



Imperial County

Agricultural Briefs



University of California
Agriculture and Natural Resources

Features from your Farm Advisors

April 2015

Table of Contents

LEAF SPOTS ON SPINACH CAN BE CONFUSING!

.....Jose Luis Aguiar and Akif Eskalen - 2 -

ALFALFA SEED PRODUCTION INSECTICIDE EFFICACY IN 2014

.....Eric T. Natwick and Martin L. Lopez - 6 -

CIMIS REPORT AND UC DROUGHT RESOURCES

.....Khaled M. Bali and Sharon Sparks - 14 -

AGRONOMIC CROPS AND WATER CONSERVATION FIELD DAY AGENDA.....

- 15 -

LEAF SPOTS ON SPINACH CAN BE CONFUSING!

Jose Luis Aguiar, Vegetable Crops and Small Farms, UCCE Riverside County

Akif Eskalen, Extension Plant Pathology Specialist, UCR

Spinach has become a crop of economic importance in the United States. California produced about 73% of the 2004-2006 crop; Arizona produced about 12% and New Jersey produced 3%. In the Coachella Valley the spinach crop has also seen its fortunes rise and fall with concerns about food safety. Table 1 documents the acreage and gross crop value of the spinach crop in the Coachella Valley from 2004 to 2013.

Table 1. Coachella Valley Spinach Acreage and Gross Crop Value

YEAR	US DOLLARS GROSS VALUE: Coachella Valley	Coachella Valley ACREAGE
2004	8,836,500	975
2005	9,170,100	886
2006	5,578,700	616
2007	7,625,700	1077
2008	6,019,500	1,133
2009	7,715,500	767
2010	2,007,000	189
2011*	1,771,600	161
2012	9,036,100	859
2013	10,442,000	725

***2011 Data appears to be in error**

****Riverside County Agricultural Commissioners' Crop Reports**

Late December 2014 ended with unusually cold and uncharacteristically wet weather. This weather contributed to some interesting spinach leaf spotting problems. The leaf spots started in a small area in the field but soon it was spread over the whole field, and then other growers began reporting leaf spotting on their spinach fields.

Samples were collected in the field where the leaf spotting was first noticed and shipped to the diagnostic laboratory in Salinas for disease evaluation. Unfortunately, these samples arrived in very poor condition to the lab and they could not be evaluated properly. The lab found secondary molds and some colonies that appeared to be *Stemphylium*. These fungal colonies were plated onto another medium for confirmation. There are secondary non-pathogenic species of *Stemphylium* and it was unknown if these isolates were the pathogenic or non-pathogenic species of *Stemphylium*.

Stemphylium leaf spot was first documented in the Salinas Valley of California in 2001. Since then it has been found in Arizona, Delaware, Florida, Maryland, Washington and even in Europe. Confusion with this disease can occur because the spores of pathogenic and non-pathogenic *Stemphylium* are similar and time-consuming pathogenicity experiments would be needed to be completed in order to differentiate these two types with certainty.

Because the samples arrived to the diagnostic lab in poor condition, Farm Advisor Aguiar decided to collect fresh spinach samples from the affected field. This sample was shipped to the diagnostic lab in Salinas and a subsample was delivered to Dr. Akif Eskalen at UCR. Dr. Akif prepared slides and based on the spores present suggested the presence of *Stemphylium*. To be certain his lab conducted ITS sequencing on this sample. The results confirmed it was *Stemphylium spp.* See Figure 1 for the spores observed.

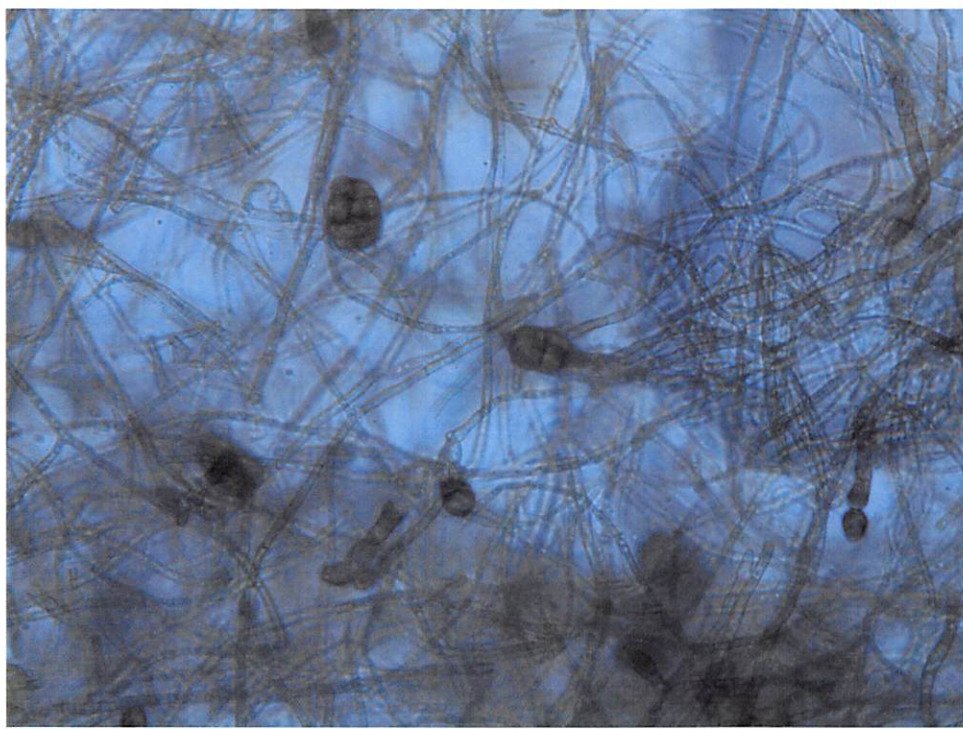


Figure 1. *Stemphylium* spores observed from spinach sample with leaf spots.

Pathogenicity tests were not done with this sample and so it cannot be concluded that this is the pathogenic species to spinach. It takes time to get reliable results; plant pathologists want to be certain that what they are observing is the disease agent and not a secondary or non-pathogenic species. Growers and Pest Control Advisors will then base their control options on the information provided that identifies the causal agent.

The new samples collected by Aguiar arrived at the Salinas Diagnostic lab in good condition and Steven Koike was able to recover **Cladosporium Leaf Spot** caused by the fungus *Cladosporium variable*. This disease is occasionally a problem in spinach fields and is favored by high humidity and moisture during the growing season, conditions that were very present in these spinach fields. The leaf spots are round, tan in color; there can be a few leaf spots or there can be many spots on a leaf. (See Figure 2 with spinach leaf with many leaf spots.)



Figure 2. Cladosporium spinach leaf spots rarely exceed 1 cm in diameter.



Figure 3. Cladosporium leaf spot from a field close to harvesting.

Cladosporium variable produces dark green spores and the mycelium develops in the center of the spots. The conidia produced are dispersed by winds and splashing water from rain or sprinkler irrigation. The complete epidemiology of this disease has not been documented. (See figure 3 for another spinach leaf with Cladosporium leaf spot). This pathogen has been detected on spinach seed produced in Europe and the USA. There may be spinach varieties with partial resistance; growers should consult with seed companies. Once the disease is

confirmed in a field, a 2-year crop rotation is recommended. Cultural practices that encourage air circulation in the field would also help. Affected fields should be disked as soon as possible.

This article references a foliar disease in spinach and explains our investigation of this problem. Laboratory investigation by a plant pathologist is one of the most important tools a grower should be accessing when he suspects a disease problem. Getting accurate lab results takes time; when the crop is in the field, it cannot wait weeks for the results. The information learned may not help this spinach crop but maybe it will the next. The reader should know that not all spinach fields in the Coachella Valley were affected by disease. Diseases and insects have evolved with plants and UC scientists spend a lot of time trying to understand these relationships.

References:

1. Vegetable Diseases: A Color Handbook: Steven Koike, Peter Gladdens, Albert O. Paulus. 2007 Academic Press.
2. Vegetables 2004-2013 Summary. USDA, National Agricultural Service.

ALFALFA SEED PRODUCTION INSECTICIDE EFFICACY IN 2014

Eric T. Natwick, Entomology Advisor, UCCE Imperial County
Martin I. Lopez, Staff Research Associate II, UCCE Imperial County

An insecticide efficacy trial was conducted at the UC DREC on a stand of CUF-101 alfalfa on beds of 40 inch centers. The experimental design was RCB using 4 replicates with 9 insecticide treatments and an untreated check. Plots were 50 ft wide (15 beds on 3.33 ft centers) and 70 ft long (one buffer bed between plots); 5 ft buffer between replicate blocks. Insecticide treatments were applied on 28 May and 11 June 2014 at the rates specified in the tables. Insecticide treatments were broadcast sprays applied using a Lee Spider Spray Trac, Tractor mounted spray boom, equipped with 13 nozzles (TJ-60 11003VS) operated at 20 psi, and delivering 26 gpa in a 25 ft wide spray swath. Hasten, a modified vegetable oil surfactant (Wilber-Ellis Company) was applied at 0.25% vol/vol in tank mixtures with each insecticide treatment. For uniformity, the entire field was sprayed with Dibrom 8 at 1.0 pt/acre on 29 April. The pre-treatment (PT) insect population data were collected on 27 May 2014; 1-day prior to treatment (1-DPT). Post-treatment samples after the first spray treatments were on 30 May, 4, 6 and 10 June or 2, 7, 9 and 13 days after treatment one (DAT1) and post-treatment samples after the second spray treatments were on 13, 18, 20 and 25 June or 2, 7, 9, and 14 days after treatment two (DAT2). During each evaluation, ten 180° sweeps per plot were collected with a standard 15-inch diameter sweep net. Sweep net samples were bagged, labeled and frozen for later counting in the laboratory of small LB nymphs (SLN) (1st through 3rd instars), large LB nymphs (LLN) (4th and 5th instars) and LB adults (LBA); totals of all LB stages (ALB) were also calculated for analysis. On 1 Jul 2014, mature seed pods were stripped from a few plants at random in each treatment replicate, pods were hand-threshed to prevent loss of damaged seed, and 100 random seeds from each replicate were examined under a binocular microscope for LB damage, SB damage, ASC damage, chewing insect (worm pests) damage, water damage, green seed and good seed. Treatment means were analyzed using 2-way ANOVA. Differences among means on each sampling date and in each experiment were determined using Least Significant Difference Test ($P \leq 0.10$).

Pre-treatment numbers of small LB nymphs (SLN), large LB nymphs (LLN), adult LB (LBA) and for all stages of LB (ALB) were similar among insecticide treatments and the untreated check (Tables 2-5). There were no differences among the treatment means for SLN on any of the sampling dates except on 13 June (2-DAT2), on 25 June (14-DAT2) and for the post treatment average (PTA). On 13 June (2-DAT2), Transform 50WG, GRANDEVO DF at 2 lb/acre, and MBI-206BM3SE1 at 2 gal/acre had significantly fewer SLN compared to the untreated check but GRANDEVO DF + MBI-206BM3SE1 had more SLN than the check (Table 1). On 25 June

(14-DAT2) all of the insecticide treatments had significantly fewer SLN than the untreated check. Only Transform 50WG had fewer SLN compared to the untreated check for the PTA.

There were no differences among the means for large LB nymphs (LLN) on 27 May (1-DPT), 13 June (2-DAT2) or on 20 June (9-DAT2) (Table 2). On 30 May (2-DAT1) only Transform 50 WG and GRANDEVO DF at 2 lb/acre had fewer ($P \leq 0.05$) LLN compared to the untreated check and MBI-206BM3SE1 at 0.25 gal/acre had more LLN than the check. Only Transform 50WG and MBI-206BM3SE1 at 1 gal/acre had fewer LLN than the check on 4 June (7-DAT1). All insecticide treatments had fewer LLN compared to the check except GRANDEVO DF at 2 lb/acre, MBI-206BM3SE1 at 1 gal/acre and GRANDEVO DF + MBI-206BM3SE1 on 6 June (9-DAT1). All insecticide treatments had fewer LLN than the check except GRANDEVO DF + MBI-206BM3SE1 on June (13DAT1). On 18 June (7-DAT2) and on 25 June (14DAT2), all insecticide treatments had fewer LLN than the untreated check. Only Transform 50WG, MBI-206BM3SE1 at 1 gal/acre Sivanto and Beleaf 50SG had fewer LLN than the check for their PTAs. There were no differences among the treatments for LB adults (LBA) on 27 May (1-DPT), 10 June (13DAT1), 18 June (7-DAT2), 20 June (9-DAT2) and 25 June (14DAT2) (Table 3). On 30 May (2-DAT1) only GRANDEVO DF at 1 lb/acre had fewer ($P=0.05$) LBA than the untreated check. Only Beleaf 50SG, Transform 50WG and MBI-206BM3SE1 at 0.5 gal/acre and at 1.0 gal/acre had fewer LBA than the check on 4 June (7-DAT1). Only MBI-206BM3SE1 at 0.5 gal/acre and at 1.0 gal/acre had fewer LBA than the check on 6 June (9-DAT1). All insecticide treatments except Beleaf 50SG and GRANDEVO DF + MBI-206BM3SE1 had fewer LBA compared to the check on 13 June (2-DAT2). The only insecticide treatments with PTAs for LBA not significantly lower than the untreated check were GRANDEVO DF, MBI-206BM3SE1 at 0.25 gal/acre and 2 gal/acre, and Sivanto. There were too few stink bugs (SB) and too few worm pests on any of the sampling dates for meaningful statistical analysis but percentages stink bug damage and chewing insect damage (worm pests) were evaluated from seed samples and results are shown in Table 4. There were no differences among the treatments for percentages of damage from seed chalcid or chewing insects such as worm pests (Table 4). There were no differences among the treatments for percentages of water damage or green seed. All insecticide treatments had higher percentages of good seed than the untreated check with only (70%) except MBI-206BM3SE1 at 1 gal/acre (74.5%). The only treatments that did not have LB damage percentages lower than the untreated check percentage (20.75%) of were GRANDEVO DF + MBI-206BM3SE1 (15.75%), MBI-206BM3SE1 at 0.25 gal/acre (13.75%) and MBI-206BM3SE1 at 1 gal/acre (13%). Beleaf 50SG at 2.8 oz/acre

had the lowest percentage of LB damage (6.25%) followed by Transform 50WG (8.25 %) and Sivanto (8.5%). Although there were too few SB on any given sampling date for meaningful statistical analysis, they were present and caused some seed damage. Only Sivanto (1.5%), Transform 50WG (1.75%) and GRANDEVO DF at 2 lb/acre (1.75%) had lower percentages of SB damage than the untreated check (3.5%). Some insecticides tested didn't provide much if any LB control based on the sweep counts, but nearly all treatments provided some protection from LB feeding damage. The best treatments were Beleaf 50SG, Transform 50WG and Sivanto for the lowest percentages of LB feeding damage and the highest percentages of good seed (87.75%, 86.25% and 86%, respectively). There were no symptoms of phytotoxicity following any of the insecticide treatments.

Table 1.												
Small LB nymphs per ten sweeps												
Treatment	Rate/acre	27 May	30 May	4 June	6 June	10 June	13 June	18 June	20 June	25 June	PTA ^z	
		1-DPT ^x	2-DAT ^y	7-DAT1	9-DAT1	13-DAT1	2-DAT2	7-DAT2	9-DAT2	14-DAT2		
Untreated check	-----	75.75 a	39.50 a	34.25 a	22.00 a	3.25 a	1.25 b	0.50 a	0.00 a	1.50 a	12.78 ab	
Beleaf 50SG	2.8 oz	75.50 a	18.75 a	26.75 a	13.50 a	2.00 a	0.25 bc	0.25 a	0.00 a	0.00 b	7.69 bc	
Transform 50WG	2.25 oz	86.75 a	17.25 a	8.00 a	6.25 a	2.75 a	0.00 c	0.00 a	0.00 a	0.00 b	4.28 c	
Grandevo DF	2 lb	65.75 a	17.25 a	19.50 a	14.75 a	3.00 a	0.00 c	0.00 a	0.00 a	0.25 b	6.84 bc	
Grandevo + MBI-206BM3SE1	2 lb 1 gal	90.00 a	33.75 a	22.50 a	16.25 a	2.75 a	2.50 a	0.00 a	0.00 a	0.50 b	9.78 bc	
MBI-206BM3SE1	0.25 gal	90.75 a	74.50 a	34.50 a	21.75 a	3.50 a	0.00 c	0.25 a	0.25 a	0.50 b	16.91 a	
MBI-206BM3SE1	0.5 gal	101.25 a	27.00 a	25.50 a	9.50 a	3.75 a	1.25 b	0.00 a	0.00 a	0.00 b	8.38 bc	
MBI-206BM3SE1	1 gal	52.50 a	29.00 a	22.50 a	8.75 a	1.50 a	1.00 bc	0.00 a	0.25 a	0.00 b	7.88 bc	
MBI-206BM1SE1	2 gal	85.75 a	27.50 a	28.00 a	14.75 a	5.00 a	0.75 bc	0.25 a	0.25 a	0.00 b	9.56 bc	
Sivanto 200 SL	14.0 fl oz	81.75 a	42.50 a	31.75 a	6.75 a	3.25 a	0.50 bc	0.50 a	0.00 a	0.00 b	10.66 b	

Means within columns followed by the same letter are not significantly different, LSD, $P > 0.10$.

^x Days prior to treatment.

^y Days after treatment.

^z Post treatment average.

Table 2. Large LB nymphs per ten sweeps

Treatment	Rate/acre	27 May 1-DPT ^x	30 May 2-DAT ^y	4 June 7-DAT ¹	6 June 9-DAT ¹	10 June 13-DAT ¹	13 June 2-DAT ²	18 June 7-DAT ²	20 June 9-DAT ²	25 June 14-DAT ²	PTA ^z
Untreated check	-----	50.75 a	62.50 b	63.50 ab	48.75 ab	8.50 a	2.50 a	2.75 a	0.25 a	1.75 a	23.81 ab
Beleaf 50SG	2.8 oz	75.00 a	28.25 bc	39.25 bc	22.25 cd	3.75 c	3.00 a	0.75 b	0.00 a	0.00 b	12.16 cd
Transform 50WG	2.25 oz	52.25 a	16.25 c	24.25 c	14.75 d	4.00 c	0.50 a	0.00 b	0.00 a	0.00 b	7.47 d
Grandevo DF	2 lb	51.50 a	21.50 c	73.00 a	34.25 bc	4.25 bc	1.75 a	0.25 b	0.00 a	0.00 b	16.88 bc
Grandevo + MBI- 206BM3SE I	2 lb 1 gal	56.00 a	66.50 b	75.75 a	65.00 a	9.00 a	3.75 a	0.00 b	0.25 a	0.00 b	27.53 a
MBI- 206BM3SE I	0.25 gal	52.25 a	118.00 a	62.50 ab	28.25 cd	4.75 bc	1.75 a	0.00 b	0.50 a	0.50 b	27.03 a
MBI- 206BM3SE I	0.5 gal	47.50 a	52.00 bc	47.50 abc	22.75 cd	7.75 ab	2.25 a	0.00 b	0.00 a	0.00 b	16.53 bc
MBI- 206BM3SE I	1 gal	69.50 a	31.25 bc	22.00 c	30.75 bcd	4.75 bc	0.25 a	0.00 b	0.00 a	0.00 b	11.13 cd
MBI- 206BM1SE I	2 gal	65.50 a	37.50 bc	70.75 ab	23.25 cd	4.75 bc	0.75 a	0.00 b	0.50 a	0.25 b	17.22 bc
Sivanto 200SL	14.0 fl oz	48.75 a	48.25 bc	49.75 abc	18.75 cd	3.25 c	1.50 a	0.25 b	0.25 a	0.00 b	15.25 cd

Means within columns followed by the same letter are not significantly different, LSD, $P > 0.10$.^x Days prior to treatment.^y Days after treatment.^z Post treatment average.

LB adults per ten sweeps												
Table 3.												
Treatment	Rate/acre	27 May 1-DPT ^x	30 May 2-DAT ^y	4 June 7-DAT ¹	6 June 9-DAT ¹	10 June 13-DAT ¹	13 June 2-DAT ²	18 June 7-DAT ²	20 June 9-DAT ²	25 June 14-DAT ²	PTA ^z	
Untreated check	-----	23.25 a	46.50 abc	92.00 a	66.50 bc	37.75 a	21.00 a	2.50 a	4.50 a	6.75 a	34.68 ab	
Beleaf 50SG	2.8 oz	26.75 a	34.25 bcd	41.50 c	43.00 cde	17.50 a	11.25 abc	1.75 a	2.00 a	2.50 a	19.22 cd	
Transform 50WG	2.25 oz	17.50 a	20.25 cd	53.25 bc	40.75 cde	9.75 a	2.75 c	0.50 a	4.00 a	5.75 a	17.13 d	
Grandevo DF	2 lb	14.75 a	19.50 d	72.00 abc	80.25 b	22.25 a	5.75 c	1.75 a	2.00 a	4.25 a	25.97 bcd	
Grandevo + MBI-206BM3SE1	2 lb 1 gal	13.75 a	48.25 ab	90.00 ab	115.25 a	26.25 a	19.25 ab	1.50 a	4.50 a	4.25 a	38.66 a	
MBI-206BM3SE1	0.25 gal	26.00 a	69.25 a	109.00 a	63.50 bcd	20.50 a	8.75 c	1.25 a	2.25 a	4.75 a	34.91 ab	
MBI-206BM3SE1	0.5 gal	13.25 a	32.00 bcd	53.00 bc	26.75 e	23.75 a	6.25 c	1.75 a	3.75 a	6.75 a	19.25 cd	
MBI-206BM3SE1	1 gal	28.50 a	29.75 bcd	44.25 c	32.00 de	21.25 a	5.00 c	0.75 a	3.50 a	5.00 a	17.69 cd	
MBI-206BM1SE1	2 gal	26.75 a	48.50 ab	98.75 a	57.75 bcde	21.75 a	9.25 bc	1.00 a	5.50 a	3.50 a	30.75 ab	
Sivanto 200 SL	14.0 fl oz	10.75 a	42.00 bcd	88.75 ab	49.25 bcde	28.25 a	5.25 c	0.75 a	4.25 a	4.50 a	27.88 bc	
Means within columns followed by the same letter are not significantly different, LSD, $P > 0.10$.												
^x Days prior to treatment.												
^y Days after treatment.												
^z Post treatment average.												

Table 4.

Percentage of seed damaged and healthy seed

Treatment	Rate/acre	Lygus Bug	Stink Bug	Seed Chalcid	Chewing Damage	Water Damage	Green Seed	Good Seed
Untreated check	-----	20.75 a	3.50 b	3.50 a	0.025 a	0.75 a	1.25 a	70.00 e
Beleaf 50SG	2.8 oz	6.25 c	2.50 bc	3.00 a	0.00 a	0.00 a	0.50 a	87.75 a
Transform 50WG	2.25 oz	8.25 bc	1.75 c	2.00 a	0.50 a	0.25 a	1.00 a	86.25 ab
Grandevo DF	2 lb	11.00 bc	1.75 c	4.25 a	0.25 a	0.25 a	0.25 a	82.25 abc
Grandevo + MBI-206BM3SE1	2 lb 1 gal	15.75 ab	3.75 ab	1.25 a	0.50 a	0.25 a	0.75 a	77.75 cd
MBI-206BM3SE1	0.25 gal	13.75 abc	3.00 bc	1.25 a	0.25 a	0.25 a	0.75 a	80.75 bcd
MBI-206BM3SE1	0.5 gal	11.75 bc	3.75 ab	2.00 a	0.00 a	0.00 a	0.50 a	82.00 abc
MBI-206BM3SE1	1 gal	13.00 abc	5.25 a	6.75 a	0.25 a	0.00 a	0.25 a	74.50 de
MBI-206BM1SE1	2 gal	12.50 bc	2.75 bc	1.75 a	0.25 a	0.25 a	0.75 a	81.75 75
Sivanto 200SL	14.0 fl oz	8.50 bc	1.50 c	3.25 a	0.25 a	0.25 a	0.25 a	86.00 ab

Means within columns followed by the same letter are not significantly different; $P > 0.05$, LSD.

Discussion: The three rates of Transform 50WG were the most efficacious treatments for lygus bug control followed by Beleaf 50SG used alone, Sivanto and MBI-206EP. Only Beleaf 50SG {FIFRA 24(c) Special Local Needs Label (SLN); SLN No. CA-140006} among the aforementioned insecticides have California labels for use on alfalfa at the time of this publication. Dow AgroSciences expects to have a California label for Transform 50WG for use on alfalfa grown for hay as well as for alfalfa seed production in the near future. Sivanto is still under development by Bayer CropScience. Sivanto does not have a label of any use in the USA at the time of this publication. However, Sivanto is likely to be available for use by alfalfa hay growers and possibly by alfalfa seed producers within or outside of California, in the near future according to Bayer CropScience. The manufacturers of Beleaf 50SG, Sivanto and Transform 50WG all report excellent safety for their respective products. I have not seen any reports from Morrone Bio Innovations the manufacture of MBI-203DF and MBI-206EP or in the scientific peer-reviewed literature on the safety of these products for honey bees or leaf cutter bees.

The insecticide MBI-203DF is a biological insecticide registered by Morrone Bio Innovations for use on alfalfa grown for seed or for hay is Grandevo™. Grandevo™ biopesticide is a microbial-based insecticide based upon the novel bacterium *Chromobacterium subtsugae* strain PRAA4-1^T. MBI-206 (*Burkholderia sp.* strain A396) is another biological insecticide under development by Morrone Bio Innovations with both contact and feeding activity. Morrone Bio Innovations has formulation of MBI-206 currently registered for crop use in the USA under the name Venerate™ but it is not labeled for use on alfalfa grown for seed or grown for hay. Sivanto is a formulation of the insecticidal active ingredient flupyradifurone under development by Bayer CropScience and was not registered for use in the USA or California at the time this report was written. Transform WG is a formulation of the active ingredient sulfoxaflor developed and registered for use on several field crops in the USA but it was not registered by Cal-DPR for use in California and it was not labeled for use on alfalfa grown for seed or grown for hay or forage in the USA at the time this report was written. Beleaf 50SG (a.i. flonicamid) is available for use in California on alfalfa grown for seed, hay or forage under a SLN 24(c) label.

Acknowledgements: We wish to thank the California Alfalfa Seed Production Research Board for generously funding this project. We also thank Bayer CropScience, Dow AgroSciences, FMC Corporation Agricultural Products Group and Morrone Bio Innovations for donations of grants-in-aide and/or donations of insecticides used in this experiment.

CIMIS REPORT AND UC DROUGHT RESOURCES

Khaled M. Bali, Irrigation & Water Mgmt Advisor, Director UCCE Imperial County
Sharon Sparks, Imperial Irrigation District*

California Irrigation Management Information System (CIMIS) is a statewide network operated by California Department of Water Resources. Estimates of the daily reference evapotranspiration (ET_0) for the period of April 1 to June 30 for three locations in the Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_0 by crop coefficients. For more information about ET and crop coefficients, contact the UC Imperial County Cooperative Extension Office (352-9474) or the IID, Ag Water Science 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 (Google CIMIS for the current link to CIMIS site).

Table 1. Estimates of daily Evapotranspiration (ET_0) in inches per day

Station	April		May		June	
	1-15	16-30	1-15	16-31	1-15	16-30
Calipatria	0.26	0.29	0.32	0.36	0.39	0.40
El Centro (Seeley)	0.24	0.28	0.31	0.34	0.36	0.38
Holtville (Meloland)	0.25	0.28	0.32	0.35	0.38	0.39

* Ag Water Science Unit, Imperial Irrigation District.

Water and Drought Online Seminar Series

The latest research-based advice on weathering a drought is now available free online. The UC Division of Agriculture and Natural Resources is working to help farmers cope with the unwelcome outcome of historically low rainfall the last three years. UC scientists, with support from the California Department of Water Resources, have recorded video presentations on high-priority drought webpages.

Each presentation is about one half hour in length and is available at the link below:

<http://ciwr.ucanr.edu/>

Then click on the drought resources link.



UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION
IMPERIAL COUNTY
1050 E. HOLTON ROAD
HOLTVILLE, CALIFORNIA 92250-9615

Telephone: (760) 352-9474 FAX Number: (760) 352-0846
<http://ceimperial.ucanr.edu>



Agronomic Crops and Water Conservation Field Day

When: Thursday April 16, 2015 (7:00 AM to 12 PM)
Where: University of California Desert Research & Extension Center
1004 E. Holton Rd., Holtville, CA 92250.

7:00 AM: Registration
7:30 AM: Begin Field Day

Agenda: Talks are scheduled for 10 minutes

- Stop 1 (Area 20) - Oil Crops for the Low Desert and Current IR-4 Assessments**
- Oil Crops for the low desert – Steve Kaffka, UC Cooperative Extension, UC Davis
- Current IR-4 project field assessments – Brent Boutwell, UC Cooperative Extension, Imperial
- Stop 2 (Area 80) - Water Conservation and Alfalfa Production under Subsurface Drip Irrigation**
- Update on Drought in California – Khaled Bali, UC Cooperative Extension, Imperial County
- Alfalfa Production under Subsurface Drip Irrigation (SDI) - Dan Putnam, UC Cooperative Extension, UC Davis
- Design and Management of SDI Systems for Alfalfa - Bryan Foley, Toro Micro-Irrigation
- Grower's Experience with SDI on alfalfa - John Summers, ACX International Ag Management, To be confirmed
- Alfalfa Crop Coefficients (Kcs) and methods to estimate Kcs for alfalfa - Cayle Little, California Department of Water Resources
- Irrigation Scheduling, what you need to know - Khaled Bali, UC Cooperative Extension Imperial County
- Alfalfa and Field Crops Soil Aeration Equipment - Geno Souza, Gearmore, Inc. - Aerway
- Stop 3 (Area 90 East) - Variety Trials and Deficit Irrigation**
- Alfalfa Variety Studies and Water Use - Dan Putnam, UC Cooperative Extension, UC Davis
- Deficit Irrigation Trials in California - Dan Putnam and Khaled Bali, UC Cooperative Extension
- The BountiGel, effectiveness as tested on Bell pepper – Jose Aguiar, UC Cooperative Extension, Riverside County & Bardia Dehghan Manshadi, mOasis
- Stop 4 (Area 90 West) - Sugarbeets and Fertigation Trials**
- Sugarbeets Nitrogen and Irrigation Management under Flood and SDI Irrigation - Steve Kaffka, UC Cooperative Extension, UC Davis

Agenda continued on next page...

Sponsors:

UCCE – Imperial County

California Department of Water Resources



It is the policy of the University of California (UC) and the UC Division of Agriculture & Natural Resources not to engage in discrimination against or harassment of any person in any of its programs or activities (Complete nondiscrimination policy statement can be found at <http://ucanr.edu/sites/ucanr/files/169224.pdf>)
Inquiries regarding ANR's nondiscrimination policies may be directed to Linda Marie Manton, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, One Shields Avenue, Davis, CA 95616 (530) 752-0495

CO-OPERATIVE EXTENSION WORK IN AGRICULTURE & HOME ECONOMICS, U.S. DEPARTMENT OF AGRICULTURE & UNIVERSITY OF CALIFORNIA CO-OPERATING



UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION
IMPERIAL COUNTY
1050 E. HOLTON ROAD
HOLTVILLE, CALIFORNIA 92250-9615

Telephone: (760) 352-9474 FAX Number: (760) 352-0846
<http://ceimperial.ucanr.edu>



Agronomic Crops and Water Conservation Field Day

When: Thursday April 16, 2015 (7:00 AM to 12 PM)
Where: University of California Desert Research & Extension Center
1004 E. Holton Rd., Holtville, CA 92250.

7:00 AM: Registration
8:00 AM: Begin Field Day

Agenda: *continued*

Stop 5a (Area 70) – Potential New Crop and Biofuels

- The Giant King Grass for the Valley – Oli Bachie, UC Cooperative Extension, Imperial County
- Sorghum forages for California – Oli Bachie & Dan Putnam, UC Cooperative Extension
- How to assess the costs and benefits of biofuel feedstocks in the low desert - David Grantz, Kearney Agricultural Center

Stop 5b (Area 70) – Automated Surface Irrigation

- Update on Automated Irrigation - Tom Gill, USBR
- Remote Monitoring of Pumps and Irrigation Systems - Philip Reh, Observant Inc.
- Advance in Advance Sensors for Automation - Alan Jackson, Rubicon Water
- Flow Rate Measurements - Diego Davis, SonTek/YSI, San Diego & Ron Nauman, HydroScientific West, Poway

Stop 5c (Area 70) – Sugarbeet Nematode

- Coded variety trial and new products for cyst nematode management - Becky Westerdahl, UC Davis

Stop 6 (Area 26) – Agronomic Crop Insect Pests

- Blue alfalfa aphids and control – Eric Natwick, UC Cooperative Extension, Imperial County
- Insect pests of alfalfa in Palo Verde Valley – Vonny Barlow, UC Cooperative Extension, Riverside County

Lunch will be served at noon (Sponsored by mOasis). For additional information on the field day, please contact Khaled Bali, kmbali@ucanr.edu or Oli Bachie, obachie@ucanr.edu

APPROVED CEU's: Certified Crop Adviser (CA 53247 – 4hrs.), CA CEU (M-0663-15 – 1hr.) & AZ CEU (EXC-318-15A – 1hr.)

Please feel free to contact us if you need special accommodations.

Sponsors:

UCCE – Imperial County



California Department of Water Resources



It is the policy of the University of California (UC) and the UC Division of Agriculture & Natural Resources not to engage in discrimination against or harassment of any person in any of its programs or activities (Complete nondiscrimination policy statement can be found at <http://ucanr.edu/sites/anrstaff/files/169224.pdf>)
Inquiries regarding ANR's nondiscrimination policies may be directed to Linda Marie Mantoni, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, One Shields Avenue, Davis, CA 95616, (530) 752-0495.

CO-OPERATIVE EXTENSION WORK IN AGRICULTURE & HOME ECONOMICS, U.S. DEPARTMENT OF AGRICULTURE & UNIVERSITY OF CALIFORNIA CO-OPERATING

*The University of California prohibits discrimination or harassment of any person in any of its programs or activities.
(Complete nondiscrimination policy statement can be found at <http://ucanr.org/sites/anrstaff/files/107734.doc>)*

Inquiries regarding the University's equal employment opportunity policies may be directed to Linda Marie Manton, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, One Shields Avenue, Davis, CA 95616, (530) 752-0495.