

1982

EC82-130 A 1982 Guide for Herbicide Use in Nebraska

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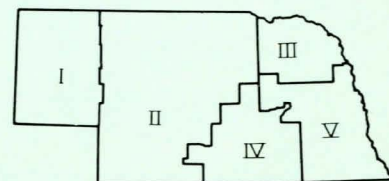
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Furrer, John D.; Roeth, Fred W.; and Wilson, Robert G., "EC82-130 A 1982 Guide for Herbicide Use in Nebraska" (1982). *Historical Materials from University of Nebraska-Lincoln Extension*. 4387.
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A 1982 GUIDE FOR --- HERBICIDE USE IN NEBRASKA . . .



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RESTRICTED USE HERBICIDES ...
Hoelon, Tordon & 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"*

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.

● **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.



Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Leo E. Lucas, Director of Cooperative Extension Service, University of Nebraska, Institute of Agriculture and Natural Resources.



Weed Response To Selected Soil Applied 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	b. nightshade	cocklebur	crabgrass	fall panicum	foxtail	jimsonweed	kochia	lambsquarters	pigweed	ragweed	R. thistle	sandbur	shattercane	smartweed	sunflower	velvetleaf	w. buckwheat	crop safety ¹	soil persistence in months ²
FIELD CORN & POPCORN*																					
*AAtrex or Atrazine	E	G	E	G	F	P	G	E	E	E	E	E	E	F	P	E	E	G	E	E	6-24
Bicep or Dual + AAtrex	G	E	E	F	G	G	E	F	E	E	E	E	E	G	F	P	G	G	F	G	6-18
Bladex	E	G	E	G	G	F	G	E	E	E	F	E	E	F	P	E	G	F	E	G	2-4
Bladex + AAtrex	E	G	E	G	G	F	G	E	E	E	E	E	E	F	P	E	G	F	E	G	6-18
Dual	P	E	G	P	E	E	E	P	P	G	G	F	P	F	P	P	P	P	P	P	2-5
Dual + Atrazine + Sencor	G	E	E	F	G	G	E	F	G	E	E	E	G	F	P	G	G	F	G	G	6-12
Dual + Bladex	G	E	E	F	E	E	E	F	E	G	E	E	G	F	P	G	F	F	G	G	2-5
Dual + Bladex + Sencor	G	E	E	F	E	E	E	F	G	G	G	E	G	F	P	G	F	F	G	G	2-5
*Eradicane	G	E	E	P	E	E	E	P	F	G	G	F	P	G	G	P	P	P	P	G	1-2
*Eradicane + Atrazine	G	E	E	F	E	E	E	G	E	E	E	G	G	G	G	G	F	F	G	E	6-18
*Eradicane + Bladex	G	E	E	F	E	E	E	G	E	E	G	G	G	G	G	G	F	P	G	G	2-4
*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	F	G	E	6-18
Lasso + Atrazine + Bladex	G	E	E	F	E	E	E	F	E	E	E	E	G	F	P	G	F	F	G	G	6-12
Lasso + Atrazine + Sencor	G	E	E	F	G	G	E	F	G	E	E	E	G	F	P	G	G	F	G	G	6-12
*Lasso + Bladex	G	E	E	F	E	E	E	F	E	G	G	E	G	F	P	G	F	F	G	G	2-4
Lasso + Bladex + Sencor	G	E	E	F	E	E	E	F	G	G	G	E	G	F	P	G	F	F	G	G	2-5
Prowl + Atrazine	G	E	G	F	E	E	E	F	E	E	E	G	G	F	P	G	G	F	G	G	6-18
Prowl + Bladex	G	E	G	F	E	E	E	F	E	E	G	G	F	P	G	F	F	F	G	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	F	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-GRAIN & FORAGE*																					
*AAtrex or Atrazine	E	G	E	G	F	P	G	G	E	E	E	E	E	F	P	E	E	G	E	F	6-24
Bicep + Concep	G	E	E	F	G	G	E	F	E	E	E	G	F	F	P	G	G	F	G	G	6-18
Dual + Concep	P	E	G	P	E	E	E	P	P	G	G	F	P	F	P	P	P	P	P	G	2-5
Dual + Atrazine + Concep	G	E	E	F	G	G	E	F	E	E	E	E	G	F	P	G	G	F	G	G	6-18
Igran + AAtrex	E	G	E	G	F	P	G	G	E	E	E	E	E	F	P	E	E	G	E	F	6-18
Modown + Ramrod	G	G	F	P	G	G	E	G	G	G	E	P	P	P	P	E	P	F	G	F	1-2
Ramrod/Propachlor/Bexton	P	G	P	P	G	G	E	P	P	F	G	P	P	P	P	F	P	F	F	E	1-2
Ramrod/Bexton + Atrazine	G	G	G	F	G	F	E	F	E	E	G	G	P	P	P	G	G	F	G	G	6-18
Ramrod/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
Basalin + Sencor/Lexone	P	E	F	F	E	E	E	G	G	E	E	E	E	G	G	G	F	G	E	F	6-18
Dual	P	E	G	P	E	E	E	P	P	G	G	F	P	F	P	P	P	P	P	E	2-5
Dual + Sencor or Lexone	P	E	G	F	E	E	E	G	F	E	E	E	G	F	P	G	F	G	E	F	2-5
Lasso	P	E	G	P	E	E	E	P	P	G	G	P	F	P	P	P	P	P	P	E	2-4
Lasso + Modown	G	G	F	P	G	G	E	G	G	G	E	P	P	F	P	E	F	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	F	G	E	2-4
Lorox + Lasso or Dual	P	E	G	F	E	E	E	F	F	G	E	G	F	F	P	G	F	F	G	G	2-4
Prowl	P	E	P	P	E	E	E	P	F	G	G	P	G	G	P	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	F	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 or Tolban	P	E	P	F	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
Vernam	F	E	F	P	E	G	E	P	P	G	G	F	G	G	F	P	P	F	F	F	1-2
SUGARBEETS																					
Eptam	G	E	E	P	E	E	E	P	F	G	G	F	P	E	E	P	P	P	F	G	1-2
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
FIELD BEANS																					
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 or Tolban	F	E	G	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	G	P	F	E	P	P	P	P	G	2-4
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 or Prowl	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
Sencor/Lexone + Lasso	P	E	G	F	F	E	E	G	F	E	E	E	G	F	P	G	F	G	E	F	2-6

¹Crop varieties vary in their response to herbicides.

²The 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-Soil Applied Herbicides

Preplant (PPI) treatments are made before planting the crop. Thoroughly incorporate by cross tandem discing, field cultivator, rototiller or similar equipment. *Preemergence* (PRE) treatments are applied from planting time to just before plant emergence. *Surface blending* is the shallow mixing of a preemergence herbicide into the top 1 to 2" of soil using a rototiller, mulch treader, field cultivator or similar implement. *Early post* refers to herbicide applications made soon after the crop or weeds have started to emerge; control of emerged weeds may be reduced. *Postemergence* (POST) 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 rotary hoe. Excessive rain fall may leach some of the more soluble herbicides into the subsoil, especially on sandy soils. Weed control with preplant herbicides is more satisfactory on surface-planted crops.

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. *Atrazine may carry over and injure alfalfa, beans, potatoes, sugarbeets and small grains the following year.* Herbicide residue problems in soils increase as one goes westward in Nebraska. Residue problems also increase on low organic matter and high pH soils.

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 before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	

FIELD CORN & POPCORN*

SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS

*AATREX/ATRAZINE 4L ³	2 qt	2.4 qt	3 qt	PPI, PRE, SURFACE BLEND or EARLY POST...May be applied through sprinkler systems. May affect sensitive crops the following year especially on high pH soils. Can be used at lay-by. Approx. cost \$5.60 to \$8.40.
BICEP 4.5L	2 qt	2.4 qt	3.2 qt	PRE, SURFACE BLEND or EARLY POST...May be applied through sprinkler systems. Bicep is a combination of 2½ parts Dual to 2 parts atrazine. Approx. cost \$10.00 to \$16.00.
BLADEX 4L ³	Do not use	2.5 qt	3.25 qt	PRE, SURFACE BLEND or 80W EARLY POST...Bladex 4L may be applied through sprinkler systems. Do not use on light or variable textured soils. Injury may occur on soils that are calcareous, sandy or below 1% organic matter. Approx. cost \$10.75 to \$14.00.
BLADEX 15G	Do not use	16 lb	21 lb	
BLADEX 4L ³ + ATRAZINE 4L ³	Do not use	1.67 qt + 0.83 qt	2.2 qt + 1.1 qt	PRE, SURFACE BLEND or 80W EARLY POST...May be applied through sprinkler systems. Injury may occur on soils that are calcareous, sandy or below 1% organic matter. Carry over could affect some crops the following year. Approx. cost \$9.50 to \$12.55.
DUAL 8E (Primarily grass control)	1 qt	1.25 qt	1.5 qt	PRE or SURFACE BLEND...Dual and Dual + Aatrex may be applied through sprinkler systems or early post. Injury may occur with Dual + Bladex on soils that are calcareous, sandy or below 1% organic matter. Postemergence broadleaf weed control usually required when Dual is used alone. Approx. cost: Dual--\$9.80 to \$14.70; Dual + Aatrex--\$9.30 to \$14.65; Dual + Bladex--\$9.00 to \$16.40.
DUAL 8E + AATREX 4L ³ or BLADEX 4L ³	0.67 qt + 1 qt or 1 qt	0.75 qt + 1.25 qt or 1.67 qt	1 qt + 1.67 qt or 2 qt	
DUAL 8E with ATRAZINE 4L ³ or BLADEX 4L ³ + SENCOR 4L ³	Do not use	0.75 qt + 0.75-1.5 qt or 1.25 qt + 0.5 pt	1 qt + 0.75-1.5 qt or 1.5 qt + 0.5 pt	

(Continued next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt Aatrex or Atrazine 4L = 1.25 lb Aatrex or Atrazine 80W or 1.1 lb Aatrex Nine-O

1 qt Bladex 4L = 1.25 lb Bladex 80W.

*Registered for popcorn.

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	
CORN-(continued)				
SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS				
*ERADICANE 6.7E (Primarily grass control)	4.75 pt	5 pt	5 pt	PPI...May be applied through sprinkler systems. Apply to dry surface soil. Immediately incorporate by cross tandem discing or similar soil mixing. Some hybrids may be injured. Injury may occur with Eradicane + Bladex on soils that are calcareous, sandy or below 1% organic matter. Postemergence broadleaf control usually required when Eradicane is used alone. Repeated use of Eradicane will likely lead to reduced weed control. Consider crop and herbicide rotations. Approx. cost: Eradicane--\$17.80 to \$18.75; Eradicane + Atrazine--\$20.60 to \$22.25; Eradicane + Bladex--\$22.10 to \$26.40.
*ERADICANE 6.7E +	4.75 pt	4.75 pt	4.75 pt	
*ATRAZINE 4L ³ or	2 pt	2.4 pt	3.2 pt	
*BLADEX	2 pt	3.2 pt	4 pt	
*LASSO 4EC ⁴ or	3 qt	2.5 qt	3 qt	PRE or SURFACE BLEND...Liquid registered for application through sprinkler systems. Post-emergence broadleaf weed control usually required. Also registered for lay-by application. See page 11. Approx. cost \$12.25 to \$14.70.
*LASSO II 15G (Primarily grass control)	20 lb	17 lb	20 lb	
*LASSO 4EC ⁴ +	2 qt	2 qt	2 qt	PRE, SURFACE BLEND or EARLY POST...Also registered for application through sprinkler systems. Tank mix. Also registered for lay-by application. See page 11. Approx. cost \$12.60 to \$14.25.
*AATREX/ATRAZINE 4L ³ or	1 qt	1.2 qt	1.6 qt	
*LASSO & ATRAZINE ⁴ FLOWABLE (Package blend)	3.2 qt	4 qt	4 qt	
*LASSO 4EC +	2 qt	2 qt	2 qt	PRE...May be applied through sprinkler systems. Injury may occur on soils that are calcareous, sandy or below 1% organic matter. Approx. cost \$14.10 to \$18.40.
*BLADEX 4L ³	1 qt	1.6 qt	2 qt	
LASSO 4EC with ATRAZINE 4L ³ or BLADEX 4L ³ +	Do not use	2 qt + 0.75-1.5 qt or 1.25 qt +	2 qt + 0.75-1.5 qt or 1.5 qt +	PRE...Do not use on sandy soils or soils containing less than 2% organic matter. Do not use on calcareous soils or soils with a pH of 7.0 or greater. Approx. cost: Lasso + Atrazine + Sencor--\$17.95 to \$20.05; Lasso + Bladex + Sencor--\$21.25 to \$22.30.
SENCOR 4L ³		0.5 pt	0.5 pt	
LASSO +	2 qt	2 qt	2 qt	PRE...Injury may occur on soils that are calcareous, sandy or below 1% organic matter. Approx. cost \$13.35 to \$15.00.
ATRAZINE 4L ³ +	1 pt	1 pt	1.25 pt	
BLADEX 4L ³	1 pt	1.25 pt	1.6 pt	
PROWL 4EC +	Do not use	1.5 qt +	1.5 qt +	PRE or EARLY POST...Corn injury may occur if replanting is necessary. Also registered for lay-by application. See page 11. Approx. cost: Prowl + Atrazine--\$16.10 to \$17.25; Prowl + Bladex--\$19.65 to \$21.35
ATRAZINE 4L ³ or		1.2 qt or	1.6 qt or	
BLADEX 4L ³		1.6 qt	2 qt	

(Continued next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt Aatrex or Atrazine 4L = 1.25 lb Aatrex or Atrazine 80W or 1.1 lb Aatrex Nine-0

1 qt Bladex 4L = 1.25 lb Bladex 80W.

⁴Increase rate 20% when surface blending.

*Registered on popcorn.

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	

CORN-(continued)

SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS

*SUTAN ⁺ 6.7E (Primarily grass control)	5 pt	5 pt	5 pt	PPI...May be applied through sprinkler systems. Apply to dry surface soil. Incorporate immediately by cross tandem discing or equivalent soil mixing. Some hybrids may be injured. Postemergence broad-leaf weed control usually required. Approx. cost \$15.75.
*SUTAN ⁺ 6.7E + *ATRAZINE 4L ³ or *BLADEX 4L ³	3.75 pt + 2 pt or 2 pt	3.75 pt + 2.4 pt or 3.2 pt	3.75 pt + 3.2 pt or 4 pt	PPI...Sutan ⁺ + Atrazine may be applied through sprinkler systems. 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. Injury may occur with Sutan ⁺ + Bladex on soils that are calcareous, sandy or below 1% organic matter. Approx. cost: Sutan + Atrazine--\$14.60 to \$16.30; Sutan + Bladex--\$16.10 to \$20.40.
*SUTAN ⁺ 6.7E + *ATRAZINE 4L ³ + *BLADEX 4L ³	3.75 pt + 1 pt + 1 pt	3.75 pt + 1 pt + 1.25 pt	3.75 pt + 1.25 pt + 1.6 pt	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. Injury may occur on soils that are calcareous, sandy or below 1% organic matter. Approx. cost \$15.35 to \$17.00.

OTHER REGISTERED TREATMENTS FOR CORN: 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), Radox (PRE), 2,4-D (PRE). See Herbicide Dictionary for additional information.

PROSO MILLET

AATREX/ATRAZINE 4L ³	1-1.5 pt	1-1.5 pt	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 out-croppings, eroded areas and on terraced fields. Approx. cost \$1.40 to \$2.10.
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FORAGE SORGHUMS

UNDER MOST CONDITIONS HERBICIDES ARE NOT NECESSARY

ATRAZINE 4L ³	Do not use	2 qt	2.25 qt	PPI, PRE or SURFACE BLEND...Make preplant applications only on fine textured soils. Heavy rains may leach and cause crop injury. Approx. cost \$5.60 to \$7.00.
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³Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt AATrex or Atrazine 4L = 1.25 lb AATrex or Atrazine 80W or 1.1 lb AATrex Nine-O
1 qt Bladex 4L = 1.25 lb Bladex 80W.

*Registered on popcorn.

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	
GRAIN SORGHUM (MILO)				
SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS				
AATREX 4L/ATRAZINE 4L ³	Do not use	2 qt	2.4 qt	PPI, PRE or SURFACE BLEND...Preplant applications should be made only on fine textured soils. Heavy rains may leach AAtrex/Atrazine and cause injury to sorghum. Approx. cost \$5.60 to \$6.70.
BEXTON 4L/RAMROD FLOWABLE ³	4 qt	4 qt	4 qt	PRE...May cause skin irritation to applicator. Do not feed treated forage to dairy animals. Leaches on sandy soil. Approx. cost \$14.60.
BEXTON 20G/PROPACHLOR 20G/ RAMROD 20G	20 lb	20 lb	20 lb	
BEXTON 4L/RAMROD FLOWABLE ³ + AATREX 4L/ATRAZINE 4L ³	Do not use	7 pt + 1.5 pt	7 pt + 1.5 pt	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 \$15.05.
BEXTON 4L/RAMROD FLOWABLE ³ + BLADEX 4L ³	Do not use	5 pt + 2.5 pt	5 pt + 2.75 pt	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: Bexton/Ramrod + Bladex--\$14.65 to \$15.15; Bexton/Ramrod & Atrazine--\$15.25.
BEXTON & ATRAZINE FLOWABLE/ RAMROD & ATRAZINE FLOWABLE (Package blend) or RAMROD & ATRAZINE 69WP (Package blend)	Do not use	4 qt or 5 lb	4 qt or 5 lb	
BEXTON 4L/RAMROD FLOWABLE ³ + MODOWN 4F ³	5 pt + 2.5 pt	5 pt + 2.5 pt		
BICEP 4.5L (Use only on Concep treated seed)	Do not use	2.4 qt	3.2 qt	PRE...Seed must be treated to protect from Dual injury. Do not use on sandy, high pH or calcar- eous soils. Bicep is a combination of 2½ parts Dual and 2 parts Atrazine. Approx. cost \$12.00 to \$16.00.
DUAL 8E (Use only on Concep treated seed)	2 pt	2.5 pt	3 pt	PRE or SURFACE BLEND...Post broadleaf weed con- trol may be needed if Dual is used alone. Seed must be Concep treated to protect from Dual injury. Do not use on sandy, high pH or cal- careous soils. Approx. cost: Dual--\$9.80 to \$14.70; Dual + AAtrex--\$10.15 to \$14.00.
DUAL 8E (Use only on Concep treated seed) + AATREX/ATRAZINE 4L ³	Do not use	1.5 pt 2 pt	2 pt 3 pt	
IGRAN 80W + AATREX 80W	Do not use	2 lb + 1 lb	2 lb + 1 lb	
OTHER REGISTERED TREATMENTS FOR SORGHUM: Bladex + Propazine [Milogard] (PRE), Dual 8E + Igran 80W (PRE), Dual 8E + Milogard (PRE), Igran 80W (PRE), Milocep (PRE), Milogard 80W (PRE), Milogard + Igran (PPI, PRE, or Surface Blend), Propazine (PRE), Ramrod/Bexton + Propazine or Milogard (PRE). See Herbicide Dictionary for additional information.				

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt AAtrex or Atrazine 4L = 1.25 lb 80W or 1.1 lb AAtrex Nine-O

1 qt Bladex 4L = 1.25 lb 80W

1 qt Modown 4 L = 1.25 lb 80W

1 qt Bexton 4L or Ramrod Flowable = 1.5 lb Ramrod 65W

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	
SOYBEANS				
SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS				
BASALIN 4EC	1 pt	1.5 pt	2.5 pt	PPI...For best results immediately incorporate. Primarily grass control. Approx. cost \$4.25 to \$10.65.
BASALIN 4EC + SENCOR/LEXONE 4L ³	Do not use	1.5 pt + 0.75 pt	2 pt + 0.75 pt	PPI...For best results immediately incorporate. To reduce injury on calcareous soil reduce Sencor/Lexone rate by 1/3. Approx. cost \$15.50 to \$17.60.
DUAL 8E	2 pt	2.5 pt	2.5 pt	PRE or SURFACE BLEND...Primarily grass control. Approx. cost \$9.80 to \$12.25.
DUAL 8E + SENCOR/LEXONE 4L ³	Do not use	1.5 pt + 0.75 pt	2 pt + 0.75 pt	PRE or SURFACE BLEND...To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost \$16.55 to \$18.90.
LAISO 4EC ⁴	2.5 qt	2.5 qt	2.5 qt	PRE or SURFACE BLEND...Primarily grass control. Approx. cost \$12.25.
LAISO II 15G	17 lb	17 lb	17 lb	
LOROX L ³ + DUAL 8E or LAISO 4EC	Do not use	1.5 pt + 2.5 pt or 5 pt	2.0 pt + 2.5 pt or 5 pt	PRE...If rain does not occur within 7 days, surface mix only with rotary hoe. Lorox not greatly influenced by soil pH. Approx. cost: Lorox + Dual--\$20.50 to \$23.75; Lorox + Lasso-- \$20.50 to \$23.75.
LAISO 4EC + MODOWN 4EC ³	2.5 qt + 1.25 qt			SURFACE MIX WITH ROTARY HOE...Modown not greatly influenced by soil texture, organic matter or pH. Approx. cost \$19.15.
LAISO 4EC ⁴ + SENCOR/LEXONE 4L ³	Do not use	2 qt + 0.75 pt	2 qt + 0.75 pt	PRE or SURFACE BLEND...To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost \$18.90.
PROWL 4EC	1.5 pt	2 pt	2.5 pt	PPI or PRE...If soybeans have not been planted and rain or irrigation does not occur within 7 days incorporate by cross tandem discing or equivalent soil mixing. Primarily grass control. Approx. cost \$6.75 to \$10.65.
PROWL 4EC + SENCOR/LEXONE 4L ³	Do not use	2 pt + 0.75 pt	2 pt + 0.75 pt	PPI or PRE...If soybeans have not been planted and 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 \$17.60.

(Continued next page)

³ Additional formulations available. Use rates that give comparable amounts of active ingredient:

1 pt Sencor or Lexone 4L = 1 lb 50W or 0.67 lb Lexone DF or Sencor DF

1 pt Modown 4EC = 0.67 lb 80W

1 pt Lorox L = 1.0 lb 50W.

⁴ Increase rate 20% when surface blending.

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	

SOYBEANS-(continued)

SEE TROUBLESOME WEED SECTION ON PAGE 19 FOR SPECIFIC WEEDS

TOLBAN 4EC	1 pt	1.5 pt	2 pt	} PPI...For best results immediately incorporate. Primarily grass control. Approx. cost: Tolban-- \$4.10 to \$8.20; Treflan--\$4.10 to \$8.20.
TREFLAN 4EC	1 pt	1.5 pt	1.75 pt	
TOLBAN 4EC + SENCOR/LEXONE 4L ³	Do not use	1.25 pt + 0.75 pt	1.5 pt + 0.75 pt	PPI...For best results immediately incorporate. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost \$14.25 to \$15.25.
TREFLAN 4EC + SENCOR/LEXONE 4L ³ (Also Split-shot ⁵)	Do not use	1.25 pt + 0.75 pt	1.5 pt + 0.75 pt	PPI...For best results immediately incorporate. To reduce injury on calcareous soil decrease Sencor/Lexone rates by 1/3. Approx. cost \$14.25 to \$15.25.
VERNAM	2.3 pt	3 pt	3 pt	PPI...For best results immediately incorporate. Do not plant soybeans deeper than 2 inches. Approx. cost \$7.50 to \$9.75.

OTHER REGISTERED TREATMENTS FOR SOYBEANS: Alanap (PRE), Amiben (PRE), Amiben + Sencor/Lexone (PRE), Amiben + Treflan (PPI), Ancrack (PRE), Bexton (PRE, seed beans only), Dacthal (PRE), Dual + Lorox (PRE), Dual + Dyanap (PRE), Dual + Amiben (PRE or PPI), Dyanap (PRE and POST), Enide (PRE), Enide + Dinitro (PRE), Furloe (PRE), Goal (PRE), Goal + Lasso (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/Lexone (PRE), Treflan (PPI), + Modown (PRE) Vernam (PPI) + Amiben (PRE), Vernam (PPI) + Dyanap (PRE), Vernam (PPI) + Lorox (PRE), Vernam + Treflan (PPI). See Herbicide Dictionary for additional information.

POTATOES

EPTAM 7E	3.5 pt	3.5 pt	PPI, DRAG-OFF or LAY-BY...Apply and incorporate before planting or after potato plants have emerged. The superior variety of potato is sensitive to Eptam and under stress conditions potato injury will occur. Approx. cost \$11.75.
EPTAM 7E + TREFLAN 4EC	2.5 pt + 1 pt	2.5 pt + 1 pt	} PRE UP TO and JUST BEFORE DRAG-OFF...Incorporate chemical immediately after application. Set in- corporation equipment so that herbicide is not concentrated over the row. The superior variety of potato is sensitive to Eptam and potato injury may occur. Approx. cost: Eptam + Treflan--\$12.50; Eptam + Prowl--\$14.30 to \$16.45.
EPTAM 7E + PROWL 4EC	3 pt + 1 pt	3 pt + 1.5 pt	
SENCOR/LEXONE 4L ³	1 pt	1.5 pt	} 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. The superior variety of potato is sensi- tive to Lasso and potato injury may occur. Approx. cost: Sencor/Lexone--\$12.10 to \$18.15; Sencor/ Lexone + Lasso--\$21.90 to \$24.35.
SENCOR/LEXONE 4L ³ + LASSO 4EC	1 pt + 4 pt	1 pt + 5 pt	

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), Telone (PPI), Treflan (PRE), Treflan + Eptam (PRE). See Herbicide Dictionary for additional information.

³Additional formulations available. Use rates that give comparable amounts of active ingredient:

⁴1 pt Sencor or Lexone 4L = 1 lb 50W or 0.67 lb Lexone DF or Sencor DF.

⁵Split application for improved broadleaf weed control - apply 0.5 pt Sencor/Lexone 4L PPI as a tank mix followed by 0.5 pt Sencor/Lexone 4L preemergence. To reduce injury on calcareous soil reduce Sencor/Lexone rates by 1/3.

Field Crops-Soil Applied Herbicides-(continued)

Herbicide (See weed response chart before selecting herbicides)	Apply this amount of commercial product per acre			Application Time, Remarks and Approximate Cost/A Broadcast
	Sandy Loam <1½% OM	Silt Loam 1½-2½% OM	Silty-Clay Loam >2½% OM	
SUGARBEETS				
EPTAM 7E or EPTAM 10G	3 pt or 25 lb	3.5 pt or 30 lb	LAY-BY...Apply Eptam after thinning and clean cultivation and incorporate immediately with a rolling cultivator to a depth of 2 inches. Approx. cost \$10.05 to \$11.75.	
NORTRON 1.5EC	1 gal	1.5 gal	PPI or PRE...Furrow irrigation apply preplant and incorporate 1 to 2"; for sprinkler irrigation apply preemergence at planting or shortly after and immediately irrigate with 0.5" of water. Approx. cost \$42.00 to \$64.00.	
RO-NEET 6E or RO-NEET 10G	3-4 pt or 23 lb	4-4.5 pt or 30-35 lb	PPI...Immediately mix into dry soil with power incorporator 2 to 3". 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 \$15.60 to \$23.40.	
OTHER REGISTERED TREATMENTS FOR SUGARBEETS: Chem-Hoe (PPI), Endothall (PRE), Eptam (PPI), Pre-Beta (PPI), Pyramin W (PRE), Pyramin W + Endothall (PRE), Pyramin W + TCA (PRE), TCA (PRE), Tillam (PPI). See Herbicide Dictionary for additional information.				

FIELDBEANS

EPTAM 10G or EPTAM 7E	30 lb or 3.5 pt	30 lb or 3.5 pt		PPI...Apply to dry surface soil, immediately incorporate with a disc or field cultivator. Lay-by can be applied at time of last cultivation. Apply as a directed spray or direct granules to the soil at the base of the plants before bean pods start to form. Do not feed or pasture vines to livestock within 45 days after application. Approx. cost \$11.75.
EPTAM 7E + TREFLAN 4EC	2.5 pt + 1 pt	2.5 pt + 1 pt	}	PPI...Do not follow with fall seeded small grain. Sugarbeets and sorghum may be injured the next year. Approx. cost: Eptam + Treflan--\$12.50; Eptam + Tolban--\$12.50.
EPTAM 7E + TOLBAN 4EC	2.5 pt + 1 pt	2.5 pt + 1 pt		
LAISO 4EC	3 qt	2.5 qt		
				PPI or SURFACE BLEND...Surface blending will improve weed control and reduce crop injury. Approx. cost \$12.25 to \$14.70.

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

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	b. nightshade	cocklebur	crabgrass	fall panicum	foxtail	jimsonweed	kochia	lambsquarters	pigweed	ragweed	R. thistle	sandbur	shattercane	smartweed	sunflower	velvetleaf	w. buckwheat	crop safety ¹	soil persistence in months ²
CORN																					
AAtrex or Atrazine + crop oil	E	F	E	E	F	P	G	E	E	E	E	E	F	F	P	E	E	E	E	G	6-18
Banvel	E	P	P	E	P	P	P	E	G	G	G	G	E	P	P	E	G	F	E	G	1-2
Bladex	G	F	E	G	G	F	G	E	E	G	G	E	F	G	P	E	G	G	G	F	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
Basagran + Atrazine	G	P	G	E	P	P	P	E	G	G	G	E	P	P	P	E	E	E	E	E	2-6
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	G	G	E	0
Blazer (soybeans only)	E	P	G	F	F	G	F	E	-	F	E	E	P	G	F	E	P	F	-	G	0
*Good control of hairy nightshade																					
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 or Betamix	F	P	F	F	P	P	P	F	F	G	G	F	P	P	P	F	F	P	G	G	<1
Herbicide 273	P	F	F	F	P	P	F	P	F	F	F	P	P	P	P	G	G	P	G	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" tall
except less than 2" 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	R. thistle	shepherdspurse	sunflower	tansy mustard	wild buckwheat	wild lettuce	wild vetch	soil persistence in months ²
WINTER WHEAT															
2,4-D	E	F	E	G	E	E	G	E	E	E	P	G	E	1	
Brominal/Buctril	F	E	G	F	G	F	G	G	E	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	G	E	1	
Banvel	F	E	P	E	E	E	E	F	E	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	1-2	

¹Crop varieties vary in their response to herbicides.

²The 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", 674-180.

Field Crops Postemergence & Harvest Aids

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. Rate of carrier should be in accordance with label recommendations.

Crop	Herbicide	Rate Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
BARLEY AND SPRING WHEAT	2,4-D amine	1-1.5 pt	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 \$.60 to \$1.25.
	or 2,4-D LV ester	or 0.5-1 pt		
CORN (Field and popcorn*)	*Aatrex/Atrazine 4L ³	2 qt	Grass weeds 1" or less; also at lay-by	Use with water-oil mixtures. Lower rates control broadleaf weeds. Make lay-by applications when corn is 20-30" tall and weeds less than 1½" tall. Approx. cost \$5.60.
	*Basagran + *Atrazine	0.5 qt + 0.5 qt	Broadleaf weeds 2-4" high	Use with crop oil concentrate, 20 gal. water and 40 lb pressure. Increase rate by 50% on weeds 3-8" tall. Approx. cost \$11.10.
	Bladex 80W	2.5 lb	Grass weeds 1" or less; corn before 4 leaf stage	Use Bladex 80W with water or vegetable oils or surfactants. Reduce rates by 1/3 on sandy soils. Do not use Bladex 4L. Approx. cost \$8.65.
	*2,4-D amine or *2,4-D LV ester	1-2 pt or 0.5-1 pt	Before corn is 8" high, over 8" use drop nozzles	Later applications may cause brittleness and stalk breakage. Use lower rate when good growing conditions exist to reduce corn injury. <i>Do not use Banvel within ½ mile of sugarbeets, fieldbeans, alfalfa, soybeans, gardens and ornamentals unless drop nozzles are used on corn over 8". Do not treat corn over 24". Do not apply between June 20 and Sept. 1 if sensitive crops are nearby.</i> Approx. cost: 2,4-D--\$.60 to \$1.25; 2,4-D + Banvel--\$2.00; Banvel--\$2.75.
	2,4-D amine + Banvel 4WS or Banvel II	0.5 pt + 0.25 pt or 0.5 pt		
	Banvel 4WS or Banvel II	0.5 pt or 1 pt		
	Lasso 4EC alone or with Atrazine	2-3 qt + 1-1.6 qt		
	Prowl 4EC alone or with Atrazine 4L ³	0.75-1.5 qt + 1-1.2 qt		
	2,4-D LV ester (Harvest aid)	1 qt	After silks brown	Rescue operation for late control of sunflowers, cockleburrs, velvetleaf and other late broadleaf weeds. Only certain brands labeled for this use. Brittleness and kernel fill not affected if silks are dry and pollination is complete. Approx. cost \$3.20.
FIELD BEANS	Basagran 4WS	0.75-1 qt	At least one trifoliate leaf fully expanded. Weeds 2-4" 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 \$14.55 to \$19.40.

(Continued next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt Aatrex or Atrazine 4L = 1.25 lb Aatrex or Atrazine 80W or 1.1 lb Aatrex Nine-O

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

*Registered on popcorn.

Field Crops Postemergence & Harvest Aids-(continued)

Crop	Herbicide	Rate Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
OATS (Not under-seeded with legume)	Brominal or Buctril 2EC	1-1.5 pt	Weeds and oats in 3-4 leaf stage	Controls annual broadleaf weeds including wild buckwheat. Thorough coverage required. Approx. cost \$5.90 to \$8.55.
	+ 2,4-D amine	0.5 pt		
	2,4-D amine	1 pt	3-4 leaf stage of oats	Some injury from 2,4-D may be expected at any stage. Approx. cost \$1.25.
	2,4-D LV ester (Harvest aid)	1 qt	After hard dough	Rescue operation for control of sunflowers, bindweed and pigweed. Only certain brands labeled for this use. Approx. cost \$3.20.
POTATOES	Sencor or Lexone 4L ³	0.5-1 pt	Before weeds are 1" 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 \$6.05 to \$12.10.
	Dinitro (Harvest aid)		10-20 days before harvest	Highly toxic products. Apply diesel, crop oil or surfactant mixed with water. Approx. cost \$5.40 to \$8.10.
	Dow General	1-2 qt		
	Dinitro 5	1-2 qt		
	Premerge 3	2-3 qt		
	Dinitro 3	2-3 qt		
	Paraquat (Harvest aid)	1-2 pt	3 or more days before harvest	Do not use on seed potatoes nor potatoes to be stored. Follow label on water volume and surfactant use. Approx. cost \$5.65 to \$11.30.
SORGHUM (Grain or forage)	AAtrex/Atrazine 4L ³	1.2 qt	Broadleaf weeds less than 6"	Use with water-oil mixtures. Read product label. May give partial control of grass weeds under 1". Approx. cost \$3.35.
	2,4-D amine	1 pt	When sorghum is 4-12" high.	Spraying before 4" stage may inhibit root development. Spraying without drop nozzles after 12" through early boot may inhibit head development. Approx. cost \$.80.
	or	or	Over 12" use drop nozzles	
	2,4-D LV ester	0.5 pt		
	2,4-D LV ester (Harvest aid)	1 qt	After soft dough	Rescue operation for late control of sunflowers, cockleburrs, velvetleaf and pigweed. Only certain brands labeled for this use. Grain quality not affected if milo is in soft dough or later stage of growth. Approx. cost \$3.20.
	Chlorate 3	1.5-2 gal	7-10 days before harvest	For grain sorghum. Products are sodium chlorate with fire retardant. Use in enough water to give good coverage. Do not graze or feed forage for 14 days. Approx. cost \$6.00 to \$8.00.
	or	or		
	Leafex 3 (Harvest aids)	1.5-2 gal		
SOYBEANS	Basagran 4WS	0.75-1 qt	Most susceptible weeds less than 4" tall	Good spray coverage essential. See label for rates and specific weed size. Approx. cost: Basagran--\$14.55 to \$19.40; Blazer--\$19.70.
	Blazer 2S	1 qt		
	Paraquat (Harvest aid)	0.5-1 pt	50% leaf drop	Follow label directions on water volume and X-77 additive. Approx. cost \$2.80 to \$5.60.
SUGARBEETS	Betanex 1.3EC	4.5-7.5 pt	Beets past 2 leaf stage and weeds in cotyledon to 4 leaf stage	Use lower rates on small beets or when using a split-application. Works best on Nortron or Ro-Neet treated fields. Wait till 4 leaf stage if beets show signs of Ro-Neet or Nortron injury. Treat in late afternoon to reduce injury. Tank mix or Betamix gives more effective kochia control. Approx. cost per inch width of treated band for 22" rows: Betanex--\$1.50 to \$2.65; Betanex + Betanal or Betamix--\$1.30 to \$1.95.
	Betanex 1.3EC	2-3 pt		
	+ Betanal 1.3EC	2-3 pt		
	or	or		
	Betamix 1.3EC	4-6 pt		
	Herbicide 273	1-2 qt	Beets 4-6 true leaves. Weeds less than 5" tall	Use higher rates on large weeds. Apply when temperatures are above 60° F. Do not apply when sugarbeets are past the 8 leaf stage of growth. Primarily for wild buckwheat and sunflower control. Approx. cost \$7.25 to \$14.50.

(Continued next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-0

1 pt Sencor or Lexone 4L = 1 lb 50W or 0.67 lb Lexone DF or Sencor DF

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

Field Crops Postemergence & Harvest Aids-(continued)

Crop	Herbicide	Rate Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
WINTER WHEAT (Control for wild buckwheat)	2,4-D amine or 2,4-D LV ester	1-1.5 pt or 0.5-1 pt	Early spring before joint stage or late fall after tillering	Do not spray winter wheat until well tillered. Spray broadleaf weeds as soon as good growing conditions occur. Refer to page 19 for blue mustard control. Approx. cost \$.80 to \$1.60.
	2,4-D LV ester (Harvest aid)	1.0 qt		
	Brominal or Buctril 2EC + 2,4-D amine	1-1.5 pt + 0.5 pt	Well tillered	Thorough coverage required. Weeds should be in 3-4 leaf stage. Approx. cost \$5.90 to \$9.30.
	Banvel 4WS + 2,4-D amine	4 oz + 0.75 pt	Before wheat joints	Controls most troublesome broadleaf weeds. Approx. cost \$2.35.

ADDITIONAL REGISTERED POSTEMERGENCE TREATMENTS:

Barley-Oats: MCPA, 2,4-D + Banvel.
 Corn: 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.
 Sugarbeets: Betanal, Endothall, Pyramin + Dowpon.
 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		Broadleaf Weed Control	
	Roundup:Water Ratio	% Conc.	Roundup:Water Ratio	% Conc.
Recirculating Sprayer	1:39	2 1/2	1:19	5
Rope-Wick Applicators-- Pipe-Wick, Wedge-Wick, Bobar	1:4	20	1:3	25
Roller Applicator	1:19	5	1:9	10

REMARKS: Roundup labeled for use in soybeans only. Corn, shattercane and other weeds should be 8-12 inches taller than soybeans. When clumps of corn, shattercane and weeds are present, retreatment in the opposite direction is advisable with rope-wick 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-\$15.00 in heavy infestations.

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 of acid equivalent (the chemicals responsible for herbicidal effects). For other information see conversion table page 32.

Forage Crops, Pastures & Ranges

Area or Use	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
ALFALFA (establishment)	Balan 1.5EC	3-4 qt	Preplant	Immediately incorporate by cross tandem discing or equivalent soil mixing. Reduce rates on sandy soil. Early legume injury may occur. Controls primarily annual grasses. Approx. cost: Balan--\$10.50 to \$14.00; Eptam--\$11.75; Tolban--\$4.10 to \$8.20.
	Eptam 7E	3.5 pt		
	Tolban 4EC	1-2 pt		
ALFALFA (seedling or established)	Butyrac or Butoxone 2,4-DB	2 qt	Postemergence when weeds are less than 3"	For broadleaf weeds. Do not use treated forage for 30 days. <i>DO NOT confuse with 2,4-D.</i> Use when temperature is above 50°F. Approx. cost \$7.20.
	Chem-Hoe 4FL	3-4 qt	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. Moisture necessary for chemical activity. Kerb helps control sand-bur. Approx. cost: Chem-Hoe--\$12.30 to \$16.40; Kerb--\$11.85 to \$17.80.
	Kerb 50W	1-1.5 lb		
ALFALFA (established one year or more)	Princep 80W	0.5-2 lb	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--\$1.65 to \$6.60; Sinbar 80W--\$9.00 to \$18.00; Sencor/Lexone--\$6.00 to \$12.00.
	Sinbar 80W	0.5-1 lb	Late fall or early spring	
	Sencor/Lexone 50W	0.75-1 lb		
	or Lexone DF	or 0.5-0.67 lb		
ALFALFA (seed harvest aid)	Diquat	1.5-2 pt	3-10 days prior to seed harvest	Do not graze or feed treated forage. Approx. cost \$11.10 to \$14.80.
	Endothall	1.25-1.5 gal	5-10 days prior to seed harvest	Do not graze or feed treated forage. Toxic to fish and wildlife. Approx. cost \$36.25 to \$43.50.
	Dinoseb (Dinitro compds)	Varies	3-6 days prior to seed harvest	Do not feed treated forage nor graze treated areas for 6 weeks. Approx. cost \$3.30 to \$4.90.
BIG BLUESTEM AND SWITCHGRASS (established and new seedlings)	AAtrex 80W or AAtrex 4L	2.5 lb or 2 qt	Preemergence	Controls many annual grasses and broadleaf weeds. Do not use on sandy soils or soils below 1% organic matter. Approx. cost \$5.60.
	COOL-SEASON GRASS SEEDLINGS	2,4-D	1-1.5 pt	2- to 4-leaf stage of grass
WARM-SEASON GRASS SEEDLINGS	2,4-D	0.5-1 pt		
WARM-SEASON GRASSES FOR SEED	AAtrex 4L or AAtrex 80W	3 qt or 3.75 lb	Spring or fall before weed emergence	Do not use until second year after seeding. Less effective in heavy plant residues. Approx. cost \$8.40.

(Continued next page)

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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

Forage Crops, Pastures & Ranges-(continued)

Area or Use	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Costs/A Broadcast
ANNUAL OR BIENNIAL BROAD-LEAF WEEDS IN PASTURES AND RANGES	2,4-D	1 qt	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 of sensitive crops. Combination controls greater variety of weed species. Approx. cost: 2,4-D--\$2.50; 2,4-D + Banvel--\$5.25.
	2,4-D	1 qt		
	+	+		
	Banvel 4WS	0.5 pt		
	or	or		
	Banvel II	1 pt		
PERENNIAL BROAD-LEAF WEEDS IN PASTURES AND RANGES (includes vervains, broom snakeweed, western ironweed and woolly loco)	2,4-D	1.5 qt	At bud stage of predomi- ¹⁴ nant weeds. 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 of sensitive crops. Approx. cost: 2,4-D--\$3.75; 2,4-D + Banvel--\$8.05.
	2,4-D	1 qt		
	+	+		
	Banvel 4WS	1 pt		
	or	or		
	Banvel II	2 pt		
RANGELAND	AAtrex 80W	1-1.25 lb	Fall	Control winter annual bromes. Severely injures cool-season grasses. Do not graze for 7 months after application. Reduce grazing pressure to improve grass stands. Approx. cost \$2.25 to \$2.80.
	or	or		
	AAtrex 4L	1.6-2 pt		

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment will be necessary.

Windbreaks & Tree Plantings

Crop or Use	Herbicide	Apply This Amount Commercial Product Per Acre	Application Time	Remarks and Approximate Cost/A Broadcast
TREES AND SHRUBS (Check each label for species response)	Paraquat CL 2WS	1-2 qt	Directed post-emergence	Nonselective contact herbicide. Use sufficient water and wetting agent to cover weed foliage. <i>Keep spray off tree foliage.</i> Add 0.125% X-77 wetting agent to spray solutions. Approx. cost \$11.30 to \$22.60.
	Princep 80W	1.5-5 lb	Preemergence on trees at least 2 years old	Use 1.5 lb on sandy or high pH soils. Apply 20" band on each side of tree row after trees are planted. Some injury to trees may result on low organic matter soils. Gives poor control of Russian thistle. Approx. cost \$4.95 to \$16.50.
	Treflan 4EC	1-1.5 pt	Preplant	Incorporate 2-3" deep prior to planting. After planting adjust machine to throw treated soil towards trees in the row. Approx. cost \$4.10 to \$6.15.
	Roundup 3WS	1-4 qt	Directed post-emergence	<i>Do not spray green bark or foliage.</i> Spray may contact brown bark. Use lower rate on annuals. Approx. cost \$18.40 to \$73.50.
	Karmex 80W	2.5-5 lb	Preemergence on trees at least 2 years old	See remarks for Casoron. Karmex use limited to conifers, honey locust and green ash. Approx. cost \$11.95 to \$23.90.
	2,4-D amine	1 qt	Postemergence to weeds	Do not spray the new growth of spruce and pine trees. Controls broadleaf weeds. Approx. cost \$2.50.
CHRISTMAS TREES-- SCOTCH, AUSTRIAN, PONDOROSA PINE ONLY	Velpar	1-2 lb	Pre or post-emergence at least 2 months after trans-planting	Use lower rates on sandy soils, soils low in organic matter, and on first year plantings. May be applied directly over the trees before bud break. Approx. cost \$19.80 to \$39.60.
	Velpar L	1.8-3.6 qt		

Aquatic Weed Control

Slow Moving and Still Water

Important: Before treating any body of water containing fish, contact the Game and Parks Commission local representative. Whenever possible treat before water weed growth becomes dense to avoid fish suffocation due to oxygen depletion from decaying vegetation. When heavy growth is present in fish containing waters, treat no more than one-half of the area. After vegetation in the treated area disappears treat the remainder of the water.

Herbicide	Rate Per AF (Acre Foot) or SF (Surface Acre)	Weeds Controlled	Application Time	Remarks and Approximate Cost
COPPER SULFATE CRYSTALS or COPPER CHELATES (Cutrine plus, Algetol or Algecide)	5.4 lb/SA or 0.67-1.25 gal/AF	Algae Chara	When growth first becomes visible	No restrictions on water usage at recommended rates. Copper comps. can be corrosive to equipment. Use Chelated Copper in high pH water. Approx. cost/SA: Copper Sulfate--\$3.00.
AQUATHOL G or AQUATHOL K	13-135 lb/AF or 0.3-3.2 gal/AF	Burreed Coontail Milfoil Pondweed Naiad	Water has warmed and growth is visible	Handle with caution, extremely irritating to skin. Overdose can be harmful to fish. Do not use water within 14 days for irrigation or domestic uses. Approx. cost/AF \$8.70 to \$92.80.
AQUAZINE (Simazine)	1.7-6.8 lb/AF	Algae Chara Coontail Duckweed Naiad Pondweed Milfoil	Spring before heavy weed growth appears	Treat total water volume. Best suited for still water. Do not use water for irrigation or livestock use. Approx. cost/AF \$8.50 to \$34.00.
DIQUAT	1-2 gal/SA	Arrowhead Cattail Bulrush Elodea Pondweed Coontail Duckweed Naiad Milfoil	Post on foliage or on surface for submerged species	Do not use water for 10 days for swimming, livestock or irrigation. Not effective in water with suspended silt. Approx. cost/SA \$59.00 to \$98.00.
2,4-D amine or ester 20G	1.50-4 qt/AF 7.50-20 lb/AF	Water Hyacinth Water Lily Water Primrose Duckweed Arrowhead Pondweed Milfoil	Use sprays on emerged weeds when in full leaf stage. Apply granules when first growth appears	Do not use water for 14 days for livestock or irrigation. Approx. cost/AF \$3.75 to \$10.00.

Non-Crop Areas

Area or Use	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
ROADSIDES (Broadleaf weed control)	2,4-D	1 qt/A	Broadleaf weeds 2-6"	Repeat treatments may be necessary. For woody species replace 0.5 qt/A 2,4-D with 0.5 qt/A 2,4,5-T. Do not use Banvel or Tordon near susceptible plants. Approx. cost: 2,4-D--\$2.50; 2,4-D + Banvel--\$8.05; Tordon 212--\$25.90.
	2,4-D	1 qt/A		
	+	+		
	Banvel 4WS	1 pt/A		
	Tordon 212	2 qt/A	Postemergence	
IRRIGATION DITCHBANKS	Karmex 80W	5-10 lb/A	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--\$23.90; AAtrex/Atrazine--\$16.55; Princep--\$31.50.
	AAtrex/Atrazine 4L ³	1.5 gal/A		
	or	or		
	Princep 4L ³	1.5 gal/A		
	2,4-D	1 qt/A	Broadleaf weeds 2-6"	Approx. cost \$2.50.
	Roundup 3WS	2-4 qt	Full foliage	Nonselective. No residual control. Use the lower rate on annual weeds and perennial grasses the higher rates on perennial broadleaf weeds. Approx. cost \$36.75 to \$73.50.
LONG TERM VEGETATION CONTROL	Pramitrol 25E	4 pt/1000 sq ft	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: Pramitrol--\$6.80/1000 sq ft; Hyvar--\$2.65; Krovar--\$3.65.
	or	or		
	Pramitrol 5PS	10-20 lb/1000 sq ft		
	Hyvar X 80W	0.5 lb/1000 sq ft		
	or	or		
	Hyvar XL 2 WS	0.75 pt/1000 sq ft		
	Krovar I 80W	0.5 lb/1000 sq ft		
PERENNIAL GRASSES (Including brome grass and quackgrass)	Roundup 3WS	2 qt/A	Full foliage	Nonselective. Perennial grasses should have good top growth. Kills all annuals. Approx. cost: Roundup--\$36.75; Amitrol--\$39.50.
	Amitrol-T/ Cytrol-T 2WS	2 gal/A		

³ Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

Troublesome Weeds & 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	Application Time	Remarks and Approximate Cost/A Broadcast
ALFALFA	2,4-D amine	0.5 pt	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 \$3.35.
	+ Banvel 4WS	0.5 pt		
	or Banvel II	1 pt		
ARTICHOKE, ¹⁶ JERUSALEM ¹⁶	2,4-D amine	0.5 pt	12-18" tall ¹⁴	For use in corn. Use drop nozzles on corn taller than 8". Approx. cost \$3.35.
	+ Banvel 4WS	0.5 pt		
	or Banvel II	1 pt		
BLUE MUSTARD	2,4-D LV ester	1 qt	18-24" tall	For use where no crop is present. Approx. cost \$3.20.
	2,4-D LV ester	0.5 pt	Nov. 15-March 15 before blue mustard stem elongation	Use only on fully tillered wheat. Approx. cost \$.80.
	2,4-D amine	1 pt		
BUFFALOBUR	Atrazine 4L	3 qt	Preplant or pre-emergence in corn	Reduced rates less effective. Approx. cost \$.40.
	Blazer 2S	1 qt	Weeds in 3-4 leaf stage	Weeds must be small. Follow-up treatments necessary. Approx. cost \$19.70.
	Eradicane 6.7E	5 pt	Preplant to corn	Immediately incorporate by cross tandem discing or similar mixing. Approx. cost \$18.75.
	2,4-D + Banvel or Banvel II	1 pt + 0.5 pt or 1 pt	Postemergence on corn	Plants must be small. Approx. cost \$4.00.
BURSAGE, SKELETONLEAF ¹⁶ AND WOOLLYLEAF ¹⁶	Tordon 22K	2 qt	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 \$45.20.
	2,4-D + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt	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 \$8.05.
CANADA THISTLE ¹⁶	Tordon 22K	2 qt	Fall-actively growing or spring-early bud ¹⁴	For non-crop areas and for spot treatment in pasture and rangeland. Tordon may remain in the soil for three or more years. Carefully read all label precautions and warnings. Approx. cost \$45.20.
	2,4-D + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt	Fall-actively growing or spring-early bud ¹⁴	Do not plant small grains for 45 days after treatment or sugarbeets the following year. See remarks for field bindweed. Approx. cost \$8.05.
	Amitrol-T or Cytrol-T 2WS	2 gal	When growing actively ¹⁴	See remarks for field bindweed. Amitrol-T and Cytrol-T kill all vegetation. Use on non-cropland. Approx. cost \$39.50.
	Roundup 3WS	2-3 qt	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 \$36.80 to \$55.20.

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⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment may be necessary.

¹⁶For 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 & Woody Plants-(continued)

Weed	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
CATTAILS	2,4-D LV ester	1.5 gal + 5% diesel oil + 0.5% emulsifier	Boot to early flowering	Use the equivalent of 150 gal of water per acre. Retreat regrowth as necessary. Approx. cost: 2,4-D--\$19.35; Dowpon--\$50.00.
	Dowpon M 74SP or Dowpon C 74SP	20 lb + 0.5% emulsifier or 30 lb + 0.5% emulsifier	After flowering to fruiting	
	Roundup	3 qt	At flowering	
				Avoid water contamination. Approx. cost \$55.20.
COTTONWOOD, WILLOWS AND SIBERIAN ELM	2,4-D LV ester	2-3 qt	Full foliage (early June) or basal treatment anytime	Aerial equipment: at least 5 gal carrier/A. Annual treatment for 2-3 years may be necessary. Basal treatment: 2 qt of herbicide/10 gal of diesel. Spray tree trunk to point of runoff. Approx. cost \$6.40 to \$9.60.
	Krenite S	2-3 gal in 100 gal water + surfactant	Late July, August and September	Apply 2 months before leaves start to color. Has little effect on grasses. Results on woody plants show the following spring. Approx. cost \$82.00 to \$123.00.
DOGWOOD	2,4-D + 2,4,5-T ¹⁴ LV esters	2 qt of most "Brushkillers"	Full foliage during June	See remarks for cottonwood. Approx. cost \$11.30.
DOWNY BROME	AAtrex or Atrazine 80W ³	2.5 lb	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--\$5.60; Princep--\$8.25.
	or AAtrex or Atrazine 4L	2 qt		
	Princep 80W	2.5 lb		
FIELD BINDWEED ¹⁶ (Use herbicide rates on page 11 when treating in crops)	2,4-D	1 qt	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--\$2.50; 2,4-D + Banvel--\$8.05.
	2,4-D + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt		
	Tordon 22K	2 qt		
			Vigorous fall growth or bud stage in spring ¹⁴	Tordon for non-crop areas and spot treatment in pasture and rangeland. Avoid tillage 5 weeks before and 1 week after application. Carefully read and observe all label precautions and warnings. Approx. cost \$45.20.
	Roundup 3WS	4-5 qt		
	Roundup + Banvel 4WS or Banvel II	2 qt + 1 pt or 2 pt		
GROUNDSEL, RIDDELL	2,4-D LV ester	1 qt	May 15-June 15	Approx. cost \$3.20.
HEMP	2,4-D	1 pt-1 qt	2-12" tall	At later growth stages use higher rate. Approx. cost \$1.25 to \$2.50.

(Continued next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-O

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment may be necessary.

¹⁵Permitted 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.

¹⁶For 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 & Woody Plants-(continued)

Weed	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
HEMP DOGBANE ¹⁶	2,4-D	1 qt	Spring bud stage ¹⁴	Use lower rates in crops. Approx. cost \$2.50.
	2,4-D	1 qt	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" rows. Do not use Banvel within 1/2 mile of sensitive crops before September 1. Approx. cost: 2,4-D--\$2.50; 2,4-D + Banvel--\$5.25.
	2,4-D amine	1 qt		
	+ Banvel 4WS or Banvel II	+ 0.5 pt or 1 pt		
	Roundup 3WS	4 qt	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 \$73.50.
HOARY CRESS	2,4-D LV ester	0.5-1 gal	Rosette stage in the fall or early bud in spring ¹⁴	Same as for field bindweed except amine formulations less effective. Approx. cost \$6.45 to \$12.90.
JOHNSONGRASS (see shatter-cane for seedling control)	Dowpon M 74SP	6.7 lb	8 to 12" new growth or regrowth ¹⁴	Repeat treatment 3 times, 10 to 20 days apart. Treat when 70°F or above. Approx. cost \$16.75.
	Ansar 529 H.C. or Daconate 6WS	2 qt	Boot stage	Treat when 70°F or above. Do not use on cropland or grassland. Approx. cost \$9.60.
	Roundup 3WS	2-3 qt	12" through boot stage	Idle ground or spot treatment before head or pod fill. Avoid tillage for 7 days after application. Approx. cost \$36.80 to \$55.20.
LEAFY SPURGE ¹⁶	2,4-D LV ester	2 qt	Early bud stage spring or late fall ¹⁴	Same as for field bindweed except amine formulations less effective. Control seedlings. Approx. cost \$6.40.
	2,4-D + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt	Fall or spring ¹⁴	See remarks for field bindweed. Approx. cost \$8.05.
	Tordon 22K	2-4 qt	Fall or spring	Tordon for non-crop areas and spot treatment in pasture and rangeland. Carefully read and observe all label warnings and precautions. Approx. cost \$45.30 to \$90.60.
LOCUST, HONEY AND BLACK	2,4,5-T or Silvex LV ester ¹⁶	2 qt	Full foliage during June or basal treatment anytime	Do not use on pastures or rights-of-way. See remarks for cottonwood. Approx. cost \$16.10.

(Continued next page)

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment may be necessary.

¹⁵Permitted 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.

¹⁶For 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 & Woody Plants-(continued)

Weed	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
MILKWEED, COMMON ¹⁶	Amino Triazole 90SP	4.4 lb	} 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--\$39.50; 2,4-D + Banvel--\$5.25.
	or Amitrol-T/Cytrol-T 2WS	2 gal		
	2,4-D +	1 qt +		
	Banvel 4WS	0.5 pt		
	or Banvel II	1 pt		
	Roundup 3WS	3 qt	Flowering through maturity ¹⁴	Idle ground or spot treatment before head or pod fill. Avoid tillage for 7 days after application. Approx. cost \$55.20.
MILKWEED, HONEYVINE ¹⁶ (CLIMBING)	2,4-D amine	1-2 pt	} Before vines reach 3' in length ¹⁴	For use in corn or sorghum. Use lower rates in sorghum. Gives suppression only. Approx. cost \$.80 to \$1.60.
	2,4-D LV ester	0.5-1.0 pt		
MULLEIN, COMMON	2,4,5-T or Silvex ¹⁵	1-1.5 qt	Late fall on rosettes or spring before flowering stalks lengthen	Essential to apply in rosette stage. Approx. cost \$8.10 to \$12.15.
MUSK AND PLUMELESS THISTLE ¹⁶	2,4-D	1.5-2 qt	} Late fall treatment of rosettes or spring before flowering stalks lengthen	Make sure products are labeled for rates applied. 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--\$3.75 to \$5.00; 2,4-D + Banvel--\$5.25; Tordon--\$4.20 to \$5.60.
	2,4-D +	1 qt +		
	Banvel 4WS	0.5 pt		
	or Banvel II	1 pt		
	Tordon 22K (musk only)	6-8 oz	Oct. 1-Dec. 1 or spring before flowering stalk lengthens	
OAKS	2,4,5-T or Silvex LV ester ¹⁵	2-3 qt	Full foliage June to July or basal treatment anytime	Retreatment necessary. See remarks for cottonwood. Approx. cost \$16.20 to \$24.30.
OSAGEORANGE	2,4,5-T LV ester ¹⁵	2 qt	Full foliage June to July or basal treatment anytime	See remarks for cottonwood. Approx. cost \$16.20.
PERENNIAL SOWTHISTLE	2,4-D LV ester	1.5 qt	Fall rosette or spring bud stage	See remarks for field bindweed. Approx. cost \$4.80.
POISON IVY	Amino Triazole/Weedazol 90SP	2 tbs/gal of water	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. Approx. cost \$39.50.
	or Amitrol-T/Cytrol-T 2WS	0.5 cup/gal of water		
PRICKLYPEAR	Silvex ¹⁵	1-2 qt	Bud to bloom stage	Rotary hoe pads just prior to spraying. Add 1 gal/A diesel + 0.5% emulsifier in water carrier. Approx. cost \$8.10 to \$16.20.

(Continued next page)

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment may be necessary.

¹⁵Permitted 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.

¹⁶For 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 & Woody Plants-(continued)

Weed	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
PUNCTUREVINE	2,4-D LV ester	1 qt	Pre-bud stage most effective	Mature burs not affected by 2,4-D. Retreatment necessary on new plants. Approx. cost \$3.20.
PURSLANE	2,4-D LV ester	1 qt	When growing actively	Till 5-7 days after treatment. Do not plant small grains for 15 days after treatment. Approx. cost \$3.20.
RAGWEED, WESTERN (Perennial)	2,4-D LV ester	1 qt	Early summer ¹⁴	Follow-up treatments may be necessary. Approx. cost \$3.20.
RUSSIAN KNAWEED ¹⁶	2,4-D LV ester	2 qt	Early bud stage ¹⁴	Same as for field bindweed except amine formulations less effective. Approx. cost: 2,4-D--\$6.40; 2,4-D + Banvel--\$8.05.
	2,4-D LV ester + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt		
RUSSIAN OLIVE	2,4-D + 2,4,5-T LV ester ¹⁵	2 qt of most "Brushkillers"	Full foliage (early June) ¹⁴	See remarks for cottonwood. Approx. cost \$11.30
SAGEBRUSH (Sand and fringed and green sagewort)	2,4-D LV ester	1.5-2 qt	4-8" new growth (June) ¹⁴	Use sufficient water to insure good coverage. 1.5 qt/A 2,4-D adequate on sand sagebrush. Approx. cost \$4.80 to \$6.40.
SHATTERCANE (Wild cane) AND SEEDLING JOHNSONGRASS	Eradicane 6.7E	5 pt ¹⁷	Preplant to corn	Incorporate immediately by cross tandem discing or equivalent soil mixing. Do not use Princep or Bladex treatment on sand. 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. Repeated use of Eradicane will likely lead to reduced weed control. Under very high shattercane population herbicides may not give acceptable control--rotate to small grain or alfalfa. Vernam + Treflan eliminates carry-over possibilities. Approx. cost: Eradicane--\$18.75; Sutan--\$23.00; Eradicane + Bladex--\$27.35; Eradicane + Princep--\$27.00; Sutan + Bladex--\$31.60; Sutan + Princep--\$31.30; Treflan--\$8.40 to \$10.25; Tolban--\$8.40 to \$12.50; Basalin--\$12.75; Vernam + Treflan--\$13.85.
	Sutan ⁺ 6.7E	7.3 pt		
	Princep or Bladex 4L + Eradicane 6.7E or Sutan ⁺	2 qt + 5 pt ¹⁷ or 7.3 pt		
	Treflan 4EC	2-2.5 pt	Preplant to soybeans	
	Tolban 4EC	2-3 pt		
	Basalin 4EC	3 pt		
	Vernam 7E + Treflan 4EC	3 pt + 1 pt		
SNOWBERRY ¹⁶ (Buckbrush)	2,4-D LV ester	1-2 qt	Full foliage (May 10-25) ¹⁴	Use sufficient water to insure good coverage. Approx. cost \$3.20 to \$6.40.
SOAPWEED ¹⁶ (Yucca)	Silvex ¹⁵	2 qt	June ¹⁴	Use diesel as a carrier. Approx. cost \$16.20.

(Continued next page)

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

¹⁴Retreatment may be necessary.

¹⁵Permitted 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.

¹⁶For 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.

¹⁷Labelled rate is 7.3 pt/A.

Troublesome Weeds & Woody Plants-(continued)

Weed	Herbicide	Apply This Amount Commercial Product Per Acre ⁶	Application Time	Remarks and Approximate Cost/A Broadcast
SUMAC	2,4-D LV ester	1-2 qt	Full foliage	Use sufficient water for good coverage. Approx. cost \$3.20 to \$6.40.
SWAMP SMARTWEED ¹⁶ (Tanweed)	2,4-D LV ester + Banvel 4WS or Banvel II	1 qt + 1 pt or 2 pt	When growing vigorously ¹⁴	On crops use lower rates and amine formulations. Approx. cost \$8.05.
	Roundup 3WS	3-4 qt	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 \$55.20 to \$73.50.
VELVETLEAF	AAtrex/Atrazine 4L ³	1.2 qt	Velvetleaf less than 4"	AAtrex/Atrazine and 2,4-D for corn and milo; Basagran for soybeans and corn; Basagran + Atrazine for corn. Use crop oil concentrate with AAtrex/Atrazine, Basagran, and Basagran + Atrazine. Use 0.75 qt Basagran on velvetleaf 2" in height or less, 1 qt if 2-4". Approx. cost: AAtrex/Atrazine--\$3.35; Basagran--\$14.55 to \$19.40; Basagran + Atrazine--\$12.10; 2,4-D--\$.80 to \$1.60.
	Basagran 4WS + Atrazine 4L	0.5 qt + 0.5 qt		
	Basagran 4WS	0.75-1 qt		
	2,4-D LV ester	0.5-1 pt	Velvetleaf less than 12"	
	OTHER HELPFUL TREATMENTS FOR VELVETLEAF: Corn and milo--full rates of atrazine applied PPI; Soybeans--Vernam (PPI) + Amiben (PPI), Amiben + Sencor (PRE), Vernam (PPI) + Sencor/Lexone (PRE), Treflan + Sencor/Lexone Split-Shot. Also consider appropriate preemergence herbicides.			
WILD PROSO MILLET	Eradicane 6.7E or Sutan [†] 6.7E	5 pt or 5 pt	Preplant to corn	Incorporate immediately with disc or field cultivator. Approx. cost: Eradicane--\$18.75; Sutan--\$15.75.
	Lasso + Bladex 4L	2.5 qt + 1 qt	Preplant to corn	Incorporate with a field cultivator or roller harrow. Approx. cost \$16.55.
	Prowl 4EC	1.5 qt	Lay-by to corn	Direct weed spray to cover the base of the corn plant and in between corn rows. Incorporate with irrigation water or with cultivation. Approx. cost \$12.75.
	Eptam	3.5 pt	Preplant to fieldbeans	Incorporate immediately with a disc or field cultivator. Approx. cost \$11.75.

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-O

⁶Low 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 of acid equivalent (the chemicals responsible for herbicidal effects). For other formulations see conversion table page 32.

Reduced Tillage Systems-Ecofarming

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

Situation	Herbicide and Rate Per Acre	Application Time	Remarks and Approximate Cost/A Broadcast
NO-TILL CORN IN GRASS SOD ⁷	AAtrex 4L ³ + Paraquat CL ⁸ 2-3 qt + 1-2 pt	Apply to new growth in May before corn emergence	Weak on tall warm-season perennial grasses. Add paraquat if weeds have emerged. Approx. cost \$11.75 to \$19.70.
NO-TILL CORN IN ALFALFA SOD ⁷	2,4-D + Banvel 1 qt + 0.5 pt	Apply in Sept. or April-May to alfalfa with 4" new growth. Avoid tillage for 5 days	Will control alfalfa. For annual weed con- trol 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 \$5.25.
NO-TILL CORN IN RYE OR WINTER WHEAT ⁷	AAtrex 4L ³ + Paraquat CL ⁸ 2-3 qt + 1-2 pt	Preemergence or pre- plant for slot plant- ers. Preemergence for planters with sweeps or furrow openers. Apply when rye and wheat are more than 4" tall	Apply before corn emerges. Approx. cost \$11.75 to \$19.70.
NO-TILL CONTINUOUS CORN	AAtrex/Atrazine 4L ³ 2-3 qt Bicep 4.5L 3 qt Dual + Atrazine 4L ³ 2 pt + 1.6 qt Lasso + Atrazine 4L ³ 2 qt + 1.6 qt Bladex 4L ³ 3-4 qt	Preemergence or pre- plant for slot plant- ers. Preemerg- ence for planters with sweeps or furrow openers	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. Approx. cost w/o Paraquat: AAtrex/Atrazine--\$5.60 to \$8.40; Bicep--\$15.00; Dual + Atrazine-- \$14.30; Lasso + Atrazine--\$14.30; Bladex-- \$12.90 to \$17.20.
NO-TILL CONTINUOUS SORGHUM (PLANTED INTO PREVIOUS CROP RESIDUE)	Atrazine 4L ³ + Paraquat CL ⁸ 1.6-2.4 qt + 1-2 pt	Preemergence or pre- plant for slot plant- ers. Preemergence for planters with sweeps or furrow openers	Avoid sandy soils, eroded soils and soils with pH greater than 7.2. Approx. cost \$9.85 to \$18.00.
	Bladex 80W 2-2.5 lb	30 to 45 days pre- plant	Add Paraquat CL ⁸ at 1-2 pt or 2,4-D LV ester at 1 pt if emerged weeds are present. For volunteer corn or sorghum control use Round- up prior to planting. Approx. cost w/o Paraquat \$6.90 to \$12.10.
	Bladex 80W 3-3.5 lb	45 days or more preplant	
	Dual + Atrazine 4L ³ + Paraquat CL ⁸ 1.5-2 pt + 1-2 qt + 1-2 pt Bicep 4.5L + Paraquat CL ⁸ 2.4-3.2 qt + 1-2 pt	Preemergence or pre- plant for slot plant- ers. Preemergence for planters with sweeps or furrow openers	Seed must be treated with Concep to protect from Dual & Bicep injury. Atrazine and Bicep will damage sorghum on sandy and low organic matter soils. Approx. cost: Dual + Atrazine + Paraquat--\$14.40 to \$23.90; Bicep + Paraquat--\$17.65 to \$27.30.
	Igran 80W + AAtrex 4L ³ 2-2.5 lb + 1.5-2 pt	Preemergence or pre- plant for slot plant- ers. Preemergence for planters with sweeps or furrow openers	If grasses are in 3-5 leaf stage add 1-2 pt Paraquat CL ⁸ . Approx. cost w/o Paraquat \$10.95 to \$13.90.

(Continued on next page)

³Additional formulations are available. Use rates that give comparable amounts of active ingredient:

1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-O

1 qt Bladex 4L = 1.25 lb Bladex 80W

⁷Irrigated conditions or eastern Nebraska.

⁸Add X-77 spreader 2 pt per 100 gal spray solution.

Reduced Tillage Systems-Ecofarming-(continued)

Situation	Herbicide and Rate Per Acre	Application Time	Remarks and Approximate Cost/A Broadcast
NO-TILL SOYBEANS (Planted into previous crop residue)	Lasso 4 pt or Dual 2 pt or Prowl 2 pt or Surflan AS 2 pt + Sencor/Lexone 4L ³ 0.75 pt + Paraquat CL ⁸ 1-2 pt	Preemergence or preplant for slot planters. Pre- emergence for plant- ers with sweeps or furrow openers	Atrazine residue from previous crop could cause soybean injury. Approx. cost: Lasso + Sencor/Lexone + Paraquat--\$24.55 to \$30.20; Dual + Sencor/Lexone + Paraquat--\$24.55 to \$30.20; Prowl + Sencor/Lexone + Paraquat-- \$23.35 to \$28.90; Surflan + Sencor/Lexone + Paraquat--\$27.95 to \$33.60.
NO-TILL CONTINUOUS WINTER WHEAT	Bladex 80W 2-3 lb	60 days prior to planting	If grasses are present add Paraquat CL ⁸ at 1-2 pt/A. If only broadleaf weeds are present add 1 qt/A 2,4-D LV ester. If volunteer wheat develops later treat with Roundup. Approx. cost \$6.90 to \$10.50.
	Paraquat CL ⁸ + X-77 1-2 pt Roundup + X-77 0.5-1 pt + 4 oz	Postemergence two or more applica- tions	Use only when volunteer wheat is the principal weed. Apply Roundup in 5 gallons of water per acre. To facilitate drilling stubble should be no taller than 12" with excess removed from field after harvest. Approx. cost: Paraquat--\$5.65 to \$11.30; Roundup--\$4.60 to \$9.20.
WHEAT-ECOFALLOW-WHEAT ⁹ WHEAT SEEDED 10-14 MONTHS LATER	Atrazine 4L ³ 1-2 pt Use lower rate on soils below 1% OM or on calcareous soils	July-September 1	Add 1 qt/A 2,4-D ester to improve grass and broadleaf weed control. Use sweep plow if grass weeds or volunteer wheat are not controlled. Avoid terraced fields, Canyon and Rosebud soils, and caliche out- croppings. Approx. cost w/o 2,4-D: Atrazine--\$1.40 to \$2.80; Bladex + Atrazine-- \$8.60 to \$10.90.
Use where stubble is weed free after harvest	Bladex 80W + Atrazine 4L ³ 2-2.5 lb + 1.2-1.6 pt	July-November 15	
For use where weeds are present in stubble after harvest	Atrazine 4L ³ + Paraquat CL ^{8,10} 1-2 pt + 1-2 pt Igran 80W + AAtrex 4L ^{3,8} 2-2.5 lb + 1-2 pt	July-September 1	Spray before weeds produce seed. If grasses or volunteer wheat recover use sweep plow. Add 1 qt 2,4-D ester to Igran + Atrazine to improve control of emerged grass and broad- leaf weeds. Avoid terraced fields, Canyon and Rosebud soils, and caliche outcroppings. Approx. cost: Atrazine + Paraquat--\$7.05 to \$14.10; Igran + AAtrex--\$10.25 to \$13.90.
Sweep plow wheat stubble after harvest	Bladex 80W 3.5-4.5 lb Use higher rate on fine textured soils	September-November	If volunteer wheat, downy brome, or jointed goatgrass are present add Paraquat ⁸ + X-77 at 1 pt/A. Approx. cost \$12.08 to \$15.55.
WHEAT-ECOFALLOW-WHEAT ⁹ WHEAT SEEDED 4-5 MONTHS LATER	Bladex 80W + Paraquat CL ⁸ 2.5- 3.5 lb + 1-2 pt	March-April 15 or before boot stage of weeds	Do not use on undercut stubble. Use higher rates on fine textured soils. Controls volunteer wheat, downy brome, jointed goat- grass and broadleaf weeds. Approx. cost \$17.75 to \$23.40.
	Roundup + X-77 0.5-1 pt + 4 oz	Postemergence-April	Apply to vigorously growing volunteer wheat and downy brome. Apply in 5 gal. of water per acre. Use the lower rate on downy brome. Has no preemergence activity. Do not mix with other herbicides. Approx. cost \$4.60 to \$9.20.
	2,4-D LV ester + Banvel 1 qt + 0.5 pt	May-July	Broadleaf weed control only. Do not plant small grains for 15 days after treatment. Approx. cost \$5.95.

(Continued next page)

³ Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-0

1 pt Sencor or Lexone 4L = 1 lb 50W or 0.67 lb Lexone DF or Sencor DF

⁸ Add X-77 spreader 2 pt 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-Ecofarming-(continued)

Situation	Herbicide and Rate Per Acre	Application Time	Remarks and Approximate Cost/A Broadcast
WHEAT-ECOFALLOW-CORN OR SORGHUM Spray small grain stubble after harvest. Plant corn or sorghum following spring. <i>WARNING...High atrazine rates may carry over and destroy wheat on eroded areas and terraces.</i>	Atrazine 4L 2-3 qt ³ Use higher rates on fine tex- tured soils in July and August and on soils below 6.5 pH	July through November	1.5 qt/A 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. Approx. cost \$5.60 to \$8.40.
	Atrazine 4L ³ + Paraquat CL ⁸ 2-3 qt + 1-2 pt Igran 80W + AAtrex 4L ³ 2-2.5 lb + 2-3 qt	July through November	Spray before weeds produce seeds. If grasses such as barnyardgrass recover use sweep plow before weed seeds develop. Approx. cost: Atrazine + Paraquat--\$11.25 to \$16.90; Igran + AAtrex--\$14.45 to \$19.50.
WHEAT-ECOFALLOW-CORN CORN PLANTED IN WHEAT STUBBLE TREATED WITH AATREX AFTER HARVEST	Bladex 80W 1.5-2 lb ^{11,12}	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	Do not use on sands and loamy sands with less than 1% OM. Approx. cost \$5.20 to \$6.90.
	Dual 2.5-3 pt ^{11,12} Dual + AAtrex 4L ³ 2 pt + 1 qt ^{11,12,13} Lasso 2.5-3 qt ^{11,12} Lasso + AAtrex 4L ³ 2 qt + 1 qt ^{11,12,13}	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	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 combina- tion treatments if the maximum AAtrex rate was used previous year and increase Dual or Lasso rate 25-50%. Approx. cost: Dual-- \$12.25 to \$14.70; Dual + AAtrex--\$12.60; Lasso--\$12.50 to \$14.70; Lasso + AAtrex-- \$12.60.
WHEAT-ECOFALLOW-SORGHUM Sorghum planted in wheat stubble treated with AAtrex/Atrazine after harvest	Bladex 80W 2-2.5 lb	30 to 45 days preplant	Add Paraquat CL ⁸ at 1-2 pt or 2,4-D ester at 1 pt if there are emerged weeds. Approx. cost w/o Paraquat or 2,4-D \$6.90 to \$11.90.
	Bladex 80W 3-3.5 lb	45 or more days preplant	
	Dual 8E 1.5-2 pt ^{11,12} Dual 8E + AAtrex 4L ^{11,12,13} 1.5-2 pt + 2 pt	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	Add Paraquat CL ⁸ at 1-2 pt if emerged weeds are present. Seed must be treated with Concep. Approx. cost: Dual--\$7.35 to \$9.80; Dual + AAtrex--\$10.15 to \$12.60.
	Igran 80W + AAtrex 80W ^{11,12,13} 2 + 1 lb	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	Igran will kill or injure emerged sorghum. Use on loam or finer textured soils. Do not use on soils with less than 1.6% OM and pH greater than 7.4. Approx. cost for Igran + AAtrex--\$11.00.
	Igran 80W 2-2.5 lb ^{11,12}	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	Igran will kill or injure emerged sorghum. Use on loam and finer textured soils. Do not use on soils with less than 1.0% OM and pH greater than 7.4. Approx. cost \$8.86 to \$11.10.

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³Additional formulations are available. Use rates that give comparable amounts of active ingredient:
1 qt AAtrex or Atrazine 4L = 1.25 lb AAtrex or Atrazine 80W or 1.1 lb AAtrex Nine-O

⁸Add X-77 spreader 2 pt per 100 gal spray solution.

¹¹If seedling (3-leaf) grass or volunteer wheat are present at planting, add Paraquat at 1 pt/A + X-77 to mixtures or prepare a shallow seedbed with tillage. Paraquat may not kill grasses more than 4" tall. Crop oil at 1 gpa 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 one week before planting or immediately after planting but before crop emergence. Do not mix Roundup with other herbicides.

¹²If Russian thistle is present the addition of 0.5 to 1 pt 2,4-D improves control.

¹³AAtrex/Atrazine carry over 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 of 80W or 3 qt 4L.

Reduced Tillage Systems-Ecofarming-(continued)

Situation	Herbicide and Rate Per Acre	Application Time	Remarks and Approximate Cost/A Broadcast
WINTER WHEAT-ECOFALLOW SOYBEANS Spray wheat stubble after harvest. Plant soybeans following spring	Lexone/Sencor 4L + 2,4-D 2 pt + 1 qt	July	Add Paraquat to Lexone/Sencor if weeds are larger than 6 inches. Volunteer wheat may emerge in fall or spring. Control volun- teer wheat in spring or fall with Roundup. Approx. cost w/o Paraquat \$26.70.
SOYBEANS Planted into wheat stubble treated with Lexone/Sencor 10 months previously	Dual + Sencor/Lexone 2 pt + 0.75 pt <hr/> Prowl + Sencor/Lexone 2 pt + 0.75 pt <hr/> Surflan + Sencor/Lexone 2 pt + 0.75 pt <hr/> Lasso + Sencor/Lexone 2 qt + 0.75 pt	Preemergence or pre- plant for slot planters. Preemerg- ence for planters with sweeps or furrow openers	Add Paraquat CL ⁸ at 1-2 pt if there are emerged weeds. Russian thistle, sunflower, and velvetleaf may be difficult to control. Follow Sencor/Lexone label for soil type. Substitute Lorox for Sencor/Lexone if there is atrazine carry over. If planter is equipped with sweeps or furrow openers do not apply before planting. Approx. cost w/o Paraquat: Dual + Sencor/Lexone--\$18.90; Lasso + Sencor/Lexone--\$17.60; Surflan + Sencor/ Lexone--\$22.30.

⁸Add X-77 spreader 2 pt per 100 gal spray solution.

Herbicide Dictionary

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

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

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

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

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, Cyntrol and Weedazol.

Amitrol-T--Amitrole + ammonium thiocyanate. Union
Carbide.

Amizine (amitrole + simazine)--A combination of
amitrole and simazine providing post- and pre-
emergence weed control in tree plantings and
noncrop areas. Union Carbide.

Ammate (ammonium sulfamate)--A nonselective post-
emergence herbicide especially effective on woody
plants. DuPont.

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

Aquathol (endothall)--An aquatic herbicide for use
in still water. Pennwalt.

Aquazine (simazine)--An aquatic herbicide for use in
still water. Ciba-Geigy.

Atrazine--A preplant, preemergence and postemergence
s-triazine herbicide for the control of broadleaf
and certain grass weeds in corn, sorghum and range-
land. 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.

Banvel II (dicamba)--Na salt of dicamba with reduced
volatility. Contains 2 lb dicamba per gallon rather
than 4 lb per gallon in regular Banvel. 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". BASF-Wyandotte.

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

Betamix (phenmedipham + desmedipham)--A prepackaged
combination of Betanal + Betanex for postemergence
broadleaf weed control in sugarbeets. Nor-Am.

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

Herbicide Dictionary--(continued)

- Betanex (desmedipham)--Used postemergence for redroot pigweed control in sugarbeets. Nor-Am.
- Benzac (2,3,6-TBA)--Primarily for perennial broadleaf weed control in noncropland. Union Carbide.
- 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 planted with Concep treated seed. 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. Rohm & Haas.
- Brominal (bromoxynil)--A contact herbicide for selective control of broadleaf weeds in small grain. Union Carbide.
- Brominal plus--A combination of bromoxynil and MCPA for use in small grain. Union Carbide.
- Bronate--Similar to Brominal plus. Rhone-Poulenc.
- Bronco (alachlor + glyphosate)--A prepackaged combination of Lasso + Roundup for use in no-till corn and soybeans. Monsanto.
- Bucril (bromoxynil)--Similar to Brominal. Rhone-Poulenc.
- Butoxone (2,4-DB)--For selective control of cocklebur in soybeans and some small broadleaf weeds in seedling alfalfa. Rhone-Poulenc.
- Butyrac (2,4-DB)--Similar to Butoxone. Union Carbide.
- Carbyne (barban)--Used for wild oat control in spring small grain. Velsicol.
- 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.
- Chlorate-3 (sodium chlorate)--Used as a sorghum desiccant. Platte Chemical.
- 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 dinitro-aniline herbicides. U.S. Borax.
- Concep (cyoxmetrinil)--A protectant applied to sorghum seed to prevent Dual injury. Ciba-Geigy.
- Copper Sulphate (copper sulphate)--Available as copper sulphate crystals or in chelated form for algae control in moving and still water. Several brand names.
- 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 pre-emergence 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, sorghum 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 Company.
- Endothall (endothall)--A herbicide registered for pre-emergence 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.
- Eradicane Extra (EPTC + R-25788 antidote + R-33865 extender)--The extender restores Eradicane performance on soils with an Eradicane history. 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.
- Fusilade (PP-009)--A nonselective postemergence grass control herbicide under development. ICI
- Garlon (Dowco 233)--Postemergence herbicide for woody plant control on rights-of-way. Dow.
- Glean (chlorsulfuron)--A pre- and postemergence broadleaf herbicide being developed for small grains. DuPont.
- Goal (oxyfluorfen)--A preemergence herbicide for weed control in soybeans and nursery stock. Rohm & Haas.
- Herbicide 273 (endothall)--A postemergence sugarbeet herbicide especially effective against broadleaf weeds. Pennwalt.

Herbicide Dictionary--(continued)

- Hoelon (dichlofop)--A postemergence herbicide for grass control in soybeans. 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 carry over. 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)--Used for preemergence and early post-emergence weed control in alfalfa. Rohm & Haas.
- Klean Krop--Naptalam + dinoseb. 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 (fosamine)--A water soluble brush control agent that can be used on noncropland areas adjacent to water. DuPont.
- Krovar--A combination of Hyvar and Karmex. DuPont.
- Kuron (silvex)--Trade name for silvex. Dow.
- Laddok (bentazon + atrazine)--A combination of Basagran + atrazine used for postemergence broadleaf weed control in corn. BASF-Wyandotte.
- Lasso (alachlor)--Used preplant and preemergence for annual grass and some broadleaf weed control in corn, soybeans and fieldbeans. Monsanto.
- Lasso-Atrazine Flowable (alachlor + atrazine)--A prepackaged combination of Lasso and atrazine for preemergence use in corn. Ciba-Geigy.
- Leafex-3 (sodium chlorate)--Used as a sorghum desiccant. Occidental.
- Lexone--Trade name for metribuzin. DuPont.
- Lorox (linuron)--Used primarily preemergence for broadleaf weed control in corn, sorghum and soybeans. DuPont.
- Maloran (chlorbromuron)--A substituted urea used pre-emergence for broadleaf weed control in soybeans and corn. Similar to Lorox. Recently discontinued. Ciba-Geigy.
- MCPA--A phenoxy herbicide similar to 2,4-D but safer on oats and legumes. Often used in combination. Many trade names. Dow, Union Carbide, Rhone-Poulenc.
- Metribuzin--Used for annual broadleaf weeds in soybeans, alfalfa, potatoes and winter wheat, often used in combinations. Trade names - Lexone and Sencor. DuPont, Mobay.
- Milocep (metolachlor + propazine)--A combination of Dual + Milogard for use on sorghum planted with Concep treated seed. 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. Rhone-Poulenc.
- 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 noncropland. Occidental.
- MSMA (monosodium methanearsonate)--Used for selective crab-grass control in turf and for the control of many weeds including johnsongrass in noncrop areas. Union Carbide, Vineland.
- Nortron (ethofumesate)--A preemergence or preplant incorporated herbicide for sugarbeets. Fisons.
- Oust--A noncropland herbicide. DuPont.
- Paraquat CL (paraquat)--A nonselective contact herbicide registered for several no-till uses, soybean and sunflower desiccation and for noncropland. Chevron.
- Phytar (cacodylic acid)--Nonselective contact herbicide used for weed control on noncropland.
- Poast (sethoxydim)--A postemergence grass control herbicide being developed for soybeans. BASF Wyandotte.
- 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.
- 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.
- 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 preplant 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.
- Radox (CDAA)--A preemergence grass herbicide for corn, sorghum and soybeans grown for seed. Radox T for use on corn only, combines Radox with TCBC for improved broadleaf weed control. Monsanto.

Herbicide Dictionary--(continued)

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 nursery stock and turf. Rhone-Poulenc.

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.

Screen--A protectant being developed for application to sorghum seed to prevent Lasso injury. Monsanto.

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 resistant to 2,4-D. Union Carbide, 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.

SULV (2,4-D amine)--A 4 lb per gallon 2,4-D amine registered for aerial application undiluted or by ground equipment in 3 to 5 gallons of water. Registered for use in grazingland. Thompson-Hayward.

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

Surpass (vernolate + R-25788 antitode)--Vernam plus a safener registered for preplant incorporated grass control in corn. Stauffer.

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 noncrop areas. Many trade names. Union Carbide, Dow.

Tackle (aciflurofen)--A postemergence herbicide for broadleaf weed control in soybeans under development. Rhone-Poulenc.

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. Discontinued. DuPont.

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 nonselective control of perennial broadleaf weeds in noncropland. DuPont.

Velpar (hexazinone)--Used for nonselective postemergence weed control on noncropland 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 Company.

Weedazol--Trade name for amitrole. Union Carbide.

Notes

Weed Science Publications

Toxic Plants and Mushrooms - Misc. Pub.
 Lawn Weeds - NC Regional Pub. No. 26
 Weed Control in Trees - G73-33
 Hay Fever Plants - EC77-199
 Weed Control in Gardens - G79-444
 Vine Weeds - NC Regional Pub. No. 33
 Major Nebraska Thistles - SB493
 Musk Thistle - EC76-160
 Common Milkweed - G77-384
 Field Sandbur Control in Corn - G74-121
 Jointed Goatgrass - G75-210
 Shattercane-What To Do About It - G74-122
 Know and Control Downy Brome - G78-422
 Sagebrush Control - G80-510
 Canada Thistle Control - G80-509
 Blue Mustard Control - G74-92
 Hemp Dogbane - G75-156
 Soybean Weed Control - EC74-198
 Weed Control in Alfalfa - G75-220
 Broadleaf Weed Control in Wheat - G74-120
 Weed Control in Grain Sorghum - G74-137
 Weed Control in Minimum Tillage Corn - G74-123
 No-Till Corn in Alfalfa Sod - G74-131
 Right Crop Stage for Herbicide Use--Alfalfa, Sugar-beets, Soybeans and Fieldbeans - G78-390

Right Crop Stage for Herbicide Use--Corn, Sorghum, Small Grains - G77-382
 Factors That Make Herbicides Work - G76-272
 Herbicide Carryover - G74-180
 Close Drilled Soybeans - G77-329
 Applying Herbicides in Irrigation Water - G77-356
 Test for Atrazine Carryover - G74-113
 Broadcast or Band Herbicides - G76-294
 Calibrating a Sprayer - G77-370
 Herbicides and Soils - G74-160
 Herbicide-Fertilizer Combinations - G74-164
 Surfactants and Herbicides - G76-295
 Weed Control Along Irrigation Pipe and Ditchbanks - G78-420
 Constructing a Pipewick Applicator - G81-555
 Using Pipewick and Other Selective Applicators - G81-562
 Ecofarming-Management of Atrazine Carry Over in Ecofallow - G81-570
 Ecofarming-Fallow Aids in Winter Wheat Fallow Rotations - G81-546
 Ecofarming-Spring Row Crop Planting and Weed Control in Winter Wheat Stubble - G81-551
 Ecofarming-Selection of Sprayers - G80-500
 Ecofarming-Floaters for Herbicide Application - G81-550
 Disposal of Excess Pesticides - G79-473

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 1 quart of household ammonia to 25 gallons 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

Acre To 1000 Square Feet

1. Known Facts and Assumptions:

1 acre = 43,560 sq ft
 1 pt = 16 oz; 1 qt = 32 oz
 1 oz = 2 tablespoons = 6 teaspoons
 Herbicide rate per acre from bulletin or label
 Hand sprayers apply about 1 gal per 1000 sq ft

2. Convert Herbicide Rate Per Acre to Ounces:

For example, 2 qt per acre = 64 oz

3. Convert 64 oz Per Acre to oz Per 1000 sq ft:

64 ÷ 43 = 1.50 oz or 3 tablespoons per 1000 sq ft

4. Add 3 tablespoons of the product to 1 gal of water and apply uniformly to 1000 sq ft

NOTE: Wettable powder herbicide rates would be determined by the same procedure; however, since volume or density of wettable powder herbicides varies, the calculated rate per 1000 sq ft should be carefully measured by weighing on a precision scale.

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
A	acres	0.4	hectares	ha
ha	hectares	2.5	acres	A