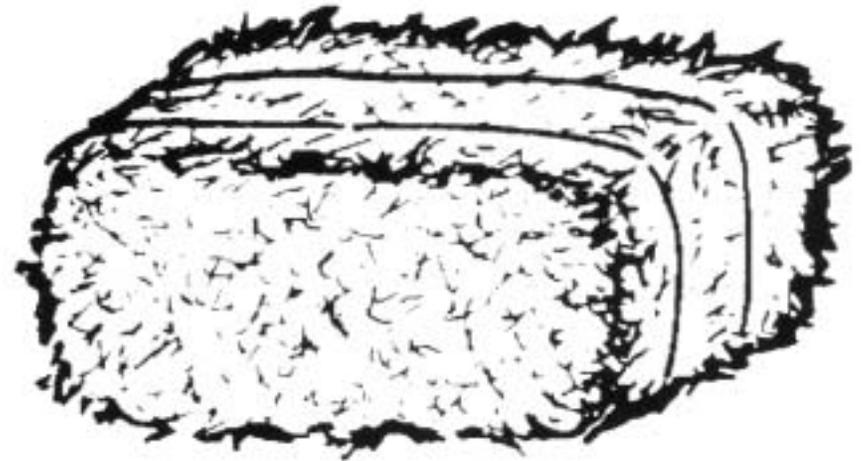


# Suggestions for Weed Control in Pastures and Forages



# Suggestions for Weed Control in Pastures and Forages

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Table	Page	Table	Page
1 Bermudagrass pastures—newly sprigged.....	4	7 Dormant, semidormant or actively growing alfalfa and some clovers .....	9
2 Dormant bermudagrass pastures.....	4	8 Winter pastures for grazing only (wheat, oats, rye, barley, ryegrass and mixtures thereof) .....	12
3 Pasture sod suppression and renovation .....	4	9 Grazing/hay restrictions for pasture herbicides .....	13
4 Permanent grass pastures and established grass crop .....	5	Boom Sprayer Calibration .....	14
5 Sorghum-sudan hybrids (forage types) .....	8	Boomless Sprayer Calibration.....	15
6 Alfalfa and clover—new plantings .....	8		

The suggestions contained herein are based primarily on herbicide labels, research by the Texas Agricultural Experiment Station and Texas Cooperative Extension. The use of product names is not intended as an endorsement of the product or of a specific manufacturer, nor is there any implication that other formulations containing the same active chemical are not equally as effective. Product names are included solely to aid readers in locating and identifying the herbicides suggested.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas Cooperative Extension is implied.

**This publication is no substitute for the herbicide product labels! It is intended to serve only as a guide for controlling weeds in pasture and forages. Labeled rates and restrictions change constantly, therefore, consult the product label before use.**

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Weeds can be controlled in cropland through cultural, mechanical and chemical means. Wise use of these individual methods or a combination of them manage weeds effectively without causing economic loss or harming the environment. Deciding which practice to use will depend largely on the weed(s) being controlled and the infestation level. Also, the crop being planted will play a major role in determining when to use mechanical measures.

Considerations for cultural and mechanical weed control include:

1. Remove light or spotty infestations of weeds by hand hoeing or spot cultivation to prevent spreading weed seed, rhizomes or roots. Exercise caution when plowing perennial weeds, being careful to prevent the transport and spread of plant parts to other areas of the field.
2. Use weed-free planting seed to protect against weed infestations in the row and the introduction of new weed species.
3. Thoroughly clean harvesting equipment before moving from one field to the next, or require it of the custom harvesters before they enter your fields.
4. Use mechanical tillage to remove initial weed flushes prior to planting, thereby reducing or eliminating the potential for continued infestation.
5. Consider the economics of using mechanical cultivation alone for weed control in the crop, especially where annual weed infestations are light.
6. Practice rotation to crops that physically out-compete certain weeds, resulting in their gradual decline.

**Table 1. Bermudagrass pastures—newly sprigged**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual grasses and annual broadleaf weeds	<b>Weedmaster®</b> (2,4-D + dicamba) BASF	1 to 2 qts.	Preemergence 7 - 10 days after planting.	For use after planting vegetative propagules (stolons) of hybrid bermudagrass. Reduced control may be expected if weeds are allowed to reach 1 inch tall before application or if germination occurs 10 days after application. Consult Weedmaster supplemental label for further information.

**Table 2. Dormant bermudagrass pastures**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual broadleaf and grass weeds including little barley	<b>Gramoxone Extra®</b> (paraquat dichloride) Syngenta	12.8 oz.	Postemergence during March.	<b>Do not pasture or mow for hay until 40 days after treatment.</b> Gramoxone Extra® is a restricted use herbicide and is poisonous. Use of surfactant will improve the performance of this herbicide.
Annual grasses and weeds in Coastal bermudagrass	<b>Roundup Ultra®</b> (glyphosate) Monsanto	1 - 4 pts.	Active weed growth before bermuda growth (dormant bermudagrass).	Only one application per year per field. Application must be at least 60 days before grazing or harvest. Use only on fields that have an established stand of bermudagrass where some temporary injury or discoloration can be tolerated. Do not use where cool-season legumes are a major part of the forage component.

**Table 3. Pasture sod suppression and renovation**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Sod suppression	<b>Gramoxone Extra®</b> (paraquat dichloride) Syngenta	12.8 oz.	Postemergence in late summer or early fall to sod not > 3 inches tall. Apply before or at time of seeding winter annuals.	<b>Do not graze in treated areas until 60 days after treatment or until winter annual seedlings are 9 inches tall.</b> Gramoxone Extra® is a restricted use herbicide and is poisonous. Using a surfactant will improve the performance of this herbicide.

**Table 3. Pasture sod suppression and renovation (continued)**

<b>Weeds controlled</b>	<b>Product (Herbicide common name) Company</b>	<b>Application rate per acre (broadcast)</b>	<b>Time to apply</b>	<b>Remarks</b>
Broadleaf weeds	<b>Roundup Ultra®</b> (glyphosate) Monsanto	0.5 to 5 qts.	Apply before planting forage grasses and legumes.	Use for pasture, hay crop renovation and labeled weeds. <b>Note: Remove domestic livestock before application and wait 8 weeks after application before grazing or harvesting.</b>
Broadleaf weeds	<b>Roundup Ultra®</b> (glyphosate) Monsanto	Spot treatment. 1 to 2% solution (1 to 2 qts. per 25 gals. of water)	Apply during active growth. For perennials, apply during seedhead formation.	Labeled for forage grasses and legumes, including bahiagrass, bermudagrass, bluegrass, fescue, ryegrass, alfalfa and clover. No more than one-tenth of any one acre should be treated at any time.

**Table 4. Permanent grass pastures and established grass crops**

<b>Weeds controlled</b>	<b>Product (Herbicide common name) Company</b>	<b>Application rate per acre (broadcast)</b>	<b>Time to apply</b>	<b>Remarks</b>
Annual and perennial grasses such as field sandbur, large crabgrass, green foxtail, barnyardgrass, broadleaf signalgrass, Texas panicum, johnsongrass, vaseygrass, nutsedge spp, and numerous broadleaf weeds. Suppression of bahiagrass, dallisgrass, and smutgrass.	<b>Plateau®</b> (imazapic) BASF	4 to 12 oz. (refer to label for weed specifics)	Postemergence after 100% bermudagrass green-up.	Bermudagrass growth suppression after treatment should be expected. The severity and longevity of this suppression will be minimized if bermudagrass is actively growing at the time of application and good growing conditions prevail following application. Consult label regarding varietal sensitivity. Application uniformity and accuracy is essential. After 2004, Plateau® will be available only through government agencies.
Annual broadleaf weeds. For Texas bullnettle, spray in early bloom stage. See label for specific perennial weeds.	<b>2,4-D® amine or low volatile ester</b> (2,4-D) Several manufacturers	1 pt. to 1 qt. (4 lb./gal. product)	Postemergence when weeds are actively growing.	Do not apply to newly seeded grasses until the grass is well established or after heading begins. Do not apply when grass is in boot to milk stage if grass seed production is desired. <b>Do not graze dairy animals on treated areas within 7 days after treatment.</b> Using a surfactant will improve the performance of this herbicide. <b>Note: White and arrowleaf clovers have tolerated 0.5 lb./A of 2,4-D applied in February or March in East Texas. Either Weedmaster® or Grazon P+D® will give better control of perennial weeds than 2,4-D® alone.</b>

**Table 4. Permanent grass pastures and established grass crops (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual broadleaf weeds. (continued)	<b>Weedmaster®</b> (2,4-D + dicamba) BASF	1 pt. to 1 qt. You can tank mix 0.25 to 0.5 pt. of Banvel® with 0.75 to 1.5 pts. 2,4-D amine or low volatile ester (4 lbs./gal. form)	Postemergence when weeds are actively growing.	As above. <b>Do not graze meat animals in treated areas within 30 days of slaughter. Treated grasses may be harvested for hay, but do not harvest within 37 days of treatment. Banvel® alone is labeled for use in grass pastures. Consult label for specific recommendations. Using a surfactant will improve the performance of this herbicide. Note: For Banvel® alone in a rope wick, 1:3 water mixture is labeled.</b>
	<b>Grazon P+D®</b> (Picloram + 2,4-D) Dow AgroSciences	1 to 4 pts You can tank mix 0.25 to 0.75 pt. Tordon 22K® with 1 to 3 pts. 2,4-D® amine or low volatile ester (4 lbs./gal. form)	As above.	New legume seedlings may not be successful if planted within 1 year after applying herbicide. <b>Do not transfer livestock onto broadleaf crop areas without first allowing 7 days of grazing on untreated grass pasture.</b> Tordon 22K® (Picloram) alone is labeled for grass pastures. Consult label for specific recommendations. Using a surfactant will improve the performance of this herbicide.
Johnsongrass, smutgrass, vaseygrass, silverleaf nightshade, milkweed, hemp dogbane, ragweed, sunflower	<b>Roundup Ultra®</b> (glyphosate) Monsanto	Wick or other applicators. 1:2, 1 gal. in 2 gals. of water	During active weed growth. For perennials apply at seedhead formation.	<b>Remove domestic livestock before application and wait 14 days after application before grazing and harvesting.</b> No more than one-tenth of any acre should be treated at a time. Further applications may be made in the same area at 30-day intervals.
Annual grasses and weeds in Coastal bermudagrass	<b>Roundup Ultra®</b> (glyphosate) Monsanto	16 oz.	Active weed growth before bermuda growth or following the first cutting of bermuda before bermuda starts regrowth.	Only one application per year per field. <b>Spring application must occur 60 days before grazing or harvest. After first cutting application, wait 28 days before grazing or harvest.</b>
Annual broadleaf weeds, some perennial broadleaf weeds and bahiagrass	<b>Cimarron®</b> (metsulfuron) DuPont	0.1 to 0.3 oz.	Apply when weeds are actively growing.	No grazing restriction. Has residual soil activity so it may affect the following crops: ryegrass, alfalfa and clover highly sensitive to Ally®. Ally® can be tank-mixed with 2,4-D, Grazon P+D®, Tordon 22K®, Banvel®, Weedmaster®, and Remedy® according to label. Rate for bahiagrass control is 0.3 oz./A. Using a surfactant will improve the performance of this herbicide.
	<b>Cimarron Max®</b> (metsulfuron + dicamba + 2,4-D) DuPont	Consult label.		

**Table 4. Permanent grass pastures and established grass crops (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Smutgrass and other weeds in bermudagrass and bahiagrass	<b>Velpar L<sup>®</sup></b> (hexazinone) DuPont	2.75 to 4.5 pts.	Warm and moist soil conditions—weeds actively growing.	Only one application per year. Oak trees are very sensitive to Velpar <sup>®</sup> L. <b>Do not graze or feed treated forage or hay within 60 days of application.</b> Using a surfactant will improve the performance of this herbicide. Some forage grass injury may occur.
Annual broadleaf weeds, annual ryegrass and annual brome grass	<b>Amber<sup>®</sup></b> (triasulfuron) Syngenta	0.28 to 0.56 oz	Postemergence applications to pastures when weeds are in an early stage of active growth.	No grazing restrictions. Has residual soil activity so it may affect following crops: ryegrass, brome grass, alfalfa, and clovers highly sensitive to Amber <sup>®</sup> . Amber <sup>®</sup> can be tank-mixed with 2,4-D <sup>®</sup> , Banvel <sup>®</sup> , Grazon P + D <sup>®</sup> , Weedmaster <sup>®</sup> and Weedone <sup>®</sup> LV6 according to label. Using a surfactant will improve the performance of this herbicide.
Annual broadleaf weeds and suppression of western ragweed	<b>Rave<sup>®</sup></b> (triasulfuron + dicamba) Syngenta  <b>Fuego<sup>®</sup></b> (triasulfuron + dicamba) Syngenta	3.5 to 5.0 oz.  Consult label.	Postemergence when weeds are actively growing.	For use in bermudagrass pastures and some native grasses, consult label. <b>Treated areas cannot be grazed by lactating dairy animals for 7 days after application. Animals cannot be removed from treated areas for slaughter less than 30 days after application.</b> Do not apply Rave until at least 60 days after emergence of newly seeded grasses or sprigging of bermudagrass.

**Table 5. Sorghum-sudan hybrids (forage types)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual weeds and grasses	<b>AAtrex® 4L</b> <b>AAtrex Nine-O®</b> (atrazine) Syngenta	3.2 to 4 pts. 1.7 to 2.6 lbs.	Preemergence: Apply during or shortly after planting.  Postemergence: Apply 2.4 pts./A (4L) or 1.3 lbs./A (Nine-O) when sorghum is 6 to 12 inches tall. Do not apply postemergence in liquid fertilizer solution.	<b>Apply only on Texas Gulf Coast and Blackland areas.</b> In case of planting failure, sorghum or corn may be replanted. Do not make a second application. If originally applied in a band and sorghum or corn is replanted in untreated row middles, this product may be applied in a band to the second planting. Use low rates where organic matter is 1 to 1.5% and high rates on soil with more than 1.5% organic matter. Use only on medium and fine textured soil. <b>Note: Do not graze or feed forage from treated areas for 21 days after application. 2,4-D can be used postemergence for broadleaf weed control in sorghum sudan and millets.</b>
Annual broadleaf weeds	<b>Weedmaster®</b> (2,4-D + dicamba) BASF	1 pt. to 1 qt.	Postemergence when weeds are actively growing.	<b>Do not graze meat animals in treated areas within 30 days of slaughter. Do not graze lactating dairy animals in treated areas within 7 days of treatment.</b> Do not harvest for hay within 37 days of treatment. Using a surfactant will improve the performance of this herbicide.

**Table 6. Alfalfa and clover—new plantings**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual grasses and some annual broadleaf weeds	<b>Balan® 1.5 EC</b> (benfenin) Dow AgroSciences	3 qts. on coarse and medium soils, 4 qts. on fine soils.	Preplant; incorporate before seeding alfalfa.	Incorporation equipment should be a tandem disc, PTO-driven tillers, cultivators or hoes. Use only on alfalfa, birdsfoot trefoil and clover (alsike, ladino and red). <b>Note: Balan® is also labeled as a preplant treatment before planting alsike and ladino clovers.</b>
Annual grasses and some annual broadleaf weeds	<b>Eptam® 7E</b> (EPTC) Syngenta	3.5 pts.	Preplant; incorporate immediately following the application.	Temporary crop stunting and sealing of the first leaves will occur if conditions for germination and growth are not optimum. Adequate rainfall or irrigation will relieve crop symptoms. Do not use on white dutch clover.

**Table 7. Dormant, semidormant or actively growing alfalfa and some clovers (refer to product label)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual broadleaf weeds and annual grasses	<b>Sinbar® 80W</b> (terbacil) DuPont	0.5 to 1.5 lbs.	Before or after emergence of weeds, but before they are 2 inches tall or across.	Treat only semidormant or dormant stands established for 1 year or more.  <b>Dormant alfalfa:</b> Make a single application in the fall after plants become dormant or in the spring before new growth begins.  <b>Semidormant or nondormant varieties:</b> Apply in fall or winter after last cutting or in spring before new growth starts.  <b>Note: Do not use on seedling alfalfa or alfalfa-grass mixtures. Do not apply to established stands after new growth starts in the spring. Do not apply on snow-covered or frozen ground as crop injury may result.</b>
Annual broadleaf weed	<b>2,4-DB</b> Several manufacturers	1 to 3 qts. Use 1 to 2 qts. if weeds are less than 1 inch high, 2 to 3 qts. if weeds are 1 to 3 inches high.	Postemergence when clovers have 2 to 4 trifoliolate leaves.	Labeled for seedling and established alfalfa, seedling birdsfoot trefoils, seedling alsike clover, seedling ladino clover and seedling red clover. Using a surfactant will improve the performance of this herbicide.  <b>Note: Do not graze or feed seedling clovers within 60 days after application. Do not feed hay from treated crops to livestock within 30 days after application. Do not use on established clovers grown for seed.</b>
Grasses and certain broadleaf weeds	<b>Kerb® 50W</b> (pronamide 0.5 to 0.75 lb.) Dow AgroSciences	1 to 1.5 lbs.	Preemergence to weeds during fall or winter months in established legumes or in new plantings in trifoliolate leaf stage.	Effective with dependable rainfall or overhead irrigation. With low rainfall or furrow irrigation, increase rate 0.5 lb. of product per acre.  <b>Note: Do not graze or harvest for forage or dehydration within 25 days after application.</b>
Annual grasses and broadleaf weeds	<b>Treflan TR-10® Granules</b> (trifluralin) Dow AgroSciences	20 lbs.	Preemergence to weeds after January 1.	Application must be followed by 1/2 inch of sprinkler irrigation or rainfall or a flood irrigation within 3 days. If this has not occurred, then shallow cultivation must be performed to activate and uniformly distribute the herbicide, taking care not to cause severe injury to the alfalfa.

**Table 7. Dormant, semidormant or actively growing alfalfa and some clovers (refer to product label) (continued)**

<b>Weeds controlled</b>	<b>Product (Herbicide common name) Company</b>	<b>Application rate per acre (broadcast)</b>	<b>Time to apply</b>	<b>Remarks</b>
Annual grasses and broadleaf weeds	<b>Gramoxone Extra®</b> (paraquat dichloride) Syngenta	12.8 oz.	Between cuttings in established stands.	Do not treat more than 5 days after cutting. Do not cut or harvest within 30 days of application. Gramoxone Extra® is a restricted use herbicide and is poisonous. Using a surfactant will improve the performance of this herbicide.
Annual grasses and broadleaf weeds	<b>Pursuit DG®</b> (imazathapyr) BASF	1.08 to 2.16 oz.	Postemergence to seedling alfalfa (2nd trifoliolate or larger) or established alfalfa.	Established alfalfa applications must be made when alfalfa is dormant, semidormant (less than 3 inches of regrowth) or between cuttings. Weeds should be 1 to 3 inches tall at application and a surfactant or crop oil concentrate and a liquid fertilizer solution should be added to the spray mixture. Application rate will depend on weed species and size. Do not apply more than 2.16 oz. per year.
Annual broadleaf weeds and certain annual grasses	<b>Karmex® DF</b> (diuron) DuPont	1.5 to 2 lbs.	Preemergence in March or early April, but before spring growth begins on the alfalfa.	<b>Treat dormant stands of alfalfa established for 1 year or more.</b> Do not apply to seedling alfalfa or to alfalfa-grass mixtures; do not apply to alfalfa under stress from disease, insect damage, shallow root penetration or alkali spots; do not apply to flooded fields or to snow-covered or frozen ground as crop injury may result.
Annual grasses and broadleaf weeds	<b>Velpar®</b> (hexazinone)  <b>Velpar® 90W</b> (hexazinone) DuPont	1 to 3.0 qts. on soils with less than 1% organic matter. Consult label for rates on specific soil textures.  0.5 to 1.5 lbs. Consult label as above.	Preemergence or early post-emergence to the weeds in the fall or winter after alfalfa becomes dormant or in the spring before new growth begins.	<b>Treat dormant stands of alfalfa established for 1 year or for one growing season.</b> Do not apply to actively growing alfalfa or to stubble between cuttings. Do not apply to snow-covered, frozen ground.  <b>Note: Do not graze or feed forage or hay to livestock within 30 days following application.</b>
Annual broadleaf weeds and grasses	<b>Sencor® 4</b> <b>Sencor® DF</b> (metribuzin) Bayer  <b>Lexone® DF</b> (metribuzin) DuPont	0.75 to 2.0 pts. 0.5 to 1.3 lbs.  1 to 1.3 lbs.	Apply when weeds are less than 2 inches tall or before weed foliage is 2 inches in diameter. Do not apply metribuzin during the first growing season after seeding.	<b>Treat only dormant established alfalfa.</b> Injury may occur if metribuzin is applied earlier than 12 months after seeding. Apply metribuzin after growth ceases in the fall or before growth begins in the spring.  <b>Note: Do not graze or harvest within 28 days after application.</b>

**Table 7. Dormant, semidormant or actively growing alfalfa and some clovers (refer to product label) (continued)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual broadleaf weeds	<b>2,4-DB</b> Several manufacturers	1 to 3 qts.	When weeds are less than 3 inches high. Weeds in the rosette stage should be treated when rosettes are less than 3 inches across.	Treat alfalfa when plants have 2 to 4 trifoliate leaves. For irrigated crops, apply herbicide as soon as possible after irrigation. Delay next irrigation for at least 7 to 10 days after spraying to avoid washing the chemical into the root zone. 2,4-DB is a restricted use herbicide. Use of surfactant will improve the performance of this herbicide. <b>Note: Do not graze treated crop or feed hay from treated crop to livestock within 60 days after application.</b>
Annual and perennial grasses	<b>Poast Plus®</b> (sethoxydim) BASF	1.5 to 2.25 pts.	When grass weeds are actively growing and 4 to 25 inches tall. Consult label for specific weed recommendations.	Poast Plus® is absorbed through the leaves and translocated to roots and buds. Active growth is required. Minimum time from application to harvest is 14 days for hay or 7 days for grazing or green chop. Always add 1 pt./A of DASH® or 1 qt./A of crop oil concentrate to enhance herbicide performance. Consult label use rate and application timing specifications for different parts of Texas.

**Table 8. Winter pastures for grazing only (wheat, oats, rye, barley, ryegrass and mixtures thereof)**

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre (broadcast)	Time to apply	Remarks
Annual broadleaf weeds  (refer to label for specific weeds controlled)	<b>Ally®</b> (metsulfuron) DuPont	0.1 oz.	Postemergence after 2-leaf stage but before boot stage of wheat or barley.	Ally® is labeled only for use in wheat and winter barley. If ryegrass is present, slight to severe injury may occur. Ally may be combined with other herbicides for expanded broadleaf weed control. Refer to Ally label for additional precautions and recommendations. Ally has no grazing restriction in labeled crops. Use of surfactant will improve the performance of this herbicide.
Annual broadleaf weeds  (refer to label for specific weeds controlled)	<b>Amber®</b> (triasulfuron) Syngenta	0.28 to 0.56 oz.	Postemergence on wheat up to preboot stage or barley from 2-leaf to pre-boot stage.	Amber® is labeled for use in wheat and barley only. Applications to ryegrass or other winter forages may result in severe damage. Amber may be combined with other herbicides for expanded weed control. Refer to the Amber label for additional precautions and recommendations. Amber has no grazing restriction on labeled crops. Use of surfactant will improve the performance of this herbicide.
Annual broadleaf weeds and some biennial and perennial broadleaf weeds  (refer to label for specific weeds controlled)	<b>MCPA®</b> Several manufacturers	0.5 to 1.5 pts.	Postemergence after grain is in 3- to 4-leaf stage, or fully tillered for the 1.5 pt. rate.	Use higher rates for biennial and perennial weeds. <b>Do not allow livestock to forage or graze treated areas within 7 days before slaughter.</b> Refer to the specific MCPA product label for additional restrictions and precautions. Use of surfactant will improve the performance of this herbicide.
Annual broadleaf weeds and some biennial and perennial broadleaf weeds  (refer to label for specific weeds controlled)	<b>2,4-D®</b> Several manufacturers	0.5 to 1.5 pts.	Postemergence after grain is fully tillered.	Most 2,4-D® products are labeled for use in wheat, barley and rye. Application timings other than those recommended on the individual 2,4-D® product label may result in small grain injury. Use the higher rate range for biennial and perennial weeds. Consult individual product label for additional precautions and use restrictions. Use of surfactant will improve the performance of this herbicide.

**Table 9. Grazing/hay restrictions for pasture herbicides in days<sup>1</sup>**

Herbicide	Lactating dairy		Non-lactating		Meat animals		Slaughter
	Graze	Hay	Graze	Hay	Graze	Hay	
Ally <sup>®</sup> , Cimarron <sup>®</sup>	0	0	0	0	0	0	NL <sup>2</sup>
Amber <sup>®</sup>	0	30	0	30	0	30	NL
Banvel <sup>®</sup>							
0.5 qt./A	7	37	0	37	0	37	30
0.5 - 1 qt./A	21	51	0	37	0	37	30
1 - 2 qts./A	40	70	0	37	0	37	30
Grazon P+D <sup>®</sup>	7	30	0	30	0	30	3
Plateau <sup>®</sup>	NL <sup>2</sup>	7	NL <sup>2</sup>	7	NL <sup>2</sup>	7	NL <sup>2</sup>
Reclaim <sup>®</sup>	0	0	0	0	0	0	0
Remedy <sup>®</sup>							
< 2 qts./A	14	NS <sup>3</sup>	0	7	0	7	3
2 - 6 qts./A	NS	NS	14	14 - NS <sup>4</sup>	14	14 - NS <sup>4</sup>	3
Roundup Ultra <sup>®</sup>							
Spot (0.1/A)	14	14	14	14	14	14	NL
Renovation1	56	56	56	56	56	56	NL
Tordon <sup>®</sup> 22K	14	14	14	14	14	14	3
Velpar <sup>®</sup>	60	60	60	60	60	60	NL
Weedmaster <sup>®</sup>	7	37	0	37	0	37	30
2,4-D <sup>®</sup> amine	7	30	7	30	0	30	3
2,4-D <sup>®</sup> ester	7	30	7	30	7	30	3

<sup>1</sup>This table is only intended to be used as a guideline for these restrictions. Always refer to the most current label for up-to-date recommendations.

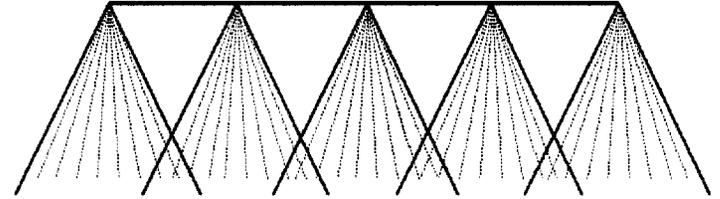
<sup>2</sup>NL = No restrictions listed on label.

<sup>3</sup>NS = Next season.

<sup>4</sup>Refer to label for specific time interval based upon use rate.

# Boom Sprayer Calibration

1. Determine nozzle spacing.
2. Refer to the table below for length of calibration course.
3. Mark off the calibration course on the actual area to be sprayed.
4. Record the time required to drive the calibration course at the desired field gear and rpm to be used while spraying.
5. Park tractor, maintain rpm used to drive course, turn on the sprayer and set it at proper pressure for desired nozzle tips.
6. Catch water from one nozzle for the time equal to that required to drive the calibration course.
7. Ounces of water caught = gallons per acre.
8. Divide gallons per acre into the number of gallons in spray tank to determine how many acres will be sprayed. Add the appropriate amount of herbicide for number of acres to be sprayed.



**Chart for Nozzle Spacing and Length of Calibration Course**

Nozzle spacing (inches)	18	20	30	40
Length of calibration course* (linear feet)	227	204	136	102

\*To determine the calibration course for a nozzle spacing not listed, divide the spacing expressed in feet into 340 (340 sq. ft. = 1/128 of an acre).

**Example:** Calibration distance for 19-inch nozzle spacing =  $340 \div 19/12 = 215$  feet.

# Boomless Sprayer Calibration

1. Determine swath width.
2. Refer to the table below for the length of the calibration course.
3. Mark off the calibration course.
4. Record the time required to drive the calibration course at the desired field gear and rpm.
5. Park the tractor, maintain rpm used to drive course, turn on the sprayer.
6. Catch water for the time equal to that required to drive the calibration course.
7. Pints of water caught = gallons per acre.
8. Divide gallons per acre into the number of gallons in spray tank to determine how many acres will be sprayed. Add the appropriate amount of herbicide for number of acres to be sprayed.



**Chart for Nozzle Spacing and Length of Calibration Course**

Effective Swath Width (feet)	25	30	35	40	45	50
Length of calibration course* (linear feet)	218	182	156	136	121	109

\*To determine the calibration course for a swath width not listed, divide the swath width expressed in feet into 5460 (5460 sq. ft. = 1/8 of an acre).

**Example:** Calibration distance for 32-foot swath width =  $5460 \div 32 = 171$  feet.

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