

Runcina

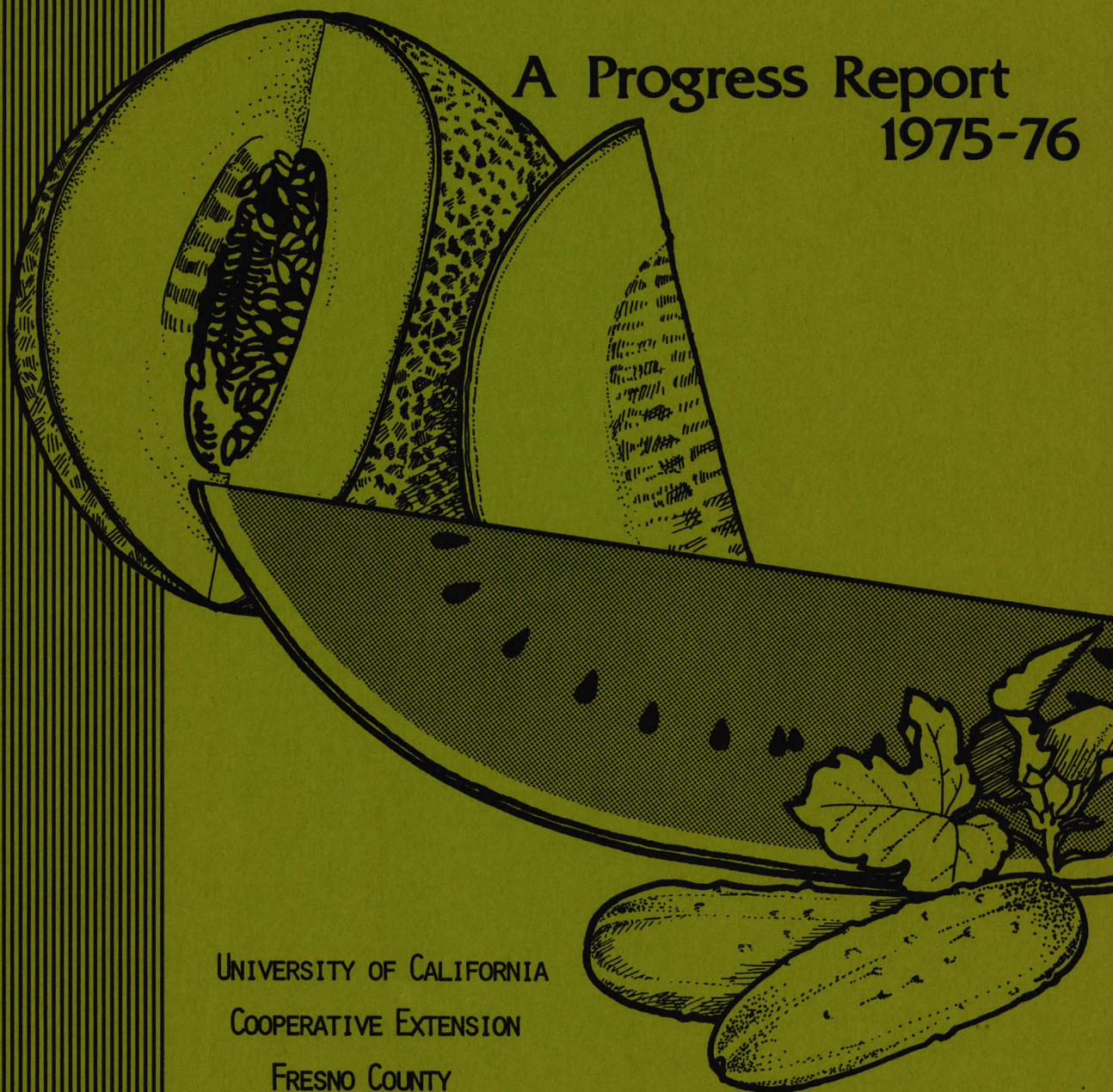
VOL.

9

**Evaluation of Herbicides
in the production of**

CUCURBITS

**A Progress Report
1975-76**



UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION
FRESNO COUNTY

This is a report of work in progress only. The chemicals and uses contained in this publication are experimental data and should not be considered as recommendations for use.

Until the products and their uses given in this report appear on a registered pesticide label or other legal, supplementary direction for use, it is illegal to use the chemicals as described.

WARNING ON THE USE OF CHEMICALS

Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in their original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Recommendations are based on the best information currently available, and treatments based on them should not leave residues exceeding the tolerance established for any particular chemical. Confine chemicals to the area being treated. **THE GROWER IS LEGALLY RESPONSIBLE** for residues on his crops as well as for problems caused by drift from his property to other properties or crops.

Consult your County Agricultural Commissioner for correct methods of disposing of leftover spray material and empty containers. **Never burn pesticide containers.**

PHYTOTOXICITY: Certain chemicals may cause plant injury if used at the wrong stage of plant development or when temperatures are too high. Injury may also result from excessive amounts or the wrong formulation or from mixing incompatible materials. Inert ingredients, such as wetters, spreaders, emulsifiers, diluents, and solvents, can cause plant injury. Since formulations are often changed by manufacturers, it is possible that plant injury may occur, even though no injury was noted in previous seasons.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.

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FARM AND HOME ADVISORS OFFICE

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A C K N O W L E D G E M E N T S

The applied research studies, summarized in this progress report, was generously supported by the California Melon Research Board. We are grateful for their confidence, encouragement and support.

Grants for weed control studies conducted in Fresno County were also received from the following companies: Amchem, BASF, Eli Lilly, Fisons, FMC, Hercules, Monsanto, Rohm & Haas, Shell, Stauffer and US Borax. I am grateful for their generosity.

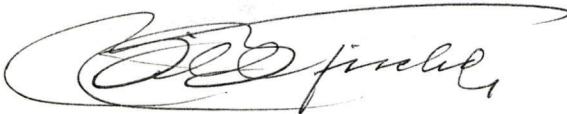
The purpose of this report is to inform members of the California Melon Research Board of our accomplishments. It is intended also to serve as a report to cooperating growers and commercial companies of our progress. This progress report is not intended and it should not be interpreted as a recommendation for the use of herbicides.

We wish to thank Gary McMullin and Jack Schlesselman, Extension Field Technologists, for their untiring assistance in conducting the trials.

We are grateful to Fred Fischer of the Westside Field Station and cooperating growers for their managerial assistance.

The art work of Gwen Okamoto, the efficient secretarial labor of Rita Cassidy, and the editorial comments of Peggy May are praiseworthy and they are sincerely appreciated.

Sincerely,



BILL B. FISCHER
Farm Advisor

EVALUATION OF HERBICIDES IN THE PRODUCTION OF CUCURBITS

A PROGRESS REPORT

B. B. Fischer, A. H. Lange, D. M. May*

SNYOPSIS

Effective weed control was obtained with the use of selective herbicides in direct seeded cantaloupes, cucumbers and watermelons. Watermelons exhibited the most tolerance followed by cantaloupes. Cucumbers were the most susceptible of the three cucurbits.

Good weed control and cucurbit selectivity was obtained with Devrinol® at 1.0 and 2.0 lb ai/A, when shallow incorporated. Prefar® plus Alanap®, incorporated prior to planting, provided effective weed control at crop emergence through thinning or the establishment of permanent beds. The application and incorporation of Treflan® post-emergence gave good control of annual grasses and certain broadleaf weeds until harvest. Amex® and Buban 37®, applied preplant and shallow incorporated, also provided good weed control with acceptable crop tolerance.

INTRODUCTION

In California, an estimated 53,000 acres of land are planted yearly with the following three species of cucurbits: cantaloupes, cucumbers and watermelons. Of this acreage, approximately 70% is planted with cantaloupes, 18%

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with watermelons and 12% with cucumbers that are grown for pickling and fresh market.

The limited acreage devoted to the production of these crops is not sufficient to motivate herbicide manufacturers to devote much of their time and resources in the evaluation of their products for the selective control of weeds in cucurbits. This does not mean that growers of cantaloupes, cucumbers and watermelons are not troubled by or that they do not spend a lot of effort and energy controlling weeds in their crops.

Cantaloupe acreage in Fresno County in some years exceeds 30,000 acres. Weed problems associated with the production of the crop are varied from one area to another. This variation is influenced also by the cropping sequence. Summer annual grasses, broadleaf weeds and volunteer cereals can be a problem at crop emergence, through the growing season, and often interfere with the harvest, whether it is picked by hand or mechanically.

Since 1964 numerous trials were conducted in Fresno County to evaluate the effectiveness of herbicides for the selective control of weeds preplant incorporated and postemergence in cantaloupes. The studies were expanded three years ago and in addition to cantaloupes, the herbicides were evaluated on cucumbers and watermelons as well.

In this progress report detailed tabular data are presented only from the 1975 and 1976 trials, but in the narrative, information is drawn from all experiments conducted and from observations made in commercially treated fields. More specific information about individual trials is available from the senior author.

This is a progress report of studies conducted in Fresno County. In no way should it be interpreted as recommendation for the use of herbicides evaluated in the experiments or methods of application described.

For recommendations regarding the use of selective herbicides in the production of cantaloupes, cucumbers or watermelons, please consult the labels of specific herbicides.

PROCEDURES USED IN CONDUCTING THE STUDIES

The trials were conducted at the Westside Field Station and in commercial fields with the generous cooperation of cantaloupe growers. Most of the trials were conducted on the westside of Fresno County in soils containing less than 1% organic matter.

The herbicides were applied with CO₂ constant pressure sprayer in 60 or 70 gallons of water per acre. All trials were replicated four times in a randomized block design. In the preplant trials following application, the herbicides were incorporated with power driven rotary tillers. Ground driven sectioned rolling cultivators were used to incorporate the herbicide in the postemergence trial.

Weed control evaluations, crop injury and crop vigor ratings were based on a 0 to 10 scale. A rating of "10" for weed control denotes perfect control. As a vigor rating, "10" means vigorously growing cucurbit seedlings. A rating of "0" designates no weed control or severely retarded plants. In rating for injury "0" stands for no injury and "10" indicates severe injury or death.

Cantaloupe yield data were obtained by hand harvesting 15ft of row from the center of each plot and the fruit were counted and graded into appropriate sizes. The cucumbers were harvested by hand picking all the fruit from the plots at weekly intervals. The watermelons were counted and graded into marketable and unmarketable sizes.

Soil type, plot sizes, herbicides used, dates of treatment, irrigation

method, dates of harvest, weed control, vigor ratings and yield data are presented in the tables summarizing the results.

WHAT HAVE WE LEARNED?

Before discussing the performance of specific herbicides, it is essential to emphasize that weed control has to be an integral part not only of the production of cucurbits, but of the total farming operation. Herbicides are tools, not unlike other equipment, needed in the production of a crop. Intelligent planning is essential for the safe and effective use of these chemical tools. Rarely, if ever, will they control all the weeds found infesting cropland in the Central San Joaquin Valley.

Decisions made prior to planting and the cultural practices followed in the production of the crop can significantly influence the effectiveness and cost of weed control. Factors to consider are:

Proper field selection and intelligent rotation.

The cost of weed control can be reduced by selecting fields that are not infested with perennial weeds, such as field bindweed, Johnson-grass, bermudagrass and nutsedge. Fields infested with annuals that cannot be controlled with the available herbicides should be avoided. A rotation program should be considered where annuals such as dodder, sunflower, mare's tail and weeds in the potato family such as nightshade, etc., can be controlled more economically.

Certain herbicides used on the previous crop may have residual properties injurious to cucurbits. Therefore, fields should be avoided where residual herbicides may adversely affect the early growth of the cucurbits.

Proper Land and Seed-bed Preparation

In a well prepared seed-bed more rapid and more uniform germination of the seed can be obtained and the performance of herbicides is enhanced.

Preirrigation and Timely Crop Irrigation

A preirrigation can enable a grower to prepare a better seed-bed. It can also germinate weed seeds that can be destroyed with shallow harrowing prior to planting.

With preirrigation and shallow harrowing of the beds, in many fields additional weed seeds will not germinate until the first crop irrigation, therefore, preplant incorporated herbicides may not be needed.

Intelligent Herbicide Selection Through Knowledge of the Weed Infestation

Without knowledge of the weed infestation, selection of an herbicide is a guessing game. It cannot be done intelligently.

Records of the weed infestation can enable one to plan the most effective and most economical weed control program. (Weed infestation record cards, such as the one attached to this progress report, is available free from farm advisors or pest control advisors.)

A Vigorously Growing Crop is Essential

Proper fertilization, timely irrigation, adequate insect and disease control are essential integral parts of an effective weed control program. A vigorously growing crop is an excellent competitor with weeds.

THE PERFORMANCE OF PREPLANT INCORPORATED HERBICIDES

Only a small percentage of the many herbicides evaluated showed selectivity on cucurbits. Therefore, the following discussion will be limited to those compounds that appeared promising for use in cantaloupes, cucumbers and watermelons.

Of the three cucurbits, watermelon was the most tolerant to all herbicides evaluated. Cantaloupes showed somewhat less tolerance and cucumbers were the most susceptible. This may not be due to inherent differences in selectivity but to differences in the seedling vigor of these crops. Watermelon seedlings grew most vigorously and cucumber seedlings were the least vigorous.

The observations made and data obtained relating to the performance of specific herbicides can be briefly summarized as follows:

Prefar® (bensulide) was the most selective of all the herbicides evaluated. At 4.0 and 6.0 lb ai/A it provided excellent summer annual grass control but it did not control volunteer cereals.

Prefar did not provide effective broadleaf control at 4.0 lb ai/A. Pigweed and lambsquarter control was better at 6.0 lb ai/A. Although Prefar has long residual properties, crops such as tomatoes, peppers, cole crops, lettuce, alfalfa, cotton, safflower and sesame have been safely planted following its use. The growth of sugar beets, corn, sorghum and sudan grass may be adversely effected from residual Prefar.

Alanap® (naptalam) preplant incorporated at 4.0 lb ai/A exhibited good selectivity and provided fair control of broadleaf weeds but inadequate control of grasses.

Alanap has provided erratic control when used alone. In combination with Prefar it has given good weed control, and good selectivity from crop emergence through thinning or the first cultivation and irrigation.

Devrinol® (napropamide) controlled the broadest spectrum of weeds.

Shallow incorporated at 1.0 and 2.0 lb ai/A it exhibited good selectivity. At 4.0 lb ai/A it caused severe retardation in the growth of the cucurbits, especially if the seeds were planted within the treated layer of soil.

Incorporating Devrinol into the top two inch layer of soil and planting the seed below or at the lower limit of the treated soil good weed control and good crop selectivity was obtained.

Devrinol is an herbicide with long residual properties, therefore crops susceptible to this herbicide should not be planted immediately following cucurbits. Sugar beets, cereals, lettuce, corn and sorghum have been injured by residual Devrinol. Alfalfa, tomatoes, peppers, cotton and cole crops have not been injured when planted following its use in a previous crop.

Amex® (butralin) at 1.0 lb ai/A shallow incorporated has shown good selectivity on watermelons and cantaloupes but on cucumbers possibly lower rates of 0.75 lb ai/A would be safer.

Amex provided excellent grass control and good control of certain annual broadleaf weeds. Weeds in the potato thistle and mustard families were not controlled.

Buban 37® (bulab-37) is a substituted dinitroaniline compound related to Amex. Preplant, shallow incorporated it showed good selectivity on the cucurbits. It effectively controlled the summer annual grasses and certain broadleaf weeds. Buban 37 was not effective on weeds in the thistle, potato and mustard families.

Vegadex® (sulfallate) was evaluated in earlier studies and was found to have some selectivity but provided poor weed control.

Vegadex was demonstrated to be effective for the control of dodder in tomatoes. Therefore, it was included in the 1975 and 1976 trials in combination with Devrinol, Amex and Buban-37. It caused growth retardation of cucurbit seedlings especially at 6.0 lb ai/A.

The further evaluation of Vegadex in combination with Devrinol is warranted for possible use in fields that are heavily infested with parasitic dodder.

H-26905 did not exhibit sufficient selectivity to justify its further evaluation as a preplant incorporated herbicide in cucurbits. H-26905 is being evaluated for dodder control postemergence in tomatoes and alfalfa. It should be evaluated for dodder control in cantaloupes, postemergence, or after the dodder is attached.

R-33222 did not show any selectivity on any of the cucurbits.

The following herbicides and experimental compounds were evaluated preplant incorporated in earlier studies for possible use for weed control in cantaloupes. The results obtained relative to their selectivity on cantaloupes, and their effectiveness in controlling commonly occurring annual weeds, can be summarized as follows:

<u>Trade Name</u>	<u>Common Name</u>	<u>Cantaloupe Selectivity</u>	<u>Weed Control Obtained</u>
Antor	HER-22234	fair	Fair
Balan	benefin	marginal	Good
Dacthal	chlorthal	marginal	Good
Destun	perfluidone	poor	Poor
Kerb	pronamide	poor	Good
Paarlan	isopropalin	marginal	Good
Planavin	nitralin	marginal	Good
Treflan	trifluralin	marginal	Good
AC-78126	---	good	Fair
AC-72986	---	fair	Fair
H-26905	---	poor	Fair
NTN 6867	---	fair	Fair
OCS 21693	---	marginal	Poor
R-1856	---	good	Poor

POSTEMERGENCE WEED CONTROL IN CANTALOUPE

The use of Treflan® (trifluralin) for weed control in established cantaloupes was first demonstrated in 1966. Since then numerous trials were conducted in Fresno County demonstrating its effectiveness and safe use. Today Treflan is widely used by cantaloupe

growers for postemergence weed control. Treflan applied at 0.5 or 0.75 lb ai/A when the cantaloupes had 2 to 5 true leaves and incorporated with sectioned rolling cultivators has provided effective control of summer annual grasses - pigweeds, lambsquarter, purslane, and some other broadleaf weeds. Treflan did not control weeds in the thistle, potato and mustard families. (weeds such as: sowthistle, prickly lettuce, sunflower, groundcherry, hairy nightshade, black nightshade, mustard, London rocket, etc.)

Treflan did not control established weeds. The best control was obtained when it was applied before the first crop irrigation and where the established weeds were destroyed. Incorporation with rolling cultivators resulted in better weed control when two passes were made in opposite directions. When sweeps were carried on the rolling cultivators care had to be exercised in not placing it too deep to avoid removing the herbicide treated soil from the furrows.

This year a nonreplicated observation trial was conducted to study the effectiveness of other substituted dinitroaniline herbicides related to Treflan, but with shorter residual properties. Amex[®] (butralin) at 1.0 lb ai/A and Cobex[®] (dinitramine) at 0.5 lb ai/A were applied as a broadcast treatment when the cantaloupes had 3 to 5 true leaves. The herbicides were incorporated with ground driven rotary tillers.

Effective control of barnyardgrass, pigweed and lambsquarter was observed without any evidence of phytotoxicity on the cantaloupes.

IN CONCLUSION

The effective use of selective herbicides for weed control in cucurbits has been demonstrated.

Of the herbicides that are registered, growers could use the combination of Prefar plus Alanap in a 10 to 12 inch band preplant incorporated. After crop emergence, at the time of final bed shaping, Treflan can be applied to provide effective weed control through the growing season.

The use of Devrinol should be further demonstrated in larger plots in commercial fields, and simultaneously its registration should be pursued.

Selective herbicides coupled with one or two timely cultivations can enable growers of cantaloupes, cucumbers and watermelons to effectively control unwanted competing vegetation in their fields.

Table 1
Melon Weed Control Trial-Preplant Incorporated
C-51, 425, 175, 10, 76-1 & 2

Trial Location: Westside Field Station
Soil Type: Panoche Loam
Melons Planted: 22 April 1976
Varieties: Watermelon - Klondike
Cantaloupe-PMR 45A

Plot Size: 3.3' x 35' - 4 reps
Irrigation Method: Furrow-irrigated up
4/26/76
Herbicides Applied: 21 April 1976
Evaluated: 5/11 and 5/19, 1976

Herbicide		lb ai/A	Melon Stand, Melon Vigor and Weed Control Evaluation				
			Watermelon		Cantaloupe		Weed Control ^{2/}
			Stand ^{1/}	Vigor ^{2/}	Stand ^{1/}	Vigor ^{2/}	
A	Devrinol	1.0	13.0	9.5	22.8	9.2	9.0
B	Devrinol	2.0	12.3	8.5	15.3	7.5	10.0
C	Devrinol	4.0	8.8	8.0	12.5	7.2	10.0
D	Prefar	6.0	17.3	9.7	15.8	8.5	7.0
E	Alanap	6.0	16.5	10.0	16.3	8.3	6.5
F	H-26905	1.0	14.3	9.2	14.8	7.7	6.5
G	H-26905	2.0	8.8	7.5	6.0	4.7	8.0
H	R-33222	2.0	6.5	3.5	0.3	1.0	9.0
	R-33222	4.0	1.8	0.5	0.3	0	9.0
K	Amex	1.0	9.8	9.0	18.0	8.5	8.0
L	Alanap	4.0	12.5	8.7	18.0	9.0	8.5
	Prefar	4.0					
M	Devrinol	1.0	11.8	10.0	16.0	6.3	10.0
	Vegadex	4.0					
N	Devrinol	2.0	8.3	8.7	13.3	6.2	10.0
	Vegadex	4.0					
P	Amex	1.0	11.8	8.5	16.0	8.5	9.0
	Vegadex	4.0					
Q	Buban 37	2.0	6.3	8.4	17.0	7.8	9.0
	Vegadex	4.0					
R	Untreated	---	8.0	9.2	15.0	8.7	0

^{1/} Stand counts made in four feet of row, values are the average of four replications.

^{2/} Vigor and weed control ratings are based on a 0 to 10 scale: 0=very poor vigor or no weed control. 10=perfect weed control or vigorously growing melon seedlings.

Table 2
Cantaloupe Weed Control Trial-Preplant-Yield Data
C-51, 425, 175, 10, 76-1 & 2

Trial Location: Westside Field Station
Soil Type: Panoche Loam
Herbicides Applied: 21 April 1976
Melons Planted: 22 April 1976
Plot Size: 3/3' x 35' - 4 reps

Variety: PMR 45A
Irrigation Method: Furrow-irrigated up
4/26/76
Harvested: 27 July 1976
Harvested Area: 6.6' x 15'

		Yield, Number of Melons in Harvested Area According to Size ^{1/}										Marketable Melons ^{2/}	
Herbicide	lb/A	27's		36's		45's		<45				Ripe	Green
		Ripe	Green	Ripe	Green	Ripe	Green	Ripe	Green				
A Devrinol	1.0	4.7	3.0	4.5	6.2	3.2	11.2	1.2	12.2			12.4	20.4
B Devrinol	2.0	4.5	4.5	4.0	8.2	2.2	9.0	0.5	9.7			10.7	21.7
C Devrinol	4.0	4.7	3.5	3.2	8.5	2.2	6.2	0.5	10.7			10.1	18.2
D Prefar	6.0	3.5	4.2	1.5	11.2	1.0	11.5	0	10.7			6.0	26.9
E Alanap	6.0	5.6	3.6	6.3	6.0	2.3	9.6	0.3	11.3			14.2	19.2
F H-26905	1.0	4.7	1.5	4.7	9.7	1.2	10.2	0.5	10.2			10.6	21.4
G H-26905	2.0	4.7	2.2	4.7	9.7	0.7	9.0	0	9.2			10.1	20.9
H R-33222	2.0	0.5	1.2	1.0	3.0	0.5	2.2	0	2.7			2.0	6.4
J R-33222	4.0	0	0	0	0	0	0	0	0			0	0
K Amex	1.0	5.2	4.5	4.0	9.0	1.0	9.0	1.0	10.2			10.2	22.5
L Alanap Prefar	4.0 > 4.0 >	6.0	2.0	3.2	10.0	3.7	7.7	1.7	13.7			12.9	19.7
M Devrinol Vegadex	1.0 > 4.0 >	2.6	3.3	3.6	11.3	2.0	9.0	0.6	9.0			8.2	23.6
N Devrinol Vegadex	2.0 > 4.0 >	2.0	5.5	2.2	11.0	2.5	7.2	0.2	12.5			6.7	23.7
P Amex Vegadex	1.0 > 4.0 >	5.7	3.0	3.2	7.5	3.0	8.7	0.7	11.0			11.9	19.2
Q Buban 37 Vegadex	2.0 > 4.0 >	4.2	2.7	3.5	12.7	0.7	15.5	0.7	12.5			8.4	30.9
R Untreated	---	4.7	3.2	3.5	9.2	2.0	9.0	2.2	11.7			10.2	21.4
LSD 5%		3.7	3.0	2.7	4.6	NS	5.1	NS	5.5				

^{1/} Yield data was obtained by harvesting all the melons from 15' of row in the center of each plot. They were graded as to size and ripeness.

^{2/} Marketable melons includes sizes 27's or larger, 36's and 45's.

Table 3
Cantaloupe Weed Control Trial-Preplant-Yield Data
C-51, 425, 175, 10, 76-1 & 2

Trial Location: Westside Field Station
Soil Type: Panoche Loam
Herbicides Applied: 21 April 1976
Melons Planted: 22 April 1976
Plot Size: 3'3" x 35' - 4 reps

Variety: PMR 45A
Irrigation Method: Furrow-irrigated
up 4/26/76
Harvested: 27 July 1976
Harvested Area: 6'6" x 15'

Yield & Number of Melons in Harvested Area^{1/}

Herbicide	lb/A	Total ^{2/} Marketable Melons	Percent		Percent of Untreated		
			Ripe	Green	Total	Ripe	Green
A	Devrinol 1.0	32.8	37.8	62.9	103	117	92
B	Devrinol 2.0	32.4	33.0	66.9	102	102	98
C	Devrinol 4.0	28.3	35.6	64.3	89	110	94
D	Prefar 6.0	32.9	18.2	81.7	104	56	120
E	Alanap 6.0	33.4	42.5	57.4	105	131	84
F	H-26905 1.0	32.0	33.1	66.8	101	102	98
	H-26905 2.0	31.0	32.5	67.4	98	100	99
H	R-33222 2.0	8.4	23.8	76.1	26	73	112
J	R-33222 4.0	0	0	0	0	0	0
K	Amex 1.0	32.7	31.1	68.8	103	96	101
L	Alanap 4.0 > Prefar 4.0 >	32.6	39.5	60.4	103	122	89
M	Devrinol 1.0 > Vegadex 4.0 >	31.8	25.7	74.2	100	79	109
N	Devrinol 2.0 > Vegadex 4.0 >	30.4	22.0	77.9	96	68	115
P	Amex 1.0 > Vegadex 4.0 >	31.1	38.2	61.7	98	118	91
Q	Buban 37 2.0 > Vegadex 4.0 >	39.3	21.3	78.6	124	66	116
R	Untreated ---	31.6	32.2	67.7	100	100	100

^{1/} Yield data was obtained by harvesting all the melons from 15' of row in the center of each plot. They were graded as to size and ripeness.

^{2/} Total of melons includes only sizes 27's, or larger, 36's and 45's. Melons smaller than 45's are not included.

CANTELOUPE WEED CONTROL TRIAL—PREPLANT— YIELD DATA

C-51, 425, 175, 10, 76-1 & 2

Soil Type: Panoche Loam
Herbicides Applied: April 21, 1976
Plot Size: 3.3' x 35'—4 reps
Harvested: July 27, 1976

Harvested Area: 6.6' x 15'
Irrigation Method: Furrow
Variety: PMR 45A

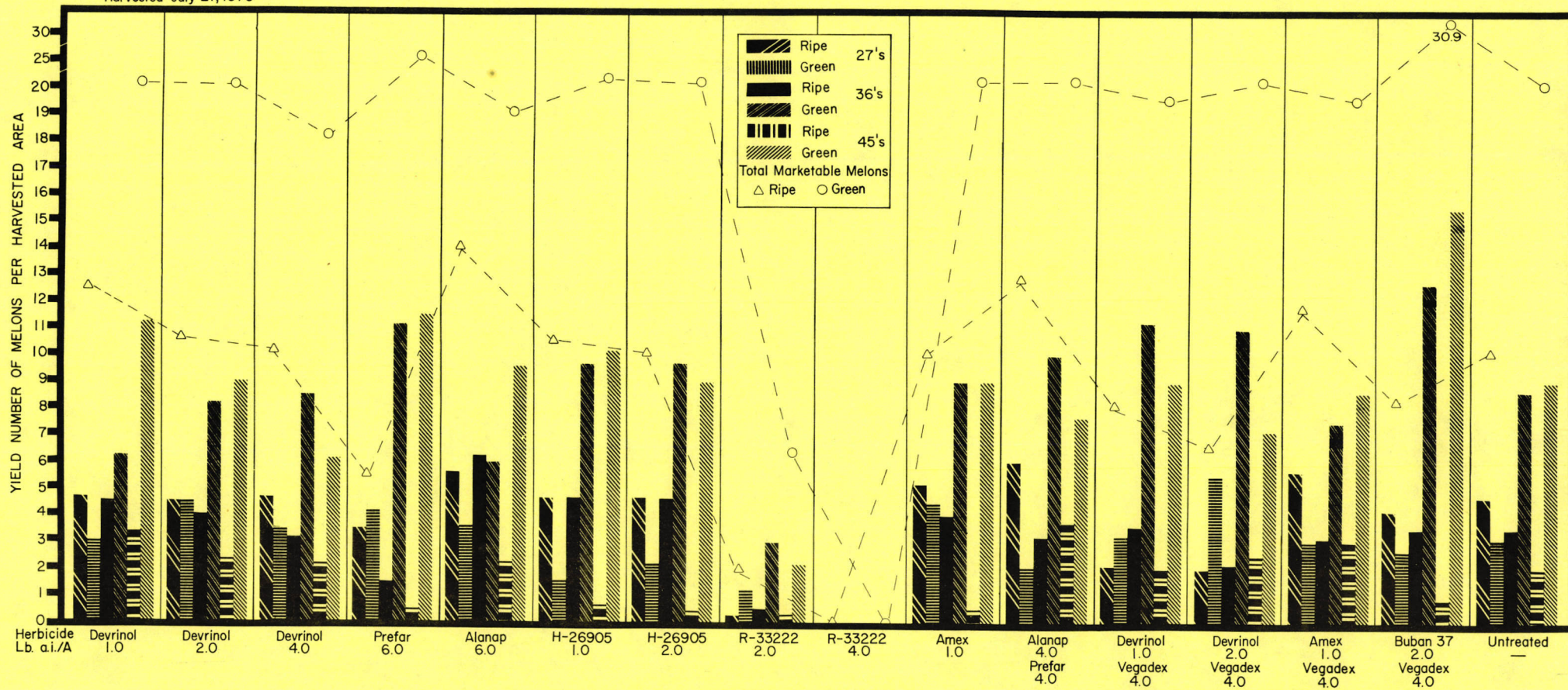


Table 5
Watermelon Weed Control Trial-Preplant Yield Data
C-51, 425, 175, 10, 76-1 & 2

Trial Location: Westside Field Station
Soil Type: Panoche Loam
Herbicides Applied: 21 April 1976
Melons Planted: 22 April 1976
Variety: Klondike

Plot Size: 3.3' x 35' - 4 reps
Irrigation Method: Furrow
Yield Obtained: 27 July 1976

1/
Yield-Number of Melons/Plot - Average of 4 Replications

Herbicides	lb ai/A	Total Melons/Plot	Percent of Untreated	Large Melons	Small Melons
A Devrinol	1.0	32.4	104	24.7	7.7
B Devrinol	2.0	32.5	102	25.0	7.5
C Devrinol	4.0	31.7	102	25.2	6.5
D Prefar	6.0	32.7	105	24.0	8.7
E Alanap	6.0	32.6	105	23.0	9.6
F H-26905	1.0	36.5	117	28.0	8.5
G H-26905	2.0	31.9	103	25.2	6.7
H R-33222	2.0	18.4	59	15.7	2.7
J R-33222	4.0	9.2	29	7.7	1.5
K Amex	1.0	36.4	117	27.7	8.7
L Alanap	4.0	31.9	103	25.7	6.2
Prefar	4.0				
M Devrinol	1.0	38.6	124	30.3	8.3
Vegadex	4.0				
N Devrinol	2.0	30.5	98	23.5	7.0
Vegadex	4.0				
P Amex	1.0	32.2	103	24.0	8.2
Vegadex	4.0				
Q Buban 37	2.0	34.9	112	26.2	8.7
Vegadex	4.0				
R Untreated	---	31.0	100	25.5	5.5
LSD 5%	---	----	---	7.2	NS

1/ Yield data were obtained by counting the number of melons in each 80" x 35' plot. Large melons indicate those that were larger than 8" in diameter. Melons that were less than 8" in diameter were classified as small.

Table 6
Cucumber Weed Control Trial-Preplant Incorporated
C-51, 425, 166, 10, 76-3

Trial Location: Westside Field Station
Soil Type: Panoche Loam
Herbicides Applied: 21 April 1976
Cucumber Planted: 22 April 1976

Evaluated: 5/11 & 5/19, 1976
Cucumber Variety: SMR 58
Plot Size: 3.3' x 35' - 4 reps
Irrigation Method: Furrow-irrigated up
4/26/76

Cucumber Stand, Vigor and Weed Control Evaluation ^{1/}				
Herbicides	lb ai/A	Stand/Ft of Row ^{1/}	Vigor ^{2/}	Weed Control ^{2/}
A Devrinol	1.0	11.5	8.7	9.0
B Devrinol	2.0	10.3	7.5	10.0
C Devrinol	4.0	7.8	6.7	10.0
D Prefar	6.0	9.3	10.0	7.0
E Alanap	6.0	6.5	7.0	6.5
F H-26905	1.0	5.3	5.5	6.5
G H-26905	2.0	2.3	1.2	8.0
H R-33222	2.0	0.5	1.0	9.0
R-33222	4.0	0	0	9.0
K Amex	1.0	6.3	8.0	8.0
L Alanap	4.0	5.3	10.0	8.5
Prefar	4.0			
M Devrinol	1.0	5.3	6.0	10.0
Vegadex	4.0			
N Devrinol	2.0	4.8	3.0	10.0
Vegadex	4.0			
P Amex	1.0	12.5	8.0	9.0
Vegadex	4.0			
Q Buban 37	2.0	7.3	7.5	9.0
Vegadex	4.0			
R Untreated	---	5.8	10.0	0

^{1/} Plants counted in four feet of row. Values are the average of four replications.

^{2/} Weed control and vigor rating based on a 0 to 10 scale. 0=no weed control or very poor vigor, 10=perfect weed control or vigorously growing cucumber seedlings.

Table 7
Cucumber Weed Control Trial-Preplant-Yield Data
C-51, 425, 166, 10, 76-3

Soil Type: Panoche Loam
Herbicides Applied: 21 April 1976
Cucumber Planted: 22 April 1976

Cucumber Variety: SMR 58
Irrigation Method: Furrow
Harvested: 6/29, 7/6, 7/12, 7/19, 7/26, 8/2

		YIELD IN LBS PER PLOT ON SIX DATES OF HARVEST								
		1st Hvst	2nd Hvst	3rd Hvst	4th Hvst	5th Hvst	6th Hvst	Total	T/A	
Herbicide	lb ai/A	6/29/76	7/6/76	7/12/76	7/19/76	7/26/76	8/2/76	Yield	Calc.	
A Devrinol	1.0	8.5	12.6	21.9	30.0	28.4	59.4	160.8	15.0	
B Devrinol	2.0	11.6	13.1	19.6	27.0	36.1	46.4	153.8	14.5	
C Devrinol	4.0	3.5	6.9	13.4	27.8	33.9	47.6	133.1	12.5	
D Prefar	6.0	20.5	22.2	25.7	34.4	36.9	52.9	192.6	12.2	
E Alanap	6.0	13.6	10.6	24.8	25.0	33.9	45.4	153.3	18.0	
F H-26905	1.0	6.7	11.2	13.8	22.7	23.8	42.5	120.7	11.0	
G H-26905	2.0	.2	8.9	1.5	1.1	3.5	7.8	23.0	2.1	
H R-33222	2.0	0	0	0	0	0	0	0	0	
J R-33222	4.0	0	0	0	0	0	0	0	0	
K Amex	1.0	6.2	13.5	24.0	28.3	23.9	55.5	151.4	14.2	
L Alanap	4.0	>	10.4	16.8	19.6	33.7	33.7	46.2	160.4	15.0
Prefar	4.0									
M Devrinol	1.0	>	5.1	4.5	12.1	28.1	29.5	47.4	126.7	11.9
Vegadex	4.0									
N Devrinol	2.0	>	1.4	3.3	7.9	16.7	31.4	31.6	92.3	8.7
Vegadex	4.0									
P Amex	1.0	>	11.7	10.5	24.5	26.5	41.0	57.4	171.6	16.1
Vegadex	4.0									
Q Buban	2.0	>	9.6	18.0	14.9	29.8	28.9	51.5	152.7	14.3
Vegadex	4.0									
R Untreated	---	10.5	13.1	20.8	25.3	34.3	49.5	153.5	14.4	
LSD 5%		8.7	8.5	12.4	16.0	14.9	23.9	-----	-----	

1/ Cucumbers longer than 2" to 2½" were picked on each date of harvest from entire plot and weighed. Values are average of 4 reps expressed as percent of untreated.

CUCUMBER WEED CONTROL TRIAL— Yield on Six Harvest Dates Expressed as Percent of Untreated

Variety: SMR 58

Irrigation Method: Furrow

Integration: $\int_{-\infty}^{\infty} \delta(x) dx = 1$

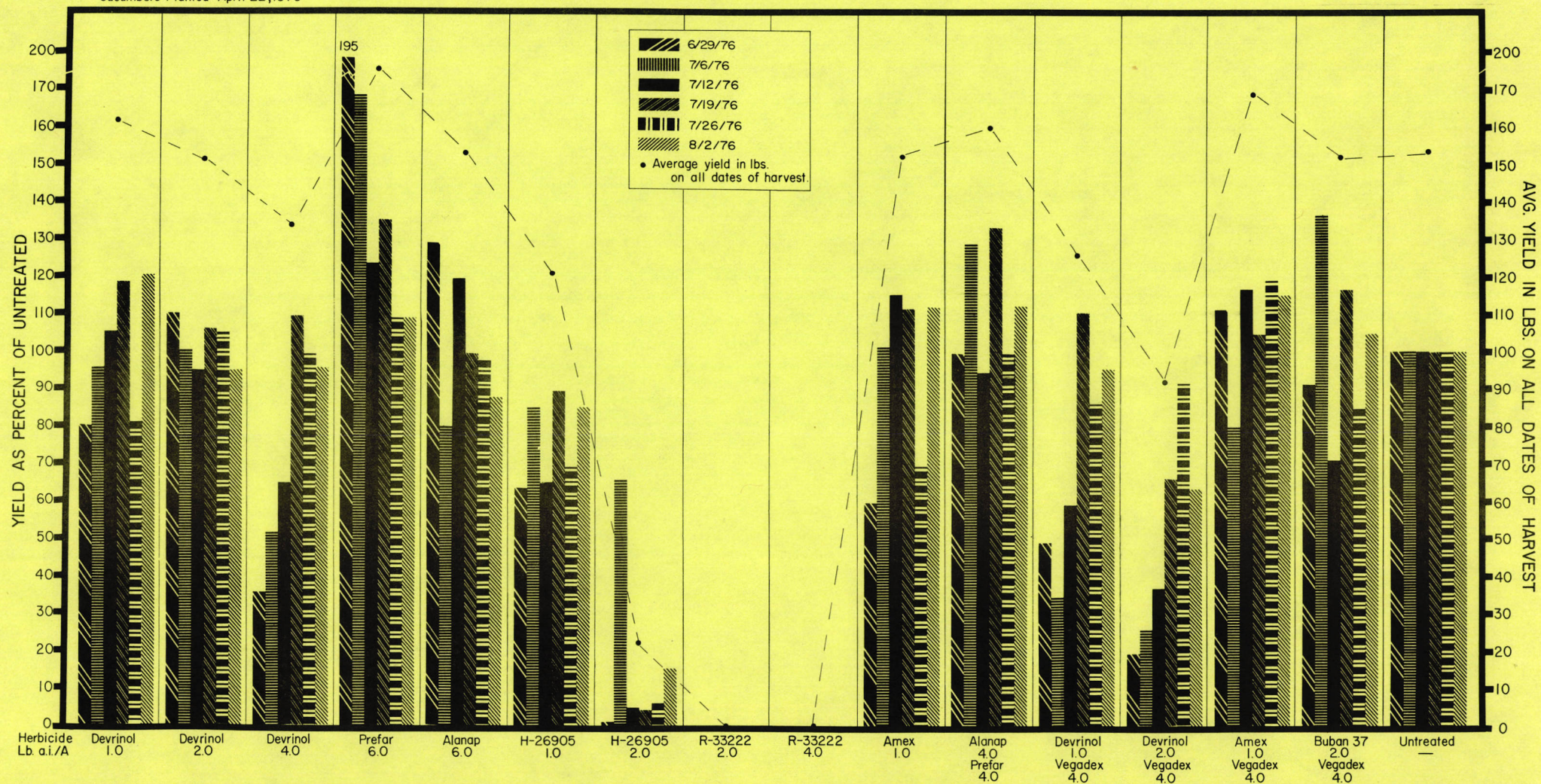


Table 9
Evaluation of Herbicides for Use in Cantaloupe Production
Preplant Incorporated

Trial Location: Westside Field Station
Soil Type: Panoche clay loam
Plot Size: 1 bed x 30' - 4 reps
Established: 29 April 1975
Variety: Imperial PMR-45

Irrigation Method: Furrow irrigated 4/30/7
Evaluated: May 22, 1975 & May 30, 1975

Herbicides	lb ai/A	Stand Count Vigor & Weed Control Evaluations ^{1/}				
		Melon/Ft of Row	Percent of Untreated	Melon Vigor	Weed Control	
					Pigweed	Lambsquarter
A Vegadex	4.0	1.7	81	8.2	7.1	10.0
B Amex 820	1.0	1.5	71	9.0	9.2	9.5
C Buban 37	2.0	2.3	110	9.7	7.6	9.8
D Buban 37	4.0	1.9	90	7.7	9.3	10.0
E Antor	2.0	2.2	105	8.2	8.6	7.3
F Antor	8.0	1.6	76	6.0	9.9	9.6
G H-26905	2.0	1.9	90	7.7	9.9	10.0
H H-26905	8.0	0.8	38	2.2	10.0	10.0
J Devrinol	1.0	2.3	110	8.5	8.5	9.9
K Devrinol	4.0	1.9	90	3.7	8.3	10.0
L NTN 6867	1.0	2.4	114	9.7	9.5	10.0
M NTN 6867	4.0	0.9	43	4.5	10.0	10.0
N Alanap	4.0	>	3.4	9.0	9.6	10.0
Prefar	4.0					
P Prefar	4.0	>	2.4	7.7	9.4	10.0
Vegadex	4.0					
Q Buban 37	2.0	>	2.1	8.0	9.6	10.0
Vegadex	4.0					
R Amex 820	1.0	>	2.7	9.5	9.7	10.0
Alanap	4.0					
S Devrinol	1.0	>	2.3	7.5	9.9	10.0
Vegadex	4.0					
T Amex 820	1.0	>	1.9	9.0	9.6	10.0
Amiben	4.0					
U Buban 37	2.0	>	2.1	9.2	9.6	9.9
Alanap	4.0					
V Untreated	---	2.1	100	8.2	0	0

^{1/} Stand counts were made in two 4'x6" area in the center of each plot. The values are the average number of plants per foot of row.

Vigor and weed control evaluations are based on a 0 to 10 scale. 0=very poor vigor or no weed control; 10=vigorously growing cantaloupe seedling or perfect weed control.

Table 10
Evaluation of Herbicides for Use in Cantaloupe Production
Preplant Incorporated
Yield Data

Trial Location: Westside Field Station
Soil Type: Panoche clay loam
Established: 29 April 1975
Variety: Imperial PMR-45

Irrigation Method: Furrow
Harvested: 8 Aug 1975 (once over
destructive harvest)
Harvested area: 80" x 15' - 4 reps

Herbicides lb ai/A		Yield Average Number of Melons in Harvested Area ^{1/}								Marketable Sizes ^{2/}		
		27's		36's		45's		Cull		Total	Ripe	Green
		Ripe	Green	Ripe	Green	Ripe	Green					
A	Vegadex 4.0	6.7	7.0	2.5	8.5	0.5	7.7	4.4		32.9	9.7	23.2
B	Amex 820 1.0	12.0	9.5	3.2	5.5	1.7	3.7	5.0		35.6	16.9	18.7
C	Bubun 37 2.0	8.5	6.0	6.2	8.0	2.2	6.0	7.7		36.9	16.9	20.0
D	Bubun 37 4.0	8.0	4.5	6.2	6.2	1.5	5.0	5.0		31.4	15.7	15.7
E	Antor 2.0	9.2	8.2	3.5	5.5	3.0	6.0	2.9		35.4	15.7	19.7
F	Antor 8.0	6.0	9.7	5.2	7.7	1.0	3.7	5.0		33.3	12.2	21.1
G	H-26905 2.0	7.5	5.2	4.5	9.2	1.2	7.7	4.4		35.3	13.2	22.1
H	H-26905 8.0	3.2	2.2	0.7	2.7	0.2	2.5	3.2		11.5	4.1	7.4
J	Devrinol 1.0	7.5	8.7	9.0	6.5	2.0	5.2	5.7		38.9	18.5	20.4
K	Devrinol 4.0	4.2	5.0	3.2	6.2	1.7	4.7	8.4		25.0	9.1	15.9
L	NTN 6867 1.0	13.0	4.0	7.7	4.0	4.0	6.0	5.0		38.7	24.7	14.0
M	NTN 6867 4.0	4.0	5.0	2.2	6.0	1.2	7.7	5.0		26.1	7.4	18.7
N	Alanap 4.0	>	15.2	1.5	7.2	4.5	5.0	5.5	6.4	38.9	27.4	11.5
	Prefar 4.0											
P	Prefar 4.0	>	9.2	5.5	3.5	5.5	2.5	4.2	4.7	30.4	15.2	15.2
	Vegadex 4.0											
Q	Bubun 37 2.0	>	11.7	6.5	5.0	7.2	2.0	2.7	6.5	35.1	18.7	16.4
	Vegadex 4.0											
R	Amex 820 1.0	>	10.2	5.2	8.5	4.7	3.0	5.7	7.2	36.3	20.7	15.6
	Alanap 4.0											
S	Devrinol 1.0	>	11.2	4.5	5.5	7.7	1.2	7.0	5.0	37.1	17.9	19.2
	Vegadex 4.0											
T	Amex 820 1.0	>	10.7	7.7	7.5	4.5	3.0	3.0	5.0	36.4	21.2	15.2
	Amiben 4.0											
U	Bubun 37 2.0	>	9.7	3.5	7.5	6.2	3.0	3.7	7.0	33.6	20.2	13.4
	Alanap 4.0											
V	Untreated ---		4.7	7.5	1.5	8.2	1.7	7.5	5.2	31.1	7.9	23.2

^{1/} All melons were picked from 15' of row. They were sized and counted.

^{2/} Only 27's, 36's and 45's are included.

Remarks: To obtain yield per acre, multiply the values given in the Table by 440.

**Table 11 Cantaloupe-Weed Control Trial
Preplant Incorporated**

Trial Location: Lyon Ave. Coit Ranch, Mendota
Soil Type: Panoche Loam
Herbicides Applied: 8 April 1975
Cantaloupe Planted: 9 April 1975

Plot Size: 5'x30' - 4 reps
Incorporation Tool: Lilliston rolling cultivators
Irrigation Method: Furrow

		Cantaloupe Vigor and Weed Control Evaluations ^{1/}			
Herbicides	lb ai/A	Cantaloupe Vigor		Weed Control	Weeds
		5/1/75	5/23/75	5/23/75	Present ^{2/}
A Alanap	6.0	9.8	8.7	7.0	GLPS
B Prefar	6.0	9.3	9.7	9.0	LP
C Amex 820	1.0	10.0	10.0	10.0	----
D Vegadex	4.0	8.0	9.7	6.0	GLPS
E Buban 37	1.0	10.0	9.0	7.0	GLPS
F Buban 37	2.0	10.0	9.5	10.0	----
G Buban 37	4.0	9.8	9.5	9.7	P
H Destun	4.0	9.8	8.7	2.0	GLPS
J Destun	8.0	10.0	9.5	6.0	GLP
K Amex 820	1.0	10.0	9.2	9.0	P
Alanap	4.0 >				
L Prefar	3.0	8.5	9.5	9.0	LP
Alanap	3.0 >				
M Buban 37	2.0	10.0	8.7	9.5	P
Alanap	4.0 >				
N Buban 37	4.0	9.0	9.5	10.0	--
Alanap	6.0 >				
P Amex 820	0.5	8.3	8.5	8.5	LP
Vegadex	4.0 >				
Q Prefar	4.0	9.3	10.0	9.0	P
Vegadex	4.0 >				
R Untreated	---	10.0	9.2	2.0	GLPS

^{1/} Weed control and vigor evaluation based on a 0 to 10 scale; 0=very poor seedling vigor or no weed control. 10=vigorously growing cantaloupe seedling or perfect weed control.

^{2/} Weeds present: G=barnyardgrass L=lambquarter P=pigweed S=purslane

Table 12 Cantaloupe Weed Control Trial
Preplant Yield Data

Trial Location: Lyon Ave. Coit Ranch, Mendota
Soil Type: Panoche loam
Herbicides Applied: 8 April 1975
Cantaloupe Planted: 9 April 1975
Harvested Area: 1 bed x 10' - 4 reps

Plot Size: 5'x30" - 4 reps
Incorporation Tool: Lilliston rolling cultivators
Irrigation Method: Furrow
Harvested: 23 July 1975

		Average Number of Melons in Harvested Area ^{1/}					Total ^{2/}	Percent of Untreated
Herbicides	lb ai/A	Melon Sizes			Under	Marketable Sizes		
		27's Larger	36's	45's	45's			
A	Alanap	6.0	11.2	9.0	3.7	3.0	23.9	99
B	Prefar	6.0	11.7	8.7	3.2	1.2	23.6	98
C	Amex 820	1.0	12.0	6.7	2.2	0.7	20.9	86
D	Vegadex	4.0	9.2	9.2	6.7	1.0	25.1	104
E	Buban 37	1.0	10.5	8.0	5.2	3.0	23.7	98
F	Buban 37	2.0	9.7	10.2	8.2	1.0	28.1	116
G	Buban 37	4.0	11.5	9.5	1.7	0.2	22.7	94
H	Destun	4.0	15.7	6.2	1.7	0.5	23.6	98
J	Destun	8.0	9.2	9.7	4.7	1.5	23.6	98
K	Amex 820	1.0	11.2	8.5	4.0	1.2	23.7	98
	Alanap	4.0						
L	Prefar	3.0	9.5	5.5	1.7	0.7	16.7	69
	Alanap	3.0						
M	Buban 37	2.0	11.5	6.2	4.5	1.2	22.2	92
	Alanap	4.0						
N	Buban 37	4.0	11.5	12.7	3.5	1.5	27.7	114
	Alanap	6.0						
P	Amex 820	0.5	9.5	9.7	4.7	1.5	23.9	99
	Vegadex	4.0						
Q	Prefar	4.0	9.2	6.0	1.7	1.2	16.9	70
	Vegadex	4.0						
R	Untreated	---	11.2	9.5	3.5	2.7	24.2	100
	LSD 5%		NS	NS	3.3	NS	NS	----

^{1/} All fruit were picked, sized and counted. To obtain estimated yield per acre multiply the values by 870.

^{2/} Melons smaller than 45's not included.

Table 13
Weed Control Trial in Cucurbits
CW-11, A-36, V-2&3, 75-2

Trial Location: Westside Field Station
Soil Type: Panoche Clay Loam
Plot Size: 48'x30' - 4 replications
Varieties: Cucumber - Watermelon-Peacock

Established: 29 April 1975
Stand Count: 27 May 75, Vigor evaluation
made 30 May 75
Irrigation Method: Furrow

Cucurbit Stand Count, Vigor and Weed Control Evaluation									
Herbicides	lb ai/A	Cucumber			Watermelon			Weed Control	
		Stand/Ft of Row	Percent of Untreated	Vigor	Stand/Ft of Row	Percent of Untreated	Vigor	Pigweed	Lambsquarter
A Vegadex	4.0	2.7	79	9.0	1.9	100	8.0	7.1	10.0
B Amex 820	1.0	2.6	76	7.5	2.3	121	9.5	9.2	9.5
C Buban 37	2.0	3.1	91	9.5	1.6	84	9.7	7.6	9.8
D Buban 37	4.0	2.7	79	8.7	1.7	89	9.2	9.3	10.0
E Antor	2.0	2.8	82	8.7	1.6	84	8.2	8.6	7.3
F Antor	8.0	0.7	21	2.0	1.2	63	2.7	9.9	9.6
G H-26905	2.0	2.2	64	7.0	1.6	84	9.7	9.9	10.0
H H-26905	8.0	0.4	12	2.2	0.9	47	2.0	10.0	10.0
J Devrinol	1.0	2.7	79	8.0	1.2	63	7.7	8.5	9.9
K Devrinol	4.0	1.7	50	4.5	2.1	111	8.0	8.3	10.0
L NTN 6867	1.0	2.8	82	9.2	2.2	116	10.0	9.5	10.0
M NTN 6867	4.0	0.4	12	3.5	1.5	79	7.5	10.0	10.0
N Alanap	4.0	>	2.1	9.7	1.7	89	9.2	9.6	10.0
Prefar	4.0								
P Prefar	4.0	>	1.2	6.2	1.2	63	7.7	9.4	10.0
Vegadex	4.0								
Q Buban 37	2.0	>	1.4	6.7	1.7	89	8.0	9.6	10.0
Vegadex	4.0								
R Amex 820	1.0	>	2.0	7.5	1.2	63	8.7	9.7	10.0
Alanap	4.0								
S Devrinol	1.0	>	1.6	6.2	1.2	63	6.7	9.9	10.0
Vegadex	4.0								
T Amex 820	1.0	>	2.7	10.0	1.2	63	8.7	9.6	10.0
Amiben	4.0								
U Buban 37	2.0	>	2.2	9.5	2.0	105	8.2	9.6	9.9
Alanap	4.0								
V Untreated	---	3.4	100	9.0	1.9	100	9.0	0	0

1/ Stand counts were made in 4' of row in the center of each plot. Values are the average of four replications and expressed as number of plants per foot of row. Vigor and weed control evaluations are based on a 0 to 10 scale; 0=no weed control or very poor vigor; 10=perfect weed control or vigorously growing plants.

Evaluation of Herbicides in Cucumbers - Yield Data

Trial Location: Westside Field Station
 Soil Type: Panoche Clay Loam
 Plot Size: 48"x30' - 4 replications
 Varieties: Cucumber - SMR 58

Established: 29 April 1975
 Irrigation Method: Furrow
 Harvested: 7/12/, 7/21, 7/28/75 and 8/4/75
 Harvested area: 80"x15'

Average Number and Pounds of Cucumbers on Four Harvest Dates

Herbicides	lb ai/A	7/12/75		7/21/75		7/28/75		8/4/75		Total No. of Cukes	Total Weight lbs
		Number	lbs	Number	lbs	Number	lbs	Number	lbs		
A Vegadex	4.0	7.5	2.5	34.0	8.7	19.3	6.7	29.0	7.5	89.8	25.4
B Amex 820	1.0	7.0	2.3	32.3	8.9	22.8	6.6	27.8	5.8	89.8	23.6
C Buban 37	2.0	14.0	4.8	36.8	9.9	24.3	8.0	27.3	6.0	102.4	28.7
D Buban 37	4.0	10.3	3.3	38.0	11.6	17.8	6.7	19.5	4.6	85.6	26.2
E Antor	2.0	9.0	3.3	43.3	11.9	25.5	7.8	16.8	3.8	94.6	26.8
F Antor	8.0	4.3	0.9	11.8	3.9	12.8	4.2	2.5	5.0	31.4	13.9
G H-26905	2.0	11.5	3.4	47.3	13.5	27.3	8.9	24.3	5.8	110.4	31.6
H H-26905	8.0	1.0	0.4	4.3	1.3	0.0	0.0	1.0	0.1	6.3	1.8
J Devrinol	1.0	10.3	3.6	25.0	7.5	20.5	5.0	23.5	4.3	79.3	20.4
K Devrinol	4.0	1.0	0.3	17.3	4.0	9.3	2.6	10.0	2.1	37.6	9.0
L NTN 6867	1.0	8.8	3.5	44.5	13.0	26.5	9.2	27.5	6.2	107.3	31.9
M NTN 6867	4.0	2.0	0.5	17.5	4.8	8.5	2.2	5.3	0.9	33.3	8.4
N Alanap	4.0	>	4.8	43.5	14.0	27.5	10.0	35.3	9.0	118.1	37.8
Prefar	4.0										
P Prefar	4.0	>	2.9	38.0	10.7	21.8	6.5	11.0	2.7	79.6	22.8
Vegadex	4.0										
Q Buban 37	2.0	>	2.3	39.8	11.7	14.8	3.9	8.5	1.9	71.1	19.8
Vegadex	4.0										
R Amex 820	1.0	>	2.4	24.8	7.6	16.3	4.4	26.8	4.5	77.1	18.8
Alanap	4.0										
S Devrinol	1.0	>	4.5	25.3	6.2	18.0	5.8	36.8	7.2	92.9	23.7
Vegadex	4.0										
T Amex 820	1.0	>	3.5	54.0	13.7	21.0	5.9	37.5	7.8	122.0	30.9
Amiben	4.0										
U Buban 37	2.0	>	4.7	34.0	11.4	19.5	7.1	16.5	3.8	85.0	27.0
Alanap	4.0										
V Untreated	---	7.0	2.5	35.5	8.3	21.0	7.5	13.0	2.6	76.5	20.9
LSD 5%		4.67	1.5	14.4	4.23	9.2	2.96	3.67	3.95	----	----

WEED INFESTATION RECORD

FIELD LOCATION _____ CROP _____ HERBICIDE USED _____
 DATE PLANTED _____ DATE NOTES TAKEN _____ PREVIOUS CROP _____

BROADLEAF ANNUALS	Anise ☐	Atriplex ☐	Bassia Five Hook ☐	Black Bindweed ☐	Bristly Oxtongue ☐	Burweed ☐	Carpetweed ☐	Cat's Ear ☐	Cheeseweed ☐
Chickweed ☐	Clover ☐	Cocklebur ☐	Corn Spurry ☐	Cudweed ☐	Dandelion ☐	Dock ☐	Dodder ☐	Fat Hen ☐	Fiddleneck ☐
Flaree ☐	Flaxleaved Fleabane ☐	Ground-cherry ☐	Groundsel ☐	Hemlock ☐	Henbit ☐	Jimson Weed ☐	Knotweeds ☐	Lambsquarters ☐	Lettuce Wild ☐
London Rocket ☐	Mare's Tail ☐	Mayweed ☐	Milk Thistle ☐	Minerslettuce ☐	Morning Glory ☐	Mustard ☐	Nettle ☐	Nettleleaf Goosefoot ☐	Nightshade ☐
Nuttalls Monolepis ☐	Phacelia ☐	Pigweed ☐	Pineapple Weed ☐	Plantain ☐	Popcorn Flower ☐	Puncture Vine ☐	Purslane ☐	Red Maids ☐	Russian Thistle ☐
Scarlet Pimpernel ☐	Shepherd's Purse ☐	Sow Thistle ☐	Spiny Clotbur ☐	Spurge ☐	Sunflower, Common ☐	Tarweed ☐	Telegraph-plant ☐	Toadflax ☐	Turkey Mullein ☐
Velvet Leaf ☐	Venice Mallow ☐	Veronica ☐	Willow Herb ☐	Yellow Starthistle ☐	☐	☐	☐	☐	☐
GRASSES ANNUAL	Annual Bluegrass ☐	Barley, Volunteer ☐	Barnyard-grass ☐	Bromegrass ☐	Canarygrass ☐	Crabgrass ☐	Cupgrass ☐	Dallisgrass ☐	Diffuse Lovegrass ☐
Feather Finger-grass ☐	Foxtails (Bristle grass) ☐	Jungle Rice ☐	Orcutts Lovegrass ☐	Rabbitfootgrass ☐	Ripgut Brome ☐	Ryegrass ☐	Sandbur ☐	Sprangletop ☐	Wild Barley (Foxtails) ☐
Wild Oats ☐	Witchgrass ☐	☐	☐	☐	☐	☐	☐	☐	☐
PERENNIALS	Alkali Sida ☐	Bermudagrass ☐	BINDWEED (Morning Glory) ☐	Cattail ☐	Chickory ☐	Heliotrope ☐	Hoary Cress ☐	Johnsongrass ☐	Nutsedge, Purple ☐
Nutsedge, Yellow ☐	Russian Knapweed ☐	Saltgrass ☐	SILVERLEAF NIGHTSHADE (Horsenettle) ☐	Swamp Smart-weed (Kelp) ☐	Tolgoucha ☐	Tule ☐	☐	☐	☐

COMPLIMENTS OF



IT'S A NATURAL WONDER

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TOWARD MORE EFFECTIVE WEED CONTROL

This weed control record card properly used will enable you to use selective herbicides more economically. Fill out a card for each field three times during the growing season:

- a. soon after crop emergence;
- b. mid-season;
- c. before harvest.

To indicate the presence of a weed, use a check mark ✓ in the spaces provided.
To indicate the degree of infestation you can use a scale of 1 - 5.

- 1 = very few weeds present
- 2 = light infestation
- 3 = moderate infestation
- 4 = heavy infestation
- 5 = very heavy infestation

A good record of weed infestation will enable you to select a crop rotation system that can minimize your weed control costs and enable you to select the most effective tools whether chemical or mechanical.

Bill B. Fischer, Fresno County Farm Advisor
University of California Agricultural Extension Service

TOWARD MORE EFFECTIVE WEED CONTROL

Without knowledge of the weed infestation it isn't possible to intelligently plan an ecoomical weed control program.

Records of weed infestations, recorded on weed infestation cards such as the one below, will enable you to select a crop rotation system that can minimize your weed control costs. It can enable you to select the most effective tools whether mechanical or chemical. Cards such as this are available free from farm advisors and pest control advisors.

To help you identify weeds the Growers Weed Identification Handbook with colored photographs of 151 commonly found weeds in California may be helpful. The handbook can be purchased from the Publications Division of Agricultural Sciences of the University of California. Order forms are available from Cooperative Extension offices.

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