Farm Advisor KAC
trials - '60's-'80's
Insecticides
& Gibberellin

GRAPE FIELD TESTS

SJVAR&EC

COOPERATIVE EXTENSION
UNIVERSITY OF CALIFORNIA

SAN JOAQUIN VALLEY
AGRICULTURAL RESEARCH
AND EXTENSION CENTER

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MEMO TO: Grape Farm Advisors
DATE: April 9, 1981

FROM: John E. Dibble
Extension Entomologist

The data tables in the enclosed folder are the result of field tests run out of the San Joaquin Valley Agricultural Research & Extension Center by myself in cooperation with various counties, growers and chemical companies. A few trials run by Johannes Joos and Fred Jensen are included as are quite a number of valley tests done by past and present UCD-Department of Entomology staff (Stafford, Kido, AliNiazee, and others).

Some of these data date back quite a number of years, but due to their present day validity and value as reference matter they were included. The enclosed does not represent all of the pest control information obtained by the U.C. system in past or present seasons. However, it was felt definitely worthwhile to gather and assemble most of the work done in this area for your reference. Such a gathering of data has multiple uses.

Other workers that would have additional data to add to this would be Dr. H. Kido, Department of Entomology, UCD, and Johannes Joos, Farm Advisor, Sonoma County.

Contributions by the following are on the pages as listed:

Dept. of Entomology-UCD - 4,6,22,42,47-49,66-90,103-120, 140-160,167,168

J. Joos - 14,15

F. Jensen - 169-173

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JED:jc

Cooperative Extension work in Agriculture and Home Economics. United States Department of Agriculture and University of California cooperating.

GRAPES

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Comparison of Certain Materials For the Control of Polycaon Branch and Twig Borer on Grapes*

Material	Formulation	Rate/ac. oz-lbs. pts-gal.	Borer Holes Per Treated Area					
			April 16			April 20		
			+	-	% Uninhabited	+	-	% Uninhabited
Dibrom + Tronic		2/3 pt. 1 pt.	12	18	59.8	3	18	85.7
Phosdrin + Tronic		2 pts. 1 pt.	9	21	69.7	1	23	95.8
Diazinon + Z-1	50 WP	1 lb. 1 lb.	18	12	39.9	0	9	100
Parathion + Z-1	25 WP	2.5 lb. 1 lb.	23	7	23.3	1	7	87.3
Guthion + Z-1	50 WP	3 lb. 1 lb.	6	24	79.3	1	9	90.0
Guthion + Lindane	50 WP 25 WP	3 lb. 1 lb.	7	23	76.2	1	2	66.6
Lindane + Z-1	25 WP	1 lb. 1 lb.	19	11	36.5	0	2	100
Check	--	--	30	0	0	7	6	46.3

*Treated April 14 and 15 (Merced County). No. of inhabited (+) and uninhabited (-).

1971

Tokay Grapes - Lodi - 1975

Cottony Maple Scale Tests
(application - 3/12/75)

James J. Kissler, Farm Advisor, San Joaquin County
Jack Dibble, Extension Entomologist, San Joaquin
Valley Agricultural Research and Extension Center

Material	Formulation	Rate/100	No. crawlers/40 leaves 7/2[1/]	7/7	7/17	8/1[2/]	8/28
Imidan + oil	50 W	1 lb/1 gal.	12	53	12	2	10
Imidan + oil	50 W	2 lbs/1 gal.	11	6	9	16	14
Diazinon + oil	50 W	1 lb/1 gal.	21	15	8	14	16
Oil	-	2 gals.	38	26	76	160	38
Check	-	-	88	86	200	193	586

1/ Cottony Maple Scale female adult on vine.

2/ Sampled Reps. I & IV and doubled to get these counts. Each treatment - 4 x 5 vines and replicated 4 times. All samples were taken from the 6 center vines.

COTTONY MAPLE SCALE PLOT - 1975
Peterson's Ranch, Turner Road

Counts 9/3/75 - Sticky Clusters - Sooty Clusters - Sooty Leaves

	VINE NO.					
	1	2	3	4	5	6
TREATMENT 1 (Red)						
Rep. I	0-0-0	0-0-0	0-0-0	0-0-2	0-0-0	0-0-1
II	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0
III	0-0-0	0-0-0	0-0-1	0-0-0	0-0-0	0-1-2
IV	0-0-0	0-0-0	0-0-1	0-0-0	0-0-0	0-0-0
TREATMENT 2 (Yellow)						
Rep. I	2-0-2	0-1-1	0-0-0	0-0-0	0-0-0	0-0-0
II	0-0-0	0-0-0	0-1-1	0-1-1	1-1-1	0-0-0
III	0-0-0	0-1-2	0-0-0	0-0-0	0-0-0	0-0-0
IV	0-0-0	0-0-2	0-0-0	0-0-0	0-1-1	0-1-2
TREATMENT 3 (Blue)						
Rep. I	0-0-0	0-0-0	0-0-0	0-0-0	0-0-1	0-0-2
II	0-0-0	0-0-0	0-0-0	0-0-0	0-0-1	0-0-3
III	0-0-0	0-0-0	0-0-1	0-0-0	0-0-0	0-0-0
IV	0-0-0	0-0-1	0-0-0	0-1-2	0-0-0	0-0-0
TREATMENT 4 (Orange)						
Rep. I	0-0-0	0-0-2	0-0-0	0-0-0	0-0-0	0-1-1
II	0-0-2	0-2-2	0-1-1	0-0-2	0-1-2	0-4-5
III	0-0-0	0-1-1	0-0-3	0-1-3	0-1-4	0-0-4
IV	0-0-0	0-2-3	0-2-3	0-2-3	0-0-3	0-0-1
TREATMENT 5 (White)						
Rep. I	1-4-7	0-3-4	0-1-5	0-5-4	0-0-3	0-1-2
II	0-2-4	1-3-6	1-9-6	0-2-4	0-7-5	0-7-7
III	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-2
IV	0-0-0	0-1-3	0-0-3	0-1-1	0-6-4	0-2-4

TREATMENT: 1 - Imidan® 50W-- 1 lb. plus 1 gal. oil per 100 gal. water (Red)
2 - Imidan® 50W -- 1½ lbs. plus 1 gal. oil per 100 gal. water (Yellow)
3 - Diazinon® -- 1 lb. per 100 plus 1 gal. oil per 100 gal. water (Blue)
4 - Two gallons oil per 100 gallons water (Orange)
5 - Check (White)

METHOD OF RATING: First number equals number of sticky clusters per vine.
Second number equals number of sooty clusters per vine.
Third number equals number of sooty leaves based on a visual rating of 0 to 10.
(Note: Sooty means black fungus growth from honeydew droppings.)

® Indicates registered trade name.

JJK:jrs
9/3/75

Cutworm on Gamay grapes - 1973
Galleron Bros. - Rutherford

Pre- and Post-treatment counts made on April 3 and April 11, 1973, respectively. Treatments applied on April 3, 1973. Counts made on the number of damaged buds per vine. 200 gals. per acre applied.

Treatments	AI/A (lb)	Vines per treatment	Vines with damaged buds Apr.3 Pre	Vines with damaged buds Apr.11 Post	Vines with damaged buds 1/ (+)	(-)	(0)	Total new damaged buds 2/	New damaged vines	Total number of damaged buds 3/	% control
Thiodan 2EC	1	27	8	13	0	2	6	--	5	7	30
Untreated	-	28	9	16	1	4	4	1	7	10	--
Dylox 5 Bait	2	29	7	12	4	2	1	13	5	7	30
Thiodan 2 Bait	0.6	29	8	12	0	5	3	--	4	5	50
Sevin 5 Bait	3	29	14	17	5	5	4	14	3	3	70
Untreated	-	31	10	13	5	0	5	22	3	9	--
Kryocide 96	19.2	32	8	10	1	1	6	1	2	2	80
Thiodan 2EC	1.5	33	9	12	0	6	3	--	3	3	70
Sevin 80S	3	33	12	13	0	8	4	--	1	1	90
Chlordane 8E	4	34	9	13	5	1	3	7	4	5	50

1/ (+) Increased number of damaged buds from the pre- and post-treatment counts.
(-) Decreased number of damaged buds from the pre- and post-treatment counts. Decrease caused by the growth of secondary buds hiding the damaged buds.
(0) No change in the number of damaged buds.
2/ The number of newly damaged buds on the vines which showed an increase.
3/ The number of damaged buds on the vines which were previously not infested.

G. Stafford, H. Kido.

GRAPE - VARIGATED CUTWORM

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Materials[1/]	Form.	Rate/A	Average Number[2/] Buds Damaged A,T&G	Buds Damaged T&G	Buds Damaged B	Dead Worms A,T&G	Dead Worms T&G	Dead Worms B
Sevin	5% bait	10 lbs.	-	-	5	-	-	4
Dylox	5% bait	10 lbs.	-	-	8	-	-	3
Phosvel	5% bait apple	10 lbs.	-	-	12	-	-	3
Phosvel	5% bait bran	10 lbs.	-	-	7	-	-	4
Phosvel	5% bait citrus	10 lbs.	-	-	11	-	-	1
Sevin	80 WP	2 lbs.	0	3	-	9	4	-
Sevimol	4 F	2 lbs.	2	6	-	4	5	-
Dylox	80 SP	1 lb.	0	4	-	8	5	-
Phosvel	45 WP	1 lb.	1	3	-	7	4	-
Chlordane	8 E	1 lb.	3	5	-	5	3	-
Lannate	1.8 L	14 oz.	2	5	-	6	4	-
Lorsban	4 EC	1 lb.	1	5	-	7	4	-
Supracide	2 E	1 lb.	6	9	-	3	2	-
Orthene	75 WP	1 lb.	5	8	-	3	1	-
Check	--	--	14	14	14	1	1	1

1/ Treated four vine reps at bud opening on 3/25/74. Sprays applied by compressed air sprayer at 30 gpa and baits by evenly hand shaking the measured amount at base of vine.

2/ Average total numbers of damaged buds incurred from cutworm feeding and dead worms from counts made at 3, 7, & 10 days after treatment. A,T&G = arms, trunk & ground sprayed; T&G = trunk & ground (at vine base) only sprayed; B = baits applied at base of vine trunk. Peridroma saucia.

Cutworm on Traminer Apes - 1974
Galleron Bros. - Rutherford

Pre- and Post-treatment counts made on April 4 and April 10, 1974, respectively. Treatments applied on April 4, 1974. Counts made on the number of damaged buds per vine. 200 gals. per acre applied.

Treatments	AI/A (lb)	Vines per treatment	Vines with damaged buds Apr. 4	Apr. 10	Vines with 1/ damaged buds (+)	(-)	(0)	Newly 2/ damaged buds per vine		New damaged vines	Number of damaged buds per vine 3/
Dylox 4 Solution	2	25	9	12	1	0	8	4	4	3	1-1-1
Furadan 4F	0.5	26	6	7	2	3	1	3-1	4	1	1
Furadan 4F	1.0	26	12	15	5	3	4	1-2-4-2-1	10	3	1-2-1
Orthene 75S	2	26	11	12	5	1	5	1-1-1-1-2	6	1	1
Untreated	-	25	14	18	10	0	4	4-1-2-4-1-2-4-1-3-4	26	4	2-3-5-1
Chlordane 8 (Belt)	2	28	13	14	3	2	8	1-2-1	80% cont.	1	3
Thiodan 3 EC	1	26	12	16	3	2	7	1-3-1	5	4	1-1-1-1
Sevimol 4	2	27	11	13	4	0	7	1-3-1-3	8	2	1-1
Untreated	-	24	9	11	7	1	1	3-2-1-1-3-2-1	13	2	2-4
Sevin 5 Bait	3	26	6	10	5	0	1	3-4-4-2-1	14	4	2-1-1-2
Kryocide 96	7.7	20	6	8	4	0	2	1-1-2-2	6	2	2-1
Thiodan 2 Bait	1	21	14	15	5	7	2	1-1-1-3-1	7	1	1
Sevin 80S	2	24	8	11	3	2	3	2-1-1	80% cont.	3	1-1-1

1/ (+) Increased number of damaged buds from the pre- and post-treatment counts.
(-) Decreased number of damaged buds from the pre- and post-treatment counts. Decrease caused by growth of secondary buds hiding the damaged buds.
(0) No change in the number of damaged buds.
2/ The number of newly damaged buds on the vines which showed an increase.
3/ The number of damaged buds on the vines which were previously not infested.

* Rain showers occurred on April 6, 9 and 10.

Grapes - 1976

Varigated cutworm, *Peridroma saucia*

Material[1]	Form.	AIA	Area Treated[2]	Average Number Strikes/2 vines[3] 3/26	4/7
Check	--	--	--	19.5	24.3
Chlordane	8 E	2.5 lbs.	A,T, & G	5.3	4.8
Chlordane	8 E	2.5 lbs.	Arms	8.3	6.3
Chlordane	8 E	2.5 lbs.	T & G	10.5	9.3
Chlordane	8 E	4 lbs.	A,T, & G	4.5	5.0
Chlordane	8 E	4 lbs.	Arms	12.0	8.3
Chlordane	8 E	4 lbs.	T & G	6.3	8.5
Sevin	80 S	2 lbs.	A,T, & G	2.8	4.5
Sevin	80 S	2 lbs.	Arms	9.0	8.5
Sevin	80 S	2 lbs.	T & G	16.3	12.0
Dylox	80 SP	2 lbs.	A & T	10.8	11.3
Orthene	75 WP	2 lbs.	A & T	6.0	3.5
Lannate	1.8 L	.9 lb.	A & T	6.5	6.3
Lorsban	4 EC	1 lb.	A & T	7.5	5.0
Cryolite	96 WP	6 lbs.	A & T	10.0	15.5
Imidan	70 WP	2 lbs.	A & T	4.3	8.3
Sevin bait	5 %	30 lbs.	G	6.0	9.0
Dylox bait	5 %	30 lbs.	G	8.8	11.8
Phosvel bait	5 %	30 lbs.	G	8.0	11.0

1/ Sprayed with hi-pressure hand gun on 3/22/76.

2/ Treated areas: A = arms & canes, T = trunk and G = ground.

3/ All buds were inspected on each of two vines/rep. 5 reps/trtmt. Pre-treatment population very heavy, 5 cutworms/vine. Pre-treatment damaged buds removed. Thompson variety, Stanislaus County.

Grapes - 1976

Varigated Cutworm Tests

Material[1/]	Form.	AIA	Ave. No. Strikes/Vine[2/] 1 week	2 weeks
Chlordane		2.5 lbs.	2.4	2.0
Chlordane		4 lbs.	1.2	0.8
Sevin		2 lbs.	1.6	1.2
Azodrin		1 lb.	1.8	3.6
Check		--	4.4	5.8

1/ Applied by over-the-vine boom sprayer @ 50 gpa to arms, canes & trunk 3/17/76.

2/ All buds inspected on 5 vines/rep. 5 reps and 15 vines/rep. Ruby Red variety, Fresno County.

Varigated Cutworm, Peridroma saucia

Material[1/]	Form.	AIA	Area treated[2/]	Average Number Strikes/10 vines[3/] 3/30	4/9
Chlordane	8 E	2.5 lbs.	A, T & G	3.7	1.0
Chlordane	8 E	2.5 lbs.	Arms	7.3	3.7
Chlordane	8 E	4 lbs.	T & G	2.7	0.0
Chlordane	8 E	4 lbs.	A, T & G	2.0	1.3
Chlordane	8 E	4 lbs.	Arms	.7	2.0
Chlordane	8 E	4 lbs.	T & G	2.3	1.3
Sevin	80 S	2 lbs.	A, T & G	6.0	1.0
Sevin	80 S	2 lbs.	Arms	1.7	0.0
Sevin	80 S	2 lbs.	T & G	5.3	1.0
Check	--	--	--	7.7	9.7

1/ Sprayed with hi-pressure hand gun on 3/24/76.

2/ Treated areas: A = arms & canes, T = trunk and G = ground.

3/ All buds inspected on each of 10 vines per rep. 3-50 vine reps/trtmt. Pre-treatment population averaged 0.5 cutworms per vine and damaged buds removed. Chenin Blanc variety, Stanislaus County.

GRAPES - 1977
Variegated Cutworm

	Material[1/]	Form.	AIA (lbs)	Rate/Acre	Ave. No. Live Larva/15 Vines[2/] (4 days post treatment)
1	Sevin	80S	2	2.5 lbs.	4.4
2	Sevimol	4	2	2 qts.	6.4
3	Sevimol (air)	4	2	2 qts.	9.2
4	Sevin + Dibrom	80S 8E	2 1	2.5 lbs. 1 pt.	3.4
5	Check	-	-	-	24.0

1/ Applied April 8, 1977 by back pack sprayer @ 34 gpa to 5 reps of 15 vines each. Treatment #3 was applied by fixed wing aircraft. Chenin blanc variety. Stanislaus County.

2/ Counts made April 12 by closely examining the arm/trunk crotch, the rough bark and stripping same away from the trunk from crotch to the ground on 2 sides of each vine. As most of the live larva hide in these sites complete counts could be made in this manner.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center, Parlier.
Paul LaVine, University of California, Stanislaus County.

GRAPES - 1977

Varigated Cutworm Control
Peridroma saucia

Stanislaus County

Material[1/]	Form.	AIA (lbs.)	Dead larva/3 vines[2/] Rep. 1	Rep. 2	Rep. 3	Rep. 4	Average dead larva/rep.	% of new bud feeding 4/12	4/20
Chlordane	8 E	3	4	1	5	7	4.25	8.7	25.0
Azodrin	5	1	4	3	4	5	4.0	5.5	0
Azodrin	5	2	7	1	9	9	6.5	2.9	0
Dyfonate	4 E	1	2	5	8	6	5.25	4.3	33.3
Dyfonate	4 E	2	8	11	5	6	7.5	4.5	16.7
Dyfonate	4 E	4	9	3	13	9	8.5	7.7	50.0
Orthene	75 S	0.5	5	10	2	2	4.75	9.1	0
Orthene	75 S	1	2	3	5	4	3.5	0	16.7
Sumithion	40 WP	1	2	6	3	8	4.75	3.8	12.5
Sumithion	40 WP	2	2	6	5	4	4.25	0	0
Sevin	80 S	2	3	10	6	6	6.25	4.8	0
Imidan	50 WP	2	1	12	7	1	5.25	7.1	0
SD 43775	2.4 EC	0.2	3	2	12	7	6.0	5.9	0
Dylox	80 S	2	3	6	7	5	5.25	0	0
Check	-	-	0	0	0	0	0	17.6	30.8

1/ Sprayed by backpack sprayer on 4/6/77. 3 vines/rep. 4 reps./treatment. Chenin blanc variety. AIA/34 gpa.

2/ Counted dead larva on ground on 4/7/77.

J. E. Dibble, SJVAR&EC, Paul LaVine, Stanislaus Co., Univ. of Calif.

GRAPES - 1977

Varigated Cutworm Control
Peridroma saucia

San Joaquin County

Material[1/]	Form.	AIA (lbs.)	Dead larva/3 vines[2/] Rep. 1	Rep. 2	Rep. 3	Rep. 4	Total	Average dead larva/rep.
Chlordane	8 E	3	2	4	3	0	9	2.25
Azodrin	5	1	2	2	2	3	9	2.25
Azodrin	5	2	4	0	5	4	13	3.25
Dyfonate	4 E	1	4	3	1	3	11	2.75
Dyfonate	4 E	2	3	6	5	3	17	4.25
Dyfonate	4 E	4	6	5	4	2	17	4.25
Orthene	75 S	0.5	1	5	3	1	10	2.5
Orthene	75 S	1	3	1	2	2	8	2.0
Sumithion	40 WP	1	1	4	3	2	10	2.5
Sumithion	40 WP	2	2	3	3	1	9	2.25
Sevin	80 S	2	5	3	2	3	13	3.25
Imidan	50 WP	2	4	6	0	1	11	2.75
SD 43775	2.4 EC	0.2	6	2	1	3	12	3.0
Dylox	80 S	2	2	1	3	4	10	2.5
Check	-	-	0	1	0	0	1	.25

1/ Sprayed by backpack sprayer on 4/4/77. 3 vines/rep. 4 reps/treatment. Thompson variety. AIA/34 gpa.

2/ Counted dead larva on ground on 4/8/77.

J. E. Dibble, SJVAR&EC, Univ. of Calif., Parlier, CA

GRAPES - 1977

Greenhouse Dip Tests

Varigated Cutworm - Peridroma saucia

Material[1]	Form.	AIA	Date	Amount of feeding and larval condition[2] Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5	Rep. 6	Total dead larva after 3 days
			4/15	D	A-l	A	D	S	A	
Sevin	80S	2 lbs.	4/16	D	A	A	D	D	A	
			4/18	D	A-h	A	D	D	A	3
			4/15	1	A	A	A-h	A-h	A-m	
Chlordane	8E	4 lbs.	4/16		A	A	A	D	A	
			4/18	D	A	D	A	D	D	4
			4/15	A	A	D	D	A	A	
Orthene	75S	1 lb.	4/16	A	D	D	D	A	A	
			4/18	A	D	D	D	D	A	4
			4/15	A	A	A	S	D-m	A	
Dyfonate	4E	2 lbs.	4/16	A	A	A-h	D	D	A	
			4/18	S	A	A	D	D	D	3
			4/15	A	A	A-h	A	A	A	
Azodrin	5	2 lbs.	4/16	A	D	A	D	A	A	
			4/18	D	D	A	D	A-m	D	4
			4/15	A	A	D	A	A	A	
SD 43775	2.4EC	0.2 lb.	4/16	D	A	D	A	A-l	A	
			4/18	D	D	D	D	A	S	4
			4/15	1	A	A	A-m	A	A	
Sumithion	40WP	2 lbs.	4/16	D	A	A	A	D-h	D	
			4/18	D	D	A	A	D	D	4
			4/15	D	A-m	A-m	A	A-l	A-h	
Check	-	-	4/16	D	A-h	A-h	A-l	A-h	A	
			4/18	D	A	A	A-m	A	A	1

1/ 3 reps/treatment with 1 bud and 1 small larva/rep., 3 reps/treatment with 2 buds and 1 medium larva/rep. (approximate size of vine was 3 inches).

2/ A = alive, S = sick, D = dead; 1 = light feeding, m = moderate feeding, h = heavy feeding.

GRAPES - 1977

Varigated Cutworm Control
Peridroma saucia
Greenhouse Insecticide Dip Tests[1/]

Material[2/]	Form.	AIA (lbs.)	Date	Amt. of feeding & larval condition[3/] Rep. 1	Rep. 2	Rep. 3	Rep. 4	Rep. 5	Rep. 6	% Larva control
			4/15	D	A-l	A	D	S	A	33.3
Sevin	80 S	2	4/16	D	A-l	A	D	D	A	50.0
			4/18	D	A-h	A	D	D	A	50.0
			4/15	A-l	A	A	A-h	A-h	A-m	0
Chlordane	8 E	4	4/16	A-l	A	A	A-h	D-h	A-m	16.7
			4/18	D-l	A	D	A-h	D-h	D-m	66.7
			4/15	A	A	D	D	A	A	33.3
Orthene	75 S	1	4/16	A	D	D	D	A	A	50.0
			4/18	A	D	D	D	D	A	66.7
			4/15	A	A	A	S	D-m	A	16.7
Dyfonate	4 E	2	4/16	A	A	A-h	S	D-m	S	16.7
			4/18	S	A	A-h	D	D-m	D	50.0
			4/15	A	A	A-h	A	A	A	0
Azodrin	5	2	4/16	S	D	A-h	D	A	A	33.3
			4/18	D	D	A-h	D	A-m	D	66.7
			4/15	A	A	D	A	A	A	16.7
SD 43775	2.4 EC	0.2	4/16	D	A	D	A	A-l	A	33.3
			4/18	D	D	D	D	A-l	S	66.7
			4/15	S-l	A	A	A-m	A	A	0
Sumithion	40 WP	2	4/16	D-l	A	A	A-m	D-h	D	50.0
			4/18	D-l	D	A	A-m	D-h	D	66.7
			4/15	D	A-m	A-m	A	A-l	A-h	-
Check	-	-	4/16	D	A-h	A-h	A-l	A-h	A-h	-
			4/18	D	A-h	A-h	A-m	A-h	A-h	-

1/ A 3 inch cane was dipped into insecticide and allowed to dry, then placed into a small carton half filled with damp sawdust. Larva was then introduced and observed 1, 2, and 4 days after cane dip. Reps. 1-3 of each treatment had 1 bud on each cane and 1 small larva/rep., reps. 4-6 of each treatment had 2 buds on each cane and 1 medium sized larva/rep. Variety of grapes was Carignane.

2/ Canes dipped into insecticide solution on 4/14/77. AIA/34 gpa.

3/ A = alive, S = sick, D = dead larva; l = light feeding, m = moderate feeding, h = heavy feeding. If no secondary letter present, no feeding occurred.

J. E. Dibble, SJVAR&EC, Univ. of Calif., Parlier, CA

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Oswald Vineyards
Ukiah, Mendocino County, California

Spotted Cutworm 1/
Grapes
1977

Material and Application Rate per Acre 2/	Cutworm Damaged Buds 3/							
	3-30 4/		4/7		4/14		4/20	
	Number	Mean/ Vine	Number	Mean/ Vine	Number	Mean/ Vine	Number	Mean/ Vine
Orthene 75S .75 lb. ai	136	3.8	79	2.2	66	1.8	49	1.4
Orthene 75S 1 lb. ai	146	4.1	44	1.2	46	1.3	18	0.5
Dyfonate 4E 1 lb. ai	167	4.6	66	1.9	95	2.6	72	2.0
Dyfonate 4E 2 lbs. ai	154	4.3	31	0.9	54	1.5	36	1.0
Dyfonate 4E 4 lbs. ai	150	4.2	27	0.8	62	1.7	16	0.4
Sumithion 8E 1 lb. ai	107	3.0	56	1.6	93	2.6	37	1.0
Sumithion 8E 2 lbs. ai	185	5.1	26	0.7	73	2.0	25	0.7
Sumithion 8E 4 lbs. ai	175	4.9	9	0.3	15	0.4	8	0.2
Azodrin 5E 1 lb. ai	148	4.1	12	0.3	8	0.2	4	0.1
Sevin 80S 3 lbs. ai	182	5.1	22	0.6	22	0.6	9	0.3
Sevin 5% Bait 20-40 lbs.	181	5.0	49	1.4	39	1.1	21	0.6
Untreated Check	190	5.3	317	8.8	450	12.5	253	7.0

1/ Amathes c-nigrum (Linnaeus)
2/ Treated with handgun to runoff, except Sevin 5% bait which was hand broadcast over vines.
3/ A total of 6 vines per replicate, 6 replicates per treatment and check were examined for cutworm damaged buds. On each count made, damaged buds were marked; then only new damage was counted on each subsequent count.
4/ Pretreatment count and application date.

Oswald Vineyards
Ukiah, Mendocino County, California
Spotted Cutworm 1/
Grapes
1977

Material and Application Rate per Acre 2/	Fruit Weight at Harvest - Lbs. 3/		
	Total for Treatment	Mean per Replication	Mean per Vine
Orthene 75S - .75 lb. ai	239.0	39.8	6.6
Orthene 75S - 1 lb. ai	214.9	35.8	6.0
Dyfonate 4E - 1 lb. ai	130.4	21.7	3.6
Dyfonate 4E - 2 lbs. ai	253.4	42.2	7.0
Dyfonate 4E - 4 lbs. ai	287.2	47.9	8.0
Sumithion 8E - 1 lb. ai	88.6	14.8	2.5
Sumithion 8E - 2 lbs. ai	256.8	42.8	7.1
Sumithion 8E - 4 lbs. ai	232.2	38.7	6.5
Azodrin 5E - 1 lb. ai	292.2	48.7	8.1
Sevin 80S - 3 lbs. ai	318.7	53.1	8.9
Sevin 5% Bait - 20-40 lbs.	266.8	44.5	7.4
Untreated Check	33.4	5.6	0.9

1/ Amathes c-nigrum (Linnaeus)

2/ Treated with handgun to runoff, except Sevin 5% bait which was broadcast over vines, on 3/30/77

3/ Total fruit taken from six vines per replication, & six replications per treatment and check at harvest on 9/27/77

W.G/005

COMPARISON OF CERTAIN CHEMICALS FOR THE CONTROL OF GRAPE LEAF FOLDER

Treatment	Formulation	Rate/acre[1/]	Mean Number of Pests Days after application Live folders/20 vines 5	10	15
Sevin	80WP	2 lbs.	2.3	0.0	0.0
Delnav	8EC	1 pt.	12.4	15.1	18.4
Thiodan	50WP	3 lbs.	4.9	2.9	2.8
Ethion	25WP	3 lbs.	5.8	1.0	3.6
Malathion	25WP	6 lbs.	8.9	5.4	7.9
Alfatox Diazinon Methoxychlon	10% 20%	1 gal.	9.1	4.4	6.2
Std. Lead Arsenate	95WP	6 lbs.	0.0	0.0	0.0
Biotrol BTB 183	25WP	4 lbs.	3.9	5.1	4.2
Dipel BT	Amdal WP	1 lb.	1.1	0.0	0.0
Cryolite	96WP	6 lbs.	0.0	0.4	0.5
Carzol	95WP	8 oz.	5.9	6.6	8.4
Zolone	3EC	2 lbs.	1.3	0.0	2.0
Galecron/Fundal	96SP	8 oz.	0.4	0.0	0.0
Galecron/Fundal	96SP	1 lb.	0.0	0.0	0.0
Check	---	-	87.2	112.5	91.4

[1/] Applied by air carrier sprayer at 150 gpa on 10/5/70

Grapes - Grape Leaf Folder

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

	Material[1/]	Rate (lbs/gpa)	Mean No. of Pests[2/] (per vine) 7/4	8/15
1	Sevin 80WP	2.5/200	0.0	0.0
	"	2.5/40	0.0	0.0
	"	1 lb+14 oz/40	0.2	0.0
2	Guthion 50WP	1.5/200	6.2	5.9
	"	1.5/40	4.9	8.8
	"	1 lb+2 oz/40	5.8	6.3
3	Diazinon 50WP	2/200	5.2	-
	(followed by)	2/40	6.1	-
		1.5/40	4.3	-
	Sevimol 4	1.5/200	-	0.9
	"	1.5/40	-	2.4
	"	18 oz/40	-	1.3
4	Zolone 3EC	2/200	3.7	1.0
	"	2/40	4.4	0.7
	"	1.5/40	4.0	1.3
5	Check		52.2	78.4

1/ Applications made on 6/27 and 8/15/72.

2/ Overlapping populations of both OLR and GLF occurred in vineyard.

GRAPES - 1975

Grape Leaf Folder
Desmia funeralis

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material 1/	Form.	AIA	Ave. No. live folders/20 vines 2/ 6-days	12-days
Zolone	3 EC	2 lbs.	7.9	11.5
Sevin	80 S	1.5 lbs.	3.6	1.7
Torak G	4 EC	1 lb.	5.4	8.1
Zolone/ Malathion	1.5/ .067 EC	2 lbs.	19.0	24.8
Lannate	1.8 L	0.9 lb.	1.9	0.7
Lannate	1.8 L	0.45 lb.	5.6	6.4
Lorsban	4 EC	1 lb.	11.4	14.9
Imidan	70 WP	2 lb.	7.3	8.9
Dylox	80 SP	1.5 lb.	15.6	21.7
SD 43775	2.4 EC	0.1 lb.	4.9	7.2
Check	--	--	149.4	127.1

1/ Applic's. July 24 by high pressure boom sprayer @ 40 gpa. Fresno County.

2/ Average from four replications/treatment and by examining total number of leaf rolls.

GRAPES 1975

GRAPE LEAF FOLDER DESMIA FUNERALIS

J. DIBBLE, J. BAKER AND J. BABCOCK
SAN JOAQUIN VALLEY AGRICULTURAL RESEARCH AND EXTENSION CENTER

MATERIALS[1/]	FORM.	AIA	NO. DEAD LARVAE[2/]
PENCAP M	2 E	1 LB.	22.3 A
LORSBAN	4 E	0.75 LB.	16.0 B
ZOLONE	3 EC	2 LBS.	11.5 C
LANNATE + DIPEL	1.8 L + 3.2	3.6 OZ + 0.5 LB.	10.3 C
SD 43775	2.4 EC	0.1 LB.	10.0 C
DIPEL	3.2	0.5 LB.	9.5 C
LANNATE	1.8 L	0.45 LB.	8.0 C
CHECK	-	-	2.3 D

1/ APPLIC'S. MADE JULY 18 IN TULARE COUNTY BY HIGH PRESSURE OVER THE VINE BOOM AT 200 GPA.

2/ AVERAGED FROM 4 REPS./TRTMT. COUNTS MADE ON JULY 25.

GRAPES - 1977
Grape Leaf Folder - Desmia funeralis

Material	Form.	AIA	Rate/Acre	Average Number live larva/5 vines 6-days	13-days
Carbaryl	80S	1.5 lb.	1.9 lb.	4.2	0.0
Phosalone	3EC	2.0 lb.	5.4 pts.	3.0	4.8
Dipel	7.26	IU/lb.	1 lb.	11.5	3.8
Endosulfan	50WP	1.5 lbs.	3.0 lbs.	7.0	5.5
Sumithion	40WP	1.0	2.5 lbs.	6.3	4.3
Check	—	—	—	33.5	30.5

1/ Application made 8/27 by high pressure hand gun @ 225 gpa.

2/ Counted 10 leaf rolls/vine, 5 vines/rep and 4 reps/trtmt on 9/2 and 9/9. Thompson variety, Fresno County.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center, Parlier.

Leafhopper Trials Schenley Ind.
Delano, California
1969

Variety	No. Leafhoppers Per Leaf				
	Pre-Count 5/26		5/30		6/1
	Treatment	Check	Treatment[1/]	Check	Standard
Emperor	9.65	5.55	.35	8.70	
Burger	5.10	10.10	.30	8.45	
Thompson	4.20	5.55	.50	4.00	1.40[2/]
White Malaga	11.50	8.10	.70	5.15	1.10[2/]
Muscat	20.2	27.10	2.30	24.75	15.70[3/]
Ribier	9.30	11.10	.50	8.15	
Carignane	22.80	28.85	3.05	28.80	2.80[4/]
Alicante[5/]	24.20	22.70	3.45	25.75	3.05[2/]

1/ Treatment - Ethion 25 @ 4 lbs. + Orchex 796 2 gallons per 28 gallons per acre.

2/ Treatment - Ethion - Thiodan 25 W @ 1 lb. act./A. 125 gals. dilute spray/ac.

3/ Treatment - Aqua Delnav 8E @ 1 lb. act./ac.

4/ Treatment - Alfa-tox @ 3 qts./acre

5/ Berry discoloration noticeable on 5/30 evaluation

NOTE: Applications by RSM Sprayer at 28 gpa and applied on eight different varieties.

Grape Leafhopper - Manning and Hill Avenue - Emperor Grapes

Sprayed July 18, 1969 at 200 gallons per acre 1/

Materials	Pounds Actual Per Acre	Nymphs per leaf on dates indicated. Average of 10 leaves					
		July 18 1/	July 25	Aug. 1	Aug. 8	Aug. 15	Aug. 22
Azodrin 3.2 E	0.75	27.9	8.1	8.6	15.9	28.3	25.1
Azodrin 3.2 E	1.0	44.8	26.3	5.7	14.5	20.9	14.2
Supracide 2 EC	1.0	50.1	9.0	17.8	32.3	67.4	46.5
Torak 4 EC	1.0	50.0	4.4	1.0	6.1	6.7	13.7
Torak 4 EC 2/	1.5	11.3	0.0	0.0	0.0	0.0	0.0
Furadan 4 P	0.38	36.0	1.1	1.4	14.4	33.2	37.2
Carzol tech.	1.0	31.2	12.2	22.4	27.4	49.9	46.0
Carzol tech.	2.0	40.5	2.4	12.8	15.3	18.1	43.8
Zolone 3 E	1.0	41.4	0.9	4.3	1.5	17.4	25.2
Zolone 3 E	2.0	35.7	1.3	0.2	0.5	3.7	8.2
Hercules 17413 4 E	1.0	25.8	15.0	10.6	5.9	30.4	28.0
Hercules 17413 4 E	1.5	25.0	27.4	5.9	1.6	11.9	17.5
Lannate tech.	1.0	33.4	8.1	26.6	17.0	65.6	64.4
Lannate tech.	2.0	25.6	0.3	1.9	12.9	22.4	26.6
Fundal tech.	2.0	14.7	16.9	13.8	22.3	28.1	25.0
Dursban 4 E	1.5	36.7	21.5	33.9	50.7	45.6	47.6
Cygon 25 W	1.0	24.6	10.7	12.3	2.5	12.3	20.4
Cygon 25 W	2.0	32.0	1.4	0.8	1.5	7.5	5.5
Ethion 4 E + Sevin 8 W	1.0 1.0	39.2	2.1	1.8	0.2	11.8	18.6

1/ Used an "over-the-vine" boom sprayer from Hercules Chemical Company. Pretreatment.

2/ These vines were sprayed with Zolone in 1968 at the rate of 5.9 lb. actual per acre by miscalculation. The vines appeared weak in 1969.

COMPARISON OF CERTAIN CHEMICALS FOR THE CONTROL OF OLR AND GRAPE LEAFHOPPER[1/]

Treatment	Formulation	Rate/acre[2/]	Mean Number of Pests: OLR leaf ties/vine 1 wk	2 wks	3 wks	Leafhopper/leaf 1 wk	2 wks	3 wks
Fundal/Galecron	96 SP	1.0	0.0	0.0	0.5	12.8	7.7	6.9
Fundal/Galecron	96 SP	0.5	0.7	0.0	0.0	14.2	10.1	11.3
Cryolite	96 SP		1.6	0.0	1.0	15.5	7.8	8.2
Dipel BT	Amdal WP	1.0	0.0	0.0	1.6	18.9	11.0	7.8
Dipel BT	Amdal WP	0.5	1.1	0.0	0.0	21.3	16.7	9.8
Std. Lead Arsenite	95 WP		0.0	0.0	0.0	19.3	16.1	10.4
Sevin	80 WP		1.2	0.6	1.6	1.1	2.0	0.7
Check	--	-	57.6	70.1	69.3	18.2	12.4	9.3

1/ Application on 10/8/70
2/ Application rate = 30 gpa

COMPARISON OF CERTAIN CHEMICALS FOR THE CONTROL OF LEAFHOPPERS

Treatment	Formulation	Rate/acre[1/]	Mean Number of Pests Days after application Hoppers/leaf 5	10	15
Sevin	80WP	2 lbs.	0.5	0.4	0.0
Delnav	8EC	1 pt.	0.0	0.2	0.2
Thiodan	50WP	3 lbs.	0.4	0.1	0.0
Ethion	25WP	3 lbs.	0.2	0.0	0.0
Malathion	25WP	6 lbs.	2.9	2.7	1.7
Alfatox Diazinon Methoxychlon	10% 20%	1 gal.	3.2	2.1	0.9
Std. Lead Arsenate	95WP	6 lbs.	11.4	14.4	12.3
Biotrol BTB 183	25WP	4 lbs.	14.5	13.9	8.8
Dipel BT	Amdal WP	1 lb.	13.7	12.2	5.5
Cryolite	96WP	6 lbs.	16.8	18.4	9.1
Carzol	95SP	8 oz.	11.2	14.1	10.2
Zolone	3EC	2 lbs.	1.2	0.0	0.0
Galecron/Fundal	96SP	8 oz.	9.8	8.0	6.4
Galecron/Fundal	96SP	1 lb.	8.2	9.1	7.9
Check	---	-	14.6	16.9	11.8

[1/] Applied by air carrier sprayer at 150 gpa on 10/5/70

COMPARISON OF CERTAIN CHEMICALS FOR THE CONTROL OF GRAPE LEAFHOPPERS

Treatment	Formulation	Rate/acre[1/]	Ave. No. Adult Leafhoppers/cane Days after application 9 days	16 days
Sevin	80 WP	2 lbs	1.0	0.5
Delnav	8 EC	1 pt.	6.4	9.2
Thiodan	50 WP	3 lbs.	12.0	4.7
Ethion	25 WP	3 lbs.	4.5	2.0
Malathion	25 WP	6 lbs.	4.5	1.0
Alfatox (Diazinon 10%, Methoxychlon 20%)		1 gal.	1.5	0.0
Std. Lead Arsenate	95 WP	6 lbs.	7.8	4.7
Biotrol BTB 183	25 WP	4 lbs.	7.8	7.1
Dipel BT	Amdal WP	1 lb.	11.9	9.2
Cryolite	96 WP	6 lbs.	9.9	8.0
Carzol	95 SP	8 oz.	7.1	3.5
Zolone	3 EC	2 lbs.	5.0	0.5
Galecron/Fundal	96 SP	8 oz.	13.2	9.9
Galecron/Fundal	96 SP	1 lb.	9.2	8.0
Check	--	--	9.9	9.9

1/ Applied by air carrier sprayer at 150 gpa on 10/5/70

Grapes

Leafhopper Control and High vs. Low Volume Applications

J. E. Dibble
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San Joaquin Valley Agricultural Research and Extension Center

Materials[1]	Formulation	Rate/Acre	GPA	Counts days after application and nymphs/leaf[2] 5	10	15
Carzol	95 SP	8 oz.	180	24	20	17
Carzol	95 SP	8 oz.	30	27	21	15
Plictran	50 WP	8 oz.	180	5	2	2
Plictran	50 WP	8 oz.	30	7	0	0
Morestan	25 WP	3 lbs.	180	6	1	4
Morestan	25 WP	3 lbs.	30	3	1	2
Zolone	3 EC	2 lbs.	180	0	0	1
Zolone	3 EC	2 lbs.	30	1	2	0
Ethion + oil[3]	25 WP	2 lbs/2 gals.	180	2	1	1
Ethion + oil	25 WP	2 lbs/2 gals.	30	5	0	0
Ethion + oil[4]	25 WP	2 lbs/2 gals.	30	3	1	1
Ethion + oil[5]	25 WP	2 lbs/2 gals.	30	0	4	0
Sun 6 E	Sunoco	4 gals.	30	14	5	10
Spraytex NR	Texaco	4 gals.	30	6	19	11
Check	--	--	---	21	17	25

1/ Applied with a Kinkelder Royal to Thompson variety. Fresno County in August 1971.

2/ Three reps. - counted 20 leaves/rep. in field.

3/ Oil is Spraytex NR

4/ Applied with a Kinkelder grape head (4 half rows)

5/ Applied with a Span Spray 4 fan orchard unit adjusted to cover 4 half rows.

Grapes - Grape Leafhopper

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University of California
San Joaquin Valley Agricultural Research and Extension Center

	Material[1/]	Rate (lbs/gpa	Mean No. of Pests (nymphs/leaf) 7/4	8/15
1	Sevin 80WP	2.5/200	2.0	0.8
	"	2.5/40	1.8	0.5
	"	1 lb+14 oz/40	0.9	0.7
2	Guthion 50WP	1.5/200	4.9	6.3
	"	1.5/40	5.2	7.1
	"	1 lb+2 oz/40	4.4	6.8
3	Diazinon 50WP	2/200	3.7	-
	(followed by)	2/40	4.1	-
		1.5/40	4.6	-
	Sevimol 4	1.5/200	-	0.4
	"	1.5/40	-	0.8
	"	18 oz/40	-	0.5
4	Zolone 3EC	2/200	4.0	0.5
	"	2/40	3.2	0.0
	"	1.5/40	2.9	0.7
5	Check		26.4	19.4

1/ Applications made on 6/27 and 8/15/72.

GRAPES

GRAPE LEAFHOPPER CONTROL[1/]

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San Joaquin Valley Agricultural Research and Extension Center
University of California

Sprayer[2/]	GPA	MPH	Ave. No. mites/leaf[3/] (5 days after treatment) Adjacent row	Second row
AgTec	25	3.5	0.0	0.7
AgTec	50	3.5	0.0	0.0
Kinkelder	25	3.5	0.5	1.3
Kinkelder	50	3.5	0.2	0.8
Over the vine high pressure sprayer	50	3.5	2.8	3.1
Over the vine high pressure sprayer	150	3.5	5.8	6.2
No spray	-	-	34.3	37.0

1/ Applied on Thompson Var. using Dimethoate 25 WP @ 6 lbs./acre. Fresno County. 1973.

2/ AgTec engine powered with grape head. Kinkelder PTO with grape head. Over the vine boom sprayer equipped with hollow cone T-Jet nozzles using No. 25 (50 gpa) and No. 45 (150 gpa) cores.

3/ Average No. leafhopper nymphs from leaf samples taken from 4 replications/treatment. Adjacent and second rows counted separately.

GRAPES

GRAPE LEAFHOPPER CONTROL[1/]

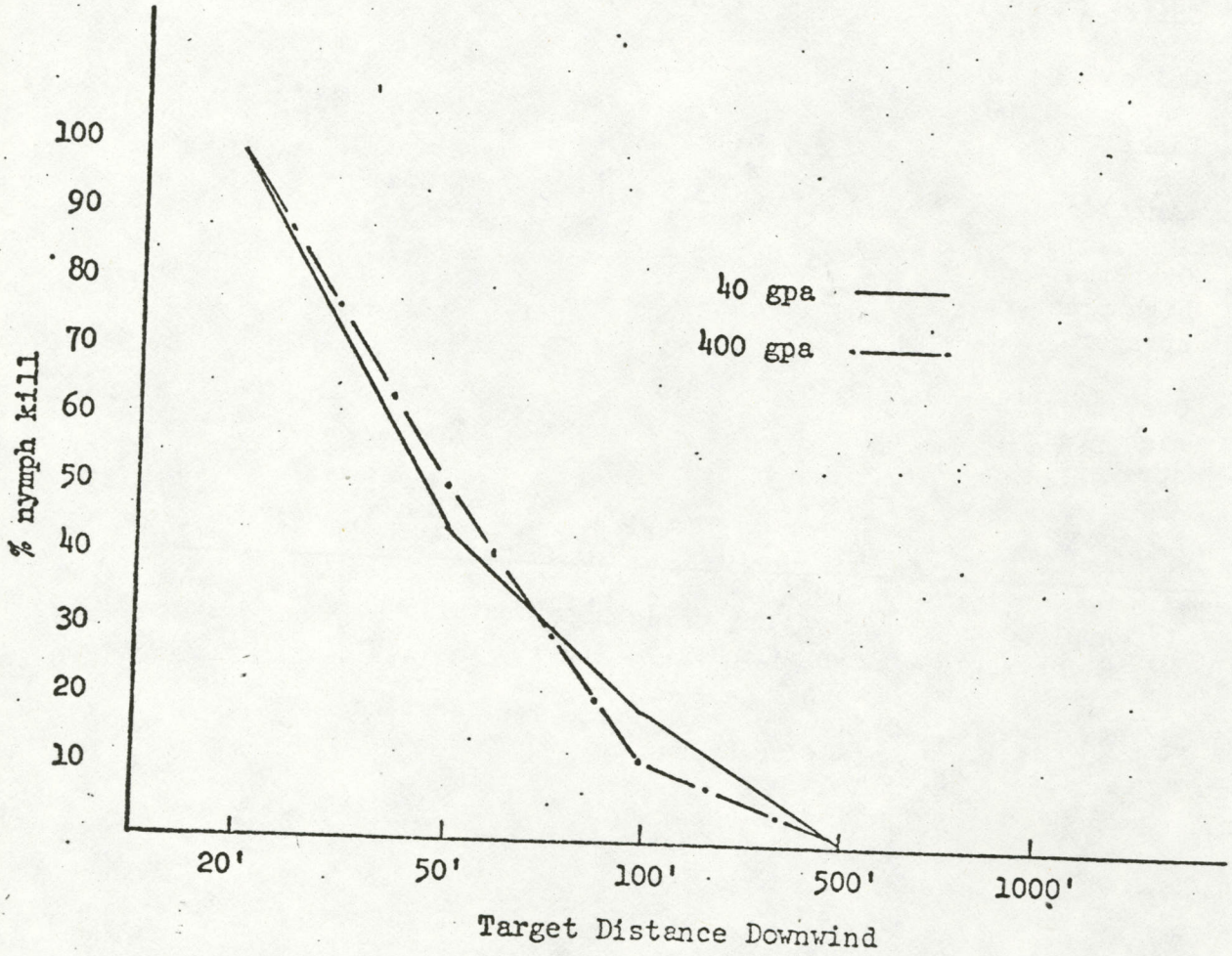
J. E. Dibble
San Joaquin Valley Agricultural Research and Extension Center
University of California

Sprayer	GPA	MPH	Ave. No. nymphs/leaf[2/] (5 days after treatment)
Chiron (3 pt.)	25	3.5	0.0
Chiron (3 pt.)	50	3.5	1.5
Kinkelder	25	3.5	0.5
Kinkelder	50	3.5	0.8
Over the vine high pressure sprayer	50	3.5	3.7
Over the vine high pressure sprayer	150	3.5	2.0
No spray	-	-	19.0

1/ Applied on Thompson Var. using Dimethoate 25 WP @ 6 lbs./acre. Fresno County. 1973.

2/ Average No. leafhopper nymphs from leaf samples taken from 4 replications/treatment.

Ground Spray Drift Evaluation
of Two Orchard Air Carrier Applications
by Leafhopper Nymph Bioassay
(Erythroneura elegantula Osb.)



AgTec Sprayall @ 40 gpa and Spraymaster @ 400 gpa operated @ 2 mph inside a peach orchard during a 4-5 mph wind. Targets of grape leafhoppers on grape leaves (10/leaf) and 5 leaves/ distance location were placed on 16' towers each in line with downwind direction. Used Ethion 25 WP @ 3 lbs/acre.

GRAPES - 1974

PACIFIC MITE & LEAFHOPPER

MATERIAL	AIA	GPA	AVERAGE NUMBER MITES AND LEAFHOPPER NYMPHS/LEAF 10 DAYS P	W	M.O.	L
PGP-102	0.5	40	9.2	2.0	1.0	18.8
PGP-102	1.0	40	5.7	0.0	0.5	24.2
PGP-102	1.5	40	4.0	0.0	0.4	21.4
PGP-102	1.0	200	6.2	0.8	0.8	16.1
PGP-103	0.5	40	8.1	0.8	0.8	25.5
PGP-103	1.0	40	3.9	0.0	0.5	31.2
PGP-103	1.5	40	2.3	0.2	0.5	27.2
PGP-103	1.0	200	4.6	0.4	0.5	19.3
PLICTRAN	0.5	40	0.0	0.0	0.4	15.4
VENDEX	0.5	40	0.4	0.0	0.8	12.8
ZOLONE	2.0	40	3.5	1.2	0.2	7.9
CHECK	-	-	33.6	12.8	2.1	47.8

1974

GRAPES - LEAFHOPPERS - OMNIVOROUS LEAF ROLLER

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Materials[1]	Form.	AIA	Average Number leafhopper nymphs/leaf[2] 3-days	7-days	14-days	Average Number OLR live larva[3] 7-days	14-days
Cygon	25 WP	24 oz.	2	0	1	14	17
Zolone	3 EC	2 lbs.	6	8	9	8	9
Lannate	1.8 L	7.2 oz.	14	16	16	4	1
Lannate	1.8 L	14.4 oz.	11	11	10	0	0
Sevin	80 S	1.5 lb.	5	9	3	4	2
Sevimol	4 L	1.5 lb.	7	2	7	7	5
Imidan	70 WP	1 lb.	19	12	9	5	3
Guthion	50 WP	1 lb.	6	13	5	8	8
Dylox	80 SP	1 lb.	4	4	3	1	4
Dylox	80 SP	2 lbs.	4	0	6	2	0
Lorsban	4 EC	1 lb.	9	6	4	6	3
Dipel	3.2 WP	8 oz.	42	51	44	12	11
Dipel	3.2 WP	1 lb.	29	34	33	9	7
DS-15647	4 EC	8 oz.	12	14	11	9	11
DS-15647	4 EC	1 lb.	8	11	10	5	5
Orthene	75 SP	12 oz.	3	1	4	4	4
Cryolite	96 WP	6 lbs.	30	37	28	6	3
Check	-	-	39	42	30	23	29

1/ Applied 7/9/74. Fresno County. 4 replications/treatment.
2/ Nymph counts made in the field 25 lvs/rep. Erythroneura elegantula.
3/ Number larva found in nests/20 bunches/rep. Platynota stultana.

1974

GRAPES - LEAFHOPPERS - OMNIVOROUS LEAF ROLLER

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Materials[1]	Form.	AIA	Average Number leafhopper nymphs/leaf[2] 3-days	7-days	14-days	Average Number OLR live larva[3] 7-days	14-days
Cygon	25 WP	24 oz.	2	0	1	14	17
Zolone	3 EC	2 lbs.	6	8	9	8	9
Lannate	1.8 L	7.2 oz.	14	16	16	4	1
Lannate	1.8 L	14.4 oz.	11	11	10	0	0
Sevin	80 S	1.5 lb.	5	9	3	4	2
Sevimol	4 L	1.5 lb.	7	2	7	7	5
Imidan	70 WP	1 lb.	19	12	9	5	3
Guthion	50 WP	1 lb.	6	13	5	8	8
Dylox	80 SP	1 lb.	4	4	3	1	4
Dylox	80 SP	2 lbs.	4	0	6	2	0
Lorsban	4 EC	1 lb.	9	6	4	6	3
Dipel	3.2 WP	8 oz.	42	51	44	12	11
Dipel	3.2 WP	1 lb.	29	34	33	9	7
CA-6900	4 EC	8 oz.	5	4	3	7	5
CA-6900	4 EC	1 lb.	3	0	1	3	1
Orthene	75 SP	12 oz.	3	1	4	4	4
Orthene	75 SP	1 lb.	0	0	3	5	2
Vydate	2 E	12 oz.	7	11	10	11	14
Cryolite	96 WP	6 lbs.	30	37	28	6	3
Check	--	--	39	42	30	23	29

1/ Applied 7/9/74. Fresno County. 4 replications/treatment.
2/ Nymph counts made in the field 25 lvs/rep. Erythroneura elegantula.
3/ Number larva found in nests/20 bunches/rep. Platynota stultana.

GRAPE - 1975

Omnivorous Leaf Roller & Grape Leafhopper

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material[1/]	Form.	AIA (lbs.)	Average Numbers leafhopper nymphs/leaf[2/] (5 days)	(10 days)	OLR larva[3/] (5 days)
Cygon	25 WP	1.5	1.4	0.0	11.4
Orthene	75 SP	0.5	2.6	1.3	5.1
Orthene + Plictran	75 SP 50 WP	0.5 0.5	0.0	2.4	4.2
Lannate	1.8 L	0.5	14.4	26.3	1.0
S-2957	4 EC	0.5	3.4	5.4	3.3
S-2957	4 EC	1.0	0.0	2.1	0.0
Check	--	--	29.5	37.2	14.7

1/ Applied on Thompson Var. Fresno County 7/16/75. 4 reps/trtmt.

2/ Nymph counts made on 25 leaves/rep.

3/ Number larva found in nests from 20 bunches/rep.

Grapes - 1976

Grape Leafhopper, Erythroneura elegantula

Material	Form.	AIA	Ave. No. Leafhopper Nymphs/leaf 6/24	7/1	7/9	7/15
EM-S2957	4 EC	.5	1.2	1.8	3.9	6.2
EM-S2957	4 EC	1.0	1.3	1.5	4.4	3.2
EM-S2957	40 WP	.5	2.7	2.3	4.5	4.3
EM-S2957	40 WP	1.0	1.8	1.0	2.7	2.6
ICI PP 557	2 EC	1.5 oz.	.2	.1	.2	.3
ICI PP 557	2 EC	3 oz.	.5	.1	.1	1.0
SD-43775	2.4 EC	1.5 oz.	.6	.5	.3	1.0
SD-43775	2.4 EC	3 oz.	.6	.5	.9	.4
Sumithion	40 WP	1 lb.	.6	1.5	4.3	5.5
Sumithion	8 E	1 lb.	1.9	1.8	6.3	3.1
Dylox	80 SP	2 lbs.	1.5	2.4	5.1	3.6
Orthene	75 SP	12 oz.	.1	.1	.3	.9
Check	--	--	3.9	1.8	5.3	7.2
Lorsban	4 E	8 oz.	2.0	2.1	6.6	6.8
Lorsban	4 E	1 lb.	1.2	2.2	5.8	4.3
Lorsban	4 E	2 lbs.	1.5	2.5	7.5	5.5
Imidan	75 SP	2 lbs.	2.2	2.5	4.4	4.9
Torak G	4 E	1 lb.	1.9	1.1	4.7	4.7
Lannate	90 SP	.45 lb.	.1	2.1	7.1	3.9
Lannate	90 SP	.9 lb.	0	1.7	1.7	3.0
Lannate	1.8 L	.45 lb.	.1	1.5	5.0	5.5
Lannate	1.8 L	.9 lb.	.1	1.5	3.8	4.2
Zolone/ Malathion	1.5/ .07	2 lbs.	.5	.8	2.1	4.0
Sevin	80 S	1.5 lbs.	1.3	.4	4.0	5.9
Cygon	2.67 EC	1.5 lbs.	.3	1.1	2.0	2.3
Cryolite	96 WP	6 lbs.	1.1	1.5	5.7	4.8
Check	--	--	3.8	4.0	7.8	7.2

-Applications 6/18 by over-the-vine boom @ 100 gpa. Thompson variety, Fresno County.

Grapes - 1976

Control Evaluations on Omnivorous Leaf Roller,
Mealybug and Leafhopper

Material[1/]	Form.	AIA (lbs.)	Pre-Harvest Counts: No. of Infested bunches/15 bunches OLR	MB	Leafhopper injury rating
EM-S2957	4 EC	0.5	9	10	1.5
EM-S2957	4 EC	1.0	7	13	1.6
EM-S2957	40 WP	0.5	7	11	1.2
EM-S2957	40	1.0	6	10	1.4
ICI PP 557	2 Ec	1.5 oz.	0	10	1.1
ICI PP 557	2 EC	3 oz	2	12	1.3
SD-43775	2.4 EC	1.5 oz.	0	12	.7
SD-43775	2.4 EC	3 oz.	3	14	1.2
Sumithion	40 WP	1	7	10	1.7
Sumithion	40 WP	1	6	8	1.5
Dylox	80 SP	2	5	13	1.9
Orthene	75 SP	12 oz.	3	11	1.1
Check	--	--	10	11	1.4
Lorsban	4 E	8 oz.	2	2	1.3
Lorsban	4 E	1	3	5	1.1
Lorsban	4 E	2	7	5	1.3
Imidan	70 WP	2	3	4	.9
Torak G	4 E	1	2	11	1.6
Lannate	90 SP	0.45	3	5	1.3
Lannate	90 SP	0.9	5	11	1.1
Lannate	1.8 L	0.45	2	5	1.4
Lannate	1.8 L	0.9	1	4	1.3
Zolone/Malathion	1.5/.07	2	2	4	1.9
Sevin	80 S	1.5	4	7	1.2
Cygon	2.67 EC	1.5	8	4	1.5
Cryolite	96 WP	6	1	8	1.5
Check	--	-	11	9	1.6

1/ Applications made on 6/18 and 7/23 by over-the-vine boom @ 100 gpa. Thompson variety, Fresno County.

2/ Leafhopper injury rating made from leaves on terminal 12" of canes. Evaluated 5 canes/rep, rating them 1-3, 1 being light injury and 3 being heavy.

Grapes - 1976

Temik - Leafhopper Control

Rate Aldicarb[1/] (AIA)	Average Number Leafhoppers/leaf[2/] 1 week	2 weeks	4 weeks	6 weeks
5 lbs.	2.7	1.4	0.8	0.6
10 lbs.	2.9	0.6	0.0	0.0
20 lbs.	2.0	0.1	0.0	0.0
Check	3.2	2.1	4.5	6.3

1/ Temik -15 granules shank incorporated into soil on 6/18/76 followed by flood irrigation.

2/ 4 reps. per treatment, Thompson variety, Fresno County.

GRAPES - 1977

Grape Leafhopper - Erythroneura elegantula

Material[1/]	Form.	AIA	Rate/Acre	Average Number Nymphs/Leaf[2/] 6/15 11-days	7/2 28-days	7/19 45-days	8/4 61-days	8/19 15-days	9/2 29-days
Chlorthiophos	40WP	0.5	1.25 lbs.	2	2	5	17	1	3
Chlorthiophos	8EC	0.5	1 pt.	0	2	6	14	0	2
Orthene	75S	0.5	0.67 lb.	0	3	2	5	1	2
Orthene	75S	1.0	1.3 lb.	0	0	1	7	0	0
Sumithion	40WP	1.0	2.5 lb.	3	6	11	23	2	5
Sumithion	40WP	2.0	5.0 lb.	0	4	9	17	1	3
Sumithion	8EC	1.0	1 pt.	1	4	8	19	3	7
SD-43775	2.4EC	0.1	5.5 oz.	0	1	5	15	0	2
UC-51762	75WP	0.45	0.6 lb.	2	1	6	14	1	3
UC-51762	75WP	0.75	1.0 lb.	0	2	2	8	0	2
Endosulfan	50WP	1.0	2.0 lb.	3	5	19	13	5	11
Dimethoate	2.67E	1.5	4.5 pts.	0	2	8	11	2	4
Phosalone	3EC	2.0	5.4 pts.	2	5	17	21	5	12
Carbaryl	80S	1.5	1.9 lbs.	1	3	19	14	2	7
Ethion	8E	1.5	1.5 pts.	2	4	17	19	3	5
Check	-	-	-	13	11	21	27	24	34

1/ Applied 6/4 & 8/5 by over-the-vine "U" shaped high pressure doom @ 180 gpa. 4 replications of 5 vines/treatment.

2/ Sampled 15 leaves from 3 vines/rep., 60 leaves per trtmt. and counted total nymphs on underside of leaf. Thompson variety. Fresno County.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center, Parlier.

GRAPES

Leafhopper control, *Erythroneura elegantula*

Material[1/]	Form.	AIA	Rate/Acre	Average Number Nymphs/Leaf[2/] (7/24) 4-days	(7/31) 11-days	(8/7) 18-days	(8/14) 25-days	(8/30) 5-days*
Celathion	40 WP	0.5 lb.	1.25 lb.	2	3	6	9	2
Celathion	40 WP	1.0 lb.	2.50 lbs.	0	2	1	5	0
Celathion	4 EC	0.5 lb.	1 pt.	1	0	4	7	0
Celathion	4 EC	1.0 lb.	2 pts.	0	0	3	4	0
Zolone	3 EC	2.0 lbs.	5.4 pts.	4	8	11	13	3
Dimethoate	25 WP	1.5 lb.	6 lbs.	0	2	3	7	0
Check	-	-	-	17	23	40	41	37

1/ Applied 7/20/78 by Myers air carrier sprayer at 75 gpa. *Retreated 8/25, 3 reps. each rep. 1 row x 100 ft. Sanger, Fresno Co.

2/ Counts from whole leaf sampled at random and 50 leaves/rep.

Leafhopper control, *Erythroneura elegantula*

Material[1/]	Form.	AIA	Rate/Acre	Average Number Nymphs/Leaf[2/] (8/1) 7-days	(8/8) 14-days	(8/15) 21-days	(8/22) 24-days
Celathion	40 WP	0.5 lb.	1.25 lbs.	1	3	5	8
Celathion	4 EC	0.5 lb.	1 pt.	2	2	4	6
Dimethoate	25 WP	1.5 lb.	6 lbs.	1	1	5	7
Zolone	3 EC	2.0 lbs.	5.4 pts.	7	10	19	22
Carbaryl	80 S	1.5 lbs.	1.9 lbs.	5	5	12	14
Ethion	8 E	1.5 lbs.	1.5 pts.	9	11	21	19
Check	-	-	-	60	63	53	49

1/ Applied 7/25/78 by Myers air carrier sprayer at 75 gpa. 4 reps/trtmt. each rep. 1 row x 100 ~~ft.~~ vines Biola, Fresno County.

2/ Sampled leaves 50/rep.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center, University of California, Parlier.

GRAPES - 1980
Two-Spotted Spider Mites, *Tetranychus urticae*
Grape Leafhopper, *Erythroneura elegantula*
Western Orchard Predator Mite, *Typhlodromus occidentalis*

Material[1/]	Form.	Rate/Acre	Average Number Mites/Leaf[2/] 8/14 2-Spot	8/14 GLH	8/14 T.O.	8/26 2-Spot	8/26 GLH	8/26 T.O.
Mitac	20EC	3.5 pts.	26.0	2.3	0.4	35.5	0.8	2.2
Mitac	20EC	6 pts.	15.2	0.1	0.7	55.0	3.5	0.0
SIR 8514	25WP	.8 lb.	1.6	9.6	1.2	0.3	15.0	0.7
SIR 8514	25WP	2.0 lbs.	8.8	9.2	2.8	0.0	9.1	4.3
SLJ 0312	50WP	9 ozs.	3.6	9.7	1.3	0.3	1.9	0.3
Kelthane	35W	3.5 lbs.	14.3	3.1	1.1	39.2	9.4	2.2
Plictran	600F	12.8 ozs.	1.7	15.3	0.0	6.5	14.1	0.0
NC 21314	50WP	19.6 ozs.	5.2	1.5	1.6	0.5	2.8	0.6
Plictran	50WP	2 lbs.	0.5	4.3	0.0	1.6	3.6	0.9
DPX 3792	2EC	14.4 ozs.	1.9	4.1	0.9	0.3	6.2	0.3
DPX 3792	2EC	14.4 ozs.	2.0	3.5	1.7	0.0	5.3	0.3
Check	-	-	1.9	2.3	2.8	0.6	2.1	0.3

1/ Sprayed on 7/30/80 with Solo back pack sprayer at 180 gpa.

2/ Counted 10 leaves/rep., 3 reps/treatment, 3 vines/rep. Fresno County.

J. E. Dibble, University of California, San Joaquin Valley Agricultural Research and Extension Center, Parlier.

GRAPES - 1980
Grape Leafhopper, *Erythroneura elegantula*

Material[1/]	Form.	Rate/Acre	Average Number Leafhoppers/Leaf[2/] 8/19	mite rating[3/]	9/3	mite rating[3/]
Pounce	3.2EC	2 ozs.	.5	1	.6	3
Pounce	3.2EC	4 ozs.	.9	1	.4	2
Ambush	2E	.4 lb.	.7	2	.1	3
Ambush	2E	.8 lb.	.1	3	0	3
Ambush	2E	3.2 lb.	0	1	0	2
Mitac	20EC	3.5 pts.	.9	3	.3	3
Mitac	20EC	6.0 pts.	1.2	3	0	3
Lorsban	4E	1 pt.	1.7	1	3.7	1
Lorsban	4E	2 pts.	10.5	0	16.2	1
Imidan + Adjust	50WP	2 lbs.	5.0	1	6.7	1
Cygon	25WP	8 lbs.	.2	1	1.1	2
UC 55248	4E	8 ozs.	2.9	1	9.2	1
Pydrin	2.4EC	10.6 ozs.	.9	0	1.2	2
Check	-	-	8.1	2	9.0	1

1/ Sprayed on 8/14 with Solo back pack sprayer @ 180 gpa.

2/ Evaluated 10 lvs/rep., 3 reps/treatment, 3 vines/rep. Fresno County.

3/ Evaluated same as for leafhoppers, rating population present. 1 = low; 2 = moderate; 3 = heavy.

J. E. Dibble, University of California, San Joaquin Valley Agricultural Research & Extension Center, Parlier.

4th Rpt 1970

Sprays For Control of the Grape Mealybug 1970

Vincent Walts--Saginaw and Walnut Avenue. Thompson Seedless.
Applied May 21 using a hand-held spray gun at 200 gpa.
Each treatment was applied to 5 vines on the east end of a row.
The vines were examined August 25, 1970.

Chemicals	Pounds Active per Acre	Per Cent Infested Bunches 1/
Supracide 2E	1.0	0.0
Imidan 50W 2/	1.0	15.0
Azodrin 5	1.0	20.0
Furadan 4F	1.0	20.0
Lannate 90%	1.0	27.0
Torak 4E	1.0	40.0
Untreated	---	80.0
duPont 1410 2E	1.0	40.0
Zolone 3E	2.0	33.3
Fundal 95%	1.0	33.3
Dimethoate 25W	1.0	0.0

1/ Fifteen bunches touching or very near the trunk of the vines were examined in each plot.

2/ Twenty bunches examined.

Grapes (Thompson variety)

Grape Mealybug Control (March)

J. E. Dibble and F. L. Jensen
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San Joaquin Valley Agricultural Research and Extension Center

Materials[1/] (all + oil)	Formulation	Rate/100 (250 gpa)	Ave. No. bunches[2/] infested with mealybug (August)
Diazinon + PGSO-2	50 WP	1 lb. 1.5 gal.	1.7
Diazinon + PGSO-2 + B-1956	50 WP	1 lb. 1.5 gal. 2 oz.	4.0
Diazinon + Spraytex NR	50 WP	1 lb. 1.5 gal.	2.7
Fundal/Galecron + PGSO-2	97 SP	1 lb. 1.5 gal.	4.3
Supracide + PGSO-2	2 EC	1 lb. 1.5 gal.	1.0
Cygon + PGSO-2	25 WP	1 lb. 1.5 gal.	3.7
Ethion + PGSO-2	25 WP	1 lb. 1.5 gal.	3.0
Check	--	--	3.3

1/ Applied March 9, 1971 by handgun @ 200 psi. Tulare County.

2/ Sampled 2 bunches next to primary scaffold branches/vine and 10 vines/rep. (3 reps/treatment). Therefore 20 bunches examined per rep.

Grapes (Thompson variety)

Grape Mealybug Control (July)

J. E. Dibble and F. L. Jensen
University of California
San Joaquin Valley Agricultural Research and Extension Center

Materials[1/] (all + oil)	Formulation	Rate/AIA (300 gpa)	Average No. bunches infested[2/] Honeydew	Mealybug
Diazinon + PG-2	50 WP	2 lbs. 3 gals.	3.0	1.7
Diazinon + Spraytex NR + B-1956	50 WP	2 lbs. 3 gals. 5 oz.	6.3	4.7
Diazinon + Spraytex NR	50 WP	2 lbs. 3 gals.	5.0	2.3
Diazinon + Sun 6 E	50 WP	2 lbs. 3 gals.	4.7	3.0
Imidan + Sun 6 E	50 WP	2 lbs. 3 gals.	2.3	2.7
Fundal/Galecron + Sun 6 E	97 SP	2 lbs. 3 gals.	11.7	9.7
Dibrom + Sun 6 E	8 E	2 lbs. 3 gals.	4.7	4.3
Check	--	--	15.0	12.7

1/ Applied by handgun July 7, 1971 @ 200 psi. Tulare County.

2/ Sampled 5 bunches/vine and 4 vines/rep. (3 reps/treatment) in August. Therefore, average is from 20 bunches examined per rep.

Grapes (Thompson variety)

Grape Mealybug Control in regards to Gallons of Spray per acre applied in July

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

GPA 1/	Average No. bunches infested with mealybug 2/ (August)
10	6.0
25	3.5
50	4.5
180	3.5
Check	11.0

1/ Applications July 7, 1971 with a Kinkelder Royal sprayer using Diazinon, 50 WP @ 4 lbs. + Sun 6 E NR oil @ 2.5 gals. + B-1956 @ 4 oz. per acre. Tulare County.

2/ Sampled 5 bunches per vine and 10 vines per rep. (2 reps/treatment). Therefore average is from 50 vines per rep.

Grapes (Thompson variety)

Grape Mealybug Control in regards to Gallons of Spray per acre applied in March

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

GPA 1/	Average No. bunches infested with mealybug 2/ (August)
10	6.0
25	4.7
50	3.7
180	4.3
Check	5.7

1/ Applications March 9, 1971 with a Kinkelder Royal sprayer using Diazinon 50 WP @ 4 lbs. + PGSO-2 @ 3 gals. + B-1956 @ 4 oz. per acre. Tulare County.

2/ Sampled 5 bunches per vine and 10 vines per rep. (3 reps/treatment). Therefore average is from 50 vines per rep.

Sprays for control of grape mealybug on Carignane vines, 1971

Nick Morris vineyard, Escalon

Treatment Chemical	GPA and Lb. ai./acre	Date sprayed	Row No.	Average number infested bunches per vine[1/]
Untreated	---	---	22 36	1.5 1.7
Zolone 3E	188/1.9	4/28	24	0.7
Methyl parathion 5E	188/1.9	4/28	25	0.5
Cygon 25W	188/1.9 286/1.9	4/28 7/15	27	0.0
Cygon 25W	188/1.9	4/28	28	0.7
Supracide 2E	188/1.9 286/1.9	4/28 7/15	29	0.0
Supracide 2E	188/1.9	4/28	30	0.3
Furadan 4F	188/1.9	4/28	31	0.3
Lannate 90%	188/1.9	4/28	32	0.7
DuPont 1410-2E	188/1.9	4/28	33	1.2 →
ICI PP511 4.34E	188/1.9	4/28	34	1.8 →
Supracide 2E	286/1.9	7/15	35	0.5
Cygon 25W	286/1.9	7/15	23	0.3

1/ Five bunches most likely to be infested examined per vine from 6 vines September 27, 1971.

(1) Shoots were about 5-6' long.

Sprays to control grape mealybugs on Thompson Seedless vines;
Victor Thiesen vineyard, Tulare County.

Sprays applied at 242 gallons per acre with a hand-held gun
on July 7, 1971.

Treatment Chemical	Lb. ai per acre	Plot No.	Number of bunches infested 1/
Untreated	--	6-6	8
		8-5	11
		10-1	12
Supracide 2E	2.1	6-1	0
		8-6	0
		10-3	0
Parathion 4E	1.5	7-4	0
		9-1	0
		9-5	0
Methyl parathion 5E	.78	6-2	0
		7-6	1
		10-4	0
Cygon 25W	2.1	7-2	0
		8-4	1
		10-6	1
ICI, PP511 - 4.34E	2.1	7-1	0
		9-2	1
		9-6	1
Guthion 2E	2.1	6-4	2
		8-3	2
		10-2	0
Zolone 3E	2.0	6-5	4
		8-2	1
		9-4	1
Torak 4E	2.1	7-3	1
		8-1	5
		10-5	0
Furadan 4F	2.0	6-3	8
		7-5	1
		9-3	1

1/ Examined 5 bunches on each of 6 vines per plot.

Dormant season sprays to control grape mealybugs on Thompson Seedless vines; Victor Thiesen vineyard, Tulare County. Sprays applied at 129 gallons per acre with a hand-held gun on February 15, 1971.

Treatment Chemical	Lb. ai. per acre	Plot No.	Number of bunches 1/ Infested	Honeydew only
Untreated	--	1-1	3	0
		3-6	5 13	3
		4-3	5	0
1410-2EC	1.6	1-4	6	0
		3-3	2 9	2
		4-5	1	0
Parathion 4E	1.6	2-2	6	1
		4-1	1 11	0
		5-5	4	0
Furadan 4F	1.6	1-6	5	0
		3-1	3 12	1
		4-4	4	2
Imidan 50W	1.3	2-4	3	0
		3-5	3 14	1
		5-2	8	0
Zolone 3E	1.6	2-3	6	0
		3-4	5 17	0
		5-6	6	0
Dibrom 8E	1.6	1-2	8	0
		2-6	0 18	0
		5-3	10	0
Methyl parathion 5E	1.3	2-1	1	1
		4-2	10 17	1
		4-6	6	0
ICI-PP 511 4.34 EC	1.3	1-3	8	0
		2-5	5 20	1
		5-1	7	0
Lannate 90%	1.3	1-5	8	0
		3-2	4 19	2
		5-4	7	0

1/ Examined 5 bunches on each of 6 vines per plot, August 17, 1971.

1972

Sprays to Control Grape Mealybugs on Tokay Grapevines 1972. Burton Townes - Lodi, California. Sprays were applied at the rate of 250 gallons per acre on July 12 and bunches were examined on August 29. Each treatment was applied to three plots of six vines each.

Treatment Chemical	Pounds ai. per acre	Number infested bunches 1/	Per cent bunches infested per treatment
Supracide 2EC	1.5	10	11.8
Zolone 3E	2.0	13	14.4
Alfatox	2/	7	7.8
Imidan 50WP	1.0	7	7.8
Imidan 50WP	2.0	25	27.8
Cygon 25WP	1.0	2	2.2
Cygon 25WP	2.0	5	5.6
ICI 511 4.14 EC	2.0	19	21.1
ICI 484-2EC	2.0	23	25.5

1/ 30 bunches per plot.

2/ Used 7.5 quarts per acre. Alfatox contains 20% tech. methoxychlor and 10% diazinon.

1973

Grape Mealybug Control 1973. Tokay Grapes, B. Townes, Lodi. Five clusters per vine examined on August 10, 1973. Infested clusters were separated into those touching the heavy wood of the vines or the stake and those hanging freely. Sprays were applied at the rate of 250 gallons per acre in March and 300 GPA in April. Six vines per plot were examined unless vines were missing.

	Chemical used	Ai per acre	Plots	Date Treated	Clean clusters Free	Clean clusters Touch 1/	Infested Free	Infested Touch 1/	Number of Vines	
1	Pencap M	0.75 ai	1	3/13/73	9	13	0	3	5	
		+ light	10	"	16	14	0	0	6	
		oil 2	22	"	23	0	0	7	6	
		gal./100			48	27	0	10	17	11.5
					75	+	10	= 85		
2	Supracide 2E	1.00 +	2	"	18	6	3	3	6	
		oil 2	14	"	17	11	2	0	6	
		gal/100	21	"	20	6	0	4	6	
					55	23	5	7	18	12.-
					78	+	12	= 90		
	Supracide 2E	1.00	3	"	22	7	0	1	6	
			16	"	20	7	1	2	6	
			23	"	17	12	0	1	6	
					59	26	1	4	18	5.5
					85	+	5	= 90		
4	Supracide 2E	2.00	4	"	18	12	0	0	6	
			13	"	27	3	0	0	6	
			18	"	14	12	2	2	6	
					59	27	2	2	18	4.7
					86	+	4	= 90		
5	Imidan 50W	1. ai +	5	"	13	16	0	1	6	
		oil 2 gal	9	"	16	5	3	1	5	
		per/100	24	"	21	5	1	3	6	
					50	26	4	5	17	10.1
					76	+	9	= 85		
6	Furadan 4F1	1. ai +	6	"	14	10	1	5	6	
		oil 2 gal	15	"	22	7	0	1	6	
		per 100	20	"	21	8	0	1	6	
					57	25	1	7	18	8.8
					82	+	8	= 90		
7	Supracide 2E	2 ai	7	4/23/73	22	6	0	2	6	
			12	"	23	7	0	0	6	
			19	"	21	3	0	1	5	
					66	16	0	3	17	3.5
					82	+	8	= 80		
8	Supracide 2E	1 ai +	8	"	19	9	0	2	6	
		oil 0.75	11	"	27	2	0	1	6	
		gal/100	17	"	21	7	1	1	6	
					67	18	1	4	18	5.5
					85	+	5	= 90		

1/ = touching

GRAPES

Grape Mealybug *Pseudococcus maritimus*

J. E. Dibble, San Joaquin Agricultural Research and Extension Center

University of California

Material	Form.	Rate AIA 1/	Total infested bunches/treatment 2/ March trtmt.		July trtmt.
Supracide	2E	2 lbs	11		3
Supracide	2E	2.5 lbs	8		0
Imidan	50WP	2 lbs	23		8
Phosvel	2.7EC	2 lbs	15		6
Lannate	90WP	2 lbs	27		14
Diazinon	50WP	2 lbs	10		4
Parathion	25WP	2 lbs	8		2
Galecron	95SP	2 lbs	32		24
Zolone	3EC	2 lbs	27		6
Cygon	25WP	2 lbs	25		4
Guthion	2E	2 lbs	11		3
HOE 2960	3.4EC	2 lbs	12		8
CHECK	--	--	-	31	-

1/ Applications made March 20 and July 5, 1973 @ 40 gpa plus 3 gal. PGS02 oil/acre. Thompson var/Tulare Co.

2/ August 24 examined 45 bunches/treatment. (15/rep) next to scaffold branches.

Grape mealybug
B. Townes - Lodi, California
Tokay variety

Plot #1

Vines handsprayed with power sprayer on March 19, 1974. Examination made on August 19, 1974.

Treatment chemical	Amount per 100 gals.	AI/Acre (GPA)	Number of clusters infested with: 1/ Mealybug	Honeydew	Percent clean clusters per treatment
Furadan 4F	8 ozs	0.9 lb	7	0	67
Spectrum 415			10	0	
spray oil	1 gal	3.4 gals (343 gals)	7	6	
Furadan 4F	16 ozs	2.0 lbs	11	1	78
Spectrum 415			3	0	
spray oil	1 gal	4.0 gals (403 gals)	5	0	
Parathion Aqua 8	10 ozs	2.7 lbs	2	0	96
Spectrum 415			2	0	
spray oil	1 gal	4.3 gals (434 gals)	0	0	

1/ Each treatment was replicated 3 times, and a total of 90 clusters per treatment examined. Clusters classifed as clean, clusters with honeydew only, and clusters with mealybugs.

Grape mealybug - 1974
B. Townes - Lodi, California
Tokay variety

Plot #2

Grape vines were handsprayed with a power sprayer at 250 gpa on July 22, 1974. Examination made on July 30, 1974.

Treatment chemical	AI/Acre (lb)	Number of vines	Number of mealybugs 1/ dead	Number of mealybugs 1/ alive	Percent dead per treatment
S 2957 50% E	1.0	6	88	206	29.9
Furadan 4F	0.5	6	170	359	32.1
Furadan 4F	1.0	4	112	47	70.4
Cygon 25W	2.0	6	175	48	78.5
Parathion Aqua 8	0.5	6	195	78	71.4
Pencap M-2	0.75	6	117	234	33.3
Untreated	-	6	13	408	3.1

1/ Mealybugs on infested clusters were examined and classified as being dead or alive.

Pacific mite on grapes

Sprayer	GPA	MPH	Mites/leaf (days)			
			3	12	18	35
Bean2106	300	2.4	1.3	4.5	1.1	5.4
"	150	"	.9	1.0	1.2	.9
"	75	"	1.6	.3	1.1	1.8
"	150	4.8	2.7	6.5	3.8	.9
OTV boom	400	2.3	.6	3.5	.7	.9
"	200	"	.8	1.0	.4	1.8
"	200	4.6	.6	3.8	.9	2.7
Check	-	-	4.9	32.0	7.5	---

(Orchex 696 + Ethion EC, 2gal.+ 1qt)

Pacific mite on grapes

Sprayer	GPA	MPH	Mites/leaf (days)			
			3	12	18	35
E-O-M	5	2.4	2.6	24.5	5.5	1.8
"	20	"	2.7	13.5	2.8	0
Kink(R)	50	"	1.9	11.0	1.9	1.8
Myers	250	"	2.9	15.0	1.2	3.6
Check	-	-	4.9	32.0	7.5	---

(Orchex 696 + Ethion EC, 1gal.+ 1qt.)

Table G-1.-- Comparison of certain plant spray oils for the control of the Pacific mite Tetranychus pacificus on grapes.

Treatment a/	Gals/acre		Mean number mites per leaf b/ (days after application) Active stage		
	oil	spray	3	8	21
Orchex 696	5	75	16.4	4.5	1.5
Orchex 796	5	"	2.0	1.8	0.0
PGSO-1	5	"	18.8	1.5	0.0
Volck	5	"	30.4	0.0	0.0
Volck	2.5	"	27.2	5.4	2.2
Check	--	--	65.2	6.0	5.4

a/ Applied August 22, 1966 (harvest) in Fresno County on Thompson variety. Each treatment 1/3 acre (4 rows x 300'). Applied with a Deere-80 orchard type air carrier sprayer. Orchex is a Humble Oil product, PGSO-1 is a Collier Carbon and Chemical product, Volck and light medium summer oil are Chevron Chemical products.

b/ 50 leaves sampled per replication.

Table G-2.-- Comparison of a single plant spray, applied at different rates for the control of the Pacific mite Tetranychus pacificus on grapes.

No.	Treatment a/	Gals/acre		Mean number mites per leaf b/ (days after application)	
		oil	spray	Active stage 7	Active stage 20
1.	PGSO-1	5	75	4.0	0.6
2.	PGSO-1	5	190	0.0	0.4
3.	PGSO-1	7	21	4.5	0.4
4.	PGSO-1	13	14.5	0.0	0.0
5.	Check	--	--	6.0	5.8

a/ Applied August 23, 1966 (harvest) in Fresno County on Thompson variety. Each treatment 1/3 (4 rows x 300'). Treatments 1 and 2 made with a Deere-80 orchard type air carrier sprayer, 3 and 4 with an Econ-O-Mist 36 TD-B orchard type air carrier PTO sprayer. PGSO-1 is a Collier Carbon & Chemical Corporation product.

b/ 100 leaves sampled per treatment.

Table G-3. Comparison of certain plant spray oils for the control of Pacific mite T. pacificus on Thompson variety grapes. a/

Treatment	Gal. oil/ac.	Spray rate/ac. b/	Ave. no. mites/1f. disc. c/ 6/14	6/24	7/10	Phyto. rating (0-5) d/
1. Orchex 696	3.5	88	0.2	0.1	7.4	0.2
2. Orchex 796	2.2	110	0.5	0.4	9.4	0.0
3. Orchex 796	4.4	110	0.1	0.2	4.2	0.4
4. Orchex 796	6.6	110	0.0	0.0	0.1	1.3
5. PGSO-1	4.4	110	0.1	0.1	6.9	3.2
6. PGSO-2	4.4	110	0.1	0.1	3.4	2.1
7. Volck Sup.	2.2	110	0.3	0.5	7.3	0.4
8. Volck Sup.	4.0	100	0	0	1.4	1.1
9. Volck Sup.	6.6	110	0	0	2.2	1.8
10. XMTY-99A	4.4	110	0.5	1.4	9.1	3.0
11. Check	--	--	2.3	12.1	23.2	0

a/ Applied April 28, 1967, on Raven Ranch, Fresno Co. (Test 4-67).

b/ Treatments 1-4 applied with Fresno Co. over-the-vine boom sprayer at 200 psi and 2.5 mph. Due to boom sprayer breakdown, balance of plots applied with a Bean 2109 air carrier unit at 200 psi and 3 mph.

c/ 100 leaf discs (1.5 inch dia. and 1 per leaf) taken per treatment (3 reps.) 7/8/10 counts/leaf.

d/ Leaf phytotoxicity in the form of "water" spots (involving small groups of cells) and marginal burn.

Table G-4. Comparison of certain plant spray oils for the control of Pacific mite T. pacificus on Thompson variety grapes. a/

Treatment	Gal. oil/ac.	Spray rate/ac.	b/ Ave. No. mites/lf. disc c/ 6/14	6/24	7/10	Phyto. rating (0-5) d/
1. Orchex 696	2	4	0.3	2.4	7.8	0
2. "	4	4	0	0	1.9	0.6
3. "	4	19	0	0.3	3.4	0
4. "	4	50	0	0.1	2.1	0.3
5. "	4	100	0	0.2	2.9	1.3
6. Check	-	-	1.1	4.2	9.4	0

a/ Applied April 28 and June 14, 1967, on Raven Ranch, Fresno Co. (Test 5-67)

b/ Treatments 1-3 applied with an Econ-O-Mist hi-concentrate air carrier sprayer. Nos. 4 and 5 applied with a Bean 2109 air carrier unit. Speed of travel 3 mph for both sprayers.

c/ 100 leaf discs (1.5 in. dia. and 1 per leaf) taken per treatment (3 reps.).

d/ Leaf phytotoxicity in the form of "water" spots (involving small groups of cells) and marginal burn.

Sprays to Control Pacific Mite on Grapes - 1969

I. E. Nielsen - California

Fifteen Leaves Examined Per Plot on Each Date

Treatment				Plot	Average Number of Mite and Egg Per Leaf in Each Plot											
					Pre-Treatment		Post-Treatment									
Color Code	Equip	GPA	PSI	No.	(Date-Collected) Jul.-18		Jul.-29		Aug.-5		Aug.-12		Aug.-21		Average of 4 counts	
					Egg	Mite	Egg	Mite	Egg	Mite	Egg	Mite	Egg	Mite	Mites	Eggs
Y	Kink.	25	1.5 kg.	A	12.5	5.6	13.8	12.5	6.1	4.8	24.4	7.5	0.5	0.6		
				B	159.5	70.7	2.6	3.1	2.1	1.6	3.1	2.6	0.3	0.3		
				C	178.4	58.1	13.5	6.0	46.0	31.1	6.2	2.3	1.3	0.3		
					350.4	134.4	29.9	21.6	54.2	37.5	33.7	12.4	2.1	1.2	6.1	29.8
					0.3	0.3	0.2	0.4	1.5	1.2	1.0	3.3	0.6	2.4	1.8	0.8
0	RSM.	31	140	A	457.6	228.8	.3	.5	0.5	1.1	6.0	1.6	2.9	0.5		
				B	43.7	13.3	3.4	6.5	11.7	10.1	24.2	3.1	20.8	1.6		
				C	80.3	46.9	0	0	0	0	0	0	1.8	0		
					581.6	289.0	3.7	7.0	12.2	11.2	30.2	4.7	25.5	2.1	2.1	17.9
					0.9	0.2	0.0	0.3	0.0	0.2	0.3	0.5	0.8	1.1	0.5	0.3
W	Bean 2106	200	300	A	95.5	37.9	1.6	3.1	2.4	1.3	9.6	2.3	17.2	0		
				B	114.7	78.1	9.1	5.2	28.7	25.0	0.3	0	1.6	0		
				C	208.3	64.3	3.9	2.6	1.9	0.3	7.8	0	7.8	0		
					418.5	180.3	14.6	10.9	33.0	26.6	17.7	2.3	26.6	0	3.3	23.0
					0.5	0.8	0.2	0.6	1.0	1.3	0.1	0.7	0.0	0.2	0.7	0.3
RG	OTV (co. rig)	200		A	456.4	205.2	4.2	.5	1.6	0.8	17.7	8.1	5.5	1.3		
				B	710.9	301.6	1.8	.5	2.7	0.5	21.3	4.7	7.3	0		
				C	120.0	60.5	3.4	7.0	1.6	1.6	2.6	1.0	3.6	0		
					1287.3	567.3	9.4	8.0	6.9	2.9	47.6	13.8	16.4	1.3	2.2	18.6
					1.1	1.1	0.1	0.2	0.2	0.3	1.4	1.9	1.1	1.3	0.9	0.7

Red figures indicate counts per leaf of predatory mite.

60

Comparison of gallons per acre in air carrier spray applications for the control of Pacific Mite in the spring (1969)

Total gals. of spray per acre	Ave. no. mites per leaf (days after applic.) 14	24	40
4	0	0	1.9
19	0	0.3	3.4
50	0	0.1	2.1
100	0	0.2	2.9
Check	1.1	4.2	9.4

(Material used: Orchex 696 oil @ 4 gals/acre)

Comparison of air carrier and commercial boom type spray applications for the summer control of Pacific Mite

Equipment (speed = 2.4 mph)	GPA	Ave. no. mites per leaf (days after applic.) 3	18	35
air carrier	5	2.6	5.5	1.8
air carrier	20	2.7	2.8	0
air carrier	50	1.9	1.9	1.8
air carrier	75	1.6	1.1	1.8
air carrier	150	0.9	1.2	1.9
air carrier	300	1.3	1.1	5.4
OTV boom	200	0.8	0.4	1.8
OTV boom	400	0.6	0.7	0.9
Air + boom	250	2.9	1.2	3.6
Check	---	4.9	7.5	14.0

(Materials used = Orchex 696 oil 2 gal/acre + Ethion EC 1 qt/acre)

Comparison of application spray rates for the control of leafhoppers

Sprayer	Type	GPA	MPH	Ave. no. leafhoppers/leaf 10 days	18 days
ACK	Air	58	2.5	0	3.2
ACK	air	225	2.5	0.8	0
ACK	air	29	5.0	1.6	4.8
ACR	air	62	2.5	4.0	1.6
ACR	air	31	2.5	0	0
ACR	air	31	5.0	1.6	1.5
ACB	air	200	2.5	8.1	1.6
ACB	air	100	2.5	2.4	4.8
OTV	boom	200	2.0	1.6	0
OTV	boom	200	4.0	1.6	4.8
Check	----	---	---	21.6	43.2

(Material used = Ethion + oil)

COMPARISON OF CERTAIN CHEMICALS FOR THE CONTROL OF PACIFIC MITES ON GRAPES

Treatment	Formulation	Rate/acre[1/]	Mean Number of Pests Days after application Mites/leaf 5	10	15
Sevin	80WP	2 lbs.	5.2	7.8	6.8
Delnav	8EC	1 pt.	0.3	0.0	0.0
Thiodan	50WP	3 lbs.	3.7	4.1	3.6
Ethion	25WP	3 lbs.	0.1	0.0	0.0
Malathion	25WP	6 lbs.	2.8	3.9	4.1
Alfatox Diazinon Methoxychlon	10% 20%	1 gal.	2.4	4.2	2.9
Std. Lead Arsenate	95WP	6 lbs.	4.4	4.5	3.1
Biotrol BTB 183	25WP	4 lbs.	5.1	4.7	2.7
Dipel BT	Amdal WP	1 lb.	3.8	5.0	3.3
Cryolite	96 WP	6 lbs.	3.9	4.2	4.1
Carzol	95SP	8 oz.	0.2	0.0	0.2
Zolone	3EC	2 lbs.	2.8	2.2	1.9
Galecron/Fundal	96SP	8 oz.	0.5	0.0	0.0
Galecron/Fundal	96SP	1 lb.	0.0	0.2	0.0
Check	---	-	4.9	5.1	3.8

[1/] Applied by air carrier sprayer at 150 gpa on 10/5/70

COMPARISON OF CERTAIN PESTICIDES ON THE PACIFIC MITE POPULATION ON GRAPES

Treatment	Formulation	Rate/Acre	10/14,15,16 Eggs	10/14,15,16 Active	10/22,23 Eggs	10/22,23 Active
Sevin	80 WP	2 lbs.	14.1	0.9	26.9	0.6
Delnav	8 EC	1 pt.	13.6	1.5	21.0	1.2
Thiodan	50 WP	3 lbs.	13.5	0.0	43.8	0.9
Ethion	25 WP	3 lbs.	2.1	0.3	22.5	0.9
Malathion	25 WP	6 lbs.	3.6	0.9	43.2	0.9
Alfatox Diazinon Methoxychlon	 10% 20%	1 gal.	9.9	0.0	24.9	0.0
Std. Lead Arsenate	95 WP	6 lbs.	1.8	0.4	13.2	0.3
Biotrol BTB 183	25 WP	4 lbs.	24.3	0.9	51.9	1.5
Dipel BT	Amdal WP	1 lb.	26.4	0.3	34.8	0.6
Cryolite	96 WP	6 lbs.	58.2	0.0	40.5	0.6
Carzol	95 SP	8 oz.	18.6	0.0	24.3	0.9
Zolone	3 EC	2 lbs. (5 pts. 6 oz.)	27.6	0.0	7.2	0.0
Galecron/ Fundal	96 SP	8 oz.	19.5	0.3	17.4	0.0
Galecron/ Fundal	96 SP	1 lb.	50.0	0.0	22.8	0.3
Check	--	--	21.0	0.3	104.4	0.6

1970

Grapes

Pacific Mite Control and High vs. Low Volume Applications

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University of California
San Joaquin Valley Agricultural Research and Extension Center

Materials[1/]	Formulation	Rate/Acre	GPA	Counts days after application and mites/leaf[2/] 5	15	25
Carzol	95 SP	8 oz.	180	2	0	0
Carzol	95 SP	8 oz.	30	0	0	0
Plictran	50 WP	8 oz.	180	1	0	0
Plictran	50 WP	8 oz.	30	2	0	1
Morestan	25 WP	3 lbs.	180	0	0	0
Morestan	25 WP	3 lbs.	30	0	0	0
Zolone	3 EC	2 lbs.	180	3	2	3
Zolone	3 EC	2 lbs.	30	1	1	0
Ethion + oil[3/]	25 WP	2 lbs/2 gals.	180	4	2	2
Ethion + oil	25 WP	2 lbs/2 gals.	30	2	0	2
Ethion + oil[4/]	25 WP	2 lbs/2 gals.	30	1	1	1
Ethion + oil[5/]	25 WP	2 lbs/2 gals.	30	2	0	1
Sun 6 E	Sunoco	4 gals.	30	4	1	1
Spraytex NR	Texaco	4 gals.	30	0	1	2
Check	--	--	---	11	15	8

1/ Applied with a Kinkelder Royal to Thompson variety. Fresno County in August 1971.
2/ Three reps. and 20 leaves/rep. brushed with machine
3/ Oil is Spraytex NR
4/ Applied with a Kinkelder grape head (4 half rows)
5/ Applied with a Span Spray 4 fan orchard unit adjusted to cover 4 half rows.

Grapes

Pacific Mite Control

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Materials[1/]	Formulation	Rate/Acre (260 gpa)	Counts-weeks after applic.[2/] Ave. No. mites/25 leaves 1	2	3	4	5
Carzol	95 SP	8 oz.	3	0	1	0	0
Delnav	8 EC	1 pt.	15	12	0	11	1
Fundal/Galecron	97 SP	8 oz.	10	12	1	0	0
Kelthane	35 WP	3 lbs.	17	24	24	10	10
Kelthane + PGSO-2	35 WP Gava-D	2 lbs. + 2 gals.	8	13	5	0	3
Morestan	25 WP	3 lbs.	0	0	0	0	0
Omite	30 WP	3 lbs.	16	0	0	0	2
Plictran	50 WP	8 oz.	0	0	5	0	0
PP-511	50 EC	3 pts.	63	59	47	60	29
Trithion	25 WP	3 lbs.	27	18	19	14	11
Trithion + PGSO-2	25 WP Gava-D	2 lbs. + 2 gals.	5	2	0	4	0
Zolone	3 EC	2 lbs.	31	15	9	8	8
PGSO-2	Gava-D	3 gals.	7	11	15	0	0
Sun 6 E	Sunoco	3 gals.	12	15	9	3	4
Spraytex NR	Texaco	3 gals.	10	9	11	4	5
Check	--	--	142	147	127	120	19

1/ Applied by handgun @ 200 psi July 1971. Fresno County.

2/ Four reps per treatment and 10 vines per rep. Sampled 25 leaves/rep. and counted after using mite brushing machine removal.

Sprays to Control Pacific Mites on Thompson Seedless Grapes, 1971.

R. McTeer, Selma. Fifteen leaves per plot on each date.

Treatment Chemical	Date Applied	GPA & Lb. ai/A	Plot No.	Average Number Mites & Eggs per Leaf on Each Date													
				Pre-treatment July 13		July 20		July 28		Aug. 3		Aug. 10		Aug. 17		Aug. 25	
				M	E	M	E	M	E	M	E	M	E	M	E	M	E
Torak 4 E	July 13	193/1.9	1-2	212.5	53	10.2	4.5	.2	0	.2	0	.4	0	2	5	1	0
"	"	193/1.9	2-1	116.4	32.9	41.6	12.0	.2	0	1	11.6	0	0	0	0	0	0
"	"	193/1.9	2-2	206.7	60.4	25.8	15.7	0	0	11.4	17.2	0	0	.2	.2	0	0
Zolone 3 E	July 13	260/2.6	1-1	96.4	46	13.0	5.3	.6	0	.2	.4	0	0	.2	1.2	0	.2
"	"	170/1.7	1-10	49.9	7.3	2.8	3.0	2.0	0	1	1.4	0	0	0	.4	.2	0
"	"	190/1.9	2-3	54.5	16.7	5.0	5.3	2.8	1	.8	0	0	0	0	0	0	0
"	"	190/1.9	2-6	9.4	1.2	5.4	12.0	3.8	1.8	0	0	.6	0	0	0	.6	0

Sprays to Control Pacific Spider Mites on Thompson Grapes, 1971

R. McTeer, Selma. Fifteen Leaves per Plot on Each Date.

Treatment Chemical	Date Applied	GPA and lb. ai/A	Plot Number	Average Number Mites and Eggs Per Leaf on Each Date							
				Pretreatment June 22		June 29		July 8		July 13	
				M	E	M	E	M	E	M	E
1410-2E	June 6	208/1.0	1-1	9.4	21	15.2	9.2	44.2	41.1	96.4	46
Lannate 90%	June 6	190/1.0	2-1	7.0	15.2	49	21	40.2	53.4	116.4	39.2
P+G[1/] 131 10% E	June 6	208/.17	1-2	62.8	70.8	77.6	24.4	182	145	212.5	53
P+G[1/] 131 25WP	June 6	173/.16	2-2	28.4	47.8	102.4	77.2	196	198	206.7	60.4
Organic Tin Shell 14114 50W	June 6	190/1.0	1-3	40	38.6	5.6	3.0	.2	.6	5	2.6
Cygon 25W	June 6	208/2.1	1-4	34	42.4	.8	0	8	1	0	0
"	"	208/2.1	1-8	1.4	4	.2	0	.6	1.6	5	1.4
"	"	208/2.1	2-9	41.0	26.8	7.2	.6	5.8	12.4	25.8	7.4
Supracide 2E	June 6	225/1.7	1-5	.2	.8	10.6	1.2	2.4	6.4	9.6	6.6
"	"	190/1.4	1-7	4.8	14.2	.2	0	.6	1.2	.4	0
"	"	225/1.7	2-11	181.2	98.4	15.8	3.0	7.2	45.6	74.4	58
Supracide 2E	June 6	190/1.9	1-11	17.6	21	20.4	9	15.8	21.2	16.8	12.6
"	"	173/1.7	2-4	33.2	19.2	6.6	.4	.8	1.2	8.2	1.6
"	"	225/2.3	2-8	30.4	37	.4	0	.2	0	3.4	.2
ICI PP511[2/]	June 6	190/1.9	1-6	9.8	9.4	6.2	.2	5.4	6.6	29	4.8
"	"	190/1.9	1-9	.46	.23	0	0	10	10	16	6.2
"	"	190/1.9	2-10	30.4	42.4	14.6	1.0	2	13.2	27	17.6
Imidan 50W	June 6	190/1.9	1-10	7.2	9.4	14.4	9.4	22.6	10.8	49.9	7.3
"	"	208/2.1	2-3	38.8	49.4	97.2	29.6	73.6	45.6	54.5	16.7
"		208/2.1	2-6	2.4	3.8	0	0	.2	0	9.4	1.2
Torak 4E	June 6	190/3.8	1-12	15	31	2.6	0	1.6	.8	1	0
"	"	190/3.8	2-5	45	42.4	15	2	0	.2	1	0
"	"	208/4.2	2-7	2.2	1.2	.2	0	9.8	3.6	.4	0

1/ Proctor and Gamble

2/ Imperial Chemical Industries, Inc.

Treatment Chemical	Plot Number	Average Number Mites and Eggs Per Leaf on Each Day											
		July 20		July 28		Aug. 3		Aug. 10		Aug. 17		Aug. 25	
		M	E	M	E	M	E	M	E	M	E	M	E
Shell 14114 50W	1-3	.4	0	0.2	0.2	1.8	1.0	0.2	0.0	0.2	0.0	0.0	0.0
Cygon 25W	1-4	1.2	.75	0.8	1.2	3.0	4.0	8.6	1.4	4.0	5.0	3.2	3.8
"	1-8	11.8	60	12.4	12.8	18.0	26.0	8.4	1.8	4.2	5.4	3.0	1.8
"	2-9	6.4	5.0	33.6	12.8	30.2	7.6	18.2	10.1	2.6	1.2	1.0	0.0
Supracide 2E	1-5	2.4	31.5	30.6	21.0	11.8	11.0	10.0	3.2	2.0	4.0	0.2	0.0
"	1-7	1.8	17.2	40.6	54.4	26.6	32.0	57.6	22.8	8.2	13.2	4.6	3.8
"	2-11	34.4	78	5.4	8.6	25.8	2.8	1.6	0.4	0.0	0.0	0.0	0.0
Supracide 2E	1-11	3.8	9	1.0	6.0	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.2
"	2-4	11	60.7	26.0	22.4	15.6	6.2	19.0	6.2	1.8	6.0	4.0	0.2
"	2-8	8.8	17	23.0	24.6	25.6	18.2	9.6	4.2	12.2	21.4	4.6	1.6
ICI-PP511	1-6	4.4	70.5	0.0	0.0	34.3	44.3	25.5	14.6	3.6	5.4	0.8	0.2
"	1-9	4.4	1.5	72.3	61.6	46.8	15.2	22.4	6.0	8.4	11.8	13.4	8.0
"	2-10	23.6	30.7	30.0	28.0	1.2	1.0	7.8	2.2	0.4	1.0	0.0	0.0
Imidan 50W	1-10												
"	2-3												
"	2-6												
Torak 4E	1-12	0	0	0.8	0.0	0.2	0.4	0.0	0.0	1.0	3.2	0.0	0.2
"	2-5	.8	.8	2.8	1.6	1.0	1.2	2.2	0.6	0.4	0.0	0.6	0.0
"	2-7	1.8	.8	1.4	2.2	3.4	6.0	11.0	10.8	8.2	29.6	4.8	3.8

Tag Ishizue Vineyard
May - September 1972
24 vines sampled/treatment
6 leaves sampled/vine

[redacted]

Date	Pollen Pacific Mite Eggs	Actives	Tydeids	Predator	No Pollen Pacific Mite Eggs	Actives	Tydeids	Predator
5-29	116	103	7	0	260	210	4	0
6-6	1206	510	17	1	716	534	33	0
6-14	456	672	8	0	1329	1077	6	0
6-23	2235	3328	43	0	1576	1736	33	1
6-30	2857	3511	24	0	3396	1882	48	1
7-7	4509	5884	58	0	4287	4277	66	16
7-14	2642	3196	81	2	1130	1667	87	3
7-24	271	1328	156	14	154	441	111	5
8-2	42	115	129	4	32	44	158	3
8-10	1	30	239	9	13	38	413	7
8-18	5	36	567	27	9	47	477	19
8-29	0	10	387	24	3	13	436	21
9-6	0	4	603	16	3	7	521	25
9-18	0	6	471	24	0	0	566	21
	14,340	18,733	2,790	121	12,908	11,973	2,959	122

Louis Olson Vineyard
May - September 1972
24 vines sampled/treatment
6 leaves sampled/vine

70

Date	Pollen Pacific Mite Eggs	Actives	Tydeids	Predators	No Pollen Pacific Mite Eggs	Actives	Tydeids	Predators
5-26	0	0	190	4	25	2	138	1
6-2	0	1	20	0	0	0	21	0
6-12	9	12	34	0	4	1	21	0
6-23	17	13	38	0	9	7	22	0
7-3	26	4	39	0	24	4	21	0
7-10	0	11	6	0	3	12	3	0
7-20	6	3	33	0	16	33	30	0
7-28	23	16	99	0	11	9	35	0
8-7	23	17	198	0	14	8	192	1
8-14	1	3	187	0	2	1	120	2
8-23	0	5	441	2	2	4	451	0
8-31	0	0	740	0	0	2	503	0
9-11	0	0	686	1	0	0	741	2
9-27	0	3	1821	4	2	3	2263	15
	105	88	4532	11	112	86	4561	21

Irving Raven Vineyard
May - September 1972
24 vines sampled/treatment
6 leaves sampled/vine

71

Date	Pollen Pacific Mite Eggs	Actives	Tydeids	Predators	No Pollen Pacific Mite Eggs	Actives	Tydeids	Predators
5-25	0	0	2	0	0	0	1	0
6-1	0	1	1	0	2	19	0	0
6-12	122	346	1	0	166	30	1	0
6-22	502	1309	0	0	176	115	0	0
7-3	1964	1253	2	0	2858	2042	1	0
7-10	5408	5004	3	0	4049	6853	0	0
7-18	14121	7166	7	0	15852	10122	1	1
7-26	19474	12176	10	3	24049	14782	2	0
8-4	10140	32766	0	0	15323	40539	0	0
8-11	7876	28724	0	4	7724	26567	0	32
8-18	3220	10353	1	27	4865	15558	0	43
8-28	94	1427	16	156	163	2524	0	138
9-6	0	23	0	17	2	16	5	27
9-22	0	0	47	17	0	2	33	15
	62,921	100,548	90	224	75,229	119,169	44	256

George Totoian Vineyard
May - September 1972
24 vines sampled/treatment
6 leaves sampled/vine

72

[redacted]

Date	Pollen Pacific Mite Eggs	Actives	Tydeids	Predators	No Pollen Pacific Mite Eggs	Actives	Tydeids	Predators
5-25	244	88	0	0	43	33	0	0
6-5	779	656	0	0	136	25	0	0
6-13	310	184	1	0	76	64	0	0
6-22	925	944	0	1	622	587	1	0
6-29	1463	1591	0	13	1199	1100	0	0
7-7	4523	2839	0	36	3736	2466	0	0
7-14	9764	6555	0	52	8922	6003	1	1
7-21	10282	20113	0	75	12574	19260	0	16
7-28	12117	13350	0	104	9351	13014	0	29
8-7	10748	16741	5	361	15114	20459	0	314
8-14	373	2208	0	87	479	3918	0	77
8-23	112	610	0	20	339	967	0	45
8-31	130	215	0	23	38	138	0	35
9-11	0	14	0	3	1	19	1	18
9-26	5	5	10	13	0	5	14	20
	51,775	66,113	16	788	52,630	68,058	17	555

Russell Giffin Vineyard
White Muscat
June - September 1972
8 vines sampled/plot
6 leaves sampled/vine

73

W/Kly Sprinkler Irrig

~~Pollen~~

Date	Eggs	Pacific Mite Actives	Tydeids	Predators
6-13	0	0	0	0
6-26	6	4	0	0
7-7	80	45	0	0
7-20	1261	786	0	0
7-31	4550	2994	0	0
8-10	6245	17155	0	109
8-21	259	1785	0	108
8-29	5	79	0	45
9-7	0	1	0	3
9-18	----	No sample	----	
	12,406	22,849	0	265

Furrow Irrig

~~No Pollen~~

Date	Eggs	Pacific Mite Actives	Tydeids	Predators
6-13	56	16	0	0
6-26	3	3	0	0
7-7	33	37	0	0
7-20	----	Plot sprayed		----
7-31	8	8	0	0
8-10	18	124	0	0
8-21	2673	320	0	0
8-29	1267	1397	0	0
9-7	2397	6285	0	37
9-18	1571	5145	0	112
	8,026	13,335	0	149

No - Sprayed - after

Good - Appearance - poor

Russell Giffin Vineyard
Thompson Seedless
June - September 1972
8 vines sampled/plot
6 leaves sampled/plot

74

[redacted]

With Sprinkler Irrig

~~Pollen~~

Date	Eggs	Pacific Mite Actives	Tydeids	Predators
6-13	0	1	0	0
6-26	3	1	0	0
7-7	83	51	0	1
7-20	3936	1706	0	0
7-31	8940	5490	0	0
8-10	3236	8322	0	932
8-21	68	419	1	130
8-29	0	0	2	13
9-7	0	0	0	1
9-18	---	No sample	---	
	16,266	15,990	3	1,077

Furrow Irrig.

~~No Pollen~~

Eggs	Pacific Mite Actives	Tydeids	Predators
3	0	0	0
0	9	0	0
0	0	0	0
----	Plot sprayed		----
5	20	0	0
62	875	0	0
744	250	0	0
320	546	0	0
1633	2230	0	26
178	446	0	70
2,945	4,376	0	96

Sprays to Control Pacific Spider Mite On Thompson Seedless Grapes, 1972. Page 1

R. McTeer, Selma. Fifteen Leaves Per Plot On Each Date.

Treatment Chemical	1/ GPA and Lb. ai./A	Plot Number	2/ GPA and Lb. ai./A	Average Number Mites and Eggs Per Leaf On Each Date. Pretreatment June 29 M	E	July 17 M	E	July 24 M	E	July 31 M	E
Torak 6EC	248-1.24	A2	220-1.10	37.4	60.6	1.8	1.0	2.6	16.2	3.2	5.8
"	248-1.24	A9	206-1.03	17.6	55.4	6.6	1.8	4.0	17.0	13.0	16.4
"	248-1.24	C6	220-1.10	34.4	74.8	2.4	6.4	0.6	1.4	6.0	1.6
Torak 6E	248-1.86	B3	220-1.65	14.6	25.4	3.4	2.8	10.0	19.4	15.4	22.4
"	248-1.86	D4	220-1.65	20.0	33.4	4.4	5.6	26.8	30.2	30.4	69.0
"	248-1.86	D10	206-1.55	22.2	44.8	0.6	2.0	7.0	20.8	40.4	23.8
Torak 6E	248-2.48	B6	206-2.06	21.8	60.0	1.0	0.6	1.0	2.8	2.8	2.6
"	248-2.48	E5	206-2.06	14.8	16.0	2.0	0.4	2.0	11.6	7.0	10.0
"	248-2.48	E9	191-1.91	26.2	51.6	3.0	7.8	1.2	6.4	17.8	19.8
Benlate 50W		B10	171-6.84	0.4	9.8	5.0	6.8	10.8	52.0	21.6	42.6
Benlate 50W & Vydate 2E		A8	171-B 38-V 1.91	66.6	87.4	1.6	2.0	3.2	7.2	14.4	22.4
Benlate 50W, Vydate 2E		A5	220-B 8.4-V 4.4	8.2	21.2	0.8	2.4	10.0	24.0	10.6	33.4
Benlate 50W, Vydate 2E		B9	191-B 3.8-V 1.9	25.8	38.8	4.2	12.6	22.0	38.8	42.4	55.0
Benlate 50W, Vydate 2E		B11	174-B 7.0-V 1.7	26.0	17.8	2.4	4.4	3.0	5.2	11.0	51.6
Vydate 2.0		C1	206-V 2.06	43.4	59.2	0.6	4.6	1.8	4.8	14.0	16.4
Supracide 2EC		B7	206-1.55	45.9	93.6	1.2	4.4	8.4	29.4	26.2	23.4
"		C10	206-1.55	19.8	25.4	6.8	21.6	21.0	52.4	74.8	38.8
"		E8	191-1.43	22.4	30.6	4.6	23.2	28.2	41.0	2.8	4.0
Galecron 95%		A4	220-1.65	16.4	26.6	3.6	22.0	1.8	29.8	26.8	72.6
"		D9	220-1.65	56.2	56.2	4.6	12.0	16.2	32.8	5.4	9.2
"		E7	206-1.55	12.2	23.8	1.0	10.8	11.6	45.6	48.4	33.6

1/ Sprayed May 17, 1972

2/ Sprayed July 5, 1972

Sprays to Control Pacific Spider Mites On Thompson Seedless Grapes, 1972. Page 1 Continued

Treatment Chemical	3/ GPA and Lb. ai./A	Plot Number	Average Number Mites And Eggs Per Leaf On Each Date. Aug. 7 M	Aug. 7 E	Aug. 14 M	Aug. 14 E	Aug. 21 M	Aug. 21 E	Aug. 28 M	Aug. 28 E
Torak 6E	-	A2	3.2	8.6	4.4	3.6	0.0	0.0	0.2	0.0
"	-	A9	20.4	24.0	22.0	20.0	0.4	0.0	0.2	0.0
"	-	C6	0.6	1.4	0.2	0.0	0.0	0.0	0.0	0.2
Torak 6E	-	B3	5.0	12.2	4.8	1.6	0.0	0.2	0.8	0.0
"	-	D4	9.0	18.4	5.0	1.2	0.4	0.0	0.2	0.2
"	-	D10	0.8	2.2	0.8	0.2	0.8	0.0	0.0	0.0
Torak 6E	-	B6	0.8	0.4	0.4	0.0	0.4	0.0	0.2	0.2
"	-	E5	2.6	5.6	0.6	0.0	0.2	0.0	0.4	0.0
"	-	E9	1.4	0.4	0.6	0.2	0.0	0.4	0.2	0.0
Benlate 50W	177-6.8	B10	24.4	26.2	2.0	0.4	0.0	0.0	-	-
Benlate 50W & Vydate 2E	-	A8	23.4	35.0	17.0	18.4	0.4	0.6	-	-
Benlate 50W, Vydate 2E	-	A5	4.0	29.4	14.4	26.8	0.4	0.2	-	-
Benlate 50W, Vydate 2E	-	B9	46.6	53.4	13.4	9.0	0.4	0.2	-	-
Benlate 50W, Vydate 2E	-	B11	18.0	11.4	7.4	3.2	0.4	0.0	-	-
Vydate 2E	206-2.1	C1	2.8	5.2	5.2	5.4	1.4	0.2	-	-
Supracide 2E	148-1.1	B7	17.8	8.0	3.6	0.6	0.6	0.0	-	-
"	148-1.1	C10	6.8	6.2	3.2	0.4	0.8	0.0	-	-
"	148-1.1	E8	0.6	0.4	0.4	0.0	0.6	0.2	-	-
Galecron 95%	87-0.7	A4	1.6	6.6	2.6	2.6	2.2	1.0	-	-
"	87-0.7	D9	7.0	3.8	1.6	1.6	1.6	0.2	-	-
"	87-0.7	E7	13.2	27.8	1.6	0.0	0.8	1.2	-	-

3/ Sprayed August 7, 1972

Treatment Chemical	2/ GPA and Lb. ai./A	Plot Number	Average Number Of Mites And Eggs Per Leaf On Each Date. Pretreatment June 29 M	E	July 17 M	E	July 24 M	E	July 31 M	E
Wendex 50 WP	206-0.53	A6	27.0	35.8	1.6	4.2	2.6	5.0	8.0	16.0
"	220-0.53	D5	17.2	32.8	2.8	3.2	48.2	67.4	12.0	14.6
"	220-0.55	E6	32.8	34.6	4.0	1.4	1.0	0.8	3.0	8.8
Wendex 50 WP	206-0.39	B5	30.0	45.0	32.2	64.8	30.8	72.8	16.6	31.8
"	217-0.39	D11	41.6	56.8	2.5	5.2	2.6	12.4	10.2	8.6
"	206-0.39	E3	24.4	69.8	2.4	6.6	7.2	25.4	50.3	54.4
S.D. 32963, 40 WP	206-0.41	C2	25.6	12.8	8.0	40.0	14.4	37.8	17.2	19.0
"	191-0.38	C5	16.6	22.4	5.8	25.2	30.6	64.6	21.8	49.6
"	217-0.43	E11	12.0	24.4	1.4	5.2	6.8	21.2	10.4	20.2
Plictran 50 WP	206-0.53	A3	10.4	9.6	0.4	1.0	1.6	6.0	11.8	27.6
"	220-0.55	D6	64.2	74.8	0.8	1.6	2.8	6.2	2.2	3.6
"	220-0.55	E4	13.0	11.4	0.2	3.8	2.6	7.8	28.4	34.2
Hercules 16801 50 WP	220-1.1	A1	24.0	4.3	1.6	8.0	5.6	16.2	10.4	19.4
"	206-1.03	C3	10.0	21.8	11.4	30.8	17.8	49.4	27.6	61.4
Hercules 16801 50 W	188-1.91	A11	33.8	60.0	2.0	3.0	3.0	8.2	22.4	24.8
"	191-1.91	D8	12.5	53.8	3.6	7.8	10.6	10.6	10.2	10.0
P & G 131, 3.34 EC	220-0.23	B1	43.4	93.6	23.2	25.6	20.8	44.2	14.6	26.8
"	206-0.22	C7	45.8	93.6	24.6	76.4	21.0	64.6	46.0	30.6
P & G 131, 3.34 EC	206-0.11	A7	37.2	30.0	1.8	3.2	1.6	5.0	3.4	7.4
"	206-0.11	D2	26.6	27.9	27.2	48.0	4.2	11.4	40.4	36.0
P & G 123, 3.34 EC	220-0.69	B2	-	-	16.2	27.4	62.8	98.6	33.8	33.6
"	206-0.64	D1	44.4	65.2	22.4	41.0	11.6	30.6	36.0	24.2
P & G 123, 3.34 EC	191-0.40	B8	44.8	75.0	22.6	42.6	19.0	33.6	14.8	11.0
"	220-0.46	D3	9.8	22.0	24.6	65.6	67.2	86.9	50.2	7.5
P & G 123, 3.34 EC	220-0.24	B4	18.6	18.6	32.2	64.4	24.8	50.2	54.2	62.4
"	206-0.22	D7	16.2	16.2	31.6	51.2	90.2	77.5	19.0	56.4

2/ Sprayed July 5, 1972

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Sprays to Control Pacific Spider Mites On Thompson Seedless Grapes, 1972. Page 2 Continued

Treatment Chemicals	3/ GPA and Lb. ai./A	Plot Number	Average Number Of Mites And Eggs Per Leaf On Each Date. Aug. 7 M	Aug. 7 E	Aug. 14 M	Aug. 14 E	Aug. 21 M	Aug. 21 E	Aug. 28 M	Aug. 28 E
Wendex 50 WP		A6	3.2	3.4	0.6	0.2	0.0	0.0	-	-
"		D5	0.2	1.2	0.0	0.0	0.8	0.2	-	-
"		E6	0.6	0.6	0.0	0.2	0.2	0.0	-	-
Wendex 50 WP		B5	9.0	8.4	1.4	0.6	0.4	0.0	0.2	0.0
"		D11	0.2	1.6	0.4	0.0	0.0	0.0	0.2	0.0
"		E3	40.0	28.0	1.0	0.0	6.4	1.8	0.0	0.0
S.D. 32963, 40 WP	148-0.59	C2	18.4	14.0	2.0	0.4	0.2	0.0	-	-
"	148-0.59	C5	7.0	7.8	0.4	0.8	0.0	0.2	-	-
"	148-0.59	E11	3.0	3.6	1.8	3.2	0.6	0.6	-	-
Plictran 50 WP		A3	6.8	2.0	14.2	13.6	0.4	0.4	0.4	0.2
"		D6	1.2	0.8	0.0	0.4	0.8	0.2	0.6	0.0
"		E4	34.8	99.6	31.2	26.2	7.4	1.0	0.2	0.0
Hercules 16801, 50 WP	148-0.74	A1	13.2	15.6	5.6	3.4	1.0	0.4	-	-
"	148-0.74	C3	25.2	12.0	3.4	0.8	0.6	0.4	-	-
Hercules 16801, 50 W		A11	17.8	9.2	1.0	0.2	0.2	0.0	-	-
"		D8	0.0	0.2	0.0	0.0	0.0	0.0	-	-
P & G 131, 3.34 EC		B1	2.8	3.6	1.2	0.0	0.4	0.2	-	-
"		C7	8.0	4.4	18.0	13.2	1.6	0.2	-	-
P & G 131, 3.34 EC		A7	9.2	10.8	1.2	0.0	0.2	0.0	-	-
"		D2	1.6	2.8	1.6	0.0	0.2	0.0	-	-
P & G 123, 3.34 EC		B3	0.4	1.2	0.4	0.4	0.0	0.2	-	-
"	206-0.65	D1	0.8	1.4	0.4	0.0	-	-	-	-
P & G 123, 3.34 EC		B8	4.6	2.0	1.2	2.6	0.0	0.2	-	-
"		D3	26.4	16.2	29.6	19.6	5.4	1.2	-	-
P & G 123, 3.34 EC		B4	29.0	21.2	3.4	1.6	0.8	0.2	-	-
"		D7	6.8	4.6	3.2	1.6	0.0	0.0	-	-

3/ Sprayed August 7, 1972

Sprays To Control Pacific Spider Mites On Thompson Seedless Grapes, 1972. Page 3.

Treatment Chemicals	2/ GPA and Lb. ai./A	Plot Number	Average Number Of Mites And Eggs Per Leaf On Each Date.							
			Pretreatment June 29		July 17		July 24		July 31	
			M	E	M	E	M	E	M	E
Cygon 25 WP	220-1.10	C9	10.8	14.2	6.0	22.0	5.8	29.4	17.8	19.8
"	181-1.81	C11	18.2	23.8	9.8	38.6	2.4	10.8	16.0	14.6
"	264-1.32	E1	16.6	0.2	12.1	28.4	21.6	68.8	10.4	7.6
Cygon 25 WP	171-1.71	C4	14.4	25.4	3.6	7.8	11.6	47.4	34.6	71.8
"	220-2.20	E2	20.0	46.0	4.2	8.8	12.2	28.8	23.0	12.0
Untreated	-	A10	27.4	51.2	10.0	10.4	24.6	40.2	20.8	11.2
"	-	C8	60.6	50.8	8.4	17.8	4.0	2.8	0.8	1.8
"	-	E10	54.0	78.2	32.2	73.4	63.8	63.2	13.8	23.4

2/ Sprayed July 5, 1972

Sprays To Control Pacific Spider Mites On Thompson Seedless Grapes, 1972. Page 3 Continued.

Treatment Chemicals.	3/ GPA and Lb. ai./A	Plot Number	Average Number Of Mites And Eggs Per Leaf On Each Date.							
			Aug. 7		Aug 14.		Aug. 21		Aug. 28	
			M	E	M	E	M	E	M	E
Cygon 25 WP	148-0.74	C9	24.4	23.2	1.4	0.0	0.2	0.0	0.8	0.0
"	148-0.74	C11	2.6	2.4	0.4	0.2	0.2	0.0	0.4	0.0
"	148-0.74	E1	17.0	9.6	0.4	0.0	0.8	0.2	0.0	0.0
Cygon 25 WP	148-0.74	C4	16.4	9.4	0.4	0.0	0.2	0.2	1.0	0.0
"	148-0.74	E2	17.0	16.2	1.0	0.0	0.6	0.0	0.0	0.0
Untreated	148-0.92 4/	A10	4.4	3.0	1.4	0.2	0.0	0.0	-	-
"		C8	0.2	1.8	0.2	0.0	0.0	0.2	-	-
"	148-0.92 4/	E10	8.4	3.8	0.0	0.0	0.0	0.2	-	-

3/ Sprayed August 7, 1972

4/ Used ethion 8EC

Sprays to Control Pacific Spider Mites on Thompson grapes - 1973

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date											
				June 14		June 20		June 27		July 3		July 11		July 18	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Torak 4E	May 24 June 18	200 - 1.0 142 - 0.71	B3	1.4	0.0	0.2	0.0	2.0	3.0	4.2	8.2	9.2	22.6	28.2	98.0
	May 24 June 18	200 - 1.0 189 - 0.95	B5	5.8	7.4	3.0	4.6	3.4	4.8	9.8	31.8	30.8	44.6	105.6	364.0
	May 24 June 18	200 - 1.0 189 - 0.95	D13	1.4	3.0	8.0	2.4	0.2	1.6	8.2	20.2	14.8	30.2	28.0	126.6
Torak 4E	May 24 July 18	200 - 1.0 189 - 0.95	B4	8.4	8.6	4.8	1.4	5.0	5.8	9.8	17.8	29.0	67.8	184.8	317.6
	May 24 July 18	200 - 1.0 170 - 0.85	C9	0.2	3.0	3.0	13.0	3.6	4.6	4.2	13.8	23.8	104.4	104.4	197.6
	May 24 July 18	200 - 1.0 189 - 0.95	A10	18.6	14.2	16.8	16.6	19.4	50.0	15.8	12.2	7.4	10.4	36.4	26.6
Torak 4E	May 24 June 18 July 18	200 - 1.0 180 - 0.90 170 - 0.85	C4	26.8	23.8	9.8	14.8	3.4	2.6	14.2	33.0	5.8	12.6	45.8	87.4
	May 24 June 18 July 18	200 - 1.0 180 - 0.90 245 - 1.23	D9	1.0	0.4	0.0	0.2	0.4	0.0	3.4	6.4	0.6	15.0	7.2	23.4
	May 24 June 18 July 18	200 - 1.0 208 - 1.04 189 - 0.95	B13	12.8	21.6	1.8	5.2	5.0	19.0	40.2	54.8	57.4	89.6	84.0	200.2
Torak 4E	May 24 June 18	200 - 1.5 283 - 2.12	A2	13.2	30.0	4.6	4.4	0.0	1.6	14.4	16.2	5.8	6.2	16.8	23.2
	May 24 June 18	200 - 1.5 189 - 1.42	A8	0.2	0.0	0.2	0.0	0.0	0.0	0.2	0.8	0.2	0.4	1.0	7.6
	May 24 June 18	200 - 1.5 189 - 1.42	C10	3.0	5.2	2.6	7.4	1.6	2.6	1.4	1.8	2.4	5.0	10.4	22.8
Torak 4E	May 24 July 18	200 - 1.5 208 - 1.56	A4	0.8	0.0	3.0	2.4	0.0	1.0	24.2	21.4	19.4	13.0	6.2	46.0
	May 24 July 18	200 - 1.5 208 - 1.56	C8	0.0	0.0	0.0	0.0	0.8	0.4	0.0	0.0	20.4	16.6	7.4	27.4
	May 24 July 18	200 - 1.5 189 - 1.42	B12	5.4	6.6	9.6	13.2	8.0	17.0	28.6	67.8	146.0	187.6	101.2	152.4

Sprays - Pacific Spider Mites - McTeer - 1973

Treatment Chemical	Date Applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date							
				July 25		Aug. 1		Aug. 8		Aug. 15	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Torak 4E	May 24 June 18	200 - 1.0 142 - 0.71	B3	73.2	111.4	38.2	256.0	171.6	166.8	145.6	117.6
	May 24 June 18	200 - 1.0 189 - 0.95	B5	221.2	326.8	139.6	222.4	265.2	327.6	58.2	55.8
	May 24 June 18	200 - 1.0 189 - 0.95	D13	183.6	136.0	142.8	346.4	46.6	21.6	49.0	137.2
Torak 4E	May 24 July 18	200 - 1.0 189 - 0.9	B4	37.2	36.6	50.6	70.2	102.8	122.8	61.6	159.2
	May 24 July 18	200 - 1.0 170 - 0.85	C9	27.0	32.8	1.2	5.6	3.2	11.4	1.6	7.8
	May 24 July 18	200 - 1.0 189 - 0.95	A10	16.6	37.6	0.8	9.2	7.6	13.8	4.4	26.6
Torak 4E	May 24 June 18 July 18	200 - 1.0 180 - 0.9 170 - 0.85	C4	18.0	34.6	19.4	55.0	27.0	61.8	25.8	53.6
	May 24 June 18 July 18	200 - 1.0 180 - 0.9 245 - 1.23	D9	16.4	30.4	-	-	12.6	43.6	3.8	73.6
	May 24 June 18 July 18	200 - 1.0 208 - 1.04 189 - 0.95	B13	69.0	97.2	10.0	35.4	49.4	80.6	6.6	22.4
Torak 4E	May 24 June 18	200 - 1.5 283 - 2.12	A2	19.6	51.4	71.2	144.2	46.6	103.4	15.6	42.4
	May 24 June 18	200 - 1.5 189 - 1.42	A8	11.0	26.0	0.0	20.4	133.2	275.2	85.2	242.8
	May 24	200 - 1.5 189 - 1.42	C10	1.8	0.2	0.0	0.0	0.0	0.0	0.2	0.4
Torak 4E	May 24 July 18	200 - 1.5 208 - 1.56	A4	13.6	8.6	1.0	6.6	11.8	26.2	27.6	92.4
	May 24 July 18	200 - 1.5 208 - 1.56	C8	5.6	13.6	9.8	58.6	25.4	71.8	49.2	90.0
	May 24 July 18	200 - 1.5 189 - 1.42	B12	5.8	6.6	0.8	0.0	4.4	10.8	3.6	9.2

Sprays - Pacific Spider Mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
Torak 4E	May 24 June 18 July 18	200 - 1.5 180 - 1.35 189 - 1.42	D3	0.4	0.4	0.2	0.0	6.0	4.0	4.0	10.4	1.2	4.0	18.6	60.6
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	C6	2.6	2.6	0.4	4.4	4.6	5.8	11.4	37.8	53.6	142.6	68.6	438.6
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	All	0.2	1.4	2.2	5.6	8.8	10.8	6.0	9.0	28.4	17.2	7.8	35.8
Torak 4E	May 24 June 18	200 - 2.0 198 - 1.98	C2	0.6	0.6	2.8	5.4	0.4	1.2	8.6	14.2	9.6	22.6	56.6	198.8
	May 24 June 18	200 - 2.0 180 - 1.80	B8	0.6	0.8	0.2	1.0	0.6	0.6	0.6	0.4	0.0	0.0	2.8	11.2
	May 24 June 18	200 - 2.0 189 - 1.89	D11	5.4	4.2	2.0	1.6	0.6	1.6	2.6	2.4	3.8	12.2	12.8	14.8
Torak 4E	May 24 July 18	200 - 2.0 189 - 1.89	D4	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.6	4.0	1.4	4.0
	May 24 July 18	200 - 2.0 189 - 1.89	D6	0.2	1.0	0.4	0.8	6.2	7.8	16.2	47.0	9.2	77.2	89.2	316.0
	May 24 July 18	200 - 2.0 227 - 2.27	D12	3.4	0.4	1.2	0.6	1.4	2.8	5.0	7.4	5.2	27.4	4.0	5.4
Torak 4E	May 24 June 18 July 18	200 - 2.0 180 - 1.80 227 - 2.27	C3	3.4	5.2	5.8	2.4	0.2	0.2	0.4	0.6	5.2	4.4	10.8	37.8
	May 24 June 18 July 18	200 - 2.0 198 - 1.98 283 - 2.83	D8	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.4	4.0
	May 24 June 18 July 18	200 - 2.0 208 - 2.08 151 - 1.51	B11	3.4	5.0	0.6	0.6	0.0	0.4	0.4	2.4	0.6	0.0	5.0	9.2

Sprays - Pacific Spider Mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Torak 4E	May 24 June 18 July 18	200 - 1.5 180 - 1.35 189 - 1.42	D3	39.8	43.2	1.6	11.4	20.0	29.8	10.6	136.8
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	C6	31.0	43.4	0.4	5.6	12.6	15.6	11.6	14.6
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	All	6.6	9.4	2.0	6.4	27.4	43.0	34.8	73.8
Torak 4E	May 24 June 18	200 - 2.0 198 - 1.98	C2	150.4	291.2	92.8	270.8	153.6	152.8	9.8	2.2
	May 24 June 18	200 - 2.0 180 - 1.8	B8	49.2	85.0	20.6	72.8	112.0	182.8	85.2	242.8
	May 24 June 18	200 - 2.0 189 - 1.89	D11	4.4	12.8	4.8	13.6	59.6	109.2	35.8	78.8
Torak 4E	May 24 July 18	200 - 2.0 189 - 1.89	D4	67.4	92.2	2.2	9.4	25.8	33.8	9.0	105.4
	May 24 July 18	200 - 2.0 189 - 1.89	D6	229.2	198.8	6.0	20.4	34.0	75.4	62.8	111.4
	May 24 July 18	200 - 2.0 227 - 2.27	D12	3.4	8.2	6.8	11.6	5.8	14.6	4.0	21.0
Torak 4E	May 24 June 18 July 18	200 - 2.0 180 - 1.8 227 - 2.27	C3	46.8	43.2	4.0	28.0	43.0	67.2	16.6	43.4
	May 24 June 18 July 18	200 - 2.0 198 - 1.98 283 - 2.83	D8	4.0	3.0	0.8	4.2	1.6	5.6	62.0	75.0
	May 24 June 18 July 18	200 - 2.0 208 - 2.08 151 - 1.51	B11	2.4	2.6	3.0	7.2	1.4	1.6	2.6	9.4

Sprays to Control Pacific Spider Mites on Thompson Grapes - 1973

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
Vendex 50W	June 18 July 3	200 - 0.26 245 - 0.61	B1	9.8	14.8	2.4	5.0	1.4	3.2	4.6	6.4	24.8	40.2	8.4	13.0
	June 18 July 3	189 - 0.24 227 - 0.57	D7	3.2	10.6	1.6	7.0	3.4	3.8	4.2	8.6	8.0	21.2	10.2	39.8
	June 18 July 3	180 - 0.23 245 - 0.61	B10	2.2	2.2	3.6	5.6	1.6	0.4	0.4	0.6	0.6	3.0	0.6	0.2
Vendex 50W	June 18 July 3	283 - 0.7 208 - 1.04	A3	13.4	14.2	11.6	10.4	8.2	19.8	8.8	8.8	4.8	4.8	5.2	2.8
	June 18 July 3	208 - 0.52 227 - 1.14	C5	9.8	7.8	15.0	13.4	15.8	18.0	23.0	31.8	2.4	9.4	1.6	32.6
	June 18 July 3	180 - 0.45 208 - 1.04	B9	36.0	71.6	17.2	30.8	4.4	10.8	6.8	21.0	0.4	0.2	0.0	0.8
Omite 30W	June 18 July 18	283 - 2.12 227 - 1.7	A6	32.4	47.8	6.4	4.4	5.8	5.6	24.6	40.4	21.4	37.4	55.4	95.4
	June 18 July 18	189 - 1.42 208 - 1.56	C12	13.6	15.6	4.8	3.8	2.4	2.6	4.2	3.8	2.0	3.4	13.8	39.0
	June 18 July 18	198 - 1.49 227 - 1.7	D5	55.8	52.6	57.0	29.8	-	-	8.2	32.4	40.0	95.4	61.0	98.4
Untreated 1/			A5 2/	24.2	37.4	56.8	55.2	54.4	117.6	93.0	80.0	40.8	21.6	28.8	38.0
			C1	8.4	22.6	47.2	28.2	22.4	35.0	92.8	93.2	26.2	25.2	22.6	20.8
			C11	40.2	70.6	36.4	47.4	23.8	47.2	47.4	105.4	2.0	1.2	0.2	0.8

1/ The untreated plots were sprayed July 3 because of increasing mite populations. Ethion used at the rate of 1 lb. ai/acre.

2/ Resprayed July 18 with ethion at the rate of 1 lb. ai/acre.

Sprays - Pacific Spider Mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Vendex 50W	June 18 July 3	200 - 0.26 245 - 0.61	B1	22.0	61.0	7.8	47.0	24.6	68.4	12.6	36.4
	June 18 July 3	189 - 0.24 227 - 0.57	D7	84.4	154.0	13.4	150.0	22.6	128.4	71.2	165.8
	June 18 July 3	180 - 0.23 245 - 0.61	B10	0.4	0.2	0.2	1.2	0.2	0.2	0.0	1.4
Vendex 50W	June 18 July 3	283 - 0.7 208 - 1.04	A3	20.0	38.8	14.0	32.6	1.2	16.2	42.2	159.2
	June 18 July 3	208 - 0.52 227 - 1.14	C5	26.2	58.8	2.8	85.6	43.8	82.8	6.4	17.0
	June 18 July 3	180 - 0.45 208 - 1.04	B9	3.0	6.6	0.0	0.8	1.2	0.6	17.0	8.4
Omite 30W	June 18 July 18	283 - 2.12 227 - 1.7	A6	49.2	41.8	2.2	33.2	59.6	127.0	113.2	119.6
	June 18 July 18	189 - 1.42 208 - 1.56	C12	4.2	5.4	0.4	0.0	0.0	0.0	0.2	0.8
	June 18 July 18	198 - 1.49 227 - 1.7	D5	39.4	50.8	11.2	9.2	31.6	40.4	9.4	57.4
Untreated 1/			A5 2/	24.2	11.4	10.0	18.8	10.6	29.6	21.8	70.6
			C1	15.4	34.6	10.0	14.4	30.4	31.2	8.8	11.8
			C11	0.2	0.8	0.2	1.0	0.4	0.0	0.4	1.0

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Sprays to Control Pacific Spider Mites on Thompson Grapes - 1973

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
P & G 103, 3.34, 1/4 pt. per 100 gals.	June 18	208 - 0.22	D1	17.0	26.4	16.4	17.6	35.0	30.2	33.0	87.4	55.2	152.0	47.6	40.8
	July 18	208 - 0.22													
	June 18	208 - 0.22	C7	0.4	1.6	0.2	0.2	0.6	0.2	5.4	12.2	14.6	25.8	186.8	338.8
	July 18	208 - 0.22													
	June 18	189 - 0.197	D10	41.2	31.0	21.4	24.0	12.2	11.6	33.8	132.8	38.6	79.2	13.2	12.0
	July 18	140 - 0.147													
P & G 103, 3.34, 1/2 pt. per 100 gals.	June 18	189 - 0.395	B2	85.6	70.4	24.8	66.6	40.6	13.8	76.8	324.8	217.6	162.8	136.0	119.6
	July 18 1/														
	June 18	226 - 0.46	B6	149.6	186.8	31.6	73.2	40.2	27.8	60.2	262.8	160.0	156.0	240.0	476.8
	July 18 1/														
	June 18	226 - 0.46	A12	36.8	29.8	12.2	20.4	22.2	18.6	20.0	88.8	37.2	34.4	39.2	40.6
	July 18	189 - 0.396													
P & G 103, 3.34, 3/4 pt. per 100 gals.	June 18	189 - 0.591	A1	0.4	0.0	0.0	0.2	0.8	0.0	0.8	0.0	3.0	6.0	27.4	8.8
	July 18	226 - 0.704													
	June 18	189 - 0.591	A7	6.6	8.6	0.2	0.6	6.8	3.4	9.8	29.6	36.8	24.8	31.4	55.4
	July 18	208 - 0.652													
	June 18	189 - 0.591	A9	32.2	28.8	2.4	2.4	7.6	4.6	8.0	21.0	12.4	17.2	50.2	47.0
	July 18	208 - 0.652													

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1/ Because of very heavy initial infestations these plots showed marked mite damage and were resprayed with ethion on July 18 at the grower's suggestion rather than with P & G 103. Ethion was used at the rate of 1 lb. ai/acre.

Sprays - Pacific Spider Mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
P & G 103,	June 18	208 - 0.22	D1	20.8	49.2	57.8	58.4	1.4	2.6	4.5	2.0
3.34, 1/4 pt.	July 18	208 - 0.22									
per 100 gals.	June 18	208 - 0.22	C7	53.4	58.2	17.0	55.4	81.0	114.2	29.0	4.0
	July 18	208 - 0.22									
	June 18	189 - 0.197	D10	6.0	24.0	1.8	4.2	3.0	6.4	17.0	57.0
	July 18	140 - 0.147									
P & G 103,	June 18	189 - 0.395	B2	15.0	14.2	14.6	34.0	57.2	43.2	6.0	1.0
3.34, 1/2 pt.	July 18 1/										
per 100 gals.	June 18	226 - 0.46	B6	34.8	11.6	19.6	20.6	20.4	16.8	4.8	13.8
	July 18 1/										
	June 18	226 - 0.46	A12	8.4	11.8	0.0	1.4	1.2	1.8	1.8	4.2
	July 18	189 - 0.396									
P & G 103,	June 18	189 - 0.591	A1	9.8	11.0	17.0	27.8	83.6	114.8	88.4	249.2
3.34, 3/4 pt.	July 18	226 - 0.704									
per 100 gals.	June 18	189 - 0.591	A7	34.6	19.6	1.6	49.4	43.6	59.4	85.6	168.0
	July 18	208 - 0.652									
	June 18	189 - 0.591	A9	21.8	12.0	0.4	7.8	37.4	70.0	24.6	59.6
	July 18	208 - 0.652									

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Sprays to Control Pacific Spider Mites on Thompson Grapes - 1973

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date											
				June 14		June 20		June 27		July 3		July 11		July 18	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Cygon 25W	June 18 July 18	179 - 1.79 208 - 2.08	D2	31.0	36.8	2.6	3.6	5.6	1.0	9.6	41.6	15.0	32.0	13.2	52.8
	June 18 July 18	189 - 1.89 208 - 2.08	B7	6.2	19.6	1.6	7.8	4.8	0.8	1.4	13.0	19.0	16.8	68.4	326.4
	June 18 July 18	189 - 1.89 246 - 2.46	C13	24.8	18.6	18.2	29.2	10.8	4.2	3.8	23.0	25.6	22.4	112.0	403.6

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Sprays - Pacific Spider Mites - McTeer - 1973.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date							
				July 25		Aug. 1		Aug. 8		Aug. 15	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Cygon 25W	June 18 July 18	179 - 1.79 208 - 2.08	D2	49.8	20.6	8.4	38.4	70.0	90.4	24.0	74.8
	June 18 July 18	189 - 1.89 208 - 2.08	B7	14.4	4.6	0.6	4.8	13.8	11.8	17.0	167.2
	June 18 July 18	189 - 1.89 246 - 2.46	C13	12.0	3.0	5.8	13.2	3.0	5.6	9.6	8.6

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GRAPES

PACIFIC MITE CONTROL[1/]

J. E. Dibble
San Joaquin Valley Agricultural Research and Extension Center
University of California

Sprayer[2/]	GPA	MPH	Ave. No. mites/leaf[3/] (5 days after treatment) Adjacent row	Second row
AgTec	25	3.5	0.7	0.3
AgTec	50	3.5	0.3	0.3
Kinkelder	25	3.5	0.0	1.0
Kinkelder	50	3.5	1.0	1.7
Over the vine high pressure sprayer	50	3.5	4.3	5.0
Over the vine high pressure sprayer	150	3.5	6.7	6.0
No spray	-	-	22.0	19.3

1/ Applied on Thompson Var. using Phosalone 3 EC @ 2 lbs. aia. Fresno County. 1973.

2/ AgTec engine powered with grape head. Kinkelder PTO with grape head. Over the vine boom sprayer equipped with hollow cone T-Jet nozzles using No. 25 (50 gpa) and No. 45 cores (150 gpa).

3/ Average No. mites from leaf samples taken from 3 replications/ treatment. Adjacent and second rows counted separately.

GRAPES

PACIFIC MITE CONTROL[1/]

J. E. Dibble
San Joaquin Valley Agricultural Research and Extension Center
University of California

Sprayer	GPA	MPH	Ave. No. mites/leaf[2/] (5 days after treatment)
Chiron (3 pt.)	25	3.5	2.3
Chiron (3 pt.)	50	3.5	1.7
Kinkelder	25	3.5	0.3
Kinkelder	50	3.5	0.7
Over the vine high pressure sprayer	50	3.5	4.3
Over the vine high pressure sprayer	150	3.5	9.3
No spray	-	-	33.7

1/ Applied on Thompson Var. using Phosalone 3 EC @ 2 lbs. aia. Fresno County. 1973.

2/ Average No. mites from leaf samples taken from 3 replications/ treatment.

1974

GRAPES - PACIFIC MITE

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material[1/]	Form.	AIA	Average Number Mites/Leaf[2/] 4-days	7-days	15-days
Bay Bue 1452	25 WP	8 oz.	41.5	15.6	4.0
Bay Bue 1452	25 WP	1 lb.	29.7	15.5	4.4
DS-15647	4 EC	1 lb.	52.1	72.8	30.6
DS-15647	4 EC	2 lbs.	49.9	47.4	19.6
DS-20630	42 EC	6.7 oz.	42.8	58.8	22.8
DS-20630	42 EC	10 oz.	74.2	49.4	11.4
Orthene	75 SP	12 oz.	60.1	115.2	58.2
Orthene	75 SP	1 lb.	51.8	93.2	68.2
CA 6900	4 EC	8 oz.	56.6	73.0	50.2
CA 6900	4 EC	1 lb.	73.1	99.4	50.8
PGP-103	40 EC	10 oz.	32.9	27.9	8.3
Fundal	97 SP	8 oz.	41.7	16.1	13.6
Plictran	50 WP	8 oz.	32.7	13.1	4.2
Zolone	3 EC	2 lbs.	26.1	11.6	12.4
Omite	30 WP	19 oz.	41.2	15.9	1.0
Cygon	25 WP	24 oz.	30.8	13.0	12.4
Carzol	95 SP	8 oz.	61.7	22.5	10.8
Galecron	4 EC	8 oz.	44.6	19.1	4.2
Ethion + oil	25 WP PG-2	24 oz. 2 gal.	46.4	30.1	7.0
Check	--	--	56.0	49.2	42.2

1/ Applied by engine driven high pressure over-the-vine boom. Fresno County. 8/26/74.

2/ Very heavy population and webbing. Pre-count = 74.4 mites/leaf. 4 reps/ treatment and 25 leaves/rep sampled. Tetranychus pacificus.

GRAPES

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material[1]	AIA	GPA	Average Number Mites and Leafhopper Nymphs/Leaf[2] 7/30 P	7/30 W	7/30 M.O.	7/30 L	8/6 P	8/6 W	8/6 M.O.	8/6 L	8/15 P	8/15 W	8/15 M.O.	8/15 L
Plictran	0.5	40	2.2	0.5	0.4	2.7	0.0	0.0	0.4	15.4	0.0	0.0	0.2	27.4
Vendex	0.5	40	1.6	0.8	0.2	1.1	0.4	0.0	0.8	12.8	0.0	0.0	0.6	12.8
Zolone	2.0	40	1.7	1.3	0.6	3.3	3.5	1.2	0.2	7.9	0.0	0.0	0.0	13.5
DS-15647	0.5	40	7.7	3.2	0.3	6.3	9.4	4.1	0.5	18.1	4.5	3.8	0.5	19.6
Check	-	-	28.8	17.6	1.6	31.1	33.6	12.8	2.1	47.8	11.1	6.6	2.0	26.0

1/ Applied by Bean 2106 air carrier PTO sprayer on 7/27/74. Fresno County.

2/ Average number of mites and leafhopper nymphs per leaf taken from 10 leaves/rep. 10 vines per rep and 4 reps/treatment. P=Pacific mite, W=Willamette mite, M.O.=*Metaseiulus occidentalis* predatory mite and L=Grape leafhopper.

GRAPES

(2)

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Color Code	Material[1/]	AIA	GPA	Average Number Mites and Leafhopper Nymphs/Leaf[2/] 7/30 P	7/30 W	7/30 M.O.	7/30 L	8/6 P	8/6 W	8/6 M.O.	8/6 L	8/15 P	8/15 W	8/15 M.O.	8/15 L
R	PGP-102	0.5	40	1.9	2.7	1.4	3.0	9.2	2.0	1.0	18.8	2.2	0.8	0.8	11.1
Y	PGP-102	1.0	40	4.2	1.7	0.3	1.1	5.7	0.0	0.5	24.2	1.8	0.0	1.0	12.4
B	PGP-102	1.5	40	1.0	0.8	0.8	1.0	4.0	0.0	0.4	21.4	1.0	0.0	0.5	17.1
P	PGP-102	1.0	200	1.1	1.4	0.4	3.4	6.2	0.8	0.8	16.1	1.4	0.0	1.0	22.6
O	PGP-103	0.5	40	1.5	1.0	0.2	2.0	8.1	0.8	0.8	25.5	1.4	0.3	0.8	13.3
RW	PGP-103	1.0	40	0.7	0.6	0.2	3.9	3.9	0.0	0.5	31.2	0.0	0.0	0.4	24.8
YW	PGP-103	1.5	40	2.0	1.4	0.3	2.5	2.3	0.2	0.5	27.2	0.0	0.0	0.6	18.4
BW	PGP-103	1.0	200	2.9	0.8	0.4	2.3	4.6	0.4	0.5	19.3	0.6	0.4	0.8	10.0
PW	Plictran	0.5	40	2.2	0.5	0.4	2.7	0.0	0.0	0.4	15.4	0.0	0.0	0.2	27.4
OW	Vendex	0.5	40	1.6	0.8	0.2	1.1	0.4	0.0	0.8	12.8	0.0	0.0	0.6	12.8
GW	Zolone	2.0	40	1.7	1.3	0.6	3.3	3.5	1.2	0.2	7.9	0.0	0.0	0.0	13.5
W	Check	-	-	28.8	17.6	1.6	31.1	33.6	12.8	2.1	47.8	11.1	6.6	2.0	26.0

1/ Applied by Bean 2106 air carrier PTO sprayer on 7/27/74. Fresno County.

2/ Average number of mites and leafhopper nymphs per leaf taken from 10 leaves/rep. 10 vines per rep and 4 reps/treatment. P=Pacific mite, W-Willamette mite, M.O.=*Metaseiulus occidentalis* predatory mite and L=Grape leafhopper

GRAPES - 1974
Effect of OLR Sprays on Pacific Mites & Grape Leafhoppers

Material[1]	AIA (lbs.)	Average Number Mites/Leaf[2]					Average Number Leafhopper Nymphs/Leaf[2]				
		7/8	7/16	7/23	7/30	8/7	7/8	7/16	7/23	7/30	8/7
Sevin	2	21.8	8.9	112.0	51.2	115.2	6.0	0.5	0.0	0.1	0.1
Sevimol	2	41.2	39.0	108.9	77.3	78.5	5.2	0.7	1.0	0.1	0.2
Lannate	.45	17.7	45.7	160.0	51.7	98.6	7.3	0.4	0.6	0.4	0.1
TH 6040	1	11.9	37.2	131.9	57.5	54.0	8.5	4.2	2.1	0.4	0.2
Cygon	1.5	33.2	9.7	28.2	15.5	17.4	6.2	0.2	1.5	0.0	0.4
Zolone EC	2	9.0	9.7	13.6	10.6	23.7	7.0	3.9	1.7	0.0	0.2
Phosvel	.34	23.8	16.1	87.8	32.8	57.4	10.5	1.4	1.8	0.0	0.4
Guthion	.19	11.6	20.9	44.1	34.4	23.1	7.0	6.3	5.1	1.0	1.0
Imidan	1	40.4	23.0	59.9	50.0	38.9	5.8	3.4	1.8	0.4	0.4
Imidan	2	18.8	26.2	44.3	24.0	45.7	5.0	5.1	2.0	0.1	0.8
Dursban	.5	21.2	9.2	29.8	31.1	56.0	4.6	2.7	1.8	0.5	0.6
Pencap M	.5	12.6	40.2	64.4	27.5	54.2	9.5	6.6	3.6	0.9	1.3
Dylox	1	24.1	35.4	62.8	56.8	81.1	6.6	3.6	1.7	1.3	0.7
Zolone WP	2	12.2	5.9	79.1	20.2	33.9	9.9	5.9	4.0	0.1	0.3
Check (water only)	-	12.3	29.4	64.4	40.3	55.6	6.3	6.3	3.6	0.5	2.0

1/ Applied on 7/9 at 200 gpa.
2/ 4 reps/treatment.

Grape - 1976
Pacific Mite, Tetranychus pacificus

Material	Form.	AIA	Ave. No. Mites/Leaf	
			Pacific	Pred.
EM-S2957	4 EC	0.5	19.2	3.2
EM-S2957	4 EC	1.0	88.0	12.0
EM-S2957	40 WP	0.5	124.8	4.8
EM-S2957	40 WP	1.0	118.4	9.6
ICI PP 557	2 EC	1.5 oz.	29.4	3.2
ICI PP 557	2 EC	3 oz.	110.4	6.4
SD-43775	2.4 EC	1.5 oz.	111.2	10.4
SD-43775	2.4 EC	3 oz.	72.8	1.6
Sumithion	40 WP	1 lb.	102.4	8.0
Sumithion	8 E	1 lb.	57.6	4.8
Dylox	80 SP	2 lbs.	54.0	7.2
Orthene	75 SP	12 oz.	118.4	6.4
Lorsban	4 E	8 oz.	86.4	-
Lorsban	4 E	1 lb.	96.0	-
Lorsban	4 E	2 lbs.	106.4	-
Imidan	75 SP	2 lbs.	174.4	-
Torak G	4 E	1 lb.	46.4	8.8
Lannate	90 SP	.45 lb.	296.8	-
Lannate	90 SP	.9 lb.	180.0	-
Lannate	1.8 L	.45 lb.	236.8	-
Lannate	1.8 L	.9 lb.	185.6	-
Zolone/Malathion	1.5/.07	2 lbs.	75.2	-
Sevin	80 S	1.5 lb.	105.6	-
Cygon	2.67 E	1.5 lb.	15.2	-
Cryolite	96 WP	6 lbs.	148.8	-
Check	--	--	64.8	1.2

1/ Applications June 18 by over-the-vine sprayer at 100 gpa. Thompson variety, Fresno County.
2/ Counts made July 15 from 5 leaves/rep. and 4 reps/trtmt.

J. E. Dibble, University of California, San Joaquin Valley Agricultural Research and Extension Center, Parlier.

GRAPES - 1977
Pacific Mite
Fresno County

Material[1/]	Form.	AIA (lbs.)	Rate/Acre	Average No. mites/leaf[2/] 7/1	7/5	7/16
XE-567	50 WP	0.5	1.0 lbs.	25.4	5.0	2.8
XE-333	30 F	0.5	1.5 pts.	23.8	3.2	1.0
Plictran	50 WP	0.5	1.0 lb.	17.4	1.8	0.4
Omite	30 WP	1.0	3.0 lbs.	24.2	4.8	0.8
Check	-	-	-	18.6	24.2	34.4

1/ Applied by air carrier sprayer @ 50 gpa on 7/1.

2/ Count on 7/1 is pre-treatment population. 100 whole leaves brushed on both sides/treatment. 10 vines/rep and 5 reps/treatment. Thompson Var.

J. E. Dibble, Extension Entomologist
San Joaquin Valley Agricultural Research & Extension Center.

GRAPES
Pacific Spider Mite

Material[1/]	Form.	AIA	Rate/Acre	Ave. No. Mites/Leaf[2/] 7-days	20-days
Omite	30 WP	1 lb.	3.3 lbs.	7.4	4.3
Plictran	50 WP	1 lb.	2 lbs.	4.9	0.2
Dimethoate	25 WP	1 lb.	4 lbs.	39.7	49.0
Zolone	3 EC	2 lbs.	5.4 pts.	24.2	36.2
Kelthane AP	35 WP	1.5 lb.	4.5 lbs.	14.7	19.5
+ Oil	PG	3 gals.	3 gals.		
Malonoben	50 WP	1 lb.	2 lbs.	9.4	7.8
Check	-	-	-	74.4	88.5

1/ Applied 7/24/78 by air carrier sprayer on 4-3 vine replications. Fresno County.

2/ Sampled leaves from center vine in each rep. Leaves brushed and counts averaged.

J. E. Dibble, San Joaquin Valley Agricultural Research & Extension Center, University of California, Parlier.

Grapes - 1976
Two-Spotted Mite Control, Tetranychus urticae

Material[1/]	Form.	AIA	Rate	Average Number Mites/Leaf[2/] 8/2	8/9	8/16	8/23
Omite	30 WP	1 lb.	3.3 lbs.	1.6	1.6	1.3	0.0
Plictran	50 WP	8 oz.	1 lb.	1.9	.3	1.6	.3
DPX-3792	2 EC	4 oz.	1 pt.	1.3	6.9	6.4	2.4
DPX-3792	2 EC	8 oz.	1 qt.	.3	21.1	4.5	1.3
Torak	4 EC	1 lb.	1 qt.	36.3	25.9	14.1	3.7
Vendex	50 WP	8 oz.	1 lb.	2.1	23.5	15.5	.3
Sumithion	40 WP	1 lb.	2.5 lbs.	52.8	82.7	41.6	1.1
Zardex	40 WP	1.5 lbs.	3.7 lbs.	.8	11.2	2.4	.3
Malonoben	50 WP	4 oz.	8 oz.	1.6	24.5	52.3	1.3
Check	--	--	--	2.4	18.2	18.4	17.6

1/ Application on July 23 by over-the-vine high pressure spray boom @ 225 gpa.

2/ 3 replications/treatment, Thompson variety, Fresno County.

Table G-6. Comparison of five plant spray oils applied at four different rates for the control of Willamette mites T. flavus on Thompson grapes. a/

Treatment	Gals. oil/acre	Mean number of mites per 50 leaves (days after application)						
		1st applic.			2nd applic.		3rd applic.	
		5	20	35	5	20	5	20
Orchex 696	2	9	14	16	2	3	2	1
	4	0	1	3	0	0	0	0
	6	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0
Orchex 796	2	2	11	14	3	0	2	2
	4	1	0	1	0	0	0	0
	6	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0
PGSO-1	2	8	9	17	5	4	1	3
	4	2	2	5	2	1	0	0
	6	0	0	0	0	0	0	1
	8	0	0	0	0	0	0	0
PGSO-2	2	4	3	7	3	4	0	2
	4	0	0	1	0	0	0	0
	6	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0
Volck Supreme	2	2	11	4	5	1	2	1
	4	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0
Check	-	21	13	34	23	15	6	9

a/ Treatments made 5/4 at 100 gpa, 6/14 and 7/24 at 275 gpa by hand gun. K.H.F.S., Fresno Co. (Test 7-67)

GRAPES - 1977

Willamette Mite, Eotetranychus willamettei

Material[1/]	Form.	AIA	Rate/Acre	No. Mites/40 Leaves[2/] Willamette 7-days	Willamette 14-days	T. occid. 14-days
XE-567	50WP	8 oz.	1 lb.	16	9	11
XE-333	30F	8 oz.	1.5 pts.	19	6	7
PP-199	2F	0.1#	6.4 oz.	14	7	4
PP-199	2F	0.2#	12.8 oz.	12	2	7
DPX-3792	2EC	.5#	1 qt.	19	14	0
DPX-3792	2EC	1.0#	2 qts.	11	9	0
Malonoben	50WP	4 oz.	8 oz.	61	11	4
Malonoben	50WP	8 oz.	1 lb.	32	4	0
Malonoben	50WP	4 oz.	8 oz.	45	21	12
+ Zardex	40WP	4 oz.	10 oz.			
Omite	30WP	1 lb.	3.3 lbs.	15	0	13
Plictran	50WP	8 oz.	1 lb.	7	1	14
Oil	PGSO-2	3 gal.	3 gal.	69	41	9
Cygon	2.67	1.5 lb.	4.5 pts.	49	39	3
Vendex	50W	8 oz.	1 lb.	9	5	7
Kelthane	34W	1.5 lb.	4.35 lbs.	67	76	4
Check	-	-	-	123	98	16

1/ Applications made 9/13/77 by an over-the-vine inverted "U" high pressure sprayer @ 120 gpa. 4 reps. of 6 vines each.

2/ Samples made by selecting 10 leaves/rep @ random and brushing for counts. Thompson variety. Fresno County.

J. E. Dibble, University of California
San Joaquin Valley Agricultural Research and Extension Center, Parlier.

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Predaceous Mites (Metaseiulus occidentalis) on Grapevines Sprayed to Control Pacific Spider Mites, 1971

R. McTeer, Selma. Fifteen leaves per plot on each date.

Treatment Chemical	Plot #	Pretreatment July 13		Average Number Mites and Eggs Per Leaf on Each Date											
				July 20		July 28		Aug. 3		Aug. 10		Aug. 17		Aug. 25	
		M	E	M	E	M	E	M	E	M	E	M	E	M	E
Torak 4E	1-2	0	.2	0	0	0	0	0	0	0	0	.6	1.6	0	.2
"	2-1	0	0	0	0	0	0	0	0	0	0	0	0	0	.2
"	2-2	0	0	0	.4	0	0	0	0	0	0	0	0	.2	0
Zolone 3E	1-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
"	1-10	.27	1.08	.2	.2	0	0	0	0	0	0	0	0	.2	.2
"	2-3	1.35	1.89	.2	0	0	0	0	0	0	0	0	0	0	0
"	2-6	0	0	.2	0	0	0	0	0	0	0	0	0	.4	0

Predaceous Mites (Metaseiulus occidentalis) on Grapevines Sprayed to Control Pacific Spider Mites, 1971.

R. McTeer, Selma. Fifteen Leaves Per Plot on Each Date.

Treatment Chemical	Plot #	Average Number Mites and Eggs Per Leaf on Each Date																	
		Pretreatment June 23		June 29		July 8		July 13		July 20		July 28		Aug. 3		Aug. 10		Aug. 17		Aug. 25	
		M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E	M	E
1410 - 2E	1-1	.0	.8	0	0	0	0	0	0												
Lannate 90%	2-1	.0	.2	0	0	0	0	0	0												
P+G[1] 131 10% E	1-2	.2	.4	0	0	0	0	0	.2												
P+G[1] 131 25 WP	2-2	.0	.2	.0	.2	0	0	0	0												
Shell 14114 50W	1-3	0	0	.4	.4	0	0	1.0	.6	0	0	0	0	0	.2	0	0	0	0	0	0
Cygon 25W	1-4	.0	.2	0	0	0	0	0	0	0	0	0	0	.6	0	0	0	.2	1.0	1.6	.2
"	1-8	.2	0	0	0	0	0	.4	.2	0	0	0	0	0	0	.2	0	.6	.6	.8	.4
"	2-9	0	0	0	0	0	.2	.4	.6	0	.4	.6	2.0	1.2	1.0	0	.5	.2	.2	0	.2
Supracide 2E	1-5	.0	.2	0	0	0	0	0	0	0	.4	.2	.6	.2	.2	0	.4	.4	0	0	0
"	1-7	.2	.2	0	0	0	0	0	0	0	0	0	0	1.2	.6	.8	1.2	1.0	2.6	.6	.8
"	2-11	.0	.2	.2	0	0	.2	0	.8	.2	2.0	1.0	4.2	1.6	.2	.4	0	0	0	.2	0
Supracide 2E	1-11	.0	.6	0	0	.2	1.0	1.0	1.4	.2	.2	0	.4	.2	.2	0	0	0	0	.2	0
"	2-4	.2	.4	0	0	0	0	.4	.2	0	.2	.6	.8	1.2	0	0	.5	.6	.4	0	.2
"	2-8	.2	.2	0	0	0	0	.2	--	0	0	0	.2	.2	.4	0	.4	.4	.6	2.4	1.0
ICI PP511[2]	1-6	0	0	0	0	1.4	1.0	0	.2	0	0	0	0	.8	1.0	.3	.3	.2	2.6	3.4	.4
"	1-9	0	0	0	0	0	0	0	0	.2	.2	0	0	0	0	0	.8	.2	0	1.2	1.0
"	2-10	.0	.2	0	0	0	.2	.6	.2	.6	0	.8	3.6	0	0	.4	3.8	.4	.4	0	0
Imidan 50	1-10	.0	.4	0	0	0	0	.2	1.1												
"	2-3	.2	8.0	0	0	.4	.8	1.4	1.9												
"	2-6	.2	.6	0	0	.4	.8	0	0												
Torak 4E	1-12	0	0	0	0	0	0	0	.4	0	0	0	.6	0	0	0	0	0	.2	0	0
"	2-5	.2	.2	0	0	0	0	0	0	0	0	0	0	0	0	.4	.4	0	0	.2	0
"	2-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.2	.8	1.0	3.2	.8

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1/ Proctor and Gamble

2/ Imperial Chemical Industries, Inc.

Predaceous Mites

Sprays to Control Pacific Spider Mites on Thompson Seedless Grapes, 1972. Page 1.

R. McTeer, Selma. Fifteen Leaves Per Plot On Each Date.

Treatment Chemical	1/ GPA and Lb. ai./A	Plot Number	2/ GPA and Lb. ai./A	Average Number of Mites and Eggs Per Leaf on Each Date. Pretreatment June 29 M	E	July 17 M	E	July 24 M	E	July 31 M	E
Torak 6EC	248-1.24	A2	220-1.10	3.6	0.2	0.0	0.0	0.0	0.0	0.0	0.2
"	248-1.24	A9	206-1.03	0.8	0.0	0.2	0.0	0.8	0.0	0.0	0.2
"	248-1.24	C6	220-1.10	1.6	1.6	0.2	1.0	0.0	0.2	0.2	0.2
Torak 6E	248-1.86	B3	220-1.65	0.6	0.0	0.0	0.0	0.0	0.2	0.0	0.0
"	248-1.86	D4	220-1.65	0.0	0.0	0.8	0.2	0.2	0.0	0.2	0.2
"	248-1.86	D10	206-1.55	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.0
Torak 6E	248-2.48	B6	206-2.06	1.4	0.0	0.0	0.0	0.2	0.2	0.2	1.4
"	248-2.48	E5	206-2.06	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2
"	248-2.48	E9	191-1.91	1.8	0.2	0.4	0.2	0.4	0.6	0.4	0.2
Benlate 50WP		B10	171-6.84	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Benlate 50WP, Vydate 2EC		A8	171-B 3.8, V1.91	3.6	0.8	0.2	0.0	0.0	0.0	0.2	0.2
Benlate 50WP, Vydate 2EC		A5	220-B 8.4, V4.4	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.2
Benlate 50WP, Vydate 2E		B9	191-B 3.8, V1.9	0.6	0.0	0.0	0.0	0.4	0.2	0.4	0.0
Benlate 50WP, Vydate 2E		B11	174-B 7., V1.7	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Vydate 2E		C1	206-2.06	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Supracide 2.0 EC		B7	206-1.55	0.8	0.0	0.0	0.2	0.0	0.2	0.6	0.6
"		C10	206-1.55	0.6	0.0	0.4	0.2	0.2	0.2	1.0	1.0
"		E8	191-1.43	0.6	0.0	0.8	0.2	0.0	0.2	1.8	1.0
Galecron 95%		A4	220-1.65	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0
"		D9	220-1.65	1.2	6.0	0.2	0.8	0.4	0.2	0.2	0.2
"		E7	206-1.55	0.2	0.2	0.0	0.0	0.0	0.0	0.6	0.4

1/ Sprayed May 17, 1972

2/ Sprayed July 5, 1972

Predaceous Mites

Sprays to Control Pacific Spider Mites on Thompson Seedless Grapes, 1972. Page 1 Continued

Treatment Chemicals	3/ GPA and Lb. ai./A	Plot Number	Average Number of Mites and Eggs Per Leaf on Each Date.							
			Aug. 7		Aug. 14		Aug. 21		Aug. 28	
			M	E	M	E	M	E	M	E
Torak 6E		A2	0.2	0.2	0.0	1.6	0.0	0.0	0.4	0.0
"		A9	0.2	0.4	0.4	0.8	0.6	0.2	0.0	0.0
"		C6	0.2	0.2	0.4	0.0	0.0	0.0	0.0	0.0
Torak 6E		B3	0.0	0.4	1.2	0.4	0.0	0.0	0.0	0.0
"		D4	0.6	3.2	1.6	0.2	0.4	0.0	0.0	0.0
"		D10	0.4	1.2	0.6	1.0	0.2	0.4	0.4	0.0
Torak 6E		B6	0.0	0.2	0.2	0.2	0.0	0.0	0.2	0.0
"		E5	0.2	1.4	0.4	0.4	0.2	0.2	0.2	0.0
"		E9	0.0	1.0	0.0	0.0	0.2	0.2	0.0	0.0
Benlate 50W	177-6.8	B10	0.2	0.4	0.0	0.2	0.0	0.0	-	-
Benlate 50W, Vydate 2EC		A8	0.0	0.0	1.4	2.2	0.8	0.0	-	-
Benlate 50W, Vydate 2EC		A5	0.0	0.2	0.6	0.2	0.2	0.2	-	-
Benlate 50W, Vydate 2EC		B9	0.2	0.6	0.6	0.2	1.0	0.4	-	-
Benlate 50W, Vydate 2EC		B11	0.0	0.0	0.0	0.4	0.6	0.0	-	-
Vydate 2EC		C1	0.0	0.0	1.0	1.2	0.0	0.0	-	-
Supracide 2EC		B7	6.0	1.4	1.0	0.0	0.2	0.0	-	-
"		C10	0.0	0.2	0.0	0.2	0.0	0.0	-	-
"		E8	0.0	1.0	0.2	0.2	0.0	0.2	-	-
Galecron 95%		A4	0.0	1.0	0.2	0.0	0.0	0.0	-	-
"		D9	0.2	0.4	0.0	0.0	0.6	0.8	-	-
"		E7	0.0	0.2	0.0	0.0	0.4	0.2	-	-

3/ Sprayed August 7, 1972

Sprays to Control Pacific Spider Mites On Thompson Seedless Grapes, 1972. Page 2
R. McTeer, Selma. Fifteen Leaves Per Plot On Each Date.

Treatment Chemicals	Plot Number	2/ GPA and Lb. ai./A	Average Number of Mites and Eggs Per Leaf on Each Date							
			Pretreatment June 29		July 17		July 24		July 31	
			M	E	M	E	M	E	M	E
Wendex 50 WP	A6	206-0.53	2.0	1.6	0.0	0.4	0.0	0.0	0.0	0.0
"	D5	220-0.55	0.0	0.0	0.4	0.0	1.0	0.8	0.8	0.2
"	E6	220-0.55	0.6	0.6	0.0	0.0	0.0	0.0	0.2	0.0
Wendex 50 WP	B5	206-0.39	1.0	0.0	0.8	0.0	0.2	0.2	0.2	0.8
"	D11	217-0.39	1.4	0.2	0.2	0.6	0.0	0.2	0.0	0.2
"	E3	206-0.39	0.4	0.0	0.0	0.0	0.4	0.2	0.2	0.8
SD 32963 - 40 WP	C2	206-0.41	3.8	0.0	0.4	0.0	0.2	0.0	0.0	0.8
"	C5	191-0.38	1.0	0.0	0.2	0.0	0.2	0.0	0.6	1.4
"	E11	217-0.43	0.2	0.0	0.0	0.2	0.0	0.0	0.6	0.2
Plictran 50 WP	A3	206-0.53	0.0	0.0	0.2	0.0	0.2	0.0	0.2	0.0
"	D6	220-0.55	2.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0
"	E4	220-0.55	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.2
Hercules 16801 - 50 WP	A1	220-1.10	2.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0
"	C3	206-1.03	0.0	0.0	0.2	0.2	0.2	0.0	0.4	0.2
Hercules 16801 - 50 WP	A11	188-1.91	1.8	0.2	0.0	0.0	0.0	0.0	0.2	0.8
"	D8	191-1.91	0.6	0.2	0.4	0.0	0.0	0.6	1.0	1.4
P & G 131-3.34 EC	B1	220-0.23	2.0	0.6	0.2	0.4	0.0	0.0	0.2	1.8
"	C7	206-0.22	0.4	0.0	0.6	0.0	0.0	0.2	0.2	0.4
P & G 131-3.34 EC	A7	206-0.11	3.4	0.0	0.2	0.0	0.0	0.0	0.2	0.6
"	D2	206-0.11	3.2	1.0	0.4	0.8	0.0	0.4	1.0	0.4
P & G 123-3.34 EC	B2	220-0.69	-	-	0.0	0.4	0.2	0.2	0.4	0.6
"	D1	206-0.61	2.0	0.2	0.6	1.2	0.0	0.6	0.2	0.2
P & G 123-3.34 EC	B8	191-0.40	3.2	2.2	0.0	1.4	0.4	0.8	0.2	0.2
"	D3	220-0.46	0.2	0.0	1.0	0.8	0.3	0.3	0.0	0.8
P & G 123-3.34 EC	B4	228-0.24	0.2	0.0	0.8	0.0	0.0	0.0	0.4	0.4
"	D7	206-0.22	0.4	0.2	1.6	1.8	1.1	2.2	0.2	1.4

2/ Sprayed July 5, 1972

Sprays to Control Pacific Spider Mites on Thompson Seedless Grapes, 1972. Page 2 Continued.

Treatment Chemicals	Plot Number	3/ GPA and Lb. ai./A	Average Number of Mites and Eggs Per Leaf on Each Date							
			Aug. 7		Aug. 14		Aug. 21		Aug. 28	
			M	E	M	E	M	E	M	E
Vendex 50 WP	A6		0.0	0.6	0.4	0.0	0.0	0.0	-	-
"	D5		1.2	0.4	0.6	0.0	0.0	0.0	-	-
"	E6		0.0	0.0	0.4	0.2	0.2	0.2	-	-
Vendex 50 WP	B5		0.0	0.2	1.0	0.6	0.4	0.0	0.0	0.0
"	D11		0.4	0.4	0.4	0.0	0.2	0.2	0.0	0.0
"	E3		0.2	0.8	0.4	0.0	0.8	0.0	0.0	0.0
SD 32963 - 40 WP	C2	148-0.59	0.0	0.6	0.2	0.0	0.2	0.0	-	-
"	C5	148-0.59	1.0	0.4	0.4	0.2	0.4	0.0	-	-
"	E11	148-0.59	0.8	1.0	0.2	0.0	0.0	0.2	-	-
Plictran 50 WP	A3		0.0	1.4	0.4	2.2	0.8	0.0	-	-
"	D6		0.2	0.0	0.2	0.0	0.6	0.0	-	-
"	E4		0.2	1.4	1.0	2.0	0.6	0.0	-	-
Hercules 16801 - 50 WP	A1	148-0.74	0.0	0.6	0.2	0.6	0.0	0.4	-	-
"	C3	148-0.74	0.4	0.2	0.2	0.4	0.6	0.0	-	-
Hercules 16801 - 50 WP	A11		0.0	1.2	0.0	0.4	0.2	0.0	-	-
"	D8		0.4	0.2	0.0	0.2	0.0	0.0	-	-
P & G 131-3.34 EC	B1		0.0	0.0	0.0	0.0	0.0	0.2	-	-
"	C7		0.4	0.2	1.2	2.6	3.6	0.4	-	-
P & G 131-3.34 EC	A7		0.0	0.8	0.0	0.0	0.0	0.0	-	-
"	D2		0.0	0.4	0.0	0.0	0.0	0.0	-	-
P & G 123-3.34 EC	B2		0.0	0.0	0.0	0.4	0.0	0.0	-	-
"	D1	206-0.65	0.0	0.2	0.0	0.0	-	-	-	-
P & G 123-3.34 EC	B8		8.0	1.2	0.4	1.2	0.8	0.2	-	-
"	D3		0.2	0.8	0.8	1.4	0.8	0.6	-	-
P & G 123-3.34 EC	B4		0.6	0.4	8.1	1.4	0.2	0.0	-	-
"	D7		0.6	0.6	1.0	2.0	0.2	0.0	-	-

3/ Sprayed Aug. 7, 1972

Predaceous Mites

Sprays to Control Pacific Spider Mites on Thompson Seedless Grapes, 1972. Page 3

R. McTeer, Selma. Fifteen Leaves Per Plot on Each Date.

Treatment Chemicals	2/ GPA and Lb. ai./A	Plot Number	Average Number of Mites and Eggs Per Leaf on Each Date							
			Pretreatment June 29		July 17		July 24		July 31	
			M	E	M	E	M	E	M	E
Cygon 25 WP	220-1.10	C9	6.1	1.0	0.2	0.0	0.4	0.2	0.3	0.0
"	181-0.91	C11	0.2	0.2	0.6	1.2	0.4	0.6	2.0	2.4
"	264-1.32	E1	1.8	0.2	0.4	0.0	0.8	0.0	0.0	0.2
Cygon 25 WP	171-1.71	C4	0.0	0.0	0.2	0.0	0.6	0.2	0.4	0.8
"	220-2.20	E2	0.8	0.4	0.0	0.0	0.0	0.4	0.0	0.6
Untreated	-	A10	0.6	0.0	0.2	0.4	0.0	0.2	0.2	0.4
"	-	C8	0.4	0.2	0.8	0.8	0.4	0.0	0.0	0.0
"	-	E10	2.0	0.0	1.6	0.4	0.4	0.2	0.4	0.6

2/ Sprayed July 5, 1972

Predaceous Mites

Sprays to Control Pacific Spider Mites on Thompson Seedless Grapes, 1972. Page 3 Continued.

Treatment Chemicals	3/ GPA and Lb. ai./A	Plot Number	Average Number of Mites and Eggs Per Leaf on Each Date							
			Aug. 7		Aug. 14		Aug. 21		Aug. 28	
			M	E	M	E	M	E	M	E
Cygon 25 WP	148-0.74	C9	1.6	2.2	0.2	0.0	0.0	0.0	0.0	0.0
"	148-0.74	C11	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
"	148-0.74	E1	0.6	0.6	0.2	0.0	0.2	0.2	0.0	0.0
Cygon 25 WP	148-0.74	C4	0.6	0.8	0.4	0.8	0.6	0.0	2.0	0.0
"	148-0.74	E2	0.8	0.4	0.2	0.0	0.0	0.0	0.0	0.0
Untreated	148-0.92 4/	A10	0.8	0.4	0.0	0.2	0.2	0.2	-	-
"		C8	0.4	0.2	0.8	0.6	0.2	0.0	-	-
"	148-0.92 4/	E10	0.4	0.6	0.2	0.0	0.6	0.0	-	-

3/ Sprayed August 7, 1972

4/ Used ethion 8 EC

Predaceous Mites (*Metaseiulus occidentalis*) on Grapevines Sprayed to Control Pacific Spider Mites - 1979.

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
Torak 4E	May 24 June 18	200 - 1.0 142 - 0.71	B3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18	200 - 1.0 189 - 0.95	B5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18	200 - 1.0 189 - 0.95	D13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Torak 4E	May 24 July 18	200 - 1.0 189 - 0.95	B4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 1.0 170 - 0.85	C9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.4	5.2	2.0
	May 24 July 18	200 - 1.0 189 - 0.95	A10	0.6	0.8	0.0	0.0	0.0	1.2	2.0	0.2	2.4	1.2	2.8	2.4
Torak 4E	May 24 June 18 July 18	200 - 1.0 180 - 0.9 170 - 0.85	C4	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.2	0.4	0.2
	May 24 June 18 July 18	200 - 1.0 180 - 0.9 245 - 1.23	D9	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
	May 24 June 18 July 18	200 - 1.0 208 - 1.04 189 - 0.95	B13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.6	1.6
Torak 4E	May 24 June 18	200 - 1.5 283 - 2.12	A2	0.2	0.8	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.8	0.4
	May 24 June 18	200 - 1.5 189 - 1.42	A8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	May 24 June 18	200 - 1.5 189 - 1.42	C10	0.0	0.0	0.0	0.2	0.0	0.6	0.0	0.0	0.2	0.2	4.8	2.2
Torak 4E	May 24 July 18	200 - 1.5 208 - 1.56	A4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 1.5 208 - 1.56	C8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 1.5 189 - 1.42	B12	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.0	0.2	0.4	0.2	3.8

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Torak 4E	May 24 June 18	200 - 1.0 142 - 0.71	B3	0.0	0.0	0.0	1.4	4.4	1.6	2.0	1.2
	May 24 June 18	200 - 1.0 189 - 0.95	B5	0.0	2.0	0.0	0.0	2.4	4.0	5.4	3.2
	May 24 June 18	200 - 1.0 189 - 0.95	D13	0.4	0.8	0.8	0.0	0.0	0.0	0.2	0.4
Torak 4E	May 24 July 18	200 - 1.0 189 - 0.95	B4	0.0	0.0	0.0	0.2	0.4	0.4	0.2	0.8
	May 24 July 18	200 - 1.0 170 - 0.85	C9	0.4	0.8	0.2	0.0	0.4	0.1	0.2	0.2
	May 24 July 18	200 - 1.0 189 - 0.95	A10	0.2	0.4	0.0	0.2	0.0	0.0	0.4	0.2
Torak 4E	May 24 June 18 July 18	200 - 1.0 180 - 0.9 170 - 0.85	C4	0.0	0.4	0.0	0.6	1.2	0.4	0.2	0.8
	May 24 June 18 July 18	200 - 1.0 180 - 0.9 245 - 1.23	D9	0.6	0.0	-	-	0.2	0.0	0.0	0.6
	May 24 June 18 July 18	200 - 1.0 208 - 1.04 189 - 0.95	B13	0.0	0.4	0.0	0.6	1.2	0.4	0.0	0.6
Torak 4E	May 24 June 18	200 - 1.5 283 - 2.12	A2	1.0	0.4	0.6	0.6	3.6	2.8	2.8	0.8
	May 24 June 18	200 - 1.5 189 - 1.42	A8	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
	May 24 June 18	200 - 1.5 189 - 1.42	C10	4.0	1.0	0.0	0.0	0.0	0.0	0.2	0.2
Torak 4E	May 24 July 18	200 - 1.5 208 - 1.56	A4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	May 24 July 18	200 - 1.5 208 - 1.56	C8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 1.5 189 - 1.42	B12	3.2	0.4	0.0	0.2	0.0	0.0	0.0	0.0

Sprays - Predaceous mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date											
				June 14		June 20		June 27		July 3		July 11		July 18	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Torak 4E	May 24 June 18 July 18	200 - 1.5 180 - 1.35 189 - 1.42	D3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	C6	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.4
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	A11	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.6
Torak 4E	May 24 June 18	200 - 2.0 198 - 1.98	C2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0
	May 24 June 18	200 - 2.0 180 - 1.8	B8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18	200 - 2.0 189 - 1.89	D11	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.2	0.0
Torak 4E	May 24 July 18	200 - 2.0 189 - 1.89	D4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 2.0 189 - 1.89	D6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 July 18	200 - 2.0 227 - 2.27	D12	0.0	0.0	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.2
Torak 4E	May 24 June 18 July 18	200 - 2.0 180 - 1.8 227 - 2.27	C3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
	May 24 June 18 July 18	200 - 2.0 198 - 1.98 283 - 2.83	D8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18 July 18	200 - 2.0 208 - 2.08 151 - 1.51	B11	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.4

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Sprays - Predaceous mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaves on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Torak 4E	May 24 June 18 July 18	200 - 1.5 180 - 1.35 189 - 1.42	D3	0.2	0.0	0.0	0.2	0.2	0.2	1.0	2.6
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	C6	1.4	0.4	0.0	0.2	0.4	0.0	0.4	1.0
	May 24 June 18 July 18	200 - 1.5 189 - 1.42 189 - 1.42	A11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Torak 4E	May 24 June 18	200 - 2.0 198 - 1.98	C2	0.8	0.4	0.8	4.0	5.6	8.0	2.8	0.6
	May 24 June 18	200 - 2.0 180 - 1.8	B8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
	May 24 June 18	200 - 2.0 189 - 1.89	D11	1.0	1.0	0.0	0.2	0.4	0.8	2.8	1.4
Torak 4E	May 24 July 18	200 - 2.0 189 - 1.89	D4	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.4
	May 24 July 18	200 - 2.0 189 - 1.89	D6	1.4	1.0	0.0	0.0	0.4	0.0	0.6	0.6
	May 24 July 18	200 - 2.0 227 - 2.27	D12	1.0	0.8	0.0	0.0	0.0	0.0	0.2	0.2
Torak 4E	May 24 June 18 July 18	200 - 2.0 180 - 1.8 227 - 2.27	C3	0.0	0.2	0.0	0.2	0.2	0.2	0.6	0.4
	May 24 June 18 July 18	200 - 2.0 198 - 1.98 283 - 2.83	D8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	May 24 June 18 July 18	200 - 2.0 208 - 2.08 151 - 1.51	B11	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0

Predaceous Mites (Metaseiulus occidentalis) on Grapevines Sprayed to Control Pacific Spider Mites - 1973.

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
Vendex 50W	June 18 July 3	200 - 0.26 245 - 0.61	B1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2
	June 18 July 3	189 - 0.24 227 - 0.57	D7	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	June 18 July 3	180 - 0.23 245 - 0.61	B10	1.0	1.8	0.0	1.0	0.2	0.2	0.4	0.0	0.4	0.8	0.2	0.0
Vendex 50W	June 18 July 3	283 - 0.7 208 - 1.04	A3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	June 18 July 3	208 - 0.52 227 - 1.14	C5	0.0	0.0	0.0	0.0	0.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0
	June 18 July 3	180 - 0.45 208 - 1.04	B9	2.6	0.8	0.0	0.4	0.0	1.4	0.6	0.8	0.0	0.0	0.0	0.0
Omite 30W	June 18 July 18	283 - 2.12 227 - 1.70	A6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	June 18 July 18	189 - 1.42 208 - 1.56	C12	0.2	0.2	0.2	0.2	0.4	0.0	0.2	0.8	0.4	0.0	1.0	0.2
	June 18 July 18	198 - 1.49 227 - 1.7	D5	0.0	0.0	0.0	0.0	-	-	0.2	0.2	0.0	0.0	0.4	0.4
Untreated 1/			A5 2/	0.0	0.0	0.0	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
			C1	0.0	0.2	0.0	0.6	0.2	0.6	0.2	0.6	1.4	0.4	0.6	1.0
			C11	0.2	2.0	0.0	0.4	0.4	0.8	2.2	4.4	1.4	0.6	0.0	0.0

1/ The untreated plots were sprayed July 3 because of increasing mite populations. Ethion used at the rate of 1 lb. ai/acre

2/ Resprayed July 18 with ethion at the rate of 1 lb. ai/acre.

Sprays - Predaceous mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Vendex 50W	June 18	200 - 0.26	B1	0.0	0.4	0.0	0.0	0.6	3.4	0.2	4.8
	July 3	245 - 0.61									
	June 18	189 - 0.24	D7	0.0	0.4	0.2	0.6	0.4	3.6	7.2	4.8
	July 3	227 - 0.57									
	June 18	180 - 0.23	B10	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.2
	July 3	245 - 0.61									
Vendex 50W	June 18	283 - 0.7	A3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
	July 3	208 - 1.04									
	June 18	208 - 0.52	C5	0.2	0.0	0.0	0.8	0.4	0.0	2.2	3.0
	July 3	227 - 1.14									
	June 18	180 - 0.45	B9	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	July 3	208 - 1.04									
Omite 30W	June 18	283 - 2.12	A6	0.6	0.4	0.0	0.2	0.0	0.6	0.0	1.6
	July 18	227 - 1.70									
	June 18	189 - 1.42	C12	1.4	1.4	0.0	0.0	0.0	0.0	0.2	0.2
	July 18	208 - 1.56									
	June 18	198 - 1.49	D5	1.0	0.0	0.6	0.6	0.0	0.0	1.0	3.0
	July 18	227 - 1.70									
Untreated 1/			A5 2/	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
			C1	1.6	1.6	1.8	1.8	1.6	0.6	4.0	2.4
			C11	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0

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1/ The untreated plots were sprayed July 3 because of increasing mite populations. Ethion used at the rate of 1 lb. ai/acre.

2/ Resprayed July 18 with ethion at the rate of 1 lb. ai/acre.

Predaceous mites (Metaseiulus occidentalis) on Grape vines Sprayed to Control Pacific Spider Mites - 1973

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: June 14 Mites	June 14 Eggs	June 20 Mites	June 20 Eggs	June 27 Mites	June 27 Eggs	July 3 Mites	July 3 Eggs	July 11 Mites	July 11 Eggs	July 18 Mites	July 18 Eggs
P & G 103,	June 18	208 - 0.22	D1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.6	1.4	1.0	2.2
3.34, 1/4 pt.	July 18	208 - 0.22													
per 100 gals.	June 13	208 - 0.22	C7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
	July 18	208 - 0.22													
	June 18	189 - 0.197	D10	0.0	0.2	0.0	0.4	0.0	0.4	0.4	0.6	1.2	3.6	2.2	4.2
	July 18	140 - 0.147													
P & G 103,	June 18	189 - 0.395	B2	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	2.0
3.34, 1/2 pt.	July 18 1/														
per 100 gals.	June 18	226 - 0.46	B6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0
	July 18 1/														
	June 18	226 - 0.46	A12	0.0	0.8	0.2	0.8	0.6	1.6	2.6	1.8	0.8	2.4	1.0	1.4
	July 18	189 - 0.396													
P & G 103,	June 18	189 - 0.591	A1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.34, 3/4 pt.	July 18	226 - 0.704													
per 100 gals.	June 18	189 - 0.591	A7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0
	July 18	208 - 0.652													
	June 18	189 - 0.591	A9	0.6	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
	July 18	208 - 0.652													

1/ Because of very heavy initial infestations these plots showed marked mite damage and were resprayed with ethion on July 18 at the grower's suggestion rather than with P & G 103. Ethion was used at the rate of 1 lb. ai/acre.

Sprays - Predaceous mites - McTeer - 1973

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
P & G 103,	June 18	208 - 0.22	D1	2.2	2.2	0.6	1.6	2.4	0.0	1.2	0.4
3.34, 1/4 pt.	July 18	208 - 0.22									
per 100 gals.	June 18	208 - 0.22	C7	0.4	0.0	1.2	0.6	0.6	2.8	1.0	1.4
	July 18	208 - 0.22									
	June 18	189 - 0.197	D10	0.6	4.8	0.0	0.6	0.0	0.0	0.0	0.1
	July 18	140 - 0.147									
P & G 103,	June 18	189 - 0.395	B2	0.0	0.2	0.0	0.6	0.8	0.0	3.2	0.0
3.34, 1/2 pt.	July 18	1/									
per 100 gals.	June 18	226 - 0.46	B6	0.4	0.8	0.8	0.2	0.0	0.2	0.6	0.0
	July 18	1/									
	June 18	226 - 0.46	A12	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	July 18	189 - 0.396									
P & G 103,	June 18	189 - 0.591	A1	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.4
3.34, 3/4 pt.	July 18	226 - 0.704									
per 100 gals.	June 18	189 - 0.591	A7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4
	July 18	208 - 0.652									
	June 18	189 - 0.591	A9	0.0	0.0	0.0	0.6	0.8	0.6	0.2	0.2
	July 18	208 - 0.652									

Predaceous Mites (Metaseiulus occidentalis) on Grape vines sprayed to Control Pacific Spider Mites - 1973.

R. McTeer, Selma. Fifteen leaves examined per plot on each date.

Treatment Chemical	Date applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date											
				June 14		June 20		June 27		July 3		July 11		July 18	
				Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs	Mites	Eggs
Cygon 25 W -	June 18	179 - 1.79	D2	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
	July 18	208 - 2.08													
	June 18	189 - 1.89	B7	0.0	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0
	July 18	208 - 2.08													
	June 18	189 - 1.89	C13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.2
	July 18	246 - 2.46													

Sprays - Predaceous Mites - McTeer - 1973

Treatment Chemical	Date Applied	GPA and lb. ai/A	Plot number	Average number of mites and eggs per leaf on each date: July 25 Mites	July 25 Eggs	Aug. 1 Mites	Aug. 1 Eggs	Aug. 8 Mites	Aug. 8 Eggs	Aug. 15 Mites	Aug. 15 Eggs
Cygon 25 W	June 18	179 - 1.79	D2	0.4	0.0	0.0	0.6	0.8	0.4	0.6	0.4
	July 18	208 - 2.08									
	June 18	189 - 1.89	B7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2
	July 18	208 - 2.08									
	June 18	189 - 1.89	C13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	July 18	246 - 2.46									

Grapes - Omnivorous Leaf Roller

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

	Material[1/]	Rate (lbs/gpa)	Mean No. of Pests[2/] (per vine) 7/4	8/15
1	Sevin 80WP	2.5/200	1.2	0.1
	"	2.5/40	0.7	0.0
	"	1 lb+14 oz/40	1.1	0.4
2	Guthion 50WP	1.5/200	5.8	3.1
	"	1.5/40	6.3	4.4
	"	1 lb+2 oz/40	6.4	3.0
3	Diazinon 50WP	2/200	7.4	-
	(followed by)	2/40	7.0	-
		1.5/40	8.9	-
	Sevimol 4	1.5/200	-	1.4
	"	1.5/40	-	0.7
	"	18 oz/40	-	0.9
4	Zolone 3EC	2/200	2.2	1.8
	"	2/40	5.5	2.3
	"	1.5/40	2.9	3.1
5	Check		37.3	41.7

1/ Applications made on 6/27 and 8/15/72.

2/ Overlapping populations of both OLR and GLF occurred in vineyard.

Grapes

Omnivorous Leaf Roller Control
Platynota stultana

Dibble, Babcock, McDaniels, Baker and Swanson

	Material[1]	Form.	Rate/Acre	Total Counts/Three Replications[2] 1st Count: No. OLR larva per 10 nests Alive	1st Count: No. OLR larva per 10 nests Dead	2nd Count: Nest populations from 10 min. count Alive	2nd Count: Nest populations from 10 min. count Dead	2nd Count: Nest populations from 10 min. count Pupa	2nd Count: Nest populations from 10 min. count Empty
R	Sevin	80 WP	2.5 lbs.	2	28	5	11	0	15
Y	Thuricide	90 TS	2 qts.	28	2	1	4	1	11
B	Dipel	3.2 WP (7.26 billion IV/lb.)	0.5 lbs.	30	0	5	7	5	7
O	Diazinon	50 WP	2 lbs.	24	6	4	6	8	8
G	Imidan	50 WP	2 lbs.	28	2	9	5	5	8
P	Zolone	3 EC	5 pts. 4 oz.	29	1	2	3	4	6
RW	Dibrom + Sevin	8 E 80 WP	1 pt. 3 oz. 1 lb. 13 oz.	5	25	1	7	0	9
W	Check	--	--	30	0	4	9	8	11

1/ Applications made 7/11/73 in Fresno County with a Bean 2106 air carrier sprayer @ 50 gpa and 3.5 mph Thompson Var.

2/ 1st counts made 7/17, 2nd counts made 7/24.

Grapes

Omnivorous Leaf Roller Control
Platynota stultana

Dibble, Babcock, McDaniels, Baker and Swanson

	Material[1/]	Form.	Rate/Acre	Average counts/replication[2/] 1st Count: No. OLR larva per 10 nests: Alive	1st Count: No. OLR larva per 10 nests: Dead	2nd Count: Nest populations from 10 min. count: Alive	2nd Count: Nest populations from 10 min. count: Dead	2nd Count: Nest populations from 10 min. count: Pupa	2nd Count: Nest populations from 10 min. count: Empty
R	Sevin	80 WP	2.5 lbs.	0.7	9.3	1.7	3.7	0.0	5.0
Y	Thuricide	90 TS	2 qts.	9.3	0.7	0.3	1.3	0.3	3.7
B	Dipel	3.2 WP (7.26 billion IV/lb.)	0.5 lbs.	10.0	0.0	1.7	2.3	1.7	2.3
O	Diazinon	50 WP	2 lbs.	8.7	1.3	1.3	2.0	2.7	2.7
G	Imidan	50 WP	2 lbs.	9.3	0.7	3.0	1.7	1.7	2.7
P	Zolone	3 EC	5 pts. 4 oz.	9.7	0.3	0.7	1.0	1.3	2.0
RW	Dibrom + Sevin	8 E 80 WP	1 pt. 3 oz. 1 lb. 13 oz.	1.7	8.3	0.3	2.3	0.0	3.0
W	Check	--	--	10.0	0.0	1.3	3.0	2.7	3.7

1/ Applications made 7/11/73 in Fresno County with a Bean 2106 air carrier sprayer @ 50 gpa and 3.5 mph Thompson Var.

2/ 1st counts made 7/17, 2nd counts made 7/24. Data from average of 3 replications.

Grapes

Omnivorous Leaf Roller Control
Platynota stultana

Dibble, Babcock, McDaniels, Baker and Swanson

	Material[1/]	Form.	Rate/Acre	Average counts/replication[2/] 1st Count Number larva per 10 nests Alive	Dead	2nd Count Nest population from 10 min. count Alive	Dead	Pupa	Empty
R	Dylox	80 SP	1 lb.	3.0	7.0	0.3	2.3	0.0	3.0
Y	Lannate	1.8 L	1 qt.	0.7	9.3	1.0	1.3	0.0	1.7
O	Lannate	1.8 L	2 qts.	0.0	10.0	0.0	1.7	0.0	1.0
G	Cryolite	96 WP	6 lbs.	8.3	1.7	1.3	2.0	0.3	2.0
P	Mesurol	75 WP	1 lb.	7.0	3.0	0.0	1.7	1.0	2.7
B	Orthene	75 WP	1 lb.	5.0	5.0	0.0	1.0	0.0	3.0
RW	Sevimol	4 F	2 qts.	4.0	6.0	0.7	1.3	0.0	2.3
YW	Dursban	4 F	1 pt.	5.7	4.3	0.3	0.7	0.0	2.0
GW	Phosvel	2.7 EC	1 pt.	9.0	1.0	0.0	0.7	1.0	2.3
OW	Supracide	2 E	2 qts.	9.0	1.0	0.3	0.7	1.0	1.3
BW	Galecron	95 SP	1 lb.	9.3	0.7	2.0	1.0	2.0	3.7
BY	HOE 2960	3.4 EC	1 pt.	8.0	2.0	0.7	1.3	0.7	4.3
BO	Meta Systox	2 SC	8 oz.	10.0	0.0	3.3	3.7	1.7	3.3
W	Check	--	--	10.0	0.0	2.3	1.3	1.3	3.7

1/ Applications were made 7/11/73 in Fresno County with a hi-pressure hand gun sprayer @ 260 gpa Thompson Var.

2/ 1st counts made 7/17; 2nd counts made 7/24. Data from average of 3 replications.

Grapes

Omnivorous Leaf Roller Control
Platynota stultana

Dibble, Babcock, McDaniels, Baker and Swanson

	Material[1/]	Form.	Rate/Acre	Total Counts/Three Replications[2/] 1st Count Number larva per 10 nests Alive	1st Count Dead	2nd Count Nest population from 10 min. count Alive	2nd Count Dead	2nd Count Pupa	2nd Count Empty
R	Dylox	80 SP	1 lb.	9	21	1	7	0	9
Y	Lannate	1.8 L	1 qt.	2	28	3	4	0	5
O	Lannate	1.8 L	2 qts.	0	30	0	5	0	3
G	Cryolite	96 WP	6 lbs.	25	5	4	6	1	6
P	Mesurol	75 WP	1 lb.	21	9	0	5	3	8
B	Orthene	75 WP	1 lb.	15	15	0	3	0	9
RW	Sevimol	4 F	2 qts.	12	18	2	4	0	7
YW	Dursban	4 F	1 pt.	17	13	1	2	0	6
GW	Phosvel	2.7 EC	1 pt.	27	3	0	2	3	7
OW	Supracide	2 E	2 qts.	27	3	1	2	3	4
BW	Galecron	95 SP	1 lb.	28	2	6	3	6	11
BY	HOE 2960	3.4 EC	1 pt.	24	6	2	4	2	13
BO	Meta Systox	2 SC	8 oz.	30	0	10	11	5	10
W	Check	--	--	30	0	7	4	4	11

1/ Applications were made 7/11/73 in Fresno county with a hi-pressure hand gun sprayer @ 260 gpa Thompson Var.

2/ 1st counts made 7/17, 2nd counts made 7/24.

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GRAPES

OMNIVOROUS LEAF ROLLER CONTROL

J. E. Dibble
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Materials & Timing[1] 5/10	7/5	8/20	lbs. AIA	Number bunches infested at harvest per 100 bunches[2]
Cryolite 96 WP	Lannate 1.8 L	Lannate 1.8 L	6-1-1	6
Cryolite 96 WP	Imidan 70 WP	Imidan 70 WP	6-2-2	9
Cryolite 96 WP	Sevin/Dibrom 80 S 8 E	Sevin/Dibrom 80 S 8 E	6-2/1-2/1	11
Cryolite 96 WP	Zolone 3 EC	Zolone 3 EC	6-2-2	15
Cryolite 96 WP	Dipel 3.2 WP	Dipel 3.2 WP	6-.5-.5	21
Dipel 3.2 WP	Dipel 3.2 WP	Dipel 3.2 WP	.5-.5-.5	24
Check			-	36

1/ Applications by air carrier ground sprayer @ 45 gpa and approx. 5-10 days after flight peaks. Fresno County. 1974.

2/ Total infested bunches from 100 bunches observed on 9/19/74. 20 bunches/rep. and 5 reps/treatment, 10 vines/replication.

Control of Omnivorous Leaf Roller on Thompson Seedless Grapes
Selma, 1974

Chemical	No. live larvae	No. dead larvae
Sevin	8	32
Pencap M	12	28
Lannate	16	24
TH 6040	27	13
Check	37	3

X^2 2x2 Analysis of Insecticide Effectiveness

Sevin	-----				
Pencap M	0.6	-----			
Lannate	2.92	0.49	-----		
TH 6040	16.46	9.81	5.03	-----	
Check	39.82	30.34	22.36	6.33	-----
	Sevin	Pencap M	Lannate	TH 6040	Check

X^2 values < 3.84 indicate no significant difference at the 5% significance level.

GRAPES - 1975

Omnivorous Leaf Roller
Platynota stultana

J. E. Dibble
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San Joaquin Valley Agricultural Research and Extension Center

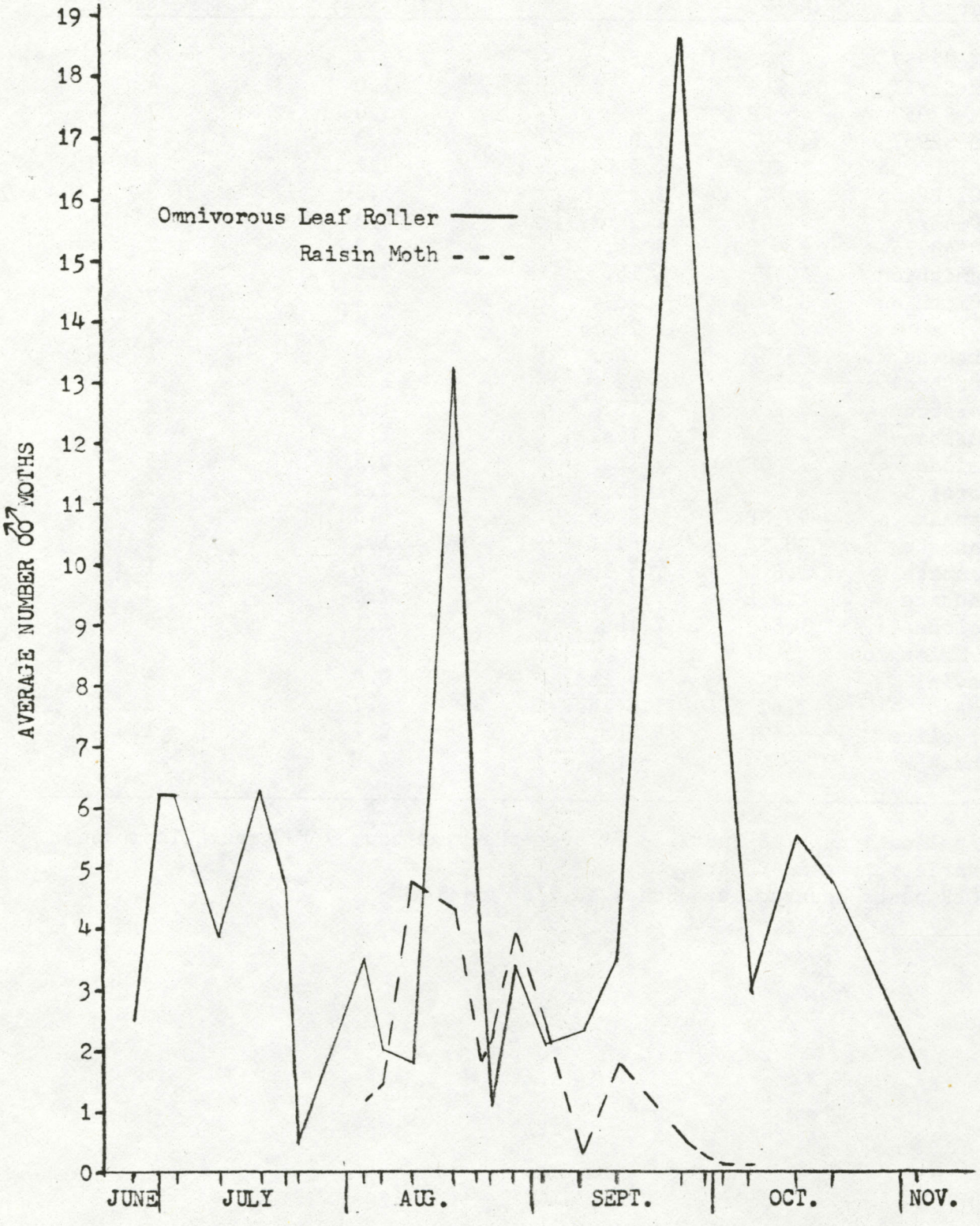
Material[1/]	Form.	AIA	Ave. No. live larva/20 leaf nests	Ave. % infested bunches[2/]
Zolone	3 EC	2 lbs.	6.7	3.8
Lannate	1.8 L	0.9 lb.	2.9	1.6
Dipel	3.2 WP	1 lb.	12.4	7.2
Torak G	4 EC	1 lb.	5.0	3.1
Orthene	75 SP	1.0 lb.	1.9	2.0
Orthene	75 SP	0.5 lb.	7.2	6.7
Orthene +Plictran	75 SP 50 WP	0.5 lb. 0.5 lb.	6.4	5.8
Cygon	25 WP	1.5 lb.	10.1	9.8
S-2957	4 EC	0.5 lb.	4.4	3.1
S-2957	4 EC	1.0 lb.	3.2	2.0
Check	--	--	18.6	13.1

1/ Applications July 15 by high pressure boom sprayer @ 40 gpa. Fresno County. Thompson Var.

2/ Average from five replications/treatment. Leaf nests evaluated 10 days after applic. and % infested bunches at harvest on Sept. 3.

OMNIVOROUS LEAF ROLLER TRAP COUNTS IN GRAPES - FRESNO CO. 1975

(including Raisin Moth captures)



Grapes - 1976
Omnivorous Leafroller, Platynota stultana

Material	Form.	AIA	Ave. No. Infested Bunches/5 bunches (21 days)	No. Infested Bunches/24 (pre-harvest)
EM-S2957	4 EC	.5	3.7	9
EM-S2957	4 EC	1.0	1.0	4
EM-S2957	40 WP	.5	3.0	7
EM-S2957	40 WP	1.0	.3	3
ICI PP 557	2 EC	1.5 oz.	.3	4
ICI PP 557	2 EC	3 oz.	1.3	3
SD-43775	2.4 EC	1.5 oz.	.3	2
SD-43775	2.4 EC	3 oz.	.3	2
Sumithion	40 WP	1 lb.	2.3	6
Sumithion	8 E	1 lb.	1.3	7
Dylox	80 SP	2 lbs.	1.0	5
Orthene	75 SP	12 oz.	0	1
Lorsban	4 E	8 oz.	1.2	4
Lorsban	4 E	1 lb.	1.7	3
Lorsban	4 E	2 lbs.	1.1	3
Imidan	75 SP	2 lbs.	0.5	3
Torak G	4 E	1 lb.	2.2	5
Lannate	90 SP	.45 lb.	.5	3
Lannate	90 SP	.9 lb.	1.1	5
Lannate	1.8 L	.45 lb.	0	1
Lannate	1.8 L	.9 lb.	2.8	3
Zolone/ Malathion	1.5/ .07	2 lbs.	1.1	5
Sevin	80 S	1.5 lbs.	0.9	4
Cygon	2.67 EC	1.5 lbs.	.7	8
Cryolite	96 WP	6 lbs.	2.7	1
Check	--	--	4.8	10

-Applications 6/18 and 7/23 by over-the-vine boom @ 100 gpa. Thompson variety, Fresno County.
-OLR nests counted in bunches on 7/9 and 8/20.

GRAPES - 1976
Omnivorous Leafroller, Platynota stultana

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material	Form.	Rate/Acre AIA	Average Percent Clean Bunches (8/15) 1 application (6/1)	2 applications (6/1 & 7/6)
Check	---	---	57.7	57.7
EM S-2957	4 EC	0.75	63.4	82.6
EM S-2957	40 WP	0.75	74.7	89.4
Methomyl	1.8 L	0.68	81.2	98.6
Methomyl	90 SP	0.68	80.6	95.0
Cryolite	96 WP	6.0	73.5	85.1
Imidan	50 WP	2.0	75.4	92.5
Sevin	80 S	1.5	82.1	94.9

Applied by over-the-vine spray boom at 50 gpa. Five replications per treatment. Thompson Variety, Fresno County.

GRAPES - 1976

Omnivorous Leafroller, Platynota stultana

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

Material	Form.	Rate/Acre AIA	Harvest OLR Counts Ave. No. Nests per bunch	Ave. Percent clean bunches
Check	--	---	4.7	51.3
EM-S-2957	4 EC	0.5	2.1	60.0
EM-S-2957	4 EC	1.0	1.3	75.0
Methomyl	1.8 L	0.68	1.3	81.3
Cyrolite	96 WP	6.0	2.7	62.5
Imidan	70 WP	2.0	1.7	81.3

Results of a single late season application on the 3rd brood pre-harvest population September 20.
Tinta Madera Variety, Stanislaus County.
Applications made on August 20 by high pressure handgun sprayer at 225 gpa.

Grapes - 1976

Late Season Omnivorous Leafroller Tests

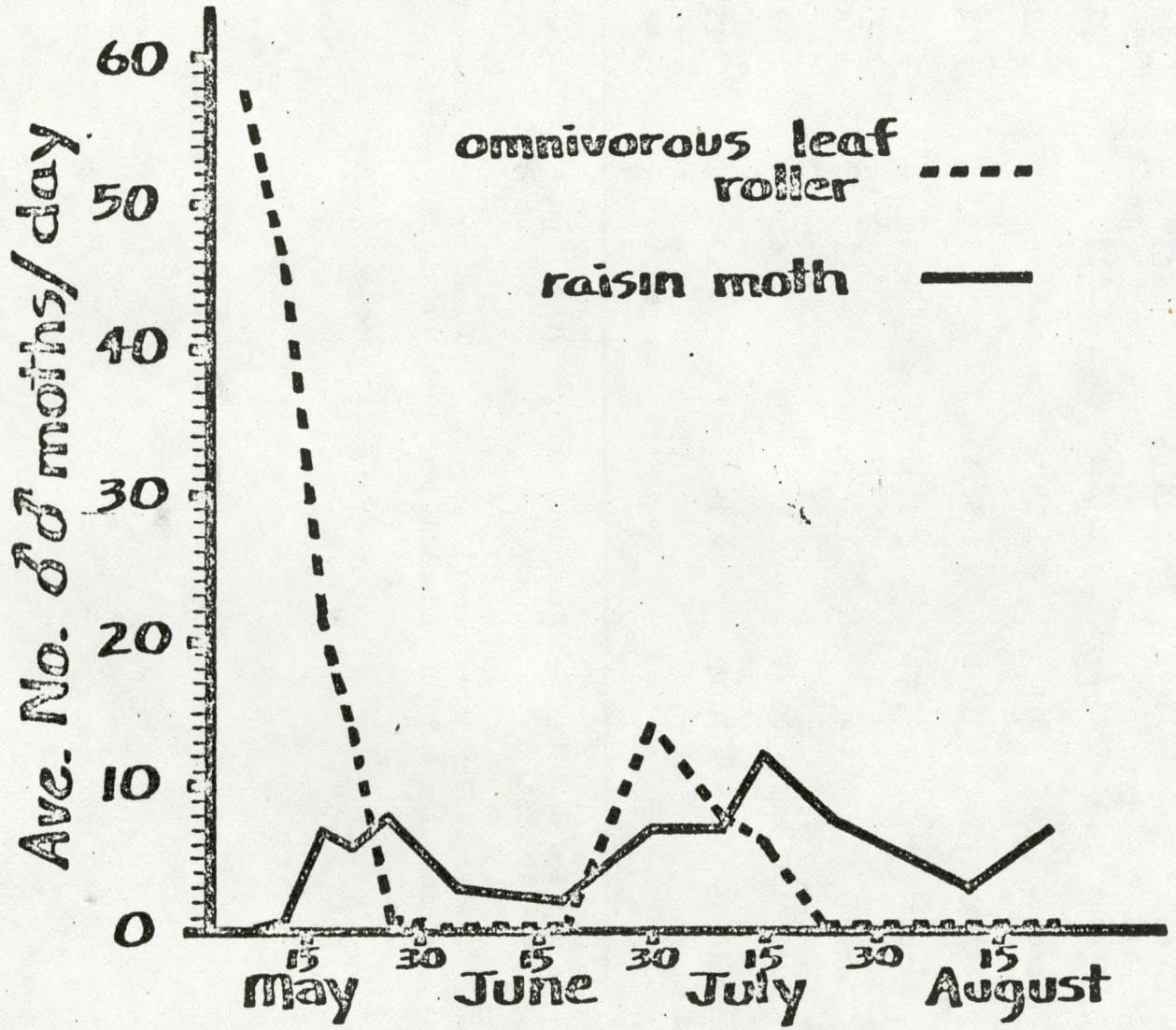
Material[1/]	Form.	AIA	Total Per 27 Bunches[2/]	
			Infested bunches	No. OLR nests
EM-S2957	4 EC	0.75 lb.	15	15
ICI PP 557	2 EC	2.25 oz.	12	12
SD 43775	2.4 E	2.25 oz.	15	18
Orthene	75 SP	12 oz.	18	27
Torak G	4 E	1 lb.	6	12
Methomyl	1.8 L	0.68 lbs.	9	12
Cryolite	96 SP	6 lbs.	18	24
Lorsban	4 E	1.5 lb.	12	18
Sumithion	40 WP	1 lb.	6	12
Imidan	70 WP	2 lb.	9	15
Check	--	--	21	42

1/ Applied 8/20 by high pressure hand gun at 225 gpa. Tinta Madera variety, Stanislaus County.

2/ Inspected 9 bunches/rep (3 reps) on 9/10 and recorded the number of infested bunches and total number of OLR larval nests.

Pheromone Trap Counts

Grapes - 1976



GRAPES - 1977

Omnivorous Leaf Roller - Season Control in Light Population

Treatment & Timing[1/]			Ave. No. Infested bunches/3 vines, Harvest Sept. 9[2/]
May 24	July 22	August 5	
Cryolite 6.0	Dipel 1.0	Dipel 0.5	1.8
Cryolite 6.0	Dipel 1.0	--	2.8
Cryolite 6.0	--	Dipel 1.0	3.3
Dipel 1.0 + C.E.	Dipel 0.5 + C.E.	Dipel 0.5 + C.E.	3.5
Dipel 1.0 + C.E.	Dipel 0.5 + Methomyl 0.45	--	3.8
Cryolite 6.0	Chlorthiophos W-1.0	Chlorthiophos W-1.0	0.3
Cryolite 6.0	Chlorthiophos W-1.0	--	0.8
Cryolite 6.0	Chlorthiophos E-1.0	--	1.0
Cryolite 6.0	Methomyl 0.45	--	0.8
Cryolite 6.0	--	Methomyl 0.45	1.3
--	Methomyl 0.9	--	2.0
Check	--	--	4.8

1/ Applied by high pressure hand gun @ 215 gpa. Numbers following compounds = pounds AIA. Cryolite = 96 WP, Dipel = BT 7.26 billion IU/lb, C.E. = chitinase enzyme, Chlorthiophos = 40 WP & 4 EC & Methomyl = 1.8 L.

2/ All bunches inspected on 3 vines/rep and 4 reps/trtmt. Stanislaus County. Chenin blanc variety.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center.
P. LaVine, Stanislaus County.

GRAPES - 1977

Omnivorous Leaf Roller - Season Control in Moderate Population

Treatment & Timing 1/			Ave. No. Infested bunches/3 vines
May 13	July 11	August 18	Harvest Sept. 20
Cryolite 6.0	Dipel 1.0	Dipel 0.5	3.0
Cryolite 6.0	Dipel 1.0	--	4.3
Cryolite 6.0	--	Dipel 1.0	4.8
Dipel 1.0 + C.E.	Dipel 0.5 + C.E.	Dipel 0.5 + C.E.	5.3
Dipel 1.0 + C.E.	Dipel 0.5 + Methomyl 0.45	--	5.5
Cryolite 6.0	Chlorthiophos W-1.0	Chlorthiophos W-1.0	0.5
Cryolite 6.0	Chlorthiophos W-1.0	--	1.0
Cryolite 6.0	Chlorthiophos E-1.0	--	1.8
Cryolite 6.0	Methomyl 0.45	--	1.0
Cryolite 6.0	--	Methomyl 0.45	2.5
--	Methomyl 0.9	--	4.8
Check	--	--	8.3

1/ Applied by high pressure hand gun @ 215 gpa. Numbers following compounds = pounds AIA. Cryolite = 96 WP, Dipel = BT 7.26 billion IU/lb, C.E. = chitinase enzyme, Chlorthiophos = 40 WP & 4 EC & Methomyl = 1.8 L.

2/ All bunches on 3 vines/rep. were inspected and 4 reps/trtmt. Thompson variety, Fresno County.

J. E. Dibble, University of California, San Joaquin Valley Agricultural Research and Extension Center, Parlier.

GRAPES - 1977

Omnivorous Leaf Roller, Platynota stultana

Material[1/]	Form.	AIA	Rate/Acre	Ave. No. Larva/Vine[2/] (9 days post treatment)
Chlorthiophos	4EC	1 lb.	1 qt.	1.0
Chlorthiophos	40WP	1 lb.	2.5 lbs.	0.8
Methomyl	1.8L	0.9	2 qts.	0.8
Dipel	3.2		1 lb.	1.5
Dipel + chitinase enzyme	3.2		0.5 lb.	2.0
SD 43775	2.4EC	0.2 lb.	11 oz.	0.4
Cryolite	96WP	6 lbs.	6 lbs.	0.2
UC 51762	75WP	1 lb.	1.3 lb.	1.0
Sevin	80S	2 lbs.	2.5 lbs.	1.2
Sumithion	8E	1 lb.	1 pt.	1.0
Sumithion	8E	2 lbs.	1 qt.	0.7
Imidan	50WP	2 lbs.	4 lbs.	0.8
Ambush	2EC	0.2 lb.	12.8 oz.	0.3
Cryolite	96WP	10 lbs.	10 lbs.	0.2
Check	-	-	-	3.9

1/ Applied by high pressure hand gun on May 25, 1977 @ 215 gpa. 4 reps. of 3 vines each. Chenin blanc variety. Stanislaus County.

2/ Counts made by examining each vine for leaf nests and counting the number of live larva 9 days after treatment.

J. E. Dibble, University of California
San Joaquin Valley Agricultural Research and Extension Center, Parlier.

Paul LaVine, University of California, Stanislaus County.

GRAPES

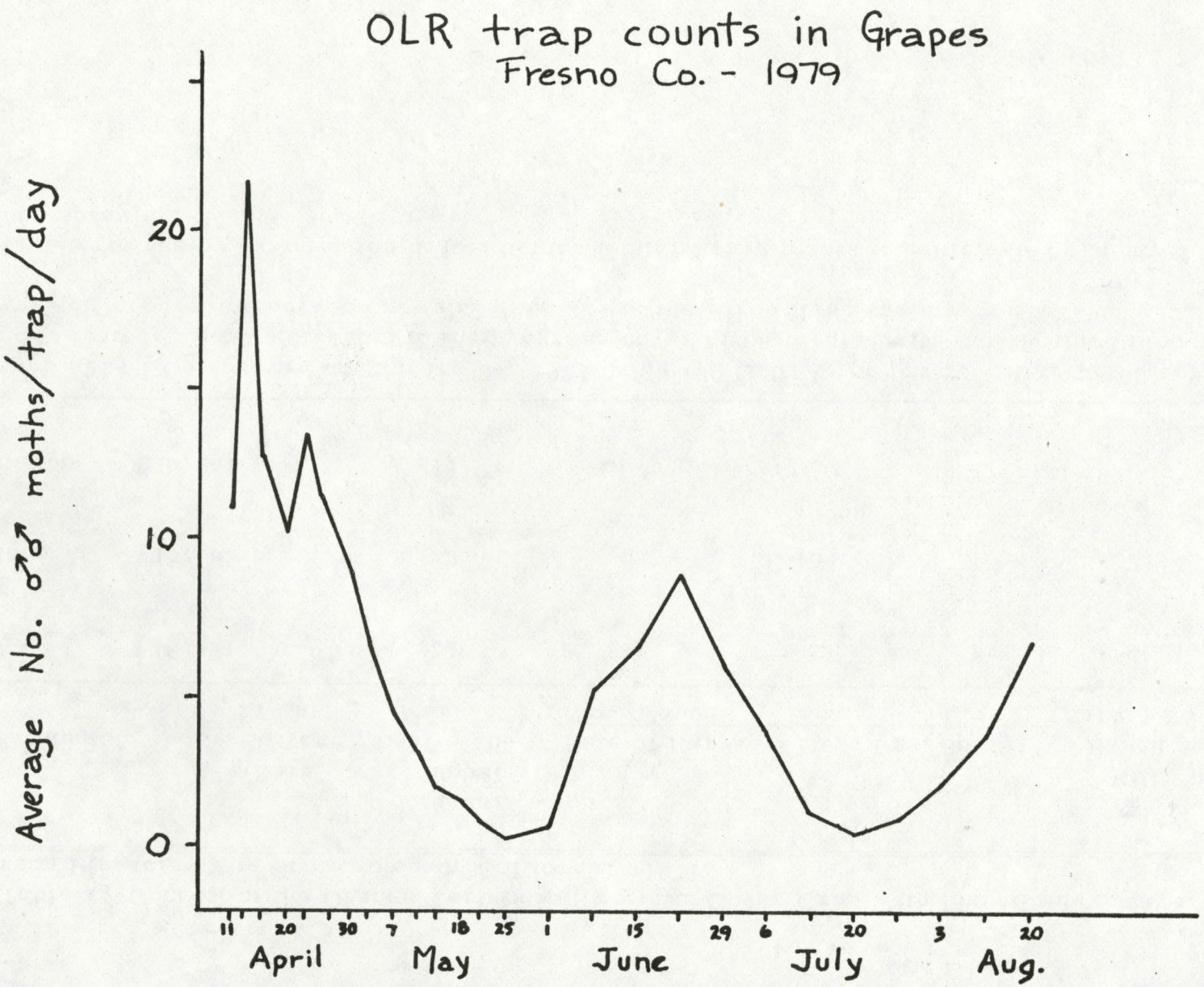
Leafhopper & Omnivorous Leaf Roller Control
(Erythroneura elegantula & Platynota stultana)

Material 1/	Form.	AIA	Rate/Acre	Leafhopper nymphs/leaf 4-days	18-days	32-days	OLR/Vine Harvest
Carbaryl	80 S	1.5 lbs.	1.9 lbs.	3	7	11	0.8
Zolone	3 EC	2.0 lbs.	5.4 pts.	4	9	21	2.4
Dimethoate	25 WP	1.5 lbs.	6 lbs.	1	2	10	3.0
Ethion	8 E	1.5 lbs.	1.5 pts.	4	11	15	1.2
Celathion	40 WP	0.5 lbs.	1.25 lbs.	1	4	13	0.4
Celathion	40 WP	1.0 lbs.	2.5 lbs.	0	2	8	0.0
Methomyl	1.8 L	0.9 lbs.	2 qts.	3	7	11	0.2
Check	-	-	-	17	29	34	3.2

1/ Cryolite applied May 17 to each plot site. Application by air carrier sprayer at 50 gpa. Above materials applied July 31, 1978. Kerman, Fresno Co.

2/ Leafhopper counts made 4, 18 & 32 days after application. OLR evaluation made at harvest 9/9/78.

J. E. Dibble, San Joaquin Valley Agricultural Research and Extension Center, University of California, Parlier.


OLR trap counts in Grapes
Fresno Co. - 1979
Average No. ♂♂ moths/trap/day
20
10
0
11
20
30
7
18
25
1
15
29
6
20
3
20
April
May
June
July
Aug.

Grapes

Table 1.-Control of the Orange Tortrix in Ryegrass Cover Crop With Insecticide Sprays. Masson Pinnacles Vineyard, Soledad, California 1971.

Treatments[1]		Rate A.I./Acre in Lbs.	Total Number Leaf Blades Marked	Fate of Larvae 3 Days Post Spray[2]			% Kill Based on Larvae Found
				None Found	Dead	Live	
Sevin	2 lb/gal EC	3	24	11	6	7	46.1
Zolone	3 lb/gal EC	3	20	6	10	4	71.4
Diazinon	4 lb/gal EC	3	11	6	3	2	60.0

[1] Applied by CO_2 sprayer on January 26, 1971 using 100 G.P.A. of water. Plots 1/100 acre non replicated. Sprays directed to the ryegrass cover crop infested with mostly third instar larvae. Plots located between rows 224 and 225 of the Pinot blanc variety.

As determined by examination of leaf blades from marked plants found infested one day before spraying.

Table 2. -Control of Orange Tortrix Overwintering in Grape Mummies by Insecticide Sprays. Mirassou Mission Vineyard, Soledad, California 1971.

Treatments[1]	Rate A.I./Acre in Lbs.	Rate Formulation[2] Per 1/100 Acre Plot	Number Insects 7 Days[3] After Spraying	Reps. I	Reps. II	Total	Average
A - Lannate 3 lb/gal EC	1	12.6 ml	Larvae	1	1	2	1
			Pupae	1	3	4	2
B - Dieldrin 1.5 lb/gal EC	1	25.2 ml	Larvae	15	42	57	28.5
			Pupae	2	9	11	5.5
C - Methyl Parathion 4 lb/gal EC	3/4	7.1 ml	Larvae	6	15	21	10.5
			Pupae	2	2	4	2
- Check	No Insecticides	-	Larvae	37	16	53	26.5
			Pupae	1	3	4	2

[1]/Sprayed Feb. 10, 1971 by CO_2 sprayer using 3 T-Jet 8002 nozzles 60 P.S.I. and 100 G.P.A. Colloidal Products X-77 spreader activator used at the rate of 4 ml per gal of water, approximately 1 pint per 100 gallons water.

[2]/Plots comprised the area under the vines which contained pruned off grape clusters lying on the soil. Area of plots: 3 feet by 145 feet in length.

[3]/All the grape clusters lying on the soil from each plot were taken to the laboratory and examined to determine the number of surviving insects February 17, 7 days after spraying.

Grapes

Table 3.-Control of the Orange Tortrix With Insecticide Sprays Applied to Vines. Mirassou Mission Vineyard, Soledad, California 1971.

Treatments[1/]	AI/A (lb)	Date Applied	Date Examined	Rep. No.	Number of Infestation: without larva	with live larva	with live pupa	with dead pupa	with dead larva
Dipel WP	0.8	3-25	4-6	I	5	16	0	0	1
				II	1	5	0	0	1
	1.0	5-4	5-25	I	7	1	1	0	1
				II	9	3	3	1	2
Zolone 3E	1.6	3-25	4-6	I	9	16	0	0	0
				II	2	7	0	0	0
	2.0	5-4	5-25	I	5	3	1	0	0
				II	16	6	1	0	1
Diazinon 4E	0.8	3-25	4-6	I	5	6	0	0	1
				II	5	20	0	0	0
	1.0	5-4	5-25	I	6	4	3	1	1
				II	13	19	3	0	1
-lox 80 SP	0.5	3-25	4-6	I	2	4	0	0	0
				II	2	4	0	0	0
	1.0	5-4	5-25	I	11	0	0	0	0
				II	8	5	0	0	0
Methyl Parathion 5E	0.3	3-25	4-6	I	6	15	0	0	0
				II	4	4	0	0	0
	0.75	5-4	5-25	I	2	0	0	0	0
				II	1	0	0	0	0
Sevin 80W	1.5	3-25	4-6	I	5	5	1	0	1
				II	5	8	0	0	0
	2.4	5-4	5-25	I	4	0	0	0	0
				II	0	0	0	0	0
Lannate 90 SP	0.6	3-25	4-6	I	4	0	0	0	0
				II	2	1	0	0	0
	1.1	5-4	5-25	I	4	0	0	0	0
				II	5	0	0	0	0
Untreated	-	-	4-6	I	4	17	0	0	0
				II	6	10	0	0	0
			5-25	I	9	11	2	0	0
				II	10	8	1	0	1

Orange tortrix on grapes - 1972
Paul Masson Vineyards - Soledad
Pinot chardonnay

June 13, 1972 - Examination made on 10 vines in each plot.

Chemical	AI/A	Row	Plot	Number of clusters Total	clean	Per cent clean
Dipel	1 lb	482	1	155	121	78.1
		A	2	144	107	74.3
			3	153	119	77.8
			4	115	85	73.9
		485	1	126	112	88.9
		B	2	163	152	93.2
			3	263	226	85.9
			4	201	176	87.6
		488	1	231	203	87.9
		C	2	167	144	86.2
			3	208	146	70.2
			4	193	151	78.2
Methyl parathion	.75	482	1	122	65	53.3
		B	2	148	111	75.0
			3	129	124	96.1
			4	151	141	93.4
		485	1	233	231	99.1
		C	2	210	210	100.0
			3	245	243	98.8
			4	191	175	91.6
		488	1	122	109	89.3
		A	2	457	454	99.3
			3	235	234	99.6
			4	206	190	92.2
Sevin	2.0	482	1	113	108	95.6
		C	2	116	113	97.4
			3	164	159	96.9
			4	141	123	87.2
		485	1	289	286	99.0
		A	2	326	322	98.8
			3	233	231	99.1
			4	242	239	98.8
		488	1	143	141	98.6
		B	2	152	151	99.3
			3	194	193	99.5
			4	153	149	97.4

Time of spray:
Plot 1 = 5-2-72
2 = 3-21-72 + 5-2-72
3 = 3-21-72 + 5-2-72
4 = 5-2-72

Orange tortrix on grapes - 1972
Paul Masson Vineyards - Soledad
Pinot chardonnay

October 2-4, 1972 - Examination made on 10 vines in each plot.

Chemical	AI/A	Row	Plot	Number of clusters Total	Number of clusters clean	Per cent clean
Dipel	1 lb	482	1	348	69	19.8
		A	2	318	74	23.3
			3	338	79	23.4
			4	249	19	7.6
		485	1	209	39	18.7
		B	2	381	155	40.7
			3	536	224	41.8
			4	395	190	48.1
		488	1	491	350	71.3
		C	2	466	293	62.9
			3	356	179	50.3
			4	349	135	38.7
Methyl parathion	.75	482	1	237	39	16.5
		B	2	316	139	44.0
			3	279	133	47.7
			4	393	228	58.0
		485	1	582	448	77.0
		C	2	540	446	82.6
			3	563	418	74.3
			4	410	197	48.1
		488	1	536	229	42.7
		A	2	851	596	70.0
			3	627	346	55.2
			4	427	49	11.5
Sevin	2.0	482	1	277	76	27.4
		C	2	365	331	90.7
			3	686	510	74.3
			4	199	59	29.7
		485	1	643	272	42.3
		A	2	801	480	59.9
			3	591	319	54.0
			4	471	91	19.3
		488	1	422	305	72.3
		B	2	385	281	73.0
			3	430	326	75.8
			4	365	264	72.3

Time of spray:
Plot 1 = 5-2-72 + 6-20-72 + 8-22-72
2 = 3-21-72 + 5-2-72 + 6-20-72 + 8-22-72
3 = 3-21-72 + 5-2-72 + 8-22-72
4 = 5-2-72 + 8-22-72

Orange tortrix on grapes - 1973
Soledad, California

Grape clusters infested with the orange tortrix larvae were collected from the Paul Masson Pinnacles and Mirassou Mission vineyards and held in the laboratory for one month. Observations were made on the number of emerging orange tortrix moths and their parasites.

Collection date	Location	Number of moths	Number of parasites 1/			
			Exochus	Apanteles	Nemorilla	Dibrachys
Jan. 23	Masson	64	8	0	0	0
Feb. 8	Mirassou	63	9	0	0	0
March 7	Masson	41	7	0	0	0
	Mirassou	30	17	0	0	0
Sept. 8	Masson	13	1	0	0	0
Oct. 4	Masson	63	14	0	1	0
Oct. 16	Masson	220	88	1	1	0
Nov. 21	Masson	55	70	4	0	18 2/

1/ Exochus nigipalpus subobscurus Tow. = ichneumonid wasp
Apanteles aristoteliae Vier. = braconid wasp
Nemorilla pyste (Walker) = tachinid fly
Dibrachys cavus = chalcid wasp

2/ Eighteen wasps emerged from 2 pupae.

Fig. 1. Average number of Orange tortrix male moths caught in female pheromone traps in 1973.

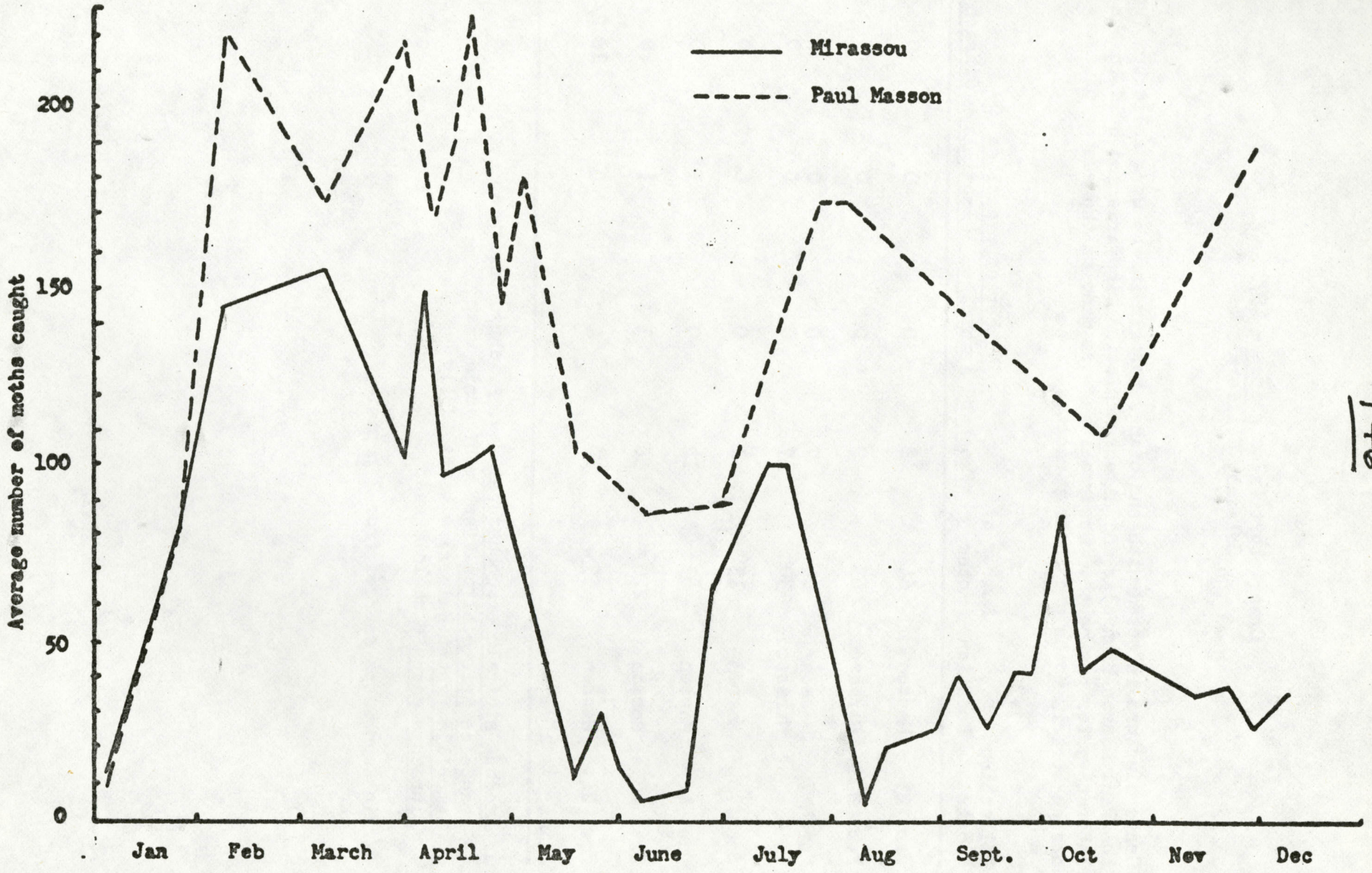
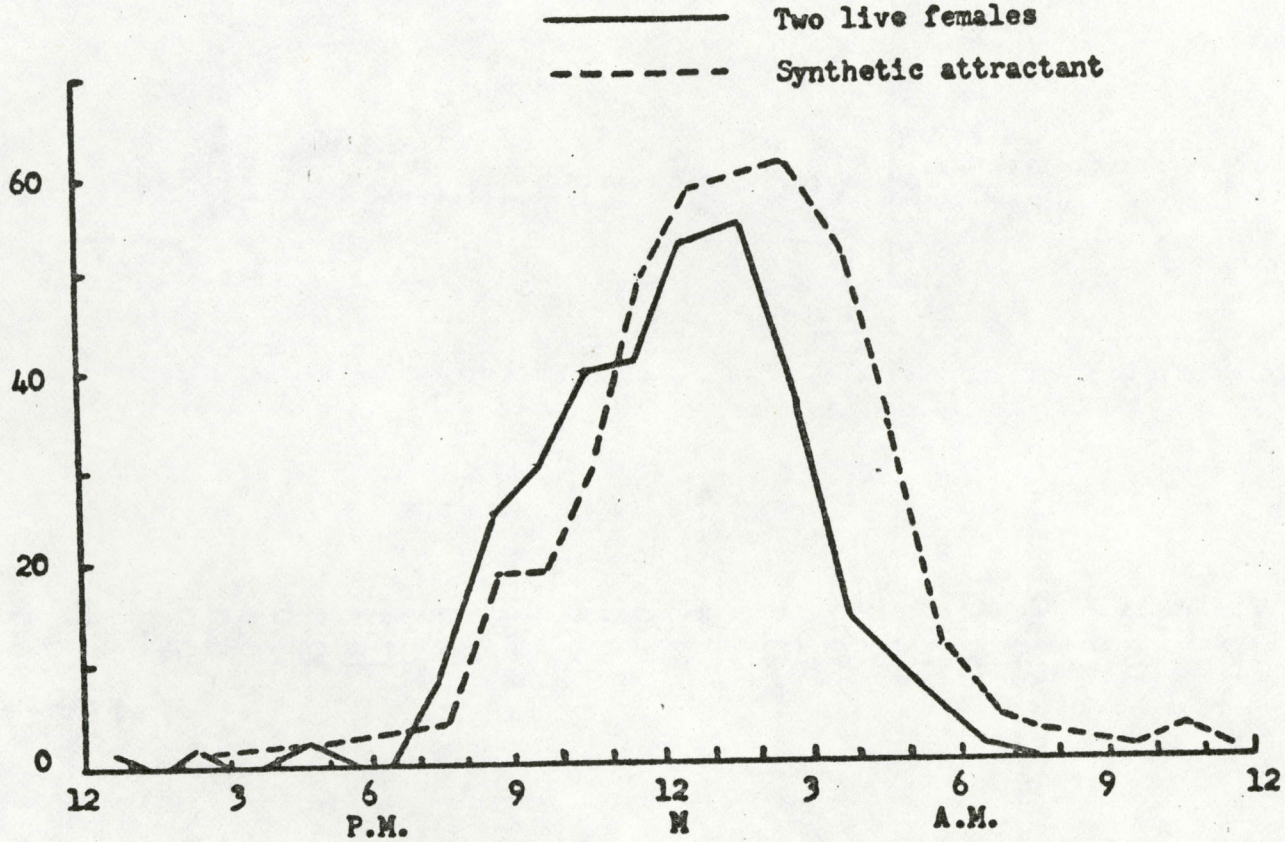


Fig. 2. Average number of Orange tortrix male moths caught in a trap during a 24 hour period.



Synthetic pheromone trials against the Orange tortrix - 1973
Paul Masson Vineyard, Soledad, California

Zoecon Pherocon 1C traps used in all trials.

Chemical	Avg. number males per trap
Apr. 12 to Apr. 18 - 5 replicates	
AC-I-1	1.2
2	153.4
3	0.4
4	112.4
5	102.8
6	0.4
May 16 to May 17 - 5 replicates	
AC-II-1	27.4
2	79.8
3	108.0
4	91.0
5	96.6
6	71.6
7	83.2
8	106.0
9	82.8
10	89.6
11	1.0
T *	0.2
F *	36.8
June 4 to June 6 - 4 replicates	
AC-III-1	2.0
2	25.5
3	17.3
4	18.8
5	30.0
6	15.0
7	0.3
8	6.0
T *	0.0
F *	1.3
June 26 to June 27 - 2 replicates	
AC-III-1	6.5
2	31.0
3	34.0
4	49.5
5	32.0
6	28.5
7	0.0
8	24.5
T *	0.0
F *	7.0

Chemical	Avg. number of males per trap
July 23 to July 24 - 2 replicates	
AC-III-1	64.5
2	133.5
3	79.0
4	115.0
5	98.0
6	51.5
7	0.0
8	35.5
T *	0.0
F *	6.5
Nov. 19 to Nov. 21 - 8 replicates	
AC-IV-1	84.3
2	89.0
3	22.1
4	20.0
5	5.5
6	142.4
7	214.8
8	200.4
9	257.1
10	260.3
11	270.8
12	4.9
13	0.9
T *	2.9
F *	58.9

T = trap only
F = 2 live females per trap

Experiment 1.
Orange tortrix on grapes - 1973
Paul Masson Vineyards, Soledad
Franken riesling variety

Examination of grape clusters conducted on vines treated with insecticides. Each plot was replicated 3 times and consisted of 12 vines. Grape clusters on 4 center vines of each plot were examined for infestation. The average number of clusters on 4 vines was 551.

Treatments	Dates applied	GPA and AI/A (lb)	Number of infested clusters counted on each date			
			June 4	July 10	Aug. 8	Sept. 26
Lannate L	April 25 June 25 July 24 Aug. 23	125-0.45 125-0.45 150-0.45 150-0.45	0	0	0	0
Pencap M	April 25 June 25 July 24 Aug. 23	125-0.75 125-0.75 150-0.75 150-0.75	1	1	0	0
Kryocide 96	April 25 June 25 July 24 Aug. 23	125-9.6 125-9.6 150-9.6 150-9.6	1	0	1	1
Sevimol 4	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	0	0	0	3
Methyl parathion 5E	April 25 June 25 July 24 Aug. 23	125-0.75 125-0.75 150-0.75 150-0.75	1	0	1	2
Furadan 4F	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	0	0	3	2
Orthene 75S	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	0	0	1	6
Imidan 50W	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	2	2	4	0

(continued)

Treatments	Dates applied	GPA and AI/A (lb)	Number of infested clusters counted on each date			
			June 4	July 10	Aug. 8	Sept. 26
Sevin 80S	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	1	1	0	7
Dursban 4	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	0	0	14	0
Methyl parathion 5E + summer oil emulsion	April 25 June 25 July 24 Aug. 23	125-0.75 -64 ozs 125-0.75 -64 ozs 150-0.75 -64 ozs 150-0.75 -64 ozs	0	0	0	15
Dylox 4E	April 25 June 25 July 24 Aug. 23	125-1.0 125-1.0 150-1.0 150-1.0	6	1	4	6
Pyrocide Growers Spray	April 25 June 25 July 24 Aug. 23	125-3 qts 125-3 qts 150-3 qts 150-3 qts	6	25	17	33
Untreated	-	-	29	48	36	80

GPA = gallons per acre
AI/A = active ingredient per acre

Experiment 1.
Orange tortrix spray trials - 1973
Paul Masson Vineyards, Soledad
Franken riesling variety

Grape leaves collected on September 26, 1973 and examined for Willamette and predaceous mites and eggs. Sprays applied on April 25, June 6, July 24 August 23, 1973 for Orange tortrix control.

Treatments	AI/Acre (lb)	Number of mites and eggs per 30 leaves			
		Willamette		Predaceous	
		Mites	Eggs	Mites	Eggs
Lannate L	0.45	1	0	0	0
Pencap M	0.75	1	0	0	0
Kryocide 96	9.6	1	0	1	0
Sevimol 4	1.0	0	0	0	0
Methyl parathion 5E	0.75	0	0	0	0
Furadan 4F	1.0	0	0	0	0
Orthene 75S	1.0	2	0	0	0
Imidan 50W	1.0	0	0	0	0
Sevin 80S	1.0	2	0	1	0
Dursban 4	1.0	1	0	0	0
Methyl parathion 5E + summer oil emulsion	0.75 64 ozs	0	0	0	0
Dylox 4E	1.0	0	0	0	0
Pyrocide Growers Spray	3 qts	3	0	0	0
Untreated	-	55	0	0	0

Grapes

EXPERIMENT 2

able 5. - Orange tortrix control, Paul Masson Pinnacles Vineyard, Franken Riesling ariety. Soledad, CA 1973.

reatments[1]	Rate AI Per Acre-Oz.	Infested Clusters Aug. 10[2] Total/12 Vines	Mean/4 Vines
annate L	3.6	0	0
annate L	7.2	0	0
annate L	10.8	0	0
evin 50 W	16	1	0.33
evimol 4	16	2	0.67
midan 50 W	16	1	0.33
ethyl parathion 7.5 E	12	0	0
heck	untreated	1	0.33

/ Sprayed July 20, and Aug. 20 with a tractor drawn sprayer equipped with an over the ine boom fitted with Spraying Systems adjustable conejet nozzles with AX 20 orifices praying one vine at 250 PSI with 150 GPA. Soilserv penetrant added to all materials t the rate of 12 ml/10 gal. water.

/ Plots 12 vines by 1 row, replicated 3 times in a randomized complete block design. n average of 551.3 clusters per 4 vines on April 25.

EXPERIMENT 3

Grapes

Table 6. - Control of the orange tortrix with Pyrocide-sulfur dust. Paul Masson Pinnacles Vineyard, Franken Riesling Variety. Soledad, CA 1973.

Treatments	Date	Total Number Vines Examined	Total Number Infested Clusters	Average Number Infested Clusters Per 4 Vines
Pyrocide-sulfur[1/]	July 11	12	22	7.3
Check	July 10	12	48	16.0
Pyrocide-sulfur	Aug. 10	20	30	6.0
Check	Aug. 8	12	36	12.0
Pyrocide-sulfur	Oct. 8	20	77	15.4
Check	Nov. 26	12	80	26.7

Dates applied May 1, June 1, June 18, July 16.

1/ An experimental dust containing 15% dry Pyrocide and 15% sulfur dust formulated by Roy Miner, Soilserv Inc., Salinas. Applied at the rate of 30 lbs. of the formulated dust per acre.

Grapes

EXPERIMENT 4

Table 7. - Orange tortrix control, Mirassou San Vincente Vineyard, Pinot noir Variety. Soledad, CA 1973.

Treatments[1]	Rate AI Per Acre-Oz.	Average Number Infested Clusters/4 Vines[2] Aug. 8 Actual Number	Aug. 8 Transformed[3] Number	Sept. 28 Actual Number	Sept. 28 Transformed[3] Number
Lannate L	3.6	0.33	.880	9.3	3.026
Lannate L	7.2	2.33	1.676	6.3	2.563
Lannate L	10.8	2.33	1.640	3.3	1.953
Sevin 50W	16.	3.0	1.556	4.7	2.140
Sevimol 4	16.	1.33	1.266	5.0	2.326
Imidan 50W	16.	2.33	1.386	3.0	1.820
Methyl parathion 7.5E	12.	1.67	1.436	1.0	1.170
Check	untreated	4.0	2.113	19.0	4.403
Statistical Analysis	LSD 5%	N.S.			1.122

1/ Sprayed July 18, and Aug. 15 with a tractor drawn sprayer equipped with an over the vine boom fitted with Spraying Systems adjustable conejet nozzles with AX 20 orifices spraying one vine at 250 PSI with 150 GPA. Soilserv Penetrant added to all materials at the rate of 12 ml./10 gal. water.

2/ Plots 12 vines by 1 row, replicated 3 times in a randomized complete block design. An average of 250 clusters per vines on Aug. 8.

3/ Actual number of infested clusters transformed for statistical analysis to $\sqrt{X + 0.5}$.

Orange tortrix on grapes - 1973
Paul Masson Vineyards, Soledad, California
Franken Riesling Variety

Treatments	Date applied	GPA and AI/A (lb)	Replicates	Number of infested clusters counted on each date			
				June 4	July 10	Aug. 8	Sept. 26
Methyl parathion 5E	April 25	125-0.75	1	1	0	0	0
	June 25	125-0.75	2	0	0	1	2
	July 24	150-0.75	3	0	0	0	0
	Aug. 23	150-0.75					
Methyl parathion 5E summer oil	April 25	125-0.75 -64 Oz	1	0	0	0	12
			2	0	0	0	3
	June 25	125-0.75 -64 Oz	3	0	0	0	0
	July 24	150-0.75 -64 Oz					
	Aug. 23	150-0.75 -64 Oz					
Dylox 4E	April 25	125-1.0	1	5	0	0	0
	June 25	125-1.0	2	1	1	4	5
	July 24	150-1.0	3	0	0	0	1
	Aug. 23	150-1.0					
Dursban 4	April 25	125-1.0	1	0	0	0	0
	June 25	125-1.0	2	0	0	13	0
	July 24	150-1.0	3	0	0	1	0
	Aug. 23	150-1.0					
Imidan 50W	April 25	125-1.0	1	2	2	0	0
	June 25	125-1.0	2	0	0	2	0
	July 24	150-1.0	3	0	0	2	0
	Aug. 23	150-1.0					
Pencap M 2	April 25	125-0.75	1	1	1	0	0
	June 25	125-0.75	2	0	0	0	0
	July 24	150-0.75	3	0	0	0	0
	Aug. 23	150-0.75					
Orthene 75S	April 25	125-1.0	1	0	0	0	3
	June 25	125-1.0	2	0	0	0	1
	July 24	150-1.0	3	0	0	1	2
	Aug. 23	150-1.0					
Furadan 4F	April 25	125-1.0	1	0	0	1	0
	June 25	125-1.0	2	0	0	1	0
	July 24	150-1.0	3	0	0	1	2
	Aug. 23	150-1.0					
Sevin 80S	April 25	125-1.0	1	1	0	0	1
	June 25	125-1.0	2	0	1	0	5
	July 24	150-1.0	3	0	0	0	1
	Aug. 23	150-1.0					

Orange tortrix on grapes - 1973

Treatments	Date applied	GPA and AI/A (lb)	Replicates	Number of infested clusters counted on each date			
				June 4	July 10	Aug. 8	Sept. 26
Kryocide 96	April 25	125-9.6	1	1	0	1	1
	June 25	125-9.6	2	0	0	0	0
	July 24	150-9.6	3	0	0	0	0
	Aug. 23	150-9.6					
Pyrocide Growers Spray	April 25	125-3 qts	1	3	11	4	18
	June 25	125-3 qts	2	0	11	12	9
	July 24	150-3 qts	3	3	4	1	6
	Aug. 23	150-3 qts					
Lannate L	April 25	125-0.45	1	0	0	0	0
	June 25	125-0.45	2	0	0	0	0
	July 24	150-0.45	3	0	0	0	0
	Aug. 23	150-0.45					
Sevimol 4	April 25	125-1.0	1	0	0	0	0
	June 25	125-1.0	2	0	0	0	3
	July 24	150-1.0	3	0	0	0	0
	Aug. 23	150-1.0					
Untreated			1	7	19	4	24
			2	10	7	15	26
			3	12	22	17	30

Treatments applied with Monterey County Extension Service over-the-vine sprayer. Plots consisted of 12 vines and grape clusters on 4 center vines of each plot were examined for infestation. Average number of clusters on 4 vines was 551.

Soil Treatments to Control Grape Phylloxera on Carignane Vines.

H. Lange Vineyard, Lodi, 1971

Granules broadcast into 24-vine basins which were then rototilled and flooded with about 6 inches of water on June 2, 1971.

Treatment chemical	Lb. ai. per acre	Plot No.	Square inches of root examined	Number per square inch	
				Adults and nymphs	Eggs
Carbofuran 10%	20	2	2.4	0	0
" "	"	7	62.4	0	0
" "	"	12	33.6	0	0
duPont 1410 1/	15	1 1/	3.3	7.6	1.8
" " 10%	"	5	2.6	40.0	18.9
" " "	"	9	100.7	3.1	5.1
Mocap 10%	20	4	198.0	0	0
" "	"	6	20.7	0	0
" "	"	10	107.9	0.4	.9
Untreated	-	3	3.5	45.3	39.6
"	-	8	0.9	62.8	32.5
"	-	11	66.0	0.0	0.0

1/ In this plot only, the chemical was sprayed on the soil which was then rototilled. Granules of 1410 (10%) were used in plots 5 and 9.

Grape Phylloxera - 1973
Vinifera Development Company
Napaco Ranch - Napa

Vines treated May 31, 1973. Root samples collected August 29, 1973.

Plot and replicate	Number of Phylloxera Motile forms	Eggs	Root area sq. in.		Average per square inch Motile forms	Eggs
Furadan 10G, 2 1/2 lbs - Furrow treatment						
1. I	21	2	65.36		0.32	0.03
II	14	0	66.32		0.21	0.0
III	200	222	46.39		4.31	4.79
Total	235	224	178.07	Avg.	1.32	1.26
Furadan 10G, 5 lbs - Furrow treatment						
2. I	189	47	41.58		4.55	1.13
II	134	35	62.22		2.15	0.56
III	198	373	61.41		3.22	6.07
Total	521	455	165.21	Avg.	3.15	2.75
Furadan10G, 10 lbs - Furrow treatment						
3. I	193	136	55.98		3.45	2.43
II	494	312	59.71		8.27	5.22
III	56	38	59.79		0.94	0.64
Total	743	486	175.48	Avg.	4.23	2.77
Untreated						
4. I	205	30	68.55		2.99	0.44
II	161	25	51.81		3.11	0.48
III	252	588	72.38		3.48	8.12
Total	618	643	192.74	Avg.	3.21	3.34
Furadan 10G, 5 lbs - Broadcast treatment						
5. I	656	85	83.06		7.90	1.02
II	97	56	73.66		1.32	0.76
III	421	275	66.71		6.31	4.12
Total	1174	416	223.43	Avg.	5.25	1.86
Furadan 10G, 10 lbs - Broadcast treatment						
6. I	136	357	65.98		2.06	5.41
II	33	9	52.52		0.63	0.17
III	0	0	64.60		0.0	0.0
Total	169	366	183.10	Avg.	0.92	2.00
Temik 10G, 5 lbs - Furrow treatment						
8. I	91	23	57.73		1.58	0.40
II	0	0	52.38		0.0	0.0
III	17	3	48.60		0.35	0.06
Total	108	26	158.71	Avg.	0.68	0.16

Grape phylloxera
Chenin blanc - U.C. Davis
November 16, 1976

Examination of grape roots at different soil depth for grape phylloxera

Plot	Soil depth 0 - 12"		12 - 24"		24 - 36"		36 - 48"		48 - 60"		60 - 72"		72 - 84"	
	Root area*	Phyll-oxera	Root area	Phyll-oxera	Root area	Phyll-oxera	Root area	Phyll-oxera	Root area	Phyll-oxera	Root area	Phyll-oxera	Root area	Phyll-oxera
B-12	31.7	23	326.6	200	13.5	0					12.3	2		
B-19	346.6	162	194.1	291	68.7	34	19.1	1	66.0	11	58.5	29	12.9	0
C-5	55.6	12	361.5	269	73.8	24	14.1	1						
C-25	1.9	1	366.3	214	140.0	59	60.9	37	60.0	34	39.6	1	6.6	2
C-29	32.7	17	141.7	11	6.3	2			80.8	8	63.5	1		
Totals	468.5	215	1390.2	985	302.3	119	94.1	39	206.8	53	173.9	33	19.5	2
Average number of phylloxera per square inch of root		.46		.71		.39		.41		.26		.19		.10

Root area = square inch

Phylloxera counts included adults only

Eggs and motile farms of Phylloxera found on roots collected August 29, 1973, NAPACO vineyard. Applications of insecticide granules were applied in 2 holes per vine on June 1, 1973 (Hercules 16801) and June 5, 1973 (others) at the rate of 5 lbs. active per acre.

Cygon 10% Granules

Vine Number	Square Inches Examined per Vine	Number Insects per Square Inch	
		Motiles	Eggs
B8-R1-V5	26.3	2.0	5.0
C8-R2-V2 1/	poor roots	-	-
C8-R3-V4	21.8	0.4	0.9
C8-R4-V3	15.5	0.0	0.0
C8-R4-V5 1/	5.6 poor roots	-	-
C11-R2-V2	33.8	0.1	0.0
D10-R3-V2	34.7	0.9	0.1
D10-R3-V4	33.3	2.1	1.1
Average	33.08	0.91	1.18
		2.09	

1/ Not used in calculating averages.

American Cyanamid 92100 15% Granules

Vine Number	Square Inches Examined per Vine	Number Insects per Square Inch	
		Motiles	Eggs
A8-R1-V5	26.3	2.0	5.0
B8-R1-V3	14.0	0.9	0.4
C8-R2-V5	17.2	3.6	4.7
C8-R3-V3	22.4	0.0	0.0
B10-R2-V2	58.5	0.6	0.4
C11-R2-V3	24.5	2.5	1.8
D10-R3-V5	19.6	0.0	0.2
E8-9-R1-V3	17.0	3.2	0.8
	28.5	1.6	1.66
		3.26	

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Hercules 16801 15% Granules

Vine Number	Square Inches Examined per Vine	Number Insects Per Square Inch	
		Motiles	Eggs
A8-R1-V4	24.1	18.3	13.4
B7-R3-V6 1/	dead roots	-	-
B8-R1-V2	29.4	2.2	0.6
B8-R1-V4	29.7	0.8	1.1
C8-R2-V3	26.4	1.9	0.3
C8-R3-V2	21.0	1.6	1.6
C11-R3-V2	31.3	0.6	0.1
D10-R2-V2	12.7	0.0	0.0
Average	24.94	3.62	2.44
		6.07	

1/ Not used in calculation of averages

Untreated

Vine Number	Square Inches Examined per Vine	Number Insects per Square Inch	
		Motiles	Eggs
B8-R2-V3 1/	not examined	-	-
C8-R2-V4 1/	not examined	-	-
C8-R3-V5	30.2	2.7	3.3
C8-R4-V4	19.7	0.6	0.6
B10-R2-V3	54.3	1.2	0.1
C11-R2-V4	15.6	6.1	8.2
D10-R3-V3 1/	poor roots	-	-
B8-R1-V6	29.1	2.0	0.4
	29.78	2.52	2.52
		5.04	

Table G-7. Comparison of five plant spray oils applied at four different rates as to foliage phytotoxicity, fruit spotting, and mildew on Thompson grapes[a/].

Treatment	Gals/acre oil	Gals/acre spray	Rating [b/] Leaf injury	Rating [b/] Fruit spotting	Rating [b/] Mildew
Orchex 696	2	100/275	0	0	2
	4	"	0	1	2
	6	"	0	1	2
	8	"	1	1	2
Orchex 796	2	"	0	0	2
	4	"	0	1	2
	6	"	0	0	1
	8	"	1	1	2
PGSO-1	2	"	1	2	2
	4	"	1	2	2
	6	"	2	2	2
	8	"	2	2	1
PGSO-2	2	"	0	1	2
	4	"	1	1	2
	6	"	2	1	2
	8	"	2	1	2
Volck Sup.	2	"	0	1	2
	4	"	0	1	2
	6	"	1	1	2
	8	"	1	1	2
Check	-	-	0	0	3-4

a/ Treatments made in May at 100 gpa, June and July at 275 gpa by hand gun. KHFS, Fresno Co. (Test 7=67)

b/ Leaf injury and fruit spotting (oil drops on bloom) 0 = none, 1 = present, 2 = noticeable and 3 = economic. Mildew rating 1-5. Temp. at May applic. 65-75°, June and July applications 104-120°,

Table G-9. Comparison of certain plant spray oils for the control of grape powdery mildew on Thompson grapes. a/

Treatment b/	Gals/acre oil	Gals/acre spray	Ave. mildew rating of berry cluster c/
Orchex 696	8	100	2.6
"	4	100	2.7
Orchex 796	4	100	1.7
PGSO-1	4	100	2.5
PGSO-2	4	100	2.6
Volck Sup.	4	100	2.6
Sulfur	3 lbs.	100	3.7
796 + sulfur	4 3 lbs.	100	2.2
PGSO-2 + sulfur	4 3 lbs.	100	2.7
Volck + sulfur	4 3 lbs.	100	2.1
796 + sulfur	4 3 lbs.	38	3.6
Check	-	-	3.5

a/ Tests at KHFS, Fresno Co. (Test 8-67)

b/ Treated in May by boom sprayer and in June by air carrier and evaluated July 20, in cooperation with W. B. Hewitt, Dept. Plant Pathology, UCD. 50 clusters inspected/rep. and 3 reps/treatment.

c/ Ratings: 1 = 1.5 % of berry cluster shows mildew; 2 = 10-25%; 3 = 25-50%; 4 = 50-75%; 5 = 75-100%.

GRAPE MILDEW CONTROL
ERADICANT TREATMENTS
Thompson Variety - Fresno County

Material[1/]	Rate/Acre	Infection rating 9 days after Treatment 0-10[2/]
Wettable Sulfur	2 lbs/100	7.2
Wettable Sulfur	4 lbs/100	6.4
Colloidal Sulfur[3/]	2 lbs/100	8.4
Colloidal Sulfur[3/]	4 lbs/100	3.3
Check	--	10.0

1/ Applications made on June 13 on totally infected bunches

2/ 10 - entire cluster infected

3/ 20.2% sulfur

MILDEW CONTROL - SULFUR - SPRAY

HERB BALL
14262 S. Cedar Ave.

Rated 6-22-72 - 6:00 a.m.

R	G	P	O	Y	B		BW	RW		W Washed Eradicators WY	PW	OW	GW	Eval. of growers fld.*	
1	0	1	0	4	1	1	5	6	0	8	0	7	7	0	1
2	0	7	4	2	1	2	2	4	2	7	1	7	8	0	1
1	1	3	5	4	2	3	0	6	1	7	0	3	10	2	1
6	0	2	9	2	1	9	1	8	1	7	7	8	8	5	3
2	0	1	8	6	3	10	2	6	0	3	5	9	10	4	5
1	0	7	1	2	5	10	0	1	0		4	8	9	1	1
1	1	8	0	1	9	9	2	2	0		5	10	7	0	2
3	1	8	0	3	7	6	5	1	1		4	9		0	1
5	0	4	1	1	2	5	3	0	5		2	9		1	1
7	1	3	2	4	7	4	1	1	5		5	5		2	3
0	1	1	0	7	7	2	1	0	4			6		4	2
1	1	6	1	5	8	10	4	4	4			5		4	3
1	1	2	7	1	3	10	7	1	3					7	7
1	3	0	5	5	5	9	2	0	1	(Applied with high				7	6
2	2	0	8	4	8	8	1	1	1	pressure hand gun				0	6
2	1	1		8	1	6	1	0	0	sprayed to run-				1	4
1	1	1		7	6	1	0	0	1	off)				3	7
0		0		8	0	0	5							4	7
		1		6	1	5	5							3	2
				8	9	1	10							1	1
				2	3	3	6							0	
				3			5								
				6			3								
				5											
				4											
				8											
				7											
				9											
AV.	2.1	.82	2.9	3.4	4.7	4.8		3.1		2.1	6.4	3.3	7.2	8.4	2.8

(*12 rows south of blue flag in plots)

RATING: 0 = no mildew (inspectors momentary evaluation on sight)
1 = mildew present. Very small quantity
5 = 50% infected berries. Definite economic problem.
10 = entire cluster infected

Evaluation made from north side of row. Generally older clusters evaluated with some exceptions.

Frosted vineyard so clusters in varying degree of maturity.

Foliage had apparent effect on coverage.

Started evaluation 2 vines in from end of rep.

Grapes

Salt Marsh Caterpillar Control
Estigmene acrea

Dibble, Babcock, McDaniels, Baker and Swanson

	Material 1/	Form.	Rate/Acre	Average number mature caterpillars/rep. 2/ (6 days)
R	Dylox	80 SP	1 lb.	2.0
Y	Lannate	1.8 L	1 qt.	0.0
O	Lannate	1.8 L	2 qts.	0.0
G	Cryolite	96 WP	6 lbs.	3.0
P.	Mesurol	75 WP	1 lb.	6.3
B	Orthene	75 WP	1 lb.	0.7
RW	Sevimol	4 F	2 qts.	2.0
YW	Dursban	4 F	1 pt.	0.0
GW	Phosvel	2.7 EC	1 pt.	0.7
OW	Supracide	2 E	2 qts.	1.3
BW	Galecron	95 SP	1 lb.	0.7
BY	HOE 2960	3.4 EC	1 pt.	0.3
BO	Meta Systox	25 E 2SC	8 oz.	3.7
W	Check	--	--	10.7

1/ Applications were made 7/11/73 in Fresno County with a hi-pressure hand gun sprayer @ 260 gpa Thompson Var.

2/ Counts were made on time lapse basis, number of larva/30 seconds/ rep.

Grapes

Salt Marsh Caterpillar Control
Estigmene acrea

Dibble, Babcock, McDaniels, Baker and Swanson

	Materials 1/	Form.	Rate/Acre	Average number of mature caterpillars/rep. 2/ (6 days)
R	Sevin	80 WP	2.5 lbs.	4.0
Y	Thuricide	90 TS	2 qts.	57.7
B	Dipel	3.2 WP (7.26 billion I.V./lb.	0.5 lb.	35.0
O	Diazinon	50 WP	2 lbs.	66.0
G	Imidan	50 WP	2 lbs.	53.3
P	Zolone	3 EC	5 pts. 4 oz.	7.3
RW	Dibrom + Sevin	8 E 80 WP	1 pt. 3 oz., 1 lb. 13 oz.	12.0
W	Check	--	--	61.3

1/ Applications made 7/11/73 in Fresno County with a Bean 2106 air carrier sprayer @ 50 gpa and 3.5 mph Thompson Var.

2/ Counts were made on time lapse basis, number of larva/30 seconds/ rep.

Chemical Control of Thrips on Grapes

Application Date: May 20, 1970 (just prior to full bloom)

Location: Reedley

Investigators: E. M. Stafford & M. T. AliNiazee

Materials	Dosage ai/Acre	Av. number of halos per 25 bunches*
Gardona 75W	1.0 lb.	26
Supracide 2E	1.0 lb.	29
DuPont 1410-2E	1.0 lb.	38
Azodrin 5	1.0 lb.	42
Carzol 95%	0.9 lb.	22
Fundal 95%	1.0 lb.	26
Torak 4E	1.0 lb.	19
Zolone 3E	2.0 lbs.	21
Cygon 25W	1.0 lb.	29
Guthion 25W	1.0 lb.	85

* Counted on August 6, 1970

(A1;

Table 4.

THRIPS TRIAL

Location = Tulare County - Terra Bella

Treated = May 28th 1971

Counts made = October 6th 1971

Grape variety = Calmeria

Chemical	Dosage AI/Ac	No. of halos and oviposition punctures/25 bunches
Check	-	139
Zolone	2	82
PP 511	2	111
Torak	1	182
Supracide	1	265
Lannate	1	220
Fundal	1	69
Carzol	1	117
Imidan	2	157
Cygon	2	111
Guthion	1	97

FLOWER THRIPS TRIALS ON TABLE GRAPES

Fred Jensen
Extension Viticulturist

The trials conducted in 1971 indicated that halo spots were produced both during and after the bloom period, perhaps as much as 2 weeks after all the caps had fallen. It was previously believed that the halo spots were produced primarily during the bloom period when flower thrips adults were commonly found in the clusters.

Insecticide Trial - Two trials were established during the 1972 season, one at the Tamouzian Italia vineyard near Cutler and the other in the Giannini Calmeria vineyard near Dinuba. Both were established as randomized complete blocks with 3 replications of each of 6 treatments. The Italias had 5 vines per replication; the Calmerias 10 vines per replication. The dimethoate (Cygon) sprays were applied at a dosage of 2 pounds of 25% wettable per 100 gallons of water, and a rate of 200 gallons per acre.

At harvest, 20 clusters were harvested from each replication. The clusters were weighed, then all berries containing one or more halo spots were picked off the cluster and weighed.

Bagged Cluster Trial - Thirty clusters were protected with paper bags at six dates beginning before any caps were shed. Each bag contained a small piece of a Shell No-Pest Strip (plastic impregnated with DDVP). The purpose of the insecticide was to kill any insects on the cluster when the bag was put in place and to kill any insects that might find entrance to the bags during the time they were in place. The bags were allowed to remain on the fruit until harvest. At harvest the fruit was weighted, the berries with halo spots removed and weighed.

Effect of Timing of Dimethoate Spray Treatments on Thrips Damage of Italia Grapes

Tamouzian Vineyard - Cutler

Date Treated	Stage of Fruit Development	Percentage of Fruit by Weight Affected with Halo Spot	
Check	-	18.3	c 1/
May 1	5% Bloom	4.02	b
May 8	95% Bloom	4.37	b
May 15	Shatter Stage, Berries 4-5 mm diam.	14.4	c
May 22	Berries 7-9 mm diam.	17.9	c
May 1, 8, 15, 22		.559	a

Treatment: 2 lbs. Cygon 25 W per 100 gallons of water applied at rate of 200 gallons per acre.

1/ Means followed by different letters are significantly different at the 1% level. Duncan's Multiple Range Test.

Effect of Timing of Bagging on Thrips Damage and Cluster Weight of Italia Grapes

Tamouzian Vineyard - Cutler

Bagging Data		Harvest Data	
Date Bagged	Stage of Cluster Development	% Fruit by Weight with Halo Spot	Mean Cluster Weight, Grams
May 1	0% Bloom	0.0	378
May 8	100% Bloom	17.9	410
May 15	Shatter stage, berries 4-5 mm diam.	26.1	526
May 22	Berries 7-9 mm diam.	26.9	586
May 30	Berries 11-13 mm diam.	25.9	560

Effect of Timing of Dimethoate Spray Treatments on Thrips Damage of Calmeria Grapes

Giannini Vineyard - Dinuba

Date Treated	Stage of Fruit Development	Percentage of Fruit by Weight Affected with Halo Spot	
Check	-	12.6	d 1/
May 8	20% Bloom	7.24	c
May 15	70% Bloom	3.42	b
May 22	Past shatter, berries 4-6 mm diam.	9.15	c
May 30	Berries 6-8 mm diam.	13.4	d
May 8, 15, 22, 30		.652	a

Treatment: 2 lbs. Cygon 25 W per 100 gallons of water applied at rate of 200 gallons per acre.

1/ Means followed by different letters are significantly different at the 1% level. Duncan's Multiple Range Test.

Effect of Timing of Bagging on Thrips Damage and Cluster Weight of Calmeria Grapes

Giannini Vineyard - Dinuba

Bagging Data		Harvest Data	
Date Bagged	Stage of Cluster Development	% Fruit by Weight with Halo Spot	Mean Cluster Weight, Grams
May 4	0% Bloom	0.42	410
May 15	70% Bloom, a few berries to 3 mm diam.	2.87	477
May 22	Past shatter, berries 4-6 mm diam.	9.20	540
May 30	Berries 6-8 mm diam.	9.21	739
June 5	Berries 8-10 mm diam.	11.2	830

RESULTS

Italia:

The bagging trial indicates that two-thirds of the halo spotting occurred during the bloom period and that the remaining one-third occurred within the next week up to the shatter stage. The insecticide trial also shows that the damage occurred prior to the shatter stage but that most of the damage occurred between the 95% bloom stage and the shatter stage. Thus, the trials are in agreement that the damage occurred during a two-week period, but are not in agreement in regard to which of the two weeks is more important.

The insecticide trial shows that four sprays are superior to all other treatments; that both of the two early sprays are significantly different from all the other treatments. Since the two late sprays were not different from the check, it appears that the benefit from the four sprays must have resulted from the two early sprays.

Calmerias:

The bagging trials indicated that less than one-third of the halo spotting occurred up to the 70% bloom stage, and that most of the damage occurred in the week between the 70% bloom stage and the post-shatter stage when the berries measured 4-6 mm in diameter.

The insecticide trial shows that about half of the damage occurred between 70% bloom and the 4-6 mm berry diameter stage, and the other half about equally divided before and after those stages. A significant amount of spotting occurred after the berries had reached the 4-6 mm diameter stage.

Considering both varieties and the results of both the bagging and insecticide trials, it appears that the halo spotting occurs both during the bloom period and the post-bloom period up until about the shatter stage

or slightly beyond. In the Italias, two sprays appear required to reduce halo spotting to low levels, one applied when bloom begins and one a week later. In the Calmerias, one treatment should suffice since it is not necessary to keep halo spotting at such low levels. This could be applied fairly late in the bloom stage, when two-thirds of the caps have been shed.

The dimethoate produced no phytotoxicity or excessive visible residue even with four sprays.

In the bagging trial, the cluster size was adversely affected by the bagging procedure. Probably both the bag itself and the DDVP had some effect. The DDVP perhaps constituted the more adverse condition.

The purpose of this report is to present data on a limited study requested and partially supported by a group of San Joaquin grape growers, chemical companies, and coordinated through two farm advisors.

Evaluations in spray rates, type of delivery, patterns, and coverage as to their effect on insect control have long been felt necessary on grapes. In addition, the value and possible problems in the use of certain highly refined plant spray oils needed investigation.

Field tests were therefore made on Thompson grapes in Fresno County in order to evaluate spray application technique, plant spray oils for mite and mildew control and phytotoxicity effects of oils and sulfur. Large-scale tests involving both low and high volume commercial size spray equipment were made along with small hand-gun type plots. Humble Oil Company's Orchex 697 and 796, Collier Carbon & Chemical Company's PGSO-1 and 2 were the narrow range oils used and these were compared with Volck Supreme type oil.

Essentially all the oils controlled mites, except where very low rates were used. They also controlled mildew on the berries but only where total coverage was obtained. Sufficiently thorough coverage is poor with many commercial spray applications. This was also true in the initial mildew tests.

Orchex 696 was the least toxic to vines (leaves), with 796 showing only a small amount of injury. Volck Supreme and PGSO-2 due to being "heavier" oils showed more injury and this was apparent throughout the growing season. The effect of these oils, however, may not prove to be objectionable. PGSO-1, although a "light" oil, was generally the worst in regard to phytotoxicity. Mobil XMTY 99A was used in only two tests and also caused a high amount of injury.

Combinations of oil and sulfur were surprisingly void of injury to fruit and leaves whether applied together, before, or after each other. Late oil applications (just prior to harvest) appear to unfavorably discolor the berries.

Air carrier spray applications from 4 to 100 gpa were superior in coverage to over-the-vine boom treatments. Type, capacity and delivery technique of air carrier unit, however, is extremely important in obtaining thorough coverage. P.T.O. operated sprayers such as Bean, Econ-O-Mist, and RSM were used in these tests and compared against boom type units. Actual pattern and coverage comparison will be prepared in a separate report.

It is apparent, due to the close proximity of the vines to the air carrier sprayer, that the amount of air volume is too great with most units designed for tree work. Air discharged in horizontal patterns from the sprayer to the vine only flattens or shingles the large leaves prohibiting spray penetration. It was obvious from the outset that a miniature air carrier sprayer that would spray up and through the vines would probably perform best. Screening out the more typical types of small air carrier units was, however, first necessary. These were compared to over-the-vine boom type sprayers. Too slow a speed of travel was found to be as detrimental for coverage as was too much air. Obviously due to the short carry distance involved speed can be appreciably increased over tree spraying limits. Vines in turn, however, will still require limits that have not yet been determined. Air must be so controlled that it does not create an unfavorable amount of dust. This was a problem with some of the air carrier units tested. Some of these could be corrected through

FROM: Progress Report on Spray Applications and the Use of Plant Spray Oils regarding primarily mite control on grapes (1968) by J. E. Dibble

shielding the air source or delivery system.

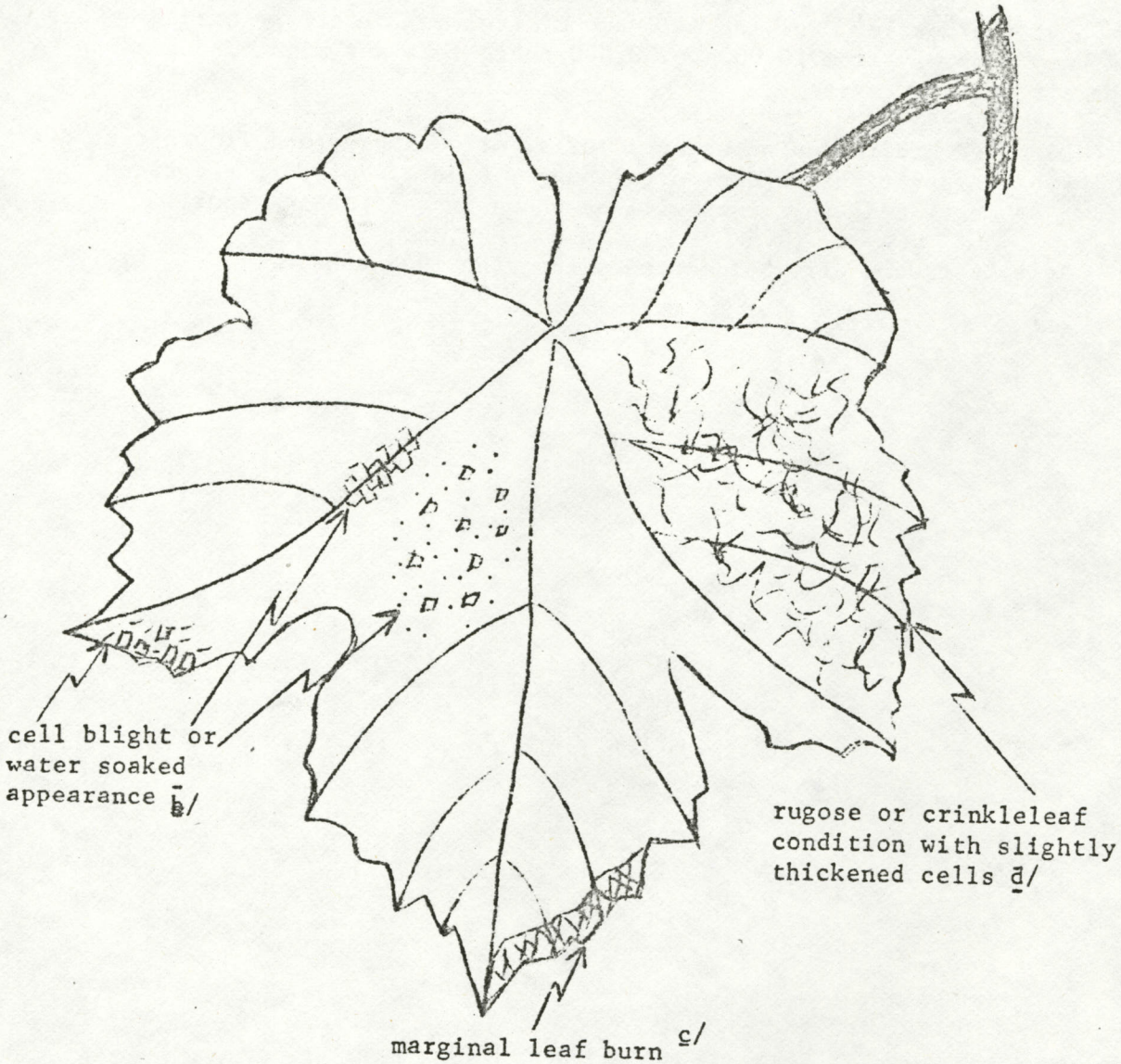
Directing or ducting the air flow from the fan up through the vine appears at present to be the best system for maximum coverage. Hollow cone disc type nozzles operating at approximately 100 psi offer the best spray pattern and most versatility for spray rate adjustments. 2.5 to 6 mph seem feasible for speed of travel as long as proper calibration has been made and coverage is checked and obtained. Air velocity seems best at approximately 100 mph at the nozzle. Only a small amount (volume) of air is needed. This could vary probably from 10,000 to 30,000 cubic feet per minute, depending on the air delivery system.

Detailed studies using water soluble, oil soluble, and flourescent dyes show the pattern variations due to gallonage, type of sprayer, and speed of travel. As mentioned, this work will be shown in a separate report.

This test work will be continued into the 1968 season.

FROM: Progress Report on Spray Applications and the Use of Plant Spray Oils regarding primarily mite control on grapes (1968) by J. E. Dibble

Fig.1 Spray oil injury symptoms on grape leaf. a/



a/ all injury sporadic and appearently unrelated as to the time of year & frequency on the vines within any single treatment. Young leaves sprayed in the early spring during the first hot weather seem to be the most susceptable & would probably be the only time injury would be noticed by the casual observer.

b/ water soaked appearance varies greatly on the number of spots per leaf & number of leaves per vine - seems to either disappear or cause pinpoint size pits.

c/ occurs mostly on young leaves not yet heat conditioned, or older leaves subject to high gallonage runoff.

d/ no necrosis occuring although specific leaf growth somewhat effected - thickened & darker green appearance occuring usually with the heavier oils.

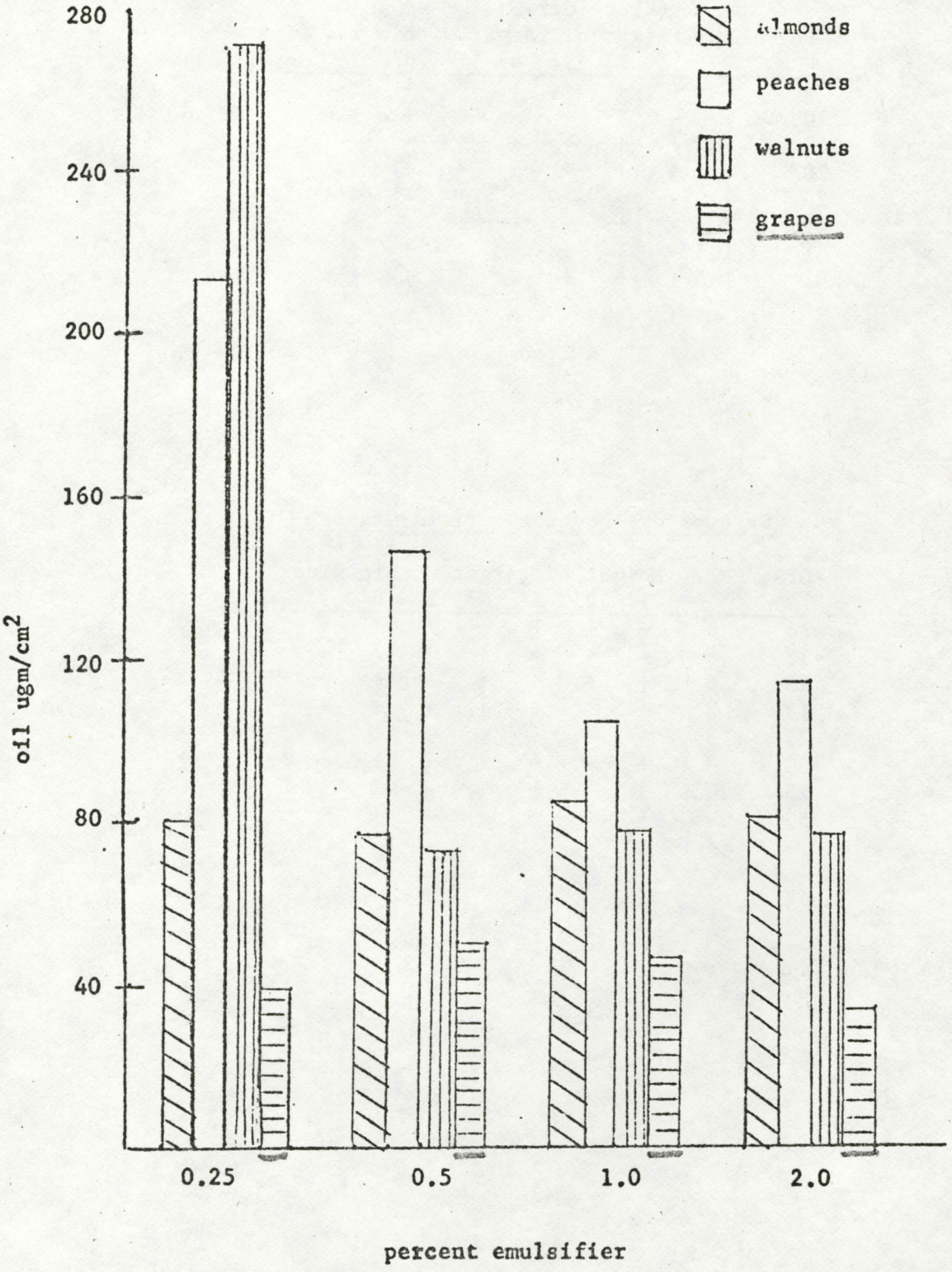
Sprayer dye coverage trials-Grapes
(Kinkelder-R)

GPA	MPH	Height of target within the vine						
		1'	2'	3'	4'	5'	6'	7'
7	6	+	+	+	+	+	+	+
10	6	-	+	+	-	+	+	+
18	6	/	+	+	+	+	+	+
20	6	+	+	+	+	+	+	+
20	3	-	+	+	+	+	+	+
41	3	-	+	+	+	+	+	+
41	1.5	-	+	+	+	+	+	+
81	1.5	+	+	+	+	+	+	+

Sprayer dye coverage trials-Grapes
(R.S.M.)

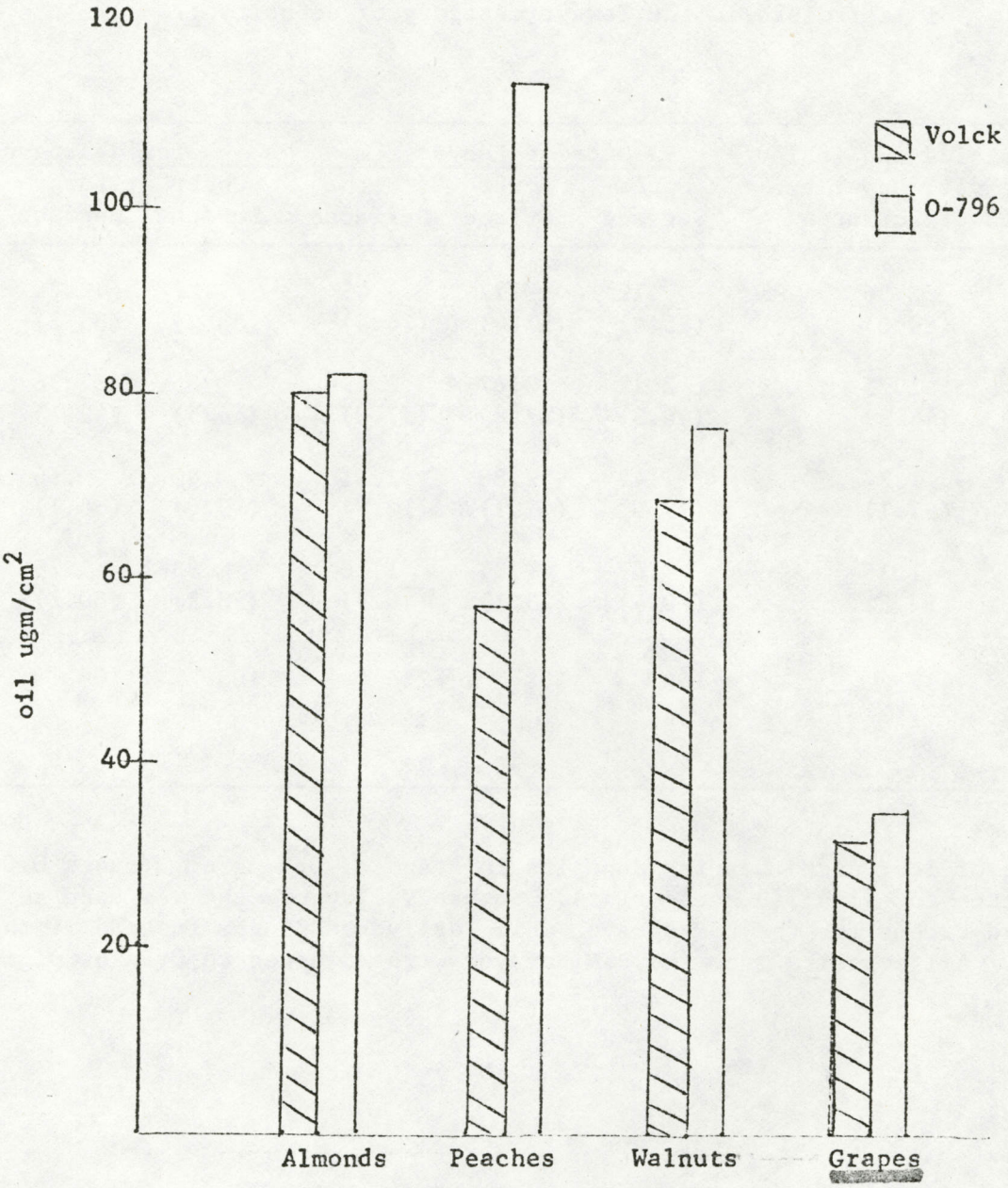
GPA	MPH	Height of target within vine						
		1'	2'	3'	4'	5'	6'	7'
6	6	+	+	+	+	/	+	+
13	6	-	+	+	+	+	/	+
25	6	+	+	+	+	+	+	+
13	3	+	+	+	+	+	+	+
25	3	-	+	+	+	+	+	+
50	3	+	+	+	+	+	+	+
25	1.5	+	+	+	+	-	+	+
50	1.5	+	+	+	+	+	+	+

Initial oil deposition of Orchex 796 with different levels of emulsifier on almond, peach, grape and walnut leaves



FROM: 1969 Western Cooperative Spray Project Report by J. E. Dibble and C. S. Davis

Initial deposit of Volck Supreme and Orchex 796 with 2% emulsifier on leaves of almonds, peaches, walnuts and grapes



FROM: 1969 Western Cooperative Spray Project Report by J. E. Dibble and C. S. DAvis

Sprays Applied To Thompson Seedless Grapes - 1969
L. E. Nielsen - Deposits ($\mu g/cm^2$) of Saturn Yellow Pigment on leaves (averages). Figures in parentheses are percent of leaf disks in the lowest category of deposits 1/.

Sprayer and GPA	Outside and Inside leaves; Upper and Lower Surfaces	Outside Leaves			Inside Leaves		
		Upper Surface	Lower Surface	Both Surfaces	Upper Surface	Lower Surface	Both Surfaces
Kinkelder 25 gpa	.36 (80.8)	.12 (95.4)	.77 (57.4)	.45 (76.4)	.27 (85.2)	.28 (85.2)	.28 (85.2)
Bean 2106 200 gpa	1.75 (44.9)	2.12 (46.3)	2.67 (27.8)	2.39 (37.0)	.85 (56.5)	1.36 (49.1)	1.10 (52.8)
OTV 200 gpa	1.27 (57.1)	1.42 (27.8)	2.80 (11.1)	2.11 (19.4)	.40 (79.6)	.66 (86.1)	.42 (82.8)
RMS 31 gpa	1.15 (52.5)	.67 (70.4)	1.84 (23.1)	1.26 (46.7)	.86 (58.3)	1.25 (60.2)	1.05 (59.2)
No. leaf disks analyzed for each analysis in the column.	432	108	108	216	108	108	216

Total analyses made = 1728.

1/ Frequencies of leaf disks bearing deposits in steps of 0.6 $\mu g/cm^2$ (range 0.0-0.6, 0.61-1.2, etc. to >11.4; 19 categories). Saturn Yellow pigment was used at 0.8 lb. per acre except for the RSM sprayer which delivered 31 gpa instead of the 25 gpa target. All deposits from the RSM sprayer were adjusted to 0.8 lb. pigment per acre.

Grape Vine Dye Coverage Tests

Vineyard Calibrations

Sprayer	Model	GPA	MPH	Foliage Condition & Notes	Pattern Coverage of Target at Various Heights Above Ground (25-1/8" hole overlay) 1'	2'	3'	4'	5'	6'	7'
Kinkelder	Royal PTO	50	2.4		56	96	88	100	100	100	100
Kinkelder	Royal PTO	81	1.5	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	41	1.5	Open (high adj.)	60	100	100	100	100	100	100
Kinkelder	Royal PTO	20	6.0	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	10	6.0	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	20	3.0	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	Max	1.5	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	7	6.0	Open	100	100	100	100	88	100	100
Kinkelder	Royal PTO	41	3.0	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	17.5	6.0	Open	100	100	100	100	100	100	100
Kinkelder	Royal PTO	41	1.5	Dense (high adj.)	4	100	100	100	100	100	100
Kinkelder	Royal PTO	20	6.0	Dense	100	100	100	100	100	100	100
Kinkelder	Royal PTO	20	1.5	Dense	84	100	100	100	100	100	100
Kinkelder	Royal PTO	17.5	6.0	Dense	88	100	100	100	100	100	100
Kinkelder	Royal PTO	10	6.0	Dense	84	100	100	76	96	100	100
Kinkelder	Royal PTO	Max	1.5	Dense	100	100	100	100	100	100	100
Kinkelder	Royal PTO	81	1.5	Dense	100	100	100	100	100	100	100
Kinkelder	Royal PTO	7	6.0	Dense	100	100	100	96	100	100	100
Kinkelder	Royal PTO	41	3.0	Dense	48	100	100	100	100	100	100
RSM	4 Spout PTO	50	3.0	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	12.5	3.0	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	6	Open		100	100	100	100	100	100	100
RSM	4 Spout PTO	12.5	6.0	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	25	6.0	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	50	1.5	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	25	3.0	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	25	1.5	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	47	4.5	Open	100	100	100	100	100	100	100
RSM	4 Spout PTO	12.5	3.0	Partial	100	100	100	100	100	100	100
RSM	4 Spout PTO	25	1.5	Partial	100	100	100	100	100	100	100
RSM	4 Spout PTO	47	4.5	Partial	100	100	100	100	100	100	88
RSM	4 Spout PTO	50	1.5	Partial	100	100	100	100	100	100	100
RSM	4 Spout PTO	50	3.0	Partial	100	100	100	100	100	100	100

Sprayer	Model	GPA	MPH	Foliage Condition & Notes	Pattern Coverage of Target at Various Heights Above Ground (25-1/8" hole overlay) 1'	2'	3'	4'	5'	6'	7'
RSM	4 Spout PTO	50	3.0	Dense	100	100	100	100	100	100	100
RSM	4 Spout PTO	12.5	3.0	Dense	100	100	100	100	100	100	100
RSM	4 Spout PTO	6	6.0	Dense	100	100	100	100	92	100	100
RSM	4 Spout PTO	12.5	6.0	Dense	64	100	100	100	100	92	100
RSM	4 Spout PTO	25	6.0	Dense	100	100	100	100	100	100	100
RSM	4 Spout PTO	50	1.5	Dense	100	100	100	100	100	100	100
RSM	4 Spout PTO	25	3.0	Dense	80	100	100	100	100	100	100
RSM	4 Spout PTO	25	1.5	Dense	100	100	100	100	76	100	100
Bean	2106 PTO	150	2.4	center of vine 200 psi	100	100	100	100	100	100	100
Bean	2106 PTO	75	2.4	center of vine 200 psi	100	100	100	100	100	100	100
Bean	2106 PTO	300	2.4	center of vine 500 psi	100	100	100	100	100	100	100
Bean	2106 PTO	150	4.8	center of vine 500 psi	100	100	100	100	100	100	100
Bean	2106 PTO	100	3.0	Open	100	100	100	100	100	100	100
Bean	2106 PTO	50	3.0	Open	100	100	100	100	100	100	100
Bean	2106 PTO	50	6.0	Open	100	100	100	100	100	100	100
Bean	2106 PTO	100	3.0	Partial	100	100	100	100	100	100	100
Bean	2106 PTO	50	6.0	Partial	100	100	100	100	100	100	100
Bean	2106 PTO	50	3.0	Partial	100	100	100	100	100	100	100
Bean	2106 PTO	100	3.0	Dense	100	100	100	100	100	100	100
Bean	2106 PTO	50	3.0	Dense	100	100	100	100	100	100	100
Bean	2106 PTO	50	6.0	Dense	100	100	100	100	100	100	100
Econ-o-mist	PTO Trailer w/o attach.	20	2.4	center of vine 28 psi	76	100	100	100	100	100	100
Econ-o-mist	PTO Trailer w/o attach.	5	2.4	center of vine 28 psi	100	100	64	100	100	100	100
Econ-o-mist	PTO Trailer w/o attach.	20	2.4	center of vine 28 psi	24	88	96	100	100	100	100
Boom	OTV-(co.rig)	100	4.0	Open (simulated)	100	100	100	100	100	100	100
Boom	OTV-(co.rig)	100	4.0	Dense (simulated)	84	96	100	88	100		100
Boom	OTV-(co.rig)	200	4.6	300 psi	48	88	100	100	100	100	100
Boom	OTV-(co.rig)	260	2.3	300 psi	100	100	100	100	100	100	80

Sprayer	Model	GPA	MPH	Foliage Condition & Notes	Pattern Coverage of Target at Various Height Above Ground (25-1/8" hole overlay)						
Boom	OTVO(co.rig)	400	2.3	300 psi	100	100	100	100	100	100	100
Myers	Nielsen rig	470	2.4		100	100	100	100	100	100	0
Myers	Nielsen rig	235	4.5		100	100	100	100	100	100	100

APPLICATION COVERAGE TRIALS

Grapes 12' Rows
August 7, 1970

Equipment 1/	Row No.	Color Code	GPA	MPH	PSI	GPM/Side	Nozzling
1 Bean 200 (300 PSI)	2	Y	30	3	300	1.2 gpm	X X X 2.5/1 3/1 2.5/1 X
2 Bean 200 (360 PSI)	5	W	30	4.5	360	1.7 gpm	X X 2.5/1 3/1 3/1 2.5/1 X
3 Bean 200 (100 PSI)	8	R	30	4.5	100	1.2 gpm	X X 4/1 4/2 4/2 4/1 X
4 Bean 200 (200 PSI)	11	B	200	3	200	7.5 gpm	X X 8/2 5/3 5/3 8/2 X
5 Turbomist (Slimline)	14	O	30	3	100	1.2 gpm	X 2 5 3 3 3 X (#24 cores)
6 Turbomist (Slimline)	17	G	30	4.5	100	1.7 gpm	X 4 5 5 4 4 X (#24 cores)
7 Kinkelder (Royal)	20	P	30	3	1.5	1.2 gpm	Setting No. 129
8 Kinkelder (Royal)	23	YW	30	4.5	1.5	1.7 gpm	Setting No. 194
9 Windmill (350 PSI)	26	RW	30	3	21	1.2 gpm	Setting No. 129
10 Windmill (350 PSI)	29	BW	30	4.5	21	1.7 gpm	Setting No. 194
11 Span Spray (Vine boom)	32	OW	30	3		1.2 gpm	
12 Spay Spray (Vine boom)	35	GW	60	3		2.4 gpm	
13 OTV Boom	39	RW	200	3	200	7.5 gpm	Adjustable "T" jets
14 RSM (Junior fan)	41	BY	30	3	100	1.2 gpm	1.25 1.75 1.50
15 RSM (Junior fan)	44	YO	30	4.5	100	1.7 gpm	1.75 2.25 2.00
16 Victair	-	-	30	3	90	1.2 gpm	X · X · 4 · X · 4 · X · 4 · X · 4 · X
17 Victair	-	-	30	4.5	90	1.7 gpm	4 · X · 4 · 4 · X · 4 · X · 4 · X · 4

1/ All PTO Sprayers

COMPARISON OF APPLICATION EQUIPMENT AS TO DYE COVERAGE ON TARGET CARDS IN GRAPES

Run No.	Equipment	GPA	MPH	% Coverage 1'	I[1]	2'	I	3'	I	4'	I	5'	I	6'	I	7'	I	8'	I
1	Windmill	30	3	90	L	100	G	100	H	100	G	95	L	100	L	100	G	100	L
2	Windmill	30	3	50	L	100	H	100	H	100	H	65	L	95	L	100	L	100	L
1	Windmill	30	4.5	0	L	100	L	100	H	70	L	60	L	95	L	100	L	100	L
2	Windmill	30	4.5	50	L	100	G	100	H	20	L	85	L	100	L	100	L	100	L
1	Span Sprayer	30	3	60	L	90	L	100	G	60	L	100	H	100	H	100	H	100	H
2	Span Sprayer	30	3	60	L	55	L	30	L	85	L	100	G	100	G	100	G	100	H
1	Span Sprayer	60	3	100	L	100	L	100	L	100	L	35	L	100	L	80	L	85	L
2	Span Sprayer	60	3	80	L	65	L	90	L	75	L	80	L	100	G	100	G	---	-
1	OTV	200	3	95	G	85	L	80	L	100	G	100	H	100	G	70	L	---	-
2	OTV	200	3	70	G	85	L	75	L	100	L	100	G	100	L	50	L	---	-
1	RSM	30	3	55	L	100	G	100	G	0	L	55	L	100	G	100	H	100	H
2	RSM	30	3	100	L	100	H	100	H	10	L	100	L	100	G	100	G	100	G
1	RSM	30	4.5	85	L	100	H	100	H	15	L	80	L	100	L	100	G	95	L
2	RSM	30	4.5	100	G	100	G	85	L	40	L	95	L	10	L	100	G	---	-
1	Kinkelder	30	3	100	G	100	H	100	H	70	L	85	G	100	G	100	H	100	H
2	Kinkelder	30	3	95	L-H	100	G	100	L	50	L	60	G	100	G	100	H	100	H
1	Kinkelder	30	4.5	90	G	100	H	75	L	55	G	60	G	100	G	100	H	100	H
2	Kinkelder	30	4.5	95	G	85	G	100	L	25	L	55	G	100	G	100	H	100	H
1	Turbomist	30	3	50	L	100	G	100	G	55	G	65	G	100	H	100	H	100	H
2	Turbomist	30	3	80	G	100	G	100	G	20	L	30	G	100	G	100	H	100	H
1	Turbomist	30	4.5	10	G	100	G	100	G	55	G	80	G	100	H	100	H	100	G
2	Turbomist	30	4.5	45	G	100	G	100	G	50	G	45	G	100	H	100	H	100	G
1	Bean 200[2]	30	3	100	L	100	G	50	L	70	L	95	L	100	H	100	G	100	G
2	Bean 200[2]	30	3	85	L	100	L	100	G	80	L	50	L	100	G	100	H	100	H
1	Bean 200[3]	30	4.5	40	L	100	L	100	L	100	H	100	G	100	H	100	H	100	H
2	Bean 200[3]	30	4.5	25	L	100	L	10	L	60	L	95	L	100	H	100	H	100	H
1	Bean 200[4]	200	3	5	L	100	L	100	L	30	L	70	L	100	G	100	G	---	-
2	Bean 200[4]	200	3	70	L	100	L	100	I	100	L	100	L	100	H	100	G	100	G
1	Bean 200[5]	30	4.5	25	L	90	L	60	L	25	L	95	G	100	H	100	G	100	H
2	Bean 200[5]	30	4.5	10	L	75	G	65	G	25	G	100	H	100	G	100	H	100	H
	Victair	30	3	60	L	100	G	100	G	60	G	70	G	100	H	100	H	100	H
	Victair	30	3	75	G	100	G	100	G	30	L	35	G	100	G	100	H	100	H
	Victair	30	4.5	35	G	100	G	100	G	50	G	75	G	100	H	100	H	100	C
	Victair	30	4.5	50	G	100	G	100	G	65	G	55	G	100	H	100	H	100	G

[1] Visual intensity (Light = L, General = G, Heavy = H)

COMPARISON OF APPLICATION EQUIPMENT USING FLUORESCENT DYE (KHFS)

Equipment	GPA	MPH	Row No.	Fluorometer Ave. Readings[1] Inside Leaves Upper	Inside Leaves Lower	Inside Leaves Ave.	Outside Leaves Upper	Outside Leaves Lower	Outside Leaves Ave.
Bean 200	30	3	2	19.7	29.4	24.6	17.8	38.2	28.0
Bean 200	30	4.5[2]	5	20.2	28.7	24.5	24.1	40.3	32.2
Bean 200	30	4.5[3]	8	18.8	29.1	23.9	32.1	37.9	35.0
Bean 200	200	3[4]	11	11.5*	18.9*	15.2*	19.8*	27.9*	23.9*
Turbomist	30	3[3]	14	21.2	34.0	27.6	24.1	44.6	34.4
Turbomist	30	4.5[3]	17	22.4**	36.9**	29.7**	25.1	45.5	35.3
Kinkelder	30	3	20	23.5	32.6	28.1	24.2	36.8	30.5
Kinkelder	30	4.5	23	14.0	22.0	18.0	21.0	29.5	25.0
Windmill	30	3	26	16.0	27.3	21.7	21.1	38.9	30.0
Windmill	30	4.5	29	18.2	22.4	20.3	25.9	37.5	31.7
Span Spray	30	3	32	24.8	40.5	32.7	24.5	54.5	39.5
Span Spray	60	3	35	14.2*	18.5*	16.4*	24.3*	34.0*	29.2*
OTV	200	3	39	13.9*	14.8*	14.4*	15.4*	23.1*	19.3*
RSM	30	3[3]	41	18.2	29.6	23.9	27.7	45.1	36.4
RSM	11	4.5[3]	44	22.3	33.2	27.8	29.8**	42.7**	36.3**
Victair	30	3		20.6	33.9	27.2	25.0	42.9	33.9
Victair		4.5		23.2	35.7	30.0	24.1	44.4	34.2

1/ Total reading from 36 leaves except *—24 and **—20 leaves.
2/ 360 psi
3/ 100 psi
4/ 200 psi

COMPARISON OF APPLICATION EQUIPMENT USING FLUORESCENT DYE (KHFS)

Equipment	GPA	MPH	Row No.	Fluorometer Ave. Readings 1/ Inside Leaves Up	Low	Ave.	Outside Leaves Up	Low	Ave.
Bean 200	30	3	2	26.9	44.9	35.9	29.3	64.1	46.7
Bean 200	30	4.5 2/	5	25.8	41.3	33.6	43.3	65.9	54.6
Bean 200	30	4.5 3/	8	35.5	49.2	42.4	46.8	52.9	49.8
Bean 200	200	3 4/	11						
Turbomist	30	3 3/	14	32.2	53.2	42.7	44.8	66.8	55.8
Turbomist	30	4.5 3/	17	26.3	46.6	36.5	40.0	59.4	49.7
Kinkelder	30	3	20	43.1	54.2	45.9	43.4	60.9	52.2
Kinkelder	30	4.5	23	21.9	34.1	28.0	31.7	45.2	38.4
Windmill	30	3	26	34.8	57.0	46.4	38.9	65.9	52.4
Windmill	30	4.5	29	38.6	46.3	42.5	46.1	54.6	50.3
Span Spray	30	3	32	30.6	54.1	42.3	15.0	55.3	35.2
Span Spray	60	3	35						
OTV	200	3	39						
RSM	30	3 3/	41	41.4	62.9	52.1	42.1	69.9	56.0
RSM	11	4.5 3/	44	35.7	55.1	45.4	37.7	55.9	46.8
Check				11.5	18.1	14.8	11.1	15.5	13.3

1/ From 12 leaf reading only
2/ 360 psi
3/ 100 psi
4/ 200 psi

Comparison of dye coverage of five concentrate PTO air carrier sprayers on target cards placed on unobstructed poles

Equipment[1]	Distance of pole from sprayer and height of target card																	
	5 Feet						10 Feet						15 Feet					
	1'	I[2]	3'	I	6'	I	1'	I	3'	I	6'	I	1'	I	3'	I	6'	I
RSM	100	L	100	G	100	G	100	L	95	L	100	G	100	L	57	L	100	G
Turbomist	100	H	100	H	100	H	100	H	100	H	100	H	100	G	100	G	100	G
Kinkelder																		
Almonds	100	G	100	H	100	H	100	G	100	H	100	H	99	L	100	G	100	G
Plums	100	G	100	H	100	H	94	L	100	G	100	G	63	L	100	G	100	G
Victair	36	L	97	L	100	H	72	L	90	L	100	G	54	L	100	H	100	G
Windmill	100	G	100	H	100	H	100	L	100	G	100	G	96	L	100	L	100	G

1/ All sprayers operated at 50 GPA and 2 MPH
2/ I = Visual intencity (L = light, G = general, H = heavy)

Sprays Applied to Thompson Seedless Grapes - 1970
L. E. Nielsen - Deposits (ug/cm^2) of Saturn Yellow Pigment on leaves (averages). Figures in parentheses are percent of leaf disks in the lowest category of deposits 1/

Sprayer, GPA PSI (Row No.)	Outside and Inside Leaves; Upper and Lower Surfaces	Outside Leaves			Inside Leaves		
		Upper Surface	Lower Surface	Both Surfaces	Upper Surface	Lower Surface	Both Surfac
Bean 30gpa-3mph 300psi (2)	.81 (44.4)	.58 (54.2)	1.17 (35.5)	.88 (44.9)	.82 (29.2)	.65 (58.3)	.74 (43.8)
Bean 30gpa-4.5mph 360psi (5)	.90 (40.7)	.74 (35.5)	1.29 (35.5)	1.02 (35.5)	.89 (25.0)	.65 (66.7)	.77 (45.9)
Bean 30gpa-4.5mph 100psi (8)	.90 (40.35)	1.28 (14.3)	1.42 (7.2)	1.35 (10.8)	.43 (70.9)	.47 (68.8)	.45 (69.9)
Bean 200gpa-3mph 200psi (11)	.85 (31.3)	1.11 (4.2)	1.31 (14.6)	1.21 (9.4)	.50 (50)	.48 (56.3)	.49 (53.2)
Turbomist 30gpa-3mph 100psi (14)	0.99 (30.8)	.66 (31.3)	1.71 (12.5)	1.18 (21.9)	.80 (41.7)	.79 (37.5)	.80 (39.6)
Turbomist 30gpa-4.5mph 100psi (17)	1.15 (31.3)	.96 (22.9)	2.08 (14.4)	1.52 (18.7)	.85 (43.8)	.70 (43.8)	.78 (43.8)
Hinkellder30gpa-3mph (20)	.79 (39.1)	.75 (31.3)	1.16 (27.1)	.95 (29.2)	.68 (39.6)	.58 (58.3)	.63 (49.0)
Hinkellder30gpa-4.5mph (23)	.38 (57.4)	.47 (50.0)	.37 (31.3)	.42 (40.7)	.38 (64.0)	.21 (83.4)	.34 (74.0)
Windmill 30gpa-3mph 21psi (26)	.90 (75.3)	.64 (76.1)	1.39 (50.0)	1.02 (63.1)	.32 (85.4)	.44 (84.6)	.38 (87.5)
Windmill 30gpa-4.5mph 21psi (29)	.74 (60.0)	.81 (25.0)	1.52 (41.7)	1.17 (33.4)	.33 (81.3)	.27 (91.7)	.30 (86.5)
Span spray 30gpa-3mph (32)					.52 (53.2)	.53 (62.5)	.53 (57.9)
Span spray 60gpa-3mph (35)	1.08 (31.3)	1.48 (4.2)	1.78 (0.0)	1.63 (2.1)	.69 (54.2)	.36 (66.7)	.52 (60.5)
TV 200gpa-3mph 200psi (39)	.68 (43.8)	.69 (22.9)	1.09 (29.2)	.89 (26.1)	.67 (35.4)	.16 (87.5)	.41 (61.5)
SM 30gpa-3mph 200psi (41)	.83 (51.4)	1.2 (10.4)	1.86 (10.4)	1.53 (10.4)	.14 (95.6)	.14 (89.1)	.14 (92.4)
SM 30gpa-4.5mph (44)	.75 (26.0)	.95 (18.8)	.74 (25.0)	.85 (21.9)	.62 (10.4)	.68 (50.0)	.65 (30.2)

1/ Frequencies of leaf disks bearing deposits in steps of 0.4 ug/cm^2 (range 0.0-0.4, 0.41-0.8, etc. to 6.69; 17 categories). Saturn yellow pigment was used at 0.5 lb./A.

Sprays Applied to Thompson Seedless Grapes - 1970

Average Deposits ($\mu g/cm^2$) of Tedion on Leaves

Sprayer, GPA PSI (Row No.)	Outside Leaves Upper & Lower Surface	Inside Leaves Upper & Lower Surface
Bean 30gpa-3mph 300psi (2)	0.82	0.67
Bean 30gpa-4.5mph 360psi (5)	1.10	0.67
Bean 30gpa-4.5mph 100psi (8)	1.22	0.61
Bean 200gpa-3mph 200psi (11)	1.14	0.48
Turbomist 30gpa-3mph 100 psi (14)	1.30	0.88
Turbomist 30gpa-4.5mph 100psi (17)	1.51	0.85
Kinkelider 30gpa-3mph (20)	0.85	0.61
Kinkelider 30gpa-4.5mph (23)	0.70	0.41
Windmill 30gpa-3mph 21psi (26)	0.97	0.32
Windmill 30gpa-4.5mph 21psi (29)	1.65	0.41
Span spray 30gpa-3mph (32)		0.65
Span spray 60gpa-3mph (35)	1.30	0.22
OTV 200gpa-3mph 200psi (39)	---	---
RSM 30gpa-3mph 200psi (41)	0.78	0.41
RSM 30gpa-4.5mph (44)	0.84	0.39

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REPORT OF PLANNED WORK ACCOMPLISHED

Date of writing: Dec. 26, 1969

Period covered by this report:
From: 1/1/69
To: 12/31/69

Name: Curtis Lynn Location: Fresno
Project Plan Title: Gibberellin for Grape Production
Proj. No.: 2 Primary Subject: A64 Commodity: H3

: Audience Type: 10 Research involved: Yes Status: Terminated

Copies to: V. Patterson, R. C. Crouch, A. N. Kasimatis, H. B. Richardson, Jack Dibble

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PROCEDURE:

A. Technical

1. An experimental gibberellin wettable powder formulation was compared to Pro Gib EC in a Thompson Seedless table grape vineyard. The treatments included a 10 ppm bloom spray plus 20 ppm shatter spray and 10 ppm bloom plus 40 ppm shatter (see plan supplement dated 5/19/69 for plot design and application details). On July 29, the plots were sampled and the fruit taken into the County Extension Lab for berry weights, soluble solid, and number berries per cm. lateral determinations (the lab procedures are included with the results in Table 1).

2. Concentrate and dilute gibberellin spray applications were evaluated in a table Thompson vineyard near Reedley. The treatments included a Kinkelder concentrate sprayer at 33 and 96 gals/acre and a Randell inverted "U" sprayer at approximately 200 gals/acre (175 gpa bloom spray and 225 gpa shatter spray).

   Both bloom and shatter sprays were evaluated with the various sprayers. The addition of a wetting agent (Biofilm) to a concentrate spray also was included in the test.

B. Educational

1. My 1968 market study was reported at our Fresno County Grape Day. Also, in the Country Life section of Fresno Bee and at two farm center meetings.

2. An article on gibberellin thinning sprays for better raisin quality was written for Sun-Maid's newsletter. This also was discussed on radio and TV and at Dried Fruit Association and Raisin Advisory Board meetings.

RESULTS:

A. Technical: See attached sheets

B. Educational

1. Table grape growers showed considerable interest in the market study.

2. Approximately 15 per cent of the California raisin growers applied gibberellin thinning sprays this past season.

TABLE 1

GIBBERELLIN SPRAY TRIAL RESULTS

D'Arrigo Bros., Reedley
Palmer Vineyard

Color Code	Rep.	Gibberellin Formulation	Gib Concentration Bloom	Gib Concentration Shatter	No. berries/ cm. lateral	Av. berry wt. gms.	% soluble solids
White	1	Pro Gib EC	0	40	3.16	4.03	17.6
	2				3.56	4.94	15.9
	3				3.42	4.43	16.0
	4				3.28	4.29	16.8
	5				3.33	4.46	15.2
	Av.				3.35	4.43	16.3
Red	1	Pro Gib EC	10	20	2.93	3.79	17.9
	2				3.42	4.64	16.1
	3				3.42	4.41	17.5
	4				3.07	4.74	17.9
	5				2.40	4.74	16.4
	Av.				3.05	4.46	17.2
Blue	1	Pro Gib EC	10	40	2.45	4.53	17.3
	2				3.23	4.94	15.6
	3				2.60	4.90	17.5
	4				2.90	4.47	16.8
	5				2.98	4.37	16.8
	Av.				2.83	4.64	16.8
Yellow	1	Pro Gib WP	10	20	2.65	4.72	17.3
	2				3.03	4.25	17.5
	3				2.48	5.45	16.5
	4				2.53	5.37	16.9
	5				3.46	4.23	17.5
	Av.				2.83	4.80	17.1
Orange	1	Pro Gib WP	10	40	2.56	4.88	17.1
	2				2.83	5.06	16.4
	3				3.28	4.58	16.2
	4				2.77	4.98	17.8
	5				2.85	5.72	15.5
	Av.				2.86	5.04	16.6

REMARKS: Sampled July 29, 1969. In sampling the second lateral was taken from one cluster, selected at random, per vine (14 vines per plot). The berries were removed from the laterals, counted, and weighed, the length of the laterals was measured in centimeters. Soluble solids were obtained by macerating 100 berries in a blender and reading the clear juice with an American Optical TC hand refractometer.

TABLE 2
GIBBERELLIN BLOOM SPRAY APPLICATION TRIAL RESULTS

D'Arrigo Bros., Reedley 1969
Ranch 10

Rep.	Bloom spray treatment (sprayed 5/19 - 75% bloom)	No. berries/ cm. lateral	Av. berry wt. gms.	% soluble solids
1	Kinkelder 33 gpa. 14 oz. Gib	3.0	4.38	15.1
2	Sol 2% (7 gms GA) and 1.5 pts.	3.2	4.03	18.0
3	Delnav 8E per acre	2.8	3.64	17.5
4		3.5	3.83	17.5
5		2.9	3.43	18.5
Av.		3.1	3.86	17.3
1	Kinkelder 33 gpa. 14 oz. Gib	3.1	4.29	17.8
2	Sol 2%, 1.5 pts. Delnav, and	3.5	3.76	17.5
3	5 oz. Biofilm per acre	2.6	3.76	17.0
4		3.3	3.89	17.6
5		3.2	3.90	18.8
Av.		3.1	3.92	17.7
1	Kinkelder 96 gpa. 14 oz. Gib	2.6	4.26	18.0
2	Sol 2% and 1.5 pts. Delnav	3.5	3.99	17.0
3	8E per acre	3.2	3.28	18.0
4		3.0	3.85	17.9
5		3.4	3.89	18.5
Av.		3.1	3.85	17.9
1	Kinkelder 33 gpa. 1.5 pts	3.9	4.03	17.4
2	Delnav 8E per acre	3.8	3.48	16.8
3		3.7	3.63	18.9
4		4.1	3.88	18.4
5		3.6	3.63	18.0
Av.		3.8	3.73	17.9
1	Randel inverted "U" boom 175 gpa.	2.5	4.28	18.8
2	14 oz. Gib Sol 2% and 1.5 pts.	3.3	4.08	17.1
3	Delnav 8E per acre	3.2	3.83	18.5
4		3.4	3.62	17.8
5		4.1	4.00	17.9
Av.		3.3	3.96	18.0

REMARKS: Latin square design 16 vines/plot. Shatter spray applied 5/29 with Randel sprayer 225 gpa, 40 ppm (36 gms GA/A) Gib Sol 2%.

Sampled Aug. 5, 1969. In sampling the second lateral was taken from one cluster, selected at random, per vine (14 vines per plot). The berries were removed from the laterals, counted, and weighed, the length of the laterals was measured in centimeters. Soluble solids were obtained by macerating 100 berries in a blender and reading the clear juice with an American Optical TC hand refractometer.

TABLE 3
GIBBERELLIN SHATTER SPRAY APPLICATION TRIAL RESULTS

D'Arrigo Bros., Reedley, 1969
Ranch 9

Rep.	Shatter spray treatment (sprayed 5/29)	No. Berries/ cm. lateral	Av. berry wt. gms.	% soluble solids
1	Kinkelder 33 gpa. 72 oz. (36 gms GA) Gib Sol 2% per acre	3.1	3.57	18.1
2		3.1	3.98	18.7
3		2.9	4.27	18.4
4		3.1	3.53	18.8
5		2.6	3.51	17.8
Av.		3.0	3.77	18.4
1	Kinkelder 33 gpa. 72 oz. (36 gms GA) Gib Sol 2% and 5 oz. Biofilm per acre	3.0	3.65	17.8
2		2.9	4.00	18.3
3		2.7	3.64	18.0
4		3.5	3.58	18.3
5		2.6	3.47	18.8
Av.		2.9	3.67	18.2
1	Kinkelder 96 gpa. 72 oz. (36 gms GA) Gib Sol 2% per acre	2.8	3.80	18.1
2		3.0	3.50	19.4
3		3.3	3.87	18.0
4		3.5	3.29	19.2
5		2.9	3.00	19.1
Av.		3.1	3.49	18.8
1	Kinkelder 33 gap 72 oz. (36 gms GA) Gib Sol 2% per acre	2.9	3.85	18.5
2		3.5	3.67	18.4
3		3.5	3.82	17.5
4		2.9	3.74	17.5
5		3.7	3.06	17.6
Av.		3.3	3.63	17.9
1	Randel inverted "U" boom 225 gpa. 72 oz. (36 gms GA) Gib Sol 2% per acre	3.4	4.42	18.4
2		3.3	4.17	18.1
3		3.3	4.09	18.4
4		3.3	3.19	19.1
5		3.2	3.49	17.7
Av.		3.3	3.87	18.3

REMARKS: Latin square design, 16 vines/plot. Bloom sprayed 5/19 with Randel sprayer 175 gpa, 14 oz. Gib Sol 2% (7 gms GA) per acre.

Sampled Aug. 5, 1969. In sampling the second lateral was taken from one cluster, selected at random, per vine (14 vines per plot). The berries were removed from the laterals, counted, and weighed, the length of the laterals was measured in centimeters. Soluble solids were obtained by macerating 100 berries in a blender and reading the clear juice with an American Optical TC hand refractometer.

GIBBERELLIN SPRAY APPLICATION TRIAL

T. Apkarian & Sons, Reedley, 1970

Trial A - Bloom Spray Comparison - Sprayed 5/16/70 - 70% Bloom

Rep	No. berries/cm lateral		Av. berry wt. gms.	
	Dilute[1]	Conc.[2]	Dilute[1]	Conc.[2]
1	5.25	4.88	3.53	3.28
2	5.71	5.06	3.42	3.77
3	5.09	5.30	3.45	3.48
4	5.03	4.07	3.42	3.97
5	4.34	5.01	4.18	3.27
6	6.08	5.08	3.20	3.73
Av.	5.25	4.90	3.53	3.58

Trial B - Sizing Spray Comparison - Sprayed 5/26/70

Rep	No. berries/cm lateral		Av. berry wt. gms.	
	Dilute[3]	Conc.[4]	Dilute[3]	Conc.[4]
1	4.98	5.27	3.96	3.47
2	5.73	4.61	3.35	3.51
3	5.34	5.28	3.31	3.00
4	4.31	4.42	4.01	3.98
5	4.35	4.79	3.17	3.70
6	3.98	4.08	4.14	3.88
Av.	4.78	4.74	3.66	3.59

1/ - Inverted "U" over-the vine-row, 11 nozzles 4-4-3 arrg., 200 gals/A 2 mph, 120 psi, 24 oz. 2% Pro-Gib/A applied.

2/ - RSM Conc., 3 nozzles/side arranged 1.25 gpm - 1.50 gpm - .70 gpm, 30 gpa, 3 mph, 150 psi, 24 oz. 2% Pro-Gib/A applied.

3/ - Inverted "U", as 1 above, 80 oz. Pro-Gib/A applied.

4/ - RSM arranged as 2 above except 28 gpa, 80 oz. Pro-Gib/A applied.

GRAPES

Kinkelder® - Coverage Trials

Comparison of standard orchard head unit with special grape head and high pressure over the vine dilute sprayer in dense vines.

J. E. Dibble
University of California
San Joaquin Valley Agricultural Research and Extension Center

	Average Percent - Leaves			
	Dye Coverage Rating[1]		Control[2]	
	Inside	Outside	Pacific mite	Leafhoppers
Standard head (30 gpa)				
3 mph	85	96	94	99
4.5 mph	81	95	96	98
6 mph	68	87	77	89
Grape head (30 gpa)				
3 mph	86	93	91	97
4.5 mph	82	95	93	100
6 mph	58	77	69	82
OTV boom (150 gpa)				
3 mph	82	94	92	100
6 mph	52	68	75	84

1/ Average percent of leaf surface covered with dye.
2/ Average percent control using Ethion + oil. 1971.

GRAPES

WATER SOLUBLE DYE COVERAGE TESTS

J. E. Dibble
San Joaquin Valley Agricultural Research and Extension Center
University of California

Sprayer	GPA	MPH	Target Position	Target height above ground & % Coverage 1'	2'	3'	4'	5'	6'	Ave.
AgTec (Engine)	25	3.5	A right row open	100	100	98	98	100	100	99.3
			B left row open	100	83	99	100	100	100	97.0
			C right row dense	97	100	100	95	100	100	98.7
			D left row dense	100	100	98	100	92	100	98.3
Kinkelder PTO	25	3.5	A right row open	97	96	100	100	100	100	98.8
			B left row open	100	98	100	97	100	100	99.2
			C right row dense	94	91	99	100	100	99	97.2
			D left row dense	89	100	98	100	100	100	97.8
AgTec (Engine)	25	6.0	A right row open	93	90	81	80	85	92	86.8
			B left row open	86	72	82	84	85	95	84.0
			C right row dense	89	90	85	81	80	79	84.0
			D left row dense	91	87	87	84	71	79	83.2
Kinkelder PTO	25	6.0	A right row open	87	89	75	81	84	90	84.3
			B left row open	89	87	76	80	80	92	84.0
			C right row dense	73	84	76	69	55	88	74.2
			D left row dense	75	86	72	74	49	90	74.3
Over the vine boom high pressure rig	150	5.0	A right row open	77	59	83	79	58	62	69.7
			B left row open	81	63	79	80	68	74	74.2
			C right row dense	54	48	68	45	42	73	55.0
			D left row dense	67	54	39	71	58	84	62.2

AgTec and Kinkelder both with conventional orchard heads and therefore traveled each row. OTV boom sprayer treated 2 rows at a time. Target cards placed in row and sprayed from both sides. Thompson Var. in full leaf, dense position targets inside vine. Fresno County. 1973.

Table G-3. Phytotoxicity of certain plant spray oils as applied in early spring on grapes. [a/]

Oil treatment	Gal. oil/acre [b/]	Leaf injury rating (0-5) [c/]	
		burn	water spot
Orchex 796	6	0.4	0
"	4	0.1	0.6
"	2	0	1.5
Volck Supreme	6	0.4	2.9
"	4	0.1	2.0
"	2	0	0
Orchex 696	4	0	0.1
PGSO-1	4	2.3	1.1
PGSO-2	4	0.2	2.4
XMTY-99A	4	3.3	1.4

a/ Applied May 3, 1967, on Raven Ranch, Fresno Co. (Test 6-67). Application followed first hot spell of season.

b/ Sprayed with a Bean 2109 air carrier sprayer at 100 gpa and 3 mph.

c/ Phytotoxicity ratings made 7 and 10 days after application and on young tender leaves. (Grower application at 170 gpa with a boom sprayer resulted in severe burn with PGSO-1 and XMTY-99A)

Table G-7. Comparison of five plant spray oils applied at four different rates as to foliage phytotoxicity, fruit spotting, and mildew on Thompson grapes.[a/]

Treatment	Gals/acre oil	Gals/acre spray	Rating [b/] Leaf injury	Rating [b/] Fruit spotting	Rating [b/] Mildew
Orchex 696	2	100/275	0	0	2
	4	"	0	1	2
	6	"	0	1	2
	8	"	1	1	2
Orchex 796	2	"	0	0	2
	4	"	0	1	2
	6	"	0	0	1
	8	"	1	1	2
PGSO-1	2	"	1	2	2
	4	"	1	2	2
	6	"	2	2	2
	8	"	2	2	1
PGSO-2	2	"	0	1	2
	4	"	1	1	2
	6	"	2	1	2
	8	"	2	1	2
Volck Sup.	2	"	0	1	2
	4	"	0	1	2
	6	"	1	1	2
	8	"	1	1	2
Check	-	-	0	0	3-4

a/ Treatments made in May at 100 gpa, June and July at 275 gpa by hand gun. KHFS, Fresno Co. (Test 7-67)

b/ Leaf injury and fruit spotting (oil drops on bloom) 0 = none, 1 = present, 2 = noticeable and 3 = economic. Mildew rating 1-5. Temp. at May applic. 65-75°, June and July applications 104-120°,

FROM: Progress Report on Spray Appliations and the Use of Plant Spray Oils regarding primarily mite control on grapes (1968) by J. E. Dibble

Table G-8. Comparison of certain plant spray oils as to foliar phytotoxicity on Thompson grapes. a/

Treatment b/	Gals/acre oil	Gals/acre spray	Rating after 2 applications as to effect on leaves c/ Marginal leafburn	Cellular breakdown (water spot)	Rugose surface
Orchex 696	8	100	23	20	0
"	4	"	5	2	2
Orchex 796	4	"	7	13	10
PGSO-1	4	"	5	8	12
PGSO-2	4	"	0	7	12
Volck Sup.	4	"	0	13	20
Sulfur	3 lbs.	"	0	0	0
796 + sulfur	4 3 lbs.	"	2	3	7
PGSO-2 + sulfur	4 3 lbs.	"	10	13	13
Volck + sulfur	4 3 lbs.	"	2	13	17
796 + sulfur	4 3 lbs.	38	0	0	0
Check	-	-	0	0	0

a/ Tests at KHFS, Fresno Co. (Test 8-67)

b/ Treated in May by boom sprayer and in June by air carrier sprayer. Temp. 90-95° in the shade and 107-110° in sun. Evaluated July 20.

c/ Ratings: 0-5 = trace of phytotoxicity; 5-10 = slight; 10-20 = slight-moderate, 20-30 = moderate; 30-40 = moderate to severe; 40-50 = severe.

Table G-10. Compatibility tests with plant spray oils and wettable sulfur sprays on grapes. a/

Treatment	Dosage/acre b/	Leaf injury rating (0-10) c/ 1 wk.	2 wks.	3 wks.
Orchex 696	4 gal.	0	0	0
" + sulfur	" + 3 lbs.	0	0	0
" + sulfur after 1 week	" + "	0	0	0
" + sulfur after 2 weeks	" + "	0	0	0
Orchex 796	4 gal.	0.5	0.5	0.5
" + sulfur	" + 3 lbs.	0.5	0.5	0.5
" + sulfur after 1 week	" + "	0.5	0.5	0.5
" + sulfur after 2 weeks	" + "	0.5	0.5	0.5
PGSO-1	4 gal.	2	1	1
" + sulfur	" + 3 lbs.	3	3	4
" + sulfur after 1 week	" + "	2	1	1
" + sulfur after 2 weeks	" + "	2	1	1
PGSO-2	4 gal.	3	3	3
" + sulfur	" + 3 lbs.	5	5	5
" + sulfur after 1 week	" + "	3	3	3
" + sulfur after 2 weeks	" + "	3	3	3
Volck Sup.	4 gal.	3	3	4
" + sulfur	" + "	6	5	5
" + sulfur after 1 week	" + "	3	3	4
" + sulfur after 2 weeks	" + "	3	3	4
Sulfur	3 lbs.	0	0	0
" + 696 after 1 week	" 4 gal.	0	0	0
" + 696 after 2 weeks	" "	0	0	0
" + 796 after 1 week	" "	0.5	0.5	0.5
" + 796 after 2 weeks	" "	0.5	0.5	0.5
" + PGSO-1 after 1 week	" "	2	2	2
" + PGSO-1 after 2 weeks	" "	2	2	2
" + PGSO-2 after 1 week	" "	4	3	3
" + PGSO-2 after 2 weeks	" "	3	4	4
" + Volck after 1 week	" "	4	4	4
" + Volck after 2 weeks	" "	4	4	4

a/ Thompson variety at KHFS, Fresno Co. (Test 9-67)

b/ Applied at 100 gpa with Bean over-the-vine boom rig on 5/23, 5/31 and 6/7 during temperature of 96-110°.

c/ Leaf injury ratings made 5/3, 6/7 and 6/15 with 10 being the most severe. Symptoms on older leaves appear as top surface bronzing and under surface water spotting (oil effect); on young leaves it appears as leaf burn. None of the damage was consistent but sporadic on vines and in plots.

Table G-11. Phytotoxicity effect of four narrow range oils in combination with wettable sulfur and as applied in saturation sprays on Thompson grapes. a/

Treatment	Percent emul. in oil b/	Dosage/acre c/	Degree of leaf damage d/			
			Leaf burn		Spotting	
			Yng. lvs.	Old lvs.	Yng. lvs.	Old lvs.
Orchex 696 + sulfur	0.5	4 gal. 3 lbs.	L	H	L	M
Orchex 796 + sulfur	0.5	4 gal. 3 lbs.	L	H	L	M
PGSO-1 + sulfur	0.5	4 gal. 3 lbs.	M	S	L	H
Volck Sup. + sulfur	2.0	4 gal. 3 lbs.	-	L	-	L

a/ Applied June 7, 1967. K.H.F.S., Fresno Co. (Test 10-67) during 100° sun temp. and 82° shade temp.

b/ May be 10 percent fluctuation in actual amount.

c/ Applications made by hand gun to the point of over saturation and heavy runoff.

d/ Leaf burn was mostly marginal on older leaves, marginal and central on young leaves. S = severe (40-100% of surface), H = heavy (20-40%), M = moderate (10-20%), and L = light (5-10%). Observations made 1 week after application.

Grapes-phyto.rating on leaves after 2 applic's.

Treatment (amt./ac.)	GPA	Marginal leafburn	Cellular breakdn.	Rugose surface
O-796 4gals + sulfur 3lbs.	100	2	3	7
"	38	0	0	0

(rating- 0-5 = trace & 6-10 = slight injury)

Table G-12.-- Residue deposit comparisons of certain plant spray oils as applied on grapes.

Oil treatment [a]	Gals/acre		μgm/cm² of leaf surface (days after application) [b]		
	oil	spray	1	7	21
Orchex 696	5	75	21.2	6.8	3.9
Orchex 796	5	75	24.8	16.3	4.6
Volck Sup.	5	75	23.1	16.9	19.2

a/ Applications made in August on Thompson variety in Fresno County. Applied with a Deere-80 air carrier orchard sprayer. Orchex is a Humble Oil product and Volck is a Chevron Chemical product.

b/ Leaves sampled with a leaf punch at random and alternately from the inside and outside of the full foliaged vines. Analyses by gas chromatography.

RESIDUES - GRAPES - CARBARYL

			PPM DAYS AFTER LAST APPLIC. 1	3	7
FRUIT	80 S	2.5+2.5 LBS/200	0.5	1.2	1.3
		2.5+2.5 LBS/40	2.1	1.0	1.9
		1.25+1.25 LBS/40	0.8	0.7	1.0
	4-L	1.5 QTS/200	0.8	0.9	0.7
		1.5 QTS/40	0.4	0.4	0.4
		1.1 QTS/40	0.4	0.2	0.3
LEAVES	80 S	2.5 LBS/200	160	70	56
		2.5 LBS/40	-	32	64
		1.25 LBS/40	38	-	32
	4-L	1.5 QTS/200	96	-	-
		1.5 QTS/40	106	-	-
		1.1 QTS/40	56	-	-

(SEVIN 80 S & SEVIMOL 4)