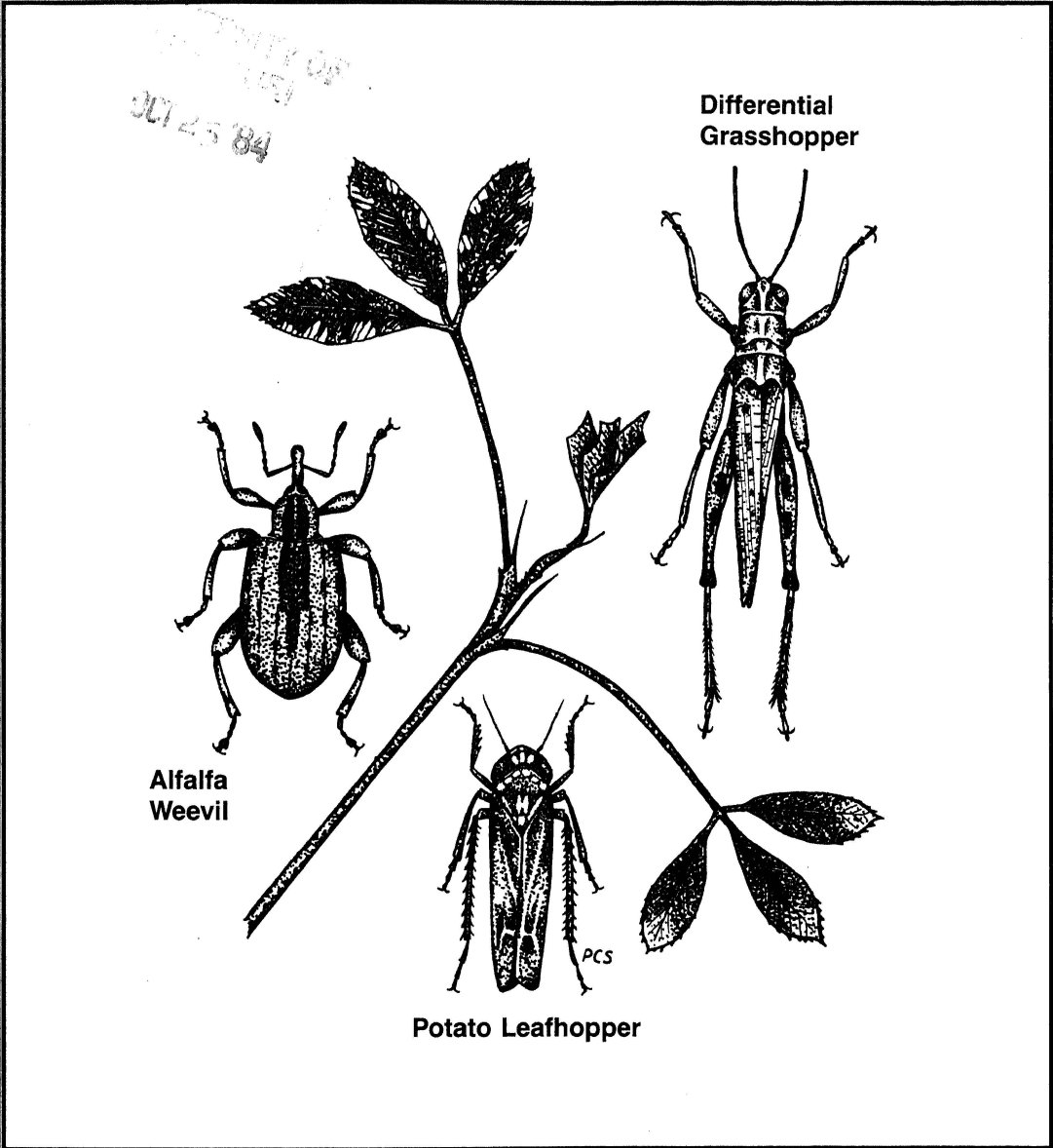


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1984 Insecticide Evaluations



Rick L. Brandenburg

University of Missouri-Columbia
Special Report 313

Agricultural Experiment Station
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FORAGE CROPS

1984 INSECTICIDE EVALUATIONS

INTRODUCTION

This report is a contribution of the Department of Entomology, University of Missouri Agricultural Experiment Station, which reports on Research Project 158, and the Cooperative Extension Service. The work was funded in part through contributions from companies submitting insecticides for evaluation.

OBJECTIVES

The purpose of these evaluations is to select the insecticides that are most effective under Missouri farm conditions. The results provide a source of data from which insect control recommendations can be developed. These tests are conducted annually at several locations throughout the state to obtain data from a wide range of conditions. Repeating tests for several years provides additional insight into insecticide effectiveness under varying insect pressures and weather conditions. Test locations are selected to closely simulate typical production schemes.

The wide variety of insecticides that are available and differences in cost, safety, residual activity, and effectiveness make selection of the best treatment difficult. Data included in this report provide additional information to aid in the selection of an insecticide for alfalfa insect control. A more accurate estimate of a compound's performance is the comparison of its performance over several years.

TEST PROCEDURES

The performance of the selected insecticides was evaluated in alfalfa fields utilizing small plots for control comparisons. Tests were conducted under farm conditions with normal crop management practices. Appropriate weather data from each site were recorded.

Insect sampling and counting were typically conducted at pretreatment, 24 hours and 7 days post-treatment. Many tests were also evaluated at additional times to estimate residual activity.

Individual test procedures are listed with each specific test. All data were subjected to the appropriate statistical analysis for treatment comparison.



Outline map of test locations

ALFALFA WEEVIL

The test was conducted at Linneus, MO (location 1 on map). Insecticides were applied on May 23, 1984 to 20- x 20-foot plots in a randomized complete block design with untreated checks in four replications. Alfalfa was 14 inches high at treatment. Spray concentrations were applied in 16.5 gallons per acre using 8002 flat fan nozzles with 50 mesh screens on a boom-type, tractor-mounted sprayer. Alfalfa weevil populations were estimated by 10, 180° sweeps with a 15-inch sweep net at 24 hours, six and 13 days post-treatment. Conditions at treatment were 74° F and five mph winds. The test area was part of a five year old stand.

Measurable precipitation fell six times during the next 13 days. After this time five consecutive days of rain resulted in a dramatic decline of the weevil population, most likely the result of a fungal infection (Erynia phytonomi).

Twenty-four hour results indicate the high rate of Furadan was more effective than over a third of the other treatments while all rates of BAS 263 were better than three other treatments. Baythroid, the low rate of Pydrin and MAT 5927 performed less effective after twenty-four hours than the top four treatments. All treatments populations were significantly different from the untreated plots.

After six days all treatments except MAT 5927 were significantly different from the untreated plots and providing good control. Replicate four of the low rate of Furadan appears to have unrealistically decreased the average level of control for this treatment.

Thirteen day counts indicate all rates of PP 321, the high rate of FMC 54800 and Baythroid were more effective than MAT 5927, Pounce and the low rates of BAS 263, Pydrin and Furadan. All treatments were still significantly different from the untreated check. MAT 5927 was less effective than any other treatment. Thirteen treatments still provided better than 90% control.

INSECTICIDE EVALUATION

Alfalfa Weevil Larvae - Alfalfa
Linn County, Missouri May 23, 1984

Alfalfa Weevil Larvae/10 Sweeps - 24-Hour Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
Furadan	0.500	10	9	12	5	9.00 a*	95
BAS 263	0.250	8	9	21	7	11.25 ab	94
BAS 263	0.380	15	15	10	8	12.00 ab	93
BAS 263	0.500	12	17	10	11	12.50 ab	93
Pounce	0.100	23	10	18	8	14.75 abc	91
Lorsban	1.000	19	33	11	8	17.75 abcd	90
Lorsban	0.500	18	13	24	19	18.50 abcd	89
FMC 54800	0.010	14	39	8	15	19.00 abcd	89
PP321	0.020	31	18	31	14	23.50 abcd	86
Furadan	0.250	18	24	15	38	23.75 abcd	86
PP321	0.005	23	22	27	33	26.25 abcd	85
FMC 54800	0.020	41	42	22	10	28.75 abcd	83
PP321	0.010	48	39	21	29	34.25 bcd	80
Pydrin	0.100	35	63	59	23	34.75 bcd	80
PP321	0.015	37	45	34	25	35.25 bcd	79
FMC 54800	0.040	22	27	15	87	37.75 bcd	78
MAT 5927	0.250	41	79	32	22	43.50 cd	75
Pydrin	0.050	35	63	59	23	45.00 d	74
Baythroid	0.045	64	69	33	19	46.25 d	73
Untreated	-	297	218	27	145	171.75 e	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Alfalfa Weevil Larvae - Alfalfa
Linn County, Missouri May 23, 1984

Alfalfa Weevil Larvae/10 Sweeps - 6-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
Lorsban	1.000	1	1	1	2	1.25 a*	99
Furadan	0.500	2	2	1	1	1.50 a	98
PP321	0.020	2	2	0	2	1.50 a	98
FMC 54800	0.010	2	2	3	2	1.75 a	98
BAS 263	0.380	4	3	2	0	2.25 a	98
PP321	0.010	5	0	1	3	2.25 a	98
PP321	0.015	1	1	3	4	2.25 a	98
Lorsban	0.500	3	5	0	3	2.75 a	97
FMC 54800	0.040	3	6	2	1	3.00 a	97
BAS 263	0.500	3	4	2	4	3.25 a	96
BAS 263	0.250	6	2	3	3	3.50 a	96
FMC 54800	0.020	4	4	2	7	4.25 a	95
Baythroid	0.045	5	4	5	3	4.25 a	95
PP321	0.005	9	1	6	4	5.00 a	95
Pydrin	0.100	14	13	4	1	8.00 a	91
Pounce	0.100	7	21	15	2	11.25 a	88
Pydrin	0.050	23	8	19	1	12.75 a	86
Furadan	0.250	7	0	0	60	16.75 a	82
MAT 5927	0.250	15	135	173	8	82.75 b	10
Untreated	-	68	120	69	109	91.50 b	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

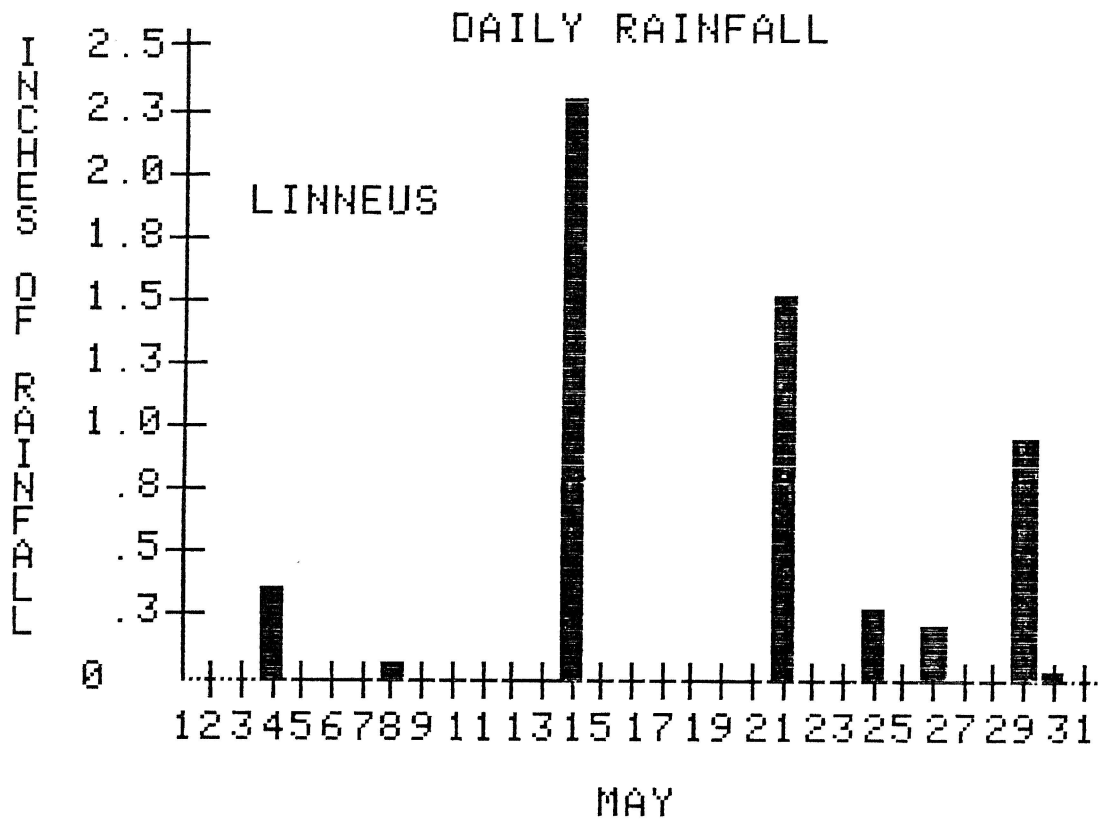
INSECTICIDE EVALUATION

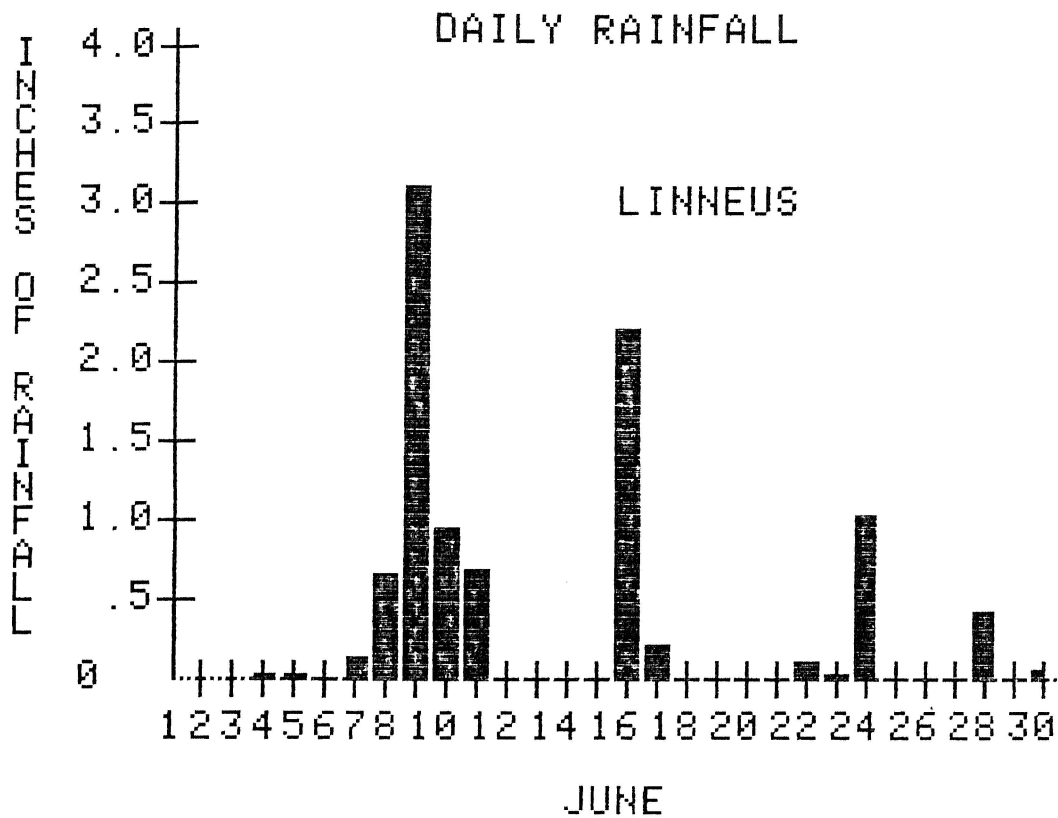
Alfalfa Weevil Larvae - Alfalfa
Linn County, Missouri May 23, 1984

Alfalfa Weevil Larvae/10 Sweeps - 13-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
PP321	0.015	0	0	0	0	0.00 a*	100
PP321	0.005	0	1	0	0	0.25 a	100
FMC 54800	0.040	1	1	1	0	0.75 ab	99
PP321	0.020	3	0	0	0	0.75 ab	99
Baythroid	0.045	2	1	2	0	1.25 ab	98
PP321	0.010	3	1	0	1	1.25 ab	98
FMC 54800	0.020	1	0	1	5	1.75 abc	97
Pydrin	0.100	1	1	2	4	2.00 abcd	96
BAS 263	0.500	3	1	6	1	2.75 abcd	95
BAS 263	0.380	4	3	2	2	2.75 abcd	95
FMC 54800	0.010	2	5	1	3	2.75 abcd	95
Furadan	0.500	3	1	8	1	3.25 abcd	94
Lorsban	0.500	1	4	3	6	3.50 abcde	93
Lorsban	1.000	3	4	12	3	5.50 bcde	89
BAS 263	0.250	5	7	5	13	7.50 cde	86
Pydrin	0.050	11	5	13	2	7.75 cde	85
Furadan	0.250	3	4	7	24	9.50 de	82
Pounce	0.100	6	14	16	6	10.50 e	80
MAT 5927	0.250	18	19	69	30	34.00 f	35
Untreated	-	37	22	62	88	52.25 g	-

* Means followed by the same letter are not significant at the 5% level using DMRT.





POTATO LEAFHOPPER

The test was conducted at Spickard, MO (location 2 on map). Insecticides were applied on July 11, 1984 to 40- x 40-foot plots in a randomized complete block design with untreated checks in four replications. Spray concentrations were applied in 16.5 gallons per acre using 8002 flat fan nozzles with 50 mesh screens on a boom-type, tractor-mounted sprayer. The alfalfa was eight inches high at treatment. Potato leafhopper populations were estimated by 20, 180° sweeps with a 15-inch sweep net for 24 hour, seven, 12 and 20 days post-treatment. Conditions at treatment were 80° F and eight mph wind. The test area was part of a one-year old stand of Buffalo alfalfa. Virtually no precipitation was recorded in the three weeks following treatment.

Twenty-four hour results indicate no difference in the effectiveness of the treatments for control of nymphs, adults and total potato leafhoppers. All treatments were significantly different from the untreated check and provided excellent initial control.

There were no significant differences in the level of control of nymphs among the treatments after seven days. All treatments were significantly different from the untreated check and gave excellent control. Adult control was best for the two higher rates of FMC 54800 as these treatments performed better than approximately one-third of the treatments while Lorsban gave less control of adults than all the other treatments. Imidan and the low rate of Dow XRM were less effective than approximately one-third of the treatments. Control of total potato leafhoppers was similar to adult control.

After 12 days control of nymphs was still excellent for all compounds. The high rate of FMC 54800 and PP 321 provided better control of adults and total potato leafhoppers than almost half of the other treatments.

Control of nymphs began to decline after 20 days although half of the treatments still provided greater than 90% control. Lorsban, Pounce, and Dow XRM were less effective than approximately half of the other treatments. The high rate of FMC 54800 was more effective at adult control than two-thirds of the other treatments while Pounce was least effective. Total potato leafhopper control was best in the plots treated with the higher rates of FMC 54800. PP 321 was more effective than four other treatments while the high rate of Pydrin was more effective than two other treatments. Pounce was least effective.

INSECTICIDE EVALUATION

Potato Leafhopper Nymphs - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 12-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
FMC 54800	0.04	0	0	0	0	0.0 a	100
PP 321	0.01	0	1	0	0	0.25 a	99.0
Furadan	0.75	0	0	0	1	0.25 a	99.0
Cygon	0.5	0	1	0	0	0.25 a	99.0
Dow XRM	1.0	0	2	0	0	0.5 a	98.1
Imidan	1.0	0	0	0	2	0.5 a	98.1
Orthene	0.75	0	0	1	1	0.5 a	98.1
Dow XRM	0.5	0	1	1	0	0.5 a	98.1
Pydrin	0.15	0	1	0	2	0.75 a	97.1
Lorsban	1.0	0	1	0	2	0.75 a	97.1
Lorsban	0.5	0	1	1	1	0.75 a	97.1
Furadan	0.5	0	1	3	0	1.0 a	96.2
Pounce	0.1	0	2	0	2	1.0 a	96.2
Pydrin	0.1	2	0	0	2	1.0 a	96.2
Untreated	-	31	18	34	21	26.0 b	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Adults - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 12-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
PP 321	0.01	4	11	1	3	4.75 a*	84.3
FMC 54800	0.04	2	2	5	20	7.25 ab	76.0
Lorsban	1.0	8	10	7	12	9.25 abc	69.4
Cygon	0.5	7	17	3	15	10.5 abcd	65.3
Pydrin	0.1	9	6	8	19	10.5 abcd	65.3
Pydrin	0.15	4	14	12	12	10.5 abcd	65.3
FMC 54800	0.01	12	13	6	12	10.75 abcd	64.5
Furadan	0.5	19	17	3	10	12.25 abcd	59.5
Imidan	1.0	13	6	14	17	12.5 bcd	58.7
FMC 54800	0.02	23	5	7	24	14.75 bcd	51.2
Dow XRM	0.5	11	22	11	19	15.75 cd	47.9
Orthene	0.75	22	10	20	19	17.75 cde	41.3
Lorsban	0.5	23	14	18	18	18.25 cde	39.7
Pounce	0.1	23	35	7	13	19.5 cde	35.5
Furadan	0.75	12	29	13	25	19.75 cde	34.7
Dow XRM	1.0	23	18	17	24	20.25 de	33.0
Untreated	-	35	37	27	22	30.25 e	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Total - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 7 Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.04	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	1	0	0.25 ab	99.4
PP 321	0.01	0	1	0	0	0.25 ab	99.4
Pydrin	0.1	0	0	0	5	1.25 abc	97.0
Cygon	0.5	2	1	0	2	1.25 abc	97.0
FMC 54800	0.01	2	0	2	3	1.75 abcd	95.8
Furadan	0.75	0	1	4	2	1.75 abcd	95.8
Furadan	0.5	4	2	0	6	3.0 abcd	92.8
Dow XRM	1.0	0	5	0	8	3.25 bcd	92.3
Pounce	0.1	3	2	2	7	3.5 abcd	91.7
Orthene	0.75	2	2	3	8	3.75 abcd	91.1
Lorsban	1.0	5	0	3	12	5.0 bcd	88.1
Imidan	1.0	4	2	8	8	5.5 cd	86.9
Dow XRM	0.5	5	13	3	5	6.5 d	84.5
Lorsban	0.5	10	37	4	13	16.0 e	61.9
Untreated	-	62	43	36	27	42.0 f	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Nymphs - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 7-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
FMC 54800	0.04	0	0	0	0	0.0 a	100
Dow XRM	0.5	0	0	0	0	0.0 a	100
Dow XRM	1.0	0	0	0	0	0.0 a	100
Imidan	1.0	0	0	0	0	0.0 a	100
Pydrin	0.1	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	0	0	0.0 a	100
Pounce	0.1	0	0	0	0	0.0 a	100
Cygon	0.5	0	0	0	0	0.0 a	100
PP 321	0.01	0	0	0	0	0.0 a	100
Lorsban	1.0	0	0	0	0	0.0 a	100
Furadan	0.75	0	0	0	0	0.0 a	100
Furadan	0.5	0	0	0	0	0.0 a	100
Orthene	0.75	0	1	0	0	0.25 a	98.0
Lorsban	0.5	0	2	0	0	0.5 a	95.9
Untreated	-	26	8	8	7	12.25 b	-

* Means followed by the same letter are not significant at the 5% level using DNMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Adults - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 7-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.04	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	1	0	0.25 ab	99.2
PP 321	0.01	0	1	0	0	0.25 ab	99.2
Pydrin	0.1	0	0	0	5	1.25 abc	95.8
Cygon	0.5	2	1	0	2	1.25 abcd	95.8
FMC 54800	0.01	2	0	2	3	1.75 abcde	94.1
Furadan	0.75	0	1	4	2	1.75 abcde	94.1
Furadan	0.5	4	2	0	6	3.0 abcde	89.9
Dow XRM	1.0	0	5	0	8	3.25 cde	89.1
Orthene	0.75	2	1	3	8	3.5 abcde	88.2
Pounce	0.1	3	2	2	7	3.5 bcde	88.2
Lorsban	1.0	5	0	3	12	5.0 cde	83.2
Imidan	1.0	4	2	8	8	5.5 de	81.5
Dow XRM	0.5	5	13	3	5	6.5 e	78.2
Lorsban	0.5	10	35	4	13	15.5 f	47.9
Untreated	-	36	35	28	20	29.75 g	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Total - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 24-Hour Results

Treatment	AI/A(1b.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
Orthene	0.75	0	0	0	0	0.0 a	100
Dow XRM	0.5	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	0	0	0.0 a	100
Imidan	1.0	0	0	0	0	0.0 a	100
Pydrin	0.1	0	0	0	0	0.0 a	100
Lorsban	0.5	0	0	0	0	0.0 a	100
Pounce	0.1	0	0	0	0	0.0 a	100
Cygon	0.5	0	0	0	0	0.0 a	100
PP 321	0.01	0	0	0	0	0.0 a	100
Furadan	0.5	0	0	0	0	0.0 a	100
Furadan	0.75	0	0	0	0	0.0 a	100
Lorsban	1.0	0	1	0	0	0.25 a	98.9
Dow XRM	1.0	0	0	0	2	0.5 a	97.9
FMC 54800	0.04	0	1	0	1	0.5 a	97.9
Untreated	-	25	17	39	22	23.75 b	-

* Means followed by the same letter are not significant at the 5% level using DNMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Nymphs - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 24-Hour Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
Orthene	0.75	0	0	0	0	0.0 a	100
Dow XRM	0.5	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	0	0	0.0 a	100
Imidan	1.0	0	0	0	0	0.0 a	100
Pydrin	0.1	0	0	0	0	0.0 a	100
Lorsban	0.5	0	0	0	0	0.0 a	100
Pounce	0.1	0	0	0	0	0.0 a	100
Cygon	0.5	0	0	0	0	0.0 a	100
PP 321	0.01	0	0	0	0	0.0 a	100
Furadan	0.5	0	0	0	0	0.0 a	100
Furadan	0.75	0	0	0	0	0.0 a	100
Lorsban	1.0	0	1	0	0	0.25 a	92.8
Dow XRM	1.0	0	0	0	2	0.5 a	85.7
FMC 54800	0.04	0	1	0	1	0.5 a	85.7
Untreated	-	5	6	1	2	3.5 b	-

* Means followed by the same letter are not significant at the 5% level using DNMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Adults - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 24-Hour Results

Treatment	AI/A(1b.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.02	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
FMC 54800	0.04	0	0	0	0	0.0 a	100
Dow XRM	0.5	0	0	0	0	0.0 a	100
Dow XRM	1.0	0	0	0	0	0.0 a	100
Imidan	1.0	0	0	0	0	0.0 a	100
Pydrin	0.1	0	0	0	0	0.0 a	100
Pydrin	0.15	0	0	0	0	0.0 a	100
Pounce	0.1	0	0	0	0	0.0 a	100
Orthene	0.75	0	0	0	0	0.0 a	100
Lorsban	0.5	0	0	0	0	0.0 a	100
Lorsban	1.0	0	0	0	0	0.0 a	100
Furadan	0.75	0	0	0	0	0.0 a	100
PP 321	0.01	0	0	0	0	0.0 a	100
Furadan	0.5	0	0	0	0	0.0 a	100
Cygon	0.5	0	0	0	0	0.0 a	100
Untreated	—	20	12	29	20	20.25 b	100

* Means followed by the same letter are not significant at the 5% level using DNMR.

INSECTICIDE EVALUATION

Potato Leafhopper Total - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 12-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
PP 321	0.01	4	12	1	3	5.0 a*	91.1
FMC 54800	0.04	2	2	5	20	7.25 ab	87.1
FMC 54800	0.01	12	13	6	12	8.25 abc	85.3
Lorsban	1.0	8	11	7	14	10.0 abc	82.2
Cygon	0.5	7	18	3	15	10.75 abc	80.9
Pydrin	0.15	4	15	12	14	11.25 abc	80.0
Pydrin	0.1	11	6	8	21	11.5 abc	79.6
Imidan	1.0	13	6	14	19	13.0 bc	76.9
Furadan	0.5	19	18	6	10	13.25 bc	76.4
FMC 54800	0.02	23	5	7	24	14.75 bc	73.8
Dow XRM	0.5	11	23	12	19	16.25 c	71.1
Orthene	0.75	22	10	21	20	18.25 c	67.6
Lorsban	0.5	23	15	19	19	19.0 c	66.2
Furadan	0.75	12	29	13	26	20.0 c	64.4
Pounce	0.1	23	37	7	15	20.5 c	63.6
Dow XRM	1.0	23	20	17	24	21.0 c	62.7
Untreated	-	66	55	61	43	56.25 d	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Nymphs - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 20-Day Results

Treatment	AI/A(lb.)	REPLICATION				Average	% Control
		I	II	III	IV		
PP 321	0.01	0	0	0	0	0.0 a*	100
FMC 54800	0.01	0	0	0	0	0.0 a	100
FMC 54800	0.04	0	0	0	1	0.25 a	97.7
Pydrin	0.15	0	0	0	1	0.25 a	97.7
Orthene	0.75	0	0	0	1	0.25 a	97.7
Furadan	0.75	0	0	0	2	0.5 a	95.3
FMC 54800	0.02	0	0	0	3	0.75 a	93.0
Dow XRM	1.0	0	2	0	1	0.75 ab	93.0
Furadan	0.5	1	0	2	0	0.75 ab	93.0
Lorsban	1.0	1	1	1	3	1.5 abc	86.0
Cygon	0.5	4	1	1	1	1.75 abc	83.7
Imidan	1.0	0	1	3	4	2.0 abc	81.4
Pydrin	0.1	0	0	2	8	2.5 abc	76.7
Dow XRM	0.5	2	7	3	2	3.5 bc	67.4
Lorsban	0.5	6	6	0	4	4.0 c	62.8
Pounce	0.1	2	6	0	10	4.5 c	58.1
Untreated	-	19	11	5	8	10.75 d	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Potato Leafhopper Adults - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 20-Day Results

Treatment	AI/A(1b.)	REPLICATION				Average	% Control
		I	II	III	IV		
FMC 54800	0.04	0	8	5	7	5.0 a*	83.3
FMC 54800	0.02	5	1	6	9	5.25 ab	82.5
PP 321	0.01	7	12	0	8	6.75 ab	77.5
Pydrin	0.15	6	8	9	6	7.25 abc	75.8
Lorsban	1.0	6	7	11	17	10.25 abcd	65.8
Imidan	1.0	12	7	5	24	12.0 abcd	60.0
Furadan	0.5	8	11	12	22	13.25 bcd	55.8
FMC 54800	0.01	11	11	9	22	13.25 bcd	55.8
Orthene	0.75	16	10	11	16	13.25 bcd	55.8
Cygon	0.5	12	23	17	3	13.75 bcd	54.2
Dow XRM	0.5	8	23	13	12	14.0 bcd	53.3
Pydrin	0.1	12	9	10	26	14.25 bcd	52.5
Furadan	0.75	16	18	7	22	17.5 cd	43.3
Dow XRM	1.0	29	22	9	9	17.25 cd	42.5
Lorsban	0.5	16	30	7	16	17.25 cd	42.5
Pounce	0.1	33	27	7	22	22.25 d	25.8
Untreated	-	25	30	27	35	30.0 e	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

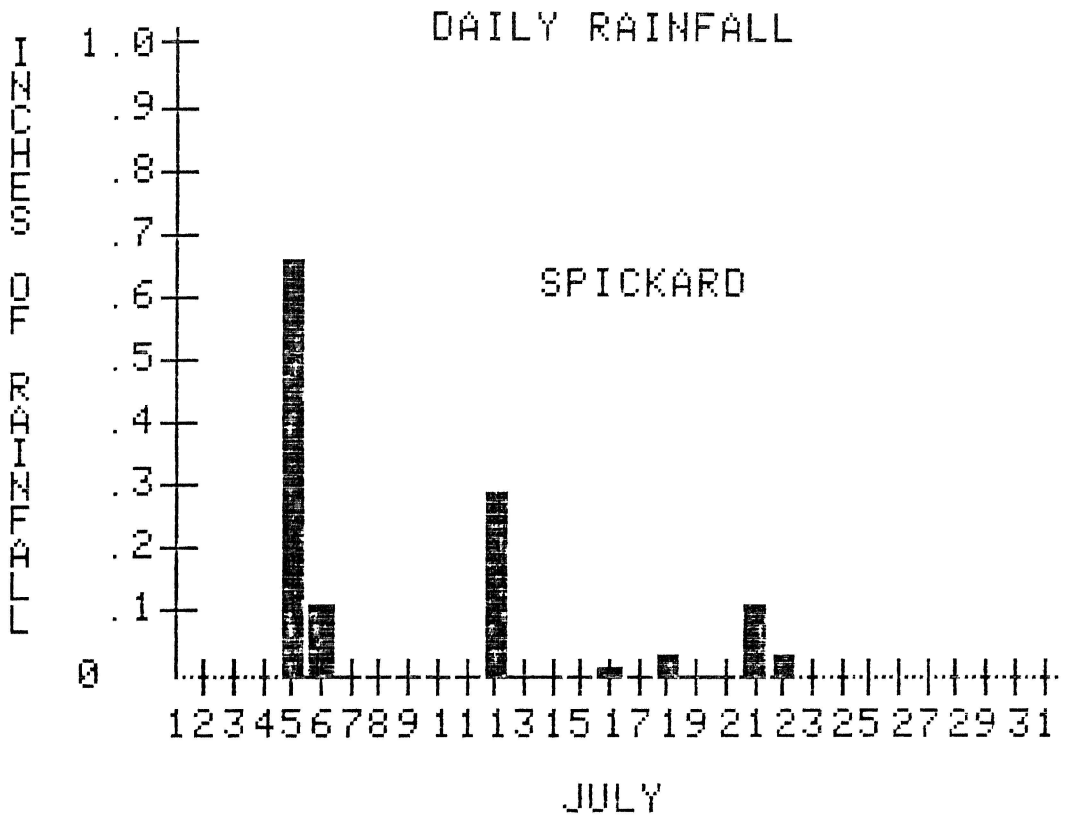
INSECTICIDE EVALUATION

Potato Leafhopper Total - Alfalfa
 Grundy County, Missouri July 11, 1984

Potato Leafhopper/20 Sweeps - 20-Day Results

Treatment	AI/A(lb.)	REPLICATIONS				Average	% Control
		I	II	III	IV		
FMC 54800	0.04	0	8	5	8	5.25 a*	87.1
FMC 54800	0.02	5	1	6	12	6.0 ab	85.3
PP 321	0.01	7	12	0	8	6.75 abc	83.4
Pydrin	0.15	6	8	9	7	7.5 abcd	81.6
Lorsban	1.0	7	8	12	20	11.75 abcde	71.2
FMC 54800	0.01	11	11	9	22	13.25 abcdef	67.5
Orthene	0.75	16	10	11	17	13.5 abcdef	66.9
Imidan	1.0	12	8	8	28	14.0 abcdef	65.6
Furadan	0.5	9	11	14	22	14.0 abcdef	65.6
Cygon	0.5	16	24	18	4	15.5 bcdef	62.0
Furadan	0.75	16	18	7	24	16.25 cdef	60.1
Pydrin	0.1	12	9	12	34	16.75 cdef	58.9
Dow XRM	0.5	10	30	16	14	17.5 def	57.0
Dow XRM	1.0	29	24	9	10	18.0 def	55.8
Lorsban	0.5	22	36	7	20	21.25 ef	47.8
Pounce	0.1	35	33	7	32	26.75 f	34.4
Untreated	-	47	41	32	43	40.75 g	-

* Means followed by the same letter are not significant at the 5% level using DMRT.



GRASSHOPPER

The test was conducted near Gallatin, MO (location 3 on map). Insecticide sprays were applied on July 18, 1984 to 60- x 60-foot plots with untreated checks in three replications. Sprays were applied to a pure stand of stubble alfalfa using a boom-type, tractor-mounted sprayer at 40 psi and 16.5 gallons per acre with 8002 flat fan nozzles. Populations were estimated by taking 20, 180° sweeps with a 15-inch sweep net at 24 hours, five and 13 days post-treatment. Conditions at treatment were 88° F with a three mph wind. Grasshopper composition was 90% differential grasshoppers. No measurable precipitation fell during the test interval.

All treatments provided good control and were significantly different from the untreated check at 24 hour post-treatment. PP 321 gave significantly better control than Cygon.

Many compounds still provided good control after five days. Only Lorsban and BAS 263 at the higher rates were not significantly different from the untreated check; however, they were not different from any of the other treatments.

Similar results were obtained after 13 days. Replicate three of both treatments contained unrealistically higher populations of grasshoppers and appears to erroneously indicate poor control by these compounds. The other two replicates at both five and 13 days post-treatment most likely reflect the actual level of control.

INSECTICIDE EVALUATION

Grasshopper - Alfalfa
Daviness County, Missouri July 18, 1984

Grasshopper/20 Sweeps - 24-Hour Results

Treatment	AI/A(lb.)	REPLICATION			Average	% Control
		I	II	III		
PP 321	0.01	0	0	0	0.0 a*	100
Furadan	0.25	0	1	0	0.33 ab	99.2
PP 321	0.015	0	0	1	0.33 ab	99.2
PP 321	0.02	0	0	3	1.0 ab	97.6
BAS 263 + Cygon	0.38 + 0.125	0	1	2	1.0 ab	97.6
Lorsban	0.25	1	1	1	1.0 ab	97.6
BAS 263	0.38	2	1	1	1.33 ab	96.8
Orthene	0.33	0	6	5	3.67 ab	91.3
Orthene	0.16	7	4	11	7.33 ab	82.5
BAS 263	0.5	2	0	24	8.67 ab	79.4
Lorsban	0.5	1	1	26	9.33 ab	77.8
Cygon	0.125	4	31	1	12.0 b	71.4
Untreated	-	43	35	48	42.0 c	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION
 Grasshopper - Alfalfa
 Daviess County, Missouri July 18, 1984
 Grasshopper/20 Sweeps - 5-Day Results

Treatment	AI/A(lb.)	REPLICATION			Average	% Control
		I	II	III		
BAS 263	0.38	0	0	3	1.0 a*	97.0
Lorsban	0.25	0	2	1	1.0 a	97.0
PP 321	0.015	2	2	0	1.33 a	96.0
PP 321	0.01	2	3	0	1.67 a	94.9
Orthene	0.33	0	1	5	2.0 a	93.9
Cygon	0.125	0	6	3	3.0 a	90.9
Bas 263 + Cygon	0.38 + 0.125	1	1	7	3.0 a	90.9
Furadan	0.25	0	2	8	3.33 a	89.9
Orthene	0.16	0	0	14	4.67 a	85.8
PP 321	0.02	1	0	22	7.67 a	76.8
BAS 263	0.5	0	15	16	10.33 ab	68.7
Lorsban	0.5	0	4	28	10.67 ab	67.7
Untreated	-	7	29	30	33.0 b	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

INSECTICIDE EVALUATION

Grasshopper - Alfalfa
 Daviess County, Missouri July 18, 1984

Grasshopper/20 Sweeps - 13-Day Results

Treatment	AI/A(1b.)	REPLICATION			Average	% Control
		I	II	III		
BAS 263	0.38	0	0	3	1.0 a*	94.1
PP 321	0.015	1	2	0	1.0 a	94.1
Furadan	0.25	0	0	6	2.0 a	88.2
Lorsban	0.25	1	0	6	2.33 a	86.3
PP 321	0.01	9	1	0	3.33 a	80.4
Orthene	0.33	1	2	8	3.67 a	78.4
BAS 263 + Cygon	0.38 + 0.125	2	2	15	6.33 a	78.4
Orthene	0.16	2	0	13	5.0 a	70.6
Cygon	0.125	2	4	11	5.67 a	66.6
PP 321	0.02	0	0	19	6.33 a	62.8
Lorsban	0.5	1	2	25	9.33 ab	45.1
BAS 263	0.5	1	7	22	10.0 ab	41.2
Untreated	-	14	11	26	17.0 b	-

* Means followed by the same letter are not significant at the 5% level using DMRT.

LIST OF INSECTICIDES EVALUATED

FMC CORPORATION	Furadan 4F (carbofuran)
	FMC 54800 2EC
	Pounce 3.2EC (permethrin)
Mobay Chemical Corporation	Baythroid 240EC
	MAT 5927
Chevron Chemical Corporation	Orthene 75S (acephate)
Stauffer Chemical Company	Imidan 50WP (phosmet)
BASF Wyandotte Corporation	BAS 263 4EC (cleothocarb)
American-Cyanamid	Cygon 400 (dimethoate)
Dow Chemical Company	Lorsban 4E (chlorpyrifos)
	XRM-4764 4E (chlorpyrifos)
Shell Chemical Company	Pydrin 2.4EC (fenvalerate)
ICI Americas Inc.	PP 321 1E

