Imperial County Agricultural Briefs

Features From your Farm Advisors

December, 2011

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INSECTICIDE EFFICACY AGAINST ALFALFA WEEVIL & APHIDS, 2011

Eric T. Natwick and Martin I. Lopez

The objective of the study was to evaluate the efficacy of the new and old insecticidal compounds used against Egyptian alfalfa weevil (EAW), *Hypera brunnipennis* (Boheman)
larvae and aphids (Blue alfalfa aphid (BAA) *Acyrthosiphon kondoi* Shinji, Pea aphid (PA), *Acyrosiphon pisum* (Harris), and Cowpea aphid (CPA) *Aphis craccivora* Koch) on alfalfa grown for hay production under Spring desert growing conditions. A field study was conducted during the spring of 2011 at the UC Desert Research and Extension Center. A stand of alfalfa, VAR. CUF 101, was used for the experiment. Plots were arranged in a randomized complete block design with five replications. The experimental design was RCB using four replicates with seven treatments. Plots measured 33.3 ft. by 50 ft. and insecticide treatments were applied on March 8, 2011, using a broadcast application with a tractor mounted boom. The applications were made with a Lee Spider Spray Trac operated at 20 psi delivering 31 gpa. A broadcast application was delivered through 17 nozzles (TJ-60 11003VS). Egyptian alfalfa weevil larvae (EAW) and aphid population complex of blue alfalfa aphid (BAA), pea aphid (PA) and cowpea aphid (CPA) were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180^{o} sweeps. Plots were sampled on 2 March (7-DPT), 11 March (3-DAT), 15 March (7-DAT), 22 March (14-DAT), and 29 March (21-DAT). Sweep samples were bagged, labeled, and frozen for later counting of EAW larvae and aphids by species (Tables 1 - 3). Data sets were analyzed using a 2-way ANOVA and means separated by a protected LSD (P<0.05).

All insecticide treatments had means for EAW larvae that were significantly lower (P=0.05) than the means for the untreated check on all post-treatment sampling dates except for Centric at 14-DAT and 21- DAT (Table 1). Danitol provided the highest level of EAW control and residual activity through 21-DAT.

Pretreatment aphid levels were high and there were no differences among the means for CAP, BAA, and PA for sweep samples (Tables 2-4). Aphid levels diminished quickly over the three weeks following treatments including in the untreated check plots due to high levels of predation from sevenspotted lady beetle *Coccinella septempunctata* Linnaeus and parasitism by *Diaeretiella spp.* All insecticide treatments had means for PA that were significantly lower (P=0.05) than the means for the untreated check 3-DAT and 7-DAT (Tables 2). All insecticide treatments had means for PA that were significantly lower (P=0.05) than the means for the untreated check 14-DAT with the exceptions of Mustang EW and Danitol. None of the insecticide treatments had PA means that were lower than the check 21-DAT. All insecticide treatments had means for BAA that were significantly lower (P=0.05) than the means for the untreated check 3-DAT, 7-DAT and 14-DAT (Tables 3). None of the insecticide treatments had BAA means that were lower than the check 21-DAT. There were few CPA present during the experiment and there were no differences among the CPA post treatment means except oat 7-DAT when all insecticides treatments except Mustang EW and Centric 40 WG had CPA means significantly lower than the check (Table 4).

You must have a US EPA and CDPR approved label registration for use on alfalfa to legally apply an insecticide to alfalfa in California. Follow the US EPA label and state label for use of any pesticide products on any agricultural commodity. Centric (thiamethoxam) is an insecticide, marketed by Syngenta, and is not registered for use on alfalfa. Endigo (lambda-cyhalothrin + thiamethoxam) is an insecticide, marketed by Syngenta, and is not registered for use on alfalfa. Danitol (fenpropathrin) in a Valent USA insecticide not registered for use on alfalfa.

Table 1. Egyptian Alfalfa Weevil Larvae per Sweeps, Holtville, CA, 2011.

Treatment	oz/acre	7DPT[y]	3 DAT[xz]	7 DAT[x]	14 DAT[x]	21 DAT[x]
Check	--------	9.75	29.88 a	13.25 a	2.38 a	1.63 a
Mustang Insecticide EW	4.3 fl	9.43	0.25 c	0.45 c	0.48 b	0.63 b
Stallion	9.25 fl	8.50	0.43 c	0.08 de	0.10 bc	0.50 b
Stallion	11.75 fl	13.28	0.30 c	0.05 de	0.25 bc	0.35 bc
Endigo 2.06 ZC*	4.0 fl	11.43	0.48 c	0.18 cd	0.25 bc	0.65 b
Endigo ZCX 2.71 ZC*	4.0 fl	10.78	0.45 c	0.15 cde	0.15 bc	0.33 b
Centric 40 WG*	3.5 dry	10.03	3.73 b	3.30 b	1.73 a	1.98 a
Voliam Xpress 1.25 ZC	9.0 fl	8.20	2.83 c	0.63 c	0.63 b	0.28 bc
Cobalt Advanced 2.63 EC	24.0 fl	6.68	0.35 c	0.13 de	0.20 bc	0.20 bc
Danitol*	21.3 fl	9.95	0.25 c	0.00 e	0.0	0.05

***Not registered for use on alfalfa at time of publication.**
Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
x Log_{10} (X+1) transformed data used for analysis, ACTUAL MEANS REPORTED.
y Pre-treatment on 2 March 2011
z Days after treatment.

Table 2. Pea Aphid per Sweeps, Holtville, CA, 2011.

Treatment	oz/acre	7DPT[y]	3 DAT[xz]	7 DAT[x]	14 DAT[x]	21 DAT
Check	--------	65.73	40.85 a	10.98 a	0.85 a	0.75
Mustang Insecticide EW	4.3 fl	68.43	0.58 c	0.50 bc	0.28 abc	0.68
Stallion	9.25 fl	65.60	0.20 c	0.03 c	0.00 d	0.83
Stallion	11.75 fl	82.30	0.33 c	0.10 bc	0.15 bcd	0.08
Endigo 2.06 ZC*	4.0 fl	72.73	0.35 c	0.00 c	0.03 d	0.40
Endigo ZCX 2.71 ZC*	4.0 fl	67.08	0.28 c	0.03 c	0.00 d	0.23
Centric 40 WG*	3.5 dry	83.95	0.48 c	0.03 c	0.05 d	0.95
Voliam Xpress 1.25 ZC	9.0 fl	73.05	1.13 c	0.28 bc	0.13 bcd	0.33
Cobalt Advanced 2.63 EC	24.0 fl	84.80	0.13 c	0.15 bc	0.10 cd	0.40
Danitol*	21.3 fl	75.90	5.93 b	1.03 b	0.45 ab	0.33

***Not registered for use on alfalfa at time of publication.**
Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
x Log_{10} (X+1) transformed data used for analysis, ACTUAL MEANS REPORTED.
y Pre-treatment on 2 March 2011
z Days after treatment.

Table 3. Blue Alfalfa Aphids per Sweeps, Holtville, CA, 2011.

Treatment	oz/acre	7DPT[y]	3 DAT[xz]	7 DAT[x]	14 DAT[x]	21 DAT
Check	--------	245.53	139.68 a	28.78 a	2.20 a	0.83
Mustang Insecticide EW	4.3 fl	238.88	2.43 c	1.30 b	0.28 bc	0.58
Stallion	9.25 fl	189.85	0.50 de	0.23 cde	0.28 bc	0.35
Stallion	11.75 fl	249.13	0.50 e	0.28 bcde	0.28 bcd	0.63
Endigo 2.06 ZC*	4.0 fl	257.03	1.08 cde	0.08 de	0.18 bcd	0.35
Endigo ZCX 2.71 ZC*	4.0 fl	182.43	0.83 cde	0.00 e	0.25 bc	0.18
Centric 40 WG*	3.5 dry	293.95	2.93 c	0.93 bc	0.08 cd	0.38
Voliam Xpress 1.25 ZC	9.0 fl	232.55	3.50 cd	1.00 bcde	0.05 d	0.58
Cobalt Advanced 2.63 EC	24.0 fl	205.05	0.43 e	0.23 bcde	0.20 bcd	0.48
Danitol*	21.3 fl	191.33	12.43 b	1.98 bcd	0.55 b	0.53

***Not registered for use on alfalfa at time of publication.**
Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
[x] Log_{10} (X+1) transformed data used for analysis, ACTUAL MEANS REPORTED.
[y] Pre-treatment on 2 March 2011
[z] Days after treatment.

Table 4. Cowpea Aphid per Sweeps, Holtville, CA, 2011.

Treatment	oz/acre	7DPT[y]	3 DAT[z]	7 DAT[x]	14 DAT	21 DAT
Check	--------	2.38	0.75	0.38 a	0.18	0.10
Mustang Insecticide EW	4.3 fl	2.55	0.23	0.35 a	0.00	0.03
Stallion	9.25 fl	2.20	0.08	0.10 bc	0.00	0.03
Stallion	11.75 fl	3.35	0.23	0.03 c	0.10	0.00
Endigo 2.06 ZC*	4.0 fl	2.83	0.20	0.00 c	0.00	0.00
Endigo ZCX 2.71 ZC*	4.0 fl	2.43	0.10	0.10 bc	0.03	0.05
Centric 40 WG*	3.5 dry	1.58	0.40	0.30 ab	0.10	0.00
Voliam Xpress 1.25 ZC	9.0 fl	3.38	0.38	0.08 bc	0.00	0.05
Cobalt Advanced 2.63 EC	24.0 fl	3.55	0.18	0.03 c	0.03	0.00
Danitol*	21.3 fl	3.73	0.13	0.05 c	0.03	0.05

***Not registered for use on alfalfa at time of publication.**
Means within columns followed by the same letter are not significantly different, LSD; *P*= 0.05.
[x] Log_{10} (X+1) transformed data used for analysis, ACTUAL MEANS REPORTED.
[y] Pre-treatment on 2 March 2011
[z] Days after treatment.

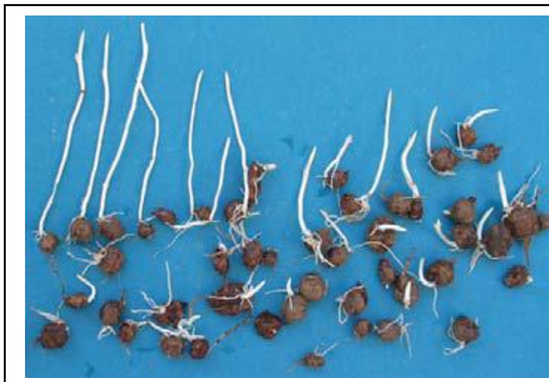
Yellow & Purple Nutsedge and the Root-knot Nematode

Vonny Barlow
Entomology Advisor, UCCE Riverside County

Weeds are often the most problematic to manage in and around agricultural fields. Yellow & Purple nutsege are difficult to manage and it seems brings an additional pest of concern. Nematodes! From Weed Science; Greenhouse experiments showed that Yellow nutsedge established from root-knot nematode-infected tubers produced more tubers than noninfected tubers. Root-knot nematode populations became established on yellow nutsedge root systems when plants were established from tubers previously cultured with root-knot nematodes. When root-knot nematodes are present, yellow nutsedge tuber germination is not affected by metolachlor herbicide...the pests do not exist independently and that their management may be interrelated.

The nature of the symbiotic relationship between the nematode and the nutsedges is such that there is a positive correlation between the density of nutsedge plants in an area of a field and the level of concentration of the nematode. More nutsedges mean more nematodes.

An interesting video on this interaction can be viewed here; http://www.youtube.com/watch?v=E7ByJ3tFxDw



As the Yellow and Purple nutsedge is attacked by the root knot nematode the plant will increase production of the "nuts" or tubers. These tubers are the overwintering stage of the Yellow and Purple nutsedge plant. The root knot nematodes can use these tubers to survive in the winter as well. So the symbiotic relationship is that the nematodes will actually increase a Yellow and Purple nutsedge populations through increased tuber production, and the plants provide an overwintering (refuge) for the nematodes increasing their survival and population. In the end both populations increase hence the use of the symbiotic term.

Studies have shown that growing a nematode-resistant alfalfa (*Medicago sativa* L.) reduced nutsedge and nematode populations to nearly zero compared to nematode susceptible cotton (*Gossypium hirsutum* L.) which remained at damaging levels over 3 yr (with a subsequent rotation to a chile pepper (*Capsicum annuum* L.)). Nematode populations following the resistant alfalfa were comparable to populations after fumigation of cotton plots. The benefit of the alfalfa crop lasted for 1 yr; therefore, growers must consider long-term strategies for extending suppression of this pest complex.

Should you apply a nematacide when spraying for nutsedge? I would say that you should not. In order to better protect the efficacy of chemical products we need to be aware of resistance management.

Pest management for nematodes:

• Plants affected by plant-parasitic nematodes may be stunted and have pale or yellow-green foliage.

• Extracting and identifying nematodes from soil samples or infected plant material is the best means for determining if and which nematode species are responsible for poor growth. The mere presence of nematodes in a sample does not mean they are causing plant damage. The nematodes must be identified and quantified correctly to determine if management measures are needed.

• Soil fumigation before planting can be effective against nematodes, but fumigants are expensive and generally not economically for all crops.

Important to remember:

❖ **Sanitation -** Cleaning machinery, tools and clothing after working in a nematode-infested field often slows the spread of nematode species into other areas. Since nematodes reproduce on certain weed species, weed control can significantly help slow population increase.

❖ **Use of nematode resistant plant varieties -** Nematode resistant plant material is available for many crops. Resistant varieties are not damaged severely by nematode infection and can reduce nematode populations. Use of nematode resistant varieties in problem fields can be effective and the least expensive way to avoid losses. However, when resistant varieties are overused, new pathogenic strains or races of nematodes may appear.

❖ **Crop rotation/Cover crops -** Crop rotation to a non-host crop can reduce nematode populations from reaching economically damaging levels. However, it is necessary to positively identify the species of nematode in order to know what plants are non-hosts.

Refer to UC IPM guidelines for nematode management here: http://www.ipm.ucdavis.edu/PMG/r1200111.html

Attention!

For more information, please go to:

http://alfalfa.ucdavis.edu

Learn more about forage crops and biofuels!

4-day Farm Supervisor Seminar (in Spanish)

Modesto, California, March 13-16, 2012. Topics that will be covered include employee discipline (including how to deal with the most difficult subordinate behaviors), interpersonal negotiation skills, and the importance of praise in day-to-day communications.
Those who attend will participate in numerous role-plays, and receive individualized attention and evaluation. A copy of the individualized participants' scorecard will be sent to each farm enterprise. Registration limited to two individuals per farm operation.

Any questions, contact Gregorio Billikopf at gebillikopf@ucdavis.edu or 209-525-6800, or Marie Harter at the same phone.

Seminar contents:

- Effective praise
- Interpersonal negotiation skills
- Employee discipline – 7 steps
- Employee discipline – dealing with difficult behavior
- Understanding piece-rate pay design
- Preventing sexual harassment – power and abuse of authority
- Conflict management
- Listening skills

Participants will have the opportunity to role-play many of the skills discussed.

Seminar cost:
Cost is $128 and includes materials and lunches over the four days. **Early registration discount**: Those who register early, by January 31, 2012, can do so for $97. If sending a check, the envelope must be postmarked by January 31, 2012.

Payment. You may pay through check or credit card. **If paying through check:** Make checks out to UC Regents and mail to Workplace Mediation / c.o. G. Billikopf / 3800 Cornucopia Way Suite A, Modesto, CA 95358. If paying by credit card, go to http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=1763.

Map to the location:
We will meet in Rooms H & I of the **Stanislaus Building**. http://www.cnr.berkeley.edu/ucce50/ag-labor/7map.htm

Instructors and coaches:

Gregorio Billikopf, Ryan Boothe and Horacio Bertinetti. Invited by not confirmed yet, are: Rodrigo López, Jorge Wicha, Juan Horacio Grant and Oscar Quezada (coming from Chile).

CIMIS REPORT AND UC DROUGHT MANAGEMENT PUBLICATIONS

Khaled Bali and Steve Burch*

California Irrigation Management Information System (CIMIS) is a statewide network operated by California Department of Water Resources. Estimates of the daily reference evapotranspiration (ET_o) for the period of December 1 to February 29 for three locations in the Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_o by crop coefficients. For more information about ET and crop coefficients, contact the UC Imperial County Cooperative Extension Office (352-9474) or the IID, Irrigation Management Unit (339-9082). Please feel free to call us if you need additional weather information, or check the latest weather data on the worldwide web (visit http://tmdl.ucdavis.edu and click on the CIMIS link).

Table 1. Estimates of daily Evapotranspiration (ET_o) in inches per day

Station	December		January		February	
	1-15	16-31	1-15	15-31	1-15	16-29
Calipatria	0.07	0.07	0.08	0.09	0.12	0.14
El Centro (Seeley)	0.06	0.06	0.08	0.09	0.12	0.14
Holtville (Meloland)	0.06	0.06	0.08	0.09	0.12	0.14

*Imperial Irrigation District.

Link to UC Drought Management Publications

http://ucmanagedrought.ucdavis.edu/