

Weed Control in Hay & Pasture Fields

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Why Control Weeds in Hay & Pastures?

- May limit new stand establishment
- Forage quality can be reduced
- Weeds can reduce yield
- Shade out beneficial plants
- Can be poisonous
- Aesthetics



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Weed Life Cycles

- **Summer annuals**
- Plants that germinate from seed in the spring, flower and produce seed in mid to late summer, and die in the fall. Control April – mid July
 - Examples include large crabgrass, barnyardgrass, common cocklebur, spiny amaranth, spurge, and ragweed.



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Weed Life Cycles

- **Winter annuals**
- Plants that germinate from seed mostly in late summer through winter, flower and produce seed in late winter to spring, and die in late spring to early summer. Control November - March
 - Examples include annual ryegrass, hairy buttercup, chickweed, henbit, purple deadnettle and cressleaf groundsel.



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Weed Life Cycles

- **Biennials**
- Plants that complete their life cycle over two growing seasons. They germinate and produce a vegetative rosette the first year. The second year, the plants bolt, flower, produce seed and die. Best controlled in rosette stage
 - Examples include musk thistle, bull thistle, wild carrot, common burdock and yellow rocket.



Weed Life Cycles

- **Perennials**
- Plants that produce a vegetative structure (taproot, tuber, bulb, rhizome, etc.), which allows them to live for more than two years. Most perennials also reproduce from seed. Control is growth stage dependent
 - Examples include johnsongrass, buckhorn plantain, horsenettle, tall ironweed, goldenrod and brambles.



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Weed Control in Pastures

- Difficult challenge
- Weeds often grow on rough terrain/hillsides
- Livestock tracking opens the soil allowing weeds to germinate
- Herbicides kill the weeds, but may kill your legumes too



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Options Available

- Fertility/Fertilization
- Multispecies grazing
- Mowing/clipping
- Herbicides
 - Always check the label, there may be grazing/hay cutting restrictions etc.

Combine all the above for an integrated approach to weed management



- **Purple Deadnettle**
- A winter annual.
- Mature plants have square stems and gently lobed triangular shape leaves.
- Flowers are crowded at the end of the branches and form under the leaves.



- **Henbit**
- A winter annual.
- Mature plants have square stems with whorled leaves and showy pink to purple flowers.
- Flowers are above the upper leaf whorls.



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- **Purple Deadnettle Control**

- Alfalfa Hay

- Eptam
- Metribuzin
- Sinbar
- Glyphosate (spot treat)
- Paraquat



- **Henbit Control**

- Alfalfa Hay

- Eptam
- Metribuzin
- Sinbar
- Glyphosate (spot treat)
- Paraquat



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- **Ground Ivy**
- A low growing, creeping perennial.
- Can reproduce by seeds, but most often reproduction is by stems that root at the nodes.
- Square stem plant with opposite leaves that are rounded or heart shaped.



- **Common Mallow**
- Often confused with Ground Ivy.
- Can grow as a winter annual, summer annual or biennial plant.
- Will grow erect, but is more often prostrate in its growth habit.
- Round stem with alternate leaf pattern.



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- **Ground Ivy Control**
- Usually not a problem in pastures
- 2,4-D
- dicamba products



- **Common Mallow Control**
- Usually not a problem in pastures
- 2,4-D
- dicamba products



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- **Chickweed**

- A low growing winter annual that can form dense thick patches.
- Reproduction is by seed.
- More than one generation can be produced a year in cool, moist areas.
- Small white flower with 5 petals.



- **Yellow Rocket**

- Generally a biennial with deep-green glossy foliage. First year rosette shown at bottom right.
- Reproduces by seed.
- The flowering stem produces bright yellow flowers in early spring the second year.



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- **Chickweed control**
- dicamba products
- Metsulfuron
- Cimarron Max
- Glyphosate (spot treat)



- **Yellow Rocket Control**
- Cimarron Max
- Crossbow
- Metsulfuron
- Glyphosate (spot treat)



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- **Curly Dock**
- A herbaceous perennial with tall, erect stems.
- Reproduces by seeds and a thick fleshy taproot.
- It is a variable species that hybridizes with other dock species.



- **Wild Mustard**
- Winter/Summer annual plant
- 2-7 inch leaves with irregularly lobed lower leaves
- Seeds can live in the soil for many years.



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- **Curly Dock Control**
- dicamba products
- Cimarron Max
- Forefront
- Milestone
- Grazon
- Glyphosate (spot treat)



- **Wild Mustard Control**
- In Alfalfa
 - Butyrac
 - Chateau
 - Metribuzin
 - Sinbar
 - Glyphosate (spot treat)



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- **Oxeye Daisy**
- A herbaceous perennial plant in the aster family
- The plant produces over 500 seeds that spread by wind or animals
- Seeds remain viable for 2-3 years
- It can quickly replace up to 50% of the grass species in pastures



- **Cressleaf Groundsel**
- Winter Annual plant
- Can be toxic to livestock
- Yellow individual flowers in a cluster
- Leaf alternate, deeply divided with wide round toothed lobes



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- **Oxeye Daisy Control**

- Forefront
- Milestone
- Grazon P&D
- Glyphosate (spot treat)



- **Cressleaf Groundsel Control**

- 2,4-D
- 2,4-D + dicamba
- Sencor 75DF
- Pursuit
- Glyphosate (spot treat)



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- **Broadleaf Plantain**
- A rosette forming perennial with broad oval leaves.
- Reproduce by seed.
- Has a slender, fibrous taproot and can grow in compacted soils.



- **Buckhorn Plantain**
- A narrow leaved perennial that forms a basal rosette.
- Reproductions is by seed and new shoots from the base of the plant.
- Seedhead is a dense cone-like spike on the end of a leafless stem.



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- **Broadleaf Plantain Control**

- 2,4-D
- Cimarron Max
- Crossbow
- Forefront
- PastureGard
- Glyphosate (spot treat)



- **Buckhorn Plantain Control**

- 2,4-D
- Cimarron Max
- Crossbow
- Forefront
- PastureGard
- Glyphosate (spot treat)



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- **Horse Nettle**

- An erect perennial that spreads by spreading rhizomes and seeds.
- Leaves are alternate with older leaves wavy, lobed and prickly on both sides.
- Mature fruit seed are yellow berries (green when immature).



- **Eastern Black Nightshade**

- An erect branching summer annual or short lived perennial.
- Mature foliage is slightly hairy with smooth stems.
- Mature fruit seed are glossy black, spherical berries.



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- **Horse Nettle Control**

- Cimarron Max
- Metsulfuron
- Milestone
- Glyphosate (spot treat)



- **Eastern Black Nightshade Control**

- Forefront
- Milestone
- Glyphosate (spot treat)



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- **Smooth Groundcherry**
- A perennial with deeply rooted thick fleshy rhizomes.
- Reproduces by seeds & rhizomes.
- Fruit is covered by a papery bladder-like case and flowers are greenish-yellow with purple center.



- **Yellow Nutsedge**
- A perennial with triangular stems and long-grass like leaves that are yellowish-green.
- Can reproduce by seed, but mainly by tubers on the end of the rhizome roots.
- Dormant tubers remain viable >10 yrs.



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- **Smooth Groundcherry Control**
- Crossbow
- Glyphosate (spot treat)



- **Yellow Nutsedge Control**
- Usually not a problem in pastures
- halosulfuron products



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- **Hemp Dogbane**
- Native perennial weed.
- Grows 1-4 feet tall and reproduces by root and seeds.
- Resembles milkweed, shoots emerge late May-June with reddish color stem.
- Can be toxic to livestock (esp. Horses)



- **Milkweed**
- A perennial with a thick un-branched stem.
- Reproduces from seeds or rhizomes..
- Stem produces milky sap when broken.
- Opposite leaves (sometimes whorled) are oblong to elliptic with a prominent white midvein.



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- **Hemp Dogbane Control**
- Remedy Ultra
- 2,4-D
- Cimarron Max
- Curtail
- Glyphosate (spot treat)



- **Milkweed Control**
- Frequent mowing
- Milestone (F)
- Crossbow (F)
- Glyphosate (spot treat)



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- **Canada Thistle**

- A persistent perennial plant that spreads by wind-blown seeds or rhizomes.
- Leaves are deeply lobed with spiny margins.
- Flowers are pink to purple in color.



- **Bull Thistle**

- A biennial with prominent spines.
- A basal rosette is formed the first year while erect branching stems develop the second year.
- Spine-tipped bracts support reddish purple flowers.



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- **Canada Thistle Control**

- Forefront
- Milestone
- Curtail
- Stinger
- Glyphosate (spot treat)



- **Bull Thistle Control**

- 2,4-D
- Forefront
- Milestone
- Crossbow
- Curtail
- Stinger
- Glyphosate (spot treat)



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- **Cocklebur**

- An erect growing branched summer annual with distinctive prickly burs.
- Burs are elliptical to egg shaped.
- Leaves are spirally arranged with deeply toothed margins.



- **Burdock**

- A biennial producing a large coarse leaved rosette the first year and a much more erect, branched stem shape the second year.
- The plant produces spiny persistent burs that terminate in Velcro-like hooks.



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- **Cocklebur Control**

- Cimarron Max
- Crossbow
- Dicamba
- Forerfront
- Milestone
- Stinger
- Glyphosate (spot treat)



- **Burdock Control**

- Cimarron Max
- Crossbow
- 2,4-D
- Forerfront
- Milestone
- PastureGard
- Glyphosate (spot treat)



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- **Yellow Foxtail**
- A clump-forming summer annual that reproduces by seed and has a characteristic bottle-brush or “fox tail” seedhead.
- Green Foxtail & Giant Foxtail are very similar species.



- **Jimsonweed**
- An annual that grows to five feet tall.
- The leaves are coarsely serrated along the edge and 3-8 inches long.
- A hard spiny seed capsule forms before bursting open when ripe.



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- **Yellow Foxtail Control**
- In Alfalfa
 - Balan
 - Eptam
 - Clethodim
 - Post/Post Plus
- Pastures
 - No good herbicides



- **Jimsonweed Control**
- Cimarron Max
- dicamba products
- Forefront
- Crossbow
- Glyphosate (spot treat)



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- **Bur Cucumber**

- This herbaceous plant is an annual vine growing up to 25' long that develops multiple lanky stems
- Can grow in moist meadows in the floodplain, banks of ditches and rivers



- **Fall Panicum**

- Is a fibrous-rooted annual grass that reproduces by seeds
- Fall panicum flowers from June to October and produces seed in late summer and fall
- It has a distinctive pyramid shape and long, wispy flower stalks



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- **Bur Cucumber Control**

- Multiple mowings
- dicamba products
- Pastures
 - Usually not a problem



- **Fall Panicum Control**

- In Alfalfa
 - Balan
 - Eptam
 - Clethodim
 - Poast/Poast Plus
 - Glyphosate (spot treat)



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- **Common Ragweed**
- An erect, branching summer annual.
- Pollen from this plant is most common cause of hay fever.
- Reproduces from seed.
- Leaves are deeply cleft on margins forming rounded to pointed lobes.



- **Giant Ragweed**
- An erect summer annual that can reach six feet tall.
- Reproduces by seed.
- Mature plant leaves generally have 3-lobes, but sometimes 5-lobes.



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- **Common Ragweed Control**

- 2,4-D
- Crossbow
- Curtail
- dicamba products
- Forrefront
- PastureGard
- & More
- Glyphosate (spot treat)



- **Giant Ragweed Control**

- 2,4-D
- Crossbow
- Curtail
- dicamba products
- Forrefront
- PastureGard
- & More
- Glyphosate (spot treat)



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- **Redroot Pigweed**
- An erect branching summer annual.
- Reproduction is from seed.
- Small greenish flowers are produced in dense, stiff spike-like terminal shoots.
- Fibrous taproot is usually red.



- **Spiny Amaranth**
- A summer annual that grows erect and freely branches.
- Roots are fibrous from a well developed taproot.
- Has a pair of sharp spines at base of most leaves.



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- **Redroot Pigweed Control**

- Cimarron Max
- dicamba products
- Metsulfuron
- PastureGard
- Glyphosate (spot treat)



- **Spiny Amaranth Control**

- 2,4-D
- Cimarron Max
- dicamba products
- Crossbow
- Milestone
- Glyphosate (spot treat)



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- **Smartweed**

- An erect or ascending, often branched summer annual.
- Reproduction is by seed.
- Stems are green or reddish with bright pink to white flowers that form on a spike-like cluster.



- **Smooth Bedstraw**

- An erect to prostrate mat forming perennial.
- Reproduces by rhizomes and stolons.
- Stems are smooth and have a whorled leaf pattern.
- Mature plants have numerous small white flowers



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- **Smartweed Control**

- Forefront
- Milestone
- Grazon P & D
- Metsulfuron
- Glyphosate (spot treat)



- **Smooth Bedstraw Control**

- Crossbow
- Forefront
- Milestone
- Glyphosate (spot treat)



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- **Spotted Knapweed**
- A perennial, invasive plant that can produce large amounts of seed from numerous terminal & axillary heads.
- Grazing capacity can be reduced 65-90% if left untreated.



- **Queen Anne's Lace**
- Also known as wild carrot this plant is an erect growing biennial reaching 3-4 feet in height from a tough, fibrous taproot.
- Reproduces by seed.
- Flat-topped umbel flower with white petals.



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- **Spotted Knapweed Control**

- Forefront
- Milestone
- Curtail
- dicamba products
- Stinger
- Glyphosate (spot treat)



- **Queen Anne's Lace Control**

- Cimarron Max
- Crossbow
- Metsulfuron
- Glyphosate (spot treat)



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- **Ironweed**
- A warm season perennial.
- Fibrous taproot and rhizomes, but reproduces primarily by seeds.
- Spreading flat-topped flower with 13-30 purple colored florets.



- **Goldenrod**
- A tall erect perennial.
- Reproduces by seed or rhizome growth and can form large patches.
- Flowers are yellow, open in August and remain until frost.



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- **Ironweed Control**

- Crossbow
- Forefront
- Milestone
- Pasture Gard
- Redeem
- Glyphosate (spot treat)



- **Goldenrod Control**

- dicamba products
- 2,4-D
- Forefront
- Curtail
- Glyphosate (spot treat)



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- **Johnsongrass**

- A coarse textured perennial grass.
- Reproduces by seeds and aggressive, thick rhizomes.
- Seedhead is a large, open, coarse purplish panicle.



- **Broomsedge**

- A clump forming perennial grass.
- Most commonly recognized in the dormant stage as copper-tan clumps of dried leaves & stems.
- Reproduces by seeds and short rhizomes.



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- **Johnsongrass Control**
- Multiple mowings/grazing
- Glyphosate (spot treat)



- **Broomsedge Control**
- Add nutrients
 - Lime
 - Phosphorus



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- **Ailanthus** (Tree-of-Heaven)
- Aggressive competitor, produces allelopathic compound suppresses growth of native trees/shrubs
- Prolific seeder (300,000/tree/yr.)
- Often mistaken for Black Walnut, Sumac or Butternuts
- Sap can cause heart problems if in contact with skin



- **Bush Honeysuckles**
- Multiple species cause problems: Tartarian, Amur, and Morrow
- Upright deciduous shrubs with long arching branches 6 to 20 feet tall
- Honeysuckle out competes and shades out desirable native woodland species



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- **Ailanthus Control**

- Foliar

- Crossbow
- triclopyr products (Garlon 3A, Garlon4, Remedy, etc.)
- Glyphosate

- Cut stump

- triclopyr products (as above)
- imazapyr products (Stalker, Chopper, Arsenal etc.)



- **Bush Honeysuckle Control**

- Foliar

- Crossbow
- triclopyr products (Garlon 3A, Tahoe 3A etc.)
- Glyphosate

- Cut stump

- Tordon RTU
- Pathway



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- **Multiflora rose**
- A perennial, prickly-stemmed shrub.
- Reproduces by seed and runner stems which form adventitious roots.
- White flowers bloom in June and form clusters of red berries.



- **Autumn Olive**
- A medium to large invasive, deciduous shrub.
- Reproduces by seeds dispersed by birds & other animals.
- Can grow in poor soil & in low pH soil.



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- **Multiflora rose Control**
- Cimarron Max
- Metsulfuron
- Remedy Ultra
- Crossbow
- Spike 20P
- Glyphosate (spot treat)



- **Autumn Olive Control**
- Remedy Ultra
- Crossbow
- Garlon
- Arsenal
- Glyphosate (spot treat)



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In Summary

- Weeds can reduce quantity and quality of hay and pasture forages
- Properly Identify the weed(s)
 - Determine the life cycle and best approach to control weeds
- Use herbicides as the last option
 - When using herbicides, be sure to read and follow the label, use appropriate amounts and wear PPE



Additional Resources:

2017 Rate per Gallon --- Herbicides Used in Fence Rows and Spot Sprays

Trade Name (Common name)	Herbicide Cost (Approximate)	Rate per Acre	Cost per Acre	Rate per Gallon for Spot Spray	Cost of product to Mix One Gallon
2,4-D amine	\$ 18/gal.	0.5 - 4 pt.	\$ 1-9/A	1.3 oz./gal. or 38.5 ml./gal.	\$0.18
2,4-D Lo-V ester	\$ 22/gal.	0.5 - 4 pt.	\$ 2-11/A	1.3 oz./gal. or 38.5 ml./gal.	\$0.22
Banvel (dicamba)	\$ 87/2.5 gal.	1-16 pt.	\$ 4-70/A	0.64 oz./gal. or 18.9 ml./gal.	\$0.18
Cimarron Max (metsulfuron + dicamba + 2,4-D)	\$ 140/2.5 gal.	Rate I, II, or III See label - co-pack	\$ 7-28/A	N/A	N/A
Cimarron Plus (metsulfuron + chlorsulfuron)	\$ 40/2oz.	0.25-1.25 oz.	\$ 5-25/A	0.01 oz./gal. or 0.284 grams/gal.	\$0.20
Crossbow/Crossroad (triclopyr + 2,4-D)	\$ 157/2.5 gal.	1-4 qt. 6 qt. (woody) 1-1.5% spot spray	\$ 16-63/A \$ 94/A	1.28 -1.92 oz./gal or 37.9 -56.8 ml/gal	\$0.63 - \$0.94
Curtail (clopyralid + 2,4-D)	\$ 141/2.5 gal.	2-4 qt.	\$ 28-56/A	0.37- 1.5 oz./gal or 11ml. - 44ml./gal	\$0.16 - \$0.66

Additional Resources:

2017 Rate per Gallon --- Herbicides Used in Fence Rows and Spot Sprays

GrazonNextHL (aminopyralid + 2,4-D)	\$ 120/2.0 gal.	1.2-2.1 pt.	\$ 9- 26/A	0.55 – 1 oz./gal. or 16.3 - 29.6ml./gal.	\$0.26 - \$0.47
Milestone (aminopyralid)	\$109/qt.	3-7 oz.	\$ 10-24/A	0.89 -2.1 ml./gal	\$0.10 - \$0.24
Roundup (glyphosate)	\$ 57/2.5 gal.	1-3 % solution Spot treat only	\$ 0.23-0.69/ gal. mixed	1.28-3.84 oz./gal or 37.9-113.7ml/gal	\$0.23 - \$0.68
Other glyphosates	\$ 38/2.5 gal.	1-3 % solution Spot treat only	\$ 0.15-0.41/ gal. mixed	1.28-3.84 oz./gal. or 37.9-113.7 ml/gal	\$0.15 - \$0.45
Spike pellets (tebuthiuron)	\$ 75/5 lbs.	5-20 lbs./A or 3/8-3/4 oz./ 100ft ²	\$ 75-300/A \$0.35- .75/ 100ft ²	N/A	N/A
Stinger (clopyralid)	\$ 139/ 1/2 gal.	0.5 - 1 1/3 pt.	\$ 23-46A	2.47-6.41 ml/gal.	\$0.18 - \$0.47
PastureGard (triclopyr + fluroxypyr)	\$ 245/2.5 gal.	2-8 pt.	\$ 25-98/A	0.37-1.47 oz. /gal or 11 – 44 ml. /gal.	\$0.28 - \$1.12
Remedy Ultra (triclopyr)	\$ 88/ gal.	1-4 pt.	\$ 11-44/A	0.64 oz. /gal. or 18.9 ml. /gal.	\$0.44
Weedmaster dicamba + 2,4-D	\$ 42/gal	0.5 pt – 5.0 pt. Depends on weed size	\$3-26/A	1 oz. / gal. or 29.6 ml/gal	\$0.33

Any use of trade names in this chart does not imply endorsement of the product or recommend exclusion of any others which may be similar.

Additional Resources:

<http://u.osu.edu/gelley.2/livestock-forages/>

www.go.osu.edu/Forages

www.beef.osu.edu

www.sheep.osu.edu



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