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EC80-130 A 1980 Guide for Herbicide Use in Nebraska

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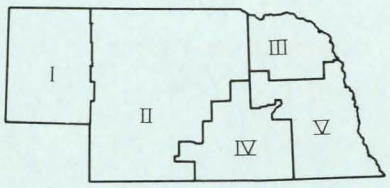

EXTENSION DISTRICTS

A 1980 GUIDE FOR ---

HERBICIDE USE IN NEBRASKA...

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This circular deals principally with herbicides as an aid for crop production. The suggestions for use are based on results at Nebraska research stations and elsewhere. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

DO NOT USE 2,4-D ESTER, BANVEL (DICAMBA), AND SIMILAR HERBICIDES NEAR VEGETABLES, ORNAMENTALS, TREES, SHRUBS, AND BROADLEAF CROPS.

Genetic strains, varieties, and hybrids vary in their response to herbicides. Check with your seed dealer for information on the crop you plan to treat.

Extension work in "Agriculture, Home Economics and subjects relating thereto," The Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska–Lincoln, Cooperating with the Counties and the U. S. Department of Agriculture
Leo E. Lucas, Director

RESTRICTED USE HERBICIDES . . . Tordon and Paraquat have been classified as restricted use herbicides by EPA. Other herbicides or some of their uses may be classified as restricted use at some future date. The label will indicate if a product is restricted use. *Only certified private or commercial applicators should apply or supervise the application of restricted use herbicides.* See your County Extension Agent if you need to be certified.

"Use Crop Production Chemicals Wisely"

- READ THE LABEL BEFORE EACH USE. Follow instructions; heed all cautions and warnings.
- APPLY ONLY AS DIRECTED. Federal law authorizes seizure of any raw agricultural commodity moving in interstate commerce which carries a pesticide residue in excess of the established tolerance.
- STORE IN ORIGINAL, LABELED CONTAINERS. Keep out of reach of children, pets, livestock and irresponsible people.
- ELIMINATE HAZARDS FROM CONTAINER. Rinse empties that contained liquids three times. Burn paper bags and fiber drums. Stay out of the smoke. Bury unused materials and crushed containers.

WEED RESPONSE TO SELECTED PREPLANT AND PREEMERGENCE HERBICIDES

Plant response may be altered by growing conditions, genetic variation in crops and weeds, soil type, pH, organic matter and rates of application. Ratings may vary from season to season and geographical areas within the state.

Response ratings:

E = Excellent
G = Good
F = Fair
P = Poor

Herbicide	annual morningglory	barnyardgrass	black nightshade	cocklebur	crabgrass	fall panicum	foxtail	jimsonweed	kochia	lambsquarters	pigweed	ragweed	Russian thistle	sandbur	shattercane	smartweed	sunflower	velvetleaf	wild buckwheat	crop tolerance[1]	soil persistence in months[2]
Corn																					
AAtrex or Atrazine	E	G	E	G	F	P	G	E	E	E	E	E	E	F	P	E	E	E	E	E	6-24
Bicep	G	E	E	F	G	G	E	F	E	E	E	E	G	F	P	G	G	G	G	E	6-18
Bladex	E	G	E	G	G	F	G	E	E	E	F	E	E	F	P	E	G	G	E	G	2-4
Bladex + AAtrex	E	G	E	G	G	F	G	E	E	E	G	E	E	F	P	E	G	G	E	G	6-18
Dual	P	E	G	P	E	E	E	P	P	G	G	F	P	F	P	P	P	P	P	E	2-6
Dual + AAtrex	G	E	E	F	G	G	E	F	E	E	E	E	G	F	P	G	G	G	G	E	6-18
Dual + Bladex	G	E	E	F	E	E	E	F	E	G	G	E	G	F	P	G	F	F	G	G	2-4
Eradicane	G	E	E	P	E	E	E	P	F	G	G	F	P	G	G	P	P	P	E	G	1-2
Eradicane + Atrazine	G	E	E	F	E	E	E	G	E	E	E	G	G	G	G	G	F	G	G	E	6-18
Lasso	P	E	G	P	E	E	E	P	P	G	G	F	P	F	P	P	P	P	P	E	2-4
Lasso + Atrazine	G	E	E	F	G	G	E	F	E	E	E	E	G	F	P	G	G	G	G	E	6-18
Lasso + Bladex	G	E	E	F	E	E	E	F	E	G	G	E	G	F	P	G	F	F	G	G	2-4
Prowl + Atrazine	G	E	G	F	E	E	E	F	E	E	E	G	G	F	P	G	G	G	G	G	6-18
Prowl + Bladex	G	E	G	F	E	E	E	F	E	E	G	G	G	F	P	G	F	G	F	G	6-18
Sutan+	F	E	G	P	E	E	E	P	P	G	F	F	P	G	G	P	P	P	F	E	1-2
Sutan+ + Atrazine	G	E	E	F	E	E	E	G	E	E	E	G	G	G	G	G	F	G	G	E	6-18
Sutan+ + Atrazine + Bladex	G	E	G	P	E	E	E	G	E	E	E	G	G	G	G	G	F	F	G	E	6-18
Sutan+ + Bladex	F	E	G	P	E	E	E	G	E	E	G	G	G	G	G	G	F	F	G	G	2-4
Sorghum																					
AAtrex or Atrazine	E	G	E	G	F	P	G	G	E	E	E	E	E	F	P	E	E	E	E	F	6-24
Igran + AAtrex	E	G	E	G	F	P	G	G	E	E	E	E	E	F	P	E	E	E	E	F	6-18
Modown + Ramrod	G	G	F	P	G	G	E	G	G	E	E	P	P	F	P	E	P	F	G	G	1-2
Ramrod; Propachlor; Bexton	P	G	P	P	G	G	E	P	P	F	G	P	P	F	P	F	P	P	F	G	1-2
Ramrod; Propachlor; Bexton + Atrazine	G	G	G	F	G	F	E	F	E	E	E	G	G	F	P	G	G	G	G	G	6-18
Ramrod; Propachlor; Bexton + Bladex	G	G	E	F	G	G	E	F	E	G	F	G	G	F	P	G	F	F	G	F	2-4
Soybeans																					
Basalin	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Dual + Sencor or Lexone	P	E	G	F	E	E	E	G	F	E	E	E	G	F	P	G	F	G	E	F	2-4
Lasso	P	E	G	P	E	E	E	P	P	G	E	G	P	F	P	P	P	P	P	E	2-4
Lasso + Lorox	P	E	G	F	E	E	E	F	F	G	E	G	F	F	P	G	F	F	G	G	2-4
Lasso + Modown	G	G	F	P	G	G	E	G	G	E	E	P	P	F	P	E	P	F	G	F	2-4
Lasso + Sencor or Lexone	P	E	G	F	E	E	E	G	F	E	E	E	G	F	P	G	F	G	E	F	2-4
Prowl	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Prowl + Sencor or Lexone	P	E	F	F	E	E	E	G	G	E	E	E	E	G	G	G	F	G	E	G	6-18
Tolban	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Tolban + Sencor or Lexone	P	E	F	F	E	E	E	G	G	E	E	E	E	G	G	G	F	G	E	F	6-18
Treflan	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Treflan + Sencor or Lexone	P	E	F	F	E	E	E	G	G	E	E	E	E	G	G	G	F	G	E	F	6-18
Sugarbeets																					
Nortron	-	G	F	F	G	G	G	-	G	G	E	-	F	F	-	G	P	-	G	G	5+
Ro-Neet	P	E	G	P	E	E	E	P	P	G	E	F	P	G	G	P	P	P	P	G	1-2
Fieldbeans																					
Eptam	G	E	E	P	E	E	E	P	F	G	G	F	P	E	E	P	P	P	F	G	1-2
Eptam + Tolban	F	E	F	P	E	E	E	P	E	G	G	P	F	E	E	P	P	P	F	E	6-12
Eptam + Treflan	F	E	F	P	E	E	E	P	E	G	G	P	F	E	E	P	P	P	F	E	6-12
Lasso	P	E	G	P	E	E	E	P	P	G	E	G	P	F	P	P	P	P	P	G	2-4
Cobex + Eptam	F	E	F	P	E	E	E	P	E	G	E	P	F	E	E	P	P	P	F	G	1-2
Potatoes																					
Eptam	G	E	E	P	E	E	E	P	F	G	G	F	P	E	E	P	P	P	F	G	1-2
Eptam + Treflan	F	E	F	P	E	E	E	P	E	G	G	P	F	E	E	P	P	P	F	E	6-12
Sencor or Lexone	P	G	G	F	G	G	G	G	F	E	E	E	G	P	P	G	F	G	E	G	2-6

[1]Crop varieties vary in their response to herbicides.
[2]The lower number applies to eastern Nebraska, the larger number to western Nebraska. Values will vary with soil and rainfall or irrigation. For more information see "Herbicide Carryover," G74-180.

FIELD CROPS--PREPLANT INCORPORATED (PPI) AND PREEMERGENCE (PRE)

Band applications reduce total herbicide used.

Preplant treatments are made before planting the crop. Preemergence treatments are applied from planting time to just before plant emergence. Postemergence treatments are applied after emergence of weeds or crop. Weed control with preemergence treatments may be poor if there is no rain to leach the herbicide into the top inch. To overcome dependence on rainfall and to increase dependability some preemergence herbicides may be incorporated into the surface soil with a suitable implement. Excessive rainfall may leach some of the more soluble herbicides into the subsoil, especially on sandy soils. Weed control with preemergence herbicides is more satisfactory on surface-planted crops and when applied to prepared seedbeds free of clods, trash and weeds.

Some weed species are resistant to particular herbicides. Herbicides should be rotated to control a wider spectrum of weeds and to reduce the build-up of any particular herbicide in the soil. *If you use atrazine plant only corn or sorghum the following year--it may carry over and injure alfalfa, beans, potatoes, sugarbeets, and small grains.* Herbicide residue problems in soils increase as one goes westward in Nebraska.

Sprayers should provide good agitation of spray solution and be equipped with 50-mesh or coarser screens to avoid clogging with wettable powders.

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
CORN				
AATREX; ATRAZINE 80W or AATREX; ATRAZINE 4L or AATREX NINE-O	2.5 lb *2.8 kg* 4 pt *4.6 ℓ* 2.2 lb *2.5 kg*	3 lb *3.4 kg* 4.75 pt *5.5 ℓ* 2.7 lb *3 kg*	3.75 lb *4.2 kg* 6 pt *7.0 ℓ* 3.3 lb *3.7 kg*	PRE or PPI...May be applied through center pivot systems. May affect sensitive crops the following year especially on high pH soils. Carryover most serious westward on eroded soils and medium to fine textured soils low in organic matter. Can be used at layby. Approx. cost $3.95 to $5.95.
BICEP 4.5L	2.4 qt *5.5 ℓ*	3.2 qt *7.4 ℓ*	3.2 qt *7.4 ℓ*	PRE or PPI...May be applied through center pivot systems. Surface blending of preemergence application with rotary hoe or similar implement may be beneficial. Bicep is a combination of 2½ parts Dual to 2 parts Atrazine. Approx. cost $10.80 to $14.40.
BLADEX 80W or BLADEX 4L or BLADEX 15G	Do not use	3 lb *3.4 kg* 5 pt *5.8 ℓ* 16 lb *17.9 kg*	4 lb *4.5 kg* 6.5 pt *7.6 ℓ* 21 lb *23.5 kg*	PRE...Do not use on light or variable textured soils. Injury likely on calcareous soils. Do not exceed label dosage for soil type. Approx. cost $6.10 to $7.95.
BLADEX 4L[4] + ATRAZINE 4L[4]	Do not use	3.33 pt *3.9 ℓ* + 1.67 pt *1.9 ℓ*	4.33 pt *5.0 ℓ* + 2.2 pt *2.6 ℓ*	PRE...Crop injury may occur on sandy, low organic matter, and high pH soils. Carryover could affect some crops the following year. Approx. cost $5.60 to $7.50.
DUAL 8E (primarily grass control)	2 pt *2.3 ℓ*	2.5 pt *2.9 ℓ*	3 pt *3.4 ℓ*	PRE or PPI...May be applied through center pivot systems. Surface blending of preemergence treatment with rotary hoe or similar implement may be beneficial. Postemergence broadleaf weed control usually required when Dual is used alone. Approx. cost: Dual--$11.45 to $13.75; Dual + AAtrex--$7.75 to $12.80. Use higher rates of Dual 6E.
DUAL 8E + AATREX 4L[4]	1.25 pt *1.5 ℓ* + 2 pt *2.3 ℓ*	1.5 pt *1.7 ℓ* + 3.2 pt *3.7 ℓ*	2 pt *2.3 ℓ* + 3.6 pt *4.2 ℓ*	

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-O
1 qt (*0.95 ℓ*) Bladex 4 L = 1¼ lb (*0.56 kg*) Bladex 80W.

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
CORN -Continued				
Dual 8E + Bladex 4L[4]	1.25 pt *1.5 ℓ* + 2 pt *2.3 ℓ*	1.5 pt *1.7 ℓ* + 3.2 pt *3.7 ℓ*	2 pt *2.3 ℓ* + 4 pt *4.6 ℓ*	PPI or PRE...Surface blending preemergence treatment with rotary hoe or similar implement may be beneficial. Use higher rates of Dual 6E. Approx. cost $8.20 to $14.10.
ERADICANE 6.7E (Not recommended for shattercane control E of Hwy. 81 and So. of I-80 or E of Hwy. 77 and No. of I-80) (Primarily grass control)	4.75 pt *5.5 ℓ*	5 pt *5.8 ℓ*	5 pt *5.8 ℓ*	PPI...(Also registered for application through center pivot sprinkler.) See page 23 for shattercane control. Apply to dry surface soil. Immediately incorporate by cross tandem discing. Some hybrids may be injured. Postemergence broadleaf control usually required when Eradicane is used alone. Approx. cost: Eradicane--$12.10 to $12.70; Eradicane + Atrazine--$14.10 to $14.50.
ERADICANE 6.7E + ATRAZINE 4L[4]	4.75 pt *5.5 ℓ* + 2 pt *2.3 ℓ*	4.75 pt *5.5 ℓ* + 2 pt *2.3 ℓ*	4.75 pt *5.5 ℓ* + 2.4 pt *2.8 ℓ*	
LASSO (4EC) or LASSO II (15G) (Primarily grass control)	3 qt *7.0 ℓ* 20 lb *22.4 kg*	2.5 qt *5.8 ℓ* 17 lb *19.0 kg*	3 qt *7.0 ℓ* 20 lb *22.4 kg*	PRE...(Liquid registered for application through center pivot sprinkler.) Surface blending with rotary hoe, mulch treader, or harrow beneficial. Postemergence broadleaf weed control usually required. Also registered for layby application. See page 11. Approx. cost $9.65 to $11.55.
LASSO (4EC) + AATREX; ATRAZINE 4L[4]	2 qt *4.7 ℓ* + 2 pt *2.3 ℓ*	2 qt *4.7 ℓ* + 2 pt *2.3 ℓ*	2 qt *4.7 ℓ* + 2.4 pt *2.8 ℓ*	PRE...(Also registered for application through center pivot sprinkler.) Tank mix. Shallow incorporation with rotary hoe, mulch treader, or harrow beneficial. Also registered for layby application. See page 11. Approx. cost $9.70 to $10.10.
LASSO (4EC) + BLADEX 4L[4]	2 qt *4.7 ℓ* + 2 pt *2.3 ℓ*	2 qt *4.7 ℓ* + 2.4 pt *2.8 ℓ*	2 qt *4.7 ℓ* + 3.2 pt *3.7 ℓ*	PRE...Crop injury may occur on sandy soils below 1% organic matter. Approx. cost $10.65 to $11.60.
PROWL (4EC) + ATRAZINE 4L[4]	1 qt *2.3 ℓ* + 2 pt *2.3 ℓ*	1.5 qt *3.5 ℓ* + 2.4 pt *2.8 ℓ*	1.5 qt *3.5 ℓ* + 3.2 pt *3.7 ℓ*	PRE...Surface blending with a rotary hoe may be beneficial. Do not use on sandy soil below 1% organic matter. Corn injury may occur if replanting is necessary. Also registered for layby application. See page 11. Approx. cost $8.40 to $12.80.
PROWL (4EC) + BLADEX 4L[4]	1 qt *2.3 ℓ* + 2 pt *2.3 ℓ*	1.5 qt *3.5 ℓ* + 3.2 pt *3.7 ℓ*	1.5 qt *3.5 ℓ* + 4.0 pt *4.7 ℓ*	PRE...Surface blending with a rotary hoe may be beneficial. Do not use on sandy soils below 1% organic matter. Corn injury may occur if replanting is necessary. Approx. cost $8.85 to $14.50.

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0
1 qt (*0.95 ℓ*) Bladex 4L = 1¼ lb (*0.56 kg*) Bladex 80W.

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
CORN - Continued				
SUTAN+ 6.7E (Primarily grass control) (See page 23 for shattercane control)	5 pt *5.8 ℓ*	5 pt *5.8 ℓ*	5 pt *5.8 ℓ*	PPI...(Also registered for application through center pivot sprinkler.) Apply to dry surface soil. Incorporate immediately by cross tandem discing or equivalent soil mixing. Some hybrids may be injured. Postemergence broadleaf weed control usually required. Approx. cost $10.45.
SUTAN+ 6.7E + ATRAZINE 4L[4]	3.75 pt *4.4 ℓ* + 2 pt *2.3 ℓ*	3.75 pt *4.4 ℓ* + 2 pt *2.3 ℓ*	3.75 pt *4.4 ℓ* + 2.4 pt *2.8 ℓ*	PPI...(Also registered for application through center pivot sprinkler.) Tank mix. Apply to dry surface soil. Incorporate immediately by cross tandem discing or equivalent soil mixing. Increase Sutan rates for sandbur and shattercane control. Some hybrids may by injured. Approx. cost $9.90 to $10.30.
SUTAN+ 6.7E + BLADEX 4L[4]	3.75 pt *4.4 ℓ* + 2.0 pt *2.3 ℓ*	3.75 pt *4.4 ℓ* + 2.4 pt *2.8 ℓ*	3.75 pt *4.4 ℓ* + 3.2 pt *3.7 ℓ*	PPI...Tank mix. Apply to dry surface soil. Incorporate immediately by cross tandem discing or equivalent soil mixing. Increase Sutan rates for sandbur and shattercane control. Some hybrids may be injured. Do not use on sandy soils below 1% organic matter. Approx. cost $10.25 to $11.75.
SUTAN+ 6.7E + ATRAZINE 4L[4] + BLADEX 4L[4]	3.75 pt *4.4 ℓ* + 1 pt *1.2 ℓ* + 1 pt *1.2 ℓ*	3.75 pt *4.4 ℓ* + 1 pt *1.2 ℓ* + 1.25 pt *1.4 ℓ*	3.75 pt *4.4 ℓ* + 1.25 pt *1.4 ℓ* + 1.6 pt *1.8 ℓ*	

OTHER REGISTERED TREATMENTS FOR CORN: AAtram (PRE), AAtrex + Princep (PPI or PRE), Amiben (PRE), Amiben + AAtrex (PRE), Banvel + Lasso (PRE), Bexton (PRE), Bexton + Atrazine (PRE), Eradicane + Bladex (PPI), Knoxweed (PRE), Lorox + AAtrex (PRE), Lorox + Lasso (PRE), Premerge (PRE), Princep (PPI or PRE), Prowl (PRE), Prowl + Banvel (PRE), Propachlor (PRE), Ramrod (PRE), Ramrod + Atrazine (PRE), Randox (PRE), Randox T (PRE), 2,4-D (PRE). See Herbicide Dictionary for additional information.

PROSO MILLET

AATREX: ATRAZINE 4L[4]	1-1.5 pt *1.2-1.7 ℓ*	1-1.5 pt *1.2-1.7 ℓ*	PRE...Do not use on foxtail millets. Do not plant wheat on treated fields during year of use. Injury and carry-over can be a problem on calcareous outcroppings, eroded areas and on terraced fields. Approx. cost $1.15 to $2.25.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-O
1 qt (*0.95 ℓ*) Bladex 4L = 1¼ lb (*0.56 kg*) Bladex 80W.

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
SORGHUM				
AATREX; ATRAZINE 4L[4]	Do not use	2 qt *4.7 ℓ*	2.4 qt *5.6 ℓ*	PPI or PRE...Preplant applications, should be made only on fine textured soils. Heavy rains may leach AAtrex/Atrazine and cause injury to sorghum. Approx. cost $4.00 to $4.80.
BEXTON 4L; RAMROD FLOWABLE or RAMROD 65W or RAMROD 20G; BEXTON 20G	4 qt *9.3 ℓ* 6 lb *6.7 kg* 20 lb *22.4 kg*	4 qt *9.3 ℓ* 6 lb *6.7 kg* 20 lb *22.4 kg*	4 qt *9.3 ℓ* 6 lb *6.7 kg* 20 lb *22.4 kg*	PRE...May cause skin irritation to applicator. Do not feed treated forage to dairy animals. Leaches on sandy soil. Approx. cost $11.55.
BEXTON 4L; RAMROD FLOWABLE[4] + ATRAZINE 4L; AATREX 4L[4]	Do not use	7.0 pt *8.0 ℓ* + 1.5 pt *1.7 ℓ*	7.0 pt *8.0 ℓ* + 1.5 pt *1.7 ℓ*	PRE...Tank mix, SW Nebraska only. Rains may leach herbicides and cause sorghum injury or poor weed control. Do not feed treated forage to dairy animals. Approx. cost $11.10.
BEXTON 4L; RAMROD FLOWABLE[4] + BLADEX 4L[4]	Do not use	5 pt *5.75 ℓ* + 2.5 pt *2.9 ℓ*	5 pt *5.75 ℓ* + 2.75 pt *3.2 ℓ*	PRE...Heavy rains may leach Ramrod, Bexton, Atrazine and Bladex and cause injury to sorghum or poor weed control. Do not feed treated forage to dairy animals. Approx. cost: Ramrod-Atrazine--$8.35; Ramrod or Bexton + Bladex--$10.30 to $10.60.
BEXTON & ATRAZINE FLOWABLE; RAMROD & ATRAZINE FLOWABLE (package blend) or RAMROD & ATRAZINE 69WP (package blend)	Do not use Do not use	4 qt *9.3 ℓ* 5 lb *5.6 kg*	4 qt *9.3 ℓ* 5 lb *5.6 kg*	
BEXTON 4L; RAMROD FLOWABLE[4] + MODOWN 4EC[4]	5 pt *5.75 ℓ* + 2.5 pt *2.9 ℓ*	5 pt *5.75 ℓ* + 2.5 pt *2.9 ℓ*		PRE...Tank mix. Do not feed treated forage to dairy animals. Modown not influenced by soil texture, organic matter or pH. Approx. cost $11.55.
IGRAN 80W + AATREX 80W	Do not use	2 lb *2.2 kg* + 1 lb *1.1 kg*	2 lb *2.2 kg* + 1 lb *1.1 kg*	PPI...Apply within 2 weeks of planting. Use rolling cultivator, rotary hoe, spike tooth harrow or similar implements for shallow incorporation. Do not feed or graze treated forage. Approx. cost $7.50.

OTHER REGISTERED TREATMENTS FOR SORGHUM: Bladex + Propazine [Milogard] (PRE), Igran 80W (PRE), Igran 80W + AAtrex 80W (PRE), Milogard 80W (PRE), Propazine (PRE). See Herbicide Dictionary for additional information.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-O
1 qt (*0.95 ℓ*) Bladex 4L = 1.25 lb (*0.56 kg*) 80W
1 qt (*0.95 ℓ*) Modown 4L = 1.25 lb (*0.56 kg*) 80W
1 qt (*0.95 ℓ*) Bexton 4L or Ramrod Flowable = 1.5 lb (*0.68 kg*) Ramrod 65W

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
SOYBEANS				
BASALIN (4EC) (Primarily grass control)	1 pt *1.2 ℓ*	1.5 pt *1.7 ℓ*	2 pt *2.3 ℓ*	PPI...For best results immediately incorporate 2" (*5 cm*) deep by cross tandem discing or equivalent soil mixing. Use higher rates for shattercane control. Approx. cost $3.20 to $6.40.
BASALIN (4EC) + SENCOR; LEXONE 4L[4]	Do not use	1.5 pt *1.7 ℓ* + 0.75 pt *0.9 ℓ*	2 pt *2.3 ℓ* + 0.75 pt *0.9 ℓ*	PPI...Immediately incorporate in top 2" (*5 cm*) soil by cross tandem discing 4" (*10 cm*) deep or equivalent soil mixing. To reduce injury or calcareous soil reduce Sencor/Lexone rate by 1/3. Approx. cost $10.40 to $12.00.
DUAL 8E (Primarily grass control)	2 pt *2.3 ℓ*	2.5 pt *2.9 ℓ*	2.5 pt *2.9 ℓ*	PRE or PPI...Blend into the top 2" (*5 cm*) of soil before planting or apply after planting. Increase rates by 1/3 if Dual 6E is used. Approx. cost $9.20 to $11.50.
DUAL 8E + SENCOR; LEXONE 4L[4]	Do not use	1.5 pt *1.7 ℓ* + 0.75 pt *0.9 ℓ*	2 pt *2.3 ℓ* + 0.75 pt *0.9 ℓ*	PRE or PPI...Blend into the top 2" (*5 cm*) of soil before planting or apply after planting. Increase rates by 1/3 if Dual 6E is used. To reduce injury on calcareous soil decrease Lexone/Sencor rates by 1/3. Approx. cost $12.50 to $14.80.
LASSO (4EC) (Primarily grass control)	2.5 qt *5.8 ℓ*	2.5 qt *5.8 ℓ*	2.5 qt *5.8 ℓ*	PRE...Surface blending with rotary hoe or harrow beneficial. Approx. cost $9.65.
LASSO II (15G) (Primarily grass control)	17 lb *19.1 kg*	17 lb *19.1 kg*	17 lb *19.1 kg*	
LASSO 4EC + LOROX 50W	Do not use	2 qt *4.7 ℓ* + 1.5 lb *1.7 kg*	2 qt *4.7 ℓ* + 2 lb *2.2 kg*	PRE...Soybeans should be covered with 1.75" (*4.4 cm*) soil. Lorox not greatly influenced by soil pH. Approx. cost $14.65 to $17.00.
LASSO 4EC + MODOWN 4EC[4]	2.5 qt *5.8 ℓ* + 2.5 pt *2.9 ℓ*			PRE...Tank mix. Modown not greatly influenced by soil texture, organic matter or pH. Approx. cost $12.15.
LASSO (4EC) + SENCOR; LEXONE 4L[4]	Do not use	2 qt *4.7 ℓ* + 0.75 pt *0.9 ℓ*	2 qt *4.7 ℓ* + 0.75 pt *0.9 ℓ*	PRE...Soybeans should be covered with 1.75" (*4.4 cm*) of soil. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $13.20.
PROWL (4EC) (Primarily grass control)	1.5 pt *1.7 ℓ*	2 pt *2.3 ℓ*	2 pt *2.3 ℓ*	PPI...If rain or irrigation does not occur within 7 days incorporate by cross tandem discing or equivalent soil mixing. Approx. cost $4.80 to $6.40.
PROWL (4EC) + SENCOR; LEXONE 4L[4]	Do not use	2 pt *2.3 ℓ* + 0.75 pt *0.9 ℓ*	2 pt *2.3 ℓ* + 0.75 pt *0.9 ℓ*	PPI or PRE...If rain or irrigation does not occur within 7 days incorporate with rotary hoe or similar equipment. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $12.00

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations available. Use rates that give comparable amounts of active ingredient:
1 pt (*0.47 ℓ*) Sencor or Lexone 4L = 1 lb (*0.45 kg*) 50W or 0.75 lb (*0.34 kg*) Lexone DF
1 pt (*0.47 ℓ*) Modown 4EC = 0.67 lb (*0.28 kg*) 80W

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
SOYBEANS -Continued				
TOLBAN (4EC) (Primarily grass control)	1 pt *1.2 ℓ*	1.5 pt *1.7 ℓ*	2.0 pt *2.3 ℓ*	PPI...For best results immediately incorporate 2-4" (*5-10 cm*) deep by cross tandem discing 4-6" (*10-15 cm*) deep or equivalent soil mixing. Use higher rates for shattercane control. Approx. cost $3.20 to $6.40.
TREFLAN (4EC) (Primarily grass control)	1 pt *1.2 ℓ*	1.5 pt *1.7 ℓ*	1.5 pt *1.7 ℓ*	
TOLBAN (4EC) + SENCOR; LEXONE 4L[4]	Do not use	1 pt *1.2 ℓ* + 0.75 pt *0.9 ℓ*	1.25 pt *1.5 ℓ* + 0.75 pt *0.9 ℓ*	PPI...For best results immediately incorporate 2-3" (*5-7.5 cm*) deep by cross tandem discing 4-6" (*10-15 cm*) deep or equivalent soil mixing. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $8.80 to $9.60.
TREFLAN (4EC) + SENCOR; LEXONE 4L[4]	Do not use	1 pt *1.2 ℓ* + 0.75 pt *0.9 ℓ*	1.25 pt *1.5 ℓ* + 0.75 pt *0.9 ℓ*	PPI...For best results immediately incorporate 2-3" (*5-10 cm*) deep by cross tandem discing 4-6" (*10-15 cm*) deep or equivalent soil mixing. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $8.80 to $9.60.

OTHER REGISTERED TREATMENTS FOR SOYBEANS: Alanap (PRE), Amiben (PRE), Amiben + Sencor (PRE), Amiben + Treflan (PPI), Ancrack (PRE), Bexton (PRE, seed beans only), Cobex (PPI), Cobex + Sencor, Lexone (PPI); Dacthal (PRE), Dual + Lorex, Dual + Dyanap, Dual + Amiben (PRE); Dyanap (PRE and POST), Enide (PRE), Enide + Dinitro (PRE), Furloe (PRE), Klean-Krop (PRE), Lasso + Amiben (PRE), Lasso + Dyanap (PRE up to cracking), Lasso + Furloe (PRE), Lasso + Modown (PRE), Lasso + Premerge (PRE), Lexone (PRE), Lorox (PRE), Lorox + Amiben (PRE), Modown (PRE), Premerge (PRE), Premerge + Amiben (PRE), Propachlor (PRE, seed beans only), Prowl + Amiben (PRE), Prowl + Lorox (PRE), Ramrod (PRE, seed beans only), Ramrod + Lorox (PRE, seed beans only), Sencor (PRE), Surflan (PRE), Surflan + Dyanap (PRE), Surflan + Lorox (PRE), Surflan + Sencor (PRE), Treflan (PPI) + Modown (PRE), Vernam (PPI). See Herbicide Dictionary for additional information.

POTATOES			
EPTAM 7E	3.5 pt *4.0 ℓ*	3.5 pt *4.0 ℓ*	PPI, Drag-off or Layby...Apply and incorporate before planting or after potato plants have emerged. Approx. cost $9.45.
EPTAM 7E + TREFLAN (4EC)	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*	PRE up to and just after drag-off... Incorporate chemical immediately after application. Set incorporation equipment so that herbicide is not concentrated over the row. Approx. cost $9.90.
SENCOR; LEXONE 4L[4]	1 pt *1.2 ℓ*	1.5 pt *1.7 ℓ*	PRE before crop emergence or after drag-off...Do not plant treated area to sensitive crops such as onions or sugarbeets during the next growing season. Approx. cost $7.45 to $11.15.

OTHER REGISTERED TREATMENTS FOR POTATOES: Dacthal (PRE), Dowpon M (PRE), Dymid (PRE), Enide (PRE), Eptam (PPI), Lasso (PRE), Lasso + Lorox (PRE), Lorox (PRE), Maloran (PRE), Premerge (PRE), Sesone (PRE), Telone (PPI), Treflan (PRE), Treflan + Eptam (PRE). See Herbicide Dictionary for additional information.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations available. Use rates that give comparable amounts of active ingredient: 1 pt (*0.47 ℓ*) Sencor or Lexone 4L = 1 lb (*0.45 kg*) 50W or 0.75 lb (*0.34 kg*) Lexone DF

Herbicide (See weed response chart and troublesome weed section before selecting herbicide)	Apply this amount of commercial product per acre (*per hectare*) Sandy Loam <1½%OM	Silt Loam 1½-2½%	Silty-Clay Loam >2½%OM	Application time, Remarks, and Approximate Cost/A[3]
SUGARBEETS				
NORTRON (1.5EC)	1 gal *9.3 ℓ*	1.25 gal *11.7 ℓ*		PPI or PRE...Furrow irrigation apply preplant and incorporate 1 to 2"; for sprinkler irrigation apply pre-emergence at planting or shortly after and immediately irrigate with 0.5 inch of water. Approx. cost $40.60 to $50.70.
RO-NEET 6E or RO-NEET 10G	3-4 pt *3.5-4.7 ℓ* 23 lb *33.6 kg*	4.0-4.5 pt *4.7-5.2 ℓ* 30-35 lb *39.2-46 kg*		PPI...Immediately mix into dry soil with power incorporator 2 to 3" (*5.0 to 7.5 cm*). Crop injury may occur on sandy soils below 1% organic matter or with highly saline or alkaline soil conditions. Use lower rate on coarse textured soils or if postemergence treatments are planned. Primarily annual grass control. Approx. cost $11.50 to $17.35.
OTHER REGISTERED TREATMENTS FOR SUGARBEETS: Chem-Hoe (PPI), Endothall (PRE), Eptam (PPI), Pre-Beta (PPI), Pyramin W (PRE), Pyramin W + Endothal (PRE), Pyramin W + TCA (PRE), TCA (PRE), Tillam (PPI). See Herbicide Dictionary for additional information.				
FIELDBEANS				
COBEX (2EC) + EPTAM 7E	1.5 pt *1.7 ℓ* + 2.5 pt *3.0 ℓ*	1.5 pt *1.7 ℓ* + 2.5 pt *3.0 ℓ*		PPI...Apply to dry surface soil, immediately incorporate by cross tandem discing or equivalent soil mixing. Approx. cost $11.50.
EPTAM 10G	30 lb *33.6 kg*	30 lb *33.6 kg*		PRE...Surface blend with rotary hoe or mulch treader. Approx. cost $13.20.
EPTAM 7E	3.5 pt *4.1 ℓ*	3.5 pt *4.1 ℓ*		PPI...Apply to dry surface soil, immediately incorporate by cross tandem discing or equivalent soil mixing. Approx. cost $9.45.
EPTAM 7E + TREFLAN (4EC)	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*		PPI...Do not follow with fall seeded small grain. Sugarbeets and sorghum may be injured the next year. Approx. cost $9.90.
EPTAM 7E + TOLBAN (4EC)	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*	2.5 pt *3.0 ℓ* + 1 pt *1.2 ℓ*		
LASSO (4EC)	3.0 qt *7.0 ℓ*	2.5 qt *5.8 ℓ*		PRE...Surface blend with rotary hoe or mulch treader will improve weed control and reduce crop injury. Approx. cost $9.60 to $11.50.
OTHER REGISTERED TREATMENTS FOR FIELDBEANS: Amiben (PRE), Cobex (PPI), Dacthal (PRE), Furloe (PRE), Lasso + Treflan (PPI), Premerge (PRE), Tolban (PPI), Treflan (PPI). See Herbicide Dictionary for additional information.				

[3]Costs calculated for broadcast treatment using least expensive formulation listed.

WEED RESPONSE TO POSTEMERGENCE HERBICIDES

See pages 19-24 for additional problem weeds and their control.

Response ratings:
E = Excellent
G = Good
F = Fair
P = Poor

Herbicide	annual morningglory	barnyardgrass	black nightshade	cocklebur	crabgrass	fall panicum	foxtail	jimsonweed	kochia	lambsquarters	pigweed	ragweed	Russian thistle	sandbur	shattercane	smartweed	sunflower	velvetleaf	wild buckwheat	Crop tolerance[1]	Soil persistence in months[2]
Corn																					
AAtrex or Atrazine + crop oil	E	F	E	E	F	P	F	E	E	E	E	E	F	F	P	E	E	E	E	G	6-18
Banvel	E	P	P	E	P	P	P	F	G	G	G	G	E	P	P	E	G	F	E	G	1-2
2,4-D	E	P	F	E	P	P	P	G	G	G	G	G	E	P	P	F	G	G	P	F	1
2,4-D + Banvel	E	P	P	E	P	P	P	F	G	G	G	G	E	P	P	E	G	G	E	G	1-2
Sorghum																					
AAtrex or Atrazine + crop oil	E	P	E	E	F	P	F	E	E	E	E	E	F	P	P	E	E	E	E	F	6-18
2,4-D	E	P	F	E	P	P	P	G	G	G	G	G	E	P	P	P	G	F	P	F	1
Soybeans and Fieldbeans																					
Basagran	F	P	P*	E	P	P	P	E	P	P	P	G	P	P	P	E	E	E	G	E	0
Sugarbeets																					
Betanex	F	P	F	F	P	P	P	P	F	G	G	F	P	P	P	F	F	P	F	G	<1
Betanal + Betanex	F	P	F	F	P	P	P	F	F	G	G	F	P	P	P	F	F	P	G	G	<1
Dowpon	P	G	P	P	G	G	G	P	P	P	P	P	P	F	G	P	P	P	P	G	<1
Potatoes																					
Sencor or Lexone	P	P	P	G	F	P	F	P	G	E	E	G	E	F	P	G	G	F	P	G	2-6

Response ratings [weeds less than 4" (*10.1 cm*) tall except less than 2" (*5.1 cm*) for Brominal; Buctril treatments]:
E = Excellent (90-100%)
G = Good (75-90%)
F = Fair (50-75%)
P = Poor (0-50%)

Herbicide	blue mustard	erect knotweed	field pennycress	kochia	lambsquarters	prostrate pigweed	redroot pigweed	Russian thistle	shepherdspurse	sunflower	tansy mustard	wild buckwheat	wild lettuce	wild vetch	Soil persistence in months[2]
Winter Wheat[5]															
2,4-D	E	F	E	G	E	E	E	G	E	E	E	P	G	E	1
Brominal; Buctril	F	E	G	F	G	F	F	G	G	E	G	E	-	-	<1
MCPA + Brominal; Buctril	F	E	E	E	E	E	E	E	E	E	G	E	-	E	1
2,4-D + Brominal; Buctril	F	E	E	E	E	E	E	E	E	E	E	E	G	E	1
Banvel	F	E	P	E	E	E	E	E	F	E	G	E	G	E	1-2
2,4-D + Banvel	F	E	E	E	E	E	E	E	E	E	G	E	G	E	1-2
Banvel + Brominal; Buctril	G	E	E	E	E	E	E	E	E	E	E	E	-	E	1-2

[1]Crop varieties vary in their response to herbicides.
[2]The lower number applies to eastern Nebraska, the larger number to western Nebraska. Values will vary with soil and rainfall or irrigation. For more information see "Herbicide Carryover," G74-180.
[5]For more information see "Annual Broadleaf Weed Control in Winter Wheat," G74-120.

*Basagran gives good control of hairy nightshade but not black nightshade.

FIELD CROPS POSTEMERGENCE

Excellent growing conditions make weeds more susceptible to postemergence herbicides. Likewise, crops may be more subject to herbicide damage when growing rapidly. *Adjust herbicide dosages downward* when excellent conditions for growth are present the week before application and *upward* when ideal growth is limited by one or more factors.

Crop	Herbicide	Rate per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
BARLEY AND SPRING WHEAT	2,4-D amine	1-1.5 pt *1.2-1.7 ℓ*	5-leaf thru tillering	Do not treat winter barley in the fall. Spray broadleaf weeds as soon as good growing conditions occur in the spring. For wild buckwheat use Brominal-Buctril as listed for winter wheat. Approx. cost $.65 to $1.30.
	2,4-D LV ester	0.5-1 pt *0.6-1.2 ℓ*		
CORN	AAtrex; Atrazine 4L[4]	2 qt *4.7 ℓ*	Grass weeds 1" (*2.5 cm*) or less; also at layby	Use with water-oil mixtures. Read product label. Lower rates control broadleaf weeds. Make layby applications when corn is 20-30" tall and weeds less than 1½" tall. Approx. cost $4.00.
	2,4-D amine	1-2 pt *1.2-2.3 ℓ*	Before corn is 8" (*20 cm*) high, over 8" (*20 cm*) use drop nozzles	Later applications may cause brittleness and stalk breakage. Use lower rate when good growing conditions exist to reduce corn injury. *Do not use Banvel within ½ mile (0.8 km) of sugarbeets, fieldbeans, alfalfa, soybeans, gardens and ornamentals unless drop nozzles are used on corn over 8" (20 cm). Do not treat corn over 24" (60 cm). Do not apply between June 20 and Sept. 1 if sensitive crops are nearby.* Approx. cost: 2,4-D--$.65 to $1.30; 2,4-D + Banvel--$1.80; Banvel--$2.50.
	2,4-D LV ester	0.5-1 pt *0.6-1.2 ℓ*		
	2,4-D amine + Banvel (4WS)	0.5 pt *0.6 ℓ* + 0.25 pt *0.3 ℓ*		
	Banvel (4WS)	0.5 pt *0.6 ℓ*	Before corn is 24" (*60 cm*) high	
	Lasso (4EC) alone or with Atrazine 4L[4]	2-3 qt *4.7-7.0 ℓ* + 1-1.6 qt *1.2-1.9 ℓ*	Layby before corn is 40" (100 cm) tall	Apply after furrowing or final cultivation. Weeds less than 1½" tall may be controlled with Lasso-Atrazine combination. Approx. cost: Lasso-$7.70 to $11.55; Lasso + Atrazine--$9.70 to $14.75
	Prowl 4EC alone or with Atrazine 4L[4]	0.75-1.5 qt *1.8-3.5 ℓ* + 1-1.2 qt *2.3-2.8 ℓ*	From 6" (*15 cm*) to layby	Cover brace roots by cultivation before application. Incorporate by tillage, irrigation or rain within a week. Approx cost: Prowl--$4.80 to $9.60; Prowl + Atrazine--$6.80 to $12.00.
	2,4-D LV ester (harvest aid)	1.0 qt *2.3 ℓ*	After silks brown	Rescue operation for late control of sunflowers, cockleburs, velvetleaf and other late broadleaf weeds. Brittleness and kernel fill not affected if silks are dry and pollination is complete. Approx. cost $3.90.
FIELDBEANS	Basagran (4WS)	0.75-1 qt *1.8-2.3 ℓ*	At least one trifoliate leaf fully expanded. Weeds 2-4" (*5-10 cm*) tall	Good spray coverage essential. Weeds showing moisture stress or over 6" tall are poorly controlled. Controls hairy nightshade but not black nightshade. Oil concentrate may improve performance on some species. Approx. cost $10.75 to $14.30.

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient: 1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1¼ lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0
[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl because of fume hazards. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

FIELD CROPS POSTEMERGENCE--(CONTINUED)

Crop	Herbicide.	Rate per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
OATS	Brominal or Buctril (2EC) + 2,4-D amine	1-1.5 pt *1.2-1.8 ℓ* + 0.5 pt *0.6 ℓ*	Weeds and oats in 3 to 4 leaf stage	Controls annual broadleaf weeds including wild buckwheat. Thorough coverage required. Approx. cost $5.00 to $6.60.
	2,4-D amine	1 pt *1.2 ℓ*	3 to 4 leaf stage of oats	Some injury from 2,4-D may be expected at any stage. Approx. cost $1.10.
POTATOES	Sencor or Lexone 4L[4]	0.5-1 pt *0.6-1.2 ℓ*	Before weeds are 1" (*2.5 cm*) tall	Use higher rate for sunflowers and kochia. *Do not use on red skinned or early maturing white varieties nor within 60 days of harvest.* Approx. cost $3.70 to $7.45.
SORGHUM	AAtrex; Atrazine 4L[4]	1.2 qt *2.8 ℓ*	Broadleaf weeds less than 6" (*15 cm*)	Use with water-oil mixtures. Read product label. May give partial control of grass weeds under 1" (*2.5 cm*). Approx. cost $2.40.
	2,4-D amine	1 pt *1.2 ℓ*	When sorghum is 4" (*10 cm*) to 12" (*30 cm*) high. Over 12" (*30 cm*) use drop nozzles.	Spraying before 4" (*10 cm*) stage may inhibit root development. Spraying without drop nozzles after 12" (*30 cm*) through early boot may inhibit head development. Approx. cost $.65.
	2,4-D LV ester	0.5 pt *0.6 ℓ*		
	2,4-D LV ester (harvest aid)	1 qt *2.3 ℓ*	After soft dough	Rescue operation for late control of sunflowers, cockleburs, velvetleaf and pigweed. Grain quality not affected if milo is in soft dough or later stage of growth. Approx. cost $2.60.
SOYBEANS	Basagran (4WS)	0.75-1 qt *1.8-2.3 ℓ*	When susceptible weeds are 2-4" (*5-10 cm*) tall	Good spray coverage essential. See label for rates and specific weed size. Approx. cost $10.75 to $14.30.
	Paraquat (harvest aid)	0.5-1 pt *0.6-1.2 ℓ*	1/2 leaf drop and remainder yellow	Follow label directions on water volume and X-77 additive. Approx. cost $4.50 to $9.00
SUGARBEETS	Dowpon M (74SP)	2.7-5.4 lb *3.0-6.1 kg*	Grass weeds less than 2" (*5 cm*) tall. Temp. above 60°F (*16°C*).	For annual grasses. Use higher rate [4 lb/A (*4.4 kg/ha*)] on grass taller than 2" (*5 cm*). May cause crop injury following Ro-Neet use. Approx. cost $4.20 to $8.40.
	Betanex (1.3EC)	4.5-7.5 pt *5.3-8.7 ℓ*	Beets past 2 leaf stage and weeds in cotyledon to 4 leaf stage	Use lower rates on small beets. Works best on Ro-Neet treated fields. Wait till 5-6 leaf stage if beets show signs of Ro-Neet injury. Treat in late afternoon to reduce injury. Tank mix gives more effective kochia control. Approx. cost per inch width of treated band for 22" (*55.9 cm*) rows: Betanex--$1.05 to $1.70; Betanex + Betanal--$.85 to $1.25.
	Betanex (1.3EC) + Betanal (1.3EC)	2-3 pt *2.3-3.5 ℓ* + 2-3 pt *2.3-3.5 ℓ*		

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0
1 pt (*0.47 ℓ*) Sencor or Lexone 4L = 1 lb (*0.45 kg*) 50W or 0.75 lb (*0.34 kg*) Lexone DF
[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl because of fume hazards. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

FIELD CROPS POSTEMERGENCE--(continued)

Crop	Herbicide	Rate per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
WINTER WHEAT	2,4-D amine	1-1.5 pt *1.2-1.7 ℓ*	Early spring before joint stage or late fall after tillering	Do not spray winter wheat until well tillered. Apray broadleaf weeds as soon as good growing conditions occur. Refer to page 19 for blue mustard control. Approx. cost $.65 to $1.30
	2,4-D LV ester	0.5-1 pt *0.6-1.2 ℓ*		
	2,4-D LV ester (harvest aid)	1.0 qt *2.3 ℓ*	Hard dough stage 7 or more days before harvest	Rescue operation for late weeds such as sunflowers, kochia, pigweed and lambsquarters. To reduce breakage all green color should be gone from the joints. Approx. cost $3.90.
(Control for wild buckwheat)	Brominal or Buctril (2EC) + 2,4-D amine	1-1.5 pt *1.2-1.8 ℓ* + 0.5 pt *0.6 ℓ*	Well tillered	Thorough coverage required. Weeds should be in 3- to 4-leaf stage. Approx. cost $5.00 to $6.60.
	Banvel (4WS) + 2,4-D amine	4 oz *0.3 ℓ* + 0.75 pt *0.9 ℓ*	Before wheat joints	Controls most troublesome broadleaf weeds. Approx. cost $2.05.

ADDITIONAL REGISTERED POSTEMERGENCE TREATMENTS:

Barley-Oats: MCPA, 2,4-D + Banvel.
Corn: Bladex 80W, Banvel + atrazine, Basagran, Dowpon M + 2,4-D directed, Evik directed, Lorox directed, Premerge in spike stage.
Sorghum: Banvel 10-25 days after emergence.
Soybeans: Butoxone/Butyrac, Dyanap/Klean Krop, Lasso + Premerge, Lorox directed, Lorox + Butyrac directed, Premerge, Premerge + Amiben, Tenoran.
Sugarbeets: Betanal, Endothal, Pyramid + Dowpon, TD 273.
Winter Wheat: Brominal + MCPA, MCPA, 2,4-D + Banvel, Tordon 22K + 2,4-D.

ROPE-WICK, ROLLER & RECIRCULATING SPRAYER TREATMENTS

Type of applicator	Corn and Shattercane Control Roundup:water ratio	Corn and Shattercane Control % conc.	Broadleaf Weed Control Roundup:water ratio	Broadleaf Weed Control % conc.
Recirculating sprayer	1:49	2%	1:19	5%
Rope wick applicator	1:2	33 1/3%	1:2	33 1/3%
Roller applicator	1:19	5%	1:9	10%
Wet apron applicator	1:7	15%	1:3	25%

Remarks: Roundup labelled for used in soybeans only. Corn, shattercane and other weeds should be 8-12" (*20-30 cm*) taller than soybeans. When clumps of corn, shattercane and weeds are present, retreatment in the opposite direction is advisable with rope-wick, wet apron and roller applicators. On the roller applicator, the carpet must be maintained at about 50% saturation to facilitate adequate herbicide application without drip. Retreatment with all units will be necessary to control late emerging weeds. Treatments also can be used where no crop is present. Velvetleaf is difficult to control with Roundup. Chemical costs per acre vary from $.50 with light weed infestations to $12.00 to $15.00 in heavy infestations.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl because of fume hazards. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

REDUCED TILLAGE SYSTEMS

Try new farming techniques on a small scale before using on large acreages.

Situation	Herbicide and Rate per acre (*per hectare*)	Application time	Remarks and Approximate Cost/A[3]
NO-TILL CORN IN GRASS SOD[7]	AAtrex 4L[4] 2-3 qt (*4.7-7.0 ℓ*) + Paraquat 1-2 pt (*1.2-2.3 ℓ*)[8]	Apply to new growth in May before corn emergence	Weak on tall warm season perennial grasses. Add paraquat if weeds have emerged. Approx. cost $8.50 to $15.00.
NO-TILL CORN IN ALFALFA SOD[7]	2,4-D 1 qt (*2.3 ℓ*) + Banvel 0.5 pt (*0.6 ℓ*)	Apply in Sept. or April-May to alfalfa with 3-4" (*7.6-10.2 cm*) new growth. Avoid tillage for 5 days	Will control alfalfa. For annual weed control select a preemergence herbicide from pages 3-5. See NebGuide G74-131 for more information. On sandy soils don't plant corn for 10 days. Approx. cost $6.05.
NO-TILL CORN IN RYE OR WINTER WHEAT[7]	AAtrex 4L[4] 2-3 qt (*4.7-7.0 ℓ*) + 1-2 pt (*1.2-2.3 ℓ*) Paraquat CL[8]	Apply when rye and wheat are more than 4" (*10.2 cm*) tall	Apply before corn emerges. Approx. cost $8.50 to $15.00.
NO-TILL CONTINUOUS CORN	AAtrex; Atrazine 4L[4] 2-3 qt (*4.7-7.0 ℓ*)	Preemergence	Control broadleaf weeds with 2,4-D LV ester prior to planting. Volunteer corn may be a problem. Tank mix 1-2 pt Paraquat[8] to control weeds present at planting. Do not use Bladex on soils below 1.5% OM w/o Paraquat. Approx. cost: AAtrex/Atrazine--$4.00 to $6.00; Bicep--$13.50; Lasso + Atrazine-$10.90; Bladex-- $7.35 to $9.80. Dual + AAtrex also registered.
	Bicep 4.5L 3.0 qt (*7.0 ℓ*)	Preemergence	
	Lasso + Atrazine 4L[4] 2 qt + 1.6 qt (*4.7 + 1.9 ℓ*)	Preemergence	
	Bladex 4L[4] 3 to 4 qt (*7.0-9.3 ℓ*)	Preemergence	
NO-TILL CONTINUOUS SORGHUM (PLANTED INTO PREVIOUS CROP RESIDUE)	Atrazine 4L[4] 1.6-2.4 qt (*3.7-6.5 ℓ*) + Paraquat CL[8] 1-2 pt (*1.2-2.3 ℓ*)	Preemergence 2 weeks before planting	Avoid long season hybrids. Reduce Atrazine rate after first year in SW Nebraska. Spray before barnyardgrass has 3 leaves. If grasses are in 3-5 leaf stage add 1-2 pt Paraquat to Igran + AAtrex. Approx. cost: Atrazine + Paraquat--$7.70 to $13.80; Igran + Atrazine--$7.50 to $9.40.
	Igran 80W + AAtrex 80W[8] 2-2.5 lb (*2.2-2.8 kg*) + 1.0-1.25 lb (*1.1-1.4 kg*)	Preemergence 2 weeks before planting	
NO-TILL SOYBEANS (PLANTED INTO PREVIOUS CROP RESIDUE)	Lasso 2 qt (*4.7 ℓ*) + Sencor; Lexone 4[4] 0.75 pt (*0.9 ℓ*) + Paraquat CL[8]	Preemergence	Atrazine residue from previous crop could cause soybean injury. Approx. cost: Lasso + Sencor/Lexone + Paraquat--$17.70 to $22.20; Dual + Sencor/Lexone + Paraquat--$19.30 to $23.80.
	Dual 2 pt (*2.3 ℓ*) + Sencor; Lexone 4[4] 0.75 pt (*0.9 ℓ*) + Paraquat CL[8] 1-2 pt (*1.2-2.3 ℓ*)	Preemergence	
WHEAT-ECOFALLOW-WHEAT[9] WHEAT SEEDED 10-14 MONTHS LATER **Use where stubble is weed free after harvest.**	AAtrex 4L[4] 1-2 pt (*1.2-2.3 ℓ*). Use lower rate on soils below 1% organic matter or on calcareous soils	July-October 15	Add 1.5 qt/A (*3.5 ℓ/ha*) 2,4-D ester to improve perennial broadleaf weed control. *Use sweep plow if grass weeds or volunteer wheat are not controlled.* Avoid terraced fields, canyon and rosebud soils, and caliche outcroppings. w/o 2,4-D Approx. cost $1.00 to $2.00.
For use where weeds are present in stubble after harvest.	AAtrex 4L[4] 1-2 pt (*1.2-2.3 ℓ*) + Paraquat CL[8] 1-2 pt (*1.2-2.3 ℓ*)[10]	July-October 15	Spray before weeds produce seed. If grasses or volunteer wheat recover use sweep plow. Avoid terraced fields, canyon and rosebud soils, and caliche outcroppings. Approx. cost: AAtrex + Paraquat--$5.50 to $11.00; Igran + AAtrex--$7.90 to $9.40.
	Igran 80W 2-2.5 lb (*2.2-2.8 kg*) + AAtrex 4L 1-2 pt[8] (*1.2-2.3 ℓ*)	July-October 15	

(Continued next page)

[3]Cost calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0
1 pt (*0.47 ℓ*) Sencor or Lexone 4L = 1 lb (*0.45 kg*) 50W or 0.75 lb (*0.34 kg*) Lexone DF
[7]Irrigated conditions or eastern Nebraska.
[8]Add X-77 spreader 2 pt (*2.3 ℓ*) per 100 gal spray solution.
[9]For use west of highway 83. Consider herbicides used in a wheat-fallow rotation as fallow aids and resume stubble mulch tillage practices in May-August to control grasses and prepare a seedbed.
[10]Increase Paraquat rate, gallonage and pressure (minimum of 30 lb pressure at nozzle) on heavy infestations of grass or Russian thistle where it is difficult to penetrate the foliage.

REDUCED TILLAGE SYSTEMS--(CONTINUED)

Situation	Herbicide and Rate per acre (*per hectare*)	Application time	Remarks and Approximate Cost/A[3]
Sweep plow wheat stubble after harvest.	Bladex 80W 3.5-4.5 lb (*4.0-5.0 kg*) Use higher rate on fine textured soils	September-November	If volunteer wheat, downy brome or jointed goatgrass are present add Paraquat[8] + X77 at 1 pt/A (*1.2 ℓ/ha*). Approx. cost $10.70 to $13.75.
WHEAT-ECOFALLOW-WHEAT[9] WHEAT SEEDED 4-5 MONTHS LATER	Bladex 80W 2.5-3.5 lb (*2.8-4.0 kg*) + Paraquat CL[8] 1-2 pt (*1.2-2.3 ℓ*)	March-April 15 or before boot stage of weeds	Use higher rates on fine textured soils. Controls volunteer wheat, downy brome, jointed goatgrass and broadleaf weeds. Approx. cost $7.65 to $10.70.
	Roundup 1 qt (*2.3 ℓ*)	Postemergence-April	Apply to vigorously growing weeds. Has no preemergence activity. Do not mix with other herbicides. Approx. cost $15.00.
	2,4-D 1 qt (*2.3 ℓ*) + Banvel 0.5 pt (*0.6 ℓ*)	May-July	Broadleaf weed control only. Do not plant small grains for 15 days after treatment. Approx. cost $3.60.
WHEAT-ECOFALLOW-CORN OR SORGHUM Spray or sweep plow small grain stubble after harvest. Plant corn or sorghum following spring. *WARNING...High atrazine rates may carryover and destroy wheat on eroded areas and terraces.*	AAtrex 4L 2-3 qt[4] (*4.7-7.0 ℓ*) Use higher rates on fine textured soils in July and August and on soils below 6.5 pH	July through November	1.5 qt/A (*3.5 ℓ/ha*) 2,4-D LV ester improves perennial broadleaf weed and annual grass control. Spray before weeds produce seed. Use sweep plow if grass weeds are present. w/o 2,4-D Approx. cost $4.00 to $6.00.
	AAtrex 4L 2-3 qt[4] (*4.7-7.0 ℓ*) + Paraquat CL[8] 1-2 pt (*1.2-2.3 ℓ*)	July through November	Spray before weeds produce seeds. If grasses such as barnyardgrass recover use sweep plow before weed seeds develop. Approx. cost: AAtrex--$8.50 to $15.00; Igran + AAtrex--$9.90 to $13.40.
	Igran 80W 2.0-2.5 lb + AAtrex 4L 2-3 qt[4,8] (*2.2-2.8 kg + 1.2-2.3 ℓ*)	July through November	
WHEAT-ECOFALLOW-CORN CORN PLANTED IN WHEAT STUBBLE TREATED WITH AATREX AFTER HARVEST	Bladex 80W 1.5-2.0 lb[11,12] (*1.7-2.2 kg*)	Preemergence-May	Do not use on sands and loamy sands with less than 1% OM. Approx. cost $4.60 to $6.10.
	Dual 8E 2.5-3.0 pt[11,12] (*2.8-3.5 ℓ*)	Preemergence-May	If annual grasses produced seed in the grain stubble or if areas of field have history of high grass population use higher rates of Dual or Lasso. Omit AAtrex in the combination treatments if the maximum AAtrex rate was used previous year and increase Dual or Lasso rate 25-50%. Approx. cost: Dual--$11.50 to $13.80; Dual + AAtrex--$11.20; Lasso--$9.65 to $11.55; Lasso + AAtrex--$9.70.
	Dual 8E + AAtrex 4L[4] 2 pt + 1 qt[11,12,13] (*2.3 ℓ + 2.3 ℓ*)	Preemergence-May	
	Lasso 2.5 to 3 qt[11,12] (*5.8-7.0 ℓ*)	Preemergence-May	
	Lasso + AAtrex 4L[4] 2 qt + 1 qt[11,12,13] (*4.7-2.3 ℓ*)	Preemergence-May	
WHEAT-ECOFALLOW-SORGHUM SORGHUM PLANTED IN WHEAT STUBBLE TREATED WITH AATREX AFTER HARVEST	Bexton & Atrazine Flowable; Ramrod & Atrazine Flowable 4 qt (*9.3 ℓ*)[4,11,12,13]	Preemergence-May	Add Paraquat CL[8] if weeds and volunteer crops have emerged. Approx. cost $8.35.
	Igran 80W + AAtrex 80W[11,12,13] 2 + 1 lb (*2.3 + 1.1 kg*)	Preemergence-May	Igran will kill or injure emerged sorghum. Do not use on soils less than 1.2% OM. Approx. cost $7.50.
	Igran 80W[11,12] 2-2.5 lb (*2.3-2.8 kg*)	Preemergence-May	Use lower rate of soils below 1% OM. Approx. cost $5.90 to $7.40.

[3]Cost calculated for broadcast treatment using least expensive formulation listed.
[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1.25 lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0
4 qt (*9.3 ℓ*) Ramrod-Atrazine flowable = 5 lb (*5.6 kg*) Ramrod-Atrazine 69WP
[8]Add X77 spreader 2 pt (*1.2-2.3 ℓ*) per 100 gal spray solution.
[9]For use west of highway 83. Consider herbicides used in a wheat-fallow rotation as fallow aids and resume stubble mulch tillage practices in May-August to control grasses and prepare a seedbed.
[11]If seedling (3-leaf) grass or volunteer wheat are present at planting, add Paraquat at 1 pt/A (*1.2 ℓ/ha*) + X77 to mixtures or prepare a shallow seedbed with tillage. Paraquat may not kill grasses more than 4" tall. Crop oil at 1 gpa (*9.4 ℓ/ha*) may be substituted for Paraquat but control is not as good on large weeds. If weeds are beyond the seedling stage and volunteer wheat is growing vigorously, apply Roundup at 1 qt/A (*2.3 ℓ/ha*) one week before planting or immediately after planting but before crop emergence. Do not mix Roundup with other herbicides.
[12]If Russian thistle is present the addition of 0.5 to 1 pt 2,4-D improves control.
[13]AAtrex/Atrazine carryover may occur on eroded areas or with less than 1.2% organic matter. Total AAtrex/Atrazine applied last year plus this treatment should not exceed 3.75 lb (*4.2 kg*) of 80W or 3 qt 4L (*7 ℓ*).

FORAGE CROPS, PASTURES AND RANGES

Area or use	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
ALFALFA (establishment)	Balan (1.5EC)	3-4 qt *7.0-9.3 ℓ*	Preplant	Immediately incorporate by cross tandem discing or equivalent soil mixing. Early legume injury may occur. Controls primarily annual grasses. Approx. cost: Balan--$6.40 to $8.55; Eptam--$9.45; Tolban--$3.20 to $6.40.
	Eptam 7E	3.5 pt *4.1 ℓ*		
	Tolban (4EC)	1-2 pt *1.2-2.3 ℓ*		
ALFALFA (seedling or established)	Butyrac or Butoxone (2,4-DB)	2 qt *4.7 ℓ*	Postemergence when weeds are less than 3" (*7.6 cm*)	For broadleaf weeds. Do not use treated forage for 30 days. *DO NOT confuse with 2,4-D.* Use when temperature is above 50°F (*10°C*). Approx. cost $8.25.
	Chem-Hoe 4FL	3-4 qt *7.0-9.3 ℓ*	Pre- or post-emergence to winter annual grasses late October thru mid-March	Controls downy brome and other annual weeds in established alfalfa or seedlings with 3 or more trifoliate leaves. Use Chem-Hoe when soil temperature is below 55°F (*13°C*). Moisture necessary for chemical activity. Kerb helps control sandbur. Approx. cost: Chem-Hoe--$6.60 to $8.80; Kerb--$8.80 to $13.20.
	Kerb 50W	1-1.5 lb *1.1-1.8 kg*		
ALFALFA (established one year or more)	Princep 80W	0.75-2 lb *1.1-2.2 kg*	Late fall before soil freezes	Primarily for winter annual weeds including downy brome, pennycress and other mustards. Use lowest rates on soils with less than 1% organic matter to reduce crop injury. Approx. cost: Princep--$2.05 to $5.50; Sinbar--$9.90 to $14.30; Sencor--$5.55 to $7.45.
	Sinbar (80W)	0.75-1 lb *0.8-1.1 kg*	Late fall or early spring	
	Sencor; Lexone 50W or Lexone DF	0.75-1.0 lb *0.8-1.1 kg* 0.5-.67 lb *0.5-0.7 kg*		
BIG BLUESTEM; SWITCHGRASS (establishment)	AAtrex 80W or AAtrex 4L	2.5 lb *2.8 kg* 2.0 qt *4.7 ℓ*	Preemergence	Controls many annual grasses and broadleaf weeds. Do not use on sandy soils or soils below 1% organic matter. Approx. cost $4.00.
COOL-SEASON GRASS SEEDLINGS	2,4-D	1-1.5 pt *1.2-1.7 ℓ*	2- to 4-leaf stage of grass	For broadleaf weeds. If larger weeds have formed canopy, increase rate to 1 qt (*2.3 ℓ*). Approx. cost $.65 to $1.30.
WARM-SEASON GRASS SEEDLINGS	2,4-D	0.5-1 pt *0.6-1.1 ℓ*		
WARM-SEASON GRASSES FOR SEED	AAtrex 4L or AAtrex 80W	3 qt *7.0 ℓ* 3.75 lb *4.2 kg*	Spring or fall before weed emergence	Do not use until second year after seeding. Less effective in heavy plant residues. Approx. cost: AAtrex $5.80

(Continued next page)

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl because of fume hazards. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

Area or use	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
ANNUAL OR BIENNIAL BROAD-LEAF WEEDS IN PASTURES AND RANGES	2,4-D	1 qt *2.3 ℓ*	Rosette stage in fall or when weeds are small in spring	Withhold milk cows from grazing treated areas for 7 days after 2,4-D application. With Banvel mixture do not harvest hay for dairy animals within 37 days or graze within 6 weeks of application. Do not use Banvel within ½ mile (*0.8 km*) of sensitive crops. Combination controls greater variety of weed species. Approx. cost: 2,4-D--$2.20; 2,4-D + Banvel--$4.70.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 0.5 pt *0.6 ℓ*		
PERENNIAL BROAD-LEAF WEEDS IN PASTURES AND RANGES (includes vervains, broom snakeweed, western ironwood and woolly loco)	2,4-D	1.5 qt *3.5 ℓ*	At bud stage of predominant weeds.[14] April for dandelions	Annual treatment for 2 to 3 years may be necessary. Withhold milk cows from grazing treated areas for 7 days after 2,4-D application. With Banvel mixture do not harvest hay for dairy animals within 37 days or graze within 6 weeks of application. Do not use within ½ mile (*0.8 km*) of sensitive crops. Approx. cost $3.60 to $7.15.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
RANGELAND	AAtrex 80W or AAtrex 4L	1-1.25 lb *1.1-1.4 kg* 1.6-2 pt *1.9-2.3 ℓ*	Fall	Controls winter annual bromes in warm season grasses. Do not graze for 7 months after application. Reduce grazing pressure to improve grass stands. Approx. cost $1.60 to $2.00.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.
[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.
[14]Retreatment will be necessary.

WINDBREAKS AND TREE PLANTINGS

Crop or use	Herbicide	Apply this amount commercial product per acre (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
TREES AND SHRUBS	Casoron 4G	100 lb *112 kg*	Preemergence to weeds	Apply 20" (*50 cm*) band on each side of tree row after trees are planted. Some injury to trees may result on low organic matter soils.
	Paraquat CL (2WS)	1-2 qt *2.3-4.7 ℓ*	Postemergence	Nonselective contact herbicide. Use sufficient water and wetting agent to cover weed foliage. *Keep spray off tree foliage.* Add 0.5% X77 wetting agent to spray solutions. Approx. cost $9.35 to $18.70.
	Princep 80W	1.5-5 lb *1.7-5.6 kg*	Preemergence to weeds	Use 1.5 lb on sandy high pH soils. See remarks for Casoron. Approx. cost $4.15 to $13.75.
	Treflan (4EC)	1-1.5 pt *1.2-1.7 ℓ*	Preplant	Incorporate 2 to 3" (*5 to 7.5 cm*) deep prior to planting. After planting adjust machine to throw treated soil towards trees in the row. Approx. cost $3.20 to $4.80.
	Roundup (3WS)	1-4 qt *2.3-9.3 ℓ*	Postemergence	*Do not spray green bark or foliage.* Spray may contact brown bark. Use lower rate on annuals. Approx. cost $14.85 to $59.40.
	Karmex (80W)	2.5-5 lb *2.8-5.6 kg*	Preemergence to weeds	See remarks for Casoron. Karmex use limited to conifers, honey locust and green ash. Approx. cost $7.15 to $14.30.
CHRISTMAS TREES SCOTCH, AUSTRIAN, PONDOROSA PINE, DOUGLAS FIR	Velpar	1-2 lb *1.1-2.2 kg*	Postemergence at least 1 month after planting	Use lower rates on sandy soils, soils low in organic matter, and on first year plantings. May be applied directly over the trees. Approx. cost $16.50 to $33.00.
CONIFERS	2,4-D amine	1 qt *2.3 ℓ*	Postemergence to weeds	Do not spray the new growth of spruce and pine trees. Controls broadleaf weeds. Approx. cost $2.20.

[3]Costs calculated for broadcast treatment using least expensive formulation listed.

TROUBLESOME WEEDS AND WOODY PLANTS

Best control will be obtained if treatments are made when plants are actively growing. Plan to make more than one treatment. An application just before flowering and a second application on fall regrowth will give best results on most perennials. Dust on leaves may interfere with herbicide activity.

Weed	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
ALFALFA	2,4-D amine + Banvel (4WS)	0.5 pt *0.6 ℓ* + 0.5 pt *0.6 ℓ*	Postemergence	For use in corn. Use drop nozzles on corn taller than 8". To kill established alfalfa prior to corn planting see "No-Till Corn in Alfalfa Sod" page 14. Approx. cost $3.05.
ARTICHOKE, JERUSALEM[16]	2,4-D amine + Banvel (4WS)	0.5 pt (*0.6 ℓ*) + 0.5 pt (*0.6 ℓ*)	12 to 18" (*30 to 45 cm*) tall[14]	For use in corn. Use drop nozzles on corn taller than 8" (*20.3 cm*). Approx. cost $3.05.
	2,4-D LV ester	1 qt *2.3 ℓ*	18 to 24" (*45 to 61 cm*) tall	For use where no crop is present. Approx. cost $2.60.
BLUE MUSTARD	2,4-D LV ester	0.5 pt *0.6 ℓ*	Nov. 15 thru March 15 before blue mustard stem elongation	Use only on fully tillered wheat. Approx. cost $.65 to $1.10.
	2,4-D amine	1 pt *1.2 ℓ*		
BURSAGE, SKELETONLEAF AND WOOLLYLEAF[16]	Tordon 22K	2 qt *4.7 ℓ*	Bud stage or when growing actively[14]	For non-crop areas. Tordon may remain in the soil for three or more years. Carefully read and observe all label precautions. Approx. cost $40.00.
	2,4-D + Banvel (4WS)	1 qt (*2.3 ℓ*) + 1 pt (*1.2 ℓ*)	Early June or when growing actively[14]	See remarks for field bindweed. If soil moisture conditions are poor, use oil-water emulsions as a carrier. Approx. cost $7.15.
CANADA THISTLE[16]	Tordon 22K	2 qt *4.7 ℓ*	Fall (actively growing) or spring (early bud)[14]	For non-crop areas. Tordon may remain in the soil for three or more years. Carefully read all label precautions and warnings. Approx. cost $40.00.
	2,4-D + Banvel (4WS)	1 qt (*2.3 ℓ*) + 1 pt (*1.2 ℓ*)	Fall (actively growing) and spring (early bud)[14]	Do not plant small grains for 15 days after treatment. See remarks for field bindweed. Approx. cost $7.15.
	Amitrol T or Cytrol T (2WS)	2 gal *18.7 ℓ*	When growing actively[14]	See remarks for field bindweed. Amitrol T and Cytrol T kill all vegetation. Use on non-cropland. Approx. cost $28.50.
	Roundup (3WS)	2-3 qt *4.7-7.0 ℓ*	Prebud to bud stage or in fall when growing actively[14]	Idle ground or spot treatment in crop before head or pod fill. Avoid tillage for at least three days after treatment. Approx. cost $30.00 to $45.00.
CATTAILS	2,4-D LV ester	1.5 gal (*14 ℓ*) + 5% diesel oil + 0.5% emulsifer	Boot to early flowering	Use the equivalent of 150 gal of water per acre (*1403 ℓ/ha*). Retreat regrowth as necessary. Approx. cost: 2,4-D--$15.50; Dowpon--$30.00.
	Dowpon M (74SP) or Dowpon C (74SP)	20 lb (*22.4 kg*) + 0.5% emulsifer 30 lb (*33.6 kg*) + 0.5% emulsifer	After flowering to fruiting	

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[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

[14]Retreatment may be necessary.

[16]For spot treatment add 1½ tablespoons of herbicide per gallon of water for each 1 qt per acre required broadcast, and apply to 1000 sq ft.

TROUBLESOME WEEDS AND WOODY PLANTS--(CONTINUED)

Weed	Herbicide	Apply this amount commercial product per acre[6] *(per hectare)*	Application time	Remarks, Approximate Cost/A
COTTONWOOD, WILLOWS AND SIBERIAN ELM	2,4-D LV ester	2-3 qt *4.7-7.0 ℓ*	Full foliage (early June) or basal treatment anytime	Aerial equipment: at least 5 gal carrier/A *(47 ℓ/ha)*. Annual treatment for 2 to 3 years may be necessary. Basal treatment: 2 qt of herbicide/ 10 gal *(1.9 ℓ/94 ℓ)* of diesel. Spray tree trunk to point of runoff. Approx. cost $5.60 to $7.80.
DOGWOOD	2,4-D + 2,4,5-T[15] LV esters	2 qt *(4.7 ℓ)* of most "Brushkillers"	Full foliage during June	See remarks for cottonwood. Approx. cost $10.20.
DOWNY BROME	AAtrex or Atrazine 80W[4] or AAtrex or Atrazine 4L	2.5 lb *2.8 kg* / 2 qt *4.7 ℓ*	Preemergence (fall or spring prior to April 1)	Use in waste areas such as fence rows and ditchbanks. Use sufficient water to insure good coverage. See page 16 for control in alfalfa and page 17 for control in rangeland. Approx. cost: AAtrex--$4.00; Princep--$6.90.
	Princep 80W	2.5 lb *2.8 kg*		
FIELD BINDWEED[16]	2,4-D	1 qt *2.3 ℓ*	Vigorous fall growth or bud stage in spring[14]	Avoid tillage 5 weeks before and 1 week after application. Do not plant small grains for 15 days after treatment. Plan to treat for several consecutive years. Approx. cost: 2,4-D--$2.20; 2,4-D + Banvel--$7.15.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
	Tordon 22K	2 qt *4.7 ℓ*	Vigorous fall growth or bud stage in spring[14]	Tordon for non-crop areas only. Avoid tillage 5 weeks before and 1 week after application. Carefully read and observe all label precautions and warnings. Approx. cost $40.00
	Roundup (3WS)	4-5 qt *9.3-10.6 ℓ*	Late summer or fall when actively growing[14]	Idle ground or spot treatment before head or pod fill. Avoid tillage or planting for at least 7 days after treatment. Approx. cost $60.00 to $75.00.
GROUNDSEL, RIDDELL	2,4-D	1 qt *2.3 ℓ*	May 15 to June 15	Approx. cost $2.20.
HEMP	2,4-D	1 pt-1 qt *1.2-2.3 ℓ*	2 to 12" *(5.1 to 30 cm)* tall	At later growth stages use higher rate. Approx. cost $1.10 to $2.20.

(Continued next page)

[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient: 1 qt *(0.95 ℓ)* AAtrex, Atrazine 4L = 1.25 lb *(0.56 kg)* 80W or 1.1 lb *(0.5 kg)* AAtrex Nine-0

[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal *(0.45 kg/ℓ)* of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

[14]Retreatment may be necessary.

[15]Permitted uses of 2,4,5-T and silvex include applications to (1) rangeland and (2) fence rows, hedge rows and waste areas not part of a pasture, forest or right-of-way.

[16]For spot treatment add 1½ tablespoons of herbicide per gallon of water for each 1 qt per acre required broadcast, and apply to 1000 sq ft.

Weed	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
HEMP DOGBANE[16]	2,4-D	1 qt *2.3 ℓ*	Spring bud stage[14]	Use lower rates in crops. Approx. cost $2.20.
	2,4-D	1 qt *2.3 ℓ*	After corn silks turn brown or milo is in the soft dough stage[14]	Can be used in standing corn and milo. Use the lower 2,4-D rate on milo. Do not plant small grains for 15 days after treatment. Do not apply Banvel within 30 days of harvest. Dogbane roots should have pink swollen buds. Effective only on dogbane plants with vigorous green leaves. Ground application may be more effective than aerial application on corn in 30" (*76 cm*) rows. Do not use Banvel within ½ mile (*0.8 km*) of sensitive crops before September 1. Approx. cost: 2,4-D--$2.20; 2,4-D + Banvel--$4.70.
	2,4-D amine + Banvel (4WS)	1 qt *2.3 ℓ* + 0.5 pt *0.6 ℓ*		
	Roundup (3WS)	4 qt *9.3 ℓ*	Late summer or fall[14]	Idle ground or spot treatment before head or pod fill. Avoid tillage for at least 7 days after treatment. Approx. cost $60.00.
HOARY CRESS	2,4-D LV ester	0.5-1 gal *4.7-9.3 ℓ*	Rosette stage in the fall or early bud in spring[14]	Same as for field bindweed except amine formulations less effective. Approx. cost $5.20 to $10.40.
JOHNSONGRASS (see shattercane for seedling control)	Dowpon M (74SP)	6.7 lb *7.5 kg*	8 to 12" (*20 to 30 cm*) new growth or regrowth[14]	Repeat treatment 3 times, 10 to 20 days apart. Treat when 70°F (*21°C*) or above. Approx. cost $10.40.
	Ansar 529 H.C. or Daconate (6WS)	2 qt *4.7 ℓ*	Boot stage	Treat when 70°F (*21°C*) or above. Do not use on cropland or grassland. Approx. cost $6.45.
	Roundup (3WS)	2-3 qt *4.7-7.0 ℓ*	12" (*30 cm*) through boot stage	Idle ground or spot treatment before head or pod fill. Avoid tillage for 7 days after application. Approx. cost $30.00 to $45.00.
LEAFY SPURGE[16]	2,4-D LV ester	2 qt *4.7 ℓ*	Early bud stage spring or late fall[14]	Same as for field bindweed except amine formulations less effective. Control seedlings. Approx. cost $5.20.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*	Fall or spring[14]	See remarks for field bindweed. Approx. cost $7.15.
	Tordon 22K	2 qt *4.7 ℓ*	Fall or spring	Tordon for non-crop areas only. Carefully read and observe all label warnings and precautions. Approx. cost $40.00.
LOCUST, HONEY AND BLACK	2,4,5-T or Silvex LV ester[15]	2 qt *4.7 ℓ*	Full foliage during June or basal treatment anytime	Do not use on pastures or rights-of-way. See remarks for cottonwood. Approx. cost $10.20.

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[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

[14]Retreatment may be necessary.

[15]Permitted uses of 2,4,5-T and silvex include applications to (1) rangeland and (2) fence rows, hedge rows and waste areas not part of a pasture, forest or right-of-way.

[16]For spot treatment add 1½ tablespoons of herbicide per gallon of water for each 1 qt per acre required broadcast, and apply to 1000 sq ft.

TROUBLESOME WEEDS AND WOODY PLANTS--(CONTINUED)

Weed	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
MILKWEED, COMMON[16]	Amino Triazole (90SP) or Amitrol-T/Cytrol-T (2WS)	4.4 lb *4.5 kg* / 2 gal *18.6 ℓ*	Bud to bloom stage[14]	Use enough water to insure good coverage. Use Amino Triazole and Amitrol-T/Cytrol-T only on non-cropland. Do not plant small grains for 15 days after 2,4-D + Banvel treatment. 2,4-D + Banvel suppresses growth for 1 year. Approx. cost: Amitrol-T--$28.50; 2,4-D + Banvel--$4.70.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 0.5 pt *0.6 ℓ*		
	Roundup (3WS)	3 qt *7.0 ℓ*	Flowering through maturity[14]	Idle ground or spot treatment before head or pod fill. Avoid tillage for 7 days after application. Approx. cost $45.00.
MILKWEED, HONEYVINE[16] (CLIMBING)	2,4-D amine	1-2 pt *1.2-2.3 ℓ*	Before vines reach 3' in length[14]	For use in corn or sorghum. Use lower rates in sorghum. Gives suppression only. Approx. cost $.65 to $1.30.
	2,4-D LV ester	0.5-1.0 pt *0.6-1.2 ℓ*		
MULLEIN, COMMON	2,4,5-T or Silvex[15]	1-1.5 qt *2.3-3.5 ℓ*	Late fall on rosettes or spring before flowering stalks lengthen	Essential to apply in rosette stage. Approx. cost $5.10 to $7.70.
MUSK AND PLUMELESS THISTLE[16]	2,4-D	1.5-2 qt *3.5-4.7 ℓ*	Late fall treatment of rosettes or spring before flowering stalks lengthen	Annual treatments may be necessary for control of new seedlings. Chemical applications after trees drop leaves in the fall and before leafing out in the spring reduce damage to trees. Tordon: Do not apply after "soil freeze-up" in the fall. For use on ranges and permanent pastures only. Carefully read label and heed all precautions and warnings. Approx. cost: 2,4-D--$3.30 to $4.40; 2,4-D + Banvel-$4.70; Tordon--$5.00
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 0.5 pt *0.6 ℓ*		
	Tordon 22K (musk only)	6-8 oz *0.4-0.6 ℓ*	Oct. 1-Dec. 1 or before May 1 in spring	
OAKS	2,4,5-T or Silvex LV ester[15]	2-3 qt *4.7-7.0 ℓ*	Full foliage June to July or basal treatment anytime	Retreatment necessary. See remarks for cottonwood. Approx. cost $10.20 to $15.30.
OSAGEORANGE	2,4,5-T LV ester[15]	2 qt *4.7 ℓ*	Full foliage June to July or basal treatment anytime	See remarks for cottonwood. Approx. cost $5.10.
PERENNIAL SOWTHISTLE	2,4-D	1.5 qt *3.5 ℓ*	Fall rosette or spring bud stage	See remarks for field bindweed. Approx. cost $3.30.
POISON IVY	Amino Triazole/ Weedazol (90SP) or Amitrol-T/ Cytrol-T (2WS)	2 tbs/gal of water *4 mℓ/ℓ* / 0.5 cup/gal of water *10 mℓ/ℓ*	Full foliage (June)[14]	Thoroughly wet all vegetation. Do not apply Amino Triazole or Amitrol-T to cropland nor use 2,4,5-T in recreational areas.
PRICKLYPEAR	Silvex[15]	1-2 qt *2.3-4.7 ℓ*	Bud to bloom stage	Rotary hoe pads just prior to spraying. Add 1 gal/A (*9.3 ℓ/ha*) diesel + 0.5% emulsifier in water carrier. Approx. cost $5.10 to $10.20.

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[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*4.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

[14]Retreatment may be necessary.

[15]Permitted uses of 2,4,5-T and silvex include applications to (1) rangeland and (2) fence rows, hedge rows and waste areas not part of a pasture, forest or right-of-way.

[16]For spot treatment add 1½ tablespoons of herbicide per gallon of water for each 1 qt per acre required broadcast, and apply to 1000 sq ft.

TROUBLESOME WEEDS AND WOODY PLANTS--(CONTINUED)

Weed	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
PUNCTUREVINE	2,4-D LV ester	1 qt *2.3 ℓ*	Pre-bud stage most effective	Mature burs not affected by 2,4-D. Approx. cost $2.60.
PURSLANE	2,4-D LV ester	1 qt *2.3 ℓ*	When growing actively	Till 5-7 days after treatment. Do not plant small grains for 15 days after treatment. Approx. cost $2.60.
RAGWEED, WESTERN (perennial)	2,4-D	1 qt *2.3 ℓ*	Early summer[14]	Follow-up treatments may be necessary. Approx. cost $2.20.
RUSSIAN KNAPWEED[16]	2,4-D LV ester	2 qt *4.7 ℓ*	Early bud stage[14]	Same as for field bindweed except amine formulations less effective. Approx. cost: 2,4-D--$2.60; 2,4-D + Banvel-$7.15.
	2,4-D + Banvel (4WS)	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
RUSSIAN OLIVE	2,4-D + 2,4,5-T LV esters[15]	2 qt (*4.7 ℓ*) of most "Brushkillers"	Full foliage (early June)[14]	See remarks for cottonwood. Approx. cost $10.20.
SAGEBRUSH (sand and fringed and green sagewort)	2,4-D LV ester	1.5 to 2 qt *3.5-4.7 ℓ*	4 to 8" (*10 to 20 cm*) new growth (June)[14]	Use sufficient water to insure good coverage. 1.5 qt/A (*3.5 ℓ/ha*) 2,4-D adequate on sand sagebrush. Approx. cost $3.90 to $5.20.
SHATTERCANE (wild cane) AND SEEDLING JOHNSONGRASS	Eradicane 6.7E	5 pt *5.8 ℓ*	Preplant to corn	Incorporate immediately by cross tandem discing or equivalent soil mixing. Some crop injury may result from Treflan and Tolban. Use higher rates on fine textured soils. Plant corn on the land the year following Princep treatment. Eradicane not recommended for shattercane control east of U.S. Hwy. 81 and south of I-80 nor east of U.S. Hwy. 77 and north of I-80. Under very high shattercane population herbicides may not give acceptable control--rotate to small grain or alfalfa. Approx. cost: Eradicane--$12.75; Sutan+--$15.33; Eradicane + Princep--$19.65; Eradicane + Bladex--$17.65; Sutan+ + Princep--$22.25; Sutan+ + Bladex $20.25; Treflan--$6.40 to $8.00; Tolban--$6.40 to $9.60; Basalin--$9.60.
	Sutan+ 6.7E	7.3 pt *8.5 ℓ*	Preplant to corn	
	Princep or Bladex 4L + Eradicane 6.7E or Sutan+	2.0 qt *4.7 ℓ* + 5 pt *5.8 ℓ* 7.3 pt *8.5 ℓ*	Preplant to corn	
	Treflan (4EC)	2-2.5 pt *2.3-2.9 ℓ*	Preplant to soybeans	
	Tolban (4EC)	2-3 pt *2.3-3.5 ℓ*		
	Basalin (4EC)	3 pt *3.5 ℓ*		
SNOWBERRY[16] (BUCKBRUSH)	2,4-D LV ester	1-2 qt *2.3-4.7 ℓ*	Full foliage (May 10-25)[14]	Use sufficient water to insure good coverage. Approx. cost $2.60 to $5.20.
SOAPWEED (YUCCA)[16]	Silvex[15]	2 qt *4.7 ℓ*	June[14]	Use diesel as a carrier. Approx. cost $15.40.

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[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*4.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 28.

[14]Retreatment may be necessary.

[15]Permitted uses of 2,4,5-T and silvex include application to (1) rangeland and (2) fence rows, hedge rows and waste areas not part of a pasture, forest or right-of-way.

[16]For spot treatment add 1½ tablespoons of herbicide per gallon of water for each 1 qt per acre required broadcast, and apply to 1000 sq ft.

TROUBLESOME WEEDS AND WOODY PLANTS-- (CONTINUED)

Weed	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
SUMAC	2,4-D	1-2 qt *1.2-2.3 ℓ*	Full foliage	Use sufficient water for good coverage. Approx. cost $2.20-$4.40.
SWAMP SMARTWEED[16] (TANWEED)	2,4-D LV ester + Banvel (4WS)	1 qt (*2.3 ℓ*) + 1 pt (*1.2 ℓ*)	When growing vigorously[14]	On crops use lower rates and amine formulations. Approx. cost $7.15.
	Roundup (3WS)	3-4 qt *7.0-9.3 ℓ*	Full foliage mid to late summer[14]	Idle ground or spot treatment before head or pod fill. Avoid tillage for at least 7 days after treatment. Approx. cost $45.00 to $60.00.
VELVETLEAF	2,4-D LV ester	0.5-1 pt *0.6-1.2 ℓ*	Velvetleaf less than 12" (*30.5 cm*)	2,4-D for corn and milo; Basagran for soybeans and corn. Use .75 qt Basagran on velvetleaf 2" in height or less, 1.0 qt on velvetleaf 2"-5" in height. Also consider appropriate preemergence herbicides. Approx. cost: 2,4-D--$.65 to $1.30; Basagran--$10.70 to $14.30.
	Basagran (4WS)	0.75-1 qt *1.8-2.3 ℓ*		

NON-CROP AREAS

Area or use	Herbicide	Apply this amount commercial product per acre[6] (*per hectare*)	Application time	Remarks, Approximate Cost/A
ROADSIDES (broadleaf weed control)	2,4-D	1 qt/A (*2.3 ℓ/ha*)	Broadleaf weeds 2 to 6" (*5 to 15 cm*)	Repeat treatments may be necessary. For woody species replace 0.5 qt/A (*1.2 ℓ/ha*) 2,4-D with 0.5 qt/A (*1.2 ℓ/ha*) 2,4,5-T. *Do not use Banvel or Tordon near susceptible plants.* Approx. cost: 2,4-D--$2.20; 2,4-D + Banvel--$7.15; Tordon--$22.20.
	2,4-D + Banvel (4WS)	1 qt/A (*2.3 ℓ/ha*) + 1 pt/A (*1.2 ℓ/ha*)		
	Tordon 212	2 qt/A (*4.7 ℓ/ha*)	Postemergence	
IRRIGATION DITCHBANKS	Karmex (80W)	5-10 lb/A *5.6-11.2 kg/ha*	Soon after ditches are open. Treat before weeds appear or soon thereafter	Use enough water to insure good coverage. Use 50 mesh to coarser screens. May injure nearby trees and shrubs. Approx. cost: Karmex--$14.30 to $28.60; AAtrex--$12.00.
	AAtrex, Atrazine or Princep 4L[4] or AAtrex or Atrazine 4L	1.5 gal/A *14 ℓ/ha* 1.5 gal/A *14 ℓ/ha*		
	2,4-D	1 qt/A *2.3 ℓ/ha*	Broadleaf weeds 2-6" (*5-15 cm*)	Approx. cost $2.20.
LONG TERM VEGETATION CONTROL	Pramitol 25E or Pramitol 5PS	4 pt/1000 sq ft *2 ℓ/100 sq m* 10-20 lb/1000 sq ft *5-10 kg/100 sq m*	Treat before weeds appear or soon thereafter	Some weeds will require higher rates. Consult label for specific instructions on problem weeds and conditions. Herbicides listed for irrigation ditchbanks can also be used for long term vegetation control. Consult label for rates. Approx. cost: Pramitol--$4.40/1000 sq ft; Hyvar--$3.65/1000 sq ft; Krovar I--$2.75/1000 sq ft.
	Hyvar X (80W) or Hyvar XL (2WS)	0.5 lb/1000 sq ft *0.25 kg/100 sq m* 0.75 pt/1000 sq ft *0.4 ℓ/100 sq m*		
	Krovar I (80W)	0.5 lb/1000 sq ft *0.25 kg/100 sq m*		
PERENNIAL GRASSES (including bromegrass and quackgrass)	Roundup (3WS)	2 qt/A (*4.7 ℓ/ha*)	Full foliage	Nonselective. Perennial grasses should have good top growth. Kills all annuals. Approx. cost: Roundup--$30.00; Amitrol-T--$28.60.
	Amitrol-T/ Cytrol-T (2WS)	2 gal/A (*19 ℓ/ha*)		

[4]Additional formulations are available. Use rates that give comparable amounts of active ingredient: 1 qt (*0.95 ℓ*) AAtrex, Atrazine 4L = 1¼ lb (*0.56 kg*) 80W or 1.1 lb (*0.5 kg*) AAtrex Nine-0

[6]Low volatile ester and salt formulations preferred over volatile esters such as butyl and isopropyl because of fume hazards. 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lb/gal (*0.45 kg/ℓ*) of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see converstion table page 28.

HERBICIDE DICTIONARY

AAtram--A 20% granular form of atrazine plus propachlor (Ramrod). Discontinued in 1978. Ciba-Geigy.

AAtrex--A trade name for atrazine. Ciba-Geigy.

Amex (butralin)--A preplant incorporated soybean herbicide similar to Treflan for grass weed control. Discontinued in 1977. Amchem.

Amiben (chloramben)--A preemergence herbicide for grass and broadleaf weeds in soybeans. Amchem.

Amilon--A wettable powder combination of Amiben and Lorox for preemergence broadleaf and grass weed control in soybeans. Avoid use on sandy soils. Amchem.

Alanap (naptalam)--A preemergence broadleaf and grass herbicide for soybeans and vine crops. Uniroyal.

Amino Triazole--Trade name for amitrole. American Cyanamid.

amitrole--A translocated herbicide that inhibits chlorophyll formation and regrowth from root buds. Trade names are Amino Triazole, Cytrol and Weedazol.

Amitrol-T--Amitrole + ammonium thiocyanate. Amchem.

Amizine (amitrole + simazine)--A combination of amitrole and simazine providing post and preemergence weed control in tree plantings and non crop areas. Amchem.

Ancrack (naptalam + dinitro)--A combination of Alanap plus dinitro for postemergence broadleaf weed control in soybeans.

Antor (diethatyl-ethyl)--An experimental preemergence and preplant incorporated herbicide being developed for annual grass control in soybeans and sugarbeets. Hercules.

atrazine--A preplant, preemergence and postemergence s-triazine herbicide for the control of broadleaf and certain grass weeds in corn, sorghum and rangeland. Available under several private labels.

Avenge (difenzoquat)--Selectively controls wild oats postemergence in spring small grain. American Cyanamid.

Balan (benefin)--A preplant incorporated herbicide primarily for annual grass control in alfalfa. Elanco.

Banvel (dicamba)--A post- and preemergence herbicide for selective broadleaf weed control in corn, small grains and grasses. Velsicol.

Basafon (dalapon)--Trade name for dalapon. BASF-Wyandotte.

Basagran (bentazon)--A postemergence fieldbean, corn and soybean herbicide for velvetleaf, cocklebur and other broadleaf weeds under 6" (15 cm). BASF-Wyandotte.

Basalin (fluchloralin)--A preplant soil incorporated herbicide primarily for annual grass weed control in soybeans. BASF-Wyandotte.

Betanex (desmedipham)--Used postemergence for redroot pigweed control in sugarbeets. Nor-Am.

Benzac (2,3,6-TBA)--Primarily for perennial broadleaf weed control in non cropland. Amchem.

Betanal (phenmedipham)--Postemergence broadleaf weed control in sugarbeets. Nor-Am.

Bexton (propachlor)--Trade name for propachlor. Primarily for grass weed control in sorghum and corn. Bexton + atrazine liquid also available. Dow.

Bicep (metolachlor + atrazine)--A combination of Dual + AAtrex for preemergence use in corn and sorghum. Ciba-Geigy.

Bladex (cyanazine)--A short residual triazine for grass and broadleaf weed control in corn and sorghum. Shell.

Blazer (acifluorfen)--A postemergence herbicide for broadleaf weed control in soybeans. Currently labeled with an experimental permit. Rohm & Haas.

Brominal (bromoxynil)--A contact herbicide for selective control of broadleaf weeds in small grain. Amchem.

Brominal plus--A combination of bromoxynil and MCPA for use in small grain. Amchem.

Bronate--Similar to Brominal plus. Rhodia.

Buctril (bromoxynil)--Similar to Brominal. Rhodia.

Butoxone (2,4-DB)--For selective control of cocklebur in soybeans and some small broadleaf weeds in seedling alfalfa. Rhodia.

Butyrac (2,4-DB)--Similar to Butoxone. Amchem.

Carbyne (barban)--Used for wild oat control in spring small grain. Gulf.

Casoron (dichlobenil)--Used for preemergence weed control in woody plants and certain herbaceous perennials. Thompson-Hayward.

Chem-Hoe (propham)--Used pre- and postemergence for winter annual grass control in alfalfa. PPG Industries.

Chloro IPC (chlorpropham)--Similar to Chem-Hoe. PPG Industries.

Cobex (dinitramine)--A preplant incorporated soybean herbicide for grass weed control. Slightly better control of some broadleaf weeds, shorter soil life and narrower margin of crop safety than other dinitroaniline herbicides. U.S. Borax.

Combat (AC20674)--A preemergence herbicide being developed for annual grass control in corn and soybeans. American Cyanamid.

Concep (cyoxmetrinil)--A protectant applied to sorghum seed to prevent Dual injury. Ciba-Geigy.

Cycle (procyazine)--A new short residual triazine for grass and broadleaf weed control in corn. EPA experimental permit. Ciba-Geigy.

Cytrol--Trade name for amitrole. American Cyanamid.

Dacamine--An oil soluble amine salt formulation of 2,4-D. Diamond-Shamrock.

Dacthal (DCPA)--Used for preemergence control of annual grass and certain broadleaf weeds in turf, ornamentals and horticultural crops. Diamond-Shamrock.

Dalapon--Used for grass control in many broadleaf crops and for perennial grass control. Dow.

Dinitro Weed Killer (dinoseb)--A contact weed killer for use in alfalfa, corn and soybeans. Can be used preemergence or early post on soybeans. Highly toxic to warm blooded animals. Also sold as Dow Selective Weed Killer and Premerge. Dow.

Diquat (diquat)--Used for aquatic weed control and desiccation of legume, soybean and grain sorghum seed crops. Chevron-Ortho.

Dowpon (dalapon)--Trade name for dalapon. Dow.

Dual (metolachlor)--Used preplant or preemergence for annual grass and some broadleaf weed control in corn and soybeans. Ciba-Geigy.

Dyanap (naptalam + dinitro)--A combination of Alanap and dinitro. Use preemergence or postemergence on soybeans. Controls most annual weeds. Uniroyal.

Embark (mefluidide)--Controls and suppresses growth of grasses. 3M Co.

Endothall (endothall)--A herbicide registered for preemergence and postemergence control of annual grass and broadleaf weeds in sugarbeets. Pennwalt.

Enide (diphenamid)--A preemergence herbicide for the control of annual grasses and some broadleaf weeds in potatoes. Upjohn.

Eptam (EPTC)--A preplant soil incorporated herbicide for grass and certain broadleaf weed control in corn, legumes, sugarbeets and many horticultural crops. Stauffer.

Eradicane (EPTC + R-25788 antidote)--Used similar to Eptam. The antidote provides greater crop safety for corn. Stauffer.

Evik (ametryn)--Used as a directed postemergence contact spray for weed control in corn. Ciba-Geigy.

Furloe (chlorpropham)--Used preplant incorporated and preemergence for smartweed control in soybeans. PPG Industries.

Garlon (Dowco 233)--Postemergence herbicide for woody plant control on rights-of-way. Dow.

Goal (oxyfluorfen)--An experimental preemergence herbicide for weed control in soybeans. Rohm & Haas.

Hoelon (dichlofop)--A postemergence herbicide for grass control in soybeans. Currently under development. American Hoechst.

Hyvar (bromacil)--Used as a soil sterilant and for woody plant control. DuPont.

Igran **(terbutryn)** --A short residual s-triazine used primarily for weed control in sorghum. Generally combined with AAtrex or **Milogard** for broader spectrum weed control and reduced soil residues. Ciba-Geigy.

Karmex (diuron)--A substituted urea for selective annual weed control at low rates and as a soil sterilant at higher rates. DuPont.

Kerb (pronamide)--A new herbicide for preemergence and early postemergence weed control in alfalfa. Rohm & Haas.

Klean Krop (naptalam + dinitro)--Same active ingredient as Ancrack. Thompson-Hayward.

Knoxweed--A combination of Eptam and 2,4-D for preemergence annual weed control in corn. Do not use on sandy soils. Stauffer.

Krenite--A water soluble brush control agent that can be used on species adjacent to water. DuPont.

Krovar--A combination of Hyvar and Karmex. DuPont.

Kuron (silvex)--Trade name for silvex. Dow.

Lasso (alachlor)--Used preplant and preemergence for annual grass and some broadleaf weed control in corn, soybeans and fieldbeans. Monsanto.

Lexone--Trade name for metribuzin. DuPont.

Lorox (linuron)--Used primarily preemergence for broadleaf weed control in corn, sorghum and soybeans. DuPont.

Maloran (chlorobromuron)--A substituted urea used preemergence for broadleaf weed control in soybeans and corn. Frequently used in combination with a grass herbicide. Similar to Lorox. Ciba-Geigy.

MCPA--A phenoxy herbicide similar to 2,4-D but safer on oats and legumes. Often used in combination. Many trade names. Amchem, Dow, Rhodia.

Mefluidide--Used postemergence for grass control in soybeans. Known as Embark and Vistar. 3M Co.

metribuzin--Used for annual broadleaf weeds in soybeans, alfalfa, potatoes and winter wheat, often used in combinations. DuPont, **Mobay**.

Milocep (metolachlor + propazine)--A combination of Dual + Milogard being developed for use on sorghum where the seed treatment Concep has been used. Ciba-Geigy.

Milogard (propazine)--Used for preemergence weed control in sorghum. Performs best on soils low in organic matter. Often combined with AAtrex and Igran for improved annual grass control. Ciba-Geigy.

Modown (bifenox)--A preemergence herbicide for the control of broadleaf and certain grass weeds in soybeans, corn and sorghum. Early injury observed on soybeans and corn. Mobil.

Mondak--A combination of Banvel and MCPA for broadleaf weed control in small grain. Velsicol.

Monobor-chlorate (sodium metaborate tetrahydrate)--A nonselective herbicide for general vegetation control on **non cropland**. Occidental.

MSMA (monosodium methanearsonate)--Used for selective crabgrass control in turf and for the control of many weeds including johnsongrass in **non crop area**. Amchem, Vineland.

Nortron (ethofumesate)--A preemergence or preplant incorporated herbicide for sugarbeets. Fisons.

Paraquat CL (paraquat)--A nonselective contact herbicide registered for several no-till uses, soybean and sunflower desiccation and for non cropland. Chevron.

Phytar (cacodylic acid)--Nonselective contact herbicide used for weed control on non cropland.

Pre Beta 1 (pebulate + diallate)--A preplant incorporated herbicide for the control of annual grasses and certain broadleaf weeds in sugarbeets. Great Western Sugar Co.

Pre Beta 2 (cycloate + diallate)--A preplant incorporated herbicide for the control of annual grasses and certain broadleaf weeds in sugarbeets. Great Western Sugar Co.

Prefar (bensulide)--A preplant herbicide for grass and broadleaf weed control in vine crops including cantaloupe, cucumbers and watermelons. Stauffer.

Preforan (fluorodifen)--Used preemergence in soybeans. Production discontinued. Ciba-Geigy.

Premerge (dinoseb)--See Dinitro Weed Killer. Dow.

Princep (simazine)--A long lasting preemergence or preplant herbicide for corn. Also used for weed control in shelterbelts and for dormant season weed control in alfalfa. Ciba-Geigy.

Probe (methazole)--A broad spectrum herbicide for sorghum and soybeans under development. Velsicol.

propachlor--Active ingredient in Ramrod and Bexton. Used for grass weed control in corn and sorghum. Liquid, wettable powder and granular formulations available. Monsanto, Dow, Farmland.

propazine--See Milogard. Sold as Propazine 80W by Farmland.

Prowl (pendimethalin)--Used preemergence on corn, and preemergence or ppi on soybeans grown on soils with more than 1.5% organic matter. American Cyanamid.

Pyramin (pyrazon)--Used for preemergence broadleaf weed control in sugarbeets. Often combined with other herbicides. BASF-Wyandotte.

Ramrod--Trade name for propachlor. Monsanto.

Ramrod-atrazine 69W and flowable--A combination of Ramrod and atrazine used for broad spectrum weed control in corn and sorghum. Monsanto.

Randox (CDAA)--A preemergence grass herbicide for corn, sorghum and soybeans grown for seed. Randox T for use on corn only, combines Randox with TCBC for improved broadleaf weed control. Monsanto.

Ro-Neet (cycloate)--A preplant incorporated herbicide used in sugarbeets for the control of annual grasses and some broadleaf weeds. Stauffer.

Ronstar (oxadiazon)--A preemergence herbicide for annual grass and broadleaf weed control in soybeans and turf. Rhodia-Chipman

Roundup (glyphosate)--A postemergence nonselective translocated herbicide which will control annual and perennial grasses and broadleaf weeds. No soil residual. Monsanto.

Salvo--A low volatile ester of 2,4-D. Olin.

Sencor--Trade name for metribuzin. Mobay

Silvex (2,4,5-TP)--A phenoxy herbicide used for the postemergence control of broadleaf weeds and woody plants. Used on rangeland. Controls some plants resistent to 2,4-D. Amchem, Dow.

Sinbar (terbacil)--A herbicide for dormant season control of annual grass and broadleaf weeds in established alfalfa. DuPont.

Spike (tebuthiuron)--Used for total vegetation control and for selective brush control in grassland. Elanco.

Surflan (oryzalin)--A preemergence herbicide for the control of annual grasses in soybeans. Often used in combinations. Elanco.

Sutan+ (butylate + R-25788)--A preplant incorporated herbicide for annual grasses in corn. Stauffer.

2,4-D--A growth regulating phenoxy herbicide for broadleaf weed control in grass crops. Many trade names.

2,4,5-T--A phenoxy herbicide used for the control of brush and woody plants on rangeland and in non crop areas. Many trade names. Amchem, Dow.

TCA--A postemergence herbicide for the control of annual and perennial grasses on non cropland; also preemergence in sugarbeets. Dow.

Telone (dichloropene)--A fumigant used preplant for the control of quackgrass in potatoes. Dow.

Telvar (monuron)--Used for long term vegetation control in non cropland. Discontinued. DuPont.

Tenoran (chloroxuron)--For early postemergence use in soybeans. Weeds must be less than 1.5" (3.8 cm) tall. Ciba-Geigy.

Tillam (pebulate)--Registered preplant incorporated for annual grass control in sugarbeets. Stauffer.

Tolban (profluralin)--A preplant incorporated herbicide used primarily for annual grass control in soybeans and alfalfa. Ciba-Geigy.

Tordon (picloram)--A postemergence herbicide for the control of annual and perennial broadleaf weeds. Residues may last for several years in the soil. Dow.

Treflan (trifluralin)--A preplant incorporated herbicide used in soybeans for annual grass control. Elanco.

Trysben (2,3,6-TBA)--Used for the non-selective control of perennial broadleaf weeds in non cropland. DuPont.

Velpar--Used for nonselective postemergence weed control on non cropland and Christmas tree plantings. DuPont.

Vernam (vernolate)--A preplant incorporated herbicide used in soybeans. Effective against annual grasses and some broadleaf weeds. Stauffer.

Vistar (mefluidide)--A growth regulator being developed for grass control and suppression. 3M Co.

Weedazol--Trade name for amitrole. Amchem.

WEED SCIENCE PUBLICATIONS

"Toxic Plants and Mushrooms" Misc. Pub.
"Lawn Weeds" NC Regional Pub. No. 26
"Vine Weeds" NC Regional Pub. No. 33
"Major Nebraska Thistles" SB 493
"Musk Thistle" EC 76-160
"Soybean Weed Control" EC 74-198
"Hay Fever Plants" EC 77-199
"Common Milkweed" G77-384
"Factors That Make Herbicides Work" G76-272
"Field Sandbur Control in Corn" G74-121
"Herbicide Carryover" G74-180
"Jointed Goatgrass" G75-210
"Right Crop Stage for Herbicide Use--Alfalfa, Sugarbeets, Soybeans and Fieldbeans" G78-390
"Shattercane-What To Do About It" G74-122
"Weed Control in Alfalfa" G75-220
"Weed Control in Minimum Tillage Corn" G74-123
"Know and Control Downy Brome" G78-422
"Broadleaf Weed Control in Wheat" G74-120
"Close Driller Soybeans" G77-329
"Applying Herbicides in Irrigation Water" G77-356
"Test for Atrazine Carryover" G74-113
"Blue Mustard Control" G74-92
"Broadcast or Band Herbicides" G76-294
"Calibrating a Sprayer" G77-370
"Weed Control in Trees" G73-33
"Hemp Dogbane" G75-156
"Herbicides and Soils" G74-160
"Herbicide-Fertilizer Combinations" G74-164
"No-Till Corn in Alfalfa Sod" G74-131
"Right Crop Stage for Herbicide Use--Corn, Sorghum, Small Grains" G77-382
"Surfactants and Herbicides" G76-295
"Weed Control in Grain Sorghum" G74-137
"Weed Control Along Irrigation Pipe and Ditchbanks" G78-420
"Weed Control in Gardens" G79-444

CLEANING THE SPRAYER

First rinse the sprayer with a material which acts as a solvent for the herbicide. Kerosene and fuel oils carry away oil-soluble herbicides such as 2,4-D ester. Chemicals which form emulsions when mixed with water are oil-soluble. After the oil rinse, a rinse with water containing detergent will help remove the oil. Oil-soluble herbicides are the most difficult to remove. 2,4-D amine salts are water-soluble.

For most water-soluble herbicides repeated rinsing with water is usually enough. Hormone type require extra precautions. If 2,4,5-T, silvex, Banvel, or 2,4-D were used, fill the tank with water and ammonia. Add household ammonia at the rate of 1 quart (0.95 ℓ) of household ammonia to 25 gallons (95 ℓ) of water. Pump enough solution through the hose and nozzles to fill these parts completely. Then fill the tank, close, and leave for 24 hours before rinsing thoroughly with water.

Activated charcoal can be used after the preliminary rinsing to decontaminate the sprayer. A 3% suspension absorbs the 2,4-D. Agitate the suspension for 2 to 3 minutes and drain, then rinse thoroughly with clear water.

For wettable powder herbicides, see that none of the powder remains in the tank. A thorough rinsing with water is usually sufficient. Thoroughly clean all equipment immediately after use.

CONVERSION TABLES

ACTIVE INGREDIENT PER GALLON CONVERSIONS

Pounds of active material per gal of commercial product	Pints of commercial product needed per acre to give the following pounds of herbicide per acre		
	1/4 lb	1/2 lb	1 lb
2.00	1	2	4
2.64	3/4	1 1/2	3
3.00	2/3	1 1/3	2 2/3
3.34	3/5	1 1/5	2 2/5
4.00	1/2	1	2
6.00	1/3	2/3	1 1/3

METRIC CONVERSIONS

Symbol	When you Know	Multiply By	To Find	Symbol
lb	pounds	0.45	kilograms	kg
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
oz	ounces	30	milliliters	ml
acre	acres	0.4	hectares	ha
ha	hectares	2.5	acres	

Conversions in this bulletin are pounds per acre to kilograms per hectare. Example: 2 lb/A to kg/ha = 2 x 0.45 = 0.90 kg/A x 2.5 = 2.25 kg/ha.

NOTES

The Cooperative Extension Service provides information and educational programs to all people without regard to race, color or national origin.

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