Imperial AGRICULTURAL BRIEFS

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How to Manage Egyptian Alfalfa Weevil

Eric T. Natwick

Egyptian alfalfa weevil, *Hypera brunnipennis* (Boheman), can be a serious pest of alfalfa in the low desert during the winter and early spring. Adult weevils spend the summer and most of the fall in a resting state called aestivation. When nighttime temperatures drop below 42E F in the fall (late-November and December), adult Egyptian alfalfa weevils emerge from their aestivation sites, fly to alfalfa fields, feed, and mate. The adult weevils do not cause economic damage, but this is an indicator of the levels of larval populations which will be present from January through March.

An insecticide efficacy study for Egyptian alfalfa weevil (EAW) control was conducted in March of 2003 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 four replications. Nine insecticide treatments were included along with an untreated control. Insecticide treatments and rates as pounds active ingredient (ai) per acre are listed in Table 1. Plots measured 35 feet by 50 feet and insecticide treatments were applied March 4, 2004, using a broadcast application with a tractor mounted boom.

Populations of EAW larval populations were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180^{o} sweeps. Plots were sampled on March 4, 2004 prior to insecticide applications (PT) and post-treatment samples were taken on March 8, 11, 18 and 25; 4-days after treatment (DAT), 7-DAT, 14-DAT and 21-DAT.

No differences were found among the treatments for EAW larval populations PT (P>0.05), Tables 1. All of the insecticide treatments controlled EAW with larval means that were significantly lower than the untreated control treatment means from 3-DAT through 14-DAT. Due to larval pupation, the EAW population had diminished and there were no differences among the treatments 21-DAT. The post treatment mean for Furadan 4F at 1.0 lb ai per acre (0.2) was significantly lower than the means for all other treatments followed by Furadan 4F at 0.5 lb ai per acre tanks mixed with Dimethoate 267E at 0.375 lb ai per acre with a post treatment mean of 0.48, which was significantly lower that all remaining treatments except Steward 1.25 SC at 0.045 lb ai per acre tank mixed with Lorsban 4E at 0.125 lb ai per acre.

Female EAW chew holes in the stems of alfalfa plants and lay eggs following emergence from aestivation. Adult females insert 10 to 30 smooth, shiny, yellowish eggs are into the centers of living and dead stems 3 to 6 inches above the soil surface or into stems in debris on the ground. A single female may deposit from 400 to a 1,000 eggs during a single season. Eggs usually hatch in 5 to 10 days and larval development takes about a month.

Weevil larvae hatch from the eggs, exit the stem and crawl to the terminal leaves. First instar larvae feed within the uppermost folded leaves. Later instar larvae disperse over the plant skeletonizing leaves as they feed. The weevil larva is legless, has a brown head and is light green with a white stripe down the back, and is about 0.25 inch long when fully grown. Larvae complete their growth in 3 to 4 weeks. Larvae spin a cocoon and pupate either in the leaves of the plant or on the ground in March and April. Egyptian alfalfa weevil larvae in the low desert are most abundant from late January through March. The numbers of Egyptian alfalfa weevil larvae will decline rapidly through April and newly emerged adults will be appearing in fields.

Egyptian alfalfa weevil is usually a problem only during the first cutting, although damaging populations may persist into the second cutting, or the third cutting. To sample for weevil larvae, divide the field in to 4 or more sections and take 5 sweeps in each section. Divide the total number of weevil larvae by the total number of sweeps to get the field average. The treatment threshold is the same for both species of alfalfa weevil, an average of 20 larvae per sweep.

Egyptian Alfalfa Weevil

Table 1. Mean Numbers[v] of Egyptian Alfalfa Weevil Larvae per Sweep, Holtville, CA, 2004.

Treatment	lb ai/a	PT[w]	4 DAT[xy]	7 DAT	14 DAT	21 DAT	PTM[yz]
Untreated	------	31.85 a	19.22 a	9.63 a	4.93 a	2.43 a	9.30 a
Steward 1.25 SC + Lorsban 4E	0.025 + 0.125	30.88 a	0.84 bc	0.40 bc	1.58 bc	2.45 a	1.26 b
Steward 1.25 SC + Lorsban 4E	0.045 + 0.125	30.50 a	0.07 e	0.15 bc	0.63 bcd	1.78 a	0.63 cd
DPX-KN128 1.25 EC + Lorsban	0.045 + 0.125	33.15 a	0.73 bc	0.95 b	1.88 b	1.40 a	1.14 bc
Renounce 20W	0.0413	26.05 a	1.59 b	0.98 b	1.10 bcd	1.28 a	1.34 b
Steward 1.25 SC + Dimethoate 267E	0.045 + 0.375	24.05 a	0.11 de	0.10 bc	1.55 bc	1.95 a	0.93 bc
Steward 1.25 SC + Malathion 8	0.045 + 1.000	31.45 a	0.77 bc	0.70 bc	0.90 bcd	1.78 a	0.98 bc
Imidan 70-W + Dimethoate 267E	1.429 + 0.375	29.63 a	0.48 cd	0.20 bc	1.80 bc	2.48 a	1.22 b
Furadan 4F	1.000	29.73 a	0.12 de	0.02 c	0.15 d	0.50 a	0.20 e
Furadan 4F + Dimethoate 267E	0.500 + 0.375	23.43 a	0.11 de	0.00 c	0.53 cd	1.20 a	0.48 d

[v] Mean separations within columns by $LSD_{0.05}$.
[w] Pre-treatment.
[x] Days after treatment.
[y] Log transformed data used for analysis; reverse transformed means reported.
[z] Post treatment means.

Pricing silage

Juan N. Guerrero

Making hay during the winter is difficult because the drying period may become excessive. If it rains during the drying period, the entire cutting might be ruined. Rather than making hay during the winter, some growers pasture alfalfa fields with sheep during the winter. Making silage is another option. Alfalfa silage is prized by dairy producers because cows relish silage. Cows usually eat more silage than a comparable amount of hay. There is a general rule in livestock production: the more an animal eats, the more it produces. While stored hay, over time, decreases in feeding value, silage nutritive value may be conserved over a much longer period (years). There are two market related problems with alfalfa silage production. Since silage is about 65% water, transporting water by truck is expensive. The other problem for a producer is properly pricing the alfalfa silage; how do you sell standing water?

I propose the following procedure for a producer to price alfalfa silage. Assume the following for next January:

Hay price – $130/ton for Premium hay, baled hay has 15% moisture, a hay yield of 1 ton/acre, baling losses of 20% of potential dry matter yield, lush and green alfalfa in the field is about 80% water; $30/ton for baling, raking and stacking; and costs for plastic bags for silage and freight are borne by dairyman

Some might think that 20% baling losses might be excessive, but in reality, these kinds of losses are common in the Imperial Valley.

Calculations:

✓ 2000 lb/acre (hay yield) * 0.85 dry matter (bale dry matter) = 1700 lb/acre dry matter yield

✓ 1700 lb/acre ÷ 0.80 (baling loss adjustment) = 2125 lb/acre of potentially available dry matter harvested by the silage process (when you make silage you harvest *all* potentially produced dry matter rather than the *normal* loss of 20% during baling, that is why you divide)

✓ 2125 lb/acre ÷ 0.35 (dry matter in silage) = 6071 lb/acre of potential silage yield

✓ 6071 lb/acre ÷ 2000 lb/ton = 3.04 ton/acre potential silage yield

✓ $130/ton (hay price) - $30/acre (baling costs) = $100/ton (net price per ton of hay without baling costs)

✓ 1 ton/acre hay yield * $100/ton = $100/acre gross returns

✓ $100/acre (gross returns) ÷ 3 ton/acre (silage production) = $33/ton breakeven silage price.

Under these conditions, the grower must receive $33/ton of silage to make silage-making comparable to hay production. If any part of the transaction, such as the cost of the plastic bags or freight charges change, then silage production will not be comparable to hay production. While alfalfa silage is highly prized by the dairyman, for the alfalfa producer, silage production is just another marketing medium with its own particular positives and negatives.

Tomato spotted wilt virus detected in Imperial County

Thomas Turini

Tomato spotted wilt virus has been detected in pepper and tomato in Imperial County in 2004. The disease has been known to occur in other production areas in California and other parts of the United States.

Tomato spotted wilt symptoms on tomatoes appear as numerous small dark spots on the leaves. Shoots may die back and dark streaks may be present in the vascular tissue. Affected plants may have a lopsided appearance or the entire plant may be stunted and wilting. Fruit symptoms are characterized by circular yellow and red concentric rings and raised areas.

On peppers, symptoms may appear as a mottling of leaves or a general stunting and yellowing of the entire plant with dark dead spots on leaves and shoots. Fruit may have red or green spots, which may be surrounded by yellow halos, concentric rings of brown dead tissue may also be present.

Tomato spotted wilt virus is transmitted by several thrips including western flower thrips *(Franklinella occidentalis)*, onion thrips *(Thrips tabaci)*, and chili thrips *(Scirtothrips dorsalis)*. The virus is transmitted persistently. Thrips aquire this virus as nymphs and are capable of transmitting the virus as adults. The minimum aquisition period for T. tabaci is 15 min. The insect will retain the virus for life and infected females can pass the virus to her offspring. Seed transmission has been reported in tomato.

This virus has a very wide host range including 174 plant species, 6 of which are monocots. Crop plants that may be infected include potato, pepper, celery, eggplant and lettuce. Weed hosts include cheese weed, black nightshade, purslane, bur clover, sheperd's purse, swinecress, sowthistle, burdock and lamb's-quarters. Common ornamentals that are hosts include chrysanthemum, nasturtium and verbena.

Resistant tomato and pepper varieties are commercially available. In Europe, the disease has been reported in pepper varieties that had resistance introduced from *Capsicum chinense* PI152225.

Photo courtesy of J.P. Sanderson, Cornell University, Ithaca, NY

Larval stage of western flower thrips, a vector of tomato spotted wilt tosposvirus.

Young tomato leaves infected with TSWV display small, dark-brown spots, and leaves may eventually die.

Photo courtesy of J.C. Watterson, Peto Seed Co.

Osprey, A New Herbicide for Weed Control in Wheat

Herman Meister

Osprey (mesosulfuron) is a Bayer Corporation product in the *sulfonyurea* herbicide chemistry group. Osprey is **not** currently registered on wheat in California. It has a federal registration and is currently being reviewed in California. The expected registration timeline for Osprey in California is December of this year barring any unforeseen delays.

Osprey is a unique herbicide for use on wheat in that it controls some of the grasses such as canarygrass and wild oats as well as numerous broadleaf weeds. Growers will be able to make one trip across the field instead of the usual two trips that it currently requires to control grasses with one herbicide and broadleaves with another. *Osprey will turn the wheat yellow 4-5 days after the application and may cause stunting.* The wheat will metabolize the herbicide over a 2-3 week period and the yellowing will slowly dissipate.

A test at the UC DREC in the spring of 2004 showed no adverse impact of the Osprey application on wheat yields. Puma with and without oil and Osprey were compared to an untreated check for weed control and impact on wheat yields.

Osprey controlled all the weeds in the test were except silversheath knotweed. Osprey provided good control of malva (cheeseweed), london rocket, swine cress, wild beets, red clover, canary grass and goosefoot.

Weed Susceptibility Chart

	Malva	London Rocket	Swine Cress	Wild Beets	Red Clover	Canary grass	Silver Sheath Knotweed	Goosefoot
Puma	NC	NC	NC	NC	NC	C	NC	NC
Puma + Oil	NC	NC	NC	NC	NC	C	NC	NC
Osprey	C	C	C	C	C	C	NC	C

C= Control; NC= No control; PC= Partial control

REMINDERS

The new Guidelines for 2004-2005 for both
Field Crops and Vegetable Crops
are now on line!
You are welcome to visit our website for the most up to date figures!
Printed copies or CD's are available in our office or
by mail.
http://ceimperial.ucdavis.edu

15th Desert Crop Workshop

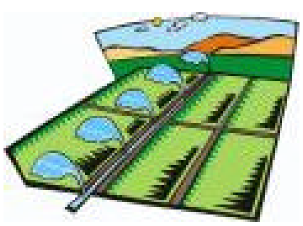
December 8, 2004
Location: Yuma Civic & Convention Center
1440 W. Desert Hills Drive
Yuma, Arizona

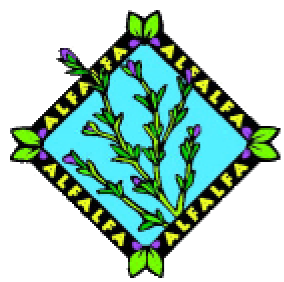
More information on following pages

WORKSHOP

Nitrate Pollution Hazard Index for Irrigated Agriculture in the Southwest
December 10, 2004
Location: UC Desert Research and Extension Center
1004 E. Holton Road, Holtville, CA
Registration begins at 8:00 a.m.

More information on following pages





National Alfalfa Symposium

Addressing Critical Issues for Alfalfa and Other Harvested Forages
December 13-15, 2004
Location: Town and Country Resort and Convention Center
San Diego, CA

More information on following pages

CIMIS REPORT

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 28 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	16-28
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

* Irrigation Management Unit, Imperial Irrigation District.

Eric T. Natwick, County Director