

Spring Alfalfa Insecticide Trial

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Introduction

Control of aphids in alfalfa has been a problem recently. An insecticide trial to evaluate the efficacy of various registered and unregistered alfalfa insecticides was conducted in early March, 1991. This trial was performed on a first year stand of Mesa Sirsa alfalfa located on the mesa south of Yuma. The purposes of this study were to evaluate aphid damage to alfalfa yields and to determine economic thresholds of various aphid treatments, as the test field did not have heavy numbers of Egyptian alfalfa weevil larvae.

Materials and Methods

Nineteen insecticide treatments and an untreated check were included in the trial. Treatments were applied on the morning of March 4, 1991, with a four nozzle (T-Jet 8001) CO₂ backpack sprayer calibrated to deliver 17.8 gallons/acre at 20 psi. Plot sizes were 10 ft x 15 ft and replicated four times in a randomized complete block design. Water for all treatments was buffered with 0.25% Buffer PS (Helena Co.). Alfalfa was approximately 6-8 inches tall when treatments were applied.

Plots were sampled on March 5th, 9th, 13th, and 18th (1, 5, 9 and 14 days post treatment). Sampling consisted of 5 sweeps per plot with a 15 inch diameter sweep net. Samples were placed into containers and frozen for later insect speciation. Insects were counted, and data were analyzed with a Student-Newman-Keuhl tests (Co-Stat). Data in following tables are statistically different at the $P \leq 0.05$ level.

Results

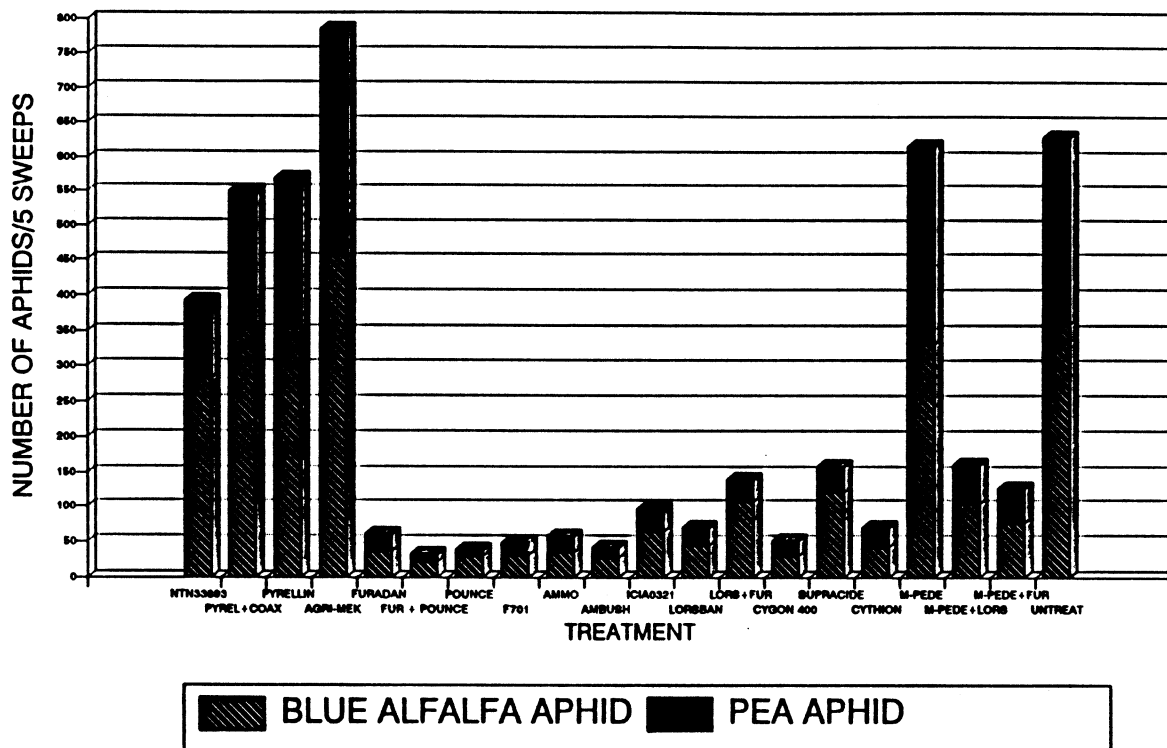
Aphid populations during the two weeks following the treatment applications remained fairly constant and even declined due to cool temperatures during March. Populations of Egyptian alfalfa weevil larvae were only high enough to record significant differences between treatments the first sample date. Adult weevils were prevalent in the test area the final week of the study. The adult weevils did not come from the test block but rather from an adjoining field that was not treated. The adjoining field "browned out" due to larval weevil feeding. Adult weevils, after feeding on the little remaining green tissue in the adjoining field, migrated over to the test block in a gradient from the untreated field. There were as many as 65 adult weevils per sweep in the replicate closest to the untreated field. The feeding from the adult weevils in the gradient across the treated areas did not allow for data to be obtained concerning the effects of aphid numbers upon alfalfa yield and resulting economics.

Data from the test indicates that most of the treatments did an excellent job in controlling aphids initially (see tables). Blue alfalfa aphid numbers ranged from over 103/sweep (516/5 sweeps) to less than two/sweep (9/5 sweeps) at one day post treatment. Pea aphid numbers, which were less than the blue alfalfa aphid numbers, ranged from just over 1/sweep (6/5 sweeps) to almost 75/sweep (374/5 sweeps).

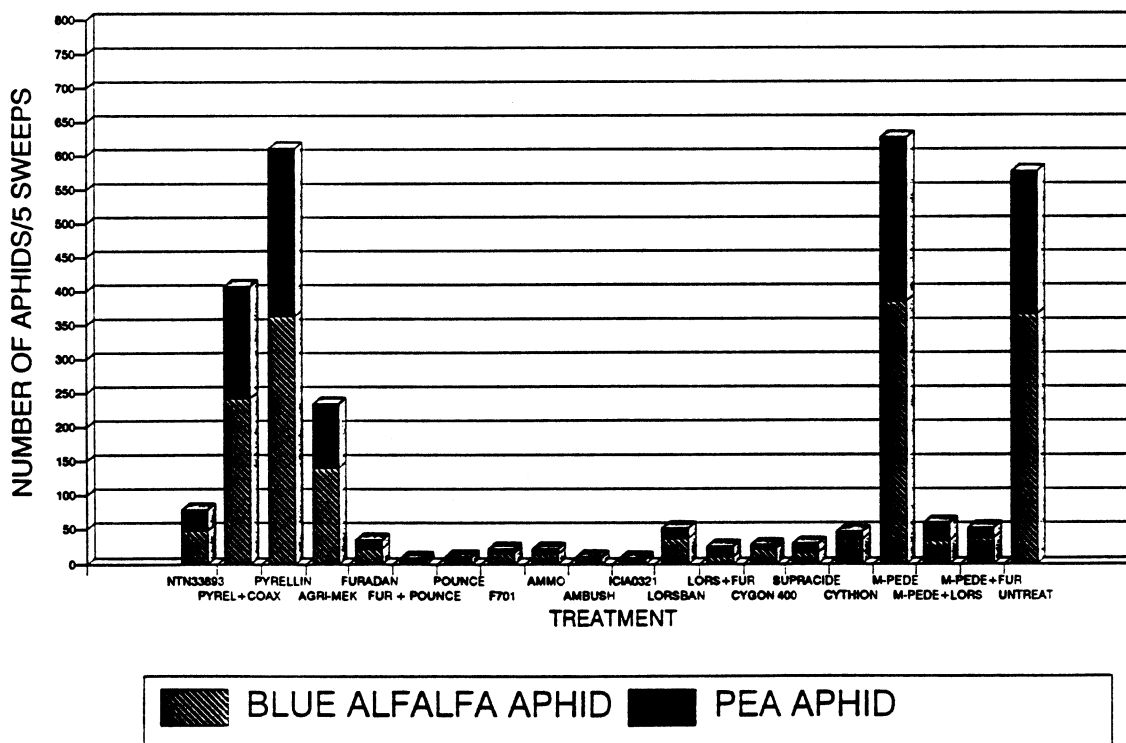
Certain insecticides, such as BAY NTN 33893, were not expected to have a quick initial knockdown of aphids as they have population growth inhibiting effects. The cool weather may not have allowed for an adequate overview of the longevity of these materials as insect pressures would increase under warmer conditions.

Western flower thrips data, as well as data for other insects, were also obtained. Little effects were noted due to the insecticides on most of the other insect populations for which data were gathered because of low insect populations.

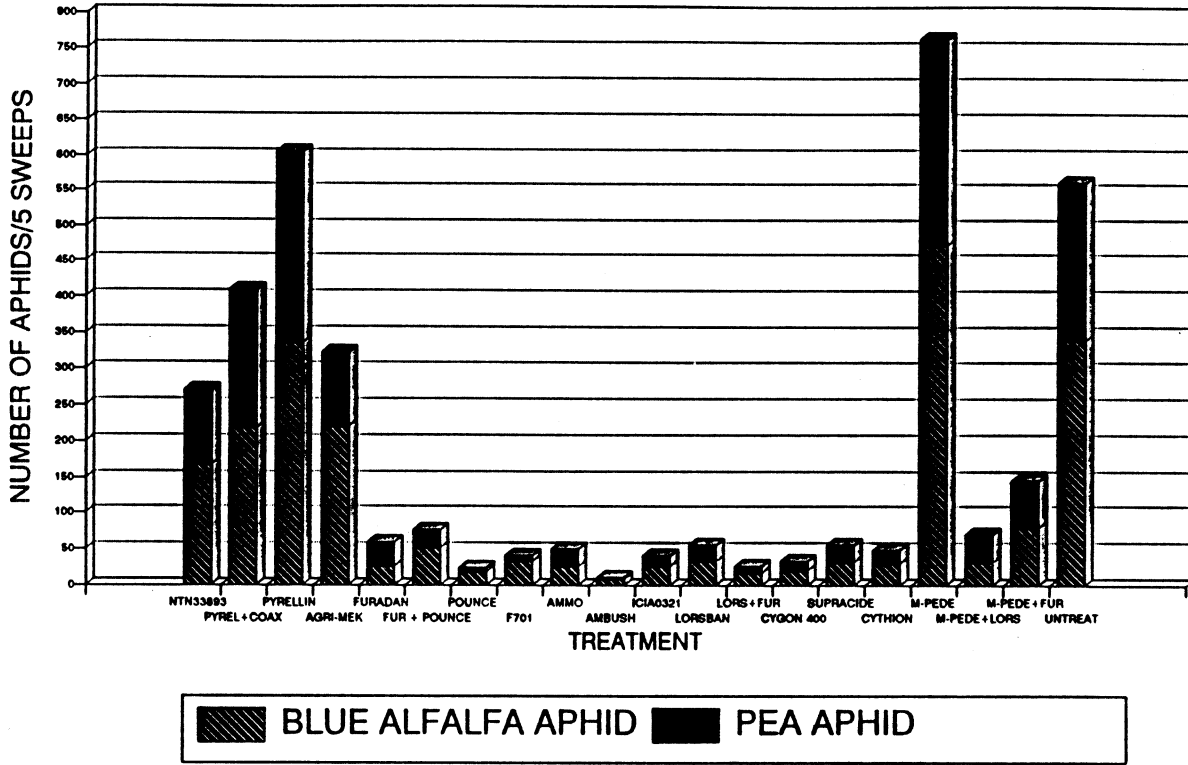
NUMBER OF BLUE ALFALFA AND PEA APHIDS ONE DAY AFTER TREATMENT



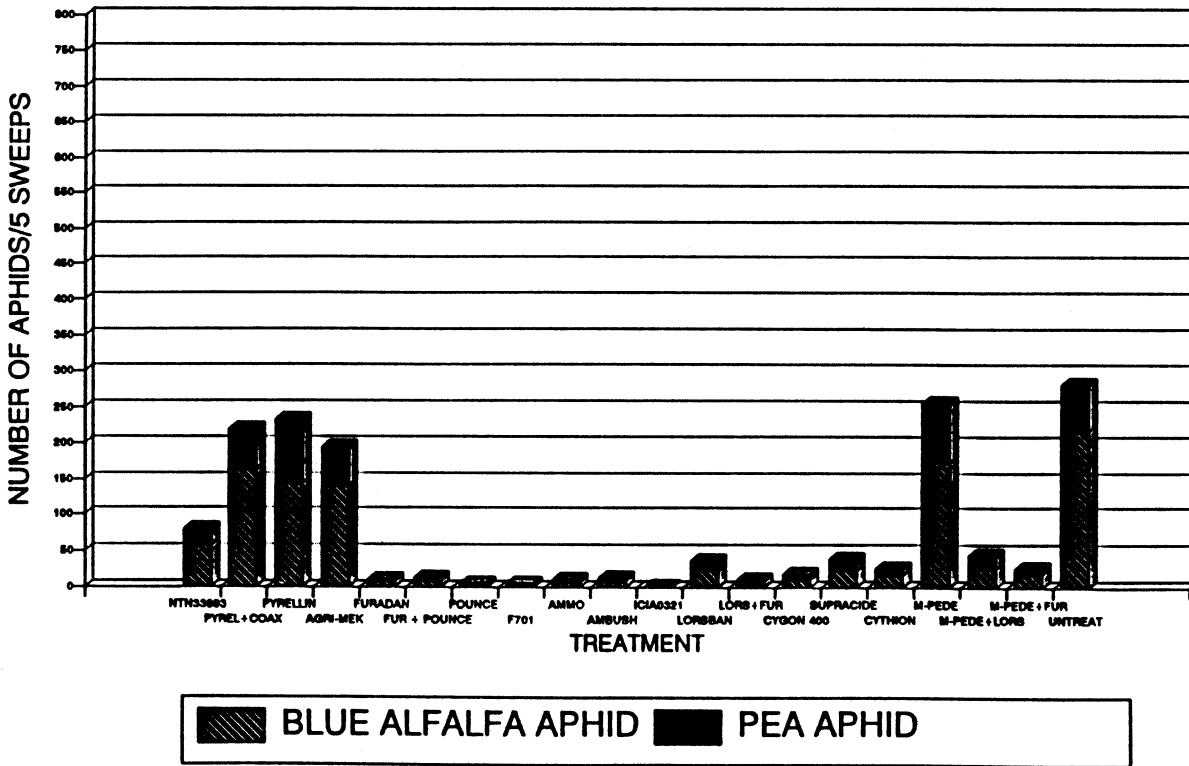
NUMBER OF BLUE ALFALFA AND PEA APHIDS FIVE DAYS AFTER TREATMENT



NUMBER OF BLUE ALFALFA AND PEA APHIDS NINE DAYS AFTER TREATMENT



NUMBER OF BLUE ALFALFA AND PEA APHIDS FOURTEEN DAYS AFTER TREATMENT



MEAN NUMBER OF BLUE ALFALFA APHIDS AND PEA APHIDS IN ALFALFA
PER 5 SWEEPS AT VARIOUS DAYS POST TREATMENT

Treatment	Rate (#ai/A)	Blue Alfalfa Aphids					Pea Aphids				
		1	5	9	14	14	1	5	9	14	
BAY NTN 33893	0.1	282.75 ^b	48.75 ^a	168.75 ^{ab}	57.0 ^a	109.25 ^a	30.75 ^a	102.0 ^{ab}	22.75 ^a		
Pyrelin EC + Coax	1 pt 2 pt	357.25 ^{bc}	243.5 ^b	220.0 ^{bc}	163.25 ^{ab}	195.0 ^b	165.0 ^{bc}	191.75 ^{bc}	58.25 ^{ab}		
Pyrelin EC	1 pt	354.25 ^{bc}	363.25 ^c	336.5 ^c	144.5 ^{ab}	215.5 ^{bc}	249.25 ^c	270.75 ^c	88.5 ^b		
Agri-Mek 0.15 EC	0.01	457.0 ^c	140.5 ^a	221.25 ^{bc}	139.5 ^{ab}	328.75 ^d	94.75 ^{ab}	103.5 ^{ab}	56.0 ^{ab}		
Furadan 4F	1.0	36.5 ^a	22.25 ^a	24.5 ^a	8.5 ^a	25.25 ^a	15.0 ^a	34.25 ^a	3.5 ^a		
Furadan 4F + Pounce	0.5 0.1	21.5 ^a	5.75 ^a	51.75 ^a	8.25 ^a	13.0 ^a	5.25 ^a	25.25 ^a	4.75 ^a		
Pounce 3.2 EC	0.15	29.25 ^a	11.5 ^a	18.25 ^a	5.25 ^a	10.75 ^a	1.75 ^a	6.25 ^a	1.75 ^a		
F 701 1.5 EC	0.0625	31.0 ^a	17.25 ^a	32.5 ^a	5.5 ^a	17.5 ^a	6.0 ^a	8.25 ^a	1.75 ^a		
Ammo 2.5 EC	0.1	35.0 ^a	14.25 ^a	24.5 ^a	6.25 ^a	23.25 ^a	8.75 ^a	26.0 ^a	5.0 ^a		
Ambush 2 EC	0.2	27.25 ^a	9.0 ^a	8.0 ^a	9.0 ^a	15.75 ^a	2.5 ^a	2.75 ^a	4.75 ^a		
ICIA0321	0.02	65.5 ^a	6.0 ^a	26.25 ^a	1.25 ^a	33.0 ^a	2.25 ^a	16.25 ^a	0.25 ^a		
Lorsban 4 EC	0.5	44.5 ^a	37.25 ^a	32.5 ^a	23.0 ^a	27.25 ^a	17.0 ^a	23.75 ^a	14.5 ^a		
Lorsban 4 EC + Furadan 4F	0.25 0.5	108.75 ^a	11.0 ^a	15.75 ^a	7.75 ^a	32.5 ^a	17.0 ^a	10.25 ^a	2.25 ^a		
Cygon 400	0.5	28.25 ^a	22.25 ^a	20.0 ^a	11.25 ^a	24.0 ^a	6.25 ^a	13.5 ^a	8.0 ^a		
Supracide 2E	0.5	121.5 ^a	16.5 ^a	31.5 ^a	23.75 ^a	38.25 ^a	15.25 ^a	25.0 ^a	16.0 ^a		
Cythion 57% EC	1.25	43.0 ^a	36.25 ^a	30.0 ^a	16.0 ^a	30.0 ^a	12.25 ^a	19.5 ^a	9.65 ^a		
M-Pede	2%	332.75 ^{bc}	385.0 ^c	473.0 ^d	175.0 ^{ab}	285.75 ^d	241.75 ^c	290.75 ^c	81.5 ^b		
Lorsban 4E + M-Pede	0.25 1%	104.25 ^a	34.5 ^a	30.75 ^a	24.5 ^a	57.25 ^a	27.75 ^a	41.25 ^a	20.0 ^a		
Furadan 4F + M-Pede	0.5 1%	75.75 ^a	37.75 ^a	79.75 ^a	18.0 ^a	51.75 ^a	16.75 ^a	67.75 ^a	9.25 ^a		
Untreated	---	359.75 ^{bc}	365.5 ^c	339.0 ^c	216.5 ^b	269.5 ^{cd}	212.75 ^c	222.5 ^c	64.75 ^{ab}		

MEAN NUMBER OF EGYPTIAN ALFALFA WEEVILS
PER 5 SWEEPS AT VARIOUS DAYS POST TREATMENT

Treatment	Rate (#ai/A)	Larvae					Adults				
		1	5	9	14	14	1	5	9	14	
BAY NTN 33893	0.1	2.75 ^{abcd}	1.0 ^a	1.25 ^a	1.75 ^{ab}	0.0 ^a	0.75 ^a	7.75 ^a	72.25 ^{abc}		
Pyrellin EC + Coax	1 pt 2 pt	2.75 ^{abcd}	1.25 ^a	1.0 ^a	3.75 ^b	0.25 ^a	1.5 ^a	20.5 ^a	89.0 ^{abc}		
Pyrellin EC	1 pt	5.0 ^{abcd}	1.75 ^a	0.75 ^a	1.5 ^{ab}	1.0 ^a	2.5 ^a	13.0 ^a	60.5 ^{abc}		
Agri-Mek 0.15 EC	0.01	6.25 ^{cd}	1.25 ^a	0.75 ^a	0.25 ^a	0.0 ^a	0.5 ^a	17.0 ^a	102.25 ^{abc}		
Furadan 4F	1.0	0.0 ^a	0.25 ^a	0.0 ^a	0.0 ^a	0.75 ^a	0.0 ^a	8.5 ^a	94.5 ^{abc}		
Furadan 4F + Pounce	0.5 0.1	0.25 ^a	0.0 ^a	0.0 ^a	0.0 ^a	0.25 ^a	1.5 ^a	10.25 ^a	106.75 ^{abc}		
Pounce 3.2 EC	0.15	1.5 ^a	0.0 ^a	0.5 ^a	1.0 ^a	1.0 ^a	2.25 ^a	33.0 ^a	168.0 ^c		
F 701 1.5 EC	0.0625	0.25 ^a	0.75 ^a	0.25 ^a	0.0 ^a	0.75 ^a	2.5 ^a	30.5 ^a	162.0 ^b		
Ammo 2.5 EC	0.1	2.0 ^{abc}	0.0 ^a	0.25 ^a	0.0 ^a	0.0 ^a	1.5 ^a	30.0 ^a	120.25 ^{abc}		
Ambush 2 EC	0.2	2.25 ^{abc}	0.0 ^a	0.5 ^a	1.0 ^a	1.0 ^a	1.5 ^a	16.75 ^a	109.5 ^{abc}		
ICIA0321	0.02	1.75 ^{ab}	0.5 ^a	0.75 ^a	0.0 ^a	0.5 ^a	2.25 ^a	22.0 ^a	85.25 ^{abc}		
Lorsban 4 EC	0.5	3.5 ^{abcd}	1.5 ^a	0.75 ^a	0.25 ^a	0.0 ^a	1.0 ^a	8.5 ^a	89.25 ^{abc}		
Lorsban 4 EC + Furadan 4F	0.25 0.5	0.5 ^a	0.0 ^a	0.0 ^a	0.0 ^a	0.75 ^a	0.75 ^a	5.5 ^a	75.0 ^{abc}		
Cygon 400	0.5	4.25 ^{abcd}	0.25 ^a	1.0 ^a	0.5 ^a	0.0 ^a	1.25 ^a	17.5 ^a	93.75 ^{abc}		
Supracide 2E	0.5	0.25 ^a	0.25 ^a	0.5 ^a	0.0 ^a	0.25 ^a	0.0 ^a	2.75 ^a	92.5 ^{abc}		
Cythion 57% EC	1.25	0.5 ^a	0.5 ^a	0.0 ^a	0.75 ^a	0.0 ^a	0.5 ^a	10.5 ^a	122.0 ^{abc}		
M-Pede	2%	6.5 ^{bcd}	2.0 ^a	1.25 ^a	1.5 ^{ab}	0.5 ^a	0.5 ^a	3.5 ^a	53.5 ^{ab}		
Lorsban 4E + M-Pede	0.25 1%	2.25 ^{abc}	2.0 ^a	1.0 ^a	0.25 ^a	0.5 ^a	0.5 ^a	4.5 ^a	34.75 ^a		
Furadan 4F + M-Pede	0.5 1%	0.25 ^a	0.25 ^a	0.0 ^a	0.0 ^a	0.5 ^a	0.5 ^a	2.25 ^a	48.5 ^a		
Untreated	---	7.25 ^d	3.0 ^a	1.25 ^a	1.5 ^{ab}	0.25 ^a	0.75 ^a	10.0 ^a	46.25 ^a		

MEAN NUMBER OF WESTERN FLOWER THRIPS AND MINUTE PIRATE BUGS IN ALFALFA
PER 5 SWEEPS AT VARIOUS DAYS POST TREATMENT

Treatment	Rate (#/ai/A)	Western Flower Thrips					Minute Pirate Bugs				
		1	5	9	14		1	5	9	14	
Bay NTN 33893	0.1	10.25 ^a	3.25 ^a	17.5 ^a	5.5 ^{ab}		0.75 ^a	1.25 ^a	0.5 ^a	0.75 ^a	
Pyrellin EC + Coax	1 pt 2 pt	13.0 ^a	7.75 ^a	11.25 ^a	10.25 ^{ab}		1.25 ^a	0.75 ^a	0.5 ^a	0.75 ^a	
Pyrellin EC	1 pt	11.25 ^a	5.25 ^a	6.0 ^a	4.25 ^a		2.0 ^a	0.75 ^a	0.75 ^a	0.25 ^a	
Agri-Mek 0.15 EC	1 pt	9.25 ^a	5.25 ^a	10.25 ^a	4.5 ^a		1.75 ^a	0 ^a	0.5 ^a	2.25 ^a	
Furadan 4F	1.0	6.25 ^a	7.75 ^a	7.5 ^a	6.75 ^{ab}		0.75 ^a	0.25 ^a	0 ^a	0.5 ^a	
Furadan 4F + Pounce 3.2 EC	0.5 0.1	12.5 ^a	8.75 ^a	15.25 ^a	18.0 ^{ab}		0.25 ^a	0.25 ^a	0.5 ^a	1.0 ^a	
Pounce 3.2 EC	0.15	19.0 ^a	6.5 ^a	16.5 ^a	20.5 ^b		1.0 ^a	0.25 ^a	1.25 ^a	2.25 ^a	
F 701 1.5 EC	0.0625	9.0 ^a	4.75 ^a	7.75 ^a	6.5 ^{ab}		0 ^a	0 ^a	0.75 ^a	1.0 ^a	
Ammo 2.5 EC	0.1	9.35 ^a	4.5 ^a	4.75 ^a	7.0 ^{ab}		0 ^a	0 ^a	0.25 ^a	0.5 ^a	
Ambush 2 EC	0.2	13.75 ^a	6.5 ^a	7.5 ^a	11.75 ^{ab}		0.75 ^a	0.5 ^a	0.75 ^a	1.0 ^a	
ICIA0321	0.02	7.0 ^a	2.5 ^a	11.75 ^a	8.75 ^{ab}		1.0 ^a	0.25 ^a	0.75 ^a	1.0 ^a	
Lorsban 4 EC	0.5	12.5 ^a	11.25 ^a	22.75 ^a	10.25 ^{ab}		0.25 ^a	0.5 ^a	1.75 ^a	1.0 ^a	
Lorsban 4 EC + Furadan 4F	0.25 0.5	5.75 ^a	6.5 ^a	19.0 ^a	9.5 ^{ab}		0.5 ^a	0.25 ^a	0 ^a	1.0 ^a	
Cygon 400	0.5	10.0 ^a	8.0 ^a	10.5 ^a	6.5 ^{ab}		1.0 ^a	1.0 ^a	0.5 ^a	1.5 ^a	
Supracide 2E	0.5	15.0 ^a	13.0 ^a	11.0 ^a	4.0 ^a		0.25 ^a	0.25 ^a	0.75 ^a	1.0 ^a	
Cythion 57% EC	1.25	16.5 ^a	11.5 ^a	20.75 ^a	13.5 ^{ab}		1.0 ^a	1.0 ^a	0.75 ^a	2.25 ^a	
M-Pede	2%	10.25 ^a	6.0 ^a	8.5 ^a	5.5 ^{ab}		0.75 ^a	1.25 ^a	0.5 ^a	1.5 ^a	
Lorsban 4E + M-Pede	0.25 1%	12.5 ^a	10.75 ^a	14.0 ^a	8.75 ^{ab}		2.0 ^a	1.0 ^a	0.25 ^a	2.0 ^a	
Furadan 4F + M-Pede	0.5 1%	10.25 ^a	5.0 ^a	11.5 ^a	8.0 ^{ab}		0.75 ^a	0.25 ^a	0.75 ^a	1.0 ^a	
Untreated	---	12.5 ^a	6.5 ^a	8.75 ^a	5.75 ^{ab}		0.5 ^a	0.25 ^a	1.0 ^a	2.0 ^a	

MEAN NUMBER OF LYGUS BUGS AND BATHYPLECTES SPP. WASPS IN ALFALFA
PER 5 SWEEPS AT VARIOUS DAYS POST TREATMENT

Treatment	Rate (#ai/A)	Lygus Bugs					Bathyplectes Spp. Wasps				
		1	5	9	14	14	1	5	9	14	
BAY NTN 33893	0.1	2.25 ^a	0.75 ^a	0.5 ^a	3.0 ^{ab}	3.0 ^{ab}	1.75 ^a	1.25 ^{ab}	0.0 ^a	0.25 ^a	
Pyrellin EC + Coax	1 pt 2 pt	1.5 ^a	2.25 ^a	5.0 ^a	2.0 ^{ab}	2.0 ^{ab}	1.75 ^a	3.25 ^b	3.75 ^{bc}	1.0 ^a	
Pyrellin EC	1 pt	2.75 ^a	2.75 ^a	3.0 ^a	1.25 ^{ab}	1.25 ^{ab}	4.75 ^b	1.75 ^{ab}	4.25 ^c	1.25 ^a	
Agri-Mek 0.15 EC	0.01	2.25 ^a	1.75 ^a	2.0 ^a	1.5 ^{ab}	1.5 ^{ab}	3.5 ^{ab}	0.5 ^a	0.25 ^a	0.75 ^a	
Furadan 4F	1.0	2.0 ^a	0.5 ^a	0.75 ^a	1.5 ^{ab}	1.5 ^{ab}	3.25 ^{ab}	0.0 ^a	0.5 ^a	0.75 ^a	
Furadan 4F + Pounce	0.5 0.2	3.25 ^a	0.5 ^a	2.25 ^a	1.75 ^{ab}	1.75 ^{ab}	0.75 ^a	0.5 ^a	0.75 ^{ab}	1.75 ^a	
Pounce 3.2 EC	0.15	2.25 ^a	1.0 ^a	1.25 ^a	0.75 ^{ab}	0.75 ^{ab}	1.0 ^a	0.5 ^a	0.25 ^a	1.75 ^a	
F 701 1.5 EC	0.0625	0.75 ^a	0.75 ^a	0.75 ^a	1.5 ^{ab}	1.5 ^{ab}	1.0 ^a	0.75 ^a	1.0 ^{ab}	1.25 ^a	
Ammo 2.5 EC	0.1	1.75 ^a	0.5 ^a	0.75 ^a	1.75 ^{ab}	1.75 ^{ab}	1.25 ^a	0.0 ^a	0.25 ^a	0.5 ^a	
Ambush 2 EC	0.2	1.5 ^a	1.0 ^a	1.5 ^a	1.75 ^{ab}	1.75 ^{ab}	0.25 ^a	0.25 ^a	0.0 ^a	0.5 ^a	
ICIA0321	0.02	1.0 ^a	0.25 ^a	1.5 ^a	1.25 ^{ab}	1.25 ^{ab}	0.25 ^a	0.25 ^a	1.5 ^{abc}	1.75 ^a	
Lorsban 4 EC	0.5	4.0 ^a	2.5 ^a	0.5 ^a	3.25 ^{ab}	3.25 ^{ab}	0.75 ^a	1.5 ^{ab}	1.5 ^{abc}	1.25 ^a	
Lorsban 4 EC + Furadan 4F	0.25 0.5	1.5 ^a	2.0 ^a	1.25 ^a	1.5 ^{ab}	1.5 ^{ab}	0.75 ^a	0.25 ^a	1.25 ^{abc}	1.5 ^a	
Cygon 400	0.5	1.25 ^a	0.75 ^a	1.0 ^a	1.25 ^{ab}	1.25 ^{ab}	1.25 ^a	1.5 ^{ab}	1.25 ^{abc}	1.5 ^a	
Supracide 2E	0.5	1.5 ^a	0.75 ^a	0.5 ^a	1.5 ^{ab}	1.5 ^{ab}	1.5 ^a	1.0 ^{ab}	1.75 ^{abc}	1.75 ^a	
Cythion 57% EC	1.25	1.75 ^a	1.75 ^a	2.25 ^a	0.5 ^{ab}	0.5 ^{ab}	0.5 ^a	1.25 ^{ab}	1.0 ^{ab}	1.25 ^a	
M-Pede	2%	3.5 ^a	2.75 ^a	1.25 ^a	4.25 ^b	4.25 ^b	1.25 ^a	2.25 ^{ab}	2.75 ^{abc}	2.0 ^a	
Lorsban 4E + M-Pede	0.25 1%	2.5 ^a	1.25 ^a	0.75 ^a	0.75 ^{ab}	0.75 ^{ab}	2.5 ^{ab}	0.75 ^a	2.0 ^{abc}	0.5 ^a	
Furadan 4F + M-Pede	0.5 1%	2.0 ^a	0.5 ^a	0.25 ^a	0.25 ^a	0.25 ^a	0.5 ^a	0.25 ^a	1.5 ^{abc}	0.75 ^a	
Untreated	---	2.25 ^a	3.25 ^a	0.25 ^a	2.5 ^{ab}	2.5 ^{ab}	2.75 ^{ab}	3.25 ^b	1.75 ^{abc}	2.75 ^a	