Imperial County Agricultural Briefs

UC CE | UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources

Features from your Advisors

November 2022 (Volume 25 Issue 10)

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USER-FRIENDLY SATELLITE-BASED IRRIGATION TOOLS TO MANAGE IRRIGATION WATER MORE EFFICIENTLY

Ali Montazar, Irrigation and Water Management Advisor
in UCCE Imperial, Riverside and San Diego Counties

Introduction. The water requirement of a crop must be satisfied to achieve optimum potential yields. The crop water requirement is called crop evapotranspiration and is usually represented as ETc. By combining reference evapotranspiration (ETo) and the proper crop coefficient (Kc), crop water use (ETc) can be determined as ETc = ETo × Kc. ETo is an estimation of evapotranspiration for short grass canopy under a well-managed, non-stressed condition. ETo is the main driver to estimate or forecast crop water needs. There are user-friendly satellite-based irrigation tools available that may assist growers to schedule irrigation more effectively. These tools provide ETo forecast for up to six days in the future or/and actual ET at the scale of individual fields. This article introduces three satellite-based irrigation tools including FRET, IrriSAT, and OpenET. A comparison of the estimated crop water uses utilizing OpenET tool and actual ET measured for a period of nine-month is also presented for an alfalfa field in the Imperial Valley.

FRET (Forecast Reference EvapoTranspiration)

A new alternative to weather station ET is forecast reference ET or FRET (Fig. 1). The National Weather Service offers FRET data on the Graphical Forecasts page of their website. FRET is one option in the digital forecast database display, and you can zoom in to find ETo data for your field up to six days in the future. In other words, FRET will help growers to have forecast ETo up to the next six days and more effectively schedule irrigation. FRET is currently available at https://digital.weather.gov/. This tool is particularly very useful to forecast crop water requirements and schedule running hours of irrigation system ahead of heat waves.

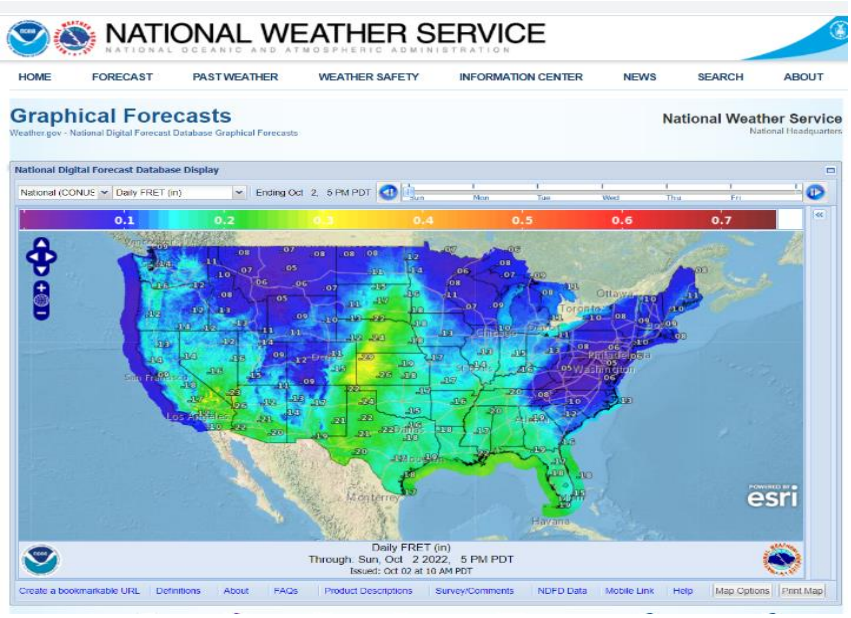

Fig. 1. A screenshot of the FRET ETo map for the entire United States issued on October 2, 2022.

IrriSAT

IrriSAT is a weather-based irrigation management and benchmarking technology that uses remote sensing to provide site specific crop water management information across large spatial scales (Fig. 2). IrriSAT uses satellite imagery to estimate crop coefficients (Kc) at a 30 m resolution. It calculates Kc from a linear relationship with satellite derived Normalized Difference Vegetation Index (NDVI). Daily crop water use is determined by simply multiplying Kc and daily reference evapotranspiration (ETo) observations from a nearby weather station. A beta version of the app is currently available at https://irrisat-cloud.appspot.com/, developed using Google App Engine.

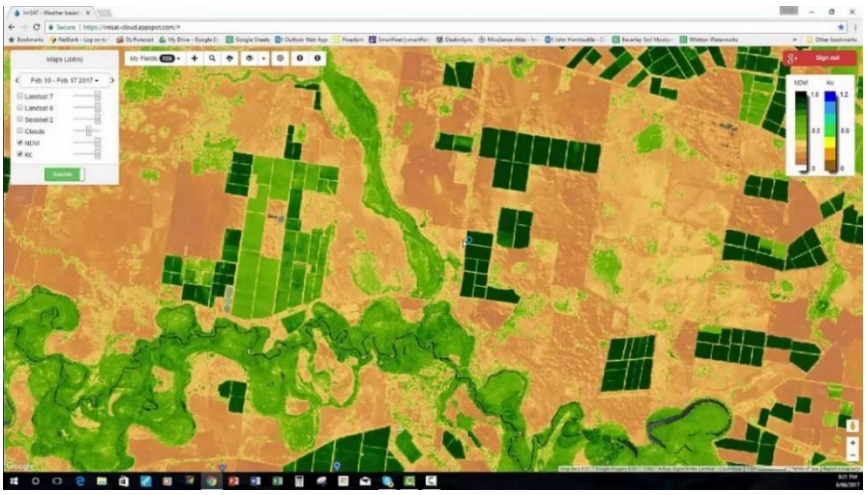

Fig. 2. A screen dump of crop coefficients calculated by the IrriSAT Google App. By combining reference evapotranspiration and the Landsat derived crop coefficient, crop water use can be determined on a 30m x 30m basis such that: ETc = ETo × Kc.

OpenET

OpenET is a new online platform that uses satellites for mapping evapotranspiration (actual ET) at the scale of individual fields, and currently can be used in 17 western states (Fig. 3). OpenET is produced at a spatial resolution of 30m x 30m (0.22 acres). Daily, monthly, and cumulative ET data are now available on the OpenET Data Explorer. OpenET is currently available at https://openetdata.org/.

OpenET currently includes seven models that are developed based on full or simplified implementations of the surface energy balance (SEB) approach or relies on surface reflectance data and crop type information to compute ET as a function of canopy density using a crop coefficient approach for agricultural lands. The model acronyms are *eeMETRIC*, *geeSEBAL*, *DisALEXI, SSEBop*, *PT-JPL*, and *SIMS*. In addition, OpenET provides the OpenET *ensemble* values calculated from an ensemble of the above six models.

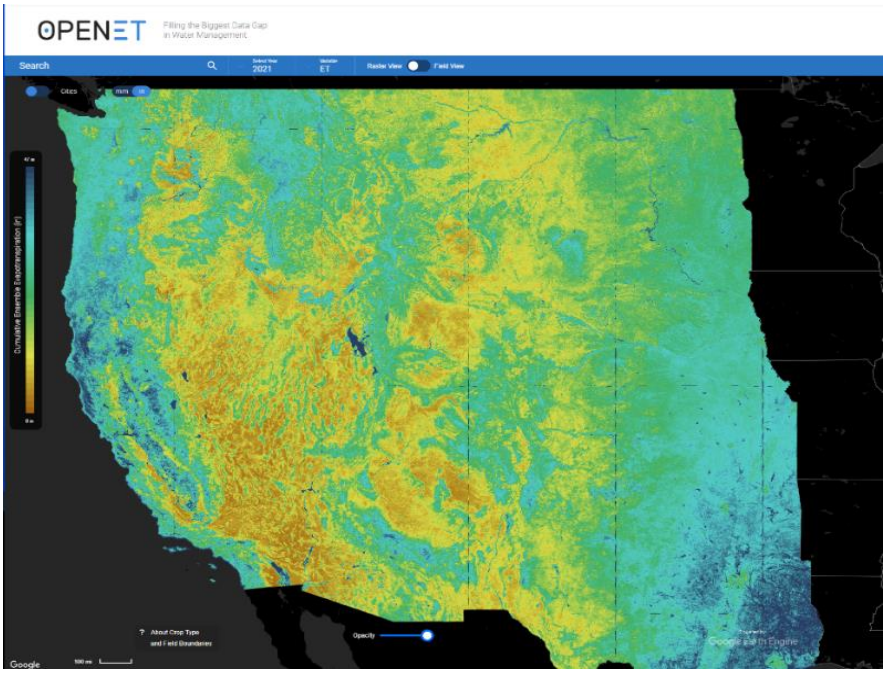

Fig. 3. A screen dump of cumulative ET (inch) for the entire western states in 2021. You may zoom on the OpenET map to find your orchard for a specific time (daily, monthly, yearly) and explore the data.

OpenET to estimate crop water requirements of alfalfa fields in the Imperial Valley. A case study was conducted to estimate daily ET values in an alfalfa field in the Imperial Valley during a nine-month period (January 1st, 2022, through September 30th, 2022). The experiment was carried out in nearly 18-acre of this 75-acre alfalfa field. The ET estimated from the OpenET models, and the OpenET Ensemble were evaluated versus the actual ET measured using the residual of energy balance approach with a combination of surface renewal and eddy covariance equipment. The alfalfa field was harvested eight times over the study period.

The actual ET (measured) varied widely for each crop harvest cycle and throughout the study period. The ET ranged between 0.02-inch d^{-1} after alfalfa cutting at the early season and 0.31-inch d^{-1} at the midseason full crop canopy (Fig. 4). The cumulative ET and average daily ET (measured) were 47.71 and 0.17-inch, respectively (Table 1).

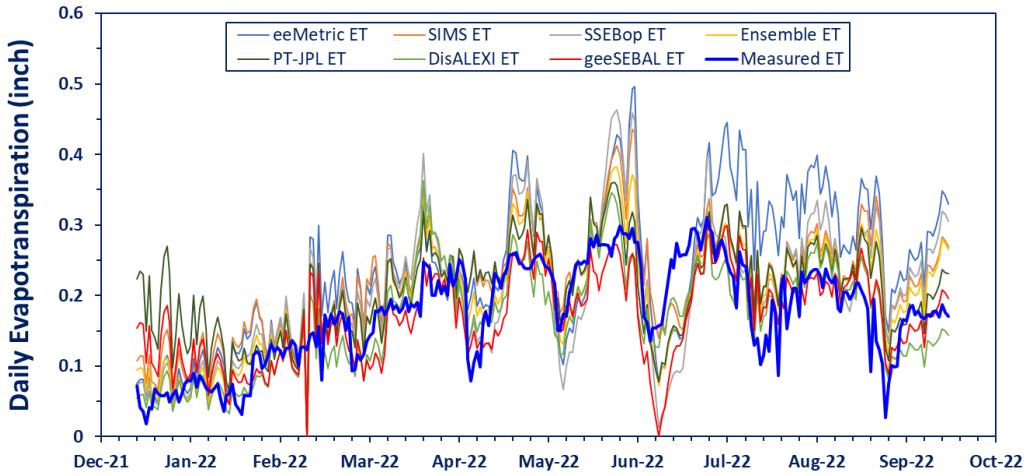

Fig. 4. Daily evapotranspiration estimated by the OpenET models and measured using surface renewal equipment in an alfalfa field nearby Holtville, California. The alfalfa field was harvest eight times during the study period (January 1st, 2022, through September 30th, 2022).

Comparing the cumulative ET and daily ET values estimated from the OpenET models and measured from the surface renewal equipment indicated that both *geeSEBAL* and *DisALEXI* models provide an accurate estimation of ET for the experimental field (an average of 1.9% cumulative ET difference). All other OpenET models and the OpenET *Ensemble* overestimated the ET of alfalfa field from 14% (*Ensemble*) to 35% (*eeMETRIC*).

Table 1. Cumulative ET, maximum daily ET and average daily ET estimated by the seven OpenET models and measured using surface renewal equipment in an alfalfa field nearby Holtville, California. The ET values are reported in inch.

	Ensemble	*eeMetric*	*SIMS*	*SSEBop*	*PT-JPL*	*DisALEXI*	*geeSEBAL*	Measured
Cumulative ET	54.25	65.51	60.36	55.98	57.31	46.22	46.31	47.71
Maximum Daily ET	0.38	0.50	0.44	0.46	0.36	0.36	0.30	0.31
Average Daily ET	0.20	0.24	0.22	0.21	0.21	0.17	0.17	0.17

Recommendations. While more comprehensive evaluations are required for the diverse cropping systems of the low desert region, this case study demonstrates a good agreement between the results of OpenET (*geeSEBAL* and *DisALEXI* models) and field measurements for alfalfa crop. As a user-friendly satellite-based irrigation tool, it is recommended growers consider using OpenET to manage water and fertilizer more efficiently.

Excess irrigation can be considered beneficial water use for salinity management in the desert region, as the 3-inch annual rainfall of the region is insufficient to accomplish this task. In other words, 4.0 ac-ft/ac actual ET reported for the experimental alfalfa field over the 9-month study period is just alfalfa crop water use during the period. The amount of additional irrigation water to effectively drain salt from the crop root zone depends on the soil circumstances and level of salinity. The irrigation water that needs to be applied in an individual field depends on crop water requirements, irrigation system efficiency, and salt leaching requirements.

EFFECTS OF REDUCED-RISK SELECTIVE NEMATICIDES ON TARGET AND NON-TARGET NEMATODES IN LOW DESERT PRODUCTION SYSTEMS – A PROGRESS REPORT

Philip Waisen, Vegetable Crops Advisor, UCCE Riverside and Imperial Counties

Introduction

Root-knot nematodes (*Meloidogyne* spp.) are the most important plant-parasitic nematodes on vegetable crops locally and globally. Vegetable crops including okra, melons, carrots, tomato, and peppers are among some of the most susceptible vegetable crops. As a genus *Meloidogyne* is ranked at the top of ≈4,300 plant-parasitic nematode species described worldwide based on economic and scientific importance (Jones et al., 2013). In southern desert valleys of California, *M. incognita* and *M. javanica* are predominantly found to be infecting vegetable crops. Infection is initiated by second stage juveniles entering roots intercellularly behind the root cap and migrating to cell elongation region, where they initiate feeding sites, which lead to formation of characteristic galls visible to naked eyes. Root galling interferes with nutrient and water uptake, resulting in water stress and nutritional deficiencies even with sufficient fertilization and irrigation. In addition to direct nematode damage, the presence of the root-knot nematode intensifies disease conditions of other diseases like Fusarium wilts on vegetable crops (Hua et al., 2019).

Management of root-knot nematodes primarily depends on the use of efficacious and high-risk nematicides such as oxamyl (Vydate®), metam sodium (Vapam®), and 1,3-dichloropropene or 1,3-D (Telone™). All of these are EPA Restricted-Use Pesticides or the latter two are California Restricted Materials, which means only certified applicators are allowed to use. These restrictions add another layer of challenge and limit the growers from using them. In light of current global paradigm shift in favoring the use of environmentally conscious approaches, high-risk pesticides are either banned (e.g. methyl bromide) or their use is being restricted (e.g. oxamyl, metam sodium and 1,3-D). New chemistries with selective modes of action are in the markets today. These include trifluoromethyl group that contains fluensulfone (Nimitz®), fluopyram (Velum® One), and fluazaindolizine (Salibro®). This study examined the effects of Salibro and Velum on root-knot nematodes and soil health as reflected on the demographics of beneficial nematodes.

Figure 1. Showing field plots a) at treatment or 2 weeks post-plant and b) 2.5 months post-treatment.

Materials and methods

A field experiment was conducted in Coachella Valley during summer of 2022 to test the effects of Salibro and Velum on plant-parasitic and beneficial nematodes (Fig. 1). There were four treatments tested and these included Salibro I (single application at 31 fl oz/ac), Salibro II (two applications at 15.5 fl oz/ac), Velum (two applications at 6.8 fl oz/ac), and an untreated control. Each treatment was replicated 4 times and arranged in a randomized complete block design. Sixteen (16) treatment plots each measuring 370×3 ft were directly seeded with okra on 36-inch beds. Salibro I, Salibro II, and Velum were applied two weeks after planting. Second application of Salibro II or Velum was made one month after the first application. The nematicide treatments were delivered through drip. Fertilization, irrigation, and weed management were done according to grower standard. Soil samples were collected before delivering treatments and at monthly interval thereafter for the duration of okra crop (2 months as of this report). At each time of sampling, 12 discrete samples of soil per plot were systematically collected at 30-ft interval from the top 4 inch of rhizosphere. The soil samples were composited, homogenized, and a subsample of 100 cm^3 per plot was subjected to Baermann method of extracting nematodes. Data analysis was done using SAS version 9.4 (SAS Institute Inc., Cary, NC). Data were checked for normality using Proc Univariate in SAS. Wherever necessary, data were normalized using log10 (x+1) and subjected to a one-way analysis of variance using Proc GLM in SAS. Means were separated using the Waller–Duncan *k*-ratio (*k*=100) *t*-test whenever appropriate and only true means were presented.

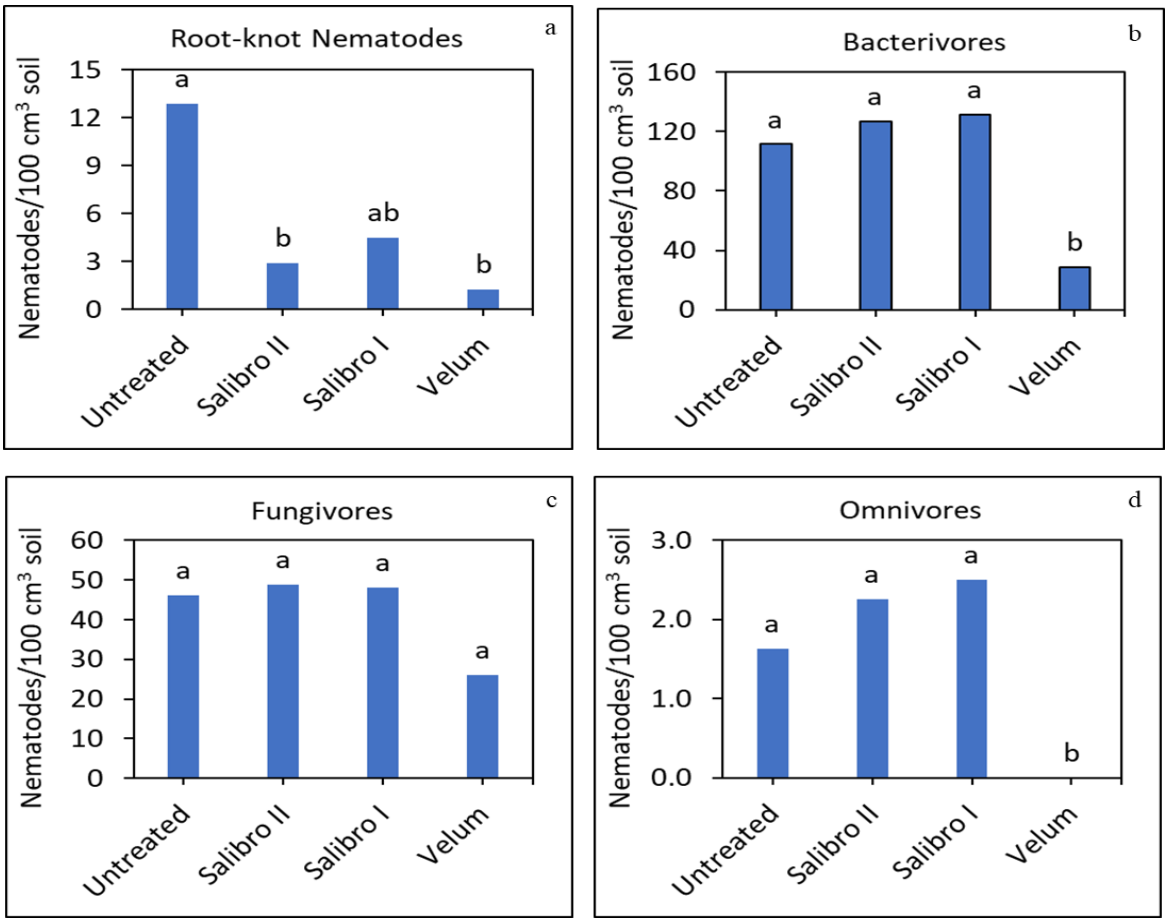

Figure 2. Showing average population densities of a) root-knot nematodes, b) bacterivores, c) fungivores, and d) omnivores in the top 4 inch of rhizosphere 2 months after nematicide treatment (n=8). Bars represent means and those followed by the same letter(s) are not different, according to the Waller–Duncan k-ratio (k=100) t-test.

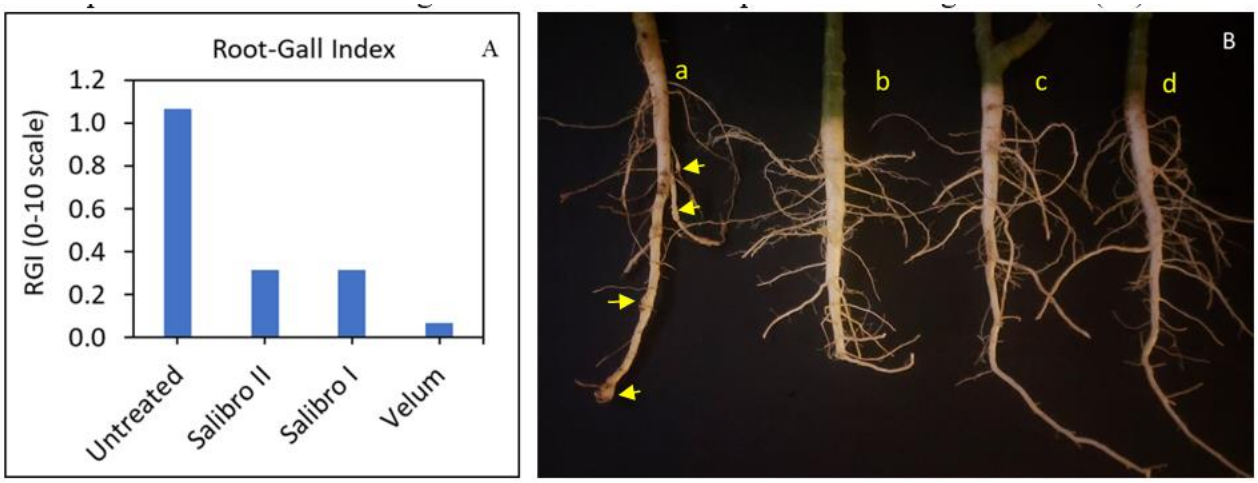

Figure 3. Showing A) average severity of nematode induced galling (n=12) and B) infected and healthy roots of okra 2 months after nematicide treatment; (a) Untreated control (a); Salibro II (b); c) Salibro I (c); Velum (d). Arrowheads point to root galls.

Results and discussion

This is a progress report of a four-month long study and the results presented here are up to two months. There are two highlights of this study so far. One that stood out the most was that Salibro appeared to only suppress root-knot nematodes but it did not suppress beneficial or free-living nematodes including bacterivores, fungivores, and omnivores (Fig. 2); predatory nematode were not detected. These beneficial nematodes feed on bacteria, fungi or other nematodes, and play an important role in cycling nutrients in the soil. Especially, this observation is captivating because Salibro demonstrated its compatibility with soil health or simply it is environmentally safe. Among the Salibro treatments, only Salibro II had significantly suppressed soil population density of root-knot nematodes compared to untreated control (Fig. 2a). Although Salibro I did not significantly suppress the root-knot nematode population, there was a numerical trend that still explained its activity. One explanation that only Salibro II was suppressive could be because it is a contact nematicide and its application in two splits had maintained activity against the nematode in the root zone. Note that root-knot nematodes survive as eggs in the absence of host or in extreme environmental conditions. This field was fallowed for 8 months and potentially root-knot nematode eggs were surviving when the trial was established. The second dose in Salibro II was applied six weeks post-plant or 4 weeks after the first dose when surviving nematode eggs may have hatched in response to root exudates. Because second stage juveniles are the most susceptible stage in the life cycle of root-knot nematodes, the second dose in Salibro II was just in time to kill these juveniles by contact. The nematode suppression was reflected on the numerical reduction on root-gall index or RGI (Fig. 3). The RGI measures the plant response to nematode infection and assessed based on 0-10 scale. At this stage of the trial, the root gall rating is too low (below 2) to make any conclusion but there a trend to explain over nematode suppression (Fig. 3).

The second highlight relates to the performance of Velum whose active ingredient, fluopyram, is an inhibitor of succinate dehydrogenase enzyme critical in respiration pathways. The Velum is a grower standard that was included in this trial. Velum had rendered a non-discriminatory performance that was suppressive to both root-knot nematodes and beneficial nematodes (Fig. 2). This observation is supported by previous findings that Velum suppressed both root-knot and beneficial nematodes on zucchini, tomato, and sweet potato (Waisen et al., 2021). Unlike Salibro, Velum is a systemic nematicide with not only nematicdal but also fungicidal activities. This dual activity could have offered competitive advantage over Salibro at least numerically in reducing root-knot nematodes (Fig. 2a, 3A).

Conclusion

The active ingredient in Salibro, fluozaindolizine, is claimed to be a selective contact nematicide to only control plant-parasitic nematodes and not active against insect pests, weeds or other plant pathogens. This study demonstrated that the beneficial nematodes (bactrivores, fungivores, and omnivores) as soil health indicators were also not impacted negatively. This study reiterated the selective action of Salibro targeting only on plant-parasitic nematodes, root-knot nematode in this case. Salibro can be an important option for sustainable crop production that can be effective in suppressing target plant-parasitic nematodes without compromising the soil health. Salibro is recommended to be applied at 15.5 fl oz/ac at 2- and 6-week post-plant to maintain the activity in the root zone. A delay of 4 weeks to apply second dose is critical because nematodes emerges from survival mode and are at the most susceptible stage to be controlled.

References

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Waisen, P., Wang, K. H., Uyeda, J., and Myers, R. Y. 2021. Effects of fluopyram and azadirachtin integration with sunn hemp on nematode communities in zucchini, tomato and sweet potato in Hawaii. Journal of Nematology 53:1-15.

INSECTICIDE EFFICACY COMPARISON FOR PALE STRIPED FLEA BEETLES IN ALFALFA

Michael D. Rethwisch, Field Crops Farm Advisor, UCCE Riverside County, Palo Verde Valley Office
Anissa Soria, Student Assistant 3, UCCE Riverside County, Palo Verde Valley Office

Pale-striped flea beetles (Fig. 1) are often present and can be pests of various desert crops. They can often cause severe damage to seedling crops, especially crops such as sugar beets (Fig. 2).

Figs 1-2. Adult pale-striped flea beetle (left); damage to sugar beet seedling (right)

They are of concern at this time of year to seedling alfalfa when adult flea beetle feeding can kill or stunt seedlings. It takes little feeding damage on stems of alfalfa seedlings to result in severing the stem, as alfalfa seedling stems are much smaller in diameter than those of sugar beets.

In seedling alfalfa infestations of pale-striped flea beetles can be spotty and can be very prevalent on field edges when they migrate into alfalfa stands. Relatively low numbers can cause economic damage when plants are in the cotyledon or first-leaf stages.

Check newly emerged seedlings weekly for flea beetle damage until plants are well established. Treatment is justified if you find that the flea beetles are causing stand loss. Alfalfa seedling fields need at least 10 to 20 plants per square foot to ensure a viable stand at the end of the first year of production. Once plants have several true leaves, they can tolerate several beetles per plant without damage.

Adult female pale-striped flea beetles lay eggs on the developing roots of plants. The small, slender, white flea beetle larvae feed on underground parts of plant such as carrots (Fig. 3), with feeding appearing as tunneling and pitting. This damage is not usually considered to be economically significant in alfalfa, although the tunneling does create openings for bacteria and fungi to attack alfalfa tap roots. Little research has been conducted to evaluate relationships between early pale-striped flea beetle infestations on new alfalfa and resulting stands/alfalfa yields in subsequent years in association with flea beetle larvae.

Fig. 3. Carrot showing pale-striped flea beetle and associated feeding/tunneling damage on alfalfa (from Nunez and Haviland)

On older plants adult flea beetles do most of the damage by feeding on the undersides of leaves, leaving small pits or irregularly shaped holes (Fig. 4). Older plants rarely suffer economic damage although their leaves may be damaged. Severe damage (Fig. 5) resembles armyworm feeding damage.

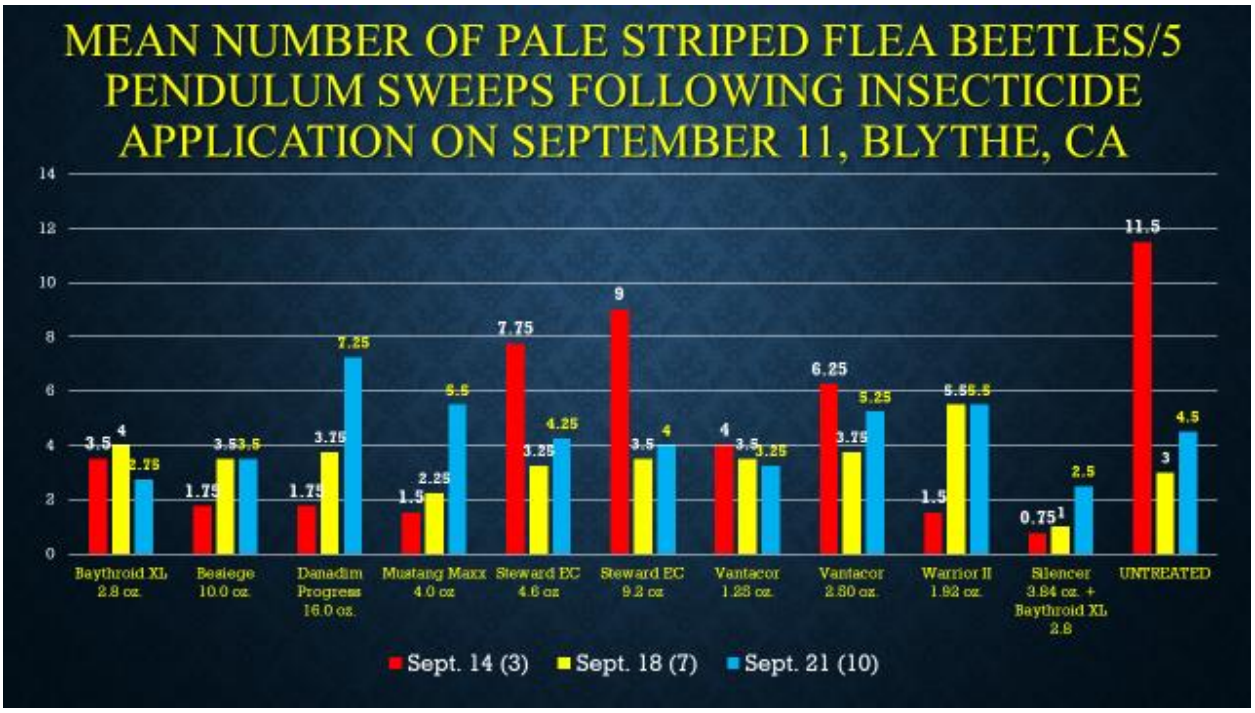
Figs 4-5. Adult pale striped feeding damage on alfalfa (left); severe feeding damage on alfalfa leaflets often does not result in leaflet veins being consumed (right)

An insecticide trial was conducted in September 2021 on established alfalfa to obtain insecticide efficacy data for control of pale-striped flea beetles. Data from this experiment noted that products containing a pyrethoid insecticide active ingredient resulted in 80+% reduction of adult beetles at 3 days post treatment but differences were not noted at 7 days post treatment. This was also true for the product containing dimethoate as the active ingredient (Danadim Progress).

Steward® EC, while having some initial reduction, had more pale striped flea beetle adults than other insecticides at 3 days post treatment. Another trend that was noted for this sample date was that higher rates of Vantacor® and Steward® had numerically more adult flea beetles than the lower rates for each of these two products. The reason for this is unknown but is not thought to be due to reduction of beneficial insects.

Table 1. Mean number of adult pale striped flea beetles per 5 pendulum sweeps of bedded alfalfa following insecticide application on September 11, 2021, Blythe, CA.

Treatment and rate/acre		Sample date *(days post treatment)*		
		Sept. 14 (3)	Sept. 18 (7)	Sept. 21 (10)
Baythroid XL	2.8 oz.	3.50	4.00	2.75
Besiege	10.0 oz.	1.75	3.50	3.50
Danadim Progress	16.0 oz.	1.75	3.75	7.25
Mustang Maxx	4.0 oz	1.50	2.25	5.50
Steward EC	4.6 oz	7.75	3.25	4.25
Steward EC	9.2 oz	9.00	3.50	4.00
Vantacor	1.25 oz.	4.00	3.50	3.25
Vantacor	2.50 oz.	6.25	3.75	5.25
Warrior II	1.92 oz.	1.50	5.50	5.50
Silencer + Baythroid XL	3.84 oz. 2.8 oz.	0.75	1.00	2.50
Untreated		11.50	3.00	4.50



Save the Date...

33rd Annual Fall Desert Crops Workshop

Nov. 30, 2022

(8:00am - 12pm)

Registration begins at 7:30

For additional information on the workshop, please contact organizers Oli Bachie, obachie@ucanr.edu and Ali Montazar, amontazar@ucanr.edu, or call us at (442) 265-7700

More details regarding pre-registration link, speakers/topics and CEU's to follow.

UC CE

Pending approval for CE units with CA Department of Pesticide Regulation (2.5hrs), AZ Department of Ag (2.5 hrs) & Certified Crop Advisors (3.5 hrs)

IMPERIAL COUNTY 1907 CALIFORNIA

Presented by:

University of California Cooperative Extension Imperial County

1050 E. Holton Rd. Holtville, CA 92250 (442) 265-7700 office

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33rd Annual Fall Desert Crops Workshop

November 30, 2022

Workshop Location:

Farm Credit West, 485 Business Park Way, Imperial, CA 92251

Registration link:

https://surveys.ucanr.edu/survey.cfm?surveynumber=39320

	800 a.m. – 12:00 p.m.
7:30	Registration
8:00	**Welcome & Introductions** - *Oli Bachie, UCCE Imperial and San Diego County Director*
8:05	**Food-grade solution for organic produce disinfection** - *Cuong Nguyen (new advisor), Food Safety and Organic Production Advisor, UCCE Imperial & Riverside Counties*
8:25	**A brief on the current pests of concern in Imperial County-** *Carlos Ortiz, Imperial County Agricultural Commissioner*
8:45	**Effective water conservation practices in the low desert region: what we've learned in recent years** - *Ali Montazar, Irrigation and Water Management Advisor, UCCE Imperial, Riverside & San Diego counties*
9:05	**IMT-DESERT: An irrigation management tool for southern California desert region** - *Amir Haghverdi, Assistant CE Professor of Irrigation and Water Management, UC Riverside*
9:25	**Integrated nematode and soil health management in vegetable cropping systems**- *Philip Waisen, Vegetable Crops Advisor, UCCE Riverside and Imperial Counties*
9:45	**Industry updates** – *Randy Landwerlen (Syngenta Crop Protection), Chris Denning (Gowan)*
	Break (10 minutes)
10:05	**Updates on the IID water conservation program** - *Benjamin Brock, Senior Program Manager, IID On-Farm Efficiency Conservation Program*
10:25	**The impact and management aspects of sugarcane aphid** - *Ayman Mostafa, Area Programmatic Agent and Regional Specialist, University of Arizona Cooperative Extension*
10:45	**Cowpea aphids in low desert alfalfa**- *Michael Rethwisch, Crop Production and Entomology Advisor, UCCE Riverside County*
11:05	**Moringa, an emerging multi-purpose crop**- *Oli Bachie, Agronomy & Weed Management Advisor, UCCE Imperial, Riverside & San Diego Counties*
11:25	**Updates on lettuce Fusarium wilt in California**- *Alex Putman, Assistant Cooperative Extension Specialist, UC Riverside*
11:45	**Industry updates** – *Kevin Rost (SWAN Systems), Junior Evans (Corteva), Abbas Alhadithi (Universal Agriculture)*
12:00	**Lunch** - Please stay for lunch

For additional information on the workshop, please contact organizers Ali Montazar, amontazar@ucanr.edu and Oli Bachie, obachie@ucanr.edu , or call us at (442) 265-7700

PENDING CEU CREDITS: CALIFORNIA DPR (2.5 hrs.), ARIZONA DEPT. Of AG (2.5 hrs.) & CCA (3.5 hrs.)

OCTOBER 2022 CATTLECAL NEWSLETTER UPDATE

Brooke Latack, Livestock Advisor – Imperial, Riverside, and San Bernardino Counties

The October edition of the CattleCal Newsletter covered information on research and activities completed this month, the career and research of Zachary Carlson, Assistant Professor and Beef Extension Specialist at North Dakota State University, and a look at a research paper on global beef x dairy crossbred considerations

If you would like to subscribe to the CattleCal newsletter, please visit this site and enter your email address: http://ceimperial.ucanr.edu/news_359/CattleCal_483/

September CattleCal podcast episodes:

- **Career Call**
  In the career call of the month, Brooke Latack and Pedro Carvalho called Dr. Zachary Carlson, beef extension specialist at North Dakota State University, about his journey from growing up on Minnesota dairy to leading research and mentoring students in North Dakota.

- **Research Call**
  Brooke Latack and Pedro Carvalho call Dr. Zachary Carlson again to discuss his research related to protected lysine supplementation in diets with and without distillers grains.

- **Feedlot Research Call**
  In this episode, join Pedro Carvalho and Brooke Latack as they discuss a review paper looking at global considerations for beef x dairy crossbred calves.

- **Quiz Zinn**
  In this episode, we asked Dr. Richard Zinn a question from our listeners about supplementation of vitamin A in feedlot diets.

The podcast can be found at https://open.spotify.com/show/6PR02gPnmTSHEgsv09ghjY?si=9uxSj3dYQueTEOr3ExTyjw or by searching "CattleCal podcast" in Spotify. It is free to listen!

If you have burning questions about cattle management and would like your questions featured on our Quiz Zinn episodes, please send questions to cattlecalucd@gmail.com or DM your question to our Instagram account @cattlecal.

If you have any questions or comments or would like to subscribe to the newsletter, please contact:

Brooke Latack (UCCE Livestock advisor) – bclatack@ucanr.edu
Pedro Carvalho (CE Feedlot Management Specialist) - pcarvalho@ucdavis.edu
CattleCal: cattlecalucd@gmail.com

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Vegetable Field Day – Response of Nematodes and Soil Health to Nematicide Treatments on Okra

Date: November 22, 2022
Time: 9:00 AM – 11:30 AM
Location: Thermal CA 92274 (Click Map for direction)

CE Credit: 1.5 hours of continuing education credit for this meeting

Lunch/beverage: Lunch and beverages will be provided

RSVP: Scan QR Code above to register or contact Philip Waisen at pwaisen@ucanr.edu or 760-905-5204

Agenda:

9:00-9:30 AM

- Registration

9:30-11:30 AM

- Introduction
- A walk-through okra field and discuss results
- Uproot plants and observe for nematode infection

11:30-12:00 Noon

- Lunch and disperse

LINKS TO RECORDED MORINGA PRESENTATIONS

On Thursday, October 13th, 2022, UCCE Imperial County held the first Moringa Awareness and Production Workshop. We had a great turnout and were able to have three speakers present on a wide variety of topics related to moringa. Dr. Oli Bachie (UCCE Agronomy advisor and county director) spoke about the history of moringa and potential production in the low desert. Dr. Carrie Waterman (Assistant Professional Researcher, Institute for Global Nutrition, UC Davis) spoke about use of moringa as a nutrient in human nutrition. Finally, Brooke Latack finished the presentations by discussing moringa as a potential livestock feed. Presentations were followed by a discussion period for participants. This lively conversation included discussions on soil types that moringa may grow best or struggle in, timing of cutting trees back, considerations when feeding livestock, and much more.

If you weren't able to attend and would like to watch the presentations, we have recorded all presentations. The following link (**https://ucanr.edu/desertmoringarec**) will take you to a survey. After filling out the survey, the links to the recorded presentations and presentation slides will be sent to your email. Included in that information will be a link to a post-presentation survey. Once you have viewed the presentations, we invite you to fill out this survey to let us know what information you would want to see presented in the future. We hope to continue these workshops on a regular basis to grow understanding of moringa and increase its production in the Imperial Valley.

If you have any questions or issues with the link, please contact Brooke Latack at (442) 265-7712.

IMPERIAL VALLEY CIMIS REPORT AND UC WATER MANAGEMENT RESOURCES

Ali Montazar, Irrigation & Water Mgmt Advisor, UCCE Imperial & Riverside County

The reference evapotranspiration (ET_o) is derived from a well-watered grass field and may be obtained from the nearest CIMIS (California Irrigation Management Information System) station. CIMIS is a program unit in the Water Use and Efficiency Branch, California Department of Water Resources that manages a network of over 145 automated weather stations in California. The network was designed to assist irrigators in managing their water resources more efficiently. CIMIS ET data are a good guideline for planning irrigations as bottom line, while crop ET may be estimated by multiplying ET_o by a crop coefficient (K_c) which is specific for each crop.

There are three CIMIS stations in Imperial County include Calipatria (CIMIS #41), Seeley (CIMIS #68), and Meloland (CIMIS #87). Data from the CIMIS network are available at: http://www.cim is.water.ca.gov. Estimates of the average daily ET_o for the period of October 1 to December 31 for the Imperial Valley stations are presented in Table 1. These values were calculated using the long-term data of each station.

Table 1. Estimates of average daily potential evapotranspiration (ET_o) in inches per day

Station	November		December		January	
	1-15	16-30	1-15	16-31	1-15	16-31
Calipatria	0.13	0.11	0.09	0.09	0.09	0.10
El Centro (Seeley)	0.14	0.12	0.10	0.09	0.10	0.11
Holtville (Meloland)	0.13	0.11	0.09	0.08	0.09	0.10

For more information about ET and crop coefficients, feel free to contact the UC Imperial County Cooperative Extension office (442-265-7700). You can also find the latest research-based advice and California water & drought management information/resources through link below:
http://ciwr.ucanr.edu/.