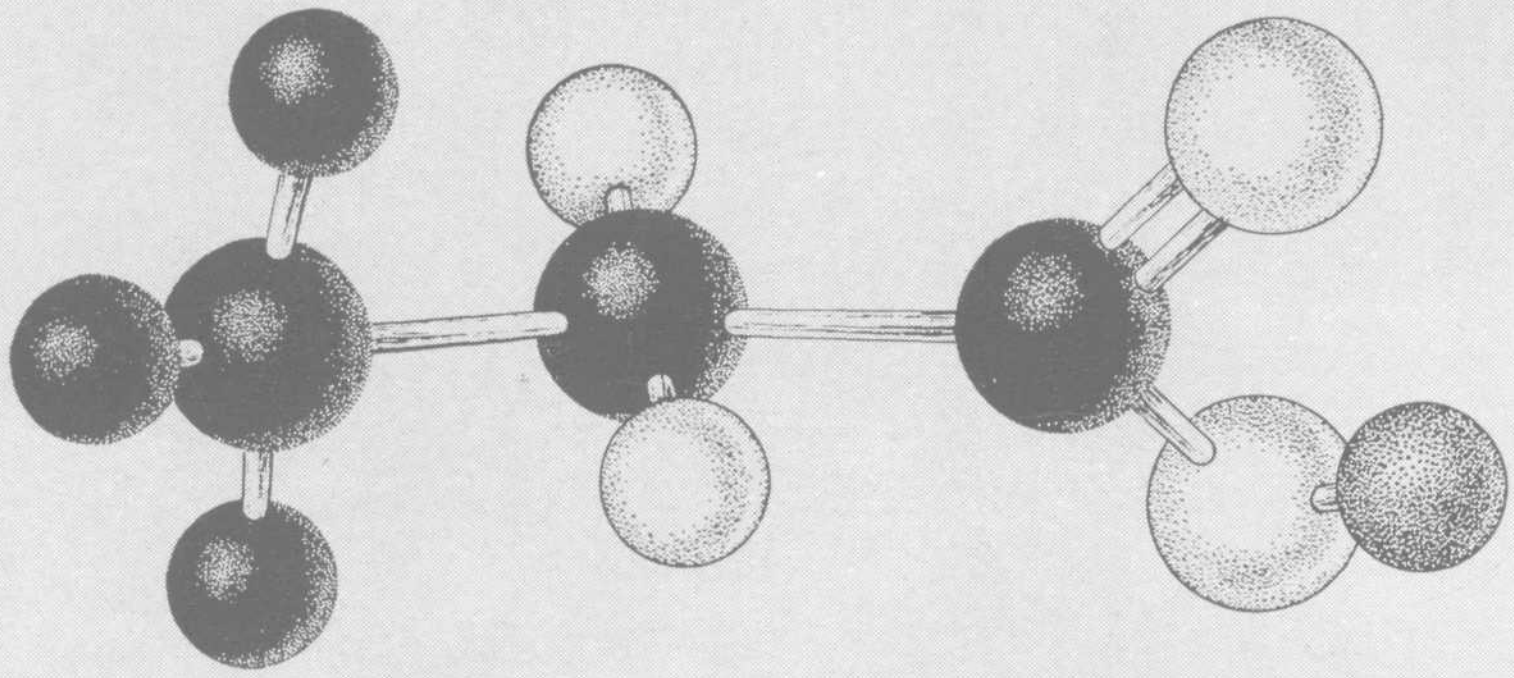


1960 Chemical Weed Control Recommendations For Irrigated Areas

BULLETIN A-1

The University of Arizona

Cooperative Extension Service

Agricultural Experiment Station

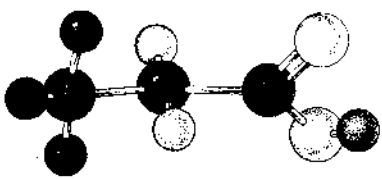
Note:

This publication is intended to summarize recommendations (see page 6) for the herbicides used to **supplement** other weed-control practices in Arizona croplands. It is based on the research and experience of The University of Arizona Experiment Station and Cooperative Extension Service, the United States Department of Agriculture, the agricultural chemicals industry, and farmers in Arizona and adjacent states.

This publication will be revised each year. New chemical controls will be recommended when developed, and older ones may be dropped.

Trade names used in this publication are for identification only and do not endorse products named nor imply criticism of similar products not mentioned.

Contents



ON THE COVER, as above, is a diagrammatic representation of a molecule of dalapon, an important herbicide.

The University of Arizona
College of Agriculture
Cooperative Extension Service
J. W. Pou, Director

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5M — January 1960 — Bulletin A-1

1960 Chemical Weed Control Recommendations For Irrigated Areas

Good Farming!

The use of herbicides is now a good farming practice. For every dollar invested in herbicides the farmer either saves several dollars in reduced production costs or gains by improved crop yield and quality. In many crops, herbicides can eliminate hand hoeing; often they can replace much of the mechanical cultivation. The full potential of herbicides can be achieved only through their proper use.

Read the Label

Use herbicides only as recommended on the container label for specific crops, rates, dates, and areas. To help assure that herbicides are used correctly, the Miller amendment to the Federal Food and Drug Act allows for the establishment of limits on the amount of herbicide in or on crops at harvest.

Rate to Apply

The rates of application recommended for a herbicide are safe and effective under most conditions. However, one application rate will not be optimum for all conditions. When a new herbicide is applied, the recommended rate should be used. Close inspection of several treatments may indicate that a higher or lower rate of application is required under your conditions.

The final decision on rate of application for a particular area must be made by the user, but it should be within the recommended rates. Check with your local County Agricultural Agent.

Use With Caution

Herbicides can kill crop plants as well as weeds. Certain herbicides are hazardous to apply near susceptible crops, and extreme care is needed in their use.

2,4-D, 2,3,6-TBA, MCPA, and silvex are hazardous to apply near cotton, grapes, or tomatoes. Damage may occur if these herbicides are carried into susceptible crops as spray drift, vapor drift, or on dust particles.

Herbicide Residues in the Soil

When herbicides are used as recommended, and normal grower practices are followed, little or no herbicide residue will remain in the soil. Herbicide residues may affect the growth of certain crops planted too soon after the application of monuron, diuron, or simazin.

Avoid possible damage from herbicide residues by (1) applying the lowest rate of herbicide needed to control weeds, (2) irrigating the treated crop properly, (3) using a moldboard plow, (4) pre-irrigating when preparing the seedbed for the next crop, and (5) planting a tolerant crop. You must determine if herbicide residues persist in your soil under your growing conditions. If so, cropping practices can be adjusted to minimize their effects.

Sprayer Calibration

Unless the operator is thoroughly familiar with the sprayer, it should be calibrated in each field. New equipment can be calibrated on a road; final calibration should be in the field. The following steps can be followed in calibrating a sprayer:

1. Fill the sprayer tank to a predetermined level with water. This may be a full tank or a height on a measuring stick.

2. Select the speed to be used. Sprayer speed must be constant to allow uniform application of the spray.

3. Spray a given area in the field at the selected throttle setting, using the pressure recommended for the most efficient use of nozzles.

4. Determine the number of square feet in the sprayed area.

5. Determine the number of gallons applied by refilling the tank to the predetermined mark by adding water from a measuring container.

6. Compute the gallons applied per acre by dividing the area sprayed (in square feet) into 43,560 and then multiplying by the number of gallons used.

$$\text{Gallons per acre} = \frac{43{,}560 \times \text{Gallons applied on the area}}{\text{(Area sprayed)}}$$

If the gallonage applied per acre is too high or low, it can be corrected by:

a. Altering the speed of the sprayer.

b. Altering the pressure at which the spray is applied.

c. Changing to different size nozzle tips.

7. After the sprayer is calibrated to apply the correct amount of spray per acre, add the herbicide to the sprayer tank at the desired rate.

EXAMPLE—If 1.5 pounds per acre are to be applied and enough water is added to the sprayer tank to treat 5 acres, add 7.5 pounds ($5 \times 1.5 = 7.5$).

8. Sprayer calibration should be checked frequently in the field because certain herbicides cause rapid wear of spray nozzle tips and most pumps. With a field of known length, the amount of spray needed for a given gallonage for a certain number of rounds can be calculated, and the amount actually applied can be determined when the tank is refilled.

Publications on Weeds and Weed Control

These publications are available from your local county extension office.

Kill Weeds in Small Grains—Circular 217.

Johnson Grass Control—Bulletin 265.

Sprayer Calibration—Folder 82.

Growing Cantaloups in Arizona—Bulletin 275.

Chemical Control of Annual Weeds in Cotton—Bulletin 283.

Carrots in Arizona—Bulletin 285.

Growing Onions in Arizona—Bulletin 280.

Weeds of Crops in Southern Arizona—Bulletin 296.

Arizona Ranch, Farm, and Garden Weeds—Circular 265.

Dalapon Controls Bermuda Grass—Report 176.

Johnson Grass Control with Dalapon and Liquified Petroleum Burners—Bulletin 293.

Names of Herbicides

Designation	Trade Name
Acrolein	Aqualin
Amitrol	Amino Triazole, Weedazol
CDEC	Vegadex
Chlorate-borate mixtures (CBM)	**
Chlorate-borate-monuron mixtures (CBMM)	Chlorea
Dalapon	Dowpon
Diuron	Karmex
DNBP (dinitro general)	**
DNPB (ammonium salt)	Dow selective, Sinox W.
EPTC	Eptam
IPC	**
KOCN	Aerocyanate
Methyl bromide	**
MCPA	**
Monuron	Telvar
NPA	Alanap-3
Petroleum oils	**
Silvex	**
Simazin	Simazine
Sulfuric acid	**
2,3,6-TBA	Benzac, Trysben
2,4-D	**

** *Several trade names*

Recommended Herbicides

The use of any herbicide in crops suggested in this publication is contingent upon registration by the United States Department of Agriculture and/or establishment of residue tolerances where necessary to the United States Department of Health, Education, and Welfare. Herbicides should be used only as **recommended on the label.**

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
FIELD CROPS			
Alfalfa			
DNBP (dinitro general) for established stands	1 qt. in 100 gallons of ⅛ petroleum oil —⅞ water emulsion.	Annual weeds. Destroys top-growth of perennial weeds.	Apply to foliage of weeds after cutting alfalfa.
DNBP (ammonium salt) for seedling stands	1 lb. in 40 gallons of water.	Broadleaved weeds.	Apply to foliage if weed competition becomes severe.
Corn, field 2,4-D, amine	1 lb. in 30 gallons of water.	Broadleaved weeds.	Apply directed spray to weed foliage when corn is 6 to 18 inches high. Stem bending and root malformation may result but corn yield reductions should not occur.
Simazin	1½ to 2 lbs. in 30 gallons of water. Vary rate with soil type.	Annual weeds.	Apply to soil before the preplant irigation or before planting.
Cotton Monuron and Diuron	1 to 2 lbs. in 30 gallons of water. Rate varies with soil type.	Annual weeds. Seedlings of perennial weeds.	Apply to soil at layby. See Bulletin 283.
Dalapon	1 lb. in 5 gallons of water. Apply until grass is thoroughly wet.	Established clumps of Johnson grass.	Apply to foliage when top-growth is 6 to 10 inches high. See Bulletin 293.

Recommended Herbicides

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
Flax 2,4-D, amine MCPA, amine	½ to ¾ lb. in 30 gallons of water.	Most broadleaved weeds.	Apply to foliage after the first irrigation.
IPC	2½ to 3 lb. in 30 gallons of water.	Annual grasses.	Apply to soil prior to first irrigation. Irrigate when flax is 2 inches high.
Small grains 2,4-D, amine MCPA, amine	½ to 1 lb. in 30 gallons of water.	Annual and most perennial broadleaved weeds.	Apply to foliage when grains are tillering. Avoid application to seedlings or during booting and heading. See Circular 217.
Sorghum 2,4-D, amine	½ to 1 lb. in 30 gallons of water.	Annual and most perennial broadleaved weeds.	Apply to foliage when sorghum is 6 to 15 inches high. Stem bending and root malformation may result but yield reductions should not occur.
Dalapon	1 lb. in 5 gallons of water. Apply until Johnson grass is wet.	Established clumps of Johnson grass.	Apply to foliage when grass is 6 to 10 inches high. Any sorghum contacted by the spray will die.
Sugar beet seed CDEC	Treat at rate of 1 lb. in 6 gallons of water per acre for each 8-inch band. Apply on bed tops only.	Purslane, carelessweed. Sometimes watergrass.	Apply to soil after planting but prior to the germination irrigation.
VEGETABLE & FRUIT CROPS			
Lettuce, Cabbage, Broccoli CDEC	Treat at rate of 1 lb. in 6 gallons of water per acre for each 8-inch band. Apply on bed tops only. (For complete bed top coverage, use 3 lb. of material in 18 gallons of water.	Purslane, carelessweed. Sometimes watergrass.	Apply to soil after planting but prior to the germination irrigation. Irrigate the same day CDEC is applied.
Celery CDEC		Purslane, carelessweed. Sometimes watergrass.	Apply to soil prior to or after planting but prior to the transplant irrigation.

Recommended Herbicides

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
Cantaloup & Watermelon NPA	Treat at rate of 1 to 1¼ lb. in 7 to 8 gallons of water per acre for each 15-inch band. (A 15-inch band over seed row is sufficient coverage for each bed.)	Watergrass and certain broadleaved weeds.	Apply to soil after planting but prior to the germination irrigation. See Bulletin 275.
Carrots Selective petroleum oils	50 to 75 gallons.	Most annual weeds.	Apply to foliage when carrots have 2 to 4 true leaves. Do not apply when temperature is 80° or higher. Repeat if necessary. See Bulletin 285.
Onions & Garlic Sulfuric acid	80 gallons of 5% solution. (By volume.)	Annual broadleaved weeds except sowthistle.	Apply to foliage at crook stage. Repeat treatment 1 or 2 times if needed. See Bulletin 280. CAUTION: Very corrosive.
Onions DNBP (ammonium salt)	1 to 1¼ lb. in 40 gallons of water.	Sowthistle and most other broadleaved weeds.	Apply to foliage at flag to first true-leaf stage. Apply only when the temperature is less than 85°. See Bulletin 280.
KOCN	10 lb. in 40 gallons of water.	Annual broadleaved weeds.	Apply to foliage when weeds are small. Apply only if temperature is 80° or higher. See Bulletin 280.
Grapes Dalapon	1 lb. in 5 gallons of water. Apply until grass is wet.	Johnson grass and Bermuda grass.	Apply to foliage when grass is 6 to 10 inches high. Avoid contact with grape foliage.
Citrus Petroleum oils high in aromatic fractions	50 to 150 gallons. Use straight or as a water-oil emulsion.	All weeds.	Apply to weed foliage whenever weeds are 4 to 8 inches high. Avoid contact with foliage or bark of citrus.

Recommended Herbicides

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
Bermuda Turf 2,4-D, amine	1 to 2 lb. Mix as recommended on the label. Spray as uniformly as possible.	Most annual broadleaved weeds. Re-treatment may be needed for perennial broad-leaved weeds.	Apply to foliage of young weeds. Avoid contact with flowers, shrubs, and shade trees.
2,4-D, amine	Use straight or diluted 2,4-D while nutgrass patches are small.	Nutgrass.	Apply one drop to center of each whorl of leaves. Repeat treatment each 3 to 4 weeks until no plant sprouts.
Diuron	1 to 2 lb. Spray as uniformly as possible.	Most annual weeds.	Apply to soil while the Bermuda grass is dormant (February to April). Irrigate after application.
Dalapon for edging	1 lb. in 5 gallons of water. Spray or paint runners until they are thoroughly wet.	Bermuda grass runners.	Avoid application to soil near trees and shrubs. Apply when runners are 6 to 8 inches long. Repeat when needed, usually every 8 to 10 weeks. See report 176.
Dalapon for renovation	¾ to 1 lb in 2 gallons of water **per 1,000 sq. ft.**	Established Bermuda grass.	Apply to foliage when Bermuda grass is growing rapidly. After one week, spade and irrigate. Wait 2 to 3 weeks before establishing new turf. See report 176.
LAWN & GARDEN SEEDBEDS Methyl bromide	1 to 1½ lb. **per 100 sq. ft.** Release gas beneath a gas-proof cover.	Most weeds. A few hard seeds may survive.	POISONOUS—Use with care. Irrigate 1 to 2 weeks before treating. Maintain cover 1 to 2 days. Remove cover. Wait 2 to 3 days before planting. Adjacent shrubs may be killed if roots extend into treated areas.

Recommended Herbicides

GENERAL VEGETATION CONTROL—
Pea gravel and parking areas—road and utility right-of-ways.
Herbicides should not be applied within the root zone of shade trees, shrubs, and flowers.

HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
Petroleum oils high in aromatic content	50 to 150 gallons. May apply as a water-oil emulsion.	Annual weeds. Top-growth of perennial weed is destroyed.	Apply to foliage when weeds are 1 to 1½ feet high.
Dalapon and silvex or 2,4-D amine	10 lb. of dalapon and 1 lb. of silvex or 2,4-D in 100 gallons of water. Apply to wet weed foliage. Apply when weeds are 1 to 1½ feet high.	All weeds.	Do not use 2,4-D-dalapon in valleys where susceptible crops are growing. Use extreme caution if silvex-dalapon is applied near susceptible crops. Repeat treatment when needed.
Dalapon and amitrol	10 lb. of dalapon and 4 lb. of amitrol in 100 gallons of water. Apply to wet weed foliage. Apply when weeds are 1 to 1½ feet high.	All weeds.	Repeat treatment when needed. Has little hazard to adjacent crops.
Soil sterilants	Do not use in crop lands.		Soil sterilants are active in the soil only after an irrigation or rainfall. **Irrigate into soil immediately after application** to reduce movement if heavy rainfall occurs. The few weeds surviving the initial treatment should be destroyed. Soil sterilant mixtures containing monuron control weeds for a longer period than the chlorate-borate mixtures. Soil sterilants are not usually the best control for established perennial weeds.
Chlorate-borate	2 to 4 lb. **per 100 sq. ft.** Spread dry on soil or apply to soil and weeds as aqueous spray.	Annual weeds.	
Chlorate-borate-monuron	1 to 3 lb. **per 100 sq. ft.** Spread dry on soil or apply to soil and weeds as aqueous spray.	Annual weeds.	

Recommended Herbicides For Specific Weeds

HERBICIDE	APPLICATION* RATE/A & METHODS	REMARKS
WEEDS		
Bermuda grass Dalapon	20 lb in 100 gallons of water.	Apply to foliage when growth is vigorous. Repeat when regrowth is 6 to 10 inches high.
Johnson grass Dalapon	30 lb. in 150 gallons of water.	Apply to foliage when growth is vigorous. Usually 4 applications are needed the first year. (See Bulletins 265 and 293.)
Field bindweed 2,3,6-TBA for test applications only	20 lb. in 40 gallons of water.	Apply as a spot treatment to foliage and soil when bindweed is 15 to 20 inches long. Use same cautions as when applying 2,4-D.
White horsenettle 2,4-D amine	1 lb. in 40 gallons of water.	Apply to foliage when plants are 1 foot high. Topgrowth is destroyed but stands are seldom reduced more than 30% by a single treatment.
Nutgrass **EPTC** for test applications only	6 lb. in 30 gallons of water.	Disk soil—apply herbicide—disk soil again to mix in herbicide. Nutgrass is inhibited for 6 to 10 weeks.
Cattail Amitrol	10 lb. in 200 gallons of water.	Apply to foliage 2 to 3 weeks before fall frosts.
Sago pondweed in irrigation canals Acrolein	35 ppm. for 6 hours.	Repeat treatment as needed. Use extreme care handling this herbicide. A single application controls weeds for several miles of canal.
Algae in irrigation canals Acrolein	10 ppm. for 6 hours.	

* *Rates of amitrol, CDEC, DNBP (ammonium salt), EPTC, IPC, methyl bromide, MCPA, NPA, silvex, simazin, 2,3,6-TBA and 2,4-D are expressed in terms of the acid equivalent or active ingredient.*
Rates of acrolein, CBM, CBMM, dalapon, diuron, dinitro general, KOCN, monuron, petroleum oils, and sulfuric acid are expressed in pounds or volumes of the commercial product.

Seventy-Fifth Anniversary of Founding

See your local County
Agricultural Agent or
County Home Agent for
other farm and home
information.