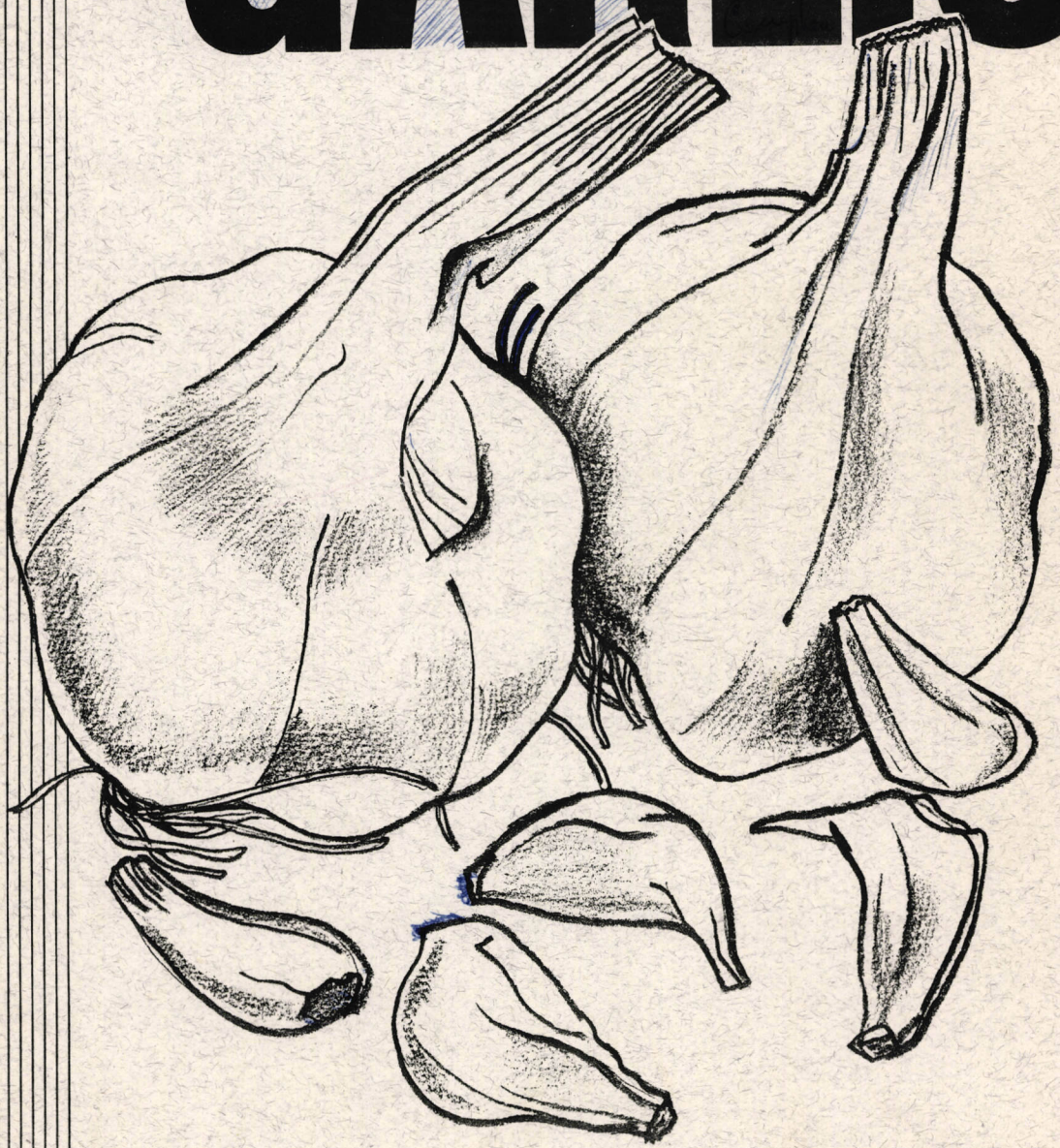
Runcina VOL. 1

Evaluation Of Herbicides For Weed Control In

GARLIC



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.

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BILL B. FISCHER
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EVALUATION OF HERBICIDES FOR WEED CONTROL IN GARLIC

A Progress Report

Bill B. Fischer*

In the Central San Joaquin Valley garlic is planted during October and November, and it is harvested in August and September.

Soon after planting, garlic fields can become infested with winter annual broadleaf weeds, grasses and volunteer cereals if they are grown in rotation with wheat or barley. Later, during the growing season, summer annuals especially pigweed, lambsquarter, knotweed, nightshade and barnyardgrass can be very troublesome. Weeds inadequately controlled can adversely effect yield, increase the cost of production and interfere with efficient harvest.

The profitable production of garlic hinges on effective, economical weed control. Although repeated hand-weeding is effective, it is very costly and fewer and fewer people are willing to do it. The purpose of the trials summarized in this progress report is to evaluate herbicides for the selective control of weeds in garlic.

This is a progress report of studies conducted in Fresno County. It is not a recommendation for the use of herbicides or techniques of application discussed; therefore, in no way should this progress report be interpreted as a recommendation by the University of California.

How the Trials Were Conducted

In a commercially grown garlic field near Mendota, and at the Westside Field Station, Five Points, several replicated trials were established in randomized block design.

Garlic cloves were planted (1400 lb/A) in two rows on beds spaced 40" apart. Herbicides were applied with a CO_2 constant pressure sprayer with the exception of one trial, summarized in Table IV, where a commercial type sprayrig was used.

The herbicides used, pound of active ingredients applied per acre (abbreviated as lb ai/A), plot size, method of application, soil type, date of treatment and irrigation method used, are given in the tables summarizing the results.

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Weed control, garlic vigor or garlic injury ratings were determined by visual assessment based on a 0 to 10 scale where "0" can indicate no weed control, no injury or very poor garlic vigor, and "10" equals perfect weed control, very severe injury or vigorously growing garlic.

Yield data in the commercially grown field was obtained by hand-digging the garlic from the center of each plot. In the trials on the Westside Field Station the garlic was dug with a commercial harvester, and the bulbs were hand-picked from the center of each plot. The harvested area is given in the tables summarizing the yield data.

Weed control ratings, garlic injury or vigor ratings and yield data are presented in Tables I through IX.

RESULTS AND DISCUSSIONS

PREPLANT INCORPORATED STUDY

On the Westside of Fresno County furrow irrigation is the most widely used and preferred method of water application. In furrow irrigated fields herbicides applied on the surface of the soil are not leached into the soil where the weed seeds germinate resulting in poor or inadequate weed control. The frequency and quantity of rainfall is not sufficiently reliable for the activation of herbicides applied on the soil surface following planting, i.e., preemergence. Therefore, in furrow irrigated fields, it would be desirable to have an herbicide that could be incorporated into the soil prior to planting to provide good weed control without causing injury to or retardation in the growth of the garlic.

Two herbicides, Dacthal and CIPC, were evaluated by incorporation into the soil with a power driven rotary tiller to a depth of 2½ to 3" Dacthal at 9.0 lb ai/A, exhibited good selectivity, but CIPC at 4.0 and 8.0 lb ai/A caused severe retardation in the growth of the garlic. At the higher rate reduction in the stand was also noted. The weed control obtained with both herbicides was poor.

The poor weed control may be attributed to the fact that during planting of the garlic, untreated soil was exposed on the top center and shoulders of the beds. Garlic cloves are planted at 1,400 lb/A, shallow in two rows on top of the bed. In the process of planting, unless the herbicide is incorporated deeper than 2½ to 3", untreated soil is exposed. Therefore, unless an herbicide is found that is selective on garlic and can be incorporated to a depth of at least 4", preplant application will not be feasible.

PREEMERGENCE STUDIES

Furrow irrigation is the most widely used method of water application in growing garlic; but most growers are willing to use sprinkler irrigation to activate herbicides applied on the surface of the soil following planting, i.e., preemergence.

Three preemergence trials were conducted evaluating numerous herbicides and combinations of herbicides. In one trial, conducted on Panoche fine sandy loam soil, near

Mendota, the field was sprinkler irrigated following the application of the herbicides; later irrigations were by furrow. In the trials conducted at the Westside Field Station sprinkler irrigation was used throughout the growing season. A summary of the weed control, garlic tolerance evaluations and yield data are presented in Tables I, II, III and IV.

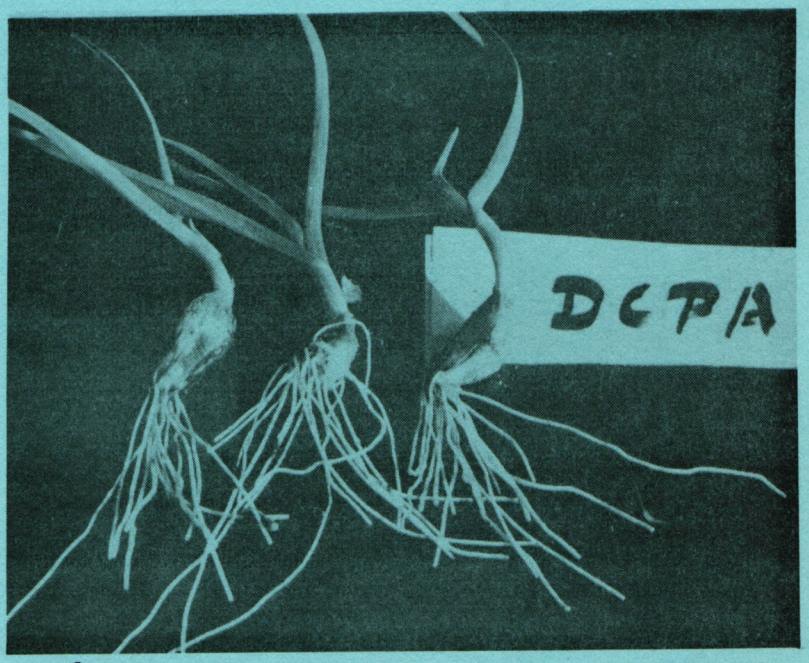
The results obtained and observations made in the trials and in commercial fields can be outlined as follows:

*CIPC and FURLOE (chloropropham) provided effective control of weeds in the mustard family, wild oats and volunteer cereals, but it caused severe retardation in early growth of the garlic.

The growth retardation was observed at 2.0 lb ai/A as well as at higher rates and in all trials. It was more severe in later planted fields when the soil temperature was lower and the garlic emergence was slow.

Although, at the present time, there are no other preemergence herbicides registered for use in garlic that control volunteer cereals and weeds in the mustard family, the use of CIPC and FURLOE cannot be encouraged in the Central San Joaquin Valley on Panoche or related soil types.





CIPC applied preemergence in sprinkler irrigated trials retarded the garlic root development, as shown above, contrasted with the normal root development in the Dacthal treated areas, as shown in the lower right picture.

*DACTHAL (chlorthal-DCPA) exhibited excellent garlic selectivity but it did not provide effective control of weeds in the mustard and thistle families, and it did not control volunteer cereals.

Dacthal failed to provide seasonal control of susceptible weeds. In fields where a second application of 9.0 lb ai/A was used, heavy barnyardgrass, pigweed and lambsquarter infestation was observed at harvest.

*PROBE (methazole-VCS 438) provided effective weed control and it showed good selectivity at crop emergence but, as the season progressed, garlic injury and growth retardation was observed. The injury was manifested in browning of the older, more mature leaves, and retarded somewhat chlorotic growth of the younger leaves. Significant yield reduction was obtained in plots treated with 4.0 lb ai/A of Probe. (See Tables I, III and V)

*PREFAR (bensulide) exhibited good garlic selectivity but it did not provide control of winter annual broadleaf weeds, volunteer cereals and wild oats.

Prefar provided good control of barnyardgrass throughout the season, and at 6.0 lb ai/A it gave adequate control of pigweeds and lambsquarter. The use of this herbicide for the control of summer annual weeds in garlic warrants further evaluation. (See Tables II and III)

*RONSTAR (oxadiazon-RP-17623) was the most effective herbicide evaluated. It provided effective seasonal weed control with good selectivity.

Ronstar gave acceptable control of weeds at 0.5 lb ai/A and it did not cause significant yield reduction at 4.0 lb ai/A. (See Tables II and III)

The evaluation of Ronstar should be continued. It could be a very effective selective herbicide for use in garlic to control most winter, as well as summer annual weeds, prevalent in the Central San Joaquin Valley.



The bed on the right side in the picture treated with CIPC provided good control of weeds with the exception of common groundsel, but retarded the growth of the garlic. Bed on the left treated with Ronstar.

*TOK (nitrofen) was included only in one trial using 4.0 lb ai/A. The garlic showed very good tolerance and the weed control rating on February 21st was excellent, but by the 30th of May it was very poor, as shown in Table II.

TOK is not effective for the control of grasses and it provides poor or erratic control of weeds in the mustard family. This herbicide should be evaluated preemergence, postemergence, and as multiple applications at rates higher than 4.0 lb ai/A.

*RONSTAR + PREFAR were used in combination in order to study whether they would provide barnyardgrass control late in the growing season.

Good garlic selectivity was obtained and excellent seasonal weed control was observed. The further evaluation of this combination should be pursued although in the trial summarized in Tables II and III good seasonal weed control was obtained with RONSTAR used alone.

*PREFAR + FURLOE in combination provided good seasonal control of barnyardgrass, but it caused retardation in the growth of the garlic resulting in significant yield reduction. (See Tables II and III)

POSTEMERGENCE STUDIES

Waiting until both the garlic and weeds are emerged before using weed control measures could eliminate guesswork and enable one to select the most effective tool for the job. But one must consider that the timely application of herbicides postemergence to the crop and weeds can be limited by adverse weather conditions and wet soil during the winter months.

Seven herbicides were evaluated in three trials at two locations to study their effectiveness to control weeds and their tolerance by two varieties of garlic - an early maturing (California early), and a late maturing variety (Seedline L-2). The results of these trials are presented in Tables V, VI and VII.

The evaluation and observations made can be outlined as follows:

*BROMINAL (bromoxynil), also sold under the trade name BUCTRIL, provided very good control of broadleaf weeds in their seedling stage of growth. Many broadleaf weeds were not effectively controlled at 0.5 and 1.0 lb ai/A when applied beyond their rosette stage of growth when their stems started elongating.

Although not included in the tables, a trial was conducted in which bromoxymil was applied on London rocket and monolepis in their later stages of growth. It was observed that applying bromoxymil at 1.0 and 2.0 lb ai/A in 60 gallons of water per acre.

provided excellent control; whereas applying it in 10 and 20 gallons of water per acre, the weed control obtained was poor.

*BROMINAL-BUCTRIL is a contact herbicide without residual soil activity; therefore, later germinating weed seeds reinfested the treated areas.

The tolerance of garlic to this herbicide was good and the registration of bromoxynil for use in garlic would provide a badly needed tool for the control of many broadleaf weeds found infesting garlic fields.

Multiple applications of bromoxynil alone or in combination with soil active residual herbicides warrant further evaluation.

*RONSTAR (oxidiazon) provided good weed control and exhibited good selectivity on garlic. The residual control was somewhat better in the sprinkler irrigated trial.

Two formulations of Ronstar were used. In one trial, summarized in Table VII, it was observed that at 2.0 lb ai/A the flowable formulation, listed as "Emuls" in the Table, did not reduce the garlic vigor whereas the EC (emulsifiable concentrate) formulation caused some chlorosis and reduction in growth.

Ronstar exhibited good selectivity on garlic and its further evaluation is warranted. In earlier studies Ronstar effectively contolled established volunteer cereals up to 3 to 4" in height, especially if rainfall or sprinkler irrigation followed 4 to 6 days after treatment.

*LOROX (linuron) provided good weed control, but the tolerance of garlic to this herbicide was very narrow. When applied at rates higher than 0.5 lb ai/A it caused severe injury and resulted in significant yield reduction. (See Tables V and VII)

The further evaluation of Lorox for weed control in garlic on panoche or related soils with low organic matter content cannot be justified.

*PROBE (methazole) was evaluated for postemergence control of weeds at 2.0 and 4.0 lb ai/A. It provided good early and late season weed control as shown in Table VII.

The tolerance of garlic to Probe appeared excellent early in the season, but with later irrigations injury was observed in areas treated with 4.0 lb ai/A. This injury was reflected in significant yield reduction, as indicated in Table V.

*SINOX-W, DOW SELECTIVE (dinoseb-DNBP NH_4 salt) was used at 1.0 lb ai/A alone and in combination with ammonium sulfate. It provided effective control with good garlic tolerance. The addition of ammonium sulfate provided more effective control of the larger weeds, but it also produced more burning of the garlic foliage.

The application of dinoseb with drop nozzles as a directed spray could be employed to minimize injury to the garlic foliage.

Sinox-W and Dow Selective are contact herbicides and the plots treated with these compounds became reinfested with weeds as shown in Table VII.

*TANORAN (chloroxuron) in combination with nonphytotoxic oil was included only in one trial at 2.0 lb ai/A. The weed control and garlic tolerance was very good. (See Table V)

The effectiveness of Tanoran for postemergence weed control in garlic has been demonstrated in earlier studies. It is unfortunate that recommendations for its use on garlic and onion has been removed from the label.

POSTEMERGENCE AND PREEMERGENCE STUDIES

A trial was conducted in which CIPC, Dacthal and the combination of CIPC plus Dacthal were applied following planting but preemergence to the garlic. Approximately three months later several herbicides, including CIPC and Dacthal were superimposed on the earlier treatments when the garlic had 3 to 5 leaves. The herbicides used, rate per acre, and dates of applications are given in Tables VIII and IX.

Although the preemergence application of CIPC caused severe retardation in the growth of the garlic, it is interesting to note that:

Two applications of 9.0 lb ai/A of Dacthal (a total of 18.0 lb ai/A) did not provide effective seasonal control of barnyardgrass, pigweed and lambsquarter.

The highest average yields were obtained in plots treated with Dacthal preemergence regardless of the postemergence treatments. Although the postemergence application of 8.0 lb ai/A of CIPC caused significant yield reduction as shown in Table IX.

None of the combinations of treatments with CIPC, evaluated in the trial, provided effective seasonal control of weeds with sufficient selectivity to pursue their further evaluation.

CONCLUSIONS

To produce garlic profitably in Fresno County, growers will have to rely on the use of selective herbicides to control weeds in their crop.

It was demonstrated that Dacthal will provide control of summer annual grasses and certain broadleaf weeds. But seasonal grass control was not maintained with two applications of 9.0 lb ai/A. Dinoseb is another chemical and, if properly used, can be an effective tool for the selective control of broadleaf weeds in garlic.

Bromoxynil is a very promising herbicide for the selective control of susceptible broadleaf weeds in their seedling stage.

Ronstar is the most promising herbicide evaluated in the studies summarized in this report. It was effective when used preemergence as well as postemergence. The study of the use of this herbicide in garlic should be vigorously pursued.



Ronstar provided the most effective seasonal control of weeds. Good garlic selectivity was observed at 0.5 and 2.0 lb ai/A as shown above.

Table I Garlic Weed Control Trial-Preemergence
CW-11, A-36, V-12, 10, 75-1

Soil Type: Panoche Sandy Loam
Garlic Planted: 4 Nov 1974
Garlic Variety: California Early
Herbicide Applied: 7 Nov 1974

Plot Size: 40"x30' - 4 replications
Irrigation Method: Sprinkler (7 Nov 1974) later furrow irrigations
Harvested: 7 July 1975 - Harvested area 10'x40"

Weed Control, Garlic Vigor and Garlic Yield Data 1/

	Herbicide	lb ai/A	Garlic Vigor 12/6/74	Garlic Vigor 1/3/75	Garlic Vigor 2/20/75	Weed Control 2/20/75	2/ Weeds 2/20/75	Garlic lb/ Harvested Area	Garlic T/A Calculated
A	CIPC	4.0	4.2	4.5	4.5	8.0	G	11.7	7.6
B	CIPC	8.0	3.2	4.0	3.5	8.2	G	7.8	5.0
C	Ronstar	0.5	7.7	7.7	9.2	8.7	GS	15.3	9.9
D	Ronstar	1.0	7.5	8.2	9.7	10.0	--	19.6	12.8
E	Ronstar	2.0	6.7	7.2	8.7	10.0	--	17.7	11.5
F	Probe	2.0	8.5	8.0	9.0	10.0	--	11.9	7.7
G	Probe	4.0	9.2	7.0	8.2	10.0	--	7.6	4.9
H	Untreated	---	9.2	9.7	9.7	1.0	GLS	17.7	11.5
						LSD 5%		3.0	2.4
						1%		5.0	3.2

1/ Vigor and weed control ratings are based on a 0 to 10 scale. 0=no weed control or very poor vigor, 10=perfect weed control or vigorously growing plant.
2/ Weeds present: G=common groundsel, S=Shepherd's purse, L=Prickly lettuce.
3/ Garlic was dug from an area 10'x40" and weighed. Yield ton/A was calculated.

Table II

Garlic Weed Control Trial - Preemergence
CW-11, A-36, V-12, 10, 75-3

Trial Location: Westside Field Station
Soil Type: Panoche Clay Loam
Established: 21 November 1974
Garlic Planted: 21 November 1974 - 1400 lb/A

Variety: Seedline L-2
Plot Size: 40'x25' - 4 replications
Irrigation Method: Sprinkler
Evaluations: 21 Feb & 30 May '75
Stand Count: 22 Feb '75

			Garlic - Stand - Vigor and Weed Control Evaluations						
			27 Feb '75		21 Feb '75 2/			30 May '75 2/	
	Herbicide	lb ai/A	Garlic/Ft of Bed	Percent of Untreated	Garlic Vigor	Weed Control	Weeds 3/ Present	Garlic Vigor	Weed Control
A	Ronstar	0.5	15.5	98	9.2	10.0	---	9.7	8.7
B	Ronstar	1.0	14.7	93	9.5	10.0	---	9.7	9.5
C	Ronstar	2.0	23.7	150	9.0	10.0	---	10.0	10.0
D	Ronstar	4.0	14.2	90	8.2	10.0	---	9.7	10.0
E	Probe	2.0	15.0	95	9.0	10.0	---	9.5	9.2
F	Probe	4.0	17.0	108	9.7	10.0	---	8.0	7.7
G	Tok	4.0	16.8	106	9.0	10.0	---	10.0	1.7
H	Ronstar Prefar	0.5 4.0	13.4	85	8.0	10.0	---	9.7	9.2
K	Ronstar Prefar	1.0 4.0	16.0	101	9.0	10.0	---	9.5	9.2
L	Prefar	4.0	14.3	91	9.0	7.2	L,W	9.7	7.7
M	Prefar	8.0	16.0	101	8.2	9.2	L	9.7	8.2
N	Prefar Furloe	4.0 4.0	15.2	96	4.5	10.0	---	6.0	5.2
P	Furloe	2.0	14.3	91	4.5	10.0	---	8.2	1.2
Q	Furloe	4.0	16.1	102	4.5	10.0	---	5.0	1.2
R	Untreated	---	15.8	100	9.2	6.5	GLMSW	10.0	0

1/ Counts made in 4' of bed (2 rows) values are the average per foot of bed (2 rows).
2/ Weed control and vigor ratings are based on a 0 to 10 scale: 0=no weed control or very poor vigor; 10=perfect weed control or vigorously growing garlic.
3/ Weeds Present: G=Common Groundsel M=Monolepis
L=London Rocket R=Lambsquarter
S=Shepherds Purse W=Sow Thistle

Table III Garlic Weed Control Trial - Preemergence
CW-11, A-36, V-12, 10, 75-3

Soil Type: Panoche Clay Loam
Garlic Planted: 21 Nov 1974
Variety: Seedline L-2
Herbicides Applied: 21 Nov 1974
Plot Size: 40'x25' - 4 reps

Irrigation Method: Sprinkler
Evaluated: Jul 18, 1975
Harvested: 17 Aug 1975
Harvested Area: 10'x40"

	Herbicides	lb ai/A	Weed Control Evaluations and Yield Data 1/ Barnyard Grass	Pigweed	Lambsqtr	Lbs/per Harvested Area	T/A Calculated
A	Ronstar	0.5	7.5	8.0	8.0	8.2 ab*	5.3
B	Ronstar	1.0	8.0	8.0	8.0	7.9 ab	5.2
C	Ronstar	2.0	9.7	9.5	9.0	9.0 a	5.9
D	Ronstar	4.0	10.0	9.2	9.7	8.1 ab	5.3
E	Probe	2.0	5.7	5.0	7.5	6.4 abc	4.2
F	Probe	4.0	6.5	5.0	6.7	4.3 cde	2.8
G	Tok	4.0	3.2	1.7	2.0	7.0 abc	4.6
H	Ronstar + Prefar	0.5 + 4.0	9.5	7.5	8.5	7.7 ab	5.0
K	Ronstar + Prefar	1.0 + 4.0	8.7	7.5	7.7	7.7 ab	5.0
L	Prefar	4.0	7.0	5.5	5.0	5.6 bcd	3.7
M	Prefar	8.0	9.2	8.0	7.2	7.9 ab	5.2
N	Prefar + Furloe	4.0 + 4.0	9.0	2.0	1.7	2.7 de	1.8
P	Furloe	2.0	2.7	1.7	0	4.6 cde	3.0
Q	Furloe	4.0	4.0	0	0	2.3 de	1.5
R	Untreated	---	0	0	0	4.9 cde	3.2

* Values followed by the same letter are not statistically significant from each other at the 5% level according to Duncan's Multiple Range Test.

1/ Weed control evaluations based on a scale of 0 to 10. 0=no control; 10=perfect control.

Yield data obtained by digging the garlic with a commercial harvester and picking up the garlic from 10'x40" area.

Table IV Garlic - Weed Control Trial
Preplant Incorporated and Preemergence
CW-11, A-36, V-12, 10, 75-2

Soil Type: Panoche Clay Loam
Garlic Planted: 21 Nov 1974 - Seed Line L-2, 1400 lb/A
Herbicide Applied: Preplant Incorporated: 6 Nov 1974
Preemergence: 21 Nov 1974
Plot Size: Preplant Incorporated: 24" on two 40' beds x 4 rows x 50"
Preemergence - 4 rows (40") x 100'
Irrigation Method: Sprinkler
Evaluation: 21 Feb 1975

Preemergence Herbicide	lb ai/A	Garlic Vigor & Weed Control Rating 1/ Garlic Vigor	Weed Control	Weeds Present 2/
A Dacthal	9.0	10.0	9.25	GL
B CIPC	4.0	6.25	10.0	--
C CIPC	8.0	5.5	10.0	--
D CIPC + Dacthal	4.0 + 9.0	6.25	7.5	GL
E CIPC + Dacthal	8.0 + 9.0	4.75	10.0	--
F Untreated	---	10.0	1.75	GLM
	LSD 5%	0.75	3.42	---
Preplant Incorporated				
A Dacthal	9.0	9.25	7.5	LM
B CIPC	4.0	3.75	7.0	LM
C CIPC	8.0	2.75	7.5	LM
D CIPC + Dacthal	4.0 + 9.0	3.5	9.5	LM
E CIPC + Dacthal	8.0 + 9.0	2.25	10.0	--
F Untreated	---	9.5	0.0	LM
	LSD 5%	1.07	1.38	--

Remarks: 1/ Rating based on a scale of 0 to 10 scale. 0=very poor vigor or no weed control. 10=vigorously growing plant or perfect weed control.
2/ Weeds Present: G-Groundsel M-Monolepis
L-London Rocket

Table V Garlic - Weed Control Trial - Postemergence
CW11, A-36, V-12, 10, 75-4

Soil Type: Panoche Fine Sandy Loam
Garlic Planted: 4 Nov 1974 Variety: Calif. Early
Herbicides Applied: 3 Jan 1975
Garlic Stage of Growth: 2-3 leaves

Harvested: 7 July 1975
Harvested Area: 10'x40"
Plot Size: 40"x20' - 4 reps
Irrigation Method: Furrow

			Weed Control Garlic Injury Rating and Yield Data 1/						
			Jan. 14, 1975		Feb 20, 1975			Garlic	Garlic T/A
	Herbicide	lb ai/A	Weed Control	Garlic Injury	Weed Control	Garlic Injury	Weeds Present	lbs Harvested Area	Calculated
A	Brominal	0.5	5.5	1.2	9.0	1.0	LS	20.1 a *	13.1
B	Brominal	1.0	7.7	2.0	9.5	0.5	BLS	20.0 a	13.0
C	Brominal	2.0	9.0	1.7	10.0	0.5	---	17.0 ab	11.1
D	Ronstar	1.0	3.2	1.0	5.5	0.5	BGLS	17.5 ab	11.4
E	Ronstar	2.0	5.0	1.7	7.7	2.0	BGLS	16.5 abc	10.7
F	Lorox	0.5	1.2	1.0	9.7	0.5	G	15.6 abc	10.1
G	Lorox	1.0	2.2	1.7	10.0	2.0	---	13.4 bc	8.7
H	Lorox	2.0	0.5	1.5	9.7	2.7	G	9.8 cd	6.3
J	Lorox	4.0	2.0	1.2	10.0	4.5	---	4.5 d	2.9
K	Sinox W	1.0	7.0	1.7	7.5	0.2	BGLS	16.1 abc	10.5
L	Sinox W + Amm. Sulfate	1.0 + 2.0	8.7	2.5	8.5	0.7	GLPS	12.9 bc	8.4
M	Tanoran + Oil UR-93	2.0 + 2.0 gpa	0	1.5	9.5	0.5	LP	19.4 ab	12.6
N	Probe	2.0	0.7	1.2	10.0	1.2	---	16.5 abc	10.7
P	Probe	4.0	1.0	1.5	10.0	1.5	---	13.5 bc	8.8
Q	Untreated	---	0.5	1.5	1.7	0.2	BGLPS	16.8 abc	10.9

* Values followed by the same letter are not statistically significant from each other at the 5% level according to Duncan's Multiple Range Test.

1/ Weed control evaluations based on a 0 to 10 scale. 0=no injury or no weed control. 10=perfect weed control.

TABLE VI Garlic Weed Control Trial - Postemergence-Yield Data
CW-11, A-36, V-12, 10, 75-5

Soil Type: Panoche fine sandy loam
Garlic Planted: 4 Nov 1974
Garlic Variety: California Early
Herbicides Applied: 20 Feb 1975

Plot Size: 40"x20' - 4 replications
Irrigation Method: Furrow
Harvested: 7 July 1975
Harvested Area: 10'x40"

	Herbicide	lb ai/A	Garlic Yield Data No. of Bulb.	lb/Plot	T/A
A	Brominal	0.5	160.5	18.6	12.1
B	Brominal	1.0	137.8	18.7	12.2
C	Brominal	2.0	153.0	18.6	12.1
D	Ronstar	1.0	163.8	18.8	12.2
E	Ronstar	2.0	156.3	19.8	12.9
F	Ronstar	4.0	160.5	19.6	12.7
G	Untreated	---	145.0	18.7	12.1
			NS	NS	NS

1/ Yield data obtained by hand digging the garlic from 10'x40" area weighed and by counting the number of bulbs.

Table VII Garlic Weed Control Trial-Postemergence
CW-11, A-36, V-12, 75-6

Soil Type: Panoche Clay Loam
Garlic Planted: 21 Nov 1974
Variety: Seedline L-2
Herbicides Applied: 25 Feb 1975
Garlic Growth Stage: 3-5 leaf

Plot Size: 40'x25' - 4 replications
Irrigation Method: Sprinkler
Harvested: 13 Aug 1975
Harvested area: 10'x40"

Weed Control, Garlic Vigor Evaluations and Yield Data 1/

	Herbicides	lb ai/A	2/ Weed Control 3/17/75	2/ Weed Control 5/30/75	3/ Vigor 5/30/75	Weed Control 7/18/75 Barnyard Grass	Pigweed	Lambsqtr	Yield lb/ Plot 4/	T/A Calculated
A	Brominal	0.5	8.5	3.5	10.0	0	0.5	0	4.8	3.1
B	Brominal	1.0	9.5	2.0	9.8	0	0	0	5.5	3.6
C	Brominal	2.0	10.0	1.2	10.0	1.0	2.2	1.0	5.3	3.5
D	Ronstar Emuls.	1.0	9.0	9.0	10.0	8.7	5.2	4.7	6.2	4.0
E	Ronstar Emuls.	2.0	9.5	9.7	10.0	9.2	8.2	7.5	6.4	4.2
F	Ronstar EC	1.0	9.0	9.5	10.0	8.7	6.0	6.2	7.6	4.9
G	Ronstar EC	2.0	9.5	9.2	7.6	7.7	7.7	6.2	5.2	3.6
H	Lorox	0.5	9.0	8.5	9.2	7.0	6.5	6.5	7.7	5.0
J	Lorox	1.0	10.0	9.0	8.4	8.2	5.2	4.5	4.4	2.9
K	Probe	2.0	10.0	9.5	10.0	9.7	8.2	8.5	6.9	4.5
L	Probe	4.0	10.0	9.5	9.2	9.7	8.2	9.2	5.7	3.7
M	Dow Selective + Amm.Sulfate	1.0 + 2.0	9.0	4.7	9.5	3.7	2.2	0	4.5	2.9
N	Dow Selective + Amm.Sulfate	1.0 + 4.0	9.5	2.7	9.5	1.7	0.75	0	5.3	3.5
P	Brominal + Prefar	0.5 + 4.0	8.0	4.7	9.2	8.7	4.0	2.5	4.9	3.2
Q	Untreated	---	0	0	10.0	1.0	1.5	0	4.7	3.1

1/ Weed control and vigor ratings are based on a 0 to 10 scale. 0=no weed control or very poor vigor; 10=perfect weed control or vigorously growing garlic.
2/ Weeds present: Monolepis, London Rocket, and Groundsel.
3/ Weeds present: Lambsquarter, Pigweed, Sowthistle.
4/ Yield obtained by digging the garlic with a commercial harvester and handpicking 10' of bed from the center of each plot.

Table VIII Garlic Weed Control Trial-Preemergence and Postemergence
CW-11, A-36, V-12, 10, 75-7

Soil Type: Panoche Clay Loam
Garlic Planted: 12 Nov 1974
Variety: Seedline
Herbicides Applied:
Preemergence: 21 Nov 1974
Postemergence: 25 Feb 1975

Plot Size:
Preemergence: 13.3' x 100'
Postemergence: 6.6' x 20'
Irrigation Method: Sprinkler
Evaluated: 18 July 1975

Weed Control Evaluations - Average of Four Replications 1/

Postemergence	Herbicide lb ai/A	CIPC 4.0	CIPC 8.0	Dacthal 9.0 Brominal 1.0	Lorox 0.5	Lorox 1.0	Brominal 0.5	Brominal 1.0	Brominal 2.0	Dow Sel. 1.0 Amm Sulf. 1.0	Untreated
Preemergence											
Herbicide	lb ai/A										
Dacthal	9.0 LQ*	6.2	6.2	7.2	6.7	6.7	0.5	3.5	6.2	1.5	1.2
	PW	6.5	4.5	6.2	6.2	2.7	4.5	1.0	4.5	4.0	2.2
	BG	5.0	6.0	3.7	3.0	4.5	6.7	5.0	4.5	2.5	2.5
CIPC	4.0 LQ	7.0	5.2	5.7	3.0	6.7	0	0	0	1.2	0
	PW	7.7	4.5	5.2	6.0	7.2	0	1.5	0	1.5	2.0
	BG	7.0	6.5	5.0	5.0	4.7	1.5	2.2	1.2	4.7	3.5
CIPC	8.0 LQ	5.7	7.0	3.2	3.0	3.2	0	1.0	0	2.2	1.2
	PW	7.0	1.7	1.2	3.5	3.0	0.7	1.2	1.2	2.7	3.7
	BG	8.2	7.0	4.2	5.2	0	2.5	3.7	0	4.0	0.2
CIPC	4.0 LQ	7.0	5.5	5.0	7.2	7.2	2.0	1.7	3.0	3.7	3.5
Dacthal	9.0 PW	7.0	4.5	6.2	5.0	7.0	4.2	4.5	3.2	3.2	4.5
	BG	9.2	8.0	8.2	5.2	6.0	6.2	6.2	5.7	3.2	6.5
CIPC	8.0 LQ	7.2	4.5	5.0	6.0	5.0	1.5	2.2	3.2	2.2	1.7
Dacthal	9.0 PW	4.7	3.2	6.0	5.2	4.0	1.2	3.7	1.5	2.7	1.5
	BG	8.7	7.2	5.7	5.2	4.0	5.0	3.5	3.0	3.7	3.0
Untreated	--- LQ	6.7	5.0	4.0	5.0	5.7	0	0	2.7	0	0
	PW	6.2	2.7	5.0	5.7	7.2	2.2	4.5	3.7	1.0	2.0
	BG	8.0	8.0	8.0	5.2	4.5	4.0	5.0	5.0	0	5.7

*LQ=Lambsquarter, PW=Pigweed, BG=Barnyardgrass.
1/ Evaluations based on a 0 to 10 scale. 0=no control, 10=perfect control.

Table IX Garlic Weed Control Trial-Preemergence and Postemergence Yield Data
CW-11, A-36, V-12, 10, 75-7

Soil Type: Panoche Clay Loam
Garlic Planted: 12 Nov 1974
Variety: Seedline
Herbicides Applied:
Preemergence: 21 Nov 1974
Postemergence: 25 Feb 1975

Plot Size:
Preemergence: 13.3'x100'
Postemergence: 6.6'x20'
Irrigation Method: Sprinkler
Harvested: 13 Aug 1975
Harvested Area: 6.6'x10'

Garlic Yield Data - lbs Per Harvested Area-Average 4 Replications 1/

Postemergence Herbicide lb ai/A		CIPC 4.0	CIPC 8.0	Dacthal 9.0 Brominal 1.0	Lorox 0.5	Lorox 1.0	Brominal 0.5	Brominal 1.0	Brominal 2.0	Dow Sel. 1.0 Amm.Sulf 1.0	Untreated	Ave.	LSD 5%
Preemergence													
Herbicide	lb ai/A												
Dacthal	9.0	11.2	8.9	14.0	17.6	14.1	16.0	12.6	13.4	11.5	15.3	13.5	4.01
CIPC	4.0	9.6	6.8	10.9	13.0	11.0	7.4	8.6	6.7	8.7	4.1	8.7	3.20
CIPC	8.0	9.6	4.1	10.1	10.0	9.2	7.4	9.5	8.2	6.4	7.9	8.2	NS
CIPC + Dacthal	4.0 + 9.0	11.8	6.3	11.8	14.4	12.4	12.5	12.9	11.3	10.4	11.6	11.5	NS
CIPC + Dacthal	8.0 + 9.0	9.5	6.5	10.6	12.2	9.0	10.5	8.5	7.2	9.5	10.0	9.3	NS
Untreated	---	11.9	5.5	13.5	11.8	12.4	10.3	9.7	7.5	9.8	5.7	9.8	3.25

1/ Yield was obtained by digging the garlic with a commercial harvester and hand picking the bulbs from a 6.6'x10' area. To obtain yield per acre multiply values by 654.0.

CORRECTIONS

Please make the following corrections and additions in the following tables:

Table II The plot size should read:

Plot Size 40" x 25'

Table III The plot size should read:

40" x 25' and not, 40' x 25'

Table IV Preplant incorporated plot size should be,

2" on two 40" beds

Table V The codes for weeds present are:

B = black mustard
G = common groundsel
L = london rocket
P = pineapple weed
S = shepherds purse

Table VII The plot size is: 40" x 25'

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