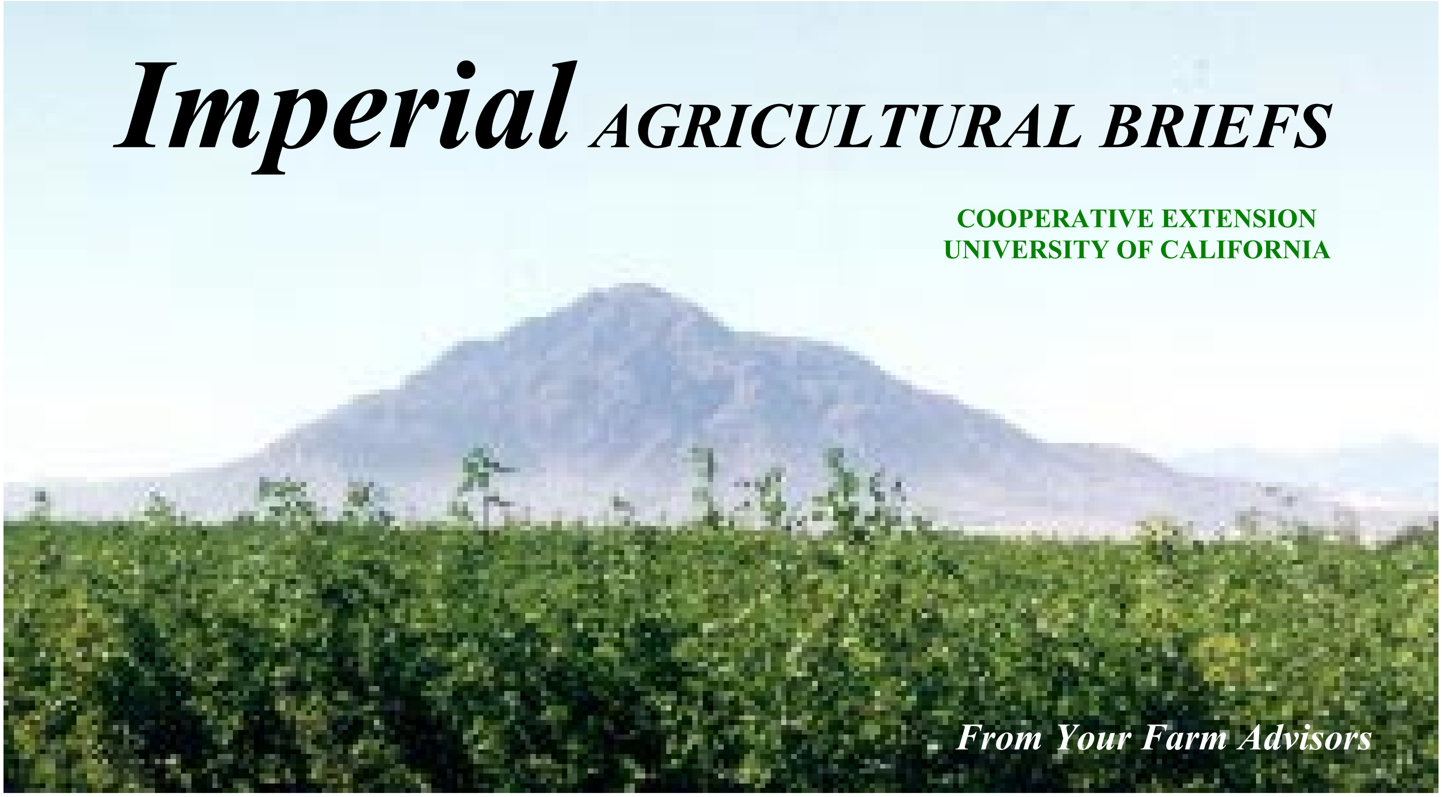
Imperial AGRICULTURAL BRIEFS

COOPERATIVE EXTENSION
UNIVERSITY OF CALIFORNIA



From Your Farm Advisors

Features — *February 2004*

Our Website is http://ceimperial.ucdavis.edu

1050 E. Holton Road — Holtville, CA 92250-9615 — (760) 352-9474

WINDBREAKS

Juan N. Guerrero

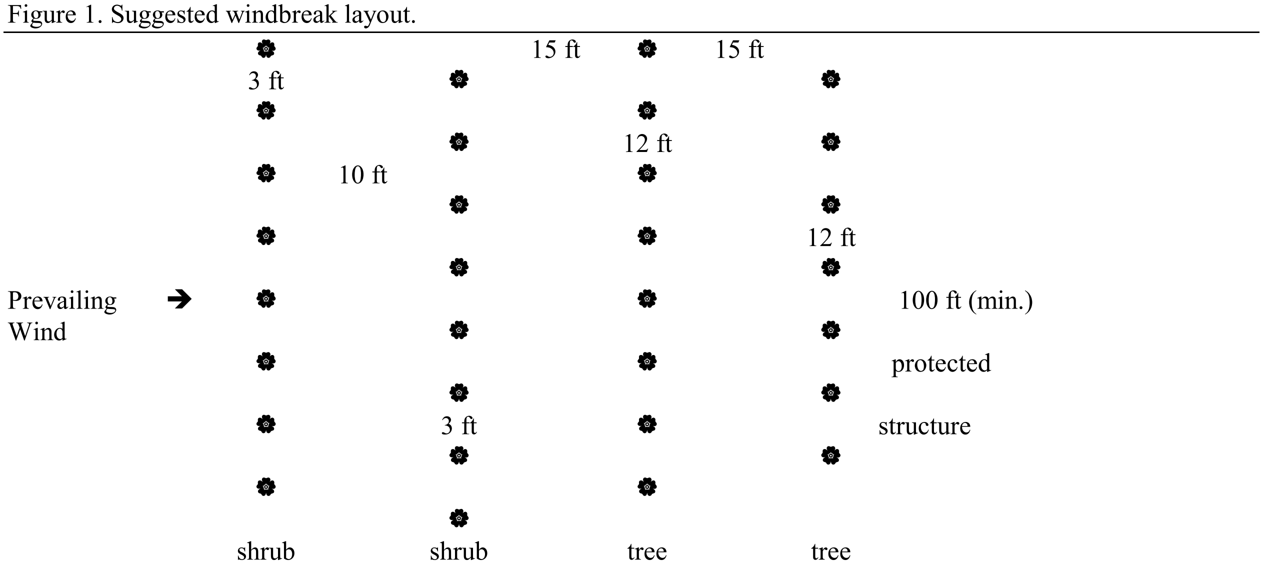
"You've been in the Imperial Valley too long when you give up dusting the furniture once a day and start shoveling once a week" is a bit a humor that I have posted on my office wall. Winters are generally pleasant in the Imperial Valley, witness the growing number of "snowbirds. However, wind velocities in the desert can be quite intense and can at times cause discomfort and stress for livestock. For humans, the winds are associated with allergies and excessive dust. During the Sonoran Desert winter, most local domestic livestock don't grow the long wooly hair coats that are common to livestock in the rest of the US. Local livestock are unprepared for cold temperatures.

We usually think of the wind chill factor, the interaction of cold and wind that makes blizzards so dangerous, as something associated with the Northern Plains states. However, even mild temperatures coupled with severe winds can make the environment quite chilly. A temperature of 40° with a 20 mph wind results in a wind chill temperature of 19°. A temperature of 40° with a 30 mph wind results in a wind chill temperature of 5° (that's cold, by desert standards, anyway). Even a benign night temperature of 50° with a 20 or a 30 mph wind has a wind chill of 29° and 15°, respectively. These conditions are not uncommon in the Imperial Valley.

To protect livestock or rural buildings from wind chill, windbreaks are quite useful. A useful windbreak in the desert would be rows of trees or shrubbery perpendicular to the prevailing winds. Figure 1 depicts a 4-row windbreak that might be used in the Imperial Valley. The outer two lines are shrubbery, locally oleander would suffice. Within a line, individual oleanders are planted 3 ft apart. Plant the oleander rows 9-10 ft apart. The two inner rows, rows closest to the protected structure, should be larger trees, locally eucalyptus would suffice. Within the row, plant the eucalyptus trees 10-12 ft apart. The eucalyptus rows are planted 15-18 ft apart. Water the windbreak at least 5-6 times per year during the first five years of the windbreak. After the trees are greater than 20 ft high, the windbreak may be watered less often. When the windbreak becomes full size in about 8 years, wind relief will be from 100-300 ft from the edge of the windbreak. The windbreak should not be placed closer than 100 ft of the protected structure.

Oleanders are toxic to all livestock. The oleander part of the windbreak should be fenced. Dried oleander leaves blown onto a hay field can cause potential toxicity problems in hay. Do not use salt cedars (*Tamarisk* spp.) for windbreaks. Tamarisk trees easily become uncontrollable and easily become a noxious weed.

Figure 1. Suggested windbreak layout.



if oleanders used, fence around oleanders
plant rows as long as necessary for wind protection

SANDEA PROGRESS REPORT

Herman Meister

Investigators are continuing to facilitate the registration of Sandea on alfalfa for nutsedge control. Sandea is currently not registered for use on alfalfa.

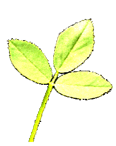
A trial was established at the UC DREC to evaluate the impact of Sandea on established alfalfa hay yields. Previous research has shown substantial economic yield reductions when Sandea was applied during the spring and early summer. This trial was established in mid-summer (late July) with the Sandea application applied to stubble just prior to the first irrigation. The objective was to determine if late summer and early fall applications of Sandea would reduce the economic impact of yield reductions on a lower production and lower value hay ("dry cow" hay as opposed to "dairy hay").

The yield reduction from the July 21, 2003 application of Sandea (1-oz rate) was not significant. A second application was applied just prior to the September rains. This phase had to be abandoned due to excessive flooding and scald, which would have adversely affected yields. Another area of the field was sprayed on September 18, but did not get irrigated in a timely fashion. Another area was treated on September 30, and received only one irrigation. There were no differences in hay production in this scenario.

One of the other significant findings in the trial work was the pre-emergence control of certain weeds in established alfalfa with the September 30 application. The 1-oz rate provided approximately 90% reduction of wild beets and annual sowthistle, and 100 % reduction of goosefoot and swine cress.

A granular formulation of Sandea is being considered in an effort to reduce injury to established alfalfa. This would eliminate to application of the herbicide to the foliage of the alfalfa stubble. Along with the nutsedge control, some pre-emergence control of other weeds would be a bonus.

Further investigations with a granular formulation of Sandea are planned for this summer and fall (2004) to review nutsedge control and other possible weed suppression benefits.



ALFALFA APHID MANAGEMENT

Eric T. Natwick

Blue alfalfa aphids and pea aphids are serious pests during the winter and spring months in the low desert. Blue alfalfa aphid is distinguished from pea aphid by uniformly dark antennae. Pea aphids have lighter antennae with dark bands at each joint. The blue alfalfa aphid first appears in December or January when it may be more abundant than pea aphid. Both species are common throughout the spring, but pea aphid is more heat tolerant and may persist into early summer. In susceptible alfalfa varieties, blue alfalfa aphid may stunt growth and infested plants have smaller leaves, shorter internodes, leaf curling, yellowing, and leaf drop. Several species of predacious bugs and parasitic wasps attack these aphids. Sample alfalfa fields weekly when aphids appear, then every 2 to 3 days as numbers approach the treatment threshold of 40 to 50 blue alfalfa aphids per stem.

Pea aphids first appear in December or January but are usually less abundant than blue alfalfa aphid until later in the spring. Pea aphid may persist into early summer as they are more heat tolerant. They are found over most of the plant with heavy infestations and can deposit large quantities of honeydew, which can foul harvesting equipment and supports the growth of sooty molds lowering hay quality. Regrowth may be stunted following cuttings with moderate to heavy aphid populations. Several species of predacious bugs and parasitic wasps attack these aphids. Sample alfalfa fields by taking 5 to 6 stem samples in at least 5 locations per field weekly when aphids appear, then every 2 to 3 days as numbers approach the treatment threshold of 40 to 50 aphids per stem for plants under 10 inches, 70 to 80 per stem for plants 10 to 20 inches tall and more than 100 aphids per stem for plants over 20 inches tall.

A field study was conducted during the spring 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. Sixteen 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 February28, 2003, using a broadcast application with a tractor-mounted boom.

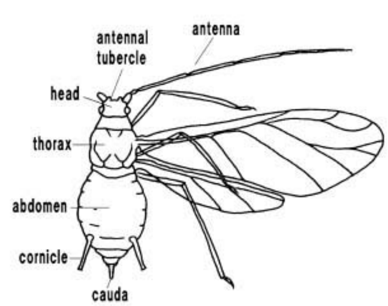
Aphid populations were measured in each plot with a standard 15-inch diameter insect net consisting of ten, 180° sweeps. Plots were sampled on February 26, March 3, 7 and 14; 2-day pre-treatment (DPT), 3-days after treatment (DAT), 7-DAT, and 14-DAT.

No differences were found among the treatments for aphid populations 2-DPT (*P*>0.05), Tables 1. All of the insecticide treatments controlled blue alfalfa aphids and pea aphids. Aphid means that were significantly lower (P0.05) than the untreated control treatment means from 3-DAT through 7-DAT. Only Warrior 1 CS, Steward 1.25 SC + Warrior 1 CS, Steward 1.25 SC + Dimethoate, and Steward 1.25 SC + Pounce 3.2 EC had aphid means significantly lower than the control 14-DAT.

Table 1. Mean Numbers of Blue Alfalfa Aphid and Pea Aphid Ten Sweeps, Holtville, CA, 2003.

Treatment	lb (AI)/a	2 DPT[x]	3 DAT[yz]	7 DAT	14 DAT[z]
Untreated	------	10.75 a	16.53 a	17.00 a	24.07 ab
□Gama - Cyhalothrin	0.015	3.25 a	1.21 cd	2.25 cd	18.65 abcd
Warrior 1 CS	0.03	6.75 a	2.46 bcd	3.00 cd	10.89 bcde
Steward 1.25 SC + Warrior 1 CS	0.045 + 0.0094	1.75 a	3.16 bcd	4.00 cd	9.95 bcde
Steward 1.25 SC	0.025	5.25 a	5.03 abc	7.50 bc	21.41 abc
Steward 1.25 SC	0.045	2.75 a	7.60 ab	10.75 b	24.53 ab
Steward 1.25 SC	0.065	3.25 a	3.70 bcd	5.25 bcd	30.72 a
Steward 1.25 SC + Dimethoate	0.045 + 0.375	1.00 a	2.36 bcd	4.50 cd	14.56 bcde
Steward 1.25 SC + Pounce 3.2 EC	0.025 + 0.075	2.75 a	3.21 bcd	4.50 cd	6.82 e
Steward 1.25 SC + Malathion 8	0.045 + 1.000	4.50 a	4.73 abc	5.25 bcd	9.02 cde
□Renounce 20 WP	0.044	2.75 a	2.46 bcd	3.25 cd	11.37 bcde
Baythroid 2	0.044	0.50 a	3.07 bcd	4.50 cd	12.57 abcde
Steward 1.25 SC + Baythroid	0.045 + 0.187	4.25 a	1.21 cd	1.50 d	22.70 abc
Steward 1.25 SC + Mustang	0.045 + 0.028	2.00 a	3.33 bcd	5.00 bcd	12.17 abcde
Steward 1.25 SC + Lorsban 4 E	0.045 + 0.250	2.75 a	0.41 d	0.50 d	7.35 de
□zeta-cypermethrin	0.025	1.50 a	1.38 cd	1.89 cd	12.08 abcde
Furadan 4F	0.500	2.75 a	0.68 d	0.75 d	7.72 de

Mean separations within columns by $LSD_{0.05}$.
[x] Days prior to treatment.
[y] Days after treatment.
[z] Log transformed data used for analysis; reverse transformed means reported.
□Not registered for this use at time of publication.



RESULTS OF FUNGICIDE COMPARISON FOR CONTROL OF POWDERY MILDEW ON MUSKMELON, 2003

Thomas A. Turini and Jose Aguiar

The study was conducted at the University of California Desert Research and Extension Center. On 1 April, 'Golden Beauty' casaba melons seed were sown on a Meloland clay loam and irrigated with underground drip. Each plot consisted of one 80-inch bed 25 feet long. Treated beds were separated by one planted row. The experimental design was a randomized complete block with five replications. On 28 May, 6 and 16 June, materials were applied in 30 gallons of water per acre with a CO_2 pressurized backpack sprayer at 30 psi. Maximum and minimum temperature ranges (^oF) were as follows: April 70-90, 44-60; May 74-106, 53-74; Jun 91-113, 57-73; Jul 93-116, 70-83. No precipitation was recorded during this experiment. On 26 June, powdery mildew severity was rated on upper and lower leaf surfaces on a scale of 0 to 5 based on percentage of leaf surface covered with the fungus: 0 = 0%; 1 = 20%; 2 = 40%; 3 = 60%; 4 = 80%; 5 = 100%. Arcsine transformed data was subjected to analysis of variance. Student-Newman-Keul's Multiple Range Test on transformed data ($P \leq 0.05$) was used for mean separation. Results are presented as percentages in Table 1.

Procure 50WS, Quintec, dusting sulfur and Rally 40W + Latron B1956 provided excellent control of powdery mildew. Plants treated with Microthiol Special 80W, Armicarb developed necrotic lesions on exposed leaves. In addition, exposed leaves on plants treated with Cabrio + Silwet on 28 May developed necrotic lesions, but when Cabrio was applied without Silwet on 6 and 16 June, the damage did not increase (Table 1).

Plants treated with any of the fungicide rotation programs tested had lower disease severity than the non-treated control (Table 2).

Table 1. Fungicide activity against powdery mildew on 'Golden Beauty' casaba melon at Holtville, CA.

Treatment [y]	26 June evaluation			
	Upper leaf surface (%)		Lower leaf surface (%)	
Procure 50WS 8 oz	0.4	d [y]	0.0	h
Procure 50WS 6 oz	5.2	cd	4.8	g
Quintec 4 fl oz	4.8	cd	6.0	g
Rally 40W 4.0 oz + Latron B1956 0.06 %	8.8	cd	8.8	g
Dusting Sulfur 30 lbs	0.4	d	12.8	fg
BAS 516 0.92 lbs	11.2	c	20.0	ef
Topsin M70W 0.5 lbs + Microthiol Special 80W 6.0 lbs	14.6	c	25.2	def
Flint 50WDG 2.0 oz	40.0	b	27.6	def
Quadris 2.08F 15.4 fl oz + Latron B1956 0.06 % + Bravo Ultrex 2.7 lbs	5.2	cd	28.0	def
Topsin M 70W 0.5 lbs	32.0	b	30.8	cde
Cabrio EG 1.0 lb + Silwet[z] 2.0oz/100gal	42.8	b	34.0	cdef
Flint 50WDG 1.5 oz + Bravo Ultrex 2.7 lbs	4.8	cd	35.2	cde
Flint 50WDG 1.5 oz	43.2	b	38.4	bcde
Quadris 2.08F 15.4 fl oz + Latron B1956 0.06 %	40.4	b	40.0	bcde
Microthiol Special 80W 6 lbs	14.0	c	40.4	bcde
Armicarb 5 lbs	34.8	b	45.6	abcd
Proud foliar fungicide 2.0%	56.8	ab	52.8	abc
Sporan Fungicide 2.0%	65.6	a	57.2	ab
Untreated	68.0	a	62.4	a

[x] All materials were applied in the equivalent of 30 gallons of water per acre with a CO_2-pressurized backpack sprayer at 30 psi. Materials were applied on 28 May, 6 and 16 June.

[y] Arcsine transformed data was subjected to analysis of variance. Means followed by the same letter do not differ significantly as determined by Student-Newman-Keul's Multiple Range Test on transformed data ($P \leq 0.05$). Non-transformed means are presented.

[z] Silwet was used with the first Cabrio application. Due to necrotic lesion development following the application, Silwet was not used in subsequent applications.

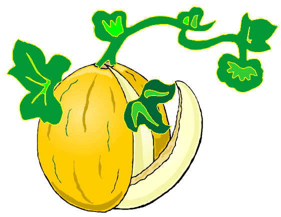
Table 2. Fungicide program activity against powdery mildew on 'Golden Beauty' casaba melon at Holtville, CA.

Trade name, rate/acre	Upper leaf surface (%) [x]		Lower leaf surface (%)	
Procure 0.8 oz (1&3)/Flint 50WDG 2.0 oz (2)[y]	3.2	e	3.6	d
Quinoxyfen 4 fl oz (1&3) / Procure 8.0 oz (2)	9.2	de	9.2	cd
Flint 50WDG 2.0 oz (1&3)/ Procure 0.5 lbs (2)	12.0	cde	12.0	cd
Flint 50WDG 2.0 oz(1)/Procure 50WS 0.5 lbs(2)/ Quinoxyfen 4 fl oz(3)	8.4	e	15.2	cd
Flint 50WDG 2.0oz(1&3)/ Rally 40W 4.0oz + Latron B1956 0.06%(2)	19.2	bcde	18.0	bcd
Flint 50WDG 2.0 oz (1&3)	32.4	bc	29.6	bc
Flint 50WDG 2.0 oz (1&3) / Topsin M 70W 0.5 lbs (2)	28.8	bcd	30.0	bc
Flint 50WDG 2.0 oz (2)	41.6	b	39.2	b
Untreated control	68.0	a	62.4	a

[x] Disease severity was evaluated on 26 June.

[y] Fungicides followed by (1&3) were applied on 28 May and 16 June; Fungicides followed by (2) were applied on 6 June.

[z] Means followed by the same letter do not differ significantly as determined by Student-Newman-Keul's Multiple Range Test on arcsine transformed data (P≤0.05). Non-transformed means are presented.



TIMING THE LAST WHEAT IRRIGATION

Herman Meister and Khaled M. Bali

Timing considerations

Timing the last irrigation may be a difficult decision. Applying an additional irrigation at the end of the season can waste water and cause unnecessary lodging. Conversely, water stress at the end of the season may reduce quality and production. Various conditions affect how a grower will determine how to time the last irrigation. Some of the considerations are the growth stage of the crop, soil type, anticipated weather conditions, variety, and water availability (a 3-day carryover can make a difference under warm or hot conditions).

Water use

On the average, about 3-4 inches of water is needed to carry a crop from soft dough to maturity. A sandy loam soil will hold about 1.4 inches of water per foot. A root system of 2.5 feet would have enough soil water, assuming average weather conditions. A heavy silty clay soil can hold 2.3 inches of water per foot and should more than adequately carry the crop to maturity with the last irrigation at soft dough. In no case should irrigation water be applied once the stems beneath the heads start to turn tan or brown.

Research data

Reduced irrigation interval data from wheat trials conducted by Lee Jackson, Khaled Bali and Herman Meister at the UC DREC during the 2002-03 growing season indicated an average of 0.5 ton reduction in wheat yield with 25% less water use (6 inches less water for the season).

Wheat is generally irrigated when 50% of the available soil water is depleted. Irrigation data from a study conducted at the Maricopa Agricultural Center showed an 837-lb increase in production by irrigating at 35% depletion rather than 50% depletion. Irrigating at 35% depletions will definitely use more water. The economics of such a decision may not be beneficial depending on cost vs. revenue issues. Irrigating at depletion levels below 50% increases crop water use due to the increase in evaporation.

Crop coefficients and CIMIS data can be used to predict water use on wheat. Additional information about CIMIS and crop coefficients are found at http://www.cimis.water.ca.gov.

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 February 1 to April 30 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).

The Irrigation Management Unit (IID) provides farmers with a weekly CIMIS update. Farmers interested in receiving the updated CIMIS report on a weekly basis can call the IID at the above number. Please feel free to call us if you need additional weather information. Or check the latest weather data on the worldwide web. Imperial County Weather Stations:
http://www.ipm.ucdavis.edu/calludt.cgi/WXSTATIONLIST?COUNTY=IM
California weather databases: http://www.ipm.ucdavis.edu/WEATHER/weather1.html
CIMIS web page: http://www.cimis.water.ca.gov/

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

Station	February		March		April	
	1-15	16-28	1-15	15-31	1-15	16-30
Calipatria	0.12	0.15	0.18	0.22	0.26	0.29
El Centro (Seeley)	0.12	0.14	0.16	0.20	0.24	0.28
Holtville (Meloland)	0.12	0.14	0.17	0.21	0.25	0.28

Eric T. Natwick, County Director