UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources | UC Cooperative Extension

Imperial County Agricultural Briefs

January 2025 (Volume 28 Issue 1)

Features from your Advisors

Table of Contents

Grant funds up to

$25,000

Restore Grant

APPLICATIONS WILL BE ACCEPTED FROM JANUARY 15 TO FEBRUARY 19

Project selection based on cost per tonne of carbon sequestered

Zero Footprint is a private financing opportunity designed to support the implementation of practices that promote healthy soil by converting harmful atmospheric carbon into beneficial soil carbon.

Eligible practices include:

- Nutrient management
- Cover crops
- No-till/Reduced tillage
- Compost application
- Mulching
- Many more!

- Quick and easy application.
- Technical assistance costs are covered by the program.
- All unawarded applications will remain in the application pool for award in subsequent rounds.

SCAN FOR MORE INFORMATION

CSA TAPs provides FREE technical assistance to complete your grant application

Feel free to contact aresendiz@ucanr.edu

AREAWIDE MONITORING OF KEY INSECT PESTS ACROSS THE IMPERIAL VALLEY: JANUARY 2025 UPDATES

Arun Babu – Entomology Advisor – UCCE Imperial County

Since the first week of August 2024, the UCCE Entomology program at Imperial County has maintained a yellow sticky trap network across the Imperial Valley. This trap network aimed to facilitate landscape-level monitoring of the population dynamics of adult whiteflies, western flower thrips, flea beetles, and aphids throughout the year. The trap set up in each site consists of a 6 X 12 in (15.2 x 30.5 cm) yellow sticky trap (Olson Products, Medina, OH), shaped into a cylinder, attached to a wooden stake using a binder clip, and positioned about 60 cm above the ground (Fig. 1A and 1B). The traps are distributed throughout the Imperial Valley, covering the major agricultural areas (Fig. 1C). Insects that are attracted to the yellow color of the traps and those that land on the surface of the trap during the flight get trapped on its sticky surface. The traps are replaced weekly and are examined in the laboratory under a stereo microscope to count the pest population.

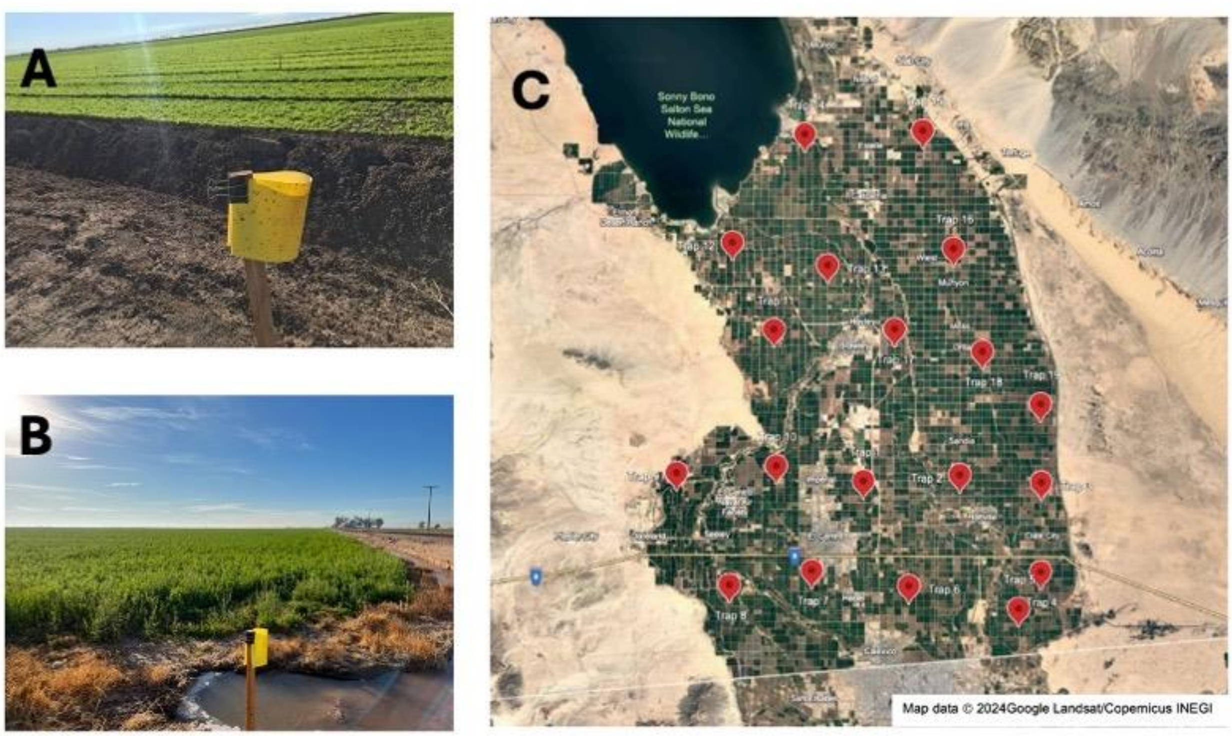


Fig. 1 A & B) Yellow sticky traps in various fields, and C) Trap locations across the Imperial Valley.

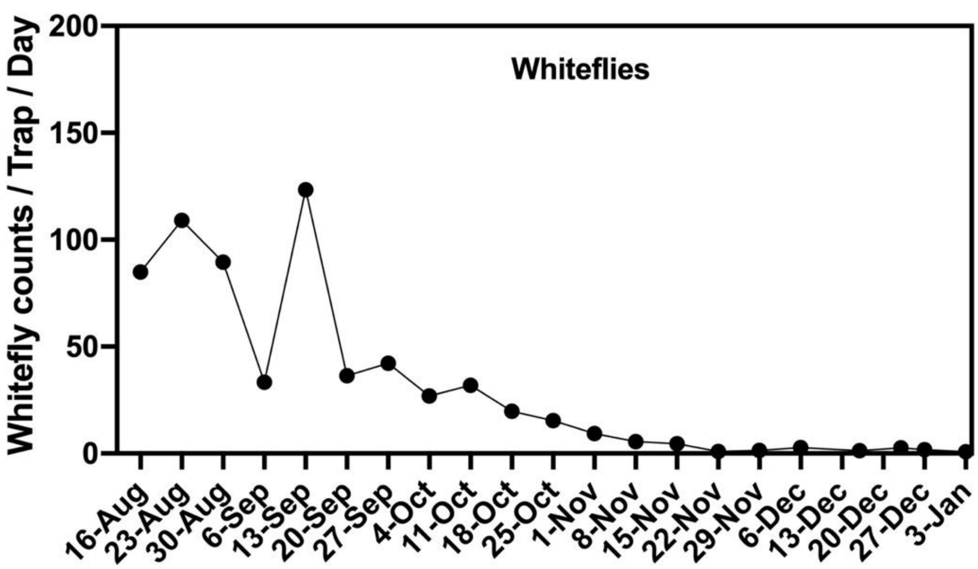
Insect count data from these traps identify the adult insect activity of targeted pests around the field. Since several biological (crop type, crop age, presence of weed hosts, etc.), physical factors (temperature, wind, precipitation, etc.), and farm operations (insecticide sprays, dust from the land preparation, crop harvest, etc.) can influence insect counts in the traps, the insect numbers in sticky traps do not always strongly correlate to the actual infestation levels in the grower's field. Despite this, the trap counts are a valuable indication of adult insects' movement across the landscape. Moreover, collecting the trap data across multiple years will help establish a baseline of pest activity across the season. This historical pest data can then be compared with current pest activity in the traps to identify population trends. The traps are also being screened for potential invasive insect pests, including Asian citrus psyllids, spotted lanternflies, Mexican fruit flies, etc.

Insect count updates until January 3, 2025

The updated insect counts from the monitoring trap network are presented below. Each dot in the graph represents the average insect count from 19 traps across the Valley for that sampling week, and the value is expressed as pest counts per trap per day.

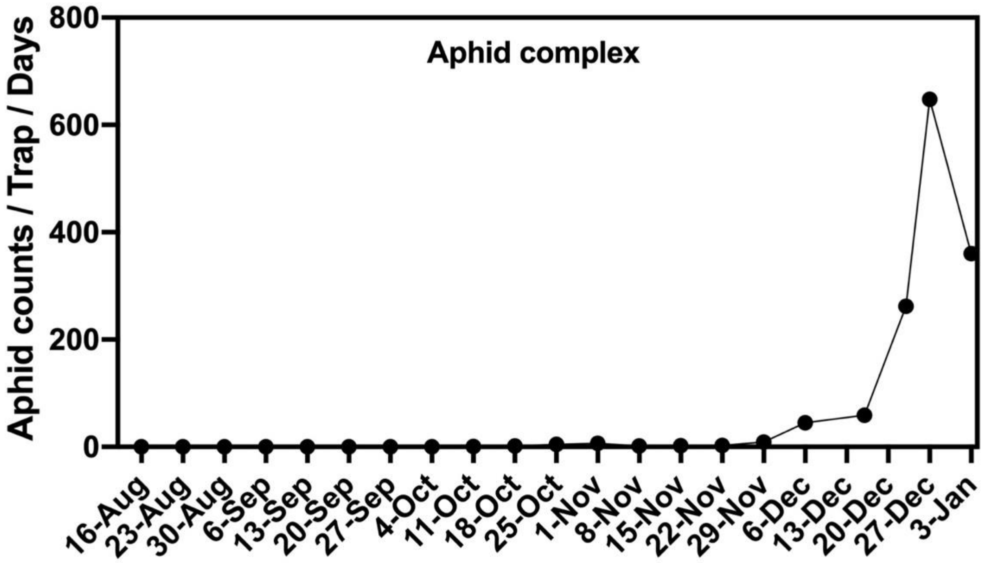
Whiteflies

The whitefly counts in the traps consisted mainly of sweetpotato whitefly (*Bemisia tabaci* MEAM1). Additionally, a small fraction of the total count (< 5%) comprises bandedwinged whiteflies, *Trialeurodes abutilonia*, and other minor species. We have observed a low whitefly adult trap capture since November 2024.



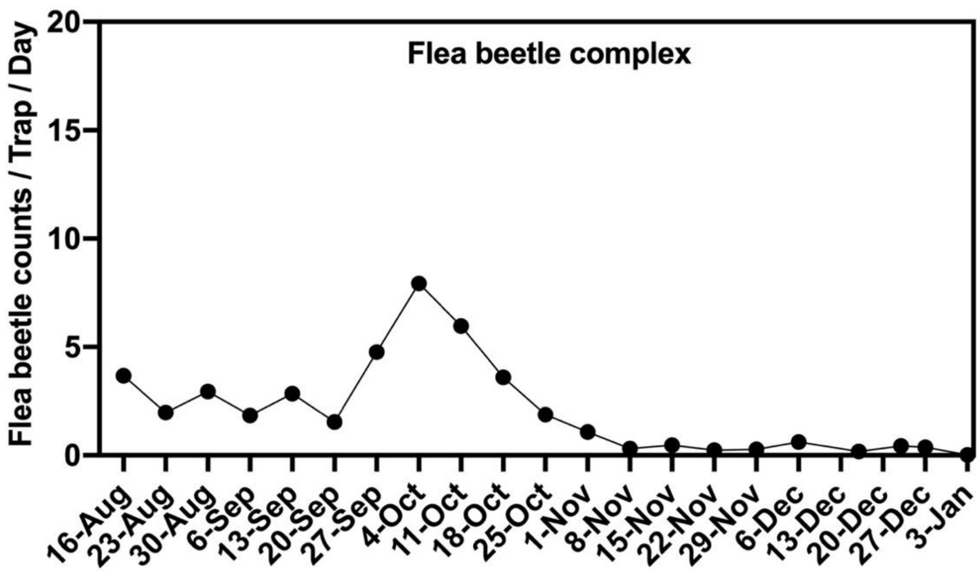
Aphids

The trap count data of aphids below do not focus on any single species but represent the aphid complex in the Valley. The trap capture data suggests that alate (winged) aphids were almost absent in the valley during August and until the first half of September. Currently, we are observing high alate aphid activity in the Imperial Valley.



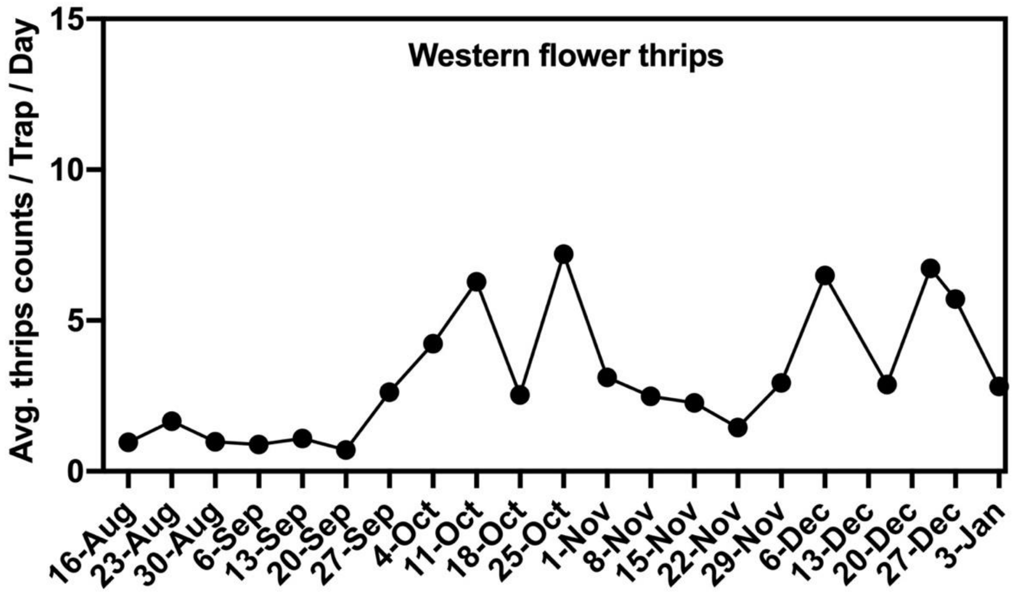
Flea beetles

The flea beetle counts in the traps comprised the pale-striped flea beetle, *Systena blanda*, desert corn flea beetle, *Chaetocnema ectypa,* and a few other minor species. Currently, their counts are low on the traps.



Western flower thrips

While the traps contained several thrip species, only western flower thrips, *Frankliniella occidentalis,* the major thrip species of concern for several crops in Imperial Valley, were counted to provide more specific data.



Additionally, biweekly updates of trap capture data are available from the UCCE Imperial County Entomology webpage, which can be accessed at https://ceimperial.ucanr.edu/Entomology_319/Imperial_Valley_Areawide_Pest_Monitoring_/. If you are interested in additional data from this project or have questions or comments, contact Arun Babu at (442) 265 -7700 or arbabu@ucanr.edu.

Acknowledgment

I thank John C Palumbo of the University of Arizona for providing guidance on establishing an areawide sticky trap network. This project is supported by the Imperial County Agricultural Benefit Program grant for 3 years (2024-27).

IMPACTS OF DEFICIT IRRIGATION STRATEGIES ON THE DESERT ALFALFA PRODUCTION SYSTEMS

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

Introduction. Alfalfa is the dominant water user in the low desert region due to its high acreage and long growing season and is important for crop rotation, dairy and livestock production, soil health, and farm profitability. High water demand and climate change have placed the Colorado River in crisis mode, particularly during drought periods, necessitating conservation of water allocated for agriculture, urban, and environmental uses. Implementing water conservation tools and techniques is necessary to sustain alfalfa production and maintain the resiliency of agricultural systems in the region. Alfalfa has a natural ability to go dormant when water is reduced or cut off making it biologically suited to deficit irrigation strategies. In other words, the plant has the ability to sustain temporary droughts due to its specific characteristics of deep roots, high water use efficiency, salinity tolerance, and to grant partial yields with less irrigation water applied than the required amount.

This article aims to provide an overview of the findings of several trials conducted over the last 5 years on the impacts of summer deficit irrigation regimes in desert. The field experiments were undertaken in several commercial alfalfa fields in Palo Verde, Holtville, Westmorland and at the UC Desert Research and Extension Center (DREC) in Holtville from 2020 through 2024. Specifically, three optional deficit irrigation strategies are discussed here, including (1) moderate deficit irrigation: skipping 1-3 irrigation events, non-continuously, during summer months; (2)
semi-severe deficit irrigation: cut off irrigation water from early August through late September or early October; (3) severe deficit irrigation: cut off irrigation water from early July through late September or early October.

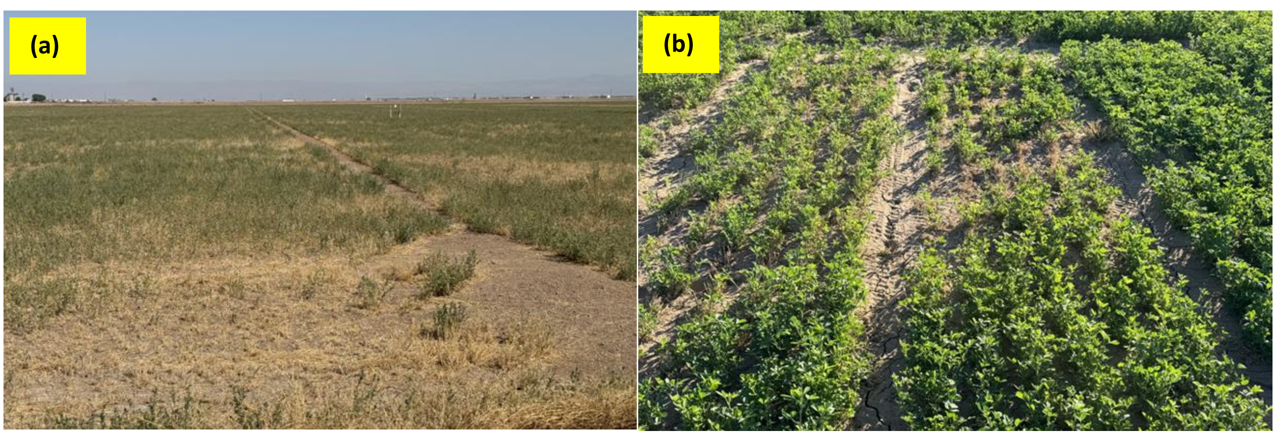


Fig. 1. (a) One alfalfa experimental field under summer deficit irrigation in September 2024 (water cut started in August 5, 2024, while the photo demonstrates the field 45 days after cutting irrigation water at this site.) and (b) a small area of an alfalfa trial at DREC in early November 2024 (the photo demonstrates the status of three different sub-plots two weeks after the first irrigation event occurred following 109 days cutting irrigation water during the summer and early fall 2024. Plant stand loss is observed).

Deficit irrigation is a feasibale water conservation tool in desert alfalfa. All moderate, semi-severe and severe summer deficit irrigation strategies can be considered as feasible water conservation tools, however, the optimal deficit irrigation strategy in desert alfalfa greatly depends on water availability, water conservation incentives programs, alfalfa hay price, and individual farming operations. The research trials conducted in commercial fields and at the DREC illustrated promising and decent amount of water conserved from implementing different deficit irrigation strategies (Table 1). The results demonstrated that deficit irrigation regimes have a notable impact on the amount of water conserved, ranging from 0.4 ac-ft/ac in a moderate deficit irrigation practice to 2.5 ac-ft/ac in a severe deficit irrigation practice. However, excess water might be needed later in the fall to refill the soil profile and leach the salt accumulated from severe summer deficit irrigation. In other words, the whole 2.5 ac-ft/ac couldn't be considered as water conservation.

Table 1. Water conserved observations from different deficit irrigation strategies in alfalfa experimental trials.

Deficit irrigation strategy	Water conserved (ac-ft/ac)
Moderate	0.4 - 0.9
Semi-Severe	1.2 – 1.3
Severe	2.4 – 2.5

Alfalfa yield loss from any deficit irrigation regime is a realistic expectation. Our earlier published data suggested that approximately 74% of desert alfalfa production typically occurred by mid-July that should not be impacted by any summer deficit irrigation practices. The data presented in Fig. 2 from the different trials clearly exhibited that any deficit irrigation in desert alfalfa cause yield penalty, more from the severe regime and less from the moderate pracice. The results suggested an average yield loss of 0.3-0.5 t/ac (4-5% of seasonal yield), 0.8-0.85 t/ac (7-8% seasonal yield), and 1.8-2.1 t/ac (16-18% of seasonal yield) for moderate, semi-severe, and severe deficit irrigation strategies, respectively. The values could be different in different fields affected by a wide range of drivers, including soil variability, irrigation management pactices from the early season through water cut, water table, soil salinity condition, years of stand after plant establishment, and cultural management and general condition of alfalfa field.

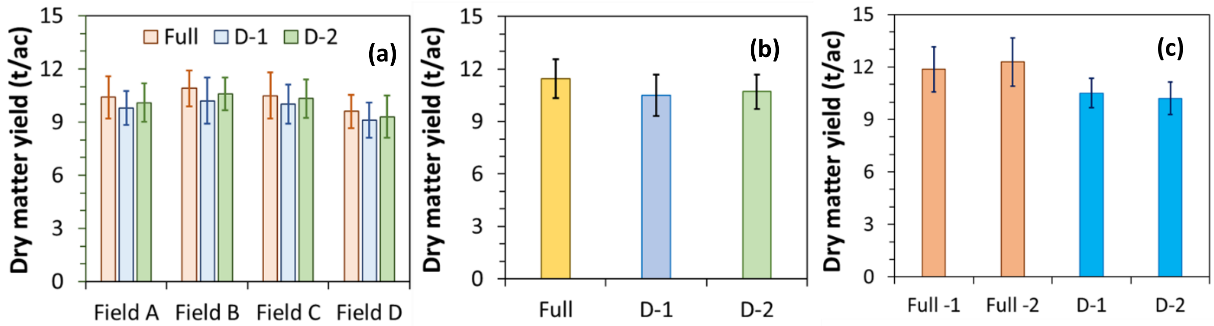


Fig. 2. Mean seasonal dry matter yield values for different summer deficit irrigation strategies (D-1 and D-2 are deficit irrigation trials and Full-1, Full-2, and Full are fully irrigated trials). Vertical bars indicate standard deviations. a: moderate deficit irrigation strategy (four various fields); b: semi-deficit irrigation strategy; c: severe deficit irrigation strategy.

Soil moisture depletion. The soil moisture sensors placed within the effective root zone provide a representative condition of the soil water status over the summer months (Fig. 3). The half-hourly soil water tension in a commercial field with a start water cut of August 5 depicts that soil moisture depletion continously occurred after the water cut, mostly on the top 24 inches and slightly on the deeper depths. The data indicates that the soil profile is not totally empty while the irrigation event right after converting to regular grower practice could sufficiently refill the soil profile in mid-October.

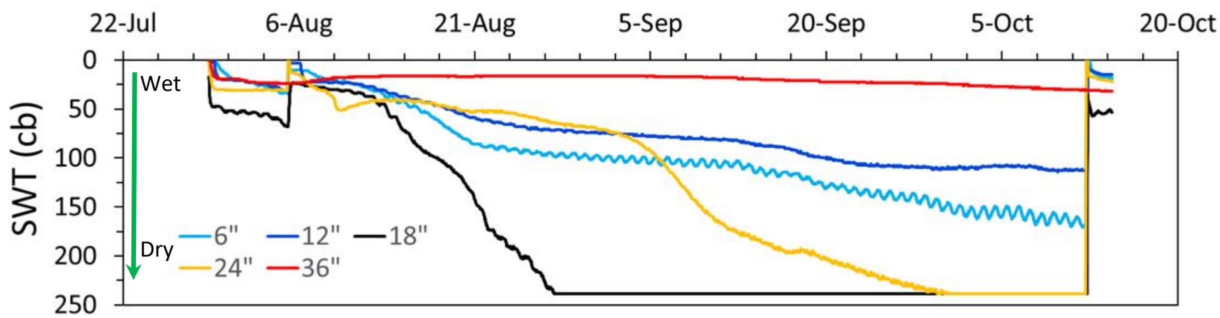


Fig. 3. Soil water tension (SWT) in a commercial alfalfa field under semi-severe deficit. Water cut started in August 5 and the first irrigation event occurred in October 11 after the summer semi-severe deficit irrigation. Soil water potential data is demonstrated at different depths of 6-36 inches.

Deficit irrigation in fields with predominant sandy soil. Fields with predominant sandy soil could not be good volunteers for implementing deficit irrigation strategies, even a moderate deficit irrigation regime. These fields could occasionally experience water stress around harvest events from mid-spring through late summer under standard grower practices (Fig. 4), and therefore, any deficit irrigation practice could have an impact on yield and plant stand losses. The significance of stand loss in moderate deficit irrigation strategy depends on individual farming operations and irrigation management practices in sandy soils.

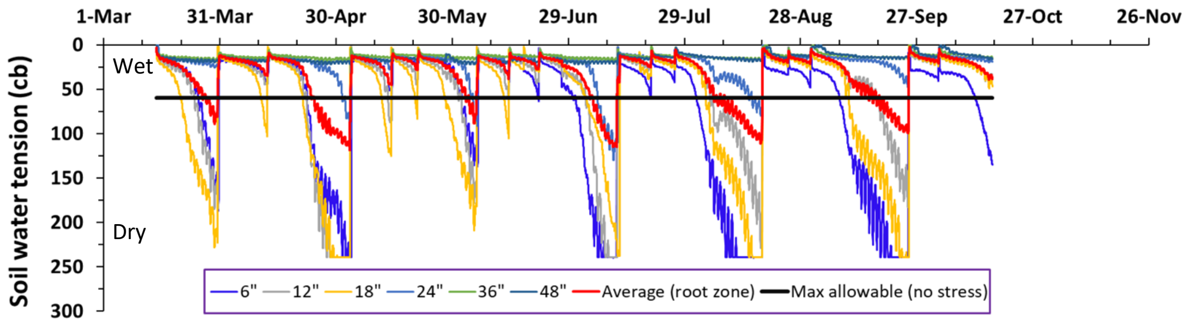


Fig. 4. Soil water tension measured in an alfalfa experimental field (under grower standard irrigation practice) in Palo Verde from mid-March through mid-October. Soil water potential data is demonstrated at different depths of 6-48 inches. Water stress is expected during the period that the red graph is below the horizontal black line, mostly around harvest events at this alfalfa site.

Deficit irrigation and salt accumulation. It is well-known that salinity associated problems are a major challenge for global food production, with particularly critical impact in the low desert region. Applications of excess water to control root zone salinity is an important agricultural practice for the region and needs to be considered a 'beneficial use' of water, since soil productivity can only be sustained by managing salinity. Buildup of salinity might be considered a serious concern and likely a key limitation for any reduced water demand strategies in the region. Thus, it is important to understand the impact of deficit irrigation on potential soil salinity buildup and soil water balances.

The soil EC_e (electrical conductivity of the saturation extract) at the top 36 inches was surveyed across the experimental sites before and after implementing deficit irrigation regimes (Fig. 5). The results demonstrated that the moderate and semi-severe deficit irrigation strategies had some impacts on soil salinity, however, the values were in the 'acceptable' range for alfalfa after the first irrigation event following the summer water cuts (<4 ds/m). The initial assessment is that the salt buildup is manageable with subsequent normal irrigation practices, following deficit irrigations. More data is required to assess salinity in deeper depths at these sites before spring 2025 as well as a more comprehensive assessment is needed at the sites where severe deficit irrigation practice were implemented.

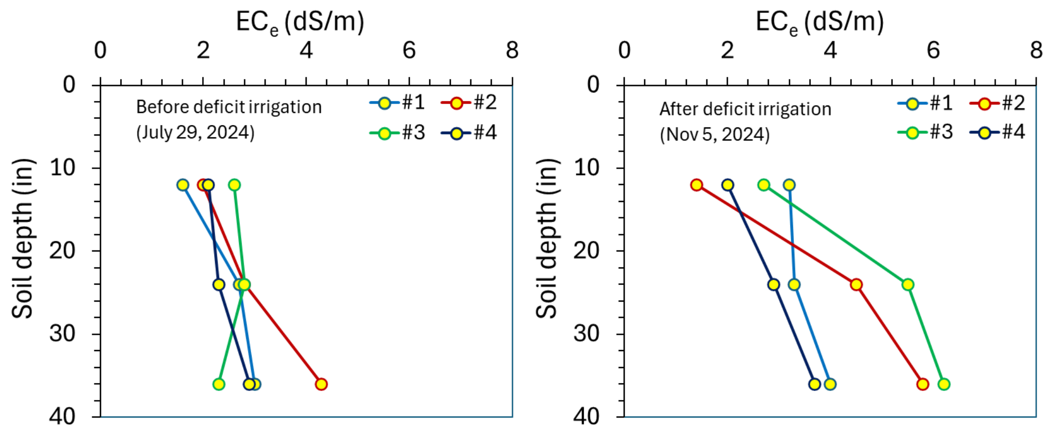


Fig. 5. Soil EC_e distribution of observed values before and after implementing semi-severe deficit irrigation strategy in one of the experimental sites. The data collected in July 29 and November 5 (2024) from four soil core sampling locations at the site were used to develop these plots.

Deficit irrigation and forage quality. There was a positive tendency, a small (non-significant) improvement, in forage quality (reductions in acid detergent fiber percentage and increases in crude protein percentage) due to the moderate deficit irrigation strategies, but not at all sites. The improved forage quality might be attributed to a reduction in stem growth (more than reduction in leaf growth) under such irrigation practices. In contrast, different results were observed for the forage quality of the trials under severe deficit irrigation strategies. A lower forage quality was observed for the samples collected from the plots under severe deficit irrigation during the August and September harvests (Fig. 6). The impact of severe deficit irrigation practice on hay quality of the 2024 August harvest is summarized as follows: 1.9% reductions in CP, 1.5% increases in ADF, 1.1% increases in NDF, and 0.5% increases in Lignin.

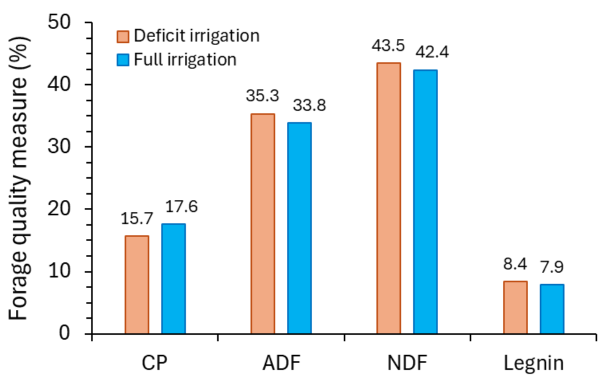


Fig. 6. A comparison between average forage quality measures of fully irrigated alfalfa and alfalfa hay under severe deficit irrigation regime. The data are plotted for the 2024 August harvest. CP, ADF, and NDF stand for crude protein, acid detergent fiber, and neutral detergent fiber, respectively.

Deficit irrigation and plant stand loss. The plant stand evaluation of the moderate deficit irrigation trials showed no significant impact on plant stand loss from this specific deficit irrigation strategy. Additionally, no yield reduction was observed from the moderate deficit irrigation strategy within the first three harvest cuttings of the following season, indicating a full recovery of the crop upon re-watering.

While the research team is still in the process of plant population assessment at the trials under semi-severe and severe deficit irrigation regimes, inconsistent results were observed in these fields. Stand loss due to deficit irrigation is quite a difficult measure in commercial scale not because it is difficult to measure it in field, it is because of the complexity of analysis associated with the actual loss caused by deficit irrigation practice. This last summer, we haven't had sufficient time for an accurate scientific plant population count in all experimental sites before the water cuts were started. It means we don't have a benchmark to compare the stands after deficit irrigation with, while clear stand losses are currently observed in some of these fields (Fig. 7). One observation is that less stand loss in younger alfalfa fields (1-2 years old) occurred than older fields (more than 3 years old) under semi-severe deficit irrigation regime this last summer. Our research team will attempt to collect more data for further evaluation of stand loss next summer.

One last comment: *It won't be surprising to see different impacts from deficit irrigation strategies in alfalfa fields than what is reported in this article. There are several factors may cause such inconsistencies that will be discussed in the future articles.*

Fig. 7. Plant stand loss in a commercial field after the summer deficit irrigation program (November 2024). Plant population count is not available before implementing the deficit irrigation regime to have a solid comparision of stand loss affected by the deficit practice.

Note. If you have any questions or concerns on the impacts of deficit irrigation regimes or soil-water management related issues, feel free to reach me at amontazar@ucanr.edu.

Acknowledgments. The author gratefully acknowledges the cooperating farms for their sincere collaboration during this study, and for allowing the research team to implement the project in their agricultural operations. A new fund from the US Bureau of Reclamation was recently received which will be partially allocated to expand and continue the alfalfa deficit irrigation study in the upcoming seasons.

HOW DO CROSSBRED ANGUS-HOLSTEIN STEERS COMPARE TO PUREBRED HOLSTEIN STEERS IN THE FEEDLOT?

Brooke Latack – UCCE Imperial, Riverside, and San Bernardino &

Pedro Carvalho – AgNext, Colorado State University

The Imperial County in California houses over 380,000 head of cattle on feed every year. Most of these cattle are Holstein coming from the California dairy industry. In recent years, there has been an increase in the use of beef semen on dairy cows and heifers, creating an increasing number of beef-on-dairy crossbred cattle. These crossbred cattle are being brought to the feedlots instead of straight Holstein bull calves. This change is being seen not just in the Imperial Valley but all over the US. The National Association of Animal Breeders indicated that there was an increase of 718,000 beef semen units sold for use on dairies from 2021 to 2022. Moreover, a recent survey of California dairies indicated that 81% of respondents used beef semen on their dairy cows (Pereira et al, 2022). While use of beef semen on dairy animals is increasing due to its potential financial benefit to the dairy farmer, there are not much data to show how those beef-on-dairy offspring will perform in the feedlot. Therefore, our objective was to identify productivity of Holstein steers versus Angus-Holstein crossbred steers in the feedlot.

Methods:

Eighty purebred Holstein and 80 Angus-Holstein crossbred steers were brought to the UC Desert Research and Extension Center in Holtville, CA at approximately 286 lbs. Cattle were fed a steam-flaked corn-based diet and management was similar to local commercial feedlots. Weights were measured monthly and carcass data were collected at the end of the feeding period - 328 days.

Results:

Feedlot growth performance – Overall final weight and average daily gain was not different between the two breeds (see table below). However, Angus-Holstein crossbred steers had a 3% less dry matter intake, leading to a gain to feed ratio that was 5% greater than the purebred Holstein steers.

Carcass characteristics – Compared to the purebred Holstein steers, the crossbred Angus-Holstein steers had heavier hot carcass weights, greater dressing percentages, greater back fat thickness, larger ribeye area, greater marbling score and greater preliminary yield grade. See the table for details. There was no difference between breeds for liver abscesses, pinkeye, or morbidity.

	Holstein	Angus-Holstein
Feedlot growth performance		
Final weight (lbs)	1346	1364
Average daily gain (lbs/d)	3.23	3.28
Dry matter intake (lbs/d) ‡	17.7	17.1
Gain to feed ratio‡	0.182	0.192
Carcass characteristics		
Hot carcass weight (lbs) ‡	825	850
Dressing percentage‡	61.4	62.3
Back fat thickness (in) ‡	0.22	0.36
Ribeye area (in^2) ‡	12.3	13.5
Marbling score‡	4.5	5.4
Preliminary yield grade‡	2.6	2.9
Health		
Liver abscess (%)	5.0	2.0
Pinkeye (%)	12.5	23.3
Morbidity (%)	6.3	7.5

‡ Denotes statistical differences ($P \leq 0.05$) between breeds

Take home:

Angus-Holstein crossbred steers were more feed efficient and had improved carcass characteristics compared to purebred Holstein steers. More research is needed to build larger data sets on performance of crossbred dairy steers. New data on the difference in performance of Angus-Holstein and Charolais-Holstein steers, the two most popular beef breeds to use on dairy cattle, in the feedlot will be presented in future articles.

Finished purebred Holstein steer (left) and crossbred Angus-Holstein steer (right) one day before harvest

EFFICACY OF REDUCED-RISK NEMATICIDE ON ROOT-KNOT NEMATODES ON CANTALOUPE IN LOW DESERT GROWING CONDITIONS

Philip Waisen, UC Cooperative Extension, Riverside and Imperial Counties

Introduction

California is ranked the number one producer of cantaloupe melon contributing 63% of the U.S. production valuing $204,646,000 in 2022 (CDFA, 2023). Cantaloupes (*Cucumis melo*) are produced in two major production areas in California including southern desert valleys (Imperial and Riverside counties) and San Joaquin Valley (Fresno, Kern, Kings, Merced, and Stanislaus counties) (Table 1). In the southern desert valleys, cantaloupes are planted from late December through March for harvest from May to early July. In contrast, in San Joaquin Valley, planting begins in February in the south and continues northward through July for harvest from late June through October (Hartz et al., 2008). To promote early plant growth during cooler months in the southern desert valleys, a mid-bed trench is created on 80-inch beds, where a single line of seed is established and then capped with a sheet of clear polythene plastic. Polyethylene is ventilated at thinning and then removed as the plants grow bigger. The trench area is weeded, and the bed is reshaped to a standard configuration. In San Joaquin Valley, fields are irrigated by furrow or sprinkler to ensure a full soil moisture profile, 40-inch or 80-inch raised beds are prepared, and a single seed line is established per bed. Seed is planted into the moist soil just below the tilled zone.

Root-knot nematodes (*Meloidogyne* spp.) remain one of the main production challenges for the growers. *Meloidogyne* is the most economically important plant-parasitic nematode on crop plants locally and globally, ranking at the top of ≈4,300 plant-parasitic nematode species described worldwide based on economic and scientific importance (Jones et al., 2013). Cantaloupes are among the most susceptible fruiting vegetables. In the southern desert valleys, *M. incognita* and *M. javanica* are predominantly found to be infecting melon crops. Effective management of *Meloidogyne* spp. is based on the Environmental Protection Agency's restricted use pesticides or California-restricted materials such as metam sodium and 1,3-dichloropropene. Sustainable management options that are environmentally friendly and safe for handlers are needed. Understanding the performance of the reduced-risk nematicide alternatives in desert growing conditions on melons is important to guide growers in making informed decisions. This study aimed to determine the efficacy of reduced-risk nematicides on the root-knot nematode population in low desert cantaloupe production system.

Table 1. California cantaloupe production from 2019-2022.

Time	**Harvested**	**Yield**	**Value**	**% of value contributed by the top 4 counties**			
Year	Area (acre)	(tons/acre)	($1,000)	Fresno	Merced	Imperial	Riverside
2019	32,800	12.5	101,591	63.3	6.8	21.0	5.7
2020	21,900	16.5	148,830	51.6	6.1	38.7	3.6
2021	23,400	14.8	109,456	55.8	13.5	25.3	4.7
2022	22,900	15.2	125,536	46.9	22.5	19.1	3.0

Source: California agricultural statistic review (www.cdfa.ca.gov).

Materials and Methods

A field trial was conducted at the Coachella Valley Agricultural Research Station (33°31'17.0"N 116°09'04.9" W), Thermal, CA. Cantaloupe 'Impac' was directly seeded on 36-inch beds 3 ft apart or at a planting density of 4,840 plants/acre on July 24, 2024. Nematicide treatments were arranged in a randomized complete block design with 4 replications (Table 2). Nematicides were applied directly on the beds using a CO_2 pressurized sprayer adjusted to 40 psi. The trial was terminated on October 18th, 2024. At the time of termination, cantaloupe roots were gently uprooted, and 7 infected root systems were individually rated for root-gall rating based on a 0-10 scale, where 0=heathy root system and 10=entire root systems galled by the nematode infection (Fig. 2). Six soil cores were collected from the top 8 inches of the cantaloupe rhizosphere, composited, and homogenized before collecting an aliquot of 100 cm^3 of soil and subjected to the Baermann funnel method of nematode extraction.

Table 2. Nematicide treatment details

Treatments	Active Ingredient	Rate	Manufacturer
Untreated control	-	-	-
Majestene®	*Burkholderia*	256 fl oz/ac	ProFarm
Velum® One	Fluopyram	13.6 fl oz/ac	Bayer
Vydate	Oxamyl	1 gal/ac	Corteva
Salibro I	Fluazaindolizine	31 fl oz/ac	Corteva
Salibro II	Fluazaindolizine	15.5 + 15.5 fl oz/ac	Corteva

Data analysis: Data analysis was done using Statistical Analytical Software version 9.4 (SAS Institute Inc., Cary, NC). Soil nematode population density of root-knot nematode and root-gall index were checked for normality using Proc Univariate in SAS. Wherever necessary, data were normalized and subjected to analysis of variance in SAS, and only the true means were presented.

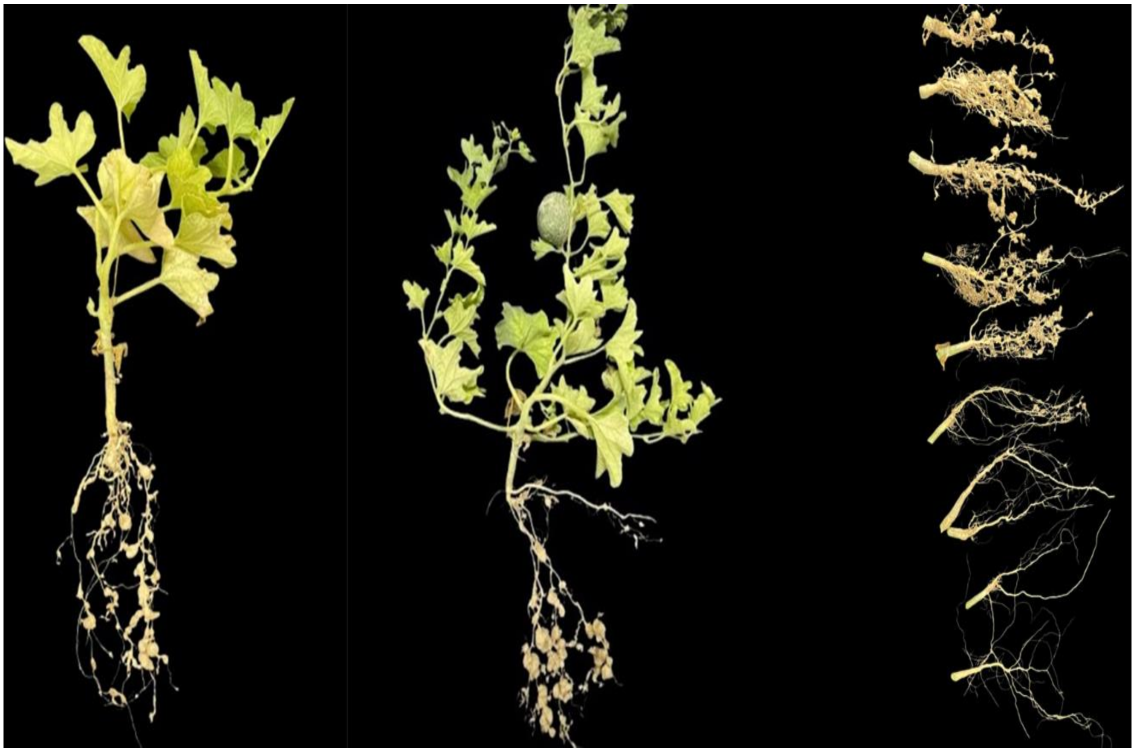


Figure 1. Root-knot nematode-induced galling on melon plants.

Results and Discussion

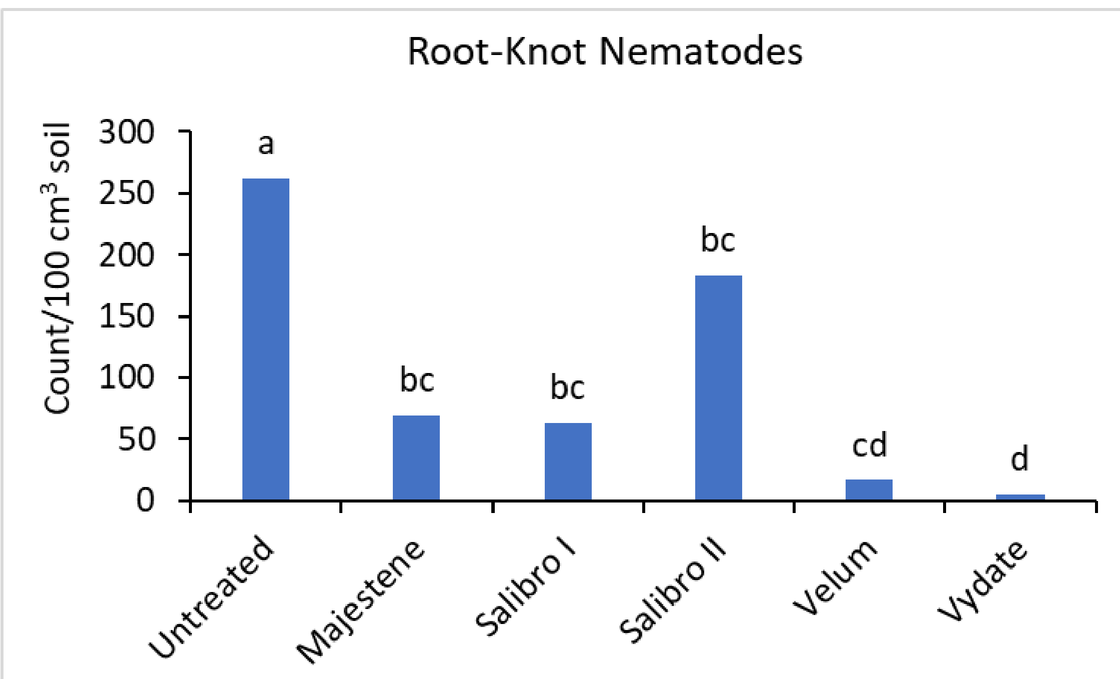


Figure 2. Showing the population density of root-knot nematodes at the time of terminating the field trial. Bars represent the means (n=4) and those followed by the same letter(s) are not different, according to the Waller–Duncan k-ratio (k=100) t-test.

In the field trial, all the nematicides suppressed the soil population densities of root-knot nematode compared to untreated control ($P \leq 0.05$; Fig. 2). Being the systemic product and as expected, Vydate significantly reduced the nematode population densities better than Salibro and Majestene. Velum is a known non-fumigant nematicide widely used by growers in southern desert valleys for controlling root-knot nematodes on fruiting vegetables, and its performance in this study was not surprising. Salibro is a new nematicide pending CA DPR registration, and its activity against the root-knot nematode was well documented in the desert growing conditions. Thus, the results are in line with previous findings on carrots and okra (Beker et al, 2019; Waisen, 2023). Interestingly, Majesene the biological nematicide suppressed the nematode significantly compared to the untreated control.

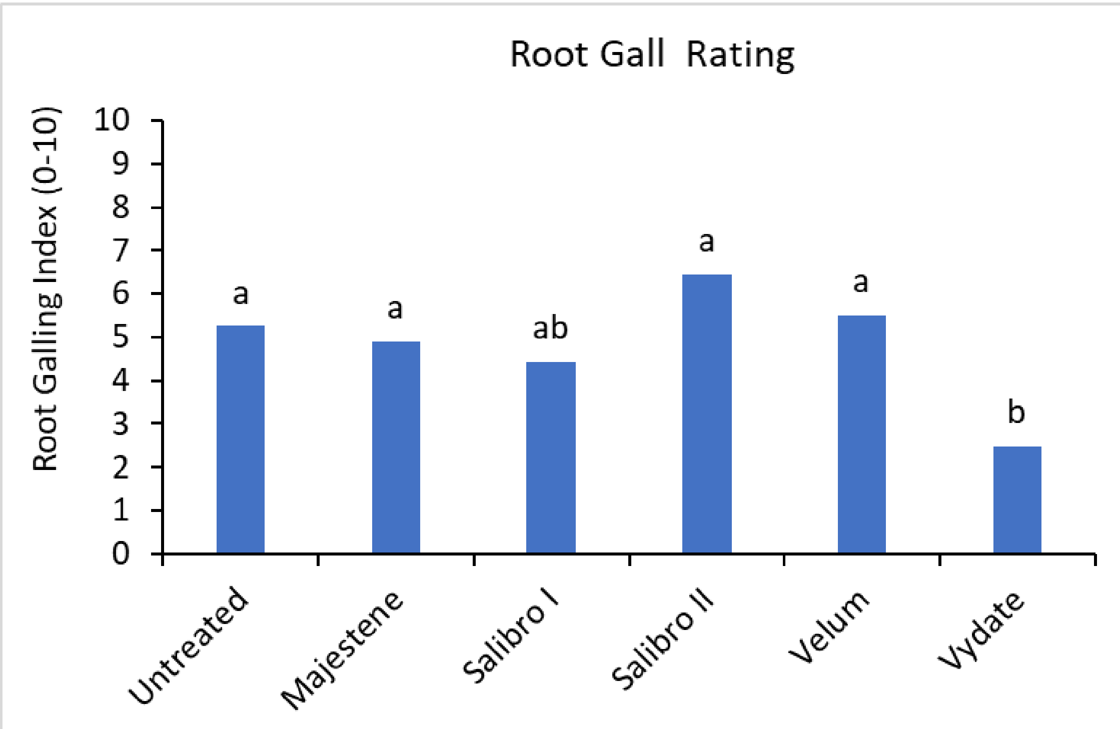


Figure 3. Showing root-knot nematode-induced root-gall rating. Bars represent means (*n*=28) and those followed by the same letter(s) are not different, according to the Waller–Duncan *k*-ratio (*k*=100) *t*-test.

While suppressing the soil population densities of root-knot nematode, Vydate also reduced root-gall rating significantly ($P \leq 0.05$; Fig. 3), underscoring the significance of systemic nematicides. Although all the nematicides were contact in activity and suppressed soil population densities of the nematode, root-gall ratings were not different from the untreated control ($P > 0.05$), indicating that contact nematicides only kill nematodes in the soil upon contact and not those that entered the roots earlier before the nematicide application resulting in the root galling. This highlights the importance of the timing of applying contact nematicides. Applying the contact nematicides right when the plants germinate or soon after transplant minimizes the chances of early infection.

Conclusion

This study determined that systemic nematicide Vydate significantly suppressed both the soil population density of root-knot nematodes and the corresponding galling on melon roots. Vydate can be a viable option for in-season applications to control those nematodes in the root systems that contact nematicides could not. Contact nematicides including Majestene, Salibro, and Velum also significantly reduced the soil population of the nematode. However, those that entered the roots before nematicide application were not controlled as reflected on the root gall index rating. This means early infection of plants by the nematode can be avoided by applying the nematicides right at germination or soon after transplanting.

References

Becker, J. O., Ploeg, A., and Nuñez, J. J. 2019. Multi-year field evaluation of fluorinated nematicides against Meloidogyne incognita in carrots. Plant Disease 103:2392-2396.

California Department of Food and Agriculture. 2023. California Agricultural Statistic Review (www.cdfa.ca.gov).

Hartz, T., Cantwell, M., Mickler, J., Mueller, S., Stoddard, S., and Turini, T. 2008. Cantaloupe production in California (Access)

Jones, J. T., Haegeman, A., Danchin, E. G., Gaur, H. S., Helder, J., Jones, M. G., Kikuchi, T., Manzanilla-López, R., Palomares-Rius, J. E., Wesemael, W. M. and Perry, R. N. 2013. Top 10 plant-parasitic nematodes in molecular plant pathology. Molecular Plant Pathology 14:946-961.

Waisen, P. 2023. Effects of Reduced-Risk Nematicides on Target and Non-Target Nematodes in Low Desert Vegetable Cropping System. Abstract. National Association of County Agricultural Agents Annual Meeting, Des Moines, IA, August 13-17 (Access).

Acknowledgments

This project was funded by the CA Melon Research Board for providing the funding. The author thanks the Coachella Valley Agricultural Research Station Crew for all the necessary field support in completing this project.

IMPERIAL VALLEY CIMIS REPORT AND UC WATER MANAGEMENT RESOURCES

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

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.cimis.water.ca.gov/. Estimates of the average daily ET_o for the period of January 1st to March 31st 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 inch per day

Station	January		February		March	
	1-15	16-31	1-15	16-28	1-15	16-31
Calipatria	0.09	0.10	0.12	0.13	0.16	0.19
El Centro (Seeley)	0.10	0.11	0.13	0.15	0.19	0.22
Holtville (Meloland)	0.09	0.10	0.12	0.14	0.17	0.21

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/

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 John Sims, Affirmative Action Contact, University of California, Davis, Agriculture and Natural Resources, One Shields Avenue, Davis, CA 95616, (530) 752-1397.