

## College of Agriculture and Life Sciences Extension Publications

---

The Extension Publications collections in the UA Campus Repository are comprised of both current and historical agricultural extension documents from the College of Agriculture and Life Sciences at the University of Arizona.

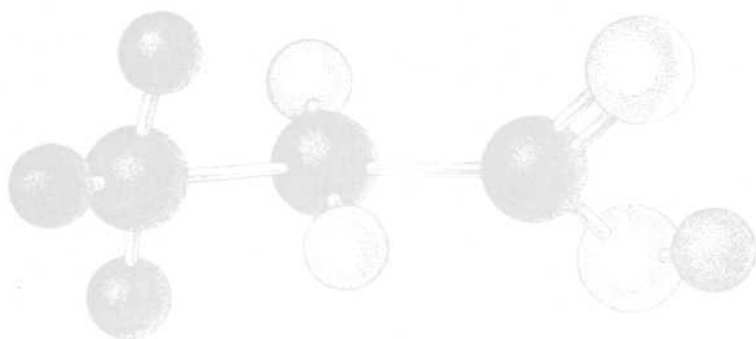
**This item is archived to preserve the historical record. This item may contain outdated information and is not intended to be used as current best practice.**

Current extension publications can be found in both the UA Campus Repository, and on the CALS Publications website, <http://cals.arizona.edu/pubs/>

If you have questions about any materials from the College of Agriculture and Life Sciences collections, please contact CALS Publications by sending an email to: [pubs@cals.arizona.edu](mailto:pubs@cals.arizona.edu)

---

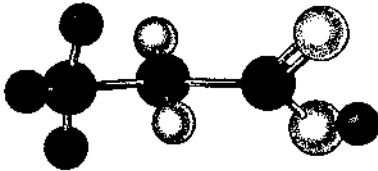
# Chemical Weed Control



## Recommendations For Irrigated Areas, 1961

**BULLETIN A-1**

**Cooperative Extension Service  
and  
Agricultural Experiment Station  
of  
The University of Arizona**



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

**T**HIS 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 bulletin will be revised as needed 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.

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

Cooperative extension work in agriculture and home economics, The University of Arizona College of Agriculture and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.  
5M—November 1960—Bulletin A-1

## Contents

	page
Good Farming! .....	3
Read the Label .....	3
Rate to Apply .....	3
Use with Caution .....	3
Herbicide Residues in the Soil .....	4
Herbicide Movement Along Irrigation Runs .....	4
Sprayer Calibration .....	4
Names of Herbicides .....	5
Recommended Herbicides .....	6
Publications on Weeds and Weed Control .....	12

This publication  
is issued by  
The Cooperative  
Extension Service  
and The  
Agricultural  
Experiment Station  
of The  
University of  
Arizona. See your  
local County  
Extension Agent  
for additional  
information.

# CHEMICAL WEED CONTROL RECOMMENDATIONS FOR IRRIGATED AREAS OF ARIZONA, 1961

## **Good Farming!**

The use of herbicides is now a good farming practice. For every dollar wisely 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 treated areas may indicate that a higher or lower rate of application is required under your conditions.

If the soil type varies in a given field it may be impossible to determine one best rate for herbicides which are applied to the soil. The entire field may be treated at the rate best for the major portion of the field or only part of the field may be treated.

For best results, treat various soil types at different rates of application. You may vary the speed of the tractor to adjust the rate of application for different soil types.

The final decision on rate of application for a particular area must be made by you, the user, but it should be within the recommended rates.

## **Use With Caution**

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

Applications of 2,4-D, 2,3,6-TBA, MCPA, and silvex are hazardous to nearby cotton, grapes, or toma-

toes. 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 or diuron.

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, adjust cropping practices to minimize their effects.

## Herbicide Movement Along Irrigation Runs

Soil herbicides are sometimes carried by water and accumulate at the tail end of irrigation runs. The

herbicide usually is carried on plant debris and soil.

The growth of treated crops may be affected where herbicides accumulate. Monuron or diuron may affect the growth of the next crop in such spots.

Since only a small fraction of a crop is affected, growers are seldom concerned with this problem.

## 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.

## Names of Herbicides

Designation	Trade Name
Acrolein	Aqualin
Amitrole	Amino Triazole, Weedazol
Atrazine	Atrazine
CDEC	Vegadex
Chlorate-borate mixtures (CBM)	**
Chlorate-Borate-monuron mixtures (CBMM)	Chlorea
Dalapon	Dowpon
Diuron	Karmex
DNBP (dinitro general)	**
DNBP (ammonium salt)	Dow selective, Sinox W.
EPIC	Eptam
KOCN	Aerocyanate
Methyl bromide	**
MCPA	**
Monuron	Telvar
NPA	Alanap-3
Petroleum oils	**
Silvex	**
Sulfuric acid	**
2,3,6-TBA	Benzac, Trysben
2,4-D	**
2,4-D and 2,4,5-T	**

(\*\* 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 toler-

ances where necessary to the United States Department of Health, Education, and Welfare.

Use herbicides *only as recommended on the label.*

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
<b>Field Crops</b>			
Alfalfa DNBP (dinitro general) for established stands	1 qt. in 100 gallons of 1/3 petroleum oil—2/3 water emulsion.	Annual weeds. Destroys topgrowth 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.
Atrazine	1 1/2 to 2 lb. in 30 gallons of water. Vary rate with soil type.	Annual weeds.	Apply to soil before the preplant irrigation or before planting.
Cotton Monuron and Diuron	1 to 2 lb. in 30 gallons of water. Vary rate 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.
Flax 2,4-D, amine MCPA, amine	1/2 to 3/4 lb. in 30 gallons of water.	Most broadleaved weeds.	Apply to foliage after the first irrigation.

<b>Small grains</b> 2,4-D, amine MCPA, amine	1/2 to 1 lb. in 30 gallons of water.	Annual and most perennial broad-leaved weeds.	Apply to foliage when grains are tillering. Avoid application to seedlings or during booting and heading.
<b>Sorghum</b> 2,4-D, amine	1/2 to 1 lb. in 30 gallons of water.	Annual and most perennial broad-leaved weeds.	Apply to foliage when sorghum is 4 to 15 inches high. Stem bending and root malformation may result but yield reductions should not occur.
<b>Dalapon</b>	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 thoroughly wet by the spray will die.
<b>Sugar beet seed</b> 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, careless-weed. Sometimes watergrass.	Apply to soil after planting but prior to the germination irrigation.

## Vegetables, Fruits, Turf

<b>Lettuce, Cabbage, Broccoli</b> 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, careless-weed. Sometimes watergrass.	Apply to soil after planting but prior to the germination irrigation. Irrigate the same day CDEC is applied.
<b>Celery</b> CDEC		Purslane, careless-weed. Sometimes watergrass.	Apply to soil prior to or after planting but prior to the transplant irrigation.
<b>Cantaloup &amp; Watermelon</b> NPA	Treat at rate of 1 to 1 1/4 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.
<b>Carrots</b> 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.



## RECOMMENDED HERBICIDES

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
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 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.
Diuron	1 1/2 to 2 lb. in 40 gallons of water. Treat only established vineyards.	Annual weeds.	Apply to soil in February. Do not treat sandy soils.
Citrus Petroleum oils high in aromatic fractions	50 to 150 gallons. Use straight or as 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.
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 broadleaved 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	3/4 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 and Garden Seedbeds Methyl bromide	1 to 1-1/2 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.

### 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.

Petroleum oils high in aromatic content	50 to 150 gallons. May apply as a water-oil emulsion.	Annual weeds. Top-growth of perennial weeds is destroyed.	Apply to foliage when weeds are 1 to 1 1/2 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 1/2 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 amitrole	10 lb. of dalapon and 4 lb. of amitrole in 100 gallons of water. Apply to wet weed foliage. Apply when weeds are 1 to 1 1/2 feet high.	All weeds.	Repeat treatment when needed. Has little hazard to adjacent crops.

## RECOMMENDED HERBICIDES

CROP and HERBICIDE	APPLICATION* RATE/A & METHODS	WEEDS CONTROLLED	REMARKS
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 and WEED	APPLICATION* RATE/A & METHODS	REMARKS
Bermuda grass Dalapon	20 lb. in 100 gallons of water.	Apply to foliage when growth is vigorous. Repeat when regrowth is about 6 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 Bulletin 293.)
Field bindweed 2,3,6-TBA	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.
2,4-D, amine	1 lb. in 40 gallons of water.	Apply to foliage when plants are 1 to 2 feet high. Topgrowth will be destroyed but stands are seldom reduced.

## RECOMMENDED HERBICIDES FOR SPECIFIC WEEDS

<b>White horseweed</b> 2,4-D, amine	1 lb. in 40 gallons of water.	Apply to foliage when plants are 1 foot high. Top-growth is destroyed but stands are seldom reduced more than 30% by a single treatment.
<b>2,3,6-TBA</b> test applications only	20 lb. in 40 gallons of water.	For spot treatments only. Apply to foliage.
<b>Nutgrass</b> EPTC test applications only	6 lb. in 20 gallons of water.	Disk soil—apply herbicide—disk soil again to mix in herbicides. Nutgrass is inhibited for 6 to 10 weeks.
<b>Cattail</b> Amitrole	10 lb. in 200 gallons of water.	Apply to foliage 2 to 3 weeks before fall frosts.
<b>Dalapon</b>	20 lb. in 200 gallons of water.	Apply to foliage 2 to 3 weeks before fall frosts.
<b>Salt Cedar on floodplains</b> Silvex	3-4 lb. in 15-40 gallons of water.	Apply to foliage of regrowth in April and repeat each spring and fall until control is achieved.
<b>2,4-D &amp; 2,4,5-T</b>	3-4 lb. in 15-40 gallons of water.	
<b>Sage pondweed in irrigation canals</b> 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.
<b>Algae in irrigation canals</b> Acrolein	10 ppm. for 6 hours.	

\*Rates of amitrole, atrazine, CDEC, DNEP (ammonium salt), EPTC, methyl bromide, MCPA, NPA, silvex, 2,3,6-TBA, 2,4-D and 2,4,5-T 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.

## **Publications on Weeds And Weed Control**

These publications are available from your local county extension office.

**C h e m i c a l** Control of Annual Weeds in Cotton — Bulletin 283.

**Growing Onions in Arizona**—Bulletin 280.

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

**Dalapon Controls Bermuda Grass**—Report 176.

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

**Control and Identification of Crop Weeds in Southern Arizona**—Bulletin 296.

---

**The University of Arizona**



*Seventy-Fifth Anniversary of Founding*