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EC60-130 Chemicals that Control Weeds

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Chemicals that Control Weeds

— a guide for 1960

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by
O. C. Burnside, J. D. Furrer, M. K. McCarty
and R. W. Bovey

This leaflet gives suggestions for weed control based on research results at the Nebraska Agricultural Experiment Station and elsewhere. We have listed what we believe to be the most effective weed killers, and their recommended rates and times of application.

Also included is a section on desiccants, or chemicals used to dry crops and weeds in the field. Their use permits earlier harvest.

It is hazardous to use agricultural chemicals for purposes other than those specified by the approved label on the container. The Federal Food, Drug and Cosmetic Act, as amended, authorizes the seizure of any raw agricultural commodity moving in interstate commerce which carries a pesticide residue in excess of the established tolerance. Read the label carefully. Observe the precautions shown on the label when handling any chemical.

Because of the danger of drift, any user of an agricultural chemical must exercise judgment when spraying. Do not spray on a windy day. Wind may cause poor coverage and excessive drift.

Extension Service
University of Nebraska College of Agriculture
and U. S. Department of Agriculture
Cooperating
W. V. Lambert, Director
E. W. Janike, Associate Director

FIELD CROPS

Crop	Herbicide	Lbs active ingredient[1] needed per acre	Apply this amount commercial product	Application time	Remarks
Corn	Atrazine	2 to 3	2.5 to 3.75 lb 80% material	Pre-emergence[2]	Use lighter rate on sandy soils. A 13" band application will reduce the total herbicide used by two-thirds. Granular material also available.
	2,4-D ester	1 to 2	1 to 2 qt[3]		
	CDAA	5 to 6	5 to 6 qt Randox		
	CDAA and 2,4-D ester	4 and 1	4 qt Randox and 1 qt 2,4-D[3]		
	2,4-D amine 2,4-D ester	½ to 1 ¼ to ½	1 to 2 pt[3] ½ to 1 pt[3]	Before corn is 18" high	Later applications may cause brittleness and stalk breakage. Use lower rate when good growing conditions exist.
Sorghum	CDAA	5 to 6	5 to 6 qt Randox	Pre-emergence	Band applications reduce herbicide cost. Granualr material also available.
	2,4-D amine 2,4-D ester	½ ¼	1 pt[3] ½ pt[3]	During the period sorghum is 4 to 12 inches high	Spraying before 4" stage may inhibit root development, and spraying during 13" stage through early boot stage may inhibit head development.
Soybeans	CDAA	5 to 6	5 to 6 qt Randox	Pre-emergence	Band applications reduce herbicide cost. Granular material also available.
Wheat	2,4-D amine 2,4-D ester	½ to ¾ ¼ to ½	1 to 1½ pt[3] ½ to 1 pt[3]	5-leaf to early boot	Do not treat winter wheat in the fall.
Oats	2,4-D amine	½	1 pt[3]	6-leaf to flag leaf	Some injury may be expected at any stage.
Barley	2,4-D amine 2,4-D ester	½ to ¾ ¼ to ½	1 to 1½ pt[3] ½ to 1 pt[3]	5-leaf to early boot	Do not treat winter barley in the fall.
Alfalfa, red clover and birdsfoot trefoil seedlings	EPTC	3	2 qt liquid or 15 lb 20% granular Eptam	Pre-emergence	Incorporate into the soil. Do not graze forage within 60 days of treatment.
	dalapon	2 to 3	2½ to 3¾ lb 75% Dowpon	2 to 3 weeks after alfalfa emerges	Do not use on red clover. For annual grasses. Do not use treated forage for feed.
	4-(2,4-DB)	1	2 qt 2 lb/gal Butoxone or Butyrac	When weeds are small	For broadleaf weeds. May be mixed with dalapon. Do not use treated forage for feed.
Alfalfa, established	4-(2,4-DB)	1	2 qt 2 lb/gal Butoxone or Butyrac	When weeds are small	For broadleaf weeds in seed fields.
	dalapon	3	3¾ lb 74% Dowpon	When grasses are small or following first cutting	For annual grass control in seed fields only.
Cool-season grass seedlings	2,4-D amine or ester	½ to ¾	1 to 1½ pt[3]	2- to 4-leaf stage	For broadleaf weeds.
Warm-season grass seedlings	2,4-D amine or ester	¼ to ½	½ to 1 pt[3]		
Established, warm-season native grasses	monuron or diuron	2 to 3	2.5 to 3.75 lbs Karmex or Telvar	Spring or fall	For seed fields only.

PASTURES, RANGES, AND NON-CROP LANDS

Area or use	Herbicide	Lbs active ingredient[1] needed per acre	Apply this amount commercial product	Application time	Remarks
Annual broadleaf weeds in pastures and ranges	2,4-D amine or ester	1	1 qt[3]	When weeds are small	Apply in April for pennycress and other mustards.
Perennial broadleaf weeds in pastures and ranges	2,4-D amine or ester	1 to 1½	1 to 1½ qt[3]	At bud stage of predominant weeds	Annual treatment for 2 to 3 years may be necessary.
Fence rows and roadsides (broadleaf weeds)	2,4-D amine or ester	1	1 qt[3]	Weed height 2 to 4 inches	Repeat treatments may be necessary. Add 1 lb/acre of 2,4,5-T for wild rose and horse nettle.
Buckbrush	2,4-D ester	1 to 2	1 to 2 qt[3]	Full foliage (May 10 to 25)	Aerial equipment: apply chemical in 2 to 5 gal diesel/A. Ground equipment: use sufficient water to insure good coverage.
Russian olive	Silvex	1	1 qt 2,4,5-TP[3]	Full foliage (June)	Aerial equipment: 7 qt oil plus 3 gal water/A.
Cottonwood	2,4-D ester	2 to 4	2 to 4 qt[3]	Full foliage (early June)	Aerial equipment: at least 5 gal diesel/A. Basal treatment: 2 qt of 2,4-D ester/10 gal of diesel. Spray tree trunk to point of run-off.
Poison ivy	amitrol		2 tbs Amino Triazole or Weedazol/gal water	Full foliage (June)	Thoroughly wet all vegetation.
	2,4,5-T or 2,4-D + 2,4,5-T		2 tbs[3] per gallon water		
	ammonium sulfamate		¾ lb Ammate X/gal water		
Sagebrush (sand or green)	2,4-D ester	1	1 qt[3]	4 to 8 inches new growth (June)	Same as for buckbrush.
Willows	2,4-D ester	2	2 qt[3]	Full foliage (June)	Same as for buckbrush.
Irrigation ditchbanks	monuron or diuron	10 to 12	12.5 to 15 lb Karmex or Telvar	Soon after ditches are open	Use enough water to insure good coverage. Use screens of 50 mesh or larger.
	2,4-D ester and dalapon	1 and 10	1 qt 2,4-D[3] and 14 lb 74% Dowpon	Weed height 2 to 4 inches	Repeat applications may be necessary.
	simazine	8	10 lb Simazine 80W	Before weeds appear or soon thereafter	Use enough water to insure good coverage.
Drives, storage areas, etc.	erbon monuron diuron simazine borate chlorate	Follow manufacturer's recommendations	Novon, Karmex, Telvar, Ureabor, Chlorax, Chlorea, Polybor-Chlorate, Simazine, Urox, etc.	Follow label directions	Consider possible damage to nearby trees and shrubs and possible movement of sterilant with runoff water.
Soil sterilant	borate	8 to 12 lb/sq rd	12 to 18 lb Concentrated Borascu	Spring or fall	Complete control of annuals, biennials, and most perennials.
	borate-chlorate mixture	6 to 8 lb/sq rd	8 to 10 lb Polybor-chlorate or Atlacide		
	diuron or monuron	40 to 80	50 to 100 lb Telvar or Karmex		
	simazine	20 to 30	25 to 37 lb Simazine 80W		
	sodium chlorate	4 to 6 lb/sq rd	4 to 6 lb		
	borate-monuron mixture	4 to 6 lb/sq rd	4 to 6 lb Ureabor		
	erbon	40 to 80	10 to 20 gal 4 lb/gal Novon or Baron	Spring or fall	Controls annuals and shallow rooted perennials.

[1] Refers to acid equivalent, phenol equivalent, or active ingredient as applicable.
[2] Refers to a herbicide treatment made from planting to prior to crop emergence.
[3] Calculated on the basis of 4 lb/gal material.

TROUBLESOME WEEDS

Weed	Herbicide	Lbs active ingredient[1] needed per acre	Apply this amount commercial product	Application time	Remarks
Field bindweed	2,4-D amine or ester	1	1 qt[3]	Bud stage in spring or on vigorous fall growth	Avoid tillage 10 to 12 weeks before and one week after application. Repeat treatment when necessary.
	sodium chlorate	6 lb/sq rd	6 lb	Fall or spring	Good soil moisture necessary. Observe safety precautions.
	borate-chlorate mixtures	7½ lb/sq rd	10 lb	Fall or spring	Good soil moisture necessary.
	2,3,6-TBA (Benzoic acid)	20	1½ lb/sq rd Benzabor or ½ pt/sq rd Benzac 1281 or Trysben 200	Fall or spring	Do not disturb areas. Fall application more effective.
	PBA (Benzoic acid)	40	10 gal/A or ½ pt/sq rd of 4 lb/gal polychlorobenzoic acid	Fall or spring	Same as for 2,3,6-TBA.
Canada thistle	2,4-D amine or ester	2	2 qt[3]	Spring (early bud) or fall (rosette)	Repeat treatment when necessary.
	amitrol	4 to 6	8 to 12 lb Amino Triazole or Weedazol	Before bloom	Use enough water to insure good coverage.
(Sodium chlorate, borate-chlorate mixture, 2,3,6-TBA, and PBA as listed above for field bindweed control.)					
Leafy spurge	2,4-D ester	2	2 qt[3]	Early bud stage	Repeat treatment when necessary.
	borax	6 to 8 lb/sq rd	10 to 12 lb Concentrated Borascu	Spring or fall	Less effective on high lime soils. Good soil moisture necessary.
	borate-chlorate mixture	6 lb/sq rd	8 lb	Spring or fall	Good soil moisture necessary.
	sodium chlorate	6 lb/sq rd	6 lb	Spring or fall	Good soil moisture necessary.
	erbon	½ to 1 lb/sq rd	1 to 2 pt Novon or Baron[3]	Spring	Use enough water to insure good coverage.
	borate-2,4-D mixture	4 lb/sq rd	4 lb DB Granular	Late fall	Soil temperature below 50°.
Hoarycress (perennial peppergrass)	2,4-D ester	2 to 4	½ to 1 gal[3]	Early bud in spring or rosette stage in the fall	Repeat treatment may be necessary.
(Sodium chlorate and borate-chlorate mixtures as suggested for field bindweed control.)					
Russian knapweed	2,4-D ester	2	2 qt[3]	Early bud stage	Repeat treatment when necessary.
	erbon	½ to 1 lb/sq rd	1 to 2 pt Baron or Novon[3]	Early in season	Use enough water to insure good coverage.
(Soil sterilants as listed above for field bindweed but double benzoic acid rates.)					
Bur ragweed	2,4-D ester	2	2 qt[3]	During June	If soil moisture conditions are poor, use oil-water emulsions as a carrier.
	erbon	1 lb/sq rd	1 qt Baron or Novon[3]	Early in season	Use enough water to insure good coverage.
(Sodium chlorate, borate materials, and benzoic acids as listed under field bindweed.)					
Nodding or musk thistle	2,4-D amine or ester	1	1 qt[3]	Spring before flowering stalks lengthen	Fall treatment of rosettes also effective.
Puncture vine	2,4-D ester	1	1 qt[3]	Pre-bud stage	Resistant to 2,4-D after burs form.
	oils	1 gal/sq rd	Diesel fuel, kerosene, etc.	Throughout season	Thoroughly wet all plants.
Johnsongrass	TCA	80	100 lb 90% Sodium TCA	Late fall or early spring	Use enough water to insure good coverage.
	dalapon	40	54 lb 74% Dowpon	10 inches tall	Use enough water to insure good coverage.
	erbon	½ lb/sq rd	1 pt Novon or Baron[3]	Early spring	Use enough water to insure good coverage.
	sodium chlorate	6 lb/sq rd	6 lb	Early spring or late fall	Good soil moisture necessary.
Tanweed	2,4-D ester	1	1 qt[3]	When growing vigorously	Controls top growth principally.
(Sodium chlorate, borate-chlorate mixtures, and benzoic acids as suggested for field bindweed.)					
Milkweed	amitrol	8	16 lb Amino Triazole or Weedazol	Bud to bloom stage	Use enough water to insure good coverage.

LAWN AND TURF WEEDS

Weed	Herbicide	Lbs active ingredient[1] needed per acre	Apply this amount commercial product	Application time	Remarks
Broadleaf weeds such as dandelion, ragweed, field bindweed, and plantain	2,4-D amine	1	2 tbs[3] per gallon of water per 1000 sq ft	Spring, summer, or fall	Avoid drift on desirable broadleafs.
Chickweed, henbit violets, and knotweed	silvex (2,4,5-TP)	Follow container recommendations		Spring or fall	Use enough water to insure good coverage.
White clover	2,4,5-T or silvex	Follow container recommendations		Spring or fall	Repeat treatments may be necessary.
Crabgrass	AMA or DMA (organic arsenics, e.g., Sodar)	Follow container recommendations		After emergence	Repeat treatment every 7 days for 2 to 3 applications. Also appears to be effective on foxtail. Poisonous.
	PMA	¾	3 oz of 10% material/1000 sq ft	2 to 4 leaves on crabgrass	Repeat treatment every 7 days for 3 applications. Also controls certain diseases. Poisonous.
	kerosene		1 qt/100 sq ft	2 to 4 leaves on crabgrass	Use water-white kerosene. Do not dilute. Apply when temperature is below 90° F.
Crabgrass, foxtail, and other annual grasses	arsenicals	3 to 5 lb metalic arsenic/1000 sq ft	12 lb calcium arsenate, 24 lb lead arsenate, or 25 lb Pax	Pre-emergence (early spring before weeds germinate or late fall)	Also controls certain insects. Use only on established grass. Poisonous.
Nimblewill	dalapon	¼ lb/gal water	⅓ lb 74% Dowpon	When growing vigorously	Thoroughly wet all plants. Kills all grass. Reseed or resod in 4 to 6 weeks.

PRE-HARVEST DESICCANTS FOR SEED CROPS

Seed crop	Chemical	Lbs. active ingredient[1] needed per acre	Apply this amount commercial product	Application time	Remarks
Legumes for seed: alfalfa, red clover, and sweetclover	DNBP or DNAP	1¼ to 2	3 to 5 pt of 3 lb/gal dinitro	After most of the seed pods have turned brown	Aerial equipment: apply chemical in 5 to 10 gal diesel/A. Dinitro compounds are poisonous, so treated foliage or seed must not be fed.
	PCP (Penta)	4 to 6	4 to 6 qt 40% pentachlorophenol	After most of the seed pods have turned brown	Same as above.
	endothal	4 to 6	4 to 6 qt of 4 lb/gal material	After most of the seed pods have turned brown	Less effective than DNBP, DNAP, or PCP except at temperatures below 60° F.
Grain sorghum for seed	DNBP or DNAP	1¼ to 2	3 to 5 pt 3 lb/gal dinitro	Grain should be fully colored and moisture down to 35% to 40%	Aerial equipment: apply chemical in 5 to 10 gal diesel/A. Dinitro compounds are poisonous, so treated foliage or seed must not be fed.
	PCP (Penta)	4 to 6	4 to 6 qt 40% pentachlorophenol	Same as above	Same as above.
	magnesium chlorate	7½	6 qt 5 lb/gal Milo-Mag or equivalent amount of De-Fol-Ate	Same as above	Aerial equipment: apply chemical in 5 to 10 gal water. Generally less effective than DNBP, DNAP, or PCP.
	nitrogen solutions	Apply at a rate to give at least 16 lb total nitrogen per acre		Same as above	Trial basis only.

[1] Refers to acid equivalent, phenol equivalent, or active ingredient as applicable.
[2] Refers to a herbicide treatment made from planting to prior to crop emergence.
[3] Calculated on the basis of 4 lb/gal material.