuron 4L) (Diuron 4L) (Diuron 80)	0.8 - 2.4 qts. 0.8 - 2.4 qts. 0.8 - 2.4 qts. 1.0 - 3.0 lbs.	0.8 - 2.4 lbs.	Preemergence applications of diuron provide fair to good control of crabgrass, crowfootgrass and goosegrass. Also provides residual control of certain annual broadleaf weeds. Diuron should be applied immediately after sprigging before weeds emerge. Bermuda sprigs should be planted 2 inches deep to lessen chance of injury. Emerged bermuda at the time of treatment may be temporarily injured. Do not graze or feed treated foliage for 70 days after diuron application. Diuron is not labeled in established forage bermudagrass.												
2,4-D (Esteron 99C) 4 lbs./gal. (2,4-D LV 4 Ester) (2,4-D LV 6 Ester)	1.0 - 2.0 qts. 1.0 - 2.0 qts. 1.3 - 3.0 pts.	1.0 - 2.0	Apply to emerged broadleaf weeds 3-4 inches tall. Provides poor preemergence control of crabgrass. Refer to specific herbicide label for use information.												
2,4-D + dicamba (WeedMaster) 2.87 + 1.0 lb./gal.	2.0 to 4.0 pts.	0.72 + 0.25 to 1.44 + 0.5	Apply 7 to 10 days after sprigging for the postemergence control of seedling broadleaf and grass weeds. Reduced control will occur if weeds are taller than 1.0 inch, or if weed seed germination occurs 10 or more days after application. Do not graze lactating dairy animals within 7 days of application. There is no grazing restriction after an application and non-lactating animals. Do not graze meat animals in treated areas within 30 days of slaughter. Do not cut for hay within 37 days of treatment.												
ESTABLISHED DORMANT BERMUDAGRASS															
paraquat (Firestorm) 3.0 lbs./gal. (Gramoxone Inteon) 2.0 lbs./gal.	0.7 - 1.3 pts. 1.0 - 2.0 pts.	0.25 - 0.5	Apply in 20 to 30 gallons of water in late winter or early spring (probably in February or March) before bermudagrass begins spring green-up. Add 1 pt. surfactant (non-ionic) per 100 gal. spray mix. Do not pasture or mow for hay until 40 days after treatment.												
glyphosate (Roundup PowerMax) (Roundup Original Max) (Roundup Weather Max) 5.5 lbs./gal.	8.0 to 11 fl. oz.	0.34 to 0.47	Apply in mid- to late-winter months to bermudagrass pastures and hayfields for the control of little barley, cheat, and to suppress Italian (annual) ryegrass. Apply before new growth appears in the spring. Bermudagrass that is not dormant at the time of application may show a slight (2 to 4 week) delay in green-up. There is no grazing or hay restriction for any type of livestock.												
ESTABLISHED FORAGE GRASSES															
2,4-D (various trade names) 4 lbs./gal.	1 qt.-2 qts.	1.0 - 2.0	Apply to weeds 2 -4 inches tall. Use low rates for small weeds, high rates for larger weeds. Apply low volatile esters from October through March. Apply only non-volatile AMINE or ACID formulations from late March through September. Do not graze lactating dairy animals for 14 days after treatment, or cut for hay for all types of livestock for 30 days after treatment. (Grazing and haying restrictions may vary - refer to product label). If thistles are present, apply while they are in the rosette stage of growth.												
2,4-D (mixed amines) Hi-Dep (3.8 lbs./gal.)	1.0 - 2.0 qts.	0.95 to 1.9	Hi-Dep consists of dimethylamine and diethanolamine salts of 2,4-D formulated for low spray volume applications. DO NOT graze dairy cattle for 7 days after application. DO NOT cut for hay for 30 days after applications.												
dicamba (Banvel) 4 lbs./gal. (Clarity) 4 lbs./gal.	1-3 pts. 1-3 pts.	0.5 - 1.5 0.5 -1.5	Controls a wide range of broadleaf weeds. There are no grazing restrictions for animals other than lactating dairy animals. Restrict grazing for lactating dairy animals as follows: <table style="margin-left: auto; margin-right: auto; border: none;"> <tr> <td></td> <td style="text-align: center;">Days Before Grazing</td> <td style="text-align: center;">Days Before Hay Harvest</td> </tr> <tr> <td style="padding-left: 20px;">Up to 1 pint</td> <td style="text-align: center;">7</td> <td style="text-align: center;">37</td> </tr> <tr> <td style="padding-left: 20px;">Up to 1 quart</td> <td style="text-align: center;">21</td> <td style="text-align: center;">51</td> </tr> <tr> <td style="padding-left: 20px;">Up to 2 quarts</td> <td style="text-align: center;">40</td> <td style="text-align: center;">70</td> </tr> </table> <p>Remove meat animals from treated areas 30 days prior to slaughter. If thistles are present, apply while they are in the rosette stage of growth. This treatment will severely injure or kill clovers and alfalfa.</p>		Days Before Grazing	Days Before Hay Harvest	Up to 1 pint	7	37	Up to 1 quart	21	51	Up to 2 quarts	40	70
	Days Before Grazing	Days Before Hay Harvest													
Up to 1 pint	7	37													
Up to 1 quart	21	51													
Up to 2 quarts	40	70													
carfentrazone (Aim EW) 1.9 lbs./gal. (Aim EC) 2.0 lbs./gal.	1.0 to 2.0 fl. oz. 1.0 to 2.0 fl. oz.	0.015 to 0.03 0.016 to 0.031	Controls numerous annual broadleaf weeds less than 3.0 inches tall. Carfentrazone does not control weedy grasses or sedges. Apply with a nonionic surfactant at 0.25% v/v, or a crop oil concentrate at 1.0% v/v. For most weeds, carfentrazone is tank-mixed with other registered grass pasture and hay field herbicides. Combining carfentrazone with other herbicides often increases overall control and speed of control. There are no grazing or haying restrictions for any type of livestock for carfentrazone.												

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ESTABLISHED FORAGE GRASSES (continued)			
2,4-D + dicamba (Weedmaster) 2.87 lbs. + 1 lb./gal. Outlaw 1.45 + 1.1 lbs./gal.	2.0 pts. to 4.0 pts.	0.72 + 0.25 to 1.44 + 0.5	For control of a broad spectrum of weeds, apply in late spring or early summer to annual or perennial broadleaf weeds before flowering. Do not graze lactating dairy animals within 7 days. There is no restriction between application and grazing for non-lactating animals. Do not cut for hay within 37 days after treatment. Do not graze meat animals in treated areas within 30 days of slaughter. If thistles are present, apply while they are in the rosette stage of growth. For horsenettle, use the high rate. Weedmaster and Outlaw will severely injure or kill clovers or alfalfa.
2,4-D + picloram (Grazon P+D) (GunSlinger) (HiredHand) 2 lbs. + 0.54 lb./gal.	2.0 pts. to 4.0 pts.	0.5 + 0.13 to 1.0 + 0.26	Controls annual and perennial broadleaf weeds. Use only in PERMANENT GRASS PASTURES AND HAYFIELDS. 2,4-D + picloram may also be applied at 4.0 pts./acre or less to permanent pastures that will be seeded with cool-season grasses (ryegrass, tall fescue). Delay planting for 21 days after application. Small grains should not be planted in treated areas for 60 days after application. For permanent pastures that have been over seeded with small grains or ryegrass, do not apply at rates in excess of 1.5 pts./acre and until over seeded ryegrass or small grains are well-established and at the tillering stage of growth. Clover seeding restrictions are as follows: fall-seeding is permitted if Grazon P+D at 2 pts./acre or less is applied no later than June (4 month plant back). Spring (Feb. – Mar.) seeding is permitted the following spring for Grazon P+D at 2 to 3 pts./acre if applied no later than Sept. 15 the previous year. The Gunslinger label indicates that legume establishment may not be successful if done within 12 months of application. 2,4-D + picloram may be used at 1.5 pts./acre after establishment of newly-sprigged bermudagrass once stolons have reached 6 inches in length. This herbicide is not recommended for use in rotational systems that utilize broadleaf crops or in temporary summer or winter grazing grass systems unless temporary grass is seeded into a permanent pasture. Do not graze lactating dairy animals on treated areas within 7 days after application. There are no grazing restrictions for non-lactating dairy animals, horses, sheep, goats and other types of livestock. Do not harvest grass cut for hay from treated areas for 30 days. Do not use hay from treated areas for composting or mulching of susceptible broadleaf crops. Withdraw meat animals from treated forage at least 3 days before slaughter. Do not transfer livestock from treated areas, or from 2,4-D + picloram treated hay feeding areas on to broadleaf crop areas without first allowing livestock to graze for 7 days on an untreated grass pasture. Do not store or feed 2,4-D + picloram treated hay on fields that will be planted to broadleaf crops. Do not use manure from livestock grazing on 2,4-D + picloram treated areas on gardens, broadleaf crops or orchards. 2,4-D + picloram will injure or kill legumes such as clovers and alfalfa. Restricted Use Herbicide.
picloram + fluoxypyr (Surmount) 1.2 + 0.96 lb./gal.	1.5 pts. to 6.0 pts.	0.22 + 0.18 to 0.9 + 0.72	Controls a wide range of herbaceous and woody broadleaf plants. Use 1.5 to 2.0 pts./ acre for herbaceous broadleaf weeds. Use 3.0 to 6.0 pts./ acre for woody brush and trees. Use only in PERMANENT GRASS PASTURES AND HAYFIELDS. This herbicide is not recommended for use in rotational systems that utilize broadleaf crops or in temporary summer or winter grazing grass systems unless temporary grass is seeded into a permanent pasture. Do not graze lactating dairy animals on treated areas within 14 days after application. There are no grazing restrictions for non-lactating dairy animals, horses, sheep, goats and other types of livestock. Do not harvest grass cut for hay from treated areas for 7 days. Do not use hay from treated areas for composting or mulching of susceptible broadleaf crops. Withdraw meat animals from treated forage at least 3 days before slaughter. Do not transfer livestock from treated areas, or from Surmount treated hay feeding areas on to broadleaf crop areas without first allowing livestock to graze for 7 days on an untreated grass pasture. Do not store or feed Surmount treated hay on fields that will be planted to broadleaf crops. Do not use manure from livestock grazing on Surmount treated areas on gardens, broad leaf crops or orchards. Surmount will injure or kill legumes such as clovers and alfalfa. New legume plantings may not be successful if seeded within one year of application. Restricted Use Herbicide.

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ESTABLISHED FORAGE GRASSES (continued)			
triclopyr + fluroxypyr (PastureGard) 1.5 + 0.5 lbs./gal.	1.5 to 8.0 pts.	0.3 + 0.1 to 1.5 + 0.5	Controls a wide range of herbaceous and woody broadleaf plants. Use 1.5 to 3.0 pts./ acre for herbaceous broadleaf weeds. Use 2.0 to 8.0 pts./acre for woody brush and trees. Do not graze lactating dairy animals on treated areas during the same growing season following application. There are no grazing restrictions for non-lactating dairy animals, horses, sheep, goats and other types of livestock. Do not harvest grass cut for hay from treated areas for 14days. Withdraw meat animals from treated forage at least 3 days before slaughter. Legumes may be planted 30 days after application. Do not reseed forage grasses for 21 days after application.
aminopyralid (Milestone) 2.0 lbs./gal.	4.0 to 7.0 fl. ozs.	0.06 to 0.11	Apply to permanent grass pastures and hayfields. Controls numerous annual and perennial broadleaf weeds - particularly effective for the control of horsenettle and tropical soda apple. There are no grazing or haying restrictions for Milestone for any type of livestock. Do not transfer livestock from treated pastures, or from Milestone treated hay feeding areas on to broad leaf crop areas without first allowing livestock to graze for 3 days on an untreated grass pasture. Do not store or feed Milestone treated hay on fields that will be planted to broadleaf crops. Do not use manure from livestock grazing on Milestone treated areas on gardens, broadleaf crops or orchards. Milestone will injure or kill legumes such as clovers and alfalfa. Do not plant legumes or broadleaf crops until a field bioassay has shown that the aminopyralid concentration in the soil is not at a level that will injure broadleaf crops (see label for instructions on conducting field bioassay).
aminopyralid + 2,4-D (ForeFront, GrazonNext) 0.33 + 2.6 7 lbs./gal.	1.5 to 2.6 pts.	0.06 + 0.5 to 0.11 + 0.9	Apply to permanent grass pastures and hayfields. Controls numerous annual and perennial broadleaf weeds - particularly effective for the control of horsenettle and tropical soda apple. Controls a wider spectrum of weed species than Milestone. There are no grazing restrictions for ForeFront and GrazonNext for any type of livestock. Do not harvest for hay within 7 days of application (all types of livestock). Do not transfer livestock from treated pastures, or from ForeFront or GrazonNext treated hay feeding areas on to broadleaf crop areas without first allowing livestock to graze for 3 days on an untreated grass pasture. Do not store or feed ForeFront or GrazonNext treated hay on fields that will be planted to broadleaf crops. Do not use manure from livestock grazing on ForeFront or Grazon Next treated areas on gardens, broadleaf crops or orchards. ForeFront and GrazonNext will injure or kill legumes such as clovers and alfalfa. Do not plant legumes or broadleaf crops until a field bioassay has shown that the aminopyralid concentration in the soil is not at a level that will injure broadleaf crops (see label for instructions on conducting field
aminopyralid + metsulfuron (Chaparral DF) 0.62 + 0.0945 lb./lb.	1.5 to 3.0 ozs.	0.06 + 0.0009 to 0.12 + 0.018	Apply to permanent grass pastures and hayfields. Bermudagrass should be established for 60 days and tall fescue for two years prior to use. Apply with 0.25% v/v nonionic surfactant per 100 gal. of spray mix. Controls numerous annual and perennial broadleaf weeds - particularly effective for the control of horsenettle and tropical soda apple. Also, controls 'Pensacola' bahiagrass. Controls a wider spectrum of weed species than Milestone. There are no grazing or haying restrictions for Chaparral for any type of livestock. Do not transfer livestock from treated pastures, or from Chaparral treated hay feeding areas on to broad leaf crop areas without first allowing livestock to graze for 3 days on an untreated grass pasture. Do not store or feed Chaparral treated hay on fields that will be planted to broadleaf crops. Do not use manure from livestock grazing on Chaparral treated areas on gardens, broadleaf crops or orchards. Chaparral will injure or kill legumes such as clovers and alfalfa. Do not plant legumes or broadleaf crops until a field bioassay has shown that the aminopyralid concentration in the soil is not at not at a level that will injure broadleaf crops (see label for instructions on conducting field bioassay). On tall fescue, applications in the early spring may suppress seedhead production and reduce hay yield. To minimize injury to tall fescue; a) tank-mix 2,4-D, b) use the lowest recommended rate for the target weeds, c) use a 1/16 to 1/8% v/v surfactant concentration, d) make applications in the late spring or fall months after 5 to 6 inches of new growth has occurred, and e) do not add a surfactant when applied with liquid N.

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ESTABLISHED FORAGE GRASSES (continued)			
2,4-D + triclopyr (Crossbow) 2 lbs. + 1 lb./gal.	1 to 6 qts		Apply to established grass pastures for control of broadleaf weeds and woody plants. Woody plant control requires 6 qts./A. or higher rate. Desirable forage broadleaf plants such as clover or alfalfa may be killed if sprayed. Grazing and haying restrictions: Grazing or harvesting of green forage: (1) Lactating dairy animals - Two gallons/acre or less; Do not graze or harvest green forage from treated area for 14 days after treatment. Greater than 2 gallons to 4 gallons/acre: Do not graze or harvest green forage until next growing season. (2) Other livestock - Two gallons/acre or less: No grazing restrictions. Greater than 2 gallons to 4 gallons/acre: Do not graze or harvest green forage from treated areas for 14 days after treatment. Note: If less than 25% of a grazed area is treated, there is no grazing restriction. Haying (harvesting of dried forage): (1) Lactating dairy animals: Do not harvest hay until next growing season. (2) Other livestock: Two gallons/acre or less: Do not harvest hay for 7 days after treatment. Greater than 2 gallons to 4 gallons/acre: Do not harvest hay for 14 days after treatment.
triclopyr + clopyralid (Redeem) 2.25 lbs. + 0. 75 lb./gal.	1.5 to 4.0 pts..	0.38 to 1.12 + 0.14 to 0.38	Apply for control of broadleaf weeds. Use 2.5 to 4.0 pts./acre to control dogfennel, spiny amaranth and horsenettle. Desirable forage broadleaf plants such as clover or alfalfa may be killed if sprayed. Do not apply to newly-seeded or sprigged grasses until they are well established as evidenced by tillering, development of a secondary root system and vigorous growth. Grazing and haying restrictions: Grazing or harvesting of green forage: (1) Lactating dairy animals - Do not graze or harvest green forage from treated area for 14 days after treatment. (2) Other livestock - No grazing restrictions. Haying (harvesting of dried forage): (1) Lactating dairy animals: Do not harvest hay until next growing season. (2) Other livestock: Do not harvest hay for 7 days after treatment.
imazapic (Impose) (Panoramic) 2.0 lbs./gal	4.0 - 8.0 fl. ozs.	0.063 - 0.125	Apply to established bermudagrass. Do not apply to other forage grass species. Provides postemergence control of crabgrass, sandbur, broadleaf signalgrass, johnsongrass, vaseygrass, nutsedge and certain other weeds. This herbicide does not control pricklypear cactus, dallisgrass and goosegrass. Apply in late spring to mid-summer after bermudagrass has reached 100% green-up growth stage. Do not apply during spring transition or to dormant bermudagrass. Imazapic is not recommended on newly-sprigged or seedling bermudagrass during the grow-in period. Research has shown that imazapic will moderately injure (yellowing of bermudagrass foliage), and suppress bermudagrass growth for approximately 20 to 40 days after application. Additionally, bermudagrass hay yields may be reduced 30 to 50% at the first hay harvest (usually 30 days) following application. Imazapic should not be applied unless a bermudagrass yield reduction is acceptable. No bermudagrass hay yield reduction has been observed at the 2nd, 3rd and 4th hay harvest following an application at 4.0 fl. ozs./acre. Add a nonionic surfactant (preferred) at 0.25% v/v or methylated seed oil at 1.5 to 2.0 pts./acre to the spray mix. The use of 2 to 3 pts./acre of 28% N, 32% N, 10-34-0 or ammonium sulfate in combination with the recommended rate of surfactant may increase control. Liquid fertilizer may be used as the sole spray carrier for imazapic, but control may be reduced. Do not add a surfactant or methylated seed oil if liquid fertilizer is used as the sole spray carrier. Annual ryegrass may be seeded 60 days after application. There is no grazing restriction for imazapic any type of livestock. Do not cut for hay for 7 days after application.
sulfosulfuron (OutRider) 75DF	1.33 ozs.	0.062	Recommended for the control of emerged johnsongrass and sedge species in bermudagrass and bahiagrass forage systems. DO NOT use OutRider on other forage grass species such as tall fescue. OutRider does not control annual grasses such as crabgrass and sandbur, or perennial grasses such as dallisgrass and vaseygrass. Apply to johnsongrass a minimum of 18 in. tall up to the heading stage. Apply to sedges 6 to 10 inches tall. Add a nonionic surfactant at 0.25% v/ v. OutRider may be tank-mixed with other pasture herbicides; however, amine formulations may reduce johnsongrass control. Grazing may occur immediately before or after application; however, control may be reduced by grazing of johnsongrass foliage. For best results, do not graze or mow for two weeks before or after application.
pendimethalin (Prowl H ₂ O) 3.8 lbs./gal.	3.1 to 4.2 qts.	3.0 to 4.0	Provides good preemergence control of summer annual grasses such as crabgrass and sandbur and some annual broadleaf weeds. Prowl H ₂ O is labeled only for established dormant bermudagrass. Applications to newly-sprigged bermudagrass, tall fescue, bahiagrass and other perennial forage grasses are not recommended. Apply Prowl H ₂ O to established bermudagrass in winter dormancy in the late winter and early spring. In most areas of Georgia, this would be February through early March. Crabgrass begins to germinate when soil temperatures average 55°F. Prowl H ₂ O must be applied before crabgrass or other annual grasses germinate. Research conducted in Georgia has shown that usually 3.0 to 4.0 lbs. ai/acre (3.1 to 4.2 quarts per acre) is needed for season-long annual grass control. Prowl H ₂ O may be tank-mixed with other herbicides registered for use on forage bermudagrass. Prowl H ₂ O should not be applied less than 45 days prior to bermudagrass hay harvest. Do not graze Prowl H ₂ O treated bermudagrass until 60 days after application.

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ESTABLISHED FORAGE GRASSES (continued)			
hexazinone (Velpar) 75DF (Velpar) 2L	0.9 - 1.5 lbs. 2.75 - 4.5 pts.	0.67 - 1.12 0.67 - 1.12	Controls smutgrass in established bermudagrass and bahiagrass pastures and hayfields. Use low rate on coarse sandy soils, and high rate on fine-textured soils. Not recommended for use on tall fescue. Make only one application per year with ground equipment at a minimum spray volume of 25 gpa. Make application in April to late July time frame, when soil moisture is good, humidity is high and when air temperatures are above 80° F. Best results occur when one-half inch of rain fall occurs within two weeks of application. Hexazinone will moderately to severely injure bermudagrass and may eliminate the first cutting of hay. Bahiagrass and bermudagrass will recover from temporary burn and yellowing within two to four weeks of application. Use only on bermudagrass and bahiagrass that has been established one year or more. DO NOT apply hexazinone near oak trees. DO NOT graze or feed treated forage or hay within 60 days after application.
triclopyr (Remedy) 4 lbs./gal.	1.0 - 2.0 pts.	0.5 - 1.0	Apply to established grass pastures for control of broadleaf weeds and brush. Triclopyr may be tank-mixed with 2,4-D for broader spectrum weed control and control of sensitive woody species. Desirable forage broadleaf plants such as clover or alfalfa may be killed if sprayed. Applications at air temperatures > 85 F. may cause moderate to severe bermudagrass injury for two to three weeks. <u>Grazing restrictions:</u> Grazing or harvesting green forage: (1) Lactating dairy animals: Two quarts/acre or less: do not graze or harvest green forage from treated area for 14 days after treatment. (2) Other livestock: Two quarts/acre or less: no grazing restrictions. <u>Haying restriction:</u> (1) Lactating dairy animals: Do not harvest hay until the next growing season. (2) Other livestock: Two quarts/acre or less: Do not harvest hay for 7 days after treatment. Slaughter Restrictions: Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter.
glyphosate (Roundup PowerMax) 5.5 lbs./gal. (supplemental label)	10 fl. oz.	0.43	Apply after the first bermudagrass cutting when bermudagrass has not yet initiated regrowth. Controls crabgrass, field sandbur, seedling johnsongrass and most annual grasses. Applications made after regrowth has begun will damage bermuda grass. DO NOT graze or cut for hay for 28 days after application. Make only one application per year. DO NOT make an application after the first cutting if the field has previously received a glyphosate application during the winter months.
diflufenzopyr + dicamba (Overdrive) 76.4% DF 0.2 lbs. + 0.5 lbs./gal.	4.0 ozs. to 8.0 ozs.	0.05 + 0.125 to 0.1 + 0.25	Controls annual and perennial broadleaf weeds. Add a nonionic surfactant at 0.25% v/v or methylated seed oil at 2.0 pts./acre to the spray mix. Diflufenzopyr has been shown to improve the activity of "auxin-like" herbicides such as triclopyr, clopyralid and picloram. May be tank-mixed with Grazon P+D, Remedy, Redeem, 2,4-D and Cimarron to increase spectrum of weed species controlled. Overdrive is rainfast within 4 hours after application. DO NOT plant any rotational crop within 30 days of an Overdrive application. There are no grazing or haying restrictions for Overdrive for any type of livestock.
metsulfuron (Metsulfuron) 60EG (Patriot) 60DF	0.1 - 0.4 oz.	0.004 - 0.015	Apply to established bermudagrass for the control of 'Pensacola' bahiagrass and certain broadleaf weeds. Bermudagrass should be established for 60 days and tall fescue for two years prior to use. Apply <u>1 pt.-1 qt. nonionic surfactant per 100 gal. of spray mix</u> . On tall fescue, applications in the early spring may suppress seedhead production and reduce hay yield. To minimize injury to tall fescue; a) tank-mix 2,4-D with metsulfuron, b) use the lowest recommended rate for the target weeds, c) use a 1/16 to 1/8% v/v surfactant concentration, d) make applications in the late spring or fall months, e) do not exceed 0.2 oz. product acre and f) do not add a surfactant when applied with liquid N. Metsulfuron tank-mixes with liquid fertilizer are not recommended for 'Pensacola' bahiagrass control. Not effective for the control of 'Common' and 'Argentine' bahiagrass. Spot treatments of metsulfuron at 1.0 oz. product per 100 gal. of water may be used for the control of multi flora rose and blackberry. Pasture legumes will be severely injured or killed by metsulfuron. There is no grazing or haying restriction for metsulfuron. Metsulfuron may be tank-mixed with Grazon P+D, Banvel, 2,4-D, Weedmaster, Milestone, ForeFront and Remedy or purchased as a co-pack product with 2,4-D + dicamba.

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ESTABLISHED FORAGE GRASSES (continued)			
metsulfuron (48%) + chlorsulfuron (15%) (Cimarron Plus) 63 DF	0.125 - 1.25 ozs.	0.004 - 0.04 + 0.001 - 0.01	Apply to established bermudagrass for the control of 'Pensacola' bahiagrass and certain broadleaf weeds. Bermudagrass should be established for 60 days and tall fescue for two years prior to use. <u>Apply 1 pt.-1 qt. nonionic surfactant per 100 gal. of spray mix.</u> On tall fescue, applications in the early spring may suppress seedhead production and reduce hay yield. To minimize injury to tall fescue; a) do not use more than 0.5 oz. product/acre, b) use the lowest recommended rate for the target weeds, c) use a 1/16 to 1/8% v/v surfactant concentration, d) make applications in the late spring or fall months, e) do not exceed 0.3 oz. product/acre and f) do not add a surfactant when applied with liquid N. Cimarron Plus tank-mixes with liquid fertilizer are not recommended for 'Pensacola' bahiagrass control. Not effective for the control of 'Common' and 'Argentine' bahiagrass. Pasture legumes will be severely injured or killed by Cimarron Plus. There is no grazing or haying restriction for Cimarron Plus. Cimarron Plus may be tank-mixed with Grazon P+D, Banvel, 2,4-D, Weedmaster and Remedy.
metsulfuron (60 DF) + 2,4-D + dicamba 2.9 + 1.0 lbs./gal (Cimarron Max)	0.25 oz. + 1.0 pt.	0.009 + 0.4 + 0.125.	Cimarron Max is a 2 part (co-pack) product used for annual and perennial broadleaf weed control in bermudagrass pastures. Also controls 'Pensacola' bahiagrass. Bermudagrass should be established for 60 days and tall fescue for two years prior to use. <u>Apply 1 pt.-1 qt. nonionic surfactant per 100 gal. of spray mix.</u> On tall fescue only, applications in the early spring may suppress seedhead production and reduce hay yield. To minimize injury to tall fescue; a) use the lowest recommended rate for the target weeds, b) use a 1/16 to 1/8% v/v surfactant concentration, c) make applications in the late spring or fall months, and d) do not add a surfactant when applied with liquid N. Cimarron Max tank-mixes with liquid fertilizer are not recommended for 'Pensacola' bahiagrass control. Not effective for the control of 'Common' and 'Argentine' bahiagrass. Pasture legumes will be severely injured or killed by Cimarron Max. There is no grazing restriction for non-lactating animals for Cimarron Max. The grazing restriction for lactating dairy animals is 7 days. Do not harvest for hay for 37 days after treatment. Remove meat animals from treated areas 30 days prior to slaughter.
Chlorsulfuron (Telar) 75DF	0.25 to 1.0 oz.	0.012 to 0.047	Controls many broadleaf weeds such as blackberry, pigweeds, and wild radish. Not effective for the control of horsenettle and common ragweed. May be used at rates up to 0.5 oz./acre in tall fescue. In bermudagrass and bahiagrass rates as high as 1.0 oz./acre may be used. Add a nonionic surfactant at 0.25% v/v to the spray mix. Chlorsulfuron has no grazing or haying restriction for any type of livestock.
Nicosulfuron (56.2%) + Metsulfuron (15.0%) (Pastora) 71.2 WDG	1.0 to 1.5 ozs.	0.035 to 0.053 + 0.009 to 0.014	Pastora is recommended only for use on bermudagrass that has been established for one year. Pastora can temporarily injure (yellowing, stunting) bermudagrass. Injury can be decreased by using Pastora during bermudagrass winter dormancy, during green-up with less than 2 inches of new growth and within 7 days after cutting for hay. Applications at other times may reduce bermudagrass production. Pastora is not recommended for use during bermudagrass "grow-in" from sprigs or seed. Applications to tall fescue, bahiagrass, overseeded winter annual forage grasses and other perennial forage grasses are not labeled. This herbicide has shown good to excellent control of sandbur, Texas panicum, fall panicum, broadleaf signalgrass and barnyardgrass less than 2 inches tall. Correct application timing is critical for control of annual grasses. Pastora has also shown excellent activity on Italian ryegrass, johnsongrass and 'Pensacola' bahiagrass when treated as per label directions. Pastora at 1.0 oz/acre applied twice also has good activity on vaseygrass (see supplemental label). Broadleaf weeds controlled by Pastora include bitter sneezeweed, buttercup, chickweed sp., Carolina geranium, curly dock, dogfennel, henbit, horseweed, musk thistle, smartweed sp., and wild garlic. A nonionic surfactant at 0.25% v/v is the preferred adjuvant for Pastora. This herbicide has no grazing or haying restriction for any type of livestock.

WEED CONTROL IN GRASS PASTURES AND HAYFIELDS (continued)

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
POSTEMERGENCE - Spot or Wiper Applications			
glyphosate (Roundup WeatherMax) 5.5 lbs./gal. (Roundup Original) 4.0 lbs./gal.	Rate varies with species and application	Rate varies with species and application	Glyphosate may be applied in wiper applicators to weeds emerged above the forage grass, or applied as a spot treatment. Further applications may be made in the same area at 30-day intervals. Forage grasses, alfalfa, or clover coming in contact with the glyphosate will be injured or killed. Remove domestic livestock before application and wait 7 days after application before grazing livestock or harvesting. Other brands of glyphosate may also be labeled for this use.
tebuthiuron (Spike 20P) 20% pellet	See label		Spike 20P pellets may be applied as a spot treatment in perennial summer grass pastures for control of individual trees or scattered stands of brush. Apply 0.75 ounce per 100 square feet of soil surface over the root systems of clumps of brush. Apply in early spring. Stands of cool season grasses such as fescue may be reduced by Spike application. Applications to or near pine trees will cause injury or death of the tree. Do not cut for hay for one year after application. Grazing is allowed after application if 20 pounds per acre or less is used.
MIXTURES - Grass-Lespedeza, Grass-Clover			
2,4-D amine (4 lbs./gal.)	0.5 - 1 pt.	0.25 - 0.5	Apply only one treatment per year to perennial clovers. 2,4-D amine will cause slight to moderate injury to legumes. Refer to specific herbicide label for use information.
CONVERSION TO FUNGUS-FREE FESCUE			
paraquat (Firestorm) 3.0 lbs.gal. (Gramoxone Inteon) 2.0 lbs./gal.	0.7 - 1.3 pts. 1.0 - 2.0 pts.	0.25 - 0.5	Apply paraquat in the fall to actively-growing, endophyte-infected fescue 2 to 3 weeks prior to planting endophyte-free fescue. Apply paraquat again at planting. Apply in 20 to 40 gal. of water per acre. Always add surfactant when using paraquat. DO NOT graze the new planting for 60 days or until the new growth is 6 inches tall.
glyphosate (RoundupWeatherMax) (Roundup Original Max) (Roundup PowerMax) 5.5 lbs./gal.	See remarks.	See remarks.	Apply in the fall at 22 fl. ozs./A to endophyte-infected fescue 3-4 weeks prior to planting endophyte-free fescue. Tall fescue should have 6 to 12 inches of new growth before the first application. Apply again at planting at 11 fl. ozs./A. This treatment provides some suppression of common bermudagrass also. There is no waiting period between application and grazing if total application rate is less than 2.0 qt/acre. Other brands of glyphosate may also be labeled for this use.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS

Tim R. Murphy, Extension Agronomist – Weed Science

Not all herbicides are labeled for use on all forage crops. Refer to the recommendations shown for a specific herbicide or refer to the herbicide label.

Time of Application	PPI	PPI	PRE	PRE	PRE	POST	POST
	benefin (Balan)	EPTC (Eptam)	Chateau	Kerb	Prowl	2,4-D	2,4-DB
amaranth, spiny	G	G	E	P	F-G	F-G	F-G
bahiagrass	P	P	P	P	P	P	P
bermudagrass	P	P	P	P	P	P	P
bitter sneezeweed	P	P		P		E	G
blackberry	P	P		P	P	P	P
bracken fern	P	P		P	P	P	P
briars (Smilax)	P	P		P	P	P	P
broomsedge	P	P		P	P	P	P
buttercup	P	P		P	P	E	F
camphorweed	P	P		P	P	P	P
chickweed	F	E	E	G	F	P	P
crabgrass	E	G	G	F	G	P-F	
crotalaria, showy	P	P	G	P	P	G	
cudweed	P	P		P		F	
curly dock	P	P	G	P	P	F	P
dallisgrass	P	P	P	P	P	P	P
dandelion	P	E	G	P	P	E	G
dodder	P	P		E		P	P
dogbane, hemp	P	P			P	P-F	P
dogfennel	P	P		P	P	F	P
evening primrose	F	F-G	E	P		E	G
foxtails, green & yellow	G	G	F	P	F	P	P
gallberry	P	P		P	P	G	P
goldenrod	P	P		P	P	F	P
henbit	F	G	E	P	F-G	P	P
honeysuckle	P	P		P	P	E	P
horsenettle	P	P		P	P	P	P
horseweed	P	P	G-E	P	P	G	P
Italian ryegrass	G	E		G		P	P
johnsongrass	G ¹	G ¹		P	G ¹	P	P
kudzu	P	P		P	P	P-F	P
Lespedeza, Sericea	P	P			P	P	P
little barley	G	G		E		P	P

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

¹ Seedling johnsongrass only.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	PPI	PPI	PRE	PRE	PRE	POST	POST
	benefin (Balan)	EPTC (Eptam)	Chateau	Kerb	Prowl	2,4-D	2,4-DB
maypop passion flower	P	P		P	P	P	P
mayweed				P		F	P
nettle, stinging	P	P		P	P	P	P
nutsedge	P	F	P	P	P	P	P
palmetto	P	P		P	P	P	P
perilla mint	P	P			P	P-F	
persimmon	P	P		P	P	P	P
pigweed species	G	G	E		F-G	G-E	G
plantain(s)	P	G	F	F	P	G-E	F
pokeweed, common	P	P		P	P	G	G
prickly pear	P	P		P	P	P	P
ragweed, common	P	P	G-E	P	P	E	G
red sorrel	P	P		P	P	P	P
rush species	P	P		P	P	G	P
sandbur	E	G		P	G	P	P
shepherdspurse	P	G	E	G	F	E	G
sicklepod	P	F	P	P	P	G	F
sida, arrowleaf & prickly	P	P	G-E	P	P	G	P
smartweed(s)	P	P	F	P	P	F	F
smutgrass	P	P		P	P	P	P
swinecress	P	G		F		E	F
Texas panicum	G-E	G		P	F-G	P	P
thistles	P	P		P	P	E	F
tropical soda apple	P	P		P	P	P	P
vaseygrass	P	P		P	P	P	P
vervain, blue							
Virginia pepperweed	P	G		P	P-F	G	E
wax myrtle	P	P		P	P	G	P
wild cherry	P	P		P	P	E	P
wild garlic	P	P	P	P	P	G-E	P
wild plum	P	P		P	P	E	P
wild radish	P	P-F	G-E	P	P	G	P
wild rose	P	P		P	P	G	P
wooly croton	P	P		P	P	G	P

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	bromoxynil (Buctril)	Chaparral	Cimarron Max	Cimarron Plus	Crossbow	dicamba (Banvel, Clarity)	ForeFront, Grazon Next	Grazon P+D
amaranth, spiny	P	E	E	E		G-E	E	G-E
bahiagrass	P	G	F-G	G	P	P	P	P
bermudagrass	P	P	P	P	P	P	P	P
bitter sneezeweed		E	E	E	E	E	E	E
blackberry	P	G-E	F	E	G	F	P	F
bracken fern			G		G	G		F
briars (Smilax)	P				P	F		
broomsedge	P		P	P	P	P	P	P
buttercup		G-E	E	E	E	P	E	E
camphorweed		G		G			G	G-E
chickweed	F	E	E	E	F	G	G	P
crabgrass	P		P	P	P	P	P	P
crotalaria, showy		G				G	G	E
cudweed	P	G	G	G	E	E	G-E	G
curly dock		G-E	G-E	G-E	G	E	G-E	G-E
dallisgrass	P		P	P	P	P	P	P
dandelion	P				E	E	G-E	E
dodder					P	P		
dogbane, hemp		P	P	P	F-G	F	P	F
dogfennel	P	P-F	G-E	F-G	E	E	F	G-E
evening primrose		G	G	G	E	E	E	E
foxtails, green & yellow	P		P	P	P	P	P	P
gallberry	P				E	E		
goldenrod	P	P	G-E	P	G	G	G	G
henbit	F	G-E	E	E	E	G	F	P-F
honeysuckle	P				E	E		F
horsenettle	P	G-E	F	P-F	P-F	G	E	G-E
horseweed	P	G-E	E	F	G	E	E	E
Italian ryegrass	P		P-F	P-F	P	P	P	P
johnsongrass	P		P	P	P	P	P	P
kudzu	P	G	P-F	P-F	F-G	G	G	F
lespedeza, Sericea	P	P	F-G	G-E	P-F	P		P
little barley	P				P	P		P

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	bromoxynil (Buctril)	Chaparral	Cimarron Max	Cimarron Plus	Crossbow	dicamba (Banvel, Clarity)	ForeFront, Grazon Next	Grazon P+D
maypop passion flower		P	P	P			P	P-F
mayweed	P		G	G	G	E	G-E	G-E
nettle, stinging		G-E	F-G	F-G	F-G	P	G	E
nutsedge	P		P	P	P	P	P	P
palmetto	P	P	P	P		F		
perilla mint					F-G	F-G		F-G
persimmon	P				G	E		P
pigweed species	F	G-E	E	E	E	E	E	E
plantain(s)	P	G-E	E	E	G	F	G	F-G
pokeweed, common	P	P		P	G	G	G	F
prickly pear	P	P	P	P		F	P	F-G
ragweed, common	G	G-E	G	G	E	E	E	E
red sorrel		E	G	G-E	E	G	E	
rush species	P	P	P	P	F-G	P		
sandbur	P		P	P	P	P	P	P
shepherdspurse	G				E	E	E	E
sicklepod		G	G	G	E	E	E	E
sida, arrowleaf & prickly	P		G	G	P-F	G	E	E
smartweed(s)	G	G-E	E	E	G-E	G	E	E
smutgrass	P		P	P	P	P	P	P
swinecress	E					E	E	E
Texas panicum	P			P	P	P	P	P
thistles	P	E	G-E	F-G	E	G	E	E
tropical soda apple	P	G-E	P	P	F	F-G	G-E	G-E
vaseygrass	P		P	P	P	P	P	P
vervain, blue							G	G
Virginia pepperweed	G					E	G	E
wax myrtle	P	P				E		
wild cherry	P					P	E	
wild garlic	P	G	G-E	G-E		F	F	F
wild plum	P					E	E	
wild radish	F-G	G-E	G-E	G-E	E	E	E	
wild rose	P	G	F	F	E	E	F	F
wooly croton	P	G-E	G-E	G	E	E	E	E

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	hexazinone (Velpar)	imazamox (Raptor)	imazapic (Impose)	imazethapyr (Pursuit)	metribuzin (Sencor)	Metsulfuron	Milestone	paraquat
amaranth, spiny	F-G	F-G	G	F-G	P-F	E	G	F-G
bahiagrass	P		G-E		P	G	P	P
bermudagrass	P	P	P	P	P	P	P	P
bitter sneezeweed						E	G-E	
blackberry	F				P	G	G	P
bracken fern	F					G	G	P
briars (Smilax)	F				P			P
broomsedge	P	P	P	P	P	P	P	P
buttercup	G				G	E	G-E	G
camphorweed				P		G		P
chickweed	E	G		F	E	P	F	E
crabgrass	P	F	F-G	F	F	P	P	F
crotalaria, showy								
cudweed						G	E	G
curly dock	P-F	P-F		P-F		E	E	P
dallisgrass			P		P	P	P	P
dandelion	E	F-G		P-F	G	G-E	P	G
dodder								G-E
dogbane, hemp							P	
dogfennel						P-F	P	P
evening primrose	E				G	G	E	P-F
foxtails, green & yellow	P-F	G	F-G	G	P	P	P	F
gallberry	P				P			P
goldenrod						G-E	G	P
henbit	G-E	F		F	G	E	F-G	G
honeysuckle					P			P
horsenettle		P	P	P	P	P	E	P
horseweed	F	P	P	P	P	F	E	P
Italian ryegrass	G	G	F	P	P	P		G
johnsongrass	P	F	F-G	P	P	P	P	P
kudzu			P	P	P	P-F	F-G	P
lespedeza, Sericea						G-E		P
little barley	E				P	P	P	G-E

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	hexazinone (Velpar)	imazamox (Raptor)	imazapic (Impose)	imazethapyr (Pursuit)	metribuzin (Sencor)	Metsulfuron	Milestone	paraquat
maypop passionflower		P		P	P	P	P	P
mayweed	F-G					G		E
nettle, stinging						F-G	E	
nutsedge	P	P-F	G	F	P	P	P	P
palmetto	P		P		P	P	P	P
perilla mint							P	
persimmon	F				P		P	P
pigweed species	G	G-E	G-E	G-E	G	E	E	G
plantain(s)	F-G	P		P	P	E	P	P
pokeweed, common						P	F	
prickly pear	P				P	P	P	P
ragweed, common	F	F	F	F	G	G	E	G
red sorrel						E		P-F
rush species		P	P	P		P		P
sandbur			G-E		F	P	P	G
shepherdspurse	E	E	E	E	E	G	P	G
sicklepod			G		F	G	P	F-G
sida, arrowleaf & prickly		P-F		P-F	F	F	P	P
smartweed(s)	F-G	G-E		G-E		E	E	E
smutgrass	G-E	P	P	P	P	P	P	P
swinecress	E	G	E		E		P	E
Texas panicum	P		P-F		P-F	P	P	G
thistles	E	P		P	G	F	E	G
tropical soda apple	F		P		P	P	E	P
vaseygrass			F		P	P	P	P
vervain, blue							F	
Virginia pepperweed	E	G		G	G		P	G
wax myrtle	P				P			P
wild cherry	E				P			P
wild garlic					P	G	P	E
wild plum	E	P	P	P	P			P
wild radish	E	G-E	E	G-E	E	G-E	P	P
wild rose		P	P	P	P	G	F	P
wooly croton	P	P		P	P	G	E	P

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	Pastora	PastureGard	Redeem	sethoxydim (Poast)	Spike	Surmount	Triclopyr (Remedy)	Weedmaster
amaranth, spiny	G-E	P-F	P	P		G-E		E
bahiagrass		P	P	F		P	P	P
bermudagrass		P	P	F-G		P	P	P
bitter sneezeweed	G-E	E	E	P	E	E	E	E
blackberry		G	G-E	P	G	G	G-E	P-F
bracken fern		F	P	P	G	F	G	
briars (Smilax)		G	P	P	G	F	P	F
broomsedge		P	P	P		P	P	P
buttercup	E	F	E	P	G	G	E	E
camphorweed		E		P		E	E	P
chickweed	E	E	G	P	E	G-E	F	F
crabgrass	F	P	P	G-E		P	P	P
crotalaria, showy		E				E	E	G
cudweed		G	E	P		G	E	G
curly dock	G-E	F	E	P		G	E	E
dallisgrass		P	P	P		P	P	P
dandelion	G	G-E	G	P	G	E	E	E
dodder		P	P	P			P	P
dogbane, hemp		F-G	P	P		G	F	F
dogfennel	P	E	E		G	E	E	G
evening primrose	F	G		P	G	E	E	E
foxtails, green & yellow	F-G	P	P	E		P	P	P
gallberry		E	G	P			E	G
goldenrod	G	G	E	P		G	G	E
henbit	E	G-E	G	P	G	G	F	P
honeysuckle		P	P	P	G	G	P	E
horsenettle	P	P-F	F	P	F	E	P-F	F
horseweed		G	G	P		E	G	E
Italian ryegrass	G-E	P	P	E		P	P	P
johnsongrass	G-E	P	P	G		P	P	P
kudzu		G	G-E	P	P	F	G-E	F
lespedeza, Sericea		E					G-E	P
little barley		P	P	F		P	P	P

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

WEED RESPONSE TO HERBICIDES USED IN PASTURE, HAY AND FORAGE CROPS (continued)

Time of Application	POSTEMERGENCE							
	Pastora	PastureGard	Redeem	sethoxydim (Poast)	Spike	Surmount	Triclopyr (Remedy)	Weedmaster
maypop passion flower		F		P				P
mayweed	G-E	G	E	P	E	G-E	G	G
nettle, stinging		E	F	P		G	G-E	F
nutsedge	P	P	P	P		P	P	P
palmetto		G	P	P	F	P	F	P
perilla mint		F		P		F	F-G	F-G
persimmon		G-F	P	P		G	F	F
pigweed species	G-E	G	G	P		G	E	E
plantain(s)	F	F	P	P		F	F	G-E
pokeweed, common		P	P	P		G	P	G
prickly pear		F	P	P		E	G ²	P
ragweed, common		E	E	P		E	E	E
red sorrel		F	F-G	P		E	E	P-F
rush species		P	P	P		P	F	
sandbur	G-E	P	P	G		P	P	P
shepherdspurse		G	G	P	G	G	E	E
sicklepod	E	G	G	P		E	E	E
sida, arrowleaf & prickly		F	P	P		E	P	E
smartweed(s)	G			P				G
smutgrass		P	P	P		P	P	P
swinecress		G	G	P		G	G	E
Texas panicum	G-E	P	P	E		P	P	P
thistles	G	G	E	P		G-E	F-G	G
tropical soda apple	P	G	P	P	P	E	G	F
vaseygrass	F ³	P	P	P		P	P	P
vervain, blue						E		
Virginia pepperweed		G		P			P	E
wax myrtle		G		P	F			G
wild cherry		G	F	P		G	E	E
wild garlic		F		P		P		G
wild plum		G	P	P	G	G		P
wild radish	G-E	G	F	P		E	E	E
wild rose		E	P	P	G	E	E	E
wooly croton	E	F	F	P		E	G	E

E = Excellent, G = Good, F = Fair, P = Poor Control. A blank space indicates weed response is not known.

² For prickly pear cactus use 20% v/v Remedy plus 80% diesel fuel. Apply only as a spot treatment, as this treatment will severely insure desirable grasses.

³ Apply in spring after full spring greenup of vaseygrass, or after hay harvest.

PERENNIAL PEANUT WEED CONTROL

Tim R. Murphy, Extension Agronomist-Weed Science

USE STAGE/ HERBICIDE	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
POSTEMERGENCE			
2,4-D amine Weed Killer (EPA Reg. No. 1386-43 -72693)	1.0 pt..	0.5	For control of many annual broadleaf species such as Mexican tea (Jerusalem oak), pigweeds, cutleaf eveningprimrose, etc. Can be applied any time during the season as long as the 30 day restriction on hay cutting is observed. May lead to slight yield decrease in "Florigraze", but "Arbrook" is more tolerant. Mixing 8 fl. oz of 2,4-D amine Weed Killer with 4 fl. oz. of Impose has been found to be an effective combination. 2,4-D amine Weed Killer (Universal Crop Production Alliance, LLC) is the product that has been officially approved for use. Use this particular product rather than other non-approved 2,4-D herbicides.
imazapic (Impose) 2.0 lbs./gal	4.0 fl. ozs.	0.063	Impose is effective on crabgrass, nutsedges, johnsongrass, and numerous broadleaf weeds. Add a surfactant at 0.25% v/v to the spray mix. There are no grazing restrictions for this herbicide. DO NOT cut for hay for 7 days after application. Other herbicides with the same active ingredient such as "Cadre" cannot be legally applied to perennial peanuts.
Clethodim (Select Max) 0.97 lbs./gal. (Intensity One) 0.97 lbs./gal. (TapOut) 0.97 lbs./gal (Shadow) 2.0 lbs./gal. (Arrow) 2.0 lbs./gal.	9.0 to 32.0 fl. ozs.	0.07 to 0.24	Clethodim will provide excellent control of annual and perennial grasses, but will not control broadleaf weeds or sedges. Use the low rate on annual grasses, and the high rate on perennial grasses (see label). Select Max and Intensity One require the addition of a nonionic surfactant at 0.25% v/v. For Shadow and Arrow use only a crop oil concentrate at 1.0% v/v. Use a nonionic surfactant or crop oil concentrate with Tapout. Do not cut for hay or graze for 40 days after an application of clethodim.
	6.0 to 16.0 fl. ozs.	0.09 to 0.25	
	6.0 to 16.0 fl. ozs.	0.09 to 0.25	

NOTE: The Georgia Department of Agriculture has ruled that the above herbicides may be legally applied to perennial peanuts. This crop is classified as a forage. Additionally, the site of application is classified as a pasture or hay field. DO NOT apply 2,4-D amine to peanuts being grown for seed or nuts. Perennial peanuts are not listed on the 2,4-D amine label. Users are advised that in the event of poor weed control, adverse crop injury, or any other issues that might arise, the manufacturers of 2,4-D amine may not warrant the application. Thus, while an application of these herbicides is legal, the end user assumes all responsibility with issues associated with an application. The University of Florida has conducted numerous experiments with these herbicides; however, there has been only limited testing of 2,4-D amine at 0.5 lbs. ai/ acre on perennial peanut in Georgia. End users are advised to evaluate the use of 2,4-D amine on a limited basis, and then make a decision if spraying an entire field is advisable.