Imperial County Agricultural Briefs

Feature
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From your Farm Advisors

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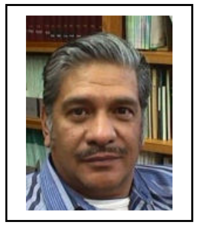
Page

El Niño, It's on the Way

Juan N. Guerrero



On the website of the *National Oceanic and Atmospheric Administration*, an ***El Niño*** is predicted for this winter (http://www.elnino.noaa.gov). This means that hay will be very difficult to bale under these wet conditions. It also means that dry, reasonably clean, and weed-free hay should (if the forecast is correct) be at a premium in March and April. Protecting fall harvested hay from rain damage should be a very worthwhile investment.

Placing hay in a shed will prevent much rain damage. Rainfall rarely comes down at a 90° angle. Hay in a shed along the periphery may get wet. Hay in a shed also absorbs ground moisture and bottom bales may be damaged. For hay protection, a shed is still a good option.

Hay may also be tarped. Because rainfall often comes down at an angle, it is probably a good idea to tarp the entire stack and not just a "crown" covering (Figure 1). After a prolonged rainy season, I have observed on hay stacks with only a crown covering, one side of the stack completely black. However, even if the stack is completely covered, the stack may still absorb ground moisture and bottom bales will become damaged.

Whether the hay is in a barn or tarped, protecting the stack from absorbing ground moisture is important. Several options may be available:

1. Elevate the surface of the stack. With a grader/leveler a pad 6-8 inches higher than ground level will prevent much damage to bottom bales (Figure 2). Spreading gravel on the elevated pad will be even better.

2. Place a plastic tarp on the ground. Plastic on the ground will prevent moisture absorption (Figure 3).

3. Don't throw away or burn those old black bales from years ago. Use old discarded bales as a pad for new hay (Figure 4). On several occasions, in very wet years, I have observed the second and even part of the third level of bales absorb ground moisture and become black and moldy. The old, valueless bales at the bottom should absorb most of the ground moisture and protect most of the stack.

The "pineapple express" has already caused floods in the Pacific Northwest this year. Later on this winter as this *pineapple express* moves south (if the predictions are true); dry, clean, green, and non-moldy hay should be at a premium. (All photos are from the Imperial Valley)

Figure 1. Tarped hay. On left only with a "crown covering"; on right entire stack is covered.

Figure 2. An elevated pad for the prevention of ground moisture absorption, note that gravel has been applied. On the bottom left soil is wet after a rain, but bottom bales of the stack remained dry.

Figure 3. Hay stack placed on top of plastic tarp. Tarp will prevent bottom bales from absorbing ground moisture.

Figure 4. Old discarded bales serve as a pad for hay stack (note arrow) and will absorb ground moisture. More valuable hay is placed on second row (note arrow).

Nitrogen Management Considerations in Carrots

Rick Bottoms Ph.D.

Nitrogen (N) management in carrot (*Daucus carota* L. var *sativus*) production systems is critical for increasing efficiency of crop production, decreasing costs, and decreasing nitrate (NO_3^-) leaching losses to groundwater.

Using management strategies to ensure adequate NO_3^- levels are available for carrot root uptake throughout the growing season for proper carrot production while not applying excessive amounts that can affect yield, water quality and tie up unneeded investment is important for consideration.

A study by H. Kristensen and K .Thorup-Kristensen (2004) investigated the N uptake and root growth using minirhizotrons (visual tubes) reaching 93 inches (2.4 m) with the purpose to study the relationship between vegetable root distribution and uptake of NO_3^- from deep soil layers. Nitrate uptake was studied over a 6 day period at the end of growing season by injection of $^{15}NO_3^-$ at four depths in the ranges: 8 – 31, 23-70, and 39-97 inches (0.2–0.8, 0.6–1.8, and 1–2.5 m) under carrot. The carrot root depth was 50 inches (1.3 m). They determined uptake of ^{15}N was close to zero from placements below root depth, and linear relationships were found between root density and ^{15}N uptake from different depths. N inflow rates (uptake per unit root length) were in the same range as sweet corn (*Zea mays* L. convar. *Saccharata* Koern.) and white cabbage(*Brassica oleracea* L. convar. *capitata* (L.) Alef. var. *alba* DC) at depths studied.

This indicates that the very different N use efficiencies often found for vegetable crops depend on crop species specific differences in root development over time and space, more than on differences in N uptake ability of the single root. Thus deep rooting is important for deep N uptake. Knowledge about deep root growth enables producers to design their crop rotations with improved N use efficiency based on re-cycling of deep soil NO_3^- by vegetables.

Previous crop history is helpful in determining nitrogen fertilizer requirements. If the field has some residual NO_3^-, there is usually no need to apply more N until the seedlings emerge. Carrot roots are vulnerable to forking if too much nitrogen is applied preplant. If to much total N is applied for the entire cropping season 181.81 lbs/acre (200 kg/ha) a producer may see a decrease in yield (T.Jackson, 1979).

Sidedressing carrots applications of 60 to 80 pounds (66-88 kg/ha) of actual N are commonly made during the growing season. Typically N materials used include dry ammonium nitrate (34-0-0), liquid ammonium nitrate (20-0-0), and UAN 32 (32-0-0).

Nitrogen deficiency in carrots is not readily apparent when viewing a field. Deficient fields might show an irregular pattern in height of the top growth, but the foliage will still be green in color. Since carrots are often grown on sandy soils, the need for taking petiole (tissue) analysis has been used to monitor the fertilizer status (M.McGiffen *et al* (1997).

Recent studies by F. Pettipas *et al* (2006) looking at the relationship between tissue and soil test to determine if leaf tissue testing may be an appropriate method to monitor and meet carrot N requirements. The study showed there were no significant differences in growth and yield of carrots in response to N regimes. Interestingly, an N rate of 0 lbs/acre (0 kg/ha) had significantly more fancy grade carrots than an N rate of 181.81 lbs/acre (200 kg/ha), probably due to residual N. There were no significant differences in culls due to increasing N application. The study summarized that N critical tissues for leaf tissue testing were not useful in N carrot management. Overall, results showed no significant differences in soil and tissue N levels due to increasing N regimes.

Similarly Westerveld (2006) found in organic soil environments there is a high potential for carrots to be used a catch crop. Depicting no N was required for optimum yield depending on previous crop rotations and N sources and amounts.

On mineral soil environments there was a potential for carrots to be used as a catch crop if there was significant residual N from the previous crop. It was determined that N uptake occurred a greater levels 50 to 60 days after seeding (DAS) and continued linearly with a slight decrease after 100 DAS in most cases. Nitrogen applications rates on mineralized soil required to maximize yield resulted on a net loss of N from the system except when sufficient N was available from the soil to produce optimal yield. On organic soil, a net removal was observed at all application rates, there by demonstrating carrots can be used as a N catch crop to reduce N losses in a vegetation rotation in conditions of high residual N, thereby improving N use efficiency.

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McGiffen, M., *et al,* 1979. Carrot Production in California, UC Publ. 76-pr-5/97-SB

Pettipas, F. C.,*et al*. 2006. Leaf Tissue Testing and Soil and Plant Tissue Relationships for Nitrogen Management in Carrots, Communications in Soil Science and Plant Analysis. 37:11-12: 1597-1609.

Westerveld, S., *et al*. 2006. Seasonal Nitrogen Partitioning and Nitrogen Uptake of Carrots as Affected by Nitrogen Application in a Mineral and an Organic Soil. Hort. 41(5):1332-1338

Cucurbit Yellow Stunting Disorder Virus Present in Imperial County

Thomas A. Turini and Robert Gilbertson

Cucurbit yellow stunting disorder virus (CYSDV) was associated with yellow leaves from cantaloupe plants Imperial County in October 2006. This is the first detection of CYSDV in California. The first report in North America was by Kao et al. (2000) who detected this virus in southern Texas and northern Mexico in stunted yellow cantaloupe plants in late summer 1999. CYSDV is a widespread virus of melons and related crops in the Middle East and southern Europe.

The symptoms on cantaloupe are characterized by a severe yellowing between veins that begins as a chlorotic mottling on older leaves. As the leaves age, the yellowing intensifies, ultimately resulting in a light yellow leaf with green veins.

CYSDV is not known to be seed borne; it is transmitted by the silverleaf whitefly, *Bemisia tabaci* biotype B, in a semi-persistent manner. The virus can be acquired in as little as 2 hours of feeding and transmitted in the same amount of time. However, percent of infected plants increases with increases in the duration of acquisition and inoculation periods. The whitefly can retain the virus for 7 days.

Natural infection by CYSDV has been reported on cantaloupe and mixed melon, squash, cucumber and watermelon.

Extending the period during which there is no susceptible host or reducing the number of hosts during the winter months may reduce the chances that this virus will reappear in the spring or delay the appearance of CYSDV in 2007. Therefore, it is prudent to remove all melon plants as soon as harvest is complete. Control of the vector has not proven to reduce the incidence or severity of this virus.

Acknowledgements and sources:
Bryce Falk (UC Davis), Robert Gilbertson (UC Davis) and William Wintermantel (USDA ARS) identified the virus in their laboratories by molecular methods.

A. Celix, A. Lopez-Sese, N. Almarza, ML Gomez-Guillamon and E. Rodriguez-Cerezo. 1996. Characterization of cucurbit yellow stunting disorder virus, a *Bemisia tabaci*-transmitted closterovirus. Phytopahtology 86, 1370-1376.

J. Kao, L. Jia, T. Tian, L. Rubio and B. Falk. 2002. First report of Cucurbit yellow stunting disorder virus (genus Crinivirus) in North America. Plant Disease 84, 101.

Field containing CYSDV in Imperial County

Mild case of CYSDV

Severe case of yellowing from CYSDV

Field containing a severe case of yellowing from CYSDV.

DURUM WHEAT VARIETIES COMPARED IN LOW DESERT

Michael Rethwisch

Wheat is an important crop in the low desert, with an average of some 60,000 acres grown annually in Riverside and Imperial Counties alone. Imperial County leads California in highest average wheat yields, averaging 2.95 tons/acre in 2005, some 0.28 tons/acre higher than the next highest yielding county (Siskiyou). The majority of Imperial County wheat acreage are durum varieties, with 35-40 thousand acres in production. This also represents just under 50% of the California state durum wheat acreage.

In the United States there is an economic incentive right now to grow contracted durum and hard white wheat because soft white prices have dropped about 40% from the ten year high. The current widening of the soft white and hard wheat spread is dependent on several factors including the Southern Plains drought in the U.S., the severity of winter-kill in Russia and Ukraine and the possibility of selling 1.0 million metric tons of hard red wheat to Iraq.

In light of these potential economics, variety selection and contracting are important. The following tables contain yield, protein and lodging data of new and currently available durum wheat varieties from testing in both Imperial County as well as comparative testing conducted in Yuma County. Additional data about these varieties as well as other wheat varieties tested by UCCE in Imperial County are available at http://agric.ucdavis.edu/crops/cereals.cereal.htm.

UNIVERSITY OF CALIFORNIA DURUM WHEAT VARIETY TRIAL RESULTS
DESERT RESEARCH AND EXTENSION CENTER - EL CENTRO, CA

	Mean Yield in Pounds per Acre					Percent Protein at 12% moisture					Percent Lodging at Harvest				
CULTIVAR	2006	2005	2004	2003	4 Yr. Ave.	2006	2005	2004	2003	4 Yr. Ave.	2006	2005	2004	2003	4 Yr. Ave.
Duraking	7,830	8,690	6,880	7,560	**7,740**	15.0	13.4	13.7	14.0	**14.0**	0	0	15	28	**10.8**
Mead	7,790					15.5					0				
Desert King	7,620	8,180	5,400	8,070	**7,318**	15.6	13.7	13.7	13.2	**14.1**	0	0	9	30	**9.8**
Orita	7,580	7,910	5,730	7,150	**7,093**	16.6	15.0	14.2	15.1	**15.2**	0	0	9	23	**8.0**
Kronos	7,570	8,320	5,100	7,050	**7,010**	15.4	15.3	14.1	14.3	**14.8**	2	15	60	45	**30.5**
RSI 59	7,470	8,920				16.3	13.4				0	0			
Crown	7,450	8,050	5,240	7,390	**7,033**	15.7	14.9	14.2	13.4	**14.6**	0	0	22	33	**13.8**
Platinum	7,440	8,120	4,100	7,700	**6,840**	15.3	13.5	13.5	13.3	**13.9**	0	4	44	43	**22.8**
RSI 64	7,430	8,190	5,330			15.6	14.4	14.5			0	0	35		
Havasu	7,310	8,660				15.0	13.6				2	2			
Topper	7,270	7,900	6,360	7,750	**7,320**	14.4	14.1	13.9	13.7	**14.0**	0	0	4	20	**6.0**
Mohawk	7,260	7,840	5,280	7,100	**6,870**	14.8	12.7	13.8	14.8	**14.0**	11	9	55	43	**29.5**
Ria	7,060	8,380	5,380	7,210	**7,008**	14.9	13.6	14.0	13.5	**14.0**	0	0	35	35	**17.5**
Cortez		8,500					14.5					0			
Candura		7,960	5,820	6,780			13.7	14.3	13.9			0	30	38	
Bravadur		7,700	4,960	6,630			13.2	14.0	13.6			1	50	28	
Kofa			5,230	7,010				14.2	13.0				35	45	
Matt			4,890	6,500				14.3	15.0				70	50	

Compiled by Michael Rethwisch (Farm Advisor, UCCE - Riverside County) .

Additional information on these varieties are available in UC-Davis Agronomy Progress Reports. *http://agric.ucdavis.edu/crops/cereals/cereal.htm*

(October, 2006)

UNIVERSITY OF ARIZONA DURUM WHEAT VARIETY TRIAL RESULTS
DATA FROM YUMA COUNTY LOCATIONS (WELLTON, YUMA)

CULTIVAR	Mean Yield in Pounds per Acre					Percent protein at 12% moisture					PERCENT LODGING				
	2006	2005	2004	2003	4 Yr. Ave.	2006	2005	2004	2003	4 Yr. Ave.	2006	2005	2004	2003	4 Yr. Ave.
Havasu	7,085	7,885	5,083			13.7	13.2	14.9			77	60	58		
Kronos	7,049	8,302	5,164	6,286	**6,700**	14.1	14.2	14.8	11.5	**13.7**	87	67	70	8	**58.0**
Duraking	7,031	9,120	6,145	7,807	**7,526**	12.9	12.2	13.7	10.8	**12.4**	57	3	0	1	**15.3**
Mead	6,813					14.2					83				
Crown	6,522	7,848	5,477	7,602	**6,862**	13.3	14.3	15.5	12.4	**13.9**	7	13	80	0	**25.0**
Orita	6,504	7,521	6,540	7,328	**6,973**	14.0	14.7	15.6	11.8	**14.0**	37	0	0	1	**9.5**
Ocotillo	6,395	7,848	4,633	6,355	**6,308**	13.7	14.2	16.7	12.1	**14.2**	0	43	75	2	**30.0**
Platinum	6,013	8,175	6,513	7,653	**7,089**	13.1	13.0		10.7	**12.3**	80	43	0	1	**31.0**
Westbred 881	6,013	7,703	5,178	6,355	**6,312**	13.9	14.1		12.3	**13.4**	70	43	70	4	**46.8**
Sky	5,904	7,122	5,600	6,406	**6,258**	13.1	13.1		11.7	**12.6**	87	43	10	7	**36.8**
Alamo	5,850	7,794	5,355	6,901		13.9	13.9	15.2	12.1		80	53	20	6	
Matt	5,813	7,884		6,184		13.7	14.3		11.8		90	87		6	
Mohawk	5,714	8,357	5,832	7,192	**6,774**	13.1	13.7	14.6	11.2	**13.2**	90	87	63	5	**61.3**
Kofa	5,668	7,685	4,905	6,320	**6,145**	13.7	14.6	15.6	12.5	**14.1**	73	73	48	7	**50.3**
Desert King		8,520	5,736				13.4	14.3				7	23		
Tacna		8,102					14.5					40			
Iride				7,670					10.1					2	
Meridiano				7,567					10.5					3	
Libeccio				7,345					11.1					7	
Ionio				6,730					11.3					3	
Ria				6,645					10.3					5	
Bravadur				6,355					11.2					4	

Data compiled by Michael Rethwisch (Farm Advisor, UCCE- Riverside Co.) from University of Arizona College of Agriculture Forage and Grain Reports *(October, 2006)*

Aphid and Threecornered Alfalfa Hopper Control in a 2006 Insecticide Efficacy Trial

Eric T. Natwick

A field study was conducted during the spring of 2006 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. Ten insecticide treatments were included along with an untreated control. Insecticide treatments and rates are listed in Table 1. Plots measured 13.3 feet by 50 feet and insecticide treatments were applied February 3, 2006, using a broadcast application with a tractor mounted boom. Aphid and threecornered alfalfa hopper populations were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180^{o} sweeps. Plots were sampled on February 2, 7, 10 & 17, 2006; 1-day pre-treatment (DPT), 4-days after treatment (DAT), 7-DAT, and 14-DAT. Aphid species present included spotted alfalfa aphid (SAA), pea aphid (PA), blue alfalfa aphid (BAA) and cowpea aphid (CPA).

No differences were found among treatments for aphid numbers or threecornered alfalfa hopper numbers in the pre-treatment samples, (P = 0.05), Tables 1-5. All of the insecticide treatments reduced the numbers of SAA to levels were significantly lower than the untreated control 4-DAT except Mustang 1.5 EW used alone, Renounce 20 WP, and Baythroid XL used alone. Only Mustang 1.5 EW and Baythroid XL did not reduce the SAA number to levels significantly lower than the control 7-DAT and only Baythroid XL did not have a SAA mean lower than the control 14-DAT. The best control of SAA through 14-DAT was from Furadan 4F at 16 fl oz/acre, Proaxis 0.497 CS plus Lorsban 4E, Mustang Max 0.8EW and both rates of Warrior 1 EC.

All of the insecticide treatments reduced the numbers of PA, BAA and CPA below the means for the untreated control 4-DAT through 14-DAT (P = 0.05), Tables 2-4. The best control of PA, based on the post-treatment means, was from Furadan 4F at 16 fl oz/acre, Proaxis 0.497 CS plus Lorsban 4E, Mustang Max 0.8EW and both rates of Warrior 1 EC (Table 2). The best control of BAA, based on the post-treatment means, was from Mustang 1.5 EW plus Furadan 4F, Proaxis 0.497 CS plus Lorsban 4E, Mustang Max 0.8EW, and both rates of Warrior 1 EC (Table 3). The best control of CPA, based on the post-treatment means, was from Proaxis 0.497 CS plus Lorsban 4E, Baythroid XL plus Lorsban 4E, and both rates of Warrior 1 (Table 4).

All of the insecticide treatments reduced the numbers of threecornered alfalfa hopper below the means for the untreated control 4-DAT through 14-DAT (P = 0.05), Tables 5. The best control of threecornered alfalfa hopper, based on the post-treatment means, was from Proaxis 0.497 CS plus Lorsban 4E, both rates of Warrior 1, Mustang Max 0.8EW, and Mustang 1.5 EW plus Furadan 4F.

Table 1. Mean Numbers[v] of Spotted Alfalfa Aphid per Ten Sweeps, Holtville, CA, 2006.

Treatment	oz/acre	PT[w]	4 DAT[xy]	7 DAT[y]	14 DAT	PTM[z]
Untreated	--------	14.50 a	10.44 abc	116.90 a	112.50 a	87.66 a
Mustang 1.5 EW	4.3	5.50 a	17.96 ab	57.06 ab	56.75 bc	58.58 ab
Mustang 1.5 EW + Furadan 4F	4.3 + 4.0	15.75 a	0.93 de	17.22 cd	17.75 cd	12.25 cd
Mustang Max 0.8EW	4.0	7.50 a	0.41 e	10.95 d	6.75 d	6.58 d
Warrior 1 EC	3.2	16.50 a	0.50 e	19.70 cd	1.75 d	7.67 d
Warrior 1 EC	3.8	17.75 a	1.50 cde	11.77 d	2.50 d	6.33 d
Renounce 20 WP	3.5	13.00 a	23.87 a	40.48 bc	48.00 bc	44.58 bc
Baythroid XL	2.8	13.00 a	8.13 abcd	41.63 abc	79.75 ab	74.33 ab
Baythroid XL + Lorsban 4E	2.8 + 8.0	14.00 a	2.90 bcde	16.21 cd	18.00 cd	13.08 cd
Proaxis 0.497 CS + Lorsban 4E	3.0 + 16.0	11.50 a	0.68 e	10.20 d	6.25 d	6.17 d
Furadan 4F	16.0	11.00 a	0.19 e	11.45 d	3.00 d	4.92 d

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

Table 2. Mean Numbers[v] of Pea Aphid per Ten Sweeps, Holtville, CA, 2006.

Treatment	oz/acre	PT[w]	4 DAT[xy]	7 DAT	14 DAT[y]	PTM[yz]
Untreated	--------	47.25 a	39.52 a	41.25 a	82.39 a	55.89 a
Mustang 1.5 EW	4.3	32.25 a	2.91 bc	14.50 b	6.75 bc	7.48 bc
Mustang 1.5 EW + Furadan 4F	4.3 + 4.0	54.50 a	1.45 c	6.75 c	2.46 cde	4.05 cd
Mustang Max 0.8EW	4.0	30.50 a	1.06 c	5.50 c	2.00 de	3.05 d
Warrior 1 EC	3.2	36.00 a	0.19 c	5.75 c	1.38 e	2.56 d
Warrior 1 EC	3.8	72.75 a	1.87 bc	4.50 c	2.00 de	3.61 d
Renounce 20 WP	3.5	62.50 a	7.29 b	4.50 c	9.75 b	9.03 b
Baythroid XL	2.8	39.50 a	1.40 c	9.00 bc	8.51 b	8.26 b
Baythroid XL + Lorsban 4E	2.8 + 8.0	35.75 a	1.82 bc	6.75 c	5.59 bcd	4.96 bcd
Proaxis 0.497 CS + Lorsban 4E	3.0 + 16.0	27.50 a	1.11 c	5.25 c	1.51 e	2.75 d
Furadan 4F	16.0	53.00 a	1.06 c	5.50 c	1.30 e	2.88 d

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

Table 3. Mean Numbers[v] of Blue Alfalfa Aphid per Ten Sweeps, Holtville, CA, 2006.

Treatment	oz/acre	PT[w]	4 DAT[x]	7 DAT[y]	14 DAT[y]	PTM[yz]
Untreated	--------	77.75 a	90.25 a	192.78 a	118.62 a	134.74 a
Mustang 1.5 EW	4.3	60.25 a	8.25 b	13.90 bcd	17.97 bc	14.16 c
Mustang 1.5 EW + Furadan 4F	4.3 + 4.0	54.75 a	5.50 b	10.89 cde	3.82 ef	7.44 def
Mustang Max 0.8EW	4.0	32.75 a	8.00 b	8.53 de	3.23 ef	6.76 def
Warrior 1 EC	3.2	50.25 a	3.50 b	6.32 ef	2.46 f	4.14 f
Warrior 1 EC	3.8	95.75 a	10.75 b	7.78 def	4.18 def	7.26 def
Renounce 20 WP	3.5	55.25 a	35.00 b	23.48 b	44.38 ab	31.08 b
Baythroid XL	2.8	30.25 a	6.50 b	18.93 bc	14.29 bcd	13.92 c
Baythroid XL + Lorsban 4E	2.8 + 8.0	67.75 a	6.75 b	14.09 bcd	10.35 cde	10.99 cd
Proaxis 0.497 CS + Lorsban 4E	3.0 + 16.0	35.50 a	12.50 b	3.86 f	2.06 f	5.48 ef
Furadan 4F	16.0	61.00 a	9.50 b	6.00 ef	3.46 ef	8.29 cde

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

Table 4. Mean Numbers[v] of Cowpea Aphid per Ten Sweeps, Holtville, CA, 2006.

Treatment	oz/acre	PT[w]	4 DAT[x]	7 DAT[y]	14 DAT[y]	PTM[yz]
Untreated	--------	231.25 a	172.50 a	205.49 a	122.91 a	170.50 a
Mustang 1.5 EW	4.3	184.50 a	45.75 bc	60.83 b	52.37 b	55.58 bc
Mustang 1.5 EW + Furadan 4F	4.3 + 4.0	292.75 a	83.25 b	66.72 b	5.45 f	52.67 bc
Mustang Max 0.8EW	4.0	259.75 a	82.75 b	53.49 bcd	11.53 de	49.50 bc
Warrior 1 EC	3.2	222.75 a	45.50 bc	46.41 bcde	11.56 de	35.25 c
Warrior 1 EC	3.8	232.25 a	48.25 bc	34.55 de	16.44 d	34.75 c
Renounce 20 WP	3.5	189.75 a	93.00 b	48.95 bcd	43.82 bc	64.00 b
Baythroid XL	2.8	202.50 a	69.00 bc	35.77 cde	50.04 b	56.00 bc
Baythroid XL + Lorsban 4E	2.8 + 8.0	221.50 a	25.00 c	70.96 b	22.89 cd	39.75 c
Proaxis 0.497 CS + Lorsban 4E	3.0 + 16.0	152.50 a	73.00 bc	29.12 e	5.45 f	36.33 c
Furadan 4F	16.0	197.75 a	73.50 bc	58.68 bc	7.98 ef	47.42 bc

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

Table 5. Mean Numbers[v] of Threecornered Alfalfa Hopper per Ten Sweeps in Alfalfa, Holtville, CA, 2006.

Treatment	oz/acre	PT[w]	4 DAT[xy]	7 DAT[y]	14 DAT	PTM[yz]
Untreated	--------	11.00 a	6.58 a	7.53 a	6.00 a	7.17 a
Mustang 1.5 EW	4.3	13.25 a	0.00c	0.68 bc	0.75 bc	0.50 b
Mustang 1.5 EW + Furadan 4F	4.3 + 4.0	14.25 a	0.32 bc	0.56 bc	0.00 c	0.42 b
Mustang Max 0.8EW	4.0	15.25 a	0.00 c	0.19 c	0.00 c	0.08 b
Warrior 1 EC	3.2	12.50 a	0.19 bc	0.00 c	0.25 bc	0.17 b
Warrior 1 EC	3.8	13.75 a	0.00 c	0.00 c	0.25 bc	0.08 b
Renounce 20 WP	3.5	12.50 a	0.78 b	0.00 c	0.75 bc	0.67 b
Baythroid XL	2.8	10.00 a	0.00 c	0.50 c	0.50 bc	0.50 b
Baythroid XL + Lorsban 4E	2.8 + 8.0	11.25 a	0.00 c	0.00 c	0.50 bc	0.17 b
Proaxis 0.497 CS + Lorsban 4E	3.0 + 16.0	12.00 a	0.00 c	1.21 b	0.25 bc	0.58 b
Furadan 4F	16.0	11.50 a	0.00 c	0.41 c	1.75 b	0.75 b

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

Meeting Announcement

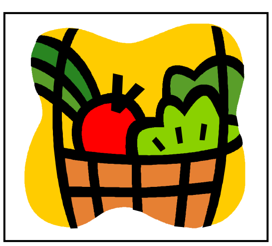
VEGETABLE CROPS FIELD DAY

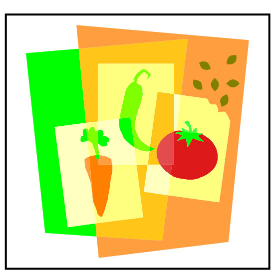
WHEN: Wednesday, January 24, 2007

TIME: 8:00 a.m.

LOCATION: UC Desert Research Center
1004 Holton Road
El Centro, CA 92243

INFORMATION: Call Rick at (760) 356-3062





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 November 1 to January 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	November		December		January	
	1-15	16-30	1-15	15-31	1-15	16-31
Calipatria	0.14	0.10	0.07	0.07	0.08	0.09
El Centro (Seeley)	0.13	0.09	0.06	0.06	0.08	0.09
Holtville (Meloland)	0.13	0.10	0.06	0.06	0.08	0.09

* Irrigation Management Unit, Imperial Irrigation District.