Imperial County *Agricultural Briefs*

University *of* California
Agriculture and Natural Resources

Features from your Farm Advisors

October 2015

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FOLIAR INSECTICIDE EFFICACY AGAINST WORM PEST IN LETTUCE, 2014

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Cabbage looper (CL): *Trichoplusia ni* (Hübner)

The objective of the study was to evaluate the efficacy of foliar insecticide spray applications for control of worm pests such as beet armyworm (BAW), *Spodoptera exigua* (Hübner) and Cabbage looper (CL), *Trichoplusia ni* (Hübner) on iceberg head lettuce under desert growing conditions. Head lettuce 'Diamond Back' was direct seeded on 17 Sep 2014 at the University of California Desert Research and Extension Center, Holtville, CA into double row beds on 40 inch centers. Stand establishment was achieved using overhead sprinkler irrigation, and irrigated via furrow irrigation thereafter. Plots were four 40 inch beds (13.3 ft) wide by 50 ft long with one non-planted bed between plots and 5 ft between blocks. Four replications of each treatment were arranged in a RCB design. Insecticidal compounds, formulations and application rates are provided in the tables. All insecticide treatments were applied as foliar sprays with a 4-row sprayer (Lee Spider Spray Trac, LeeAgra, Inc., Lubbock, TX) equipped with three TJ-60 11003VS nozzles per row delivering a directed spray application at 25 psi and 47.6 gpa on 14 Oct 2014. An adjuvant, DyneAmic (Helena Chemical CO., Collierville, TN) was added at 0.25% vol/vol to each foliar spray mixture. Worm pests sampled included BAW (92% of worms present in the plots) and CL (8% of total worms present); data for both species were pooled. The numbers of worm pests were counted and recorded from twenty random plants per treatment in each replicate on 13 Oct, 1-day pre-treatment (1-DPT) and post-treatment samples were taken on 17 Oct, 3 days after treatment (3-DAT); 21 Oct, 7-DAT; 24 Oct, 10-DAT, and 27 Oct, 13-DAT. Because there were many '0' in the data sets, 0.001 was added to all data for statistical analysis, but means are reported with only 2 digits to the right of the decimal. Data were analyzed using ANOVA. Differences among means on each sampling date were determined using Least Significant Difference Test (P=0.05).

The BAW and CL levels were very low, compared to past years, throughout the duration of the study. There were no differences among the means for worm pests (BAW and CL larvae) on the on 13 Oct 1-DPT (Table 1).

All of the insecticide treatments had significantly fewer worm pest larvae than the untreated check on all post treatment sampling dates. There were no differences among the insecticide spray treatments for worm pests on the post-treatment sampling dates of 17 Oct, 24 Oct and 27 Oct, but the Intrepid 2F + Warrior II treatment had significantly more worms than all insecticide treatments on 21 Oct, 7-DAT and for the PTA. There were no apparent symptoms of phytotoxicity from the insecticide treatments.

Table 1.

Treatments and formulations	Rate fl oz/acre	BAW larvae plus CL larvae per 20 lettuce plant, 2014					
		13 Oct 1-DPT[w]	17 Oct 3-DAT[x]	21 Oct 7-DAT[z]	24 Oct 10-DAT	27 Oct 13DAT	PTA[yz]
Check	---------	1.50 a	4.75 a	3.50 a	2.00 a	2.50 a	3.19 a
Coragen SC	5.0	1.25 a	0.00 b	0.00 c	0.25 b	0.25 b	0.13 c
Exirel 10SE	13.5	1.50 a	0.00 b	0.00 c	0.00 b	0.00 b	0.00 c
Intrepid 2F + Warrior II	10.0 3.0	1.75 a	0.25 b	0.75 b	0.75 b	0.25 b	0.50 b
Radiant SC	5.0	0.50 a	0.00 b	0.00 c	0.00 b	0.00 b	0.00 c
Belt SC	1.5	1.50 a	0.00 b	0.00 c	0.50 b	0.00 b	0.13 c
Cyclaniliprole 50SL	11.0	0.50 a	0.00 b	0.00 c	0.25 b	0.25 b	0.13 c
Intrepid 2F	10.0	0.75 a	0.25 b	0.25 bc	0.25 b	0.00 b	0.19 bc

[w] Days prior to treatment.
[x] Days after treatment.
[y] Post treatment averages.
[z] $Log_{10}(X+1)$ transformed data used in analysis; means from non-transformed data are reported.
Means within columns followed by the same letter are not significantly different, $P > 0.05$, LSD.

EFFICACY OF INSECTICIDES FOR WHITEFLY CONTROL IN BROCCOLI, 2014

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Martin I. Lopez, Staff Research Associate II, UCCE Imperial County

The objective of the study was to evaluate the efficacy of insecticides for control of Sweetpotato whitefly, *Bemisia tabaci* (Gennadius) – biotype B (SWF) on broccoli under low desert growing conditions. Broccoli, 'General' plants were transplanted on 17 Sep 2014 at the University of California Desert Research and Extension Center, Holtville, CA into double row beds on 40 inch centers, with a spacing five inches between plants. Stand establishment was achieved using overhead sprinkler irrigation and thereafter furrow irrigation was used for plant health maintenance. Plots were four beds, 13.3 ft wide by 50 ft long and bordered by one untreated bed. Five replications of each treatment were arranged in a RCB design. Insecticidal compounds, formulations and application rates are provided in the tables. All insecticide treatments were foliar sprays applied with a 4-row sprayer (Lee Spider Spray Trac Tractor) with three TJ-60 11003VS nozzles per row delivering a directed spray application at 25 psi and 47.6 gpa on 3 Oct and 17 Oct 2014. An adjuvant, Dyne-Amic surfactant (Helena Chemical Company, Collierville, TN) was added at 0.25% vol/vol to each foliar spray mixture with the exception of the treatment with Pyrifluquinazon 20SC at 3.2 fl oz / acre that had the addition of the surfactant Induce (Helena Chemical Company, Collierville, TN) at 0.25% vol/vol. Numbers of SWF adults were counted on a basal leaf from ten plants per plot in each replicate. Numbers of SWF eggs and nymphs were counted on the abaxial leaf surface, within a leaf disk of 2 cm^2 of basal leaves, from five random plants per plot in each replicate. A pre-treatment (PT) sample for SWF adults was taken on 26 Sep. Post-treatment sampling for SWF adults, eggs and nymphs occurred on 6, 10, 13, 16, 20, 24, 27, 31 Oct, that were 3 days after treatment (DAT) one, 7 DAT1, 10 DAT1, 13 DAT1, 3 DAT2, 7 DAT2, 10 DAT2, and 14 DAT2, respectively. Post treatment averages (PTA) were calculated for SWF adults, eggs and nymphs. Data were analyzed using ANOVA. Differences among means on each sampling date were determined using LSD ($P \leq 0.05$).

The SWF population level was high when this project was started in Sep 2014. There were no differences among the treatments for SWF adults on the PT sampling date of 26 Sep (Table 1). All of the insecticide treatments had significantly fewer SWF adults compared to the untreated check on the post-treatment sampling dates and for the PTAs, with the exception of Movento used alone on 20 Oct (3 DAT2). The insecticide treatments of Sivanto nad pyrifluquinazon had significantly lower PTAs than the insecticide treatments of Movento used alone and Oberon. None of the insecticide treatments had significantly fewer SWF eggs than the untreated check on 6 Oct, 3 DAT1, but all insecticide treatments had PTAs that were significantly lower than the untreated check and Movento treatments had significantly lower PTAs than the insecticide treatments of Sivanto, Exirel, and pyrifluquinazon + Induce (Table 2). All of the insecticide treatments had significantly fewer SWF nymphs compared to the untreated check on the post-treatment sampling dates and for the PTAs, with the exceptions of Movento used alone and pyrifluquinazon + Induce (Table 3). No phytotoxicity symptoms resulted from any of the insecticide treatments.

Table 1.

Treatment /Formulation	Rate-amt (fl oz)/acre	SWF adults per leaf									
		26 Sep	6 Oct	10 Oct[z]	13 Oct	16 Oct[z]	20 Oct[z]	24 Oct[z]	27 Oct	31 Oct	
		PT	3 DAT1	7 DAT1	10 DAT1	13 DAT1	3 DAT2	7 DAT2	10 DAT2	14 DAT2	PTA
Check	--------	10.80 a	41.83 a	69.88 a	32.95 a	42.85 a	35.35 a	35.98 a	20.15 a	24.18 a	37.89 a
Sivanto 200SL	10.5	6.40 a	4.90 cd	23.03 c	19.65 bc	17.58 c	2.30 de	7.38 de	5.15 c	9.03 bc	11.13 d
Movento 2SC	5.0	8.13 a	12.75 bc	35.25 b	17.45 c	19.60 bc	21.78 ab	13.18 c	4.35 c	3.68 d	16.00 c
Movento 2SC + Requiem EC	5.0 32.0	7.65 a	8.33 cd	25.43 bc	15.93 c	17.08 c	12.10c	11.15 cd	6.53 c	9.23 bc	13.22 cd
Oberon 2SC	8.5	9.10 a	16.70 b	35.68 b	21.30 bc	20.40 bc	20.23 bc	22.05 b	11.05 b	12.20 b	19.95 b
Exirel 10SE	13.5	7.15 a	3.93 d	30.15 bc	23.10 b	24.63 b	4.58 d	12.08 c	6.35 c	9.10 bc	14.24 cd
Pyrifluquinazon 20SC + Induce	3.2 0.25% vol/vol	6.58a	8.50 cd	27.08 bc	18.53 bc	17.03 c	1.63 e	6.65 e	3.33 c	7.22 cd	11.24 d
Pyrifluquinazon 20SC + Dyne-Amic	1.3 0.25% vol/vol	8.78 a	7.28 cd	27.80 bc	19.45 bc	15.75 c	4.70 d	7.20 e	6.05 c	11.43 b	12.46 d

[z] Log transformed data were used for analysis; actual means are reported.
Means within columns followed by the same letter are not significantly different; LSD, P>0.05.

Table 2.

Treatment /Formulation	Rate-amt (fl oz)/acre	SWF eggs per 10 cm² of broccoli leaf								
		6 Oct	10 Oct[z]	13 Oct[z]	16 Oct	20 Oct	24 Oct[z]	27 Oct[z]	31 Oct	
		3 DAT1	7 DAT1	10 DAT1	13 DAT1	3 DAT2	7 DAT2	10 DAT2	14 DAT2	PTA
Check	--------	59.50 a	72.25 a	329.50 a	318.25 a	140.50 a	70.50 a	36.25 a	44.75 a	133.94 a
Sivanto 200SL	10.5	26.25 a	10.25 b	117.75 ab	117.00 bc	80.25 b	61.00 a	28.50 ab	14.00 bc	56.88 bc
Movento 2SC	5.0	36.00 a	20.00 b	56.50 c	38.75 c	46.00 bc	16.75 bc	34.50 ab	10.50 bc	32.38 d
Movento 2SC + Requiem EC	5.0 32.0	25.00 a	6.00 b	61.75 c	32.00 c	26.75 c	22.50 c	4.50 c	8.50 c	23.38 d
Oberon 2SC	8.5	17.25 a	7.50 b	55.25 c	68.50 bc	69.25 bc	51.25 abc	15.75 bc	12.00 bc	37.09 cd
Exirel 10SE	13.5	27.75 a	28.50 ab	94.75 bc	151.00 b	83.00 b	68.50 a	34.25 ab	28.50 ab	64.53 b
Pyrifluquinazon 20SC + Induce	3.2 0.25% vol/vol	24.25 a	12.00 b	128.50 ab	150.75 b	62.25 bc	34.00 abc	26.50 ab	24.25 bc	57.81 bc
Pyrifluquinazon 20SC + Dyne-Amic	1.3 0.25% vol/vol	9.75 a	16.00 b	91.75 bc	60.75 bc	81.00 b	41.25 ab	19.75 abc	27.25 abc	43.44 bcd

[z] Log transformed data were used for analysis; actual means are reported.

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

Table 3.

Treatment /Formulation	Rate-amt (fl oz)/acre	Whitefly nymphs per 10 cm² of broccoli leaf								
		6 Oct 3 DAT1	10 Oct 7 DAT1	13 Oct[z] 10 DAT1	16 Oct[z] 13 DAT1	20 Oct[z] 3 DAT2	24 Oct 7 DAT2	27 Oct 10 DAT2	31 Oct 14 DAT2	PTA
Check	--------	33.50 a	29.00 a	237.25 a	277.00 a	262.25 a	251.50 a	231.25 a	282.25 a	200.50 a
Sivanto 200SL	10.5	3.75 b	5.75 b	38.50 b	48.75 b	42.00 bc	91.50 b	87.75 b	85.50 b	50.44 b
Movento 2SC	5.0	6.25 b	6.25 b	58.75 ab	43.50 b	16.50 cd	18.75 cd	75.25 b	43.50 bc	33.59 bc
Movento 2SC + Requiem EC	5.0 32.0	3.50 b	3.00 b	25.00 b	13.25 c	8.50 d	8.75 d	13.00 c	16.25 c	11.41 c
Oberon 2SC	8.5	8.50 b	3.50 b	22.75 b	57.00 b	34.50 bc	62.75 b	68.75 bc	43.25 bc	37.63 b
Exirel 10SE	13.5	3.50 b	7.25 b	32.00 b	42.00 b	48.50 bc	70.75 b	63.25 bc	46.00 bc	39.16 b
Pyrifluquinazon 20SC + Induce	3.2 0.25% vol/vol	5.25 b	6.25 b	68.25 ab	63.50 b	58.50 b	60.50 bc	57.50 bc	68.25 b	48.50 b
Pyrifluquinazon 20SC + Dyne-Amic	1.3 0.25% vol/vol	5.50 b	7.00 b	39.25 b	67.75 b	54.75 bc	64.50 bc	94.25 b	79.00 b	51.50 b

[z] Log transformed data were used for analysis; actual means are reported.
Means within columns followed by the same letter are not significantly different; LSD, P>0.05.

INSECTICIDE EVALUATION FOR WORM PEST CONTROL IN CABBAGE, 2014

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The objective of the study was to evaluate the efficacy of various insecticide treatments for control of the worm pests, beet armyworm, *Spodoptera exigua* (Hübner) (BAW) and Cabbage looper, *Trichoplusia ni* (Hübner) (CL) on cabbage under desert growing conditions. Cabbage 'Headstart' was direct seeded on 17 Sep 2014 at the University of California Desert Research and Extension Center, Holtville, CA into double row beds on 40 inch centers. Stand establishment was achieved using overhead sprinkler irrigation, and furrow irrigation was used thereafter. Plots were four beds (13.3 ft) wide by 50 ft long and bordered by one untreated bed. Four replications of each treatment were arranged in a RCB design. Insecticidal compounds, formulations and application rates are provided in the table. All insecticide treatments were foliar sprays applied on 24 Oct 2014 with a 4-row sprayer (Lee Spider Spray Trac Tractor), with three TJ-60 11003VS nozzles per row that delivered 47.2 gpa at 25 psi. An adjuvant, Dyne-Amic (Helena Chemical Company, Collierville, TN) was added at 0.25% vol/vol to each foliar spray mixture. A pre-treatment (PT) sample of BAW and CL was collected from 20 whole plants per replicate, and completed on 24 Oct 2014 prior to treatment applications. Post treatment whole plant samples were taken 3-days after treatment (DAT), 7-DAT, 10-DAT, and 14-DAT; on 24 Oct, 27 Oct, 31 Oct, 3 Nov, and 7 Nov 2014, respectively; post-treatment averages (PTA) were calculated. Data were analyzed using ANOVA. Differences among means on each sampling date were determined using Least Significant Difference Test (P=0.05).

Worm pest pressure was low throughout the study. There were only 3 BAW larvae detected during the study so the BAW larval count numbers were pooled with the cabbage loopers (CL) larval count numbers in the replicates and on dates that BAW were detected. Therefore, the pooled numbers of CL plus BAW are recorded as worm pests per 20 plants in the table. No differences in the numbers of worm pests were detected among the treatments from the PT samples taken on 24 Oct. Following the insecticide application on 24 Oct, all insecticide treatments, on all post-treatment sampling dates, had significantly lower mean worm pests than the untreated check. All insecticide treatments had PTAs for worm pests that were lower than the check PTA. There were no differences among the insecticide treatments 3-DAT, 10-DAT and 14-DAT. Lannate LV had more worms 7-DAT than all other insecticide treatments except Coragen. The insecticide treatments Belt SC, Coragen SC and Lannate LV each had higher PTAs than the PTAs for the other insecticide treatments. There were no visible symptoms of phytotoxicity following any of the insecticide treatments. This research was supported by industry monetary gifts and in-kind gifts of insecticidal products.

Table 1.

		Worm Pests per 20 plants					
Treatment/Formulation	Rate fl oz /acre	24 Oct PT[x]	27 Oct 3-DAT[y]	31 Oct[w] 7-DAT	3 Nov 10-DAT	7 Nov 14DAT	PTA[wz]
Untreated Check	---------	3.00 a	2.25 a	5.25 a	3.50 a	4.50 a	3.88 a
Coragen SC	5.0	2.00 a	0.50 b	0.25 bc	0.50 b	1.00 b	0.56 b
Exirel 10SE	13.5	2.50 a	0.00 b	0.00 c	0.00 b	0.75 b	0.19 c
Intrepid 2F + Warrior 1CS	10.0 3.0	2.50 a	0.50 b	0.00 c	0.00 b	0.00 b	0.13 c
Radiant SC	5.0	3.50 a	0.25 b	0.00 c	0.00 b	0.25 b	0.13 c
Belt SC	1.5	1.75 a	0.50 b	0.00 c	0.50 b	1.25 b	0.56 b
IKI-3106 50SL	11.0	2.00 a	0.50 b	0.00 c	0.25 b	0.00 b	0.19 c
Lannate LV	48.0	1.25 a	0.00 b	0.50 b	1.25 b	1.25 b	0.75 b

[w] Log_{10} (x+1) transformed data used for analysis but means of non-transformed data are shown.
[x] Pre-treatment.
[y] Days after treatment.
[z] Post treatment averages.
Means within columns followed by the same letter are not significantly different, $P > 0.05$, LSD.

NITRATE CONTENTS IN COTTON PETIOLES CAN BE AFFECTED BY VARIETY AND CROPPING SYSTEMS

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Cotton is still an important crop in California's low desert, particularly Palo Verde Valley, Blythe, Riverside, CA. and major areas of the Mexicali Valley in Mexico. Pest infestation, lower yield, increased production cost, poor market and lower commodity prices have resulted in declining interest in cotton production in the Imperial Valley, an area that once was known as a cotton growing belt. An ongoing research is being conducted to evaluate the influence of varieties and cropping systems (conventional versus standard) on yield of commonly used cotton varieties. Conventional or standard cotton production typically employs wide bed (38 or 40-inch), planted to a single line of seeds, resulting in lower crop population densities per acre. Narrow planting involves the use of narrower bed sizes or planting in two lines over the same standard size beds. Lower plant populations, as commonly practiced with standard wide row planting, may require longer time to grow into a closed canopy and is expected to have lower yield. Part of the ongoing trial was to look at the effects of varieties and planting practices on cotton crop nitrate uptake. This documents presents some preliminary results on NO_3 concentrations in petioles of cotton varieties planted following a high (narrow row) or standard (low) cropping density.

This field research was conducted at the UC Desert Research and Extension Center (DREC). Three varieties, DP1044B2RF (C1), a straight type variety, DP1359B2RF (C2) a columnar type variety and DP 1555 B2RF (C3), a bushy grown variety were used for the experimentation. For the traditional wide row planting, crops were planted on a 40" bed (common local practice) in single rows. The narrow row spacing used the same 40" bed, but planted in double lines. Accordingly, the narrow row planting had approximately double plant population densities per plot as the traditional planting practice. Each treatment plot was 4 beds of 40" wide and 35 ft long. All varieties were seeded at 3 to 4 inch between seeds and at ¾th inch deep. Treatment plots were laid out in a Completely Randomized Block Design (RCBD) with four replications. The treatment plots were separated with a 5 ft alley (unplanted) and 10 ft guard plants around the perimeters. Other than the planting space and varieties, all crop maintenance and inputs were applied universally following growers practices. All plots were prefertilized with 250 pounds of nitrogen per acre and furrow irrigated the next day of planting. Additional fertilizers were supplied through fertigation before the 1st bloom and as needed thereafter.

While there were various data collected and still being collected, we shall only present the effect of planting systems and cotton varieties on NO_3 concentration in crop petioles. Cotton plants were sampled for petiole NO_3 concentrations at 60, 77, 106, and 121 days after planting (DAP), representing the square formation, peak bloom, cutout and open boll stages of crop growth, respectively. During each sampling period, 20 petioles from the fifth node below the tip of the main stem were collected per treatment replication and samples deposited into sealable plastic bags. Nitrate concentrations were determined using a hand held Nitrate meter, HORIBA LAQUA twin Nitrate Ion meter by placing 5 drops of petiole extracts and recording the nitrate concentration levels directly. All data collected were analyzed for statistical significance using ANOVA with the SAS version 9.0 software. Differences between treatment means were detected with the LSD (α=0.05) and determined for significance.

Our preliminary findings from a one year cropping season suggests that Petiole nitrate concentration of cotton varied depending on cotton growth stages, the type of variety and the cropping systems. Petiole NO_3 concentrations increased until crop cutout stage and then declined at the open boll stage for all varieties planted to narrow row. However, variety two (C2) and variety 3 (C3), planted with standard planting system had swinging NO_3 concentrations from the start of the sampling to the open boll stage. The latter varieties under the standard planting system had the highest petiole nitrate concentration at the square formation and cutout stages compared to the peak bloom and open boll stages (Table 1). Variety 1 (C1) the highest NO_3 petiole concentration at the square formation stage , but plunged at towards the end of crop development; the open boll stages, suggesting that this variety under standard cropping system may have less available nitrate to promote reproductive growth and may result in a lower yield performance compared to the narrow row cropping system.

Table 1: Nitrate concentration in cotton petioles under narrow and standard planting systems at various crop growing stages

Treatment	Crop stage			
	Square (1st simple)	Peak Bloom (2nd Sample)	Cut Out (3rd Sample)	Open boll (4th simple)
CIS	8075a	5925ab	5775b	3775a
C2S	7725a	7450a	8675a	3950a
C3S	6675a	4700bc	6450ab	4725a
C2N	5325ab	6100ab	7175ab	4075a
C3N	4850ab	5025abc	5650b	4200a
C1N	2750b	3008c	5150b	4225a
Pr>F	*0.0470*	*0.0295*	*0.1456*	*0.9129*

As plants aged (the cutout and open boll stages), there were no difference in petiole NO_3 concentrations among the varieties and cropping system treatments (Table 1). All varieties had relatively higher petiole NO_3 concentrations at the beginning of our sampling, the square formation than at the open boll stage. In the meantime, all varieties had higher petiole NO_3 concentrations when planted under standard cropping system than the respective narrow row planting (Table 1), particularly at their early growth stages. Variety 1 (C1) seem highly affected for its petiole NO_3 concentration when planted in dense crop populations (narrow row). Those results are clearly shown in Figure 1.

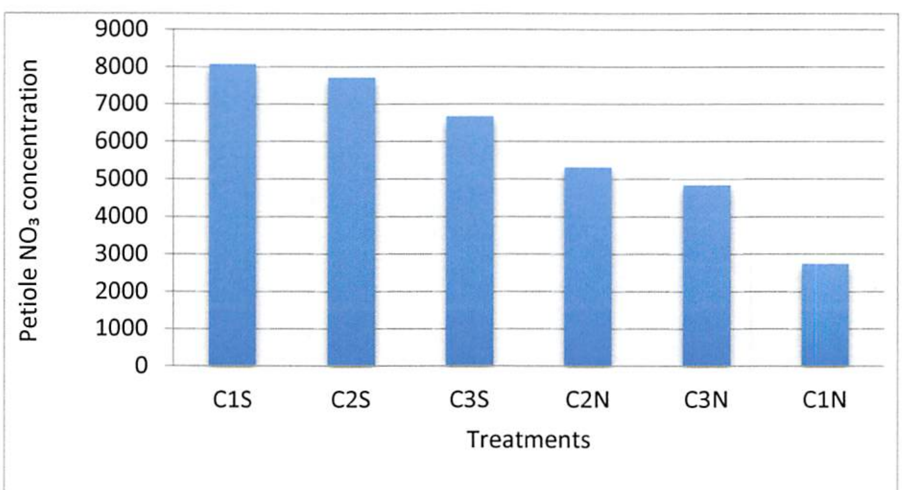

Figure 1: Petiole NO_3 concentrations in different cotton varieties planted under standard and narrow row cropping systems.

When averaged over the cropping systems, we observe that variety 2 (C2) has more aggressive nitrate uptake and accumulation in petioles than varieties 1 and 2 (C1 and C2), respectively (Figure 2). This result reveals that varieties with columnar structure may have a better advantage of nitrate absorption than the other varieties that have varying structural growth. Furthermore, cotton seems to absorb more nitrate when dispersedly planted (standard) that when planted densely (Figure 3). Similarly, when averaged over varieties, cotton crops seem to accumulate more nitrate in their petioles, if they were grown with standard than under narrow row (high density) planting practices (Figure 3). The latter responses may be an indication of plant competition for nutrition under higher plant population densities. The indication of petiole nitrate accumulation and its relationship to yield will be further investigated following an upcoming cotton seed data collection.

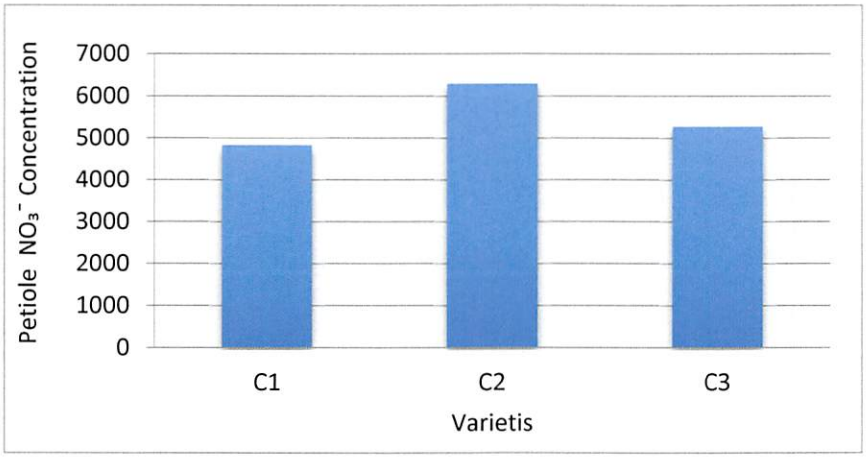

Figure 2: Petiole NO_3 concentration in three cotton varieties averaged over cropping system treatments

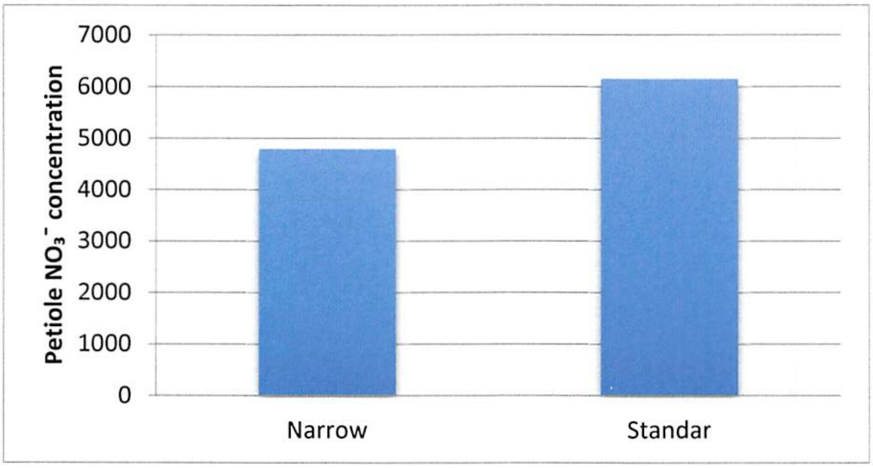

Figure 3: Petiole NO_3 concentration in cotton with two planting systems averaged over three different cotton varieties.

In summary, NO_3 concentration in plants which may be a measure of crop nutrient uptake is affected by plant architectural characteristics and planting systems directly affecting inter-plant interactions that could be useful for cotton crop management. It must be noted that the three varieties have contrasting architecture, a tall stature, columnar type and a short stature and bush type. We observed that crop vegetative and reproductive growths were variable depending on varieties and cropping systems as well (data not presented) and might have been the reason for the capacity of the crop varieties to absorb and accumulate nutrients such as NO_3. All varieties had higher NO_3 concentrations when planted under standard cropping system than under the narrow row spacing, but some are affected more than other varieties. While this preliminary finding is not yet conclusive, it reveals the existence of differences in responses of cotton to the type of varieties and planting population densities. At the end of the trials, which will last for two more years, we will be able to provide more accurate information on cotton NO_3 absorption and accumulation patters along commonly grown varieties, their respective cropping systems and yielding potentials

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_o) for the period of October 1 to December 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, 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_o) in inches per day

Station	October		November		December	
	1-15	16-31	1-15	1-15	16-31	1-15
Calipatria	0.23	0.19	0.14	0.23	0.19	0.14
El Centro (Seeley)	0.23	0.17	0.13	0.23	0.17	0.13
Holtville (Meloland)	0.23	0.18	0.13	0.23	0.18	0.13

*** 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. 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.

Save the Date...

UC CE

October 29, 2015

26th Annual Fall Desert Crops Workshop

Location:

Farm Credit Services Southwest
485 Business Park Way
Imperial, CA 92251

Time:

6:30am – 12:30pm*
(Subject to change)

Lunch:

Courtesy of Western Farm Press & Commercial Suppliers

No cost to attend!

To register or for more information contact...

University of California Cooperative Extension Imperial County

1050 E. Holton Rd.
Holtville, CA 92250
(760) 352-9474
aiestrada@ucanr.edu

** Pesticide Updates*

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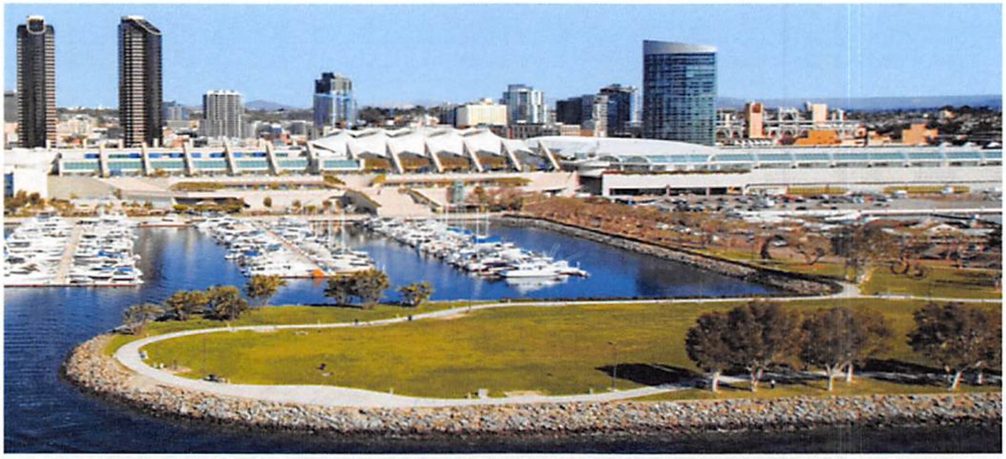
24th Annual Cal-IPC Symposium
San Diego Convention Center
October 28-31, 2015

plus a special conference on:

Habitat Conservation Planning
October 29, 2015



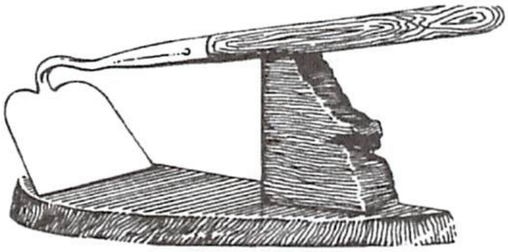
Join us in the heart of San Diego, between San Diego Bay and the historic Gaslamp Quarter!

Registration is now open!

The **2015 Symposium** will be held October 28-31 at the San Diego Convention Center, located on San Diego Bay near the historic Gaslamp Quarter. Join fellow land managers, researchers, and conservationists to catch up on the latest findings in invasive plant biology and management. In addition to the customary focus on effective program planning and tools of the trade, our 24th annual Symposium will feature a parallel one-day conference on "Invasive Plant Management and Habitat Conservation Planning". Stay tuned for more details in June.

The Symposium will feature a broad range of presentations, discussion groups, trainings and field trips, with activities like our photo contest and awards mixed in. Trainings and a session on Pesticide Laws and Regulations will be held on Wednesday; sessions will be on Thursday and Friday, with the one-day parallel HCP conference on Thursday; and field trips on Saturday (Halloween!). We anticipate continuing education credits from DPR (12 hours "Other" and 2 hours "Laws & Regs". (Trainings and field trips will have additional continuing education credits.)

Website: California Invasive Plant Council



The California Weed Science Society
68th Annual Conference

"Addressing Diverse and Dynamic Challenges in Weed Management"

January 13-15, 2016

Hyatt Regency- Sacramento
1209 L Street
Sacramento, CA 94814
Tel: 916.443.1234 Fax: 916.321.3779

www.cwss.org

Featured Sessions Include:

- Experts in the general sessions including experts in herbicide injury
- Student Oral Paper and Poster contests
- New research and updates on weed biology and management in CA agricultural crops and orchards, turf & ornamentals, roadside & industrial sites, forestry, range & natural areas, and aquatic sites.
- Laws and Regulations Sessions

DPR CEU's have been requested

To register online and view hotel reservation details, visit www.cwss.org or call (831) 442-0883 for a program agenda and registration form.