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EC77-130 A 1977 Guide for Herbicide use in Nebraska

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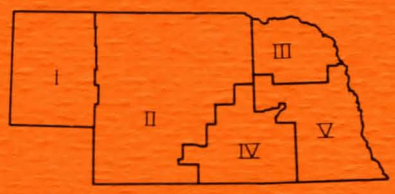
A 1977 GUIDE FOR - - -

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, DICAMBA (BANVEL), 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

PROTECT

"Use Crop Production Chemicals Wisely"

- READ THE LABEL BEFORE EACH USE. Follow instructions; heed all cautions and warnings. Products with the same active ingredient are not always registered for the same use.
- APPLY ONLY AS DIRECTED, to the crops specified, in amounts specified and at times specified. *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, soil type, 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
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
Eradicane	G	E	E	P	E	E	E	P	F	G	G	F	P	G	G	P	P	P	E	G	1-2
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 + Banvel	G	E	G	F	G	G	E	F	G	G	E	G	G	F	P	G	F	F	G	G	2-4
Lasso + Bladex	G	E	E	F	E	E	E	F	E	G	G	E	G	F	P	G	F	F	G	G	2-4
Ramrod/Propachlor-Atrazine or AAtram	G	G	G	F	G	G	E	F	E	E	E	E	G	F	P	G	G	G	G	E	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+ + 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
Ramrod/Bexton/Propachlor	P	G	P	P	G	G	E	P	P	F	G	P	P	F	P	F	P	P	F	G	1-2
Ramrod/Propachlor + 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 + Bladex	G	G	E	F	G	G	E	F	E	G	F	G	G	F	P	G	F	F	G	G	2-4
Ramrod/Propachlor + Lorox	P	G	G	F	G	G	E	F	F	G	E	G	F	F	P	G	F	F	G	G	2-4
Soybeans																					
Amex	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Amiben	P	G	G	P	G	G	G	P	G	G	G	G	G	F	P	G	P	F	F	G	1-3
Basalin	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	6-18
Cobex + Sencor or Lexone	P	E	F	F	E	E	E	G	G	E	E	E	E	G	F	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 + Maloran	P	E	G	F	E	E	E	F	F	G	E	G	F	F	P	G	F	F	G	G	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
Tolban	P	E	P	P	E	E	E	P	F	G	G	P	G	G	G	P	P	P	P	G	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																					
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 + 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	G	F	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	P	G	G	F	G	G	G	G	F	E	E	E	G	P	P	G	F	G	E	G	2-4

[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," G 74-180.

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, sugar beets, 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	2 1/2 lb *2.8 kg* or 4 pt *4.6 ℓ*	3 lb *3.4 kg* or 4 3/4 pt *5.5 ℓ*	3 3/4 lb *4.2 kg* or 6 pt *7.0 ℓ*	PRE or PPI...Carryover may affect crops the following year. More serious on high pH soils. Approx. cost $5.25 to $7.90.
Bladex 80W or Bladex 4L or Bladex 15G	Do not use	3 lb *3.4 kg* or 2 1/2 qt *5.8 ℓ* or 16 lb *17.9 kg*	4 lb *4.5 kg* or 3 1/4 qt *7.6 ℓ* or 21 lb *23.5 kg*	PRE...Do not use on light or variable soils. Injury likely on calcareous soils. Do not exceed label dosage for soil type. Approx. cost $7.50 to $10.00.
Bladex 80W + Atrazine 80W	Do not use	2 lb *2.2 kg* + 1 lb *1.1 kg*	2 2/3 lb *3.0 kg* + 1 1/3 lb *1.5 kg*	PRE...Crop injury may occur on sandy, low organic matter, and high pH soils. Carryover could affect some crops the following year. Approx. cost $7.10 to $9.50.
Bladex 4L + Atrazine 4L	Do not use	3 1/3 pt *3.9 ℓ* + 1 2/3 pt *1.9 ℓ*	4.3 pt *5.0 ℓ* + 2.2 pt *2.6 ℓ*	
Eradicane 6.7E (Postemergence broadleaf weed control may be necessary)	3 3/4 pt *4.4 ℓ*	5 pt *5.8 ℓ*	5 pt *5.8 ℓ*	PPI...(Also registered for application through center pivot sprinkler.) Primarily for shattercane control. Apply to dry surface soil. Immediately incorporate by tandem disking. Some hybrids may be injured. Approx. cost $8.25 to $11.00.
Lasso or Lasso II (15G) (Postemergence broadleaf weed control may be necessary)	3 qt *7.0 ℓ* or 20 lb *22.4 kg*	2 1/2 qt *5.8 ℓ* or 17 lb *19.0 kg*	3 qt *7.0 ℓ* or 20 lb *22.4 kg*	PRE...(Liquid registered for application through center pivot sprinkler.) Surface blending with rotary hoe, mulch treader, or harrow beneficial. Approx. cost $9.00 to $10.80.

(Continued next page)

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

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-CONT'D		
Lasso + Atrazine/AAtrex 80W or AAtrex/Atrazine 4L	2 qt *4.7 ℓ* + 1 1/4 lb *1.4 kg* or 2 pt *2.3 ℓ*	2 qt *4.7 ℓ* + 1 1/4 lb *1.4 kg* or 2 pt *2.3 ℓ*	2 qt *4.7 ℓ* + 1 1/2 lb *1.7 kg* or 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. Approx. cost $9.85 to $10.35.
Lasso + Banvel	Do not use	2 qt *4.7 ℓ* + 1 pt *1.2 ℓ*	2 qt *4.7 ℓ* + 1 pt *1.2 ℓ*	PRE...Tank mix. Leaches readily with heavy rainfall. Approx. cost $11.70.
Lasso + Bladex 80W or Bladex 4L	Do not use	2 qt *4.7 ℓ* + 1 1/2 lb *1.7 kg* or 2.4 pt *2.8 ℓ*	2 qt *4.7 ℓ* + 2 lb *2.2 kg* or 3.2 pt *3.7 ℓ*	PRE...Crop injury may occur on sandy or low organic matter soil. Approx. cost $10.95 to $12.20.
Ramrod/Propachlor with Atrazine 69WP AAtram 20G	Do not use	5 lb *5.6 kg* 22 1/2 lb *25.2 kg*	5 lb *5.6 kg* 22 1/2 lb *25.2 kg*	PRE...May cause irritation to applicator. Ramrod/Propachlor leaches on sandy soil. Approx. cost $8.75.
Sutan+ 6.7E (Postemergence broadleaf weed control may be necessary)	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 disking or equivalent soil mixing. Some hybrids may be injured. Approx. cost $8.00.
Sutan+ 6.7E + AAtrex/Atrazine 80W or AAtrex/Atrazine 4L	3 3/4 pt *4.4 ℓ* + 1 1/4 lb *1.4 kg* or 2 pt *2.3 ℓ*	3 3/4 pt *4.4 ℓ* + 1 1/4 lb *1.4 kg* or 2 pt *2.3 ℓ*	3 3/4 pt *4.4 ℓ* + 1 1/2 lb *1.7 kg* or 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 disking or equivalent soil mixing. Increase Sutan rates for sandbur control. Some hybrids may be injured. Approx. cost $8.65 to $9.15.
Sutan+ 6.7E + Bladex 80W or Bladex 4L	Do not use	3 3/4 pt *4.4 ℓ* + 1 1/2 lb *1.7 kg* or 2.4 pt *2.8 ℓ*	3 3/4 pt *4.4 ℓ* + 2 lb *2.2 kg* or 3.2 pt *3.7 ℓ*	PPI...Tank mix. Apply to dry surface soil. Incorporate immediately by cross tandem disking or equivalent soil mixing. Increase Sutan rates for sandbur control. Some hybrids may be injured. Approx. cost $9.75 to $11.00.

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

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

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				
Amex	2 pt *2.3 ℓ*	3 pt *3.5 ℓ*	3 pt *3.5 ℓ*	PPI...For best results incorporate immediately by cross tandem disking or equivalent soil mixing. Do not follow with wheat on low organic matter soils. Controls primarily annual grasses. Approx. cost $3.30 to $5.00.
Amiben	Do not use	5 qt *11.7 ℓ*	6 qt *14.0 ℓ*	PRE...Shallow incorporation may be beneficial. Leaches readily with heavy rainfall. Approx. cost $13.10 to $15.70.
Basalin	1 pt *1.2 ℓ*	1 1/2 pt *1.7 ℓ*	1 1/2 pt *1.7 ℓ*	PPI...For best results incorporate immediately by cross tandem disking or equivalent soil mixing. Do not follow with wheat on low organic matter soils. Controls primarily annual grasses. Approx. cost $3.30 to $5.00.
Cobex + Sencor/Lexone	Do not use	1 1/3 pt *1.5 ℓ* + 3/4 lb *0.8 kg*	1 1/3 pt *1.5 ℓ* + 3/4 lb *0.8 kg*	PPI...Early injury may occur. Incorporate as soon as possible. No carryover for fall planting. Approx. cost $7.70.
Lasso Lasso II (15G)	2 1/2 qt *5.8 ℓ* 17 lb *19.1 kg*	2 1/2 qt *5.8 ℓ* 17 lb *19.1 kg*	2 1/2 qt *5.8 ℓ* 17 lb *19.1 kg*	PRE...Surface blending with rotary hoe or harrow beneficial. Controls primarily annual grasses. Approx. cost $9.00.
Lasso + Lorox 50W	Do not use	2 qt *4.7 ℓ* + 1 1/2 lb *1.7 kg*	2 qt *4.7 ℓ* + 2 lb *2.2 kg*	PRE...Soybeans should be covered with 1 3/4" (*4.4 cm*) of soil. Approx. cost $12.15 to $13.80.
Lasso + Maloran	Do not use	2 qt *4.7 ℓ* + 2 lb *2.2 kg*	2 qt *4.7 ℓ* + 3 lb *3.4 kg*	PRE...Soybeans should be covered with 1 3/4" (*4.4 cm*) of soil. Approx. cost $13.40 to $16.50.
Lasso + Sencor/Lexone	Do not use	2 qt *4.7 ℓ* + 3/4 lb *0.8 kg*	2 qt *4.7 ℓ* + 3/4 lb *0.8 kg*	PRE...Soybeans should be covered with 1 3/4" (*4.4 cm*) of soil. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $11.90.
Prowl	1 1/2 pt *1.7 ℓ*	2 pt *2.3 ℓ*	2 pt *2.3 ℓ*	PPI...For best results incorporate immediately by cross tandem disking or equivalent soil mixing. Do not follow with wheat on low organic matter soils. Controls primarily annual grasses. Approx. cost $4.80 to $6.40.

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

(Continued next page)

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-CONT'D				
Tolban	1 pt *1.2 ℓ*	1 1/2 pt *1.7 ℓ*	1 1/2 pt *1.7 ℓ*	PPI...For best results incorporate immediately by cross tandem disking or equivalent soil mixing. Do not follow with wheat on low organic matter soils. Controls primarily annual grasses. Approx. cost $3.30 to $5.00.
Treflan	1 pt *1.2 ℓ*	1 1/2 pt *1.7 ℓ*	1 1/2 pt *1.7 ℓ*	
Treflan + Sencor/Lexone	Do not use	1 pt *1.2 ℓ* + 3/4 lb *0.8 kg*	1 1/4 pt *1.5 ℓ* + 3/4 lb *0.8 kg*	PPI...For best results incorporate immediately by cross tandem disking or equivalent soil mixing. Soybeans should be covered with 1 3/4" (*4.4 cm*) of soil. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost $7.70 to $8.45.

OTHER REGISTERED TREATMENTS FOR SOYBEANS: Alanap (PRE), Ancrack (PRE), Cobex (PPI), Dacthal (PRE), Dyanap (PRE), Enide (PRE), Enide + Dinitro (PRE), Furloe (PRE), Klean-Krop (PRE), Lasso + Amiben (PRE), Lasso + Dyanap (PRE), Lasso + Furloe (PRE), Lasso + Modown (PRE), Lasso + Premerge (PRE), Lasso + Solo (PRE), Lexone (PRE), Lorox (PRE), Lorox + Amiben (PRE), Modown (PRE), Premerge (PRE), Premerge + Amiben (PRE), Ramrod (PRE) seed beans only, Ramrod + Lorox (PRE), Sencor (PRE), Solo (PRE), Surflan (PRE), Surflan + Dyanap (PRE), Surflan + Lorox (PRE), Surflan + Sencor (PRE), Treflan + Modown (PPI), Vernam (PPI). See Herbicide Dictionary for additional information.

FIELDBEANS				
Cobex + Eptam	1 1/2 pt *1.7 ℓ* + 2 1/2 pt *3.0 ℓ*	1 1/2 pt *1.7 ℓ* + 2 1/2 pt *3.0 ℓ*	1 1/2 pt *1.7 ℓ* + 2 1/2 pt *3.0 ℓ*	PPI... Apply to dry surface soil. Immediately incorporate by cross tandem disking or equivalent soil mixing. Approx. cost $8.40.
Eptam 10G	30 lb *33.6 kg*	30 lb *33.6 kg*	30 lb *33.6 kg*	PRE...Surface blend with rotary hoe or mulch treader. Approx. cost $12.00.
Eptam 7E	3 1/2 pt *4.1 ℓ*	3 1/2 pt *4.1 ℓ*	3 1/2 pt *4.1 ℓ*	PPI...Apply to dry surface soil. Immediately incorporate by cross tandem disking or equivalent soil mixing. Approx. cost $7.50.
Eptam 7E + Treflan	2 1/2 qt *5.8 ℓ* + 1 pt *1.2 ℓ*	2 1/2 qt *5.8 ℓ* + 1 pt *1.2 ℓ*	2 1/2 qt *5.8 ℓ* + 1 pt *1.2 ℓ*	PPI...Do not follow Treflan with fall seeded small grain. Approx. cost $8.10.
Lasso	2 1/2 qt *5.8 ℓ*	2 1/2 qt *5.8 ℓ*	2 1/2 qt *5.8 ℓ*	PRE...Surface blend with rotary hoe or mulch treader. Approx. cost $9.00.

OTHER REGISTERED TREATMENTS FOR FIELDBEANS: Amiben (PRE), Cobex (PPI), Dacthal (PRE), Furloe (PRE), Lasso + Treflan (PPI), Premerge (PRE), Tolban-some types (PPI), Treflan. See Herbicide Dictionary for additional information.

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

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 80W or AAtrex/Atrazine 4L	Do not use	2 1/2 lb *2.8 kg* or 2 qt *4.7 ℓ*	3 lb *3.4 kg* or 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 $5.25 to $6.30.
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*	PRE...Do not apply to emerged sorghum. "Rain-splash" of Igran and cold weather could cause sorghum injury. Approx. cost $8.10.
Ramrod/Propachlor 65W Ramrod, Propachlor and Bexton 20G (Postemergence broadleaf weed control may be necessary)	6 lb *6.7 kg* and 20 lb *22.4 kg*	6 lb *6.7 kg* and 20 lb *22.4 kg*	6 lb *6.7 kg* and 20 lb *22.4 kg*	PRE...Controls grass weeds only. May cause skin irritation to applicator. Do not feed treated forage to dairy animals. Leaches on sandy soil. Approx. cost $9.00.
Ramrod/Propachlor 65W + AAtrex/Atrazine 80W	Do not use	5 lb *5.6 kg* + 1 lb *1.1 kg*	5 lb *5.6 kg* + 1 lb *1.1 kg*	PRE...Tank mix, SW Nebraska only. Rains may leach herbicides and cause sorghum injury or poor weed control. Do not feed Ramrod/Propachlor treated forage to dairy animals. Approx. cost $9.60.
Ramrod/Propachlor with Atrazine 69WP	Do not use	5 lb *5.6 kg*	5 lb *5.6 kg*	PRE...Heavy rains may leach Ramrod/Propachlor, Atrazine, Bladex and Lorox and cause injury to sorghum or poor weed control. Do not feed Ramrod/Propachlor treated forage to dairy animals. Approx. cost : Ramrod/Propachlor w/Atrazine $8.75. Ramrod/Propachlor w/Bladex $9.75 to $10.25. Ramrod/Propachlor w/Lorox $10.95 to $12.60.
Ramrod/Propachlor 65W + Bladex 80WP	Do not use	4 lb *4.5 kg* + 1 1/2 lb *1.7 kg*	4 lb *4.5 kg* + 1.7 lb *1.9 kg*	
Ramrod/Propachlor 65W + Lorox 50W	Do not use	4 lb *4.5 kg* + 1 1/2 lb *1.7 kg*	4 lb *4.5 kg* + 2 lb *2.2 kg*	

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

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

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]
POTATOES				
Eptam	3 1/2 pt *4.0 ℓ*	3 1/2 pt *4.0 ℓ*	3 1/2 pt *4.0 ℓ*	PPI, Drag-off or Layby...Apply and incorporate before planting or after potato plants have emerged. Approx. cost $7.50.
Eptam + Treflan	2 1/4 pt *2.6 ℓ* + 1 pt *1.2 ℓ*	2 1/4 pt *2.6 ℓ* + 1 pt *1.2 ℓ*	2 1/4 pt *2.6 ℓ* + 1 1/4 pt *1.5 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 $8.50.
Sencor/Lexone	1 lb *1.1 kg*	1 1/2 lb *1.7 kg*	1 1/2 lb *1.7 kg*	PRE...Do not plant treated area to sensitive crops such as onions or sugarbeets during the next growing season. Approx. cost $6.25 to $9.40.

OTHER REGISTERED TREATMENTS FOR POTATOES: Dacthal (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.

SUGARBEETS				
Ro-Neet 6E	4 pt *4.6 ℓ*	4 1/2 pt *5.2 ℓ*	5 pt *5.8 ℓ*	PPI...Immediately mix into dry soil with power incorporator 1 to 2" (*2.5 to 5.1 cm*). Do not use on sandy soils below 1% organic matter. Primarily annual grass control. Approx. cost $15.10 to $19.00.
Ro-Neet 10G	30 lb *33.6 kg*	35 lb *39.2 kg*	40 lb *44.8 kg*	

OTHER REGISTERED TREATMENTS FOR SUGARBEETS: ChemHoe (PPI), Endothal (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.

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

WEED RESPONSE TO POSTEMERGENCE HERBICIDES

See pages 16-19 for additional problem weeds and their control.

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
2,4-D	E	P	F	E	P	P	P	G	G	G	G	G	E	P	P	P	G	F	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	F	E	E	F	P	F	E	E	E	E	E	F	F	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																					
Basagran	F	P	P	E	P	P	P	E	P	P	P	G	P	P	P	E	E	E	G	E	0
Sugarbeets																					
Betanex	P	P	F	F	P	P	P	F	F	F	G	G	F	P	P	F	F	F	F	G	<1
Betanal + Betanex	F	P	F	F	P	P	P	F	G	G	G	G	F	P	P	F	F	F	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	P	P	P	G	F	P	F	P	G	E	E	G	E	F	P	G	G	F	P	G	2-4

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

[1]Crop varieties vary in 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" G 74-180.

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	Apply this amount commercial product per acre[4] *(per hectare)*	Application time	Remarks, Approximate Cost/A[3]
Barley and spring wheat	2,4-D amine	1 to 1 1/2 pt *1.2 to 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. See page for wild buckwheat control. Approx. cost $0.55 to $1.00.
	2,4-D ester	1/2 to 1 pt *0.6 to 1.2 ℓ*		
Corn	AAtrex/Atrazine 80W	2 1/2 lb *2.8 kg*	grass weeds 1" *(2.5 cm)* or less	Use with water-oil mixtures. Read product label. Lower rates control broadleaf weeds. Approx. cost $5.25.
	AAtrex/Atrazine 4L	2 qt *4.7 ℓ*		
	2,4-D amine	1 to 2 pt *1.2 to 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 (.8 km) of sugarbeets, field-beans, 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.* Approx. cost $0.55 to $1.65.
	2,4-D ester	1/2 to 1 pt *0.6 to 1.2 ℓ*		
	2,4-D amine + Banvel	1/2 pt *0.6 ℓ* + 1/4 pt *0.3 ℓ*		
Millet	2,4-D amine + Banvel	3/4 pt *0.9 ℓ* + 1/4 pt *0.3 ℓ*	2 to 5 leaf stage	See caution statement for corn. Prevent drift to desirable plants. Do not graze treated areas or harvest for dairy feed prior to crop maturity. Approx. cost $1.90.
Oats	2,4-D amine	1 pt *1.2 ℓ*	Tillering to joint stage	Some injury from 2,4-D may be expected at any stage. See page for wild buckwheat control. Approx. cost$1.10 to 3.50.
	MCPA	1 qt *2.3 ℓ*		
Potatoes	Sencor	1/2 to 1 lb *0.6 to 1.1 kg*	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.* Approx. cost $3.15 to $6.25.
Sorghum	AAtrex/Atrazine 80W or AAtrex/Atrazine 4L	1 1/2 lb *1.7 kg* or 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 $3.15.
	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 $0.55.
	2,4-D ester	1/2 pt *0.6 ℓ*		
Soybeans	Basagran	3/4 to 1 qt *1.8 to 2.3 ℓ*	Before susceptible weeds are 6" *(15 cm)* tall	Good spray coverage essential. Lower rate on smaller weeds. Use 1 qt/A *(2.3 ℓ/ha)* on velvetleaf 5" *(13 cm)* or less. Approx. cost $11.00 to $15.00.

(Continued next page)

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

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24.

Crop	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
Sugarbeets	Dowpon M	2.7 to 5.4 lb *3.0 to 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 if Ro-Neet is used preemergence. Approx. cost $4.30 to $8.60.
	Betanex	2 1/2 to 4 pt *5.8 to 9.3 ℓ*	Beets past 2-leaf stage and weeds in cotyledon to 4-leaf stage	Use lower rate 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: Betanex $11.75 to $18.80 Betanex + Betanal $21.25 to $34.00
	Betanex + Betanal	2 1/2 to 4 pt *2.9 to 4.6 ℓ* + 2 1/2 to 4 pt *2.9 to 4.6 ℓ*		
Winter wheat	2,4-D amine	1 to 1 1/2 pt *1.2 to 1.7 ℓ*	Early spring before joint stage	Do not spray winter wheat in the fall. Spray broadleaf weeds as soon as good growing conditions occur in the spring. Refer to page for wild buckwheat and blue mustard control. Approx. cost $0.55 to $1.10
	2,4-D ester	1/2 to 1 pt *0.6 to 1.2 ℓ*		

ADDITIONAL POSTEMERGENCE TREATMENTS:

Corn: Banvel, Bladex 80W, Banvel + atrazine, 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.

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

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24.

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[5]	AAtrex 4L 2 to 3 qt (*4.7 to 7.0 ℓ*) + Paraquat CL 1 to 2 pt (*1.2 to 2.3 ℓ*) + X-77 surfactant	Apply to new growth in May before corn emergence.	Weak on tall warm season perennial grasses. Approx. cost $12.70 to $21.00.
No-till corn in alfalfa sod[5]	2,4-D amine 1 qt (*2.3 ℓ*) + Banvel 1/2 pt (*0.6 ℓ*)	Apply in April-May to alfalfa with 3 to 4" (*7.6 to 10.2 cm*) new growth. Avoid tillage for 5 days.	Will control alfalfa. For annual weed control select a preemergence herbicide from pages 3 & 4. See Neb Guide G 74-131 for more information. Approx. cost $4.25.
No-till corn in rye or winter wheat[5]	AAtrex 4L 2 to 3 qt (*4.7 to 7.0 ℓ*) + 1 to 2 pt *1.2 to 2.3 ℓ*) Paraquat CL + X-77 surfactant	Apply when rye and wheat are more than 4" (*10.2 cm*) tall and before corn emerges.	Approx. cost $12.70 to $21.00.
No-till continuous corn	AAtrex 4L 2 to 3 qt (*4.7 to 7.0 ℓ*)	Preemergence	Volunteer corn is a problem. Control broadleaf weeds with 2,4-D ester prior to planting. Tank mix Paraquat to control weeds present at planting. Do not use Bladex on soils below 1.5% OM. Approx. cost $7.70 to $13.30.
	Lasso + Atrazine 80W 2 qt to 2 lb (*4.7 ℓ to 2.2 kg*)	Preemergence	
	Bladex 4L 3 to 4 qt (*7.0 to 9.3 ℓ*)	Preemergence	
Wheat-Ecofallow-Wheat. Wheat seeded 10-14 months later	Atrazine 4L 1 qt (*2.3 ℓ*)	July to October 15	Add 1 1/2 qt/A (*3.5 ℓ/ha*) 2,4-D ester to improve perennial broadleaf weed and grass control. Spray before weeds produce seed. *Use sweep plow if grass weeds or volunteer wheat are present after harvest.* Avoid canyon and rosebud soils and caliche outcroppings. Approx. cost $3.35.
Spray small grain stubble after harvest. (For areas west of highway 83)	AAtrex 4L 1 qt (*2.3 ℓ*) + Paraquat CL 1 to 2 pt (*1.2 to 2.3 ℓ*) + X-77 surfactant in 20-60 gpa[6] (*187 ℓ/ha-561 ℓ/ha*)	July to October 15	Spray before weeds produce seed. If grasses such as barnyardgrass or volunteer wheat recover use sweep plow before weed seed develops. Avoid canyon and rosebud soils and caliche outcroppings. Approx. cost $8.35 to $13.35.
Sweep plow wheat stubble after harvest. (For areas west of highway 83)	Bladex 80W 3 1/2 to 4 1/2 lb (*4.0 to 5.0 kg*) Use higher rate on fine textured soils	September-November	If volunteer wheat, downy brome or jointed goatgrass are present add Paraquat + X-77 at 1 pt/A (*1.2 ℓ/ha*). Approx. cost $8.75 to $11.25 .
Wheat-Ecofallow-Wheat. Sweep plow wheat stubble after harvest.	Bladex 80W 2 1/2 to 3 1/2 lb (*2.8 to 4.0 kg*) Use higher rates on fine textured soils.	March-April	If volunteer wheat, downy brome, or jointed goatgrass are present add Paraquat + X-77 at 1 pt/A (*1.2 ℓ/ha*). Approx. cost $6.25 to $8.75 .
	Roundup 1 qt (*2.3 ℓ*)	Postemergence-April	Apply to vigorous growing weeds such as volunteer wheat and downy brome. Has no preemergence activity. Do not mix with other herbicides. Approx. cost $16.00.

(Continued next page)

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

[5]Irrigated conditions or eastern Nebraska.

[6]Increase Paraquat rate and gallonage on heavy infestations of grass or Russian thistle where it is difficult to penetrate the foliage.

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.

REDUCED TILLAGE SYSTEMS--(Continued)

Situation	Herbicide and Rate per acre (*per hectare*)	Application time	Remarks and Approximate Cost/A[3]
Wheat-Ecofallow-Corn or sorghum. Spray or sweep plow small grain stubble after harvest. Plant corn or sorghum following spring.	AAtrex 4L 2 to 3 qt (*4.7 to 7.0 ℓ*) Use higher rates on fine textured soils in July and August.	July through November	Add 1 1/2 qt/A (*3.5 ℓ/ha*) 2,4-D ester to improve perennial broadleaf weed and annual grass control. Spray before weeds produce seed. Use sweep plow if grass weeds are present. Approx. cost $6.70 to $11.05.
	AAtrex 4L 2 to 3 qt (*4.7 to 7.0 ℓ*) + Paraquat CL 1 to 2 pt (*1.2 to 2.3 ℓ*) + X-77 surfactant	July through November	Spray before weeds produce seeds. If grasses such as barnyardgrass recover use sweep plow before weed seeds develop. Approx. cost $11.70 to $21.05.
Wheat-Ecofallow-Corn. Corn planted in wheat stubble treated with AAtrex after harvest.	Lasso 2 to 2 1/2 qt (*4.7 to 5.8 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 Lasso. Approx. cost $7.20 to $11.40.
	Lasso + AAtrex 4L[7,8] at 1 1/2 to 2 qt + 1 qt (*3.5 to 4.7 ℓ + 2.3 ℓ*)	Preemergence-May	
	Bladex 80W at 1 1/2 lb (*1.7 kg*)	Preemergence-May	Do not exceed label rate for the soil. Do not use on sands and loamy sands with less than 1% organic matter. Do not use these if corn is emerged. Approx. cost $3.75.
Wheat-Ecofallow-Sorghum. Sorghum planted in wheat stubble treated with AAtrex after harvest.	Ramrod/Propachlor 65W[7] 6 lb (*6.7 kg*)	Preemergence-May	Approx. cost $9.00.
	Ramrod/Propachlor-Atrazine 69[7,8] 5 lb (*5.6 kg*)	Preemergence-May	Approx. cost $8.75.
	Igran + AAtrex 80W[8] 2 + 1 lb (*2.3 + 1.1 kg*)	Preemergence-May	Igran will kill or injure emerged sorghum. Approx. cost $8.10.
	Igran[7] 2 1/2 lb (*2.8 kg*)	Preemergence-May	If annual grasses are past 3-leaf stage use tillage to kill weeds while keeping residue on soil surface. Approx. cost $7.50.

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

[5]Irrigated conditions or eastern Nebraska.

[6]Increase Paraquat rate and gallonage on heavy infestations of grass or Russian thistle where it is difficult to penetrate the foliage.

[7]If seedling (2-leaf) grass or volunteer wheat are present at planting, add Paraquat at 1 pt/A (*1.2 ℓ/ha*) + X-77 to mixtures or prepare a shallow seedbed with tillage. Diesel fuel at 1 1/2 gpa (*14 ℓ/ha*) + emulsifier may be substituted for Paraquat but control is not as good. 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.

[8]Carryover of Atrazine/AAtrex may occur on eroded areas or in fields with less than 1.2% organic matter.

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.

Area or use	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
Alfalfa	Balan	3 to 4 qt *7.0 to 9.3 ℓ*	Preplant	Immediately incorporate by cross tandem disking or equivalent soil mixing. Early legume injury may occur with Balan and Eptam. Approx. cost: Balan $6.40 to $8.55. Eptam $7.00. Tolban $3.10 to $6.20.
	Eptam	3 1/2 pt *4.1 ℓ*		
	Tolban	1 to 2 pt *1.2 to 2.3 ℓ*		
	Butyrac or Butoxone	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 $10.00 .
	Chem-Hoe 4FL	3 to 4 qt *7.0 to 9.3 ℓ*	Pre- or post-emergence to winter annual grasses late fall, winter or early spring	Established alfalfa or seedlings with 3 or more trifoliate leaves. Use when soil temperature is below 55° F (*13° C*). Approx. cost $6.00 to $8.00.
	Princep 80W	1 1/4 to 2 lb *1.4 to 2.2 kg*	Apply in late fall before soil freezes on alfalfa established 1 year or more	Primarily for winter annual weeds. Injury may occur in soils with less than 1% organic matter. Approx. cost: Princep $4.05 to $7.50. Sinbar $9.00 to $13.00.
	Sinbar	3/4 to 1 lb *0.8 to 1.1 kg*	Late fall or early spring on alfalfa established 1 year or more	
Cool-season grass seedlings	2,4-D	1 to 1 1/2 pt *1.2 to 1.7 ℓ*	2- to 4-leaf stage of grass	For broadleaf weeds. Approx. cost $0.55 to $1.65
Warm-season grass seedlings	2,4-D	1/2 to 1 pt *0.6 to 1.1 ℓ*		
Warm-season grasses for seed	AAtrex 4L or Atrazine 80W	3 qt *7.0 ℓ* or 3 3/4 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: Atrazine 80W $7.90. Karmex $11.20. Telvar $11.20.
	Karmex 80W	3 3/4 lb *4.2 kg*		
	Telvar 80W	3 3/4 lb *4.2 kg*		
Annual or biennial broadleaf 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 application. With Banvel mixture do not harvest hay for dairy animals within 37 days of application. Do not use Banvel within 1/2 mile (*0.8 km*) of sensitive crops. Approx. cost $2.20 to $6.70.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		

(Continued next page)

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

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24 .

[9]Retreatment will be necessary.

Area or use	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*)	Application time	Remarks, Approximate Cost/A[3]
Perennial broad-leaf weeds in pastures and ranges. Includes vervains, broom snake-weed, western ironwood and woolly loco	2,4-D	1 to 2 qt *2.3 to 4.7 ℓ*	At bud stage of predominant weeds.[9] April for dandelions	Annual treatment for 2 to 3 years may be necessary. Withhold milk cows from grazing treated areas for 7 days after application. With Banvel mixture do not harvest hay for dairy animals within 37 days of application. Do not use within 1/2 mile (*0.8 km*) of sensitive crops. Approx. cost $2.20 to $6.70.
	2, 4-D amine + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
Rangeland	AAtrex 80W or AAtrex 4L	1 to 1 1/4 lb *1.1 to 1.4 kg* or 1.6 to 2 pt *1.9 to 2.3 ℓ*	Fall	Controls winter annual bromes in warm season grasses. Do not graze for 7 months after application. Approx. cost $2.10 to $2.70.

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

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page .

[9]Retreatment will be necessary.

WINDBREAKS, TREE PLANTINGS AND ORNAMENTALS

Crop or use	Herbicide	Apply this amount commercial product per acre (*per hectare*)	Application time	Remarks
Trees and shrubs	Dowpon M	1 lb (*0.45 kg*) in 15 gal (*140 ℓ*) water used as a wetting spray	Postemergence grass 1 to 10" (*2.5 to 25 cm*) tall	Grass control only. Use only on trees established 1 or more years. *Keep spray off foliage.*
	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	1 to 2 qt *2.3 to 4.7 ℓ*	Postemergence	Nonselective contact herbicide. Use sufficient water and wetting agent to cover weed foliage. *Keep spray off tree foliage.* Add 1/2% X77 wetting agent to spray solutions.
	Princep 80W	2 1/2 to 5 lb *2.8 to 5.6 kg*	Preemergence to weeds	Use lighter rate on sandy soils. See remarks for Casoron.
	Treflan	1 to 1 1/2 pt *1.2 to 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.
	Roundup	1 to 4 qt *2.3 to 9.3 ℓ*	Postemergence	*Do not spray green bark or foliage.* Spray may contact brown bark. Use lower rate on annuals.
Conifers, honey locust, and green ash	Karmex	2 1/2 to 5 lb *2.8 to 5.6 kg*	Preemergence to weeds	See remarks for Casoron.

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.

Weed	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*	Application time	Remarks
Artichoke, Jerusalem	2,4-D amine + Banvel	1/2 pt *0.6 ℓ* + 1/2 pt *0.6 ℓ*	12 to 18" (*30 to 45 cm*) tall	For use in corn. Use drop nozzles on corn taller than 8" (*20.3 cm*).
	2,4-D ester	1 qt *2.3 ℓ*	18 to 24" (*45 to 61 cm*) tall	For use where no crop is present.
Blue mustard	2,4-D ester	1/2 pt *0.6 ℓ*	Nov. 15 - March 15	Use only on fully tillered wheat.
	2,4-D amine	1 pt *1.2 ℓ*		
Bursage, skeletonleaf and woollyleaf	2,4-D	2 qt *4.7 ℓ*	Early June or when growing actively[9]	Same as for field bindweed except 2,4-D amine formulations less effective. If soil moisture conditions are poor, use oil-water emulsions as a carrier.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
Canada thistle	2,4-D	2 qt *4.7 ℓ*	Fall (rosette) and spring (early bud)[9]	Same as for field bindweed.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
Cattails	2,4-D ester	1 1/2 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.
	Dowpon M or Dowpon C	20 lb (*22.4 kg*) + 0.5% emulsifer or 30 lb (*33.6 kg*) + 0.5% emulsifer	After flowering to fruiting	
Cottonwood, willows, and Siberian elm	2,4-D ester	2 to 3 qt *4.7 to 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 (*1.9 ℓ* of herbicide/10 gal (*94 ℓ*) of diesel. Spray tree trunk to point of runoff.
Dogwood	2,4-D + 2,4,5-T	2 qt (*4.7 ℓ*) of most "Brushkillers"	Full foliage during June	See remarks for cottonwood.
Downy brome	AAtrex or Atrazine 80W or AAtrex or Atrazine 4L	2 1/2 lb *2.8 kg* or 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.
	Princep 80W	2 1/2 lb *2.8 kg*		

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[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24.

[9]Retreatment may be necessary.

Weed	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*)	Application time	Remarks
Field bindweed	2,4-D	1 qt *2.3 ℓ*	Vigorous fall growth or bud stage in spring[9]	Avoid tillage 5 weeks before and 1 week after application. Plan to treat for several consecutive years.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		
Groundsel, riddell	2,4-D	1 qt *2.3 ℓ*	May 15-June 15	
Hemp	2,4-D	1 pt[1] to 1 qt *1.2 to 2.3 ℓ*	2 to 12" (*5.1 to 30 cm*) tall	At later growth stages use higher rate.
Hemp dogbane	2,4-D	1 qt *2.3 ℓ*	Spring bud stage[9]	Use lower rates in crops.
	2,4-D	1 to 1 1/4 qt *2.3 to 2.9 ℓ*	Sept. 1 to 30[9]	Surfactant may help. Can be used in standing corn and milo. Use the lower rate on milo.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1/2 pt *0.6 ℓ*	After Sept. 10 until dogbane leaves turn yellow	Can be used in standing corn and milo. Do not apply within 30 days of harvest.
Hoary cress	2,4-D	1/2 to 1 gal *4.7 to 9.3 ℓ*	Rosette stage in the fall or early bud in spring[9]	Same as for field bindweed except amine formulations less effective.
Johnsongrass (See shattercane for seedling control)	Dowpon M	6.7 lb *7.5 kg*	8 to 12" (*20 to 30 cm*) new growth or regrowth[9]	Repeat treatment 3 times, 10 to 20 days apart. Treat when 70°F (*21°C*) or above.
	Sodium TCA	100 lb *112.1 kg*	Early spring[9]	Use enough water to insure good coverage. Retreat escaped plants.
	Ansar 529 H.C. or Daconate	2 qt *4.7 ℓ* or 3 qt *7.0 ℓ*	Boot stage	Treat when 70° F (*21°C*) or above. Do not use on cropland or grassland.
	Roundup	2 to 3 qt *4.7 to 7.0 ℓ*	12" (*30 cm*) through boot stage	Avoid tillage for 7 days after application.
Leafy spurge	2,4-D	2 qt *4.7 ℓ*	Early bud stage spring or late fall[9]	Same as for field bindweed except amine formulations less effective. Control seedlings.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*	Fall or spring[9]	See remarks for field bindweed.
Locust, honey and black	2,4,5-T or Silvex	2 qt *4.7 ℓ*	Full foliage during June or basal treatment anytime	See remarks for cottonwood.

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[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24.

[9]Retreatment may be necessary.

Weed	Herbicide	Apply this amount commercial product per acre[4] *(per hectare)*	Application time	Remarks
Milkweed, common	Amino Triazole or Amitrol-T	4.4 lb *4.5 kg* or 2 gal *18.6 ℓ*	Bud to bloom stage[9]	Use enough water to insure good coverage. Use Amino Triazole and Amitrol-T only on non-cropland.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1/2 pt *0.6 ℓ*		
	Roundup	3 qt *7.0 ℓ*	Flowering through maturity	Avoid tillage for 7 days after application.
Mullein, common	2,4,5-T or Silvex	1 to 1 1/2 qt *2.3 to 3.5 ℓ*	Late fall on rosettes or spring before flowering stalks lengthen	Essential to apply in rosette stage.
Musk and plumless thistle	2,4-D	1 1/2 to 2 qt *3.5 to 4.7 ℓ*	Late fall treatment of rosettes or spring before flowering stalks lengthen	Annual treatments may be necessary for control of new seedlings.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1/2 pt *0.6 ℓ*		
Oaks	2,4,5-T or Silvex	2 to 3 qt *4.7 to 7.0 ℓ*	Full foliage June to July or basal treatment anytime	Retreatment necessary. See remarks for cottonwood.
Osageorange	2,4,5-T	2 qt *4.7 ℓ*	Full foliage June to July or basal treatment anytime	See remarks for cottonwood.
Pricklypear	Silvex	1 to 2 qt *2.3 to 4.7 ℓ*	May 15-June 15	Rotary hoe pads just prior to spraying. Add 1 gal/A *(9.3 ℓ/ha)* diesel + 0.5% emulsifier in water carrier.
Poison ivy	Amino Triazole/Weedazol or Amitrol-T	2 tbs/gal of water *4 mℓ/ℓ* or 1/2 cup/gal of water *10 mℓ/ℓ*	Full foliage (June)[9]	Thoroughly wet all vegetation. Do not apply Amino Triazole or Amitrol-T to cropland nor use 2,4,5-T in recreational areas.
	2,4,5-T 2,4-D + 2,4,5-T	2 tbs /gal of water *4 mℓ/ℓ*		
Puncture vine	2,4-D ester	1 qt *2.3 ℓ*	Pre-bud stage most effective	Mature burs not affected by 2,4-D.
Ragweed, western (perennial)	2,4-D	1 qt *2.3 ℓ*	Early summer[9]	Follow-up treatments may be necessary.
Russian knapweed	2,4-D	2 qt *4.7 ℓ*	Early bud stage[9]	Same as for field bindweed except amine formulations less effective.
	2,4-D + Banvel	1 qt *2.3 ℓ* + 1 pt *1.2 ℓ*		

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[4] 2,4-D, silvex, 2,4,5-T and MCPA calculated on the basis of 4 lg/gal *(0.45 kg/ℓ)* of acid equivalent (the chemicals in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24 .

[9] Retreatment may be necessary.

Weed	Herbicide	Apply this amount commercial product per acre[4] (*per hectare*)	Application time	Remarks
Russian olive	2,4-D + 2,4,5-T	2 qt (*4.7 ℓ*) of most "Brushkillers"	Full foliage (early June)[9]	See remarks for cottonwood.
Sagebrush (sand and fringed and green sagewort)	2,4-D ester	1 1/2 to 2 qt *3.5 to 4.7 ℓ*	4 to 8" (*10 to 20 cm*) new growth (June)[9]	Use sufficient water to insure good coverage. 1 1/2 qt/A (*3.5 ℓ/ha*) 2,4-D adequate on sand sagebrush.
Shattercane (wild cane) and seedling Johnsongrass	Sutan+	5 pt *5.8 ℓ*	Preplant to corn	Incorporate immediately by cross tandem disking or equivalent soil mixing. Some crop injury may result from Treflan. Plant corn on the land the year following Princep treatment.
	Eradicane	5 pt *5.8 ℓ*	Preplant to corn	
	Princep 80W	2 1/2 lb *2.8 kg*	Preplant to corn	
	+	+		
	Eradicane or Eptam	1 qt *2.3 ℓ*		
	Treflan	1 qt *2.3 ℓ*	Preplant to soybeans	
Snowberry (buckbrush)	2,4-D ester	1 to 2 qt *2.3 to 4.7 ℓ*	Full foliage (May 10 to 25)[9]	Use sufficient water to insure good coverage.
Soapweed (yucca)	Silvex	2 qt *4.7 ℓ*	June[9]	Use diesel as a carrier
Sumac	2,4-D	1 to 2 qt *1.2 to 2.3 ℓ*	Full foliage spring or summer	Use sufficient water to insure good coverage.
Swamp smartweed (tanweed)	2,4-D ester	1 qt *2.3 ℓ*	When growing vigorously[9]	On crops use lower rates and amine formulations.
	+	+		
	Banvel	1 pt *1.2 ℓ*		
Wild buckwheat	Brominal or Buctril	1 pt *1.2 ℓ*	After tillering	Do not use on oats. Thoroughly wet all vegetation.
	+	+		
	MCPA	1 pt *1.2 ℓ*		
	Banvel	4 oz *0.3 ℓ*	Early spring on winter wheat or oats	Banvel combinations will control knotweed. 2,4-D + Banvel can be used on millet in the 2 to 5 leaf stage.
	+	+		
	2,4-D amine	1 pt *1.2 ℓ*		
	MCPA	1 pt *1.2 ℓ*		
	+	+		
	Banvel	4 oz *0.3 ℓ*		

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24.

[9]Retreatment may be necessary.

NON-CROP AREAS

Area or use	Herbicide	Apply this amount commercial product[4]	Application time	Remarks
Chemical mowing	Phytar 560	1-2 gal/A *9.3-18.6 ℓ/ha*	Postemergence	Apply on a warm sunny day.
	Paraquat CL	2 qt/A *4.7 ℓ/ha*	Postemergence	Use enough water to insure good coverage. Add 1/2% X-77 wetting agent to spray solution.
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 1/2 qt/A (*1.2 ℓ/ha*) 2,4-D with 1/2 qt/A (*1.2 ℓ/ha*) 2,4,5-T.
	2,4-D + Banvel	1 qt/A *2.3 ℓ/ha* + 1 pt/A *1.2 ℓ/ha*		*Do not use BANVEL or TORDON near susceptible plants.*
	Tordon 101	2-3 qt/A *4.7-7.0 ℓ/ha*	Postemergence	
Irrigation ditchbanks	Karmex or Telvar	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 or coarser screens. May injury nearby trees and shrubs.
	AAtrex, Atrazine or Princep 80W or AAtrex or Atrazine 4L	7 1/2 lb/A *8.4 kg/ha* or 1 1/2 gal/A *14 ℓ/ha*		
Long term vegetation control	Pramitol 25 E or Pramitol 5PS	4 pt/1000 sq ft *2 ℓ/100 sq m* or 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.
	Hyvar X or Hyvar XL	1/2 lb/1000 sq ft *.25 kg/100 sq m* or 3/4 pt/1000 sq ft *.4 ℓ/100 sq m*		
	Krovar I	1/2 lb/1000 sq ft *.25 kg/100 sq m*		
Perennial broadleaf weeds such as Canada thistle, leafy spurge, field bindweed and bursage	2,4-D amine + Tordon 22K or Tordon 212	1 qt/A (*2.3 ℓ/ha*) + 1 qt/A (*2.3 ℓ/ha*) or 2 qt/A *4.7 ℓ/ha*	Spring early bud stage or fall rosette	Do not use Tordon where water table is within 25 feet (*8 m*) of soil surface. Do not use Tordon near streams or bodies of water. Do not use on cropland. Cropland includes fallow and grazing land.
	Benzac 1281 or Trysben 200	1 qt/1000 sq ft *1 ℓ/100 sq m*		
Milkweed and perennial grasses such as bromegrass and quackgrass	Roundup	2 qt/A *4.7 ℓ/ha*	Full foliage	Non-selective. Milkweed must be in bloom stage. Perennial grasses should have good top growth. Kills all annuals.
	Amino Triazole/Weedazol or Amitrole-T	4.4 lb/A *5.0 kg/ha* or 2 gal/A *19 ℓ/ha*		

[4]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 in a product that are responsible for the herbicidal effects). For other formulations see conversion table on page 24 .

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

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

Amex (butralin)--A new preplant incorporate soybean herbicide similar to Treflan for grass weed control. Amchem.

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

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 Chemical.

Alanap plus--A combination of Alanap and Chloro-IPC for improved smartweed control. Uniroyal Chemical.

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

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

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

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

Antor (H-22234)--An experimental preplant incorporated herbicide being developed for annual grass control in soybeans. 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.

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)--See Dowpon. BASF-Wyandotte.

Basagran (bentazon)--A new postemergence soybean herbicide for velvetleaf, cocklebur and other broadleaf weeds under 6-8" (*15.2-20.3 cm*). BASF-Wyandotte.

Basalin (fluchloralin)--A preplant soil incorporate 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 noncrop land. Amchem.

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

Bexton (propachlor)--Same active ingredient as Ramrod. A 20% granular primarily for grass weed control in sorghum and corn. Dow.

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

Bromex--See Maloran. Nor-Am.

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-Chipman.

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

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

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

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

Chem-Hoe (propham)--Used pre- and postemergence for annual grass and smartweed control in alfalfa and soybeans and preplant incorporated in sugarbeets. PPG Industries.

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

Cobex (dinitramine)--A new preplant incorporate soybean herbicide similar to Treflan for grass weed control. Slightly better control of some broadleaf weeds. Shorter soil life and narrower margin of crop safety. U.S. Borax.

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.

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

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.

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

Dowpon (dalapon)--Used for grass control in many broadleaf crops. Dow.

Dual (CGA-24705)--A new alachlor-like herbicide for weed control in corn and soybeans. EPA experimental permit. Ciba-Geigy.

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

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 incorporate 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 (propham)--Similar to Chem-Hoe. PPG Industries.

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

Igran (terbutryn)--A short residual s-triazine used primarily for preemergence weed control in sorghum. Generally combined with AAtrex or Milogard for broader spectrum weed control and reduced soil residues. Low soil temperature and "herbicide splash" onto emerged plants may cause sorghum injury. 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 and Hass Co.

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.

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 (metribuzin)--See Sencor. 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.

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 noncrop land. U.S. Borax.

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

Norex (chloroxuron)--For early postemergence use in soybeans. Weeds must be less than 1 1/2" (3.8 cm) tall. Nor-Am.

Outfox (cyprazine)--Used postemergence for selective weed control in corn. Weeds should be less than 2" (5.1 cm) and corn under 10" (25.4 cm). Production discontinued. Gulf.

Paraquat CL (paraquat)--A nonselective contact herbicide registered for several no-till uses and for noncropland. Chevron.

Phytar (cacodylic acid)--Nonselective contact herbicide used for weed control on noncropland. Ansul.

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.

Prefox--Combination of Outfox and ethiolate for preplant incorporated weed control in corn. Discontinued. Gulf.

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. Preplant, preemergence and postemergence. EPA experimental label. Velsicol.

Propachlor (propachlor)--Same active ingredient as Ramrod. Available as a 20% granule and a 65% wettable powder for grass weed control in corn and sorghum. Farmland.

Propazine--See Milogard. Ciba-Geigy.

Prowl (penoxalin)--Used preemergence on corn and ppi on soybeans grown on soils with more than 2% organic matter. American Cyanamid.

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

Ramrod (propachlor)--A preemergence herbicide used for annual grass control in corn and milo. Monsanto.

Ramrod-atrazine 69W--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. 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 under development for annual grass and broadleaf weed control in soybeans. Rhodia-Chipman.

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

Rowtate (isaniline)--An experimental preemergence herbicide being developed for annual broadleaf weed control in soybeans. Diamond Shamrock.

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

Sencor (metribuzin)--Used in combinations for broadleaf weed control in soybeans. Chemagro.

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

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

Solo--Alanap plus Chloro-IPC for grass and broadleaf weed control in soybeans. Uniroyal.

Soyex (flurodifen)--Same as Preforan, Discontinued. Nor-Am.

Sumitol (GS-14254)--Being developed for the control of winter annual grass and broadleaf weeds in established alfalfa. Ciba-Geigy.

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

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

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

TCA--A postemergence herbicide for the control of annual and perennial grasses on noncropland; 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 noncropland. DuPont.

Tenoran (chloroxuron)--For early postemergence use in soybeans. Weeds must be less than 1 1/2" (3.8 cm) tall. Ciba-Geigy.

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

Tolban (profluralin)--A preplant incorporated herbicide for use on soybeans and alfalfa. Similar to Treflan in performance. Ciba-Geigy.

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

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

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

Vernam (vernolate)--A preplant incorporated herbicide used in soybeans. Effective against annual grasses and some broadleaf weeds. Early injury usually not reflected in crop yields. Stauffer.

Weedazol--Trade name for Amitrole. Amchem.

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 (*.95l*) of household ammonia to 25 gallons (*95l*) 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.

WEED SCIENCE PUBLICATIONS

CIRCULARS AND BULLETINS

"Vine Weeds of the North Central States" Regional Publication No. 33
"Calibrating A Sprayer" E.C. 65-169
"Musk Thistle" E.C. 66-160
"Know and Control Hemp Dogbane" E.C. 69-184
"Know and Control Bursage" E.C. 69-185
"Know and Control Leafy Spurge" E.C. 69-186
"Know and Control Downy Brome" E.C. 74-188
"Lawn Weeds and Their Control" E.C. 76-178
"Soybean Weed Control" E.C. 74-198
"A Descriptive Guide for Major Nebraska Thistles" SB 493

NEBGUIDE SERIES

"Blue Mustard Control" G74-92
"A Quick Test for Atrazine Carryover" G74-113
"Annual Broadleaf Weed Control in Winter Wheat" G74-120
"Field Sandbur Control in Corn" G74-121
"Shattercane—What To Do About It" G74-122
"Weed Control in Minimum Tillage Corn" G74-123
"No-Till Corn in Alfalfa Sod" G74-131
"Weed Control in Grain Sorghum" G74-137
"Herbicides and Soils" G74-160
"Herbicide-Fertilizer Combinations" G74-164
"Herbicide Carryover" G74-180
"Hemp Dogbane" G75-156
"Jointed Goatgrass" G75-210
"Weed Control in Alfalfa" G75-220
"Factors That Make Herbicides Work" G76-272
"Surfactants and Herbicides" G76-295
"Broadcast or Band Your Herbicides" G76-294

Conversion Table

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		
	¼ lb	½ lb	1 lb
2.00	1	2	4
2.64	¾	1½	3
3.00	⅔	1⅓	2⅔
3.34	⅗	1⅕	2⅖
4.00	½	1	2
6.00	⅓	⅔	1⅓

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	

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