Imperial County Agricultural Briefs

Features

From your Farm Advisors

March, 2008

Evaluation of Insecticides for Control of Thrips and Suppression of IYSV

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County Director and Entomology Advisor;
Vegetable Crops Advisor (Fresno County) respectively

Western flower thrips, *Frankliniella occidentalis*, and Onion thrips, *Thrips tabaci*, are the main thrips species that occur in onion crops. Both species are injurious to onions and both adults and nymphs cause damage. Western flower thrips are generally more abundant and difficult to control with insecticides, compared to onion thrips. However, onion thrips transmit Iris yellow spot virus (IYSV). Onion thrips thrive in hot, dry conditions and are usually more damaging in areas where these climatic conditions prevail for most of the production season. High populations of thrips can reduce both yield and reduce the storage life of onions. Leaf scaring is a serious problem on green onions, but thrips feeding during the early bulb development is most injurious to dehydrator onions and sweet onions. Thrips injury is caused by their unique rasping-sucking mouthparts. This injury removes nutrients needed for bulb development, causes scaring and reduces photosynthesis. They cause damage during storage by feeding under the leaf folds and in the protected inner leaves near the bulb.

IYSV was first confirmed Imperial Valley in May 2003 in lesions on scapes from an onion field grown for seed and has been detected in this production area every year since. This virus causes development of necrotic lesions on the scapes and leaves. Lesions on scapes can result in lodging, which can greatly reduce seed production. Also, in some production areas, substantial reduction in bulb size and resultant economic losses has been attributed to the foliar lesions caused by this virus.

A trial to compare efficacy of insecticide treatments against thrips and the resultant effect on severity on Iris Yellow Spot Virus (IYSV) symptoms was conducted on White Crole dehydrator onions seeded at Brawley, CA established on 16 Oct 2006. The field was sprinkle irrigated through 5 Jan and furrow irrigated until harvest. Nine insecticide treatments were compared to an untreated control for efficacy against Western flower thrips, *Frankliniella occidentalis*, and Onion thrips, *Thrips tabaci* (Table 1). The experimental design was randomized complete block design, with four replicates; each field plot measured 50 ft X 6.7 ft. Insecticide treatments were applied seven times between 8 February and 14 May 2007.

All insecticide treatments had seasonal means for thrips that were significantly (P = 0.05) lower than the untreated control, Table 1. Insecticide treatments that provided the best thrips control included Lannate LV + Mustang 1.5 EW, Lannate LV + Warrior, Vydate L and followed by Success + Aza-Direct, Radiant 120 SC, and QRD 400 + Success. No insecticides prevented IYS-symptom development or affected severity; however, Lannate LV + Warrior and Vydate L had the lowest incidence of IYSV, significantly (P = 0.05) lower than the untreated control, Table 2. The incidence and severity of IYSV did not appear to be related to thrips population levels.

Although we were able to demonstrate that Lannate LV in combination with either Mustang 1.5 EW or Warrior, Vydate L and Radiant 120 SC provide thrips control, none of the insecticide treatments were able to suppress onion thrips populations to levels that prevented IYS-symptom expression.

Table 1. Thrips per Five Onion Plants. Brawley, CA. 2006.

Treatment	*oz/acre*	*7 Feb*	*13 Feb*	*20 Feb*	*27 Feb*	*7 Mar*[z]	*13 Mar*	*20 Mar*	*26 Mar*[z]	*3 Apr*	*9 Apr*	*16 Apr*	*23 Apr*	*2 May*	*8 May*[z]	*14 May*	*SM*[y]
Untreated	--------	24.3	31.8 ab	20.0 a	5.8 ab	1.02 a	27.5 a	15.3	1.27 a	25.0 a	37.3	55.3 a	55.8 a	29.0 ab	1.75 a	2.5	28.1 a
Vydate L	64.0 fl	24.3	15.0 c	5.5 bc	2.5 bc	0.23 b	15.0 b	8.3	0.69 c	6.5 bc	8.0	14.0 bc	11.5 bc	7.3 c	0.68 e	2.3	8.7 de
Lannate LV + Mustang	36.0 fl + 3.8 fl	23.5	12.3 c	4.3 bc	1.0 c	0.23 b	9.8 b	8.5	0.84 bc	3.8 c	12.5	7.8 c	5.0 c	3.3 c	0.78 cde	0.5	7.1 e
Lannate LV + Warrior	36.0 fl + 3.5 fl	29.0	9.0 c	2.5 bc	1.25 c	0.27 b	7.8 b	7.3	0.83 bc	4.3 c	12.3	8.3 c	8.3 bc	6.5 c	1.07 bcd	1.3	7.7 de
Success + Aza-Direct	6.0 fl + 48.0 fl	22.00	14.5 c	2.0 c	1.0 c	0.39 b	4.3 b	6.3	0.73 c	11.0 bc	28.3	32.0 abc	24.5 b	5.0 c	0.87 cde	1.8	11.1 cd
Radiant 120 SC	8.0 fl	25.3	7.0 c	6.0 bc	0.5 c	0.44 b	7.3 b	4.5	0.85 bc	23.8 a	34.5	46.8 ab	10.8 bc	5.3 c	0.87 cde	2.3	12.6 c
QRD 400	0.5% v/v	17.0	18.5 bc	13.0 ab	5.8 ab	0.70 ab	8.5 b	9.8	0.93 abc	5.8 bc	22.8	54.5 a	22.8 b	39.3 a	1.31 b	6.8	17.4 b
QRD 400	1.0% v/v	30.5	36.0 a	23.0 a	9.0 a	0.69 ab	10.5 b	7.5	0.56 c	3.0 c	22.3	54.8 a	10.5 bc	20.3 abc	1.25 b	5.3	17.6 b
QRD 400 + Success	0.5% v/v + 6.0 fl	16.8	12.8 c	6.25 bc	2.8 bc	0.35 b	6.8 b	8.0	1.15 ab	15.3 ab	38.5	29.5 abc	15.0 bc	13.5 bc	1.11 bc	1.8	13.2 c
QRD 400 + Lannate LV	0.5% v/v + 36.0 fl	26.8	17.5 bc	12.5 abc	2.0 bc	0.31 b	14.8 b	14.8	0.77 c	3.3 c	22.3	5.3 c	8.3 bc	8.3 bc	0.73 de	1.5	10.0 cde
		NS	LSD=16.5 *P*=0.05	LSD=10.8 *P*=0.05	LSD=4.5 *P*=0.05	LSD=.49 *P*=0.05	LSD=12.3 *P*=0.05	NS	LSD=.37 *P*=0.05	LSD=10.2 *P*=0.05	NS	LSD=37.1 *P*=0.05	LSD=16.5 *P*=0.05	LSD=20.9 *P*=0.05	LDS=.34 *P*=0.05	NS	LSD=3.7 *P*=0.05

[y] SM = seasonal mean. [z] Log transformed data used for analysis.

Table 2. Effect of Insecticide Treatments for Thrips Control on Incidence and Severity of Iris Yellow Spot-Symptoms on White Creole Processing Onions . Brawley, CA. 2007.

Treatment[z]	*oz/acre*	*IYSV plants/15 ft*	*Severity Rating*[y]
Untreated	**--------**	**19.50 b**	**1.25**
Vydate L	**64.0 fl**	**8.00 cd**	**1.20**
Lannate LV + Mustang 1.5EW	**36.0 fl + 3.8 fl**	**11.50 bcd**	**1.15**
Lannate LV + Warrior	**36.0 fl + 3.5 fl**	**5.50 d**	**1.25**
Success + Aza-Direct	**6.0 fl + 48.0 fl**	**15.75 bcd**	**1.30**
Radiant 120 SC	**8.0 fl**	**32.50 a**	**1.40**
QRD 400	**0.5% v/v**	**16.75 bc**	**1.10**
QRD 400	**1.0% v/v**	**16.00 bc**	**1.25**
QRD 400 + Success	**0.5% v/v + 6.0 fl**	**16.50 bc**	**1.30**
QRD 400 + Lannate LV	**0.5% v/v + 36.0 fl**	**11.75 bcd**	**1.10**
		LSD =10.37 (P=0.05)	**NS**

[z] On 8, 15 Feb, 1, 29 Mar, 10, 24 Apr, 14 May materials were applied with a CO_2-pressurized back-pack sprayer equipped with four TXVS-8 nozzles (2 nozzles/bed) delivering 17.3 gpa at 50 psi.

[y] Severity of IYS-symptoms on plants symptomatic plants on 10 May was rated as follows:

1 = 1 – 20 % of plant with IYSV symptoms
2 = 21 – 40 % of plant with IYSV symptoms
3 = 41 – 60 % of plant with IYSV symptoms
4 = 61 – 80 % of plant with IYSV symptoms
5 = 81 – 100 % of plant with IYSV symptoms

Estimating Phosphorus Load in Runoff Water

Khaled M. Bali
Irrigation and Water Management Advisor

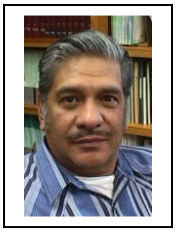
Surface irrigation, mainly furrows or border checks, is the primary method of irrigation in the Imperial Valley. When water-run phosphorus (P) or other fertilizers are applied with irrigation water, there is a potential for nutrient losses in runoff water. The most effective method to reduce nutrient losses is reducing or eliminating surface runoff during fertigation events. Tailwater recovery systems could be used to capture runoff water and make it available for reuse on other fields.

When tailwater is reused for irrigation, the load of P in this water could be used to fertilize another field. Table 1. could be used to estimate the load of P in runoff water based on the concentration of PO4 phosphorus in runoff water. The load of P in runoff water or tailwater recovery system depends on the volume of runoff water**.**

Table 1. Load of P in runoff water or tailwater recovery system

Average Concentration of P in runoff water (PO_4-P) mg/L	Load of PO_4-P in Runoff water per ac-ft of water (lb/ac-ft)	Load of P_2O_5 P in runoff water per ac-ft of water (lb/ac-ft)	Load of P as 11-52-0 equivalent fertilizer (lb/ac-ft)
1	2.72	2.03	3.90
2	5.43	4.06	7.81
3	8.15	6.09	11.71
4	10.86	8.12	15.61
5	13.58	10.15	19.52
10	27.16	20.30	39.04
20	54.32	40.60	78.08
30	81.48	60.90	117.12
40	108.64	81.20	156.16
50	135.8	101.5	195.20

The concentration of P (PO4) in runoff water may reach as high as 50 mg/L during water-run P application events. Reusing that runoff water may save as much as 500 lb of 11-52-0 per a typical 80-acre field and eliminate the discharges of P into drainage ditches. Reuse of surface runoff water can save water, fertilizers, and money.



Livestock Drinking Water
Juan N. Guerrero
Livestock Advisor

Daily temperatures will start to increase shortly; therefore, it is important to assure good water quality for all our livestock and for pets. Colorado River water usually contains from 750 to 850 mg/l (or parts per million) of total dissolved salts. Although this level may be somewhat salty tasting (for some people), it is quite satisfactory for all livestock and for pets as well. The upper limit of total dissolved salts that is recommended for livestock is 1000 mg/l. Even water that has 3,000 mg/l of total dissolved salts is satisfactory for livestock. Water of this saltiness level may initially cause diarrhea in unaccustomed animals, but as the animals learn to tolerate the water, they become accustomed and will perform normally. Water that has greater than 3,000 mg/l of total dissolved salts will cause problems for livestock.

Because of the desert heat, water in open sunlight becomes too warm. The warm water *per se* is not the problem, but rather the warm water permits algae and possibly toxic bacteria to grow. During the summer, fresh water should be provided at all times to livestock and to pets. During the summer, if water is provided in a large receptacle and not changed frequently, algae begins to grow in the water quite quickly. Sometimes the algae growth in stagnant water grows to intolerable levels making the water very turbid and green in color. When filaments of algae are present in the water, then the water should be changed immediately. Permitting the water to have algae filaments is indicative of poor livestock husbandry. Water for livestock does not have to be crystal clear, but it should be fresh and changed frequently.

Closely associated with uncontrolled algae growth in livestock drinkers, is the possibility of cyanobacteria (blue-green algae) poisoning. Cyanobacteria are ubiquitous and grow quickly on hot, sunny, days and in warm, nutrient rich waters. The presence of these bacteria may give the water a slightly blue coloration. At very high levels of cyanobacteria populations, the water

may appear dark green or brownish green. Toxins from cyanobacteria are poisonous to cattle, horses, sheep, pigs, poultry, rabbits and dogs. Not all cyanobacteria are toxic, nor do all cyanobacteria that can produce toxins do so under all conditions. Algal poisoning appears quickly and has no known antidotes. If dead lizards or birds are found near a livestock drinker that has green water and that is full of algal filaments, then cyanobaceria poisoning should be considered as one possibility of death.

If for some reason algal growth in livestock drinkers cannot be controlled with constantly replenished fresh water, then copper sulfate may be added to the water for algae control. The usual rate of copper sulfate concentration is 1 ppm, or about 8 lb of copper sulfate in 1,000,000 gallons of water. Copper sulfate is toxic to fish and should not be allowed to flow into drains or other waterways.

A mature 1000 lb bovine, during the desert summer, may drink from 25 to 30 gallons of water per day, a mature horse from 15 to 20 gallons. Exercise makes water consumption increase. Large drinkers for a few animals are not a good idea. A practical solution is to provide smaller drinkers with a float valve so fresh water is being replenished as the livestock drink their water. Nipple drinkers work well for swine and dogs.

Resistance to Mexican Rice Borrer *Eoreuma loftini* in Varieties of Sugarcane

Earl Andress – USDA Aphis
Eric Natwick - Entomology Advisor
Paul Sebesta – USDA

As the importance sugarcane in the Imperial Valley agriculture increases, so does the importance of its pests. Mexican rice borer (MRB) is the principal pest of sugarcane in the Imperial Valley of California. In the Lower Rio Grande Valley of Texas where sugarcane is a well established crop MRB is a key pest causing millions of dollars in economic loss annually. Experience has dictated and it can be further anticipated that MRB will be a serious problem in Imperial Valley as acreage of sugarcane increases. Attention to potential MRB control methods is well warranted.

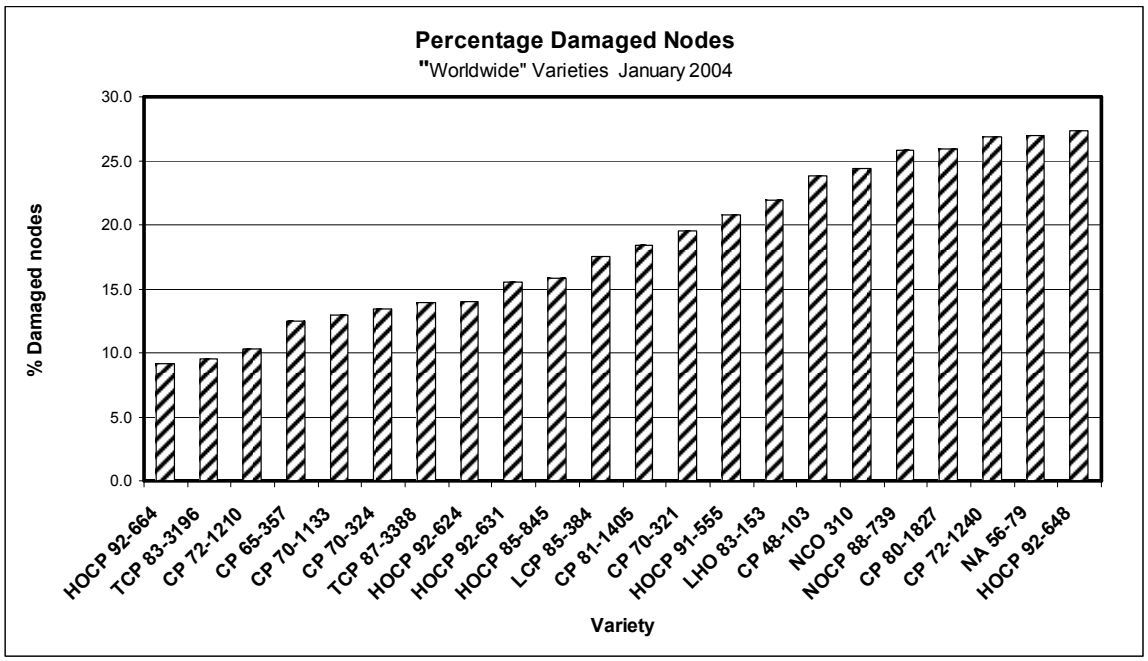
Methods:
Many sugarcane varieties were planted on the UC Desert Research and Extension Center by Paul Sebesta in order to evaluate their potential in producing yields under Imperial Valley conditions. After several years it was noticed that MRB was widespread through the research plots.

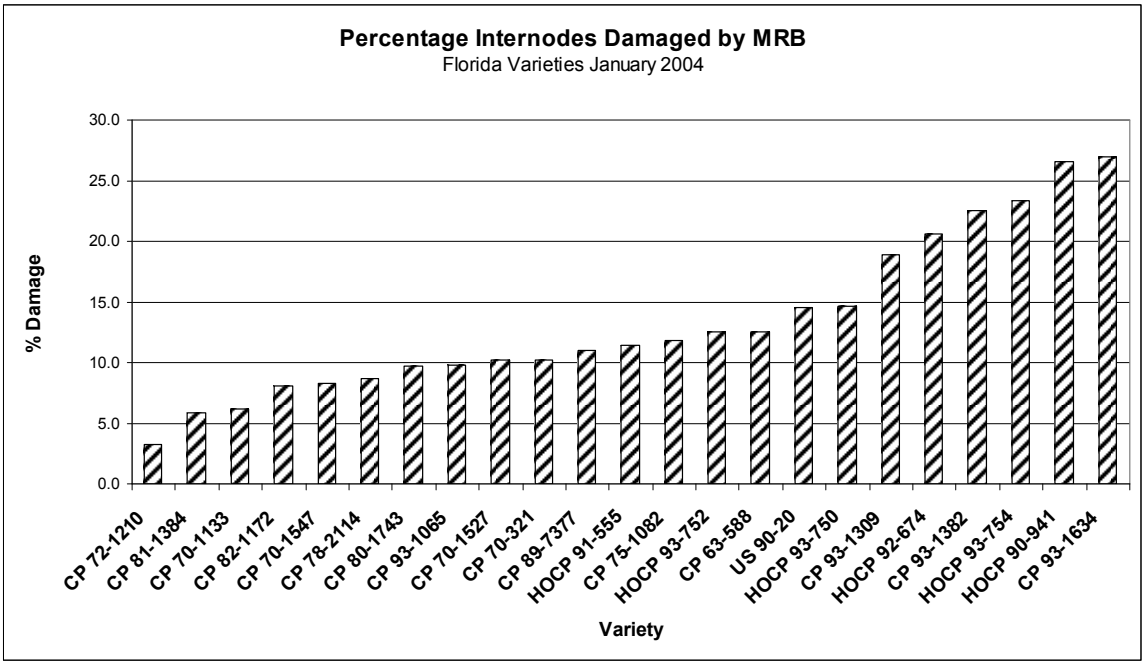
In January of 2004 we collected samples from replications of comparisons of varieties from various origins to evaluate differences in damage due to MRB. Two samples of ten stalks each were collected from each replicate of each variety. There were 23 varieties in the Florida varieties block and 22 varieties in the worldwide varieties block. There was some overlap in varieties tested in the two sets so that a total of 41 varieties were examined.

An analysis of variance was conducted using PROC GLM in SAS version 8.

Results:
There were clear statistically significant differences among varieties in number of nodes damaged by MRB.

Figure 1.





Meeting Notices

2008 Alfalfa/Small Grains Field Day

Date: April 11, 2008
Time: 08:30 AM
Place: UC Desert Research and Extension Center
1004 E. Holton Rd.
El Centro, CA 92243

PCA credit (CA and AZ) and CCC credits applied for.

Topics: Alfalfa variety trials, wheat variety trials, herbicides for wheat and alfalfa, insecticides for wheat and alfalfa, bio-fuels research: grain sorghum yields, sugar cane, canola, and switchgrass trials; deficit irrigation of alfalfa, and irrigation efficiency.

Speakers will be from the University of California, University of Arizona, and USBR.

Prices for both forages and small grains are at all time highs, but so are production costs. It is important to keep ahead of the curve. Come hear all the latest field research results!

For further information call Juan N. Guerrero at (760) 352-9474.

CLIMATE AND DESERTS WORKSHOP:
Adaptive Management of Desert Ecosystems in a Changing Climate

Join leading scientists and educators to learn more about emerging climate and desert ecology research. This workshop provides the opportunity to interact with scientists to discuss and create practical tools for natural resource managers, decision-makers and practitioners, as well as a forum for training, education and discussion regarding climate variation and its impacts on southwestern desert areas.

April 9-11, 2008
Aquarius Casino Resort, Laughlin, Nevada
(1900 S. Casino Drive, Laughlin, NV 89029)
Early Registration Deadline is **March 17, 2008!**

For Registration Information, Full Agenda and Call for Poster Abstracts, please visit
http://www.dmg.gov/climate .

Early Registration before March 17:
Climate and Deserts Workshop, April 9-10: $65.00
Mojave National Preserve Field Trip, April 11 $25.00

Late Registration after March 17:
Climate and Deserts Workshop, April 9-10 $95.00
Mojave National Preserve Field Trip, April 11 $30.00

Workshop registration includes: workshop participation, materials, breaks, lunches and Wednesday evening poster session. Field trip registration includes: box lunch, water and beverages, carpool/caravan, limited transportation as requested.

Hotel Information:
Aquarius Casino Resort, Laughlin, Nevada
1900 S. Casino Drive, Laughlin, NV 89029
http://www.aquariuscasinoresort.com

Room Accommodations:
(Ask for group code **"C-CDW08"** when booking.)
Sunday – Thursday: $29.00 per room per night
Friday & Saturday $59.00 per room per night

For reservations, please call: 1-800-662-5825
In order to receive group rate, all reservations must be booked by March 18, 2008.

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 March 1 to May 31 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	March		April		May	
	1-15	15-31	1-15	16-30	1-15	16-31
Calipatria	0.18	0.22	0.26	0.29	0.32	0.36
El Centro (Seeley)	0.16	0.20	0.24	0.28	0.31	0.34
Holtville (Meloland)	0.17	0.21	0.25	0.28	0.32	0.35

* Irrigation Management Unit, Imperial Irrigation District.