

## North Dakota Noxious and Troublesome Weeds

[www.ag.ndsu.nodak.edu/invasiveweeds/](http://www.ag.ndsu.nodak.edu/invasiveweeds/)

Photographs and descriptions of weeds (except quackgrass) in this section can be found in NDSU Extension publication W-1411. Identification and control publications for specific invasive weeds can be found at <http://www.ag.ndsu.edu/publications/crops/weeds>.

**By North Dakota Law, all land owners must control noxious weeds on their property.**

**Refer to the following Extension Circulars for additional information:**

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## BINDWEED, FIELD

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Glyphosate <sup>9</sup> + dicamba <sup>4</sup>	Up to 1.5 lb ae + <b>1 pt 4SL</b> (0.5 lb) <b>See Remarks.</b>	Preplant, fallow, post-harvest, and CRP.	Actively growing. Vines: At least 12 inches long. Apply at beyond full bloom.	Tankmixture provides less potential for soil residual than with higher rates of dicamba applied alone. Add AMS at 8.5 lb/100 gal. A3-7 T9 T10
Glyphosate <sup>9</sup> + 2,4-D <sup>4</sup>	<0.38 lb + <b>1.5 pt 4EC/SL</b> (0.75 lb)	Preplant, fallow, post-harvest.	Vines: 6 to 18 inches long.	Suppression in patches or individual plants. Allow at least 7 days between application and tillage. Control is reduced under dry conditions. Add AMS at 8.5 lb/100 gal. A3-7 T9-10
2,4-D <sup>4</sup> amine or ester	<b>1.5 to 2 pt 4SL</b> (0.75 to 1 lb) <b>1.33 to 2 pt 4EC</b> (0.66 to 1 lb)	Spring wheat and barley.	Crop: Tiller stage.	The high rate may injure crop but is beneficial in small areas to control bindweed. Does not provide long term control. T11
<b>Express</b> / generic tribenuron <sup>2</sup> + 2,4-D <sup>4</sup> + dicamba <sup>4</sup>	<b>0.17 to 0.3 oz DF</b> <b>0.25 to 0.5 oz SG +</b> <b>0.5 pt 4EC/SL +</b> <b>2 to 3 fl oz 4SL</b> (0.125 to 0.25 oz + 0.25 lb + 1 to 1.44 oz)	Spring wheat including durum.	Crop: Tillering and before crop exceeds the 5-leaf stage.	Provides season-long control. 2,4-D enhances weed control and crop safety. Add NIS at 0.125% v/v.
Metsulfuron <sup>2</sup> + 2,4-D <sup>4</sup> + dicamba <sup>4</sup>	<b>0.05 to 0.1 oz XP +</b> <b>0.5 pt 4EC/SL</b> <b>+ 2 to 3 fl oz 4SL</b> (0.0375 to 0.075 oz + 0.25 lb + 1 to 1.44 oz)			Do not apply metsulfuron within 22 months from last metsulfuron treatment or on soils above a pH of 7.9. Refer to metsulfuron label for additional restrictions. C5 T14 Y3 Y15
2,4-D <sup>4</sup>	<b>1 pt 4EC/SL</b> (0.5 lb)	Corn.	Corn: 3 to 8 inches tall.	Use drop nozzles after corn is more than 8 inches tall. Provides field bindweed suppression only.
Dicamba <sup>4</sup>	<b>0.5 to 1 pt 4SL</b> (0.25 lb)		Corn: See remarks.	Apply 0.5 to 1 pt/A up to 8 inches tall. Apply 0.5 pt/A post-direct from 8 inches to 36 inches tall or 15 days prior to tassel. A3-8 B6 C4 D3 T13 Y15
Glyphosate <sup>9</sup>	<b>1 to 1.5% solution</b> or up to 3 lb ae <b>See Remarks.</b>	Patches in wheat, barley, oat, corn, soybean or trees.	Crop: Prior to heading or flowering.  Bindweed: Bud to flowering stage.	Crop will be killed in treated area. Avoid drift or spraying tree foliage. Repeat applications are required for complete control. Apply to actively growing bindweed. Add AMS fertilizer at 8.5 lb/100 gal. A3-7 B8 T9-10
<b>Facet L +</b> MSO adjuvant (quinclorac <sup>4,26</sup> )  Ransom and Richland counties	<b>22 to 32 fl oz L +</b> <b>2 pt</b> (4 to 6 oz)	Fallow, post-harvest or preplant to wheat including durum.	In fall prior to a killing frost. Allow 30 days after tillage.	Plant wheat at least 1 inch deep. Add AMS at 2.5 lb/A or UAN at 1 gal/A. Refer to label for tank-mix rates in wheat and fallow. B10 T1 Y15
2,4-D ester <sup>4</sup>	<b>2 to 4 pt 4EC</b> (1 to 2 lb)	Fallow or post-harvest, and CRP.	Bindweed: Actively growing and regrowth 12 inches long to bud.	Apply only registered brands of 2,4-D in CRP. Cultivate fallow land until early July to achieve optimum growth at time of application. Spray in late August or September. Respray in following crop. Does not provide long term control. T11
Dicamba <sup>4</sup>	<b>2 to 4 pt 4SL</b> (1 to 2 lb)			Mid to late fall treatments more effective than summer treatments. Rotate to wheat, corn, soybean or sorghum only. Crop injury may occur if the interval between application and planting is less than 45 days per pt/A dicamba used, excluding days when ground is frozen. Add oil adjuvant to improve control. A3-8 B6 T13 Y15

## BINDWEED, FIELD cont.

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
Dicamba <sup>4</sup>	<b>4 to 16 pt 4SL</b> (2 to 8 lb)	Patches or individual plants in CRP, pastures, fallow, and noncropland.	Bindweed: Actively growing and regrowth 12 inches long to bud.	Apply to foliage and/or soil. Consult label for grazing restrictions. Use low rate only in fall and high rates in dense or old stands. Add oil adjuvant to improve control. A3-8 B6 T13 Y15
<b>Tordon 22K</b> (picloram <sup>4</sup> ) + 2,4-D <sup>4</sup> <b>RUP</b>	<b>2 to 4 pt SL + 1 to 2 pt 4EC/SL</b> (0.5 to 1 + 0.5 to 1 lb)	Pasture, rangeland, CRP, and noncropland.		Picloram + 2,4-D is more cost-effective than picloram alone at higher rates. Consult reference for grazing restrictions. T17 Y15
<b>Facet L + Overdrive +</b> MSO adjuvant (quinclorac <sup>4,26</sup> + dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )	<b>32 fl oz L + 6 oz WDG + 2 pt</b> (6 oz + 3 oz & 1.2 oz)		Fall: Bindweed: In fall prior to a killing frost. At least 4 inches of stem.	B10 T1 T13 Y15
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)	Non-crop and wildlife habitats.	Actively growing in early summer or fall rosettes.	<b>Use only in non-crop areas.</b> Allow 365 days before grazing or haying. Do not apply near trees. Add NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.

## KNAPWEED, DIFFUSE AND SPOTTED AND YELLOW STARHISTLE

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
2,4-D <sup>4</sup> amine or ester	<b>2 to 4 pt 4EC/SL</b> (1 to 2 lb)	Fallow, post-harvest, CRP, pasture, and rangeland.	Rosette stage is preferred.	Several years of annual treatment are necessary. Use only registered 2,4-D brands for CRP. T11
Dicamba <sup>4</sup>	<b>2 to 4 pt 4SL</b> (1 to 2 lb)		Bud to bloom is second best.	Plants are controlled slowly. Add NIS at 1 qt/100 gal water to improve consistency of control. A3-8 B6 T13
<b>Tordon 22K</b> (picloram <sup>4</sup> ) <b>RUP</b>	<b>1 to 2 pt SL</b> (0.25 to 0.5 lb)	CRP, pasture, rangeland, and noncropland.		Consult label for grazing restriction. Apply up to 2 pt/A broadcast and 4 pt/A for spot treatment. T17 Y15
<b>Tordon 22K +</b> (picloram <sup>4</sup> ) 2,4-D <sup>4</sup> amine / ester <b>RUP</b>	<b>1 to 2 pt SL + 1 qt 4EC/SL</b> (0.25 to 0.5 lb + 1 lb)			
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>4 to 8 fl oz SL</b> (1 to 2 oz)	Noncropland and wildlife habitats.	Spring: Prior to flowering or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal. Use lowest rate for yellow starthistle.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)			
<b>Plateau</b> (imazapic <sup>2</sup> )	<b>6 fl oz SL</b> (1.5 oz)	CRP, pasture, rangeland, and noncropland.	Rosette stage in the fall.	<b>For yellow starthistle only.</b> Do not apply more than 4 oz/A in CRP. Add MSO adjuvant at 1 qt/A + 28% UAN at 1 qt/A. Refer to label for restrictions. T16
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>3 to 7 fl oz SL</b> (0.75 to 1.75 oz)		Spring: Rosette to bolting. Fall: Rosettes.	Apply up to 14 fl oz/A for spot treatment. Use lower rates for yellow starthistle. Apply with NIS at 1 qt/100 gal. Refer to label for grazing restrictions. T15
<b>Transline</b> (clopyralid <sup>4</sup> )	<b>2/3 to 1 pt SL</b> (4 to 6 oz)	Noncropland and right-of-way.	Rosette to bud stage.	Add NIS at 1 qt/100 gal water. Stinger is labeled for CRP. A3 A6
Glyphosate <sup>9</sup>	1.5 to 2.25 lb ae <b>See Remarks.</b>	Fallow and noncropland.	Bud to bloom stage - late summer to early fall.	Other vegetation will also be killed. Retreat the following spring with 2,4-D at 2 to 4 pt/A to control seedlings and escapes. Refer to label for adjuvant use. Add AMS at 8.5 lb/100 gal water. A3-7 B8 T10

## KNAPWEED, RUSSIAN

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>8 to 12 fl oz SL</b> (2 to 3 oz)	Noncropland and wildlife habitats.	Spring: Prior to flowering or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)			
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>5 to 7 fl oz SL</b> (1.25 to 1.75 oz)	CRP, pasture, rangeland, and noncropland.	Spring: Bud to flowering stage. Fall: Dormant plants.	Apply up to 14 oz/A for spot treatment. Apply with NIS at 1 qt/100 gal. Refer to label for grazing restrictions. T15
<b>Plateau + MSO adjuvant</b> (imazapic <sup>2</sup> )	<b>12 fl oz SL + 2 pt</b> (3 oz)		Apply following several hard frosts (mid-October). Plants may be dormant with grey stems and no leaves. Application in mid-September or during flowering in mid-summer provides shorter-term control than late applications.	Rates above 8 fl oz/A can reduce grass production. T16
<b>Tordon 22K</b> (picloram <sup>4</sup> )	<b>3 to 4 pt SL</b> (0.75 to 1 lb)			Consult label for grazing restriction. Apply up to 2 pt/A broadcast and 4 pt/A for spot treatment.

## PURPLE LOOSESTRIFE OR LYTHRUM

Herbicide	Product/A (ai/A)	Weeds	When to Apply	Remarks and Paragraphs
Rodeo / generic 4 lb ae/gal glyphosate <sup>9</sup> approved for aquatic use	<b>1 to 1.5 gal/100 gal</b> <b>1.3 to 1.9 fl oz/gal water of a 4 lb/gal conc.</b> (1 to 1.5% conc.)	Drainage and aquatic sites.	July to early September.	Use only registered 4 lb ae/gal glyphosate formulations. Add NIS approved for use in aquatic sites at 1 gal/100 gal water. Control seedlings using a 2,4-D formulation labeled for use near water. Biological control agents have been introduced for control. A3-7 B8 T10
<b>Garlon 3A</b> (triclopyr-amine <sup>4</sup> ) <b>Vastlan</b> (triclopyr-choline <sup>4</sup> )	<b>1 to 3 gal/100 gal water</b> (3 to 9 lb) <b>4.5 to 6 qt/A</b> (4.5 to 6 lb)			Add NIS. Minimize overspray to open water especially application along shore of flowing water. Does not affect cattail or desirable grass species. For backpack application add Vastlan at 1 to 1.5%. T12
<b>Habitat</b> (imazapyr <sup>2</sup> )	<b>1 pt SL</b> (0.25 lb)		Plants actively growing.	Can be applied only by federal or state agency personnel trained in aquatic pest control. Will injure cattail.
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>1 pt/100 gal SL</b> (0.125% conc.)	Non-irrigation ditch banks, wildlife or natural areas, seasonally dry wetlands, including riparian areas.	July to early September.	Do not apply directly to water. Safe under or near many tree species. Apply with NIS at 1 qt/100 gal. T15
<b>Capstone</b> (triclopyr <sup>4</sup> & aminopyralid <sup>4</sup> )	<b>1 gal/100 gal SL</b> (1% conc.)			
<b>Biological Control</b>	Insects			Two leaf feeding beetles ( <i>Galerucella</i> spp.) have been successful in the state. Contact your local weed control officer or state APHIS officer in Bismarck. T21

## QUACKGRASS

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
Glyphosate <sup>9</sup>	0.75 lb	See label.	See label. Generally 6 to 12 inches tall	See label for registered uses, rates for different formulations, and application information. A3-7 B8
<b>Maverick<sup>2</sup></b> <b>Olympus<sup>2</sup></b>	<b>2/3 oz DF</b> <b>0.6 to 0.9 oz WDG</b>	- HRS wheat - Winter wheat		See label for registered uses, rates for different formulations, and application information. C12
<b>SU herbicides<sup>2</sup></b> Accent/nicosulfuron Resolve/rimsulfuron Option/foramsulfuron	<b>See label.</b>	Registered crops.		See label for application information, adjuvants, and use information. Add MSO at 1.5 pt/A. Y3
<b>POST grass herbicides<sup>1</sup></b>	See page 27.	Labeled broadleaf crops.		Add oil adjuvant at at 1 gal/100 gal water but not less than 1.25 pt/A. A3 E2

## SALT CEDAR

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
<b>Arsenal</b> (imazapyr <sup>2</sup> )	1% solution to foliage or 2 qt/A aerial applied to foliage or 12 oz/gal as a cut stump treatment immediately after cutting.	Wildlife openings and wildlands.	August or September is best but can be applied anytime saltcedar is found. Plants should have green leaves (foliar application).	Thoroughly wet foliage. Do not cut down and remove for at least three years following foliar treatment or regrowth will occur. Add MSO adjuvant at 1 qt/A for foliar application or 0.5 to 1% for backpack sprayer. Avoid drift and contact with desirable plants. Do not contaminate surface water.
<b>Garlon 4</b> (triclopyr-ester <sup>4</sup> )	<b>25% v/v + oil adjuvant</b> (1 qt + 2 qt) (1 lb)	Non-cropland as basal bark or cut stump.	Treatment in late fall or early spring is best; otherwise any time when the bark is not frozen.	Do not spray over open water or irrigation ditches. Complete coverage around the trunk (Garlon only) or stump is required. Garlon 4A in oil can be applied up to 30 days after to cut stumps. Vastlan should be applied as soon as possible after cutting stumps (no effect as a bark treatment). T12
<b>Vastlan</b> (triclopyr-choline <sup>4</sup> )	Undiluted	Cut stump only.		

# SPURGE, LEAFY

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
2,4-D <sup>4</sup> amine or ester	<b>2 to 4 pt 4EC/SL</b> (1 to 2 lb)	CRP, pasture, and rangeland	Leafy spurge: Early bud stage and fall.	Apply both spring and fall for satisfactory control. Do not graze dairy cows for 7 days or beef cows for 3 days after treatment. Apply only registered 2,4-D brands in CRP. A3 A6 T7 T11
<b>Tordon 22K</b> (picloram <sup>4</sup> ) + 2,4-D <sup>4</sup> ester or amine  <b>RUP</b>	<b>1 to 2 pt SL + 2 pt 4EC/SL</b> (0.25 to 0.5 lb + 1 lb)	CRP, pasture, rangeland and roadsides.	Leafy spurge: Spring: True flower stage. Fall: 4 to 12 inch regrowth.	Tordon + 2,4-D at 1 pt/A + 2 pt/A is the most cost-effective treatment in NDSU data. Retreatment at the same rate will be necessary for several years regardless of herbicide or rate. Annual control was greater and years of retreatment needed were less with the 2 pt/A Tordon rate. Fall treatments should use 2 pt/A and apply for 3 to 5 years consecutively. T7 T17-18
<b>Tordon 22K + Plateau +</b> 2,4-D <sup>4</sup> + MSO adjuvant (picloram <sup>4</sup> + imazapic <sup>2</sup> ) <b>RUP</b>	<b>1 pt SL + 4 fl oz SL+ 1 qt 4EC/SL + 1 qt</b> (4 oz + 1 oz + 1 lb)		Leafy spurge: True flower growth in spring.	<b>Do not apply in fall.</b> Addition of Plateau improves long-term leafy spurge control. 2,4-D is not required but does increase spectrum of weeds controlled. Follow labels of all herbicides used. Apply only in spring when plants are in true flower. Some grasses may show temporary stunting. T7 T16-18
<b>Tordon 22K + Overdrive</b> (picloram <sup>4</sup> + dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> ) <b>RUP</b>	<b>1 to 2 pt SL+ 4 to 6 oz WDG</b> (4 to 8 oz + 2 to 3 oz & 0.8 to 1.2 oz)		Leafy spurge: Spring: True flower stage.	Add oil adjuvant to improve control. Overdrive improves long-term leafy surge control with spring but not fall application timing. T7 T13 T17
Dicamba <sup>4</sup>	<b>4 pt 4SL</b> (2 lb)			Add oil adjuvant to improve control. T13
	<b>4 to 16 pt 4SL</b> (2 to 8 lb)	Patches or individual plants in CRP, pasture or noncropland.	Leafy spurge: Spring: True flower stage. Fall: 4 to 12 inch regrowth.	Consult label for grazing restrictions. Add oil adjuvant to improve control. Re-treatment necessary.
<b>Tordon 22K</b> (picloram <sup>4</sup> ) <b>RUP</b>	<b>4 pt SL</b> (1 lb)			Consult narrative for grazing restrictions. T17
Glyphosate <sup>9</sup>	0.75 to 1.5 lb ae <b>See Remarks.</b>	CRP and trees.	Leafy spurge: After July 1 to actively growing plants.	Glyphosate is non-selective. Avoid spraying tree foliage. Retreat with 2,4-D at 2 to 4 pt/A following spring application to control seedlings and escapes. Add AMS at 8.5 lb/100 gal. A3-7 B8 T7 T10
<b>Facet L + MSO adjuvant</b> (quinclorac <sup>4,26</sup> )  Ransom and Richland counties	<b>32 to 64 fl oz L+ 2 pt</b> (6 to 12 oz)	CRP, pasture and rangeland.	Spring: True flower stage. Fall: 4 to 12 inches of regrowth.	Can be used near trees and in areas with sandy soils/high water tables. Tank-mix with Overdrive for long-term control. Allow 7 days before haying. There are no grazing restrictions. B10 Y15
<b>Facet L + Overdrive + MSO adjuvant</b> (quinclorac <sup>4,26</sup> + dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )  Ransom and Richland counties	<b>32 fl oz L + 6 oz WDG + 2 pt</b> (6 + 3 oz & 1.2 oz)	Noncrop, pasture, rangeland, and wildlife habitats.	Spring: True flower. Fall: Prior to frost.	Allow 7 days before haying. B10 T13
<b>Krenite</b> (fosamine)	<b>12 to 16 pt</b> (6 to 8 lb)	Noncropland, adjacent to water and trees.	Spring: True flower growth stage. Fall: Early.	Inconsistent control. Best control with high humidity and good soil moisture. Do not contaminate water during application.

## SPURGE, LEAFY cont.

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
<b>Rodeo</b> / generic 4lb ae/gal glyphosate <sup>9</sup> approved for aquatic use	<b>2 pt SL</b> (0.75 lb)	Adjacent to water.	Mid-July to mid-September.	Use only registered glyphosate formulations. Add NIS approved for use near water at 2 to 4 qt/100 gal water. Subsequent years: Control seedlings with a 2,4-D formulation labeled near water. A3-7 T10
2,4-D <sup>4</sup> amine	<b>2 to 4 pt SL</b> (1 to 2 lb)		Leafy spurge: Actively growing.	Use only 2,4-D formulations labeled for use in or near water, such as Agrilience "AgriSolutions 2,4-D Amine 4", Nufarm "Weedar 64", or Loveland "Savage" and "Amine 4 2,4-D". T7-8
<b>Landmaster BW</b> / generic glyphosate <sup>9</sup> & 2,4-D <sup>4</sup>	<b>54 fl oz 2.4 SL</b> (0.38 & 0.63 lb)	Noncropland, pasture, and fallow.	Leafy spurge: Seed set stage or actively growing in fall.	Some grass injury and stunting may occur. Injury is greater with fall than spring treatments. Not to be used in consecutive years. A3-8 B8 T10-11
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>8 to 12 oz SL</b> (2 to 3 oz)	Noncropland and wildlife habitats.	Spring: Prior to flowering or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>4.75 to 6 oz DF</b> (1.9 to 2.4 oz & 0.75 to 0.95 oz)			
<b>Plateau +</b> MSO adjuvant (imazapic <sup>2</sup> )	<b>8 to 12 fl oz SL + 2 pt</b> (2 to 3 oz)	Pasture, new or existing grass plantings in cropland, CRP or noncropland.	Early to mid September.	May be used on CRP, pasture, rangeland, industrial sites, roadside right-of-way or noncropland. Rates above 8 fl oz can reduce grass production, especially cool season species. Safe under most tree species but will cause temporary yellowing of spruce candles. See label for additional information. T16 T18
<b>Plateau + Sharpen + NIS adjuvant</b> (imazapic <sup>2</sup> + saflufenacil <sup>14</sup> )	<b>4 to 6 fl oz SL+ 1 to 2 fl oz SC+ 1 qt/100 gallon</b> (1 to 1.5 oz + 0.36 to 0.72 oz)	Noncropland and wildlife habitats.	Spring: True flower stage.	<b>Allow 365 days before grazing or haying.</b> Do not apply in the fall. Can also be applied with AMS. Substituting MSO adjuvant for NIS will injure grasses. See label for additional information. T16 T18
<b>Casoron 4G</b> <b>Norosac 10G</b> (dichlobenil)	<b>150 to 200 4G</b> <b>60 to 80 lb 10G</b> (6 to 8 lb)	Sensitive areas such as near trees or water where long residual herbicides cannot be used.	Leafy spurge: Late Nov. to early March - before emergence.	Season long suppression only. Must be applied before leafy spurge emerges. No POST control.
<b>Overdrive +</b> MSO adjuvant (dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )	<b>6 oz WDG + 2 pt</b> (3 oz & 1.2 oz)		Spring: True flower. Fall: Early to mid-September.	<b>Do not allow spray to contact basal bark or tree leaves.</b> A3 A6 T13
<b>GrazonNext HL + Overdrive +</b> MSO adjuvant (aminopyralid <sup>4</sup> & 2,4-D <sup>4</sup> + dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )  Ransom and Richland counties	<b>2.1 pt + 4 oz WDG + 2 pt</b> (1.7 & 14 oz + 2 & 0.8 oz)		Somewhat less control than when mixed with Overdrive, but safe to use in areas with high water table.	
<b>Cultivation</b> <sup>31</sup>		Cropland.	Leafy spurge: 2 to 4 inches tall.	Leafy spurge will not survive intensive tillage. Repeat when plants are 2 to 4 inches tall. T8
			Late fall.	Cultivate when plants are 3 to 6 inches tall on fallow or post-harvest in September and again in October. T8
<b>Biological Control</b>	<b>Insects and Grazing</b>	CRP, pasture, rangeland and noncropland.	See narrative.	Several insects are available. Sheep and goats can be used for management of leafy spurge infestations. See narrative for additional information. T20

# THISTLE, CANADA

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
<b>Express /</b> generic tribenuron <sup>2</sup>	<b>0.17 to 0.33 oz DF</b> <b>0.25 to 0.5 SG</b>	Wheat, barley and pasture.	Thistle: Rosette to pre-bud stage.	Add 2,4-D ester. Add NIS except when adding 2,4-D ester at 0.75 pt/A. A4-6 T3 T9 Y1-2
Thifen <sup>2</sup> & Triben <sup>2</sup> 4:1 ratio 75DF <b>Affinity T/M 50SG</b> 3:1 <b>Audit 75DF</b> 2:1 ratio 75DF 1:1 ratio 75DF <b>Affinity B/S 50SG</b>	<b>0.4 to 0.67 oz DF</b> <b>0.6 to 1 oz SG</b> <b>0.3 to 0.5 oz DF</b> <b>0.3 to 0.66 oz DF</b> <b>0.25 to 0.5 oz DF</b> <b>0.4 to 0.8 oz SG</b>	Provides a broader spectrum of control than either a.i. alone. Choose ratio based on prevalent weeds.		
MCPA <sup>4</sup> or 2,4-D <sup>4</sup> amine or ester	<b>1.5 pt 4SL</b> (0.75 lb) <b>1.33 pt 4EC</b> (0.66 lb)	Wheat and barley.	Crop: Tiller stage.	Patch spray at higher rates may injure crop but may provide greater thistle control. Small grains are more tolerant to MCPA than 2,4-D. Suppression only. B3 T3 T9
2,4-D <sup>4</sup> ester or amine	<b>2 to 4 pt 4EC/SL</b> (1 to 2 lb)	Fallow or post-harvest.	12 inches tall and actively growing.	Cultivate fallow until early July to achieve rosette stage at time of application. Spray in late August or September. Re-treatment necessary. Suppression only. B3 T3
	<b>3 to 4 pt 4EC/SL</b> (1.5 to 2 lb)	CRP, pasture, and rangeland or trees.		Apply only registered 2,4-D brands in CRP. Refer to paragraph for livestock grazing restrictions. Use only amine formulation in trees. Suppression only. B3 T3 T7-11
<b>Curtail M /</b> generic clopyralid <sup>4</sup> &MCPA <sup>4</sup>	<b>1.75 to 2.33 pt SL</b> (0.09 to 0.122 lb & 0.5 to 0.68 lb)	Wheat, barley, and CRP.	Crop: 3-leaf to jointing.	<u>Rosette technique</u> : Products containing glyphosate or clopyralid fall-applied to Canada thistle in the rosette stage provides greater control than when applied to bolting or flowering stems. Refer to paragraph T3 for control of Canada thistle using the rosette technique. A3 A6 C5 T3 T9 T11 Y15
<b>Curtail /</b> generic clopyralid <sup>4</sup> & 2,4-D <sup>4</sup>	<b>2 pt SL</b> (0.09 lb & 0.5 lb)		Crop: 4-leaf through jointing.	
	<b>4 pt SL</b> (0.19 lb & 1 lb)	Fallow.	Thistle: Rosette until prior to bloom.	
	<b>4 to 6 pt SL</b> (0.19 to 0.29 lb & 1 to 1.5 lb)	CRP and pasture.		
<b>Stinger /</b> generic clopyralid <sup>4</sup>	<b>0.25 to 0.67 pt SL</b> (0.09 to 0.25 lb)	Sugarbeet, wheat, barley, oat, corn.	Thistles: Rosette to pre-bud stage.	High rates in pasture is expensive but more effective. A3 A6 C5 M12 T3 Y15
	<b>0.67 to 1.3 pt SL</b> (0.25 to 0.5 lb)	CRP, pasture and rangeland.		
<b>Hornet</b> (flumetsulam <sup>2</sup> & clopyralid <sup>4</sup> )	<b>2 to 5 oz WDG</b> (0.37 to 0.09 oz & 1 to 2.5 oz)	Corn.	Corn: Up to 24 inches tall. Use drop nozzles on 20 to 24 inch corn.	Add a oil adjuvant at 1 to pt/A. Refer to label for tank-mix options. A3 C5 T3 Y2 Y15
Dicamba <sup>4</sup>	<b>0.5 to 1 pt 4SL</b> (0.25 to 0.5 lb)		Corn: POST up to 5 inches tall.	Do not apply more than 0.5 pt/A after corn is more than 5 inches tall. Can be applied 15 days prior to tasseling. A3 A6 B6 T3 Y
<b>Distinct Overdrive</b> (dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )	<b>6 oz WDG</b> (3 oz & 1.2 oz)	Corn, fallow, and noncropland.	Corn: 4 to 24 inches tall.	Distinct is labeled in cropland - allow 7 days before haying/grazing. Overdrive is labeled in CRP, pasture, rangeland, and noncropland. Add NIS at at 1 qt/100 gal water + 28% UAN at 1.25 qt/A or AMS at 8.5 lb/100 gal. Canada thistle suppression only. A3 A6 B6 C4 T3 Y9
<b>Basagran</b> <sup>6</sup>	<b>1 to 2 pt SL</b> (0.5 to 1 lb)	Soybean and dry bean: Any stage.  Field pea: More than 3 leaf pairs or 4 nodes.	Canada thistle: 6 to 8 inches tall.	Contact herbicide requiring thorough coverage. Apply in two sequential applications with MSO at 1.5 pt/A. <u>Rosette technique</u> : Repeated in-crop applications control Canada thistle during the growing season but allow fall rosette growth. Refer to paragraph T3 for control of Canada thistle using the rosette technique. E3 T3



## THISTLE, CANADA cont.

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
Glyphosate <sup>9</sup>	Up to 2.25 lb ae. <b>See Remarks.</b>	Patches in corn, wheat, oat or soybean.	Prior to heading or flowering.	<u>Rosette technique:</u> Glyphosate or clopyralid fall-applied to Canada thistle in the rosette stage provides greater control than when applied to bolting or flowering plants. Refer to paragraph T3 for control of Canada thistle using the rosette technique. Add AMS fertilizer at 8.5 lb/100 gal. Crop will be killed in treated area. A3-7 T3 T7-10
	<b>Refer to label.</b>	RR Corn: Up to 30 inches tall/6 collars. RR Soybean: Emerge to 14 day PHI. RR canola: Prior to bolting.		
	Up to 2.25 lb ae. <b>See Remarks.</b>	Preharvest wheat, corn, soybean, field pea, and lentil.	Crop seed is physiologically mature. Thistle: At or beyond bud stage.	
		Fallow or post-harvest.	Canada thistle: Rosette or beyond bud stage.	
		CRP, noncropland and around trees.		Avoid spraying tree foliage. A3-7 R1 T3 T7
Dicamba <sup>4</sup>	<b>2 to 4 pt 4SL</b> (1 to 2 lb)	Fall or post-harvest.	Thistle: At least 6 inches tall. Most effective when thistle is in the rosette stage.	May be applied at a lower rate with 2,4-D or glyphosate to reduce soil residue. Add oil adjuvant at 1 to 2 pt/A. A3 A6 B6 C4 T3 T7-9 T13 Y15
	<b>1 pt 4SL</b> (0.5 lb)	CRP, pasture and rangeland.	Thistle: Rosette to 12 inches tall.	Consult label for grazing restrictions. Add oil adjuvant at 1 to 2 pt/A. Mow in noncrop or cultivate in fallow until early July to achieve rosette stage at time of application, followed by spray in late August or September. Retreatment necessary. Refer to label for additional information. A3 A6 B6 T3 T13 Y15
	<b>4 to 8 pt 4SL</b> (2 to 4 lb)	Patches in CRP, pastures, fallow and noncropland.	Spring. Thistle: Rosette to prebud stage. Fall: Rosette following light frost but prior to a killing frost.	
<b>Transline</b> (clopyralid <sup>4</sup> )	<b>0.67 to 1.3 pt SL</b> (0.25 to 0.5 lb)	Pasture, rangeland, and noncropland.		Add oil adjuvant at 1 to 2 pt/A. Observe grazing restriction for lactating animals. A3 T3
<b>Overdrive +</b> MSO adjuvant (dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )	<b>6 oz WDG +</b> <b>2 pt/A</b> (3 oz & 1.2 oz)	Trees.		<b>Do not allow spray to contact basal bark or tree leaves.</b> Mid-summer mowing promotes active growth for effective fall control of rosettes. A3 A6 T3 T13
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>5 to 7 fl oz SL</b> (1.25 to 1.75 oz)	CRP, pasture, rangeland, and noncropland.		Apply up to 14 oz/A for spot treatment. Use low rate in fall, in low density stands, or areas with good grass stands. Fall application is more consistent than spring. Provides good control when applied in late-fall to freeze-up. Refer to label for grazing restrictions. Commercial mixture with 2,4-D available (GrazonNext HL) to increase spectrum of weed control. T15
Chlorsulfuron <sup>2</sup> & Metsulfuron <sup>4</sup>	<b>0.5 to 2 oz DF</b> (0.188 to 0.75 oz & 0.15 to 0.6 oz)			Apply oil adjuvant at 1 to 2 pt/A. T3 T14 Y3
<b>Tordon 22K</b> (picloram <sup>4</sup> )	<b>RUP</b> <b>0.5 to 2 pt SL</b> (0.125 to 0.5 lb)	CRP, pasture, rangeland and fallow.	Thistle: At least 12 inches tall and actively growing.	Retreat at the same rate the following year. Add 2,4-D at 1 qt/A with Tordon at 1 pt/A to improve control. Mid-summer mowing promotes active growth for fall treatment. Mid-September is optimum fall application time and control decreases thereafter. Refer to label for additional information. T3 T17-18
		Patches in CRP and pasture.	Thistle: Actively growing.	Consult reference for grazing restrictions. T3 T17
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>8 to 12 oz SL</b> (2 to 3 oz)	Noncropland and wildlife habitats.	Actively growing in early summer or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal. Only use helicopter for aerial application on rights-of-ways. Read label for other restrictions.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)			

## THISTLE, BIENNIAL: BULL, MUSK, AND PLUMELESS

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
2,4-D <sup>4</sup>	<b>3 to 4 pt 4EC/SL</b> (1.5 to 2 lb)	CRP, pasture, rangeland, and noncropland. (Refer to Remarks and Paragraphs for restrictions)	Late-fall or early spring when thistles are in the seedling to rosette stage.  Biennial thistles reproduce only by seed, so control prior to flowering will eventually eradicate infestations.	Apply only registered 2,4-D brands in CRP. A3 A6 B3 T11
2,4,D <sup>4</sup> + dicamba <sup>4</sup>	<b>2 pt 4EC/SL + 1 to 4 pt</b> (1 lb + 0.5 to 2 lb)			Add oil adjuvant at 1 to 2 pt/A. A3 A6 B3 T11 T13
Chlorsulfuron <sup>2</sup> & Metsulfuron <sup>2</sup>	<b>0.5 to 2 oz DF</b> (0.188 to 0.75 oz & 0.15 to 0.6 oz)			Add oil adjuvant at 1 to 2 pt/A. A3 A5-6 T3 T14
Dicamba <sup>4</sup>	<b>1 to 2 pt 4SL</b> (0.5 to 1 lb)			Add oil adjuvant at 1 to 2 pt/A. Use high rate for patch treatment. A3 A6 B6 Y9 Y13 Y15
<b>Curtail</b> / generic clopyralid <sup>4</sup> & 2,4-D <sup>4</sup>	<b>4 to 6 pt SL</b> (0.19 to 0.29 lb & 1 to 1.5 lb)		Consult respective label for grazing restrictions.	See remarks for Redeem below. A3 A6 C5
Glyphosate <sup>9</sup>	Up to 2.25 lb ae <b>See Remarks.</b>			Non-selective, non-residual, foliar herbicide. Refer to label for adjuvant use. Add AMS fertilizer at 8.5 lbs/100 gal. A4-7 T3 T10
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>3 to 5 fl oz SL</b> (0.75 to 1.25 oz)		Spring: Rosette to bolting plants. Fall: Seedlings and rosette plants.	Use higher rate on plants in late-bolt to flowering growth stages and/or dense stands. Commercial mixture with 2,4-D available (GrazonNext HL) to increase spectrum of weed control. Apply with NIS at 1 qt/100 gal. Refer to label for grazing restrictions. T15
<b>Overdrive</b> (dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> )	<b>6 oz WDG</b> (3 oz & 1.2 oz)			<b>Labeled only in noncropland.</b> Add oil adjuvant at 1 to 2 pt/A. T13
<b>Transline</b> (clopyralid <sup>4</sup> )	<b>0.33 to 1.33 pt SL</b> (0.125 to 0.5 lb)	Pasture, rangeland, and noncropland		Very effective but more expensive than other treatments.
<b>Tordon 22K</b> (picloram <sup>4</sup> ) <b>RUP</b>	<b>0.5 to 2 pt SL</b> (0.125 to 0.5 lb)		Use high rate for patch treatment. Apply up to 2 pt/A broadcast and up to 4 pt/A for spot treatment. A17	
<b>Tordon 22K</b> (picloram <sup>4</sup> ) + 2,4-D <sup>4</sup> <b>RUP</b>	<b>1 + 2 pt 4EC/SL</b> (0.125 + 1 lb)		Apply only registered 2,4-D brands in CRP. T17	
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>4 to 8 fl oz SL</b> (1 to 2 oz)	Noncropland and wildlife habitats.	Spring: Prior to flowering or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>1.75 to 2.75 oz DF</b> (0.7 to 1.1 oz & 0.3 to 0.4 oz)			

## TOADFLAX, DALMATIAN AND YELLOW

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
<b>Plateau + MSO adjuvant</b> (imazapic <sup>2</sup> )	<b>12 fl oz SL + 2 pt</b> (3 oz)	CRP, pasture, rangeland, and noncropland.	After hard frost when 25% of foliage is necrotic.	<b>FOR DALMATIAN TOADFLAX ONLY.</b> Applications prior to hard frost may result in poor control. Retreat as necessary.
Chlorsulfuron <sup>2</sup>	<b>2 to 3 oz DF</b> (1.5 to 2.25 oz)	Pasture and noncropland.	PRE to early POST.	<b>FOR DALMATIAN TOADFLAX ONLY.</b> Apply at >25 gpa. Add oil adjuvant at 1 to 2 pt/A. Retreat as necessary.
<b>Tordon 22K</b> (picloram <sup>4</sup> ) <b>RUP</b>	<b>1 to 2 qt SL</b> (0.5 to 1 lb)	CRP, pasture, rangeland, and noncropland.	Toadflax: Actively growing through full bloom.	Use maximum rate for yellow toadflax. Apply 2 pt/A for broadcast and 4 pt/A for spot spray. Retreat as necessary. Y17
<b>Tordon 22K + Overdrive</b> (picloram <sup>4</sup> + dicamba <sup>4</sup> & diflufenzopyr <sup>19</sup> ) <b>RUP</b>	<b>1 to 2 qt SL + 6 to 8 oz WDG</b> (0.5 to 1 lb + 3 to 4 oz & 1.2 to 1.6 oz)		Yellow toadflax: Mid-summer during flowering or in fall prior to frost.	Add oil adjuvant at 1 to 2 pt/A. Overdrive added to Tordon greatly improves long-term <b>yellow toadflax</b> control. Use higher rates for yellow toadflax. T13 T17
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>4 to 8 oz SL</b> (1 to 2 oz)	Noncropland and wildlife habitats.	Best in June prior to flowering. Late season application is less effective.	<b>Use only in noncropland.</b> Control of yellow toadflax decreases the later applications are made in the season. Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)			

## WORMWOOD, ABSINTH

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
2,4-D <sup>4</sup>	<b>4 pt 4EC/SL</b> (2 lb)	CRP, pasture, rangeland, noncropland, trees, fallow, or post-harvest.	Apply in early spring and fall when plants are at least 12 inches tall and actively growing. Plants can be mowed in early to mid-summer to promote active regrowth prior to fall treatment.	Apply only registered 2,4-D brands in CRP. Plants are controlled slowly. Do not graze dairy cows for 7 days after treatment. Use amine formulation near trees. A3 A6 B3 T11
Dicamba <sup>4</sup>	<b>1 to 2 pt 4SL</b> (0.5 to 1 lb)			DO NOT apply near trees. Apply with oil adjuvant at 1 to 2 pt/A. Observe grazing restrictions. A3 A6 B6 T13
<b>Curtail / generic</b> cloprralid <sup>4</sup> & 2,4-D <sup>4</sup>	<b>2 pt SL</b> (0.09 lb & 0.5 lb)	Cropland.		Do not apply to new seedings of grass. Do not cut treated grass for hay within 30 days PHI. Consult label for grazing restrictions. A3 A6 C5 Y15
	<b>4 to 8 pt SL</b> (0.19 to 0.38 lb & 1 to 2 lb)	CRP, pasture, rangeland and noncropland.		0.5 pt/A is the most cost-effective. Apply 4 pt/A for spot treatment. Refer to paragraph for grazing restriction. Use high rate for dense stands. T17-18
<b>Tordon 22K</b> (picloram <sup>4</sup> ) <b>RUP</b>	<b>0.5 to 2 pt SL</b> (0.125 to 0.25 lb)			Avoid spraying tree foliage. Add AMS fertilizer at 8.5 lbs/100 gal. Use high rates for dense stands. A3-7 T10
Glyphosate <sup>9</sup>	Up to 1.125 lb ae. <b>See Remarks.</b>	Trees, noncropland, fallow or post-harvest.		
<b>Milestone</b> (aminopyralid <sup>4</sup> )	<b>6 to 7 oz SL</b> (1.5 to 1.75 oz)	CRP, pasture, rangeland and noncropland.	Early spring or fall. Mow plants prior to fall application.	Use higher rate when plants are taller than 12 inches. Commercial mixture with 2,4-D available (GrazonNext HL) to broaden spectrum of weed control. Apply with NIS at 1 qt/100 gal. Refer to label for grazing restrictions. T14-15
<b>Chaparral</b> (aminopyralid <sup>4</sup> & metsulfuron <sup>2</sup> )	<b>3 to 3.3 oz DF</b> (1.6 to 1.7 oz & 0.28 to 0.31 oz)		Early spring to plants 12 inches tall or less.	
<b>Method</b> (aminocyclopyrachlor <sup>4</sup> )	<b>4 to 8 oz SL</b> (1 to 2 oz)	Noncropland and wildlife habitats.	Actively growing in early summer or fall rosettes.	<b>Use only in noncropland.</b> Allow 365 days before grazing or haying. Do not apply near trees. Apply Method with MSO at 1 gal/100 gal. Apply Perspective with NIS at 1 qt/100 gal or MSO at 1 gal/100 gal.
<b>Perspective</b> (aminocyclopyrachlor <sup>4</sup> & chlorsulfuron <sup>2</sup> )	<b>3 to 4.75 oz DF</b> (1.2 to 1.9 oz & 0.5 to 0.75 oz)			

## HOUNDSTONGUE

Herbicide	Product/A (ai/A)	Weed Location	When to Apply	Remarks and Paragraphs
2,4-D <sup>4</sup>	<b>2 pt 4EC/SL</b> (1 lb)	CRP, pasture, rangeland, and noncropland.	May to mid-June	Apply only registered 2,4-D brands in CRP. First-year rosettes are more susceptible.
Metsulfuron <sup>2</sup> + oil adjuvant	<b>1 to 2 oz XP + 1 to 2 pt</b> (0.6 to 1.2 oz)	CRP, pasture, rangeland, and noncropland.		Can be applied throughout the growing season. First-year rosettes are more susceptible.
<b>Plateau + MSO adjuvant + 28% UAN</b> (imazapic <sup>2</sup> )	<b>8 to 12 fl oz SL + 1.5 pt + 1 qt</b> (2 to 3 oz)	CRP, pasture, rangeland, and noncropland.		Controls plants when applied PRE or POST

## PALMER AMARANTH

**Palmer amaranth** is in the pigweed (Amaranth) family, is native to the southwestern United States and has moved to many parts of the country including Iowa, Minnesota, North Dakota and South Dakota. Palmer amaranth grows rapidly and can grow to a height of 8 to 10 feet in certain environments. Palmer amaranth is difficult to identify in the seedling stage because it looks similar to four other amaranth species found in North Dakota: redroot pigweed, Powell amaranth, smooth pigweed and waterhemp. There are several characteristics that differentiate the amaranth species. Presence of hair: Redroot pigweed has fine, dense hairs. Powell and smooth pigweed hairs are less dense than redroot. The fine hairs will be most noticeable on the stems towards the newest growth. Palmer and waterhemp have no hair. Leaf shape: Palmer amaranth leaves are wider and ovate to diamond-shaped compared to other amaranth species. Petiole length: The petiole is the stem-like structure that connects the leaf blade to the main stem. In Palmer amaranth the petioles (especially on older leaves) will be as long (or longer) than the leaf blade itself. Flowering structure: Palmer amaranth females have a long main terminal seed head that can reach up to 3 feet long. Palmer amaranth female seed heads also have stiff, sharp bracts that give the seed heads a prickly feel when touched. NDSU Extension developed a website, <https://www.ag.ndsu.edu/palmeramaranth.com> to assist stakeholders so they may learn more about Palmer amaranth and how to identify it. An additional resource is <https://www.ag.ndsu.edu/publications/crops/identification-biology-and-control-of-palmer-amaranth-and-waterhemp-in-north-dakota/w1916.pdf> "Identification, Biology, and Control of Palmer amaranth and waterhemp in North Dakota."



# SHELTERBELT WEED CONTROL

Extension Bulletin W-1097, "Weed Control in Tree Plantings" provides additional information.

Read and follow label directions. Most herbicides can injure trees if applied in a manner inconsistent with label directions. Only use herbicide formulations that are labeled in shelterbelts and only as described on the label. Eliminate perennial weeds prior to planting trees. Refer to label for application method (broadcast, over-the-top, directed), timing (spring or fall), and tolerant and susceptible tree species.

Herbicide	Product/A (ai/A)	Remarks
<b>Alion</b> (indaziflam <sup>29</sup> )	<b>5 to 6.5 fl oz EC</b> (0.065 to 0.085 lb)	<b>Residual</b> , soil-applied herbicide. Apply PRE in a broadcast, or directed application to soil when around desirable tree species. Adjust rate for soil type. Refer to label for additional information.
<b>Casoron</b> (dichlobenil)	<b>100 to 200 lb 4G</b> (4 to 8 lb)	Volatile, especially on wet soil. Preemergence herbicide for control of annual and perennial weeds in new plantings established at least 4 weeks. Most effective when applied in November or March just before rain or snow to activate and move dichlobenil into the soil.
<b>Fusilade DX</b> (fluazifop-P <sup>1</sup> )	<b>1 to 1.5 pt EC</b> (0.25 to 0.38 lb)	Translocated, postemergence, non-residual herbicide for control of annual and perennial grasses. Spot spray or apply over-the-top of woody species. Add oil additive at 1 qt/A.
Glyphosate <sup>9</sup>	<b>2% solution or</b> Up to 1.125 lb ae <b>See Remarks.</b>	Non-selective, non-residual, translocated, postemergence herbicide. Effective on annual and perennial plants. Directed spray only. Add AMS at 8.5 lb/100 gal. Avoid contact to desirable species. A4-7 A16 X1
<b>Goal</b> (oxyfluorfen <sup>14</sup> )	<b>5 to 10 pt 1.6EC</b> <b>4 to 8 pt 2XL</b> (1 to 2 lb)	Residual, preemergence or contact herbicide for control of broadleaf weeds including kochia and some grass weeds. <u>General</u> : Do not incorporate in soil. Apply POST with NIS at 0.25% v/v. Can be applied with a residual herbicide or as a split application. <u>Conifers</u> : Apply pre-transplant, POST or POST-directed prior to bud-break or after new foliage has hardened off. <u>Hardwoods</u> : Apply pre-transplant or POST-directed prior to bud-break. Spray only the base of deciduous trees and <u>not over- the-top</u> . If a non-dormant application is required, apply after new foliage has expanded and hardened off and NOT during periods of new growth. Avoid direct or indirect spray contact with foliage of deciduous trees.
<b>Karmex/Direx</b> (diuron <sup>7</sup> )	<b>2.5 to 5 lb DF</b> (2 to 4 lb)	Preemergence herbicide for plantings established at least one year. Apply as directed spray. Tolerance of labeled species is fair to very good. Do not use on light soil or in low, wet areas.
<b>Plateau</b> (imazapic <sup>3</sup> )	<b>8 to 12 fl oz SL</b> (2 to 3 oz ae)	Add MSO at 2 qt/A. Controls many broadleaf weeds including leafy spurge. Can spray in and around tree species. Do not use on new plantings or seedling trees. Fall treatment will kill lilac and will cause temporary yellowing of spruce candles. Higher rates will reduce grass stands. Refer to label for list of tolerant tree species. Use caution on trees not listed on label.
<b>Poast/Vantage</b> (sethoxydim <sup>1</sup> )	<b>1.5 to 2.5 pt Poast</b> <b>2 to 3 pt Vantage</b>	Translocated, postemergence, non-residual herbicide for control of annual and perennial grasses. Spot spray or apply over-the-top of most woody species. Add oil additive at 1 qt/A.
<b>Princep / generic</b> simazine <sup>5</sup>	<b>2 to 4 qt L</b> <b>2.2 to 4.4 lb DF</b> (2 to 4 lb)	<b>Use only on tree plantings at least three years old.</b> Preemergence herbicide that is most effective on annual broadleaf weeds. For adequate annual grass control apply with a preemergence, residual grass herbicide. Apply in fall or spring in full or split-rate applications. Use high rate in fine textured soils. Refer to label for list of registered tree species.
<b>Rely 280 + AMS</b> (glufosinate <sup>10</sup> )	<b>48 to 82 fl oz SL +</b> 3 lbs/A (0.88 to 1.5 lb)	Non-selective, non-residual, contact herbicide. Directed application only. Controls many annual and perennial weeds. Use 1.7 fl oz/gal for spot application. Use 48 fl oz/A for weeds <3 inches, 56 fl oz/A for weeds <6 inches, and 56-82 fl oz/A for weeds >6 inches + tillered grasses.
<b>Stinger / generic</b> clopyralid <sup>4</sup>	<b>0.25 to 0.67 pt SL</b> (0.1 to 0.25 lb ae)	<b>Safe to only some conifer species.</b> Translocated, postemergence, broadleaf herbicide. Effective on weeds in the legume, smartweed (polygonum) and sunflower (composite) families. Provides excellent control of Canada thistle and knapweeds. Apply to actively growing weeds.
<b>Stomp</b> <b>Pendulum</b> (pendimethalin <sup>3</sup> )	<b>2 to 4 qt EC</b> <b>3.3 to 6.6 lb WDG</b> (2 to 4 lb)	Preemergence herbicide for residual control of annual grasses and some small-seeded broadleaf weeds. Apply before bud break to avoid potential growth suppression. Apply with preemergence broadleaf herbicide for broad spectrum annual weed control.
<b>Treflan / generic</b> trifluralin <sup>3</sup>	<b>1 to 2 pt EC</b> (0.5 to 1 lb) <b>80 lb 5G</b> (4 lb)	Apply PPI for new plantings or established trees. Gives season-long control of many annual grasses and some broadleaf weeds. Does not control weeds in the sunflower, legume or mustard family. Poor perennial weed control but may suppress field bindweed. Cultivation may be required for broadleaf weed control the first season. Apply with a residual preemergence broadleaf herbicide for broad-spectrum weed control.
2,4-D <sup>4</sup> amine	<b>1 to 2 qt 4EC/SL</b> (1 to 2 lb ae)	Translocated, postemergence, broadleaf herbicide. Directed application only. Used to reduce infestations of perennial weeds. Broadleaf plants and deciduous trees very sensitive. Avoid drift to desirable species. Use only amine formulations. Use low pressure, coarse spray droplets and apply only in calm weather.

## TOTAL VEGETATION WEED CONTROL

Apply herbicides to bare soil rather than dead plants will improve herbicide performance. Add glyphosate to kill existing vegetation if present. Apply high rates followed by lower rates in subsequent years will generally give satisfactory extended control. For short term bare-ground control, non-residual herbicides can be applied several times per year. General precautions when using soil sterilant are:

1. Do not move treated soil and avoid applying where wind or water will move the treated soil.
2. Avoid spray drift. Apply during low wind, reduce spray pressure, and select nozzles that produce larger droplets.
3. Do not apply where roots of desirable vegetation may extend into the treated area.
4. Be familiar with and know the risks of the product to be applied.
5. Use a combination of herbicides with different modes of action to avoid resistant weeds.

Herbicide	Product/A (lb ai/A)	Remarks												
<b>EsplAnade</b> (indaziflam <sup>29</sup> & diquat <sup>22</sup> & glyt <sup>9</sup> )	<b>8 to 16 fl oz</b>	Spray when weeds are small and actively growing, temperatures above 60° F, and sunny. Re-treat hard-to-kill weeds 2 weeks after first application. Disturbing the soil weed preventative barrier may reduce the effectiveness of this product. Rain 30 minutes after application will not wash away effectiveness. Requires precipitation for soil activation. <b>Long residual.</b> A17												
Diuron <sup>7</sup>	<b>1 to 8 gal/5 to 15 lb</b> (4 to 32 lb)	Refer to label for use in irrigation ditches. Higher rates needed for perennial grasses and broadleaf weeds. Deep rooted perennials will require retreatment. <b>Long residual.</b> A17												
Glyphosate <sup>9</sup>	Up to 1.5 lb ae <b>See Remarks.</b>	Non-selective, <b>non-residual</b> , translocated herbicide. Effective on annual and perennial grass and broadleaf plants. Add 2,4-D or dicamba for broad-spectrum weed control. Add AMS at 8.5 lbs/100 gal. A4-6 T10												
<b>Hyvar X</b> <b>Hyvar X-L</b> (bromacil <sup>7</sup> )	<b>3 to 15 lb DF</b> <b>0.75 to 6 gal L</b> (2.4 to 12 lb DF 1.5 to 12 lb L)	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%; text-align: center;">Annual weeds</td> <td style="width: 33%; text-align: center;">Perennial weeds</td> <td style="width: 33%; text-align: center;">Woody plants</td> </tr> <tr> <td>Hyvar X</td> <td style="text-align: center;">3 to 6 lb DF</td> <td style="text-align: center;">7 to 15 lb</td> <td style="text-align: center;">7 to 15 lb</td> </tr> <tr> <td>Hyvar X-L</td> <td style="text-align: center;">1 to 3 gal/A</td> <td style="text-align: center;">3 to 6 gal/A</td> <td style="text-align: center;">3 to 6 gal/A</td> </tr> </table> Apply PRE or EPOST. Non-corrosive and non-volatile. Refer to label for tank-mix options. <b>Bromacil can move horizontally in soil after application. Long residual.</b>		Annual weeds	Perennial weeds	Woody plants	Hyvar X	3 to 6 lb DF	7 to 15 lb	7 to 15 lb	Hyvar X-L	1 to 3 gal/A	3 to 6 gal/A	3 to 6 gal/A
	Annual weeds	Perennial weeds	Woody plants											
Hyvar X	3 to 6 lb DF	7 to 15 lb	7 to 15 lb											
Hyvar X-L	1 to 3 gal/A	3 to 6 gal/A	3 to 6 gal/A											
<b>Krovar I / generic</b> bromacil <sup>7</sup> & diuron <sup>7</sup>	<b>6 to 16 lb DF</b> (4.8 to 12.8 lb)	Apply PRE for annual weeds. Requires moisture for activation. Refer to label for registered tank-mixes. <b>Bromacil can move horizontally in soil after application. Long residual.</b>												
<b>Krovar I +</b> <b>Perspective</b> (bromacil <sup>7</sup> & diuron <sup>7</sup> + acpc <sup>4</sup> & chlorsulf <sup>2</sup> )	<b>6 lb DF + 11 oz DF</b> (2.4 + 2.4 lb + 4.4 oz + 1.8 oz)	Add MSO adjuvant at 1 to 2 pt/A. Apply PRE for control of annual grass and broadleaf weeds. Requires moisture for activation. Add glyphosate if emerged grass and broadleaf weeds are present. <b>Bromacil can move horizontally in soil after application. Long residual.</b>												
<b>Landmark MP</b> (sulfometuron <sup>2</sup> & chlorsulfuron <sup>2</sup> )	<b>1 pkg/5 A DF to</b> <b>1 pkg/2.5 A DF</b> (1.5 to 3 oz)	Apply PRE to EPOST for broadleaf weeds. Will control/suppress leafy spurge. May be applied with Krovar I DF or Hyvar X to control ALS resistant weeds. <b>Long residual.</b>												
<b>Liberty 280</b> (glufosinate <sup>10</sup> )	<b>3 to 5 pt SL</b> (0.88 to 1.46 lb)	Non-selective, <b>non-residual</b> contact herbicide for use in non-crop and farmsteads. Use 4 fl oz/gal for spot application. Apply with AMS at 3 lb/A. B9												
<b>Oust</b> (sulfometuron <sup>2</sup> )	<b>2 to 4 oz XP</b> (1.5 to 3 oz)	Use high rate in high moisture areas except in residential properties. Will control leafy spurge at 3 oz/A. Do not spray near water. <b>Long residual.</b>												
paraquat <sup>22</sup> <b>RUP</b>	<b>2 to 2.7 ptSL</b> (0.75 to 1 lb)	Non-selective, <b>non-residual</b> , contact herbicide. Controls only top-growth of perennial species. Add NIS and repeat application as necessary. Avoid drift and contact with desirable species.												
<b>Plateau</b> (imazapic <sup>2</sup> )	<b>8 to 12 fl oz SL</b> (2 to 3 oz ae)	Add MSO at 2 pt/A. Controls many broadleaf weeds including leafy spurge. Use up to 12 fl oz in combination with other total vegetation control herbicides. T16												
<b>Pramitol 25E</b> (prometon <sup>7</sup> )	<b>5 to 10 gal EC</b> (10 to 15 lb)	Use 5 to 7.5 gal/A for annual and susceptible perennial weeds and 7.5 to 10 gal/A for hard-to-kill perennial weeds. Apply before weeds emerge or EPOST. <b>Long residual.</b>												
<b>Spike</b> (tebuthiuron <sup>7</sup> )	<b>1.25 to 5 lb 80DF</b> (1 to 4 lb)	For long-term woody plant and some broadleaf weed control. Avoid application in areas with surface or high water tables. Do not exceed 4 lb ai/A in a three year period. See label for specific species controlled and grazing and haying restrictions. <b>Long residual.</b>												
<b>Throttle</b> (chlorsulf&sulfomet & sulfentrazone <sup>14</sup> )	<b>12.5 oz DF</b> (1.125 oz & 2.25 oz & 6 oz)	Provides residual PRE and POST control of annual weeds and POST control of perennial weeds. <b>Long residual.</b>												

# TROUBLESOME WEEDS IN PASTURE, RANGELAND, AND NONCROPLAND

Weed	Herbicide	Product/A	Remarks and Paragraphs
<b>Buckbrush/ West. snowberry</b>	2,4-D <sup>4</sup> amine or ester Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Chaparral <sup>2,4</sup>	2 to 3 qt 4EC/SL 2 oz DF + 1 to 2 pt/A 2 to 3 oz	Apply 2,4-D in spring only. Apply anytime during the growing season. Apply in spring to early summer. The addition of 2,4-D increases control at lower use rates.
<b>Baby's breath</b>	Metsulf <sup>2*</sup> + Dicamba <sup>4</sup> +oil adj.	0.3 to 0.6 oz DF + 1 pt 4S+1-2 pt/A	Best when applied from bolting to pre-flower.
<b>Black henbane</b>	Metsulfuron <sup>2*</sup> + oil adjuvant Dicamba <sup>4</sup> or Tordon <sup>4</sup> + oil adj	0.5 to 1 oz DF + 1 to 2 pt/A 1 to 3 pt 4SL + 1 to 2 pt/A	Apply herbicides during rosette to early flower. Tordon at 1 to 2 pt: Mix with 2,4-D at 1 to 2 pt/A.
<b>Burdock</b>	2,4-D <sup>4</sup> amine or ester Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Dicamba <sup>4</sup> + oil adjuvant	1 qt 4EC/SL 0.25 to 0.5 oz DF + 1 to 2 pt/A 1 pt 4SL + 1 to 2 pt/A	Early summer prior to flowering.
<b>Curly dock</b>	Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Dicamba <sup>4</sup> + oil adjuvant Metsulfuron <sup>2*</sup> + oil adjuvant Starane <sup>4</sup> 1.5/2.8EC/40DG Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b>	0.25 to 0.5 oz DF + 1 to 2 pt/A 0.5 to 1 pt 4 SL + 1 to 2 pt/A 0.1 oz + 1 to 2 pt/A 0.67 pt / 0.35 pt / 5 oz 0.5 to 1 pt + 1 to 2 pt 4EC/SL	Early spring to bolting is best. Herbicides will control curly dock when treated later in the summer but will need higher rates.
<b>Dame's rocket</b>	2,4-D <sup>4</sup> or MCPA <sup>4</sup> + oil adj. Metsulfuron <sup>2*</sup> + oil adj.	1 to 1.5 pt + 1 to 2 pt/A 1 oz + 1 to 2 pt/A	Apply in fall to rosette or early spring prior to bolting. Avoid spraying tree bark or foliage.
<b>Foxtail barley</b>	Plateau <sup>2</sup> + MSO + 28% UAN	8 to 12 fl oz + 1.5 pt + 1 qt	
<b>Goldenrod</b>	2,4-D <sup>4</sup> amine or ester Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Metsulfuron <sup>2*</sup> + oil adjuvant Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b>	3 to 6 pt 4EC/SL 1 oz DF + 1 to 2 pt/A 0.33 to 0.5 oz + 1 to 2 pt/A 1 pt + 1 qt 4EC/SL	Mid-June through flowering when plants are not stressed.
<b>Gumweed</b>	2,4-D <sup>4</sup> amine or ester Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Metsulfuron <sup>2*</sup> + oil adjuvant	1.5 to 2 pt 4EC/SL 1 oz DF + 1 to 2 pt/A 1 oz + 1 to 2 pt/A	Early spring when plants are not stressed.
<b>Halogeton</b>	2,4-D <sup>4</sup> amine or ester Metsulfuron <sup>2*</sup> + oil adjuvant Plateau <sup>2</sup> + MSO + 28% UAN	1 to 2 pt 4EC/SL 0.75 oz DF + 1 to 2 pt/A 1 to 3 oz + 1.5 pt + 1 qt	2,4-D: Apply very early in spring prior to flowering. Escort: Apply to actively growing plants. Apply PRE to POST. Use higher rates for POST.
<b>Hoary cress</b>	Metsulfuron <sup>2*</sup> + oil adj.	1 oz + 0.25% v/v + 1 to 2 pt/A	Apply in spring prior to flowering. Difficult-to-control perennial requiring followup treatments.
<b>Mint</b>	Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Dicamba <sup>4</sup> + 2,4-D <sup>4</sup> + oil adj. Metsulfuron <sup>2*</sup> + oil adjuvant Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b>	1 oz DF + 1 to 2 pt/A 1 pt 4S + 1 qt 4EC/SL + 1 to 2 pt/A 1/3 to 1/2 oz + 1 to 2 pt/A 1 pt + 1 qt 4EC/SL	Apply mid-June through flowering when plants are not stressed.
<b>Poison ivy</b>	Crossbow <sup>4,4</sup> Garlon <sup>4</sup> 3A or 4	1.5 gal 3 to 4 pt or 2 to 3 pt	Apply to plants actively growing.
<b>Prick. pear cactus</b>	Tordon <sup>4</sup> <b>RUP</b>	2 pt	Apply late-spring to early summer.
<b>Ragweed</b>	Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b>	0.25 oz DF + 1 to 2 pt/A 1 pt + 1 qt 4EC/SL	Apply mid to late summer.
<b>Sagebrush, fringed</b>	2,4-D <sup>4</sup> ester Chlorsulf <sup>2</sup> &Metsulf <sup>2*</sup> + oil adj. Tordon <sup>4</sup> <b>RUP</b>	2 to 4 pt 4EC/SL 1 oz DF + 1 to 2 pt/A 1 to 2 pt	Best when applied in May. Plants should be leafed out and growing in good moisture conditions.
<b>Sagebrush</b>	2,4-D <sup>4</sup> ester	2 to 4 pt 4EC/SL	
<b>Sagewort, Green</b>	2,4-D <sup>4</sup> ester Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b>	4 pt 4EC/SL 1 pt + 1 qt 4EC/SL	
<b>Swamp smartweed</b>	Dicamba <sup>4</sup> + oil adjuvant Metsulfuron + oil adjuvant Tordon <sup>4</sup> + 2,4-D <sup>4</sup> <b>RUP</b> Weedmaster <sup>4,4*</sup>	0.5 to 1 pt 4SL + 1 to 2 pt/A 0.1 oz + 1 to 2 pt/A 1 pt + 1 qt 4EC/SL 1 pt	Apply to plants 1 to 4 inches tall.  Apply in mid to late summer.
<b>Trees, volunteer</b>	Crossbow <sup>4,4</sup> Tordon+2,4-D+Remedy <sup>4</sup> <b>RUP</b>	2% solution or 2 gal/A 2% or 1 pt + 1 qt 4EC/SL + 1 pt	Add NIS at 0.5% v/v. Apply after tree leaves have fully expanded.
<b>Wild licorice</b>	Milestone <sup>4</sup> Transline <sup>4</sup>	7 pt/A 1 pt /A	Apply when plants are actively growing.

\* Or generic equivalent



## TROUBLESOME WEEDS IN CROPLAND AND OTHER AREAS

Weed	Herbicide	Product/A	Remarks and Paragraphs
<b>Alfalfa</b>	2,4-D <sup>4</sup> + Dicamba <sup>4</sup> + MSO Stinger <sup>4*</sup> or Curtail <sup>4,4*</sup> +MSO	2 pt 4EC/SL+0.5 pt+1.5 pt/A 0.67 pt or 4 pt + 1.5 pt/A	Roundup / generics (2 to 4 pt/A) is less effective.
<b>Buffalobur</b>	Dicamba <sup>4*</sup> + MSO adjuvant	0.5 pt 4SL + 1.5 pt/A	Cobra, 2,4-D, MCPA, and Pursuit are less effective.
<b>Cleavers/Catch-weed bedstraw</b>	Starane <sup>4*</sup> 1.5/2.8EC/40DG Affinity <sup>2,2*</sup> + NIS Orion <sup>2,4</sup> + NIS	0.67 pt / 0.35 pt / 5 oz DF or SG - See label for rate. 17 oz	Liberty is less effective. Apply Affinity and Orion with NIS at 1 qt/100 gal water.
<b>Cattail</b>	Glyphosate <sup>9</sup> (only 4 lb ae/gal no adjuvant formulations)	4.5 pt of 4 lb ae/gal conc.	Add approved NIS at 1 qt/100 gal water. Apply at early to full bloom stage = late July to mid August. A3-8
	Arsenal <sup>2</sup> + MSO adjuvant Raptor <sup>2</sup> + MSO adjuvant	2 to 4 pt (1% v/v solution) 4 to 5 fl oz + 1.5 pt/A	Apply to cattail with green foliage/after leaf elongation. May require retreatment.
<b>Curly dock</b>	Stinger <sup>4*</sup> or Curtail <sup>*</sup> Express <sup>2*</sup> + oil adjuvant Harmony <sup>2*</sup> + oil adjuvant	0.67 pt or 2 pt 0.5 oz SG + 1.5 pt/A 0.9 oz SG + 1.5 pt/A	Stinger/Curtail has crop rotation restrictions. Add MSO at 1.5 pt/A. Apply to small plants. SU mixtures of thifensulfuron & tribenuron are also effective.
<b>Common milkweed</b>	Roundup <sup>9*</sup> + NIS + AMS Express <sup>2*</sup> + 2,4-D <sup>4</sup> +Banvel <sup>4*</sup>	2%+1 qt/100 gal+8.5 lbs/100 0.33 oz DF + 0.75 pt + 2 fl oz	Glyt - Suppression only. Will require retreatment. A3-8 Exp+2,4-D+Banvel - Apply high rates for spot treatment.
<b>Dandelion</b>	2,4-D <sup>4</sup> + MSO Stinger <sup>4*</sup> Dicamba <sup>4</sup> + MSO Express <sup>2*</sup> + MSO Glyphosate <sup>9</sup> + NIS + AMS Callisto or Impact or Laudis <sup>27</sup>	2 to 4 pt + 1.5 pt/A Refer to premix label. 0.5 pt 4SL. Apply with 2,4-D DF or SG - See label for rate. 1 to 3 lb ae 3 fl oz or 0.75 fl oz or 3 fl oz	2,4-D - Best control when applied in fall. Stinger - Apply premixes - Curtail and WideMatch. Banvel - Residue may injure next crop to be planted. Express - Partial control. Apply with 2,4-D. Roundup - Best control when applied in fall. Callisto/others - Partial control. Add MSO at 1.5 qt/A.
<b>Equisetum (Horsetail) (Scouring rush)</b>	MCPA <sup>4</sup> + MSO Permit <sup>2</sup> + MSO Python <sup>2</sup> + MSO Remedy/Garlon <sup>4</sup> + MSO Glean <sup>2*</sup> + MSO	1 qt/A 4EC/SL + 1.5 pt/A 1.33 oz DF + 1.5 pt/A 1.33 oz DF + 1.5 pt/A 2 qt + 1 to 1.5 pt/A 3 oz DF + 1.5 pt/A	Glyphosate is less effective. Retreatment necessary. Permit - Apply two applications each at 1.33 oz/A. Python - Apply with oil adjuvant PRE or POST. Remedy/Garlon and MCPA - Apply fall or spring. Glean/Telar/Oust - Will result in total vegetation control.
<b>False chamomile</b>	SUs <sup>2</sup> / Orion + adj. Glyphosate <sup>9</sup> + NIS + AMS Valor <sup>14</sup> (Fall applied)	See label + NIS or oil adj. 1 qt + 1 qt/100 + 8.5 lbs/100 2 to 3 oz WDG	SU herbicides - Oil adjuvant will increase control. Roundup - Avoid spraying desirable vegetation. A3-8 PRE activity.
<b>Flax, volunteer</b>	Cobra / Blazer + oil adjuvant Flexstar <sup>14</sup> /Reflex <sup>14</sup> + oil adj. Facet L <sup>4,26</sup> + MSO Pursuit <sup>2</sup> + Sencor <sup>5*</sup> (PRE) Starane <sup>4*</sup> 1.5/2.8EC/40DG Affinity <sup>2*</sup> + NIS Express <sup>2*</sup> + 2,4-D <sup>4</sup> + NIS	See label + 1 to 2 pt/A 0.5 to 0.75 pt + 1 to 2 pt/A 0.33 oz DF + 1.5 pt/A 1 to 2 fl oz + 0.375 0.67 pt / 0.35 pt / 5 oz DF or SG - See label for rate. DF or SG + 0.75 pt 4EC/SL	Apply to flax < 3inches tall. Apply to small plants. Use only east of Hwy 281. Facet - see label for crop rotation restrictions. Add oil adjuvant at 1 to 2 pt/A Starane - No adjuvant needed. Affinity - Add NIS at 1 qt/100 gal water. Express - Add NIS at 1 qt/100 gal water.
<b>Hemp dogbane</b>	2,4-D <sup>4</sup> + Banvel <sup>4*</sup> + MSO Dicamba <sup>9</sup> + NIS + AMS	1 to 2 pt 4EC/SL + 1.5 pt 2% v/v 4SL	Banvel at 2 pt/A may will injure some crops planted the next year. A3-8
<b>Horseweed (Marestail)</b>	2,4-D <sup>4</sup> + MSO Callisto / Impact / Laudis <sup>27</sup> FirstRate <sup>2</sup> + MSO Harmony <sup>2*</sup> + MSO Hornet <sup>2,4</sup> + MSO Python <sup>2</sup> + MSO Spartan <sup>14</sup> + MSO Valor <sup>14</sup> + MSO	1 to 2 pt + 1.5 pt/A 3 fl oz / 0.75 fl oz / 2 to 3 fl oz 0.3 oz WDG + 1.5 pt/A See label for rate + 1.5 pt/A 3 to 4 oz WDG + 1.5 pt/A 1 oz WDG + 1.5 pt/A 3 to 6 fl oz + 1.5 pt/A 2 to 3 oz WDG + 1.5 pt/A	2,4-D (preplant) to some labeled crops is effective. Callisto/Impact/Laudis - Add MSO at 1.5 pt/A Roundup, atrazine, paraquat are less effective. Pursuit is not effective. Most herbicides listed have rotational crop restrictions. Follow label guidelines. Python/Spartan/Valor = PRE control.
<b>Nightflowering catchfly/ White cockle</b>	Tribenuron + NIS> Trib + thifensulfuron <sup>2*</sup> + NIS Huskie <sup>6,27</sup> (not confirmed)	DF or SG - See label for rate. DF or SG - See label for rate. 15 fl oz	Add NIS at 1 qt/100 gal water. Apply to small plants. Add NIS at 1 qt/100 gal water. Apply to small plants. Huskie also controls other cockle species.
<b>Sowthistle (Ann. or perennial)</b>	Ally <sup>2*</sup> + MSO Express <sup>2*</sup> + MSO	1/10 oz DF + 1.5 pt/A DF or SG - See label for rate.	Apply with 2,4-D or Banvel. 2,4-D, Banvel, Curtail, and Roundup applied alone are less effective.
<b>Waterpod</b>	2,4-D <sup>4</sup> , Pursuit <sup>2</sup> or SUs <sup>2</sup>	See label.	See Pursuit label for crop rotation restrictions.
<b>Wild cucumber</b>	Dicamba <sup>4</sup> + MSO Glyphosate <sup>9</sup> + NIS + AMS	0.5 4SL + 1.5 pt/A 1 qt/A + 1 qt/100+8.5 lbs/100	Banvel may injure or kill trees. Mechanical control or handweed is best. Banvel may injure trees. A3-8
<b>Yellow nutsedge</b>	Permit <sup>2</sup> + MSO Basagran <sup>5</sup> + MSO	0.67 fb 0.67 oz + 1.5 pt/A 1.5 pt fb 1.5 pt + 1.5 pt/A	Pursuit, Dual, Roundup are less effective. Permit may injure crops planted the following years.

\* Or generic equivalent