12/6/2023

Grimm Family Center for Organic Production and Research

The First Two Years

Industry Advisory Committee Report

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CAL POLY
College of Agriculture, Food & Environmental Sciences

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EXECUTIVE SUMMARY:

The center was established in early 2022 as a private-public partnership to provide a unique learning model for Cal Poly students and to develop research and innovation across disciplines that focus on real-world issues directly impacting California's >$11 billion organic industry. The center supports transdisciplinary research and teaching opportunities in topics related to organic soils, plant nutrition, pest management, agricultural education, and agricultural communications. The Center's initial phase is funded with a $5 million gift from the Grimm family. Additional funding has been acquired from donations and competitive research grants.

MISSION STATEMENT & THEMATIC GOALS

Our mission is: *To enhance California organic agriculture through applied research, education, and outreach.*

Thematic Goals supporting this mission are:

1. To improve organic nutrient management.
2. To improve organic pest management.
3. To train future organic leaders and workers.
4. To educate marketers, the public, and policy makers on organic opportunities and needs.

SUPPORT FOR COLLEGE/UNIVERSITY

Like Cal Poy's Irrigation Training and Research Center (ITRC), Dairy Products Technology Center (DPTC), and Strawberry Center, the Grimm Family Center for Organic Production and Research serves an important role within the College of Agriculture, Food and Environmental Sciences (CAFES). This role includes fostering increased industry interactions by working with faculty from across multiple departments on multidisciplinary research, education, and outreach projects. Center personnel work closely with undergraduate and graduate students throughout all projects providing Learn by Doing educational experiences. Center research and outreach projects are scaled and targeted to serve the California organic community in the short to medium term. In addition, center personnel contribute to the formal educational mission of Cal Poly through the development of specialty courses, providing guest lectures in ongoing courses, and by serving as a "client" for project oriented Learn by Doing courses.

CENTER ORGANIZATION

The center is housed within CAFES with close ties to the Plant Sciences, Natural Resources Management and Environmental Sciences, and the Agricultural Education and Communication Departments. Matthew Grieshop was hired as the founding center director to develop and lead the center with the support of affiliated CAFES faculty, students, and staff and reports to the CAFES dean. The center has established formal relationships with three faculty members and provides funding and support for technical labor, graduate students, and undergraduate students. An organizational chart is provided in Figure 1.

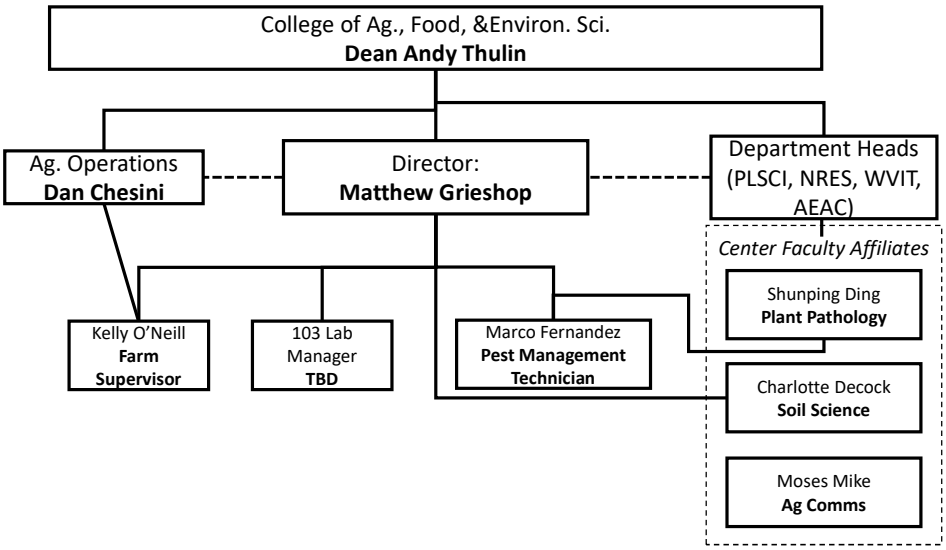


Figure 1: Center Organizational Chart

Director

The center is led by the full-time center Director, Dr. Matthew Grieshop. He was hired in 2022 by the Cal Poly Corporation and appointed by the CAFES dean. The director is appointed on an annual basis with continuation based on the success of the center. The director provides overall leadership and strategic management for the direction, coordination, and oversight of the center. The director's salary are primarily derived from the initial Grimm family funds.

Center Faculty

Dr. Charlotte Decock (Natural Resources and Environmental Sciences) is serving as a center associated faculty and provides leadership in organic soil fertility. Center funds are being used to fund 50% release time from her teaching responsibilities on a three-year renewable basis. She has led all the center's soil fertility related work and has multiple externally funded projects beginning with the center.

Dr. Shunping Ding (Plant Sciences) is a collaborator on externally funded organic pest management projects and is co-funding Marco Fernandez. Her program has active projects in biofungicide efficacy and host plant resistance. Shunping Ding and Matthew Grieshop have several active, externally funded research projects in organic pest management.

Dr. Moses Mike (Department of Agricultural Education and Communication) is collaborating on organic outreach projects via his teaching appointment – the organic center is sponsoring video and podcast production projects targeting consumer, produce buyers, and policy makers. Moses Mike is collaborating on a multi-year USDA TOPP projects and is Co-PI on additional proposals.

Center Staff

- The center funds 20% of the Plant Sciences Organic Farm Supervisor, Kelly O'Neil, with the plant sciences department, he joined on December 2, 2023.
    - *Kelly has recently accepted the position of Plant Sciences manager and we will be hiring a replacement for the Organic Farm Supervisor position soon.*
- The center funds 50% of Marco Fernandez, who works with Grieshop and Ding on plant protectant efficacy work, he joined on April 1, 2023.
- The next planned position will be a lab manager for the Grimm Family Soil Health and Sustainability Laboratory. This position is under development with an anticipated hire date of March 2024.

Center Graduate Students

The center is currently directly engaged with four graduate students, with open recruitment for a fifth. Graduate students are advised by Grieshop, Decock, and Ding.

- Laurel Vosseler (MS 2025) *Major Advisor:* Grieshop & Ding. *Project Area:* Summarizing efficacy data for NOP compliant pesticides for cole crops, leafy greens, blueberries and caneberries.
- Una O'Connell (MS 2025) *Major Advisor:* Decock & Grieshop. *Project Area:* Evaluating horticultural outcomes of reduced tillage, integrated cover crop production systems.
- Shane Egerstrom (MS 2025) *Major Advisor:* Decock. *Project Area:* Evaluating interactions between irrigation and nitrogen dynamics in organic and conventional central coast broccoli production.
- Megan Wilde (MS 2026) *Major Advisor:* Decock & Grieshop. *Project Area:* Evaluating soil water and nitrate outcomes of reduced tillage, integrated cover crop production systems.

Center Affiliated Undergraduate Students

The center and organic farm is currently employing eight undergraduate students. Students are advised by Grieshop, Decock, Ding, and Kelly O'Neil.

- Mary Nascimento. Organic Farm Crew and social media and communications
- Moe Lee. Organic Farm Crew
- Rowen Garcia. Organic Farm Crew
- Grace Longo. Organic Farm Crew
- Hunter Vaccarezza. Organic Farm Crew
- Lilyanna, Elola. Soil Health Undergraduate Technician (graduated)
- Allison McLoughlin. Soil Health Undergraduate Technician
- Abraham Ahumada. Pest Management Undergraduate Technician
- Evan Tamayo. Pest Management Undergraduate Technician

Advisory Board

The center has a Center Executive Committee (CEC) and External Advisory Council (EAC). The five member CEC is composed of two representatives selected by the Grimm family – Brandon Grimm and Dr. Russ Hamlin (Grimmway Vice President of Farming Operations), the CAFES dean – Dr. Andy Thulin, one CAFES faculty member – Dr. Charlotte Decock, and the center director. The role of the CEC is to oversee the center budget, develop the EAC and provide long term vision for the center. The EAC is composed of the external members of the CEC and representatives from the organic industry

(growers, consultants, agribusiness, and organic non-profit organizations) with a target of 10-15 members' total. Current EAC members are Gina Bella-Colfer (Wilbur Ellis), Dr. De Ann Davis (Western Growers), Ben Diesl (Grimmway Farms), Kyle Harmon (Braga Fresh/Josie's Organics), Christopher Hight (Betteravia/Bonipak), Jessy Beckett-Parr (CCOF), and John McKeon (Earthbound Farms/Taylor Farms) (Table 1).

The EAC has a chairperson and vice-chairperson elected annually, with board members serving staggered, three year terms with no term limits. Chairperson and vice-chairperson positions will run for a single year with the vice-chairperson immediately succeeding the chairperson. Dr. Russ Hamlin was elected as the chairperson in November of 2022 with Dr. De Ann Davis serving as the vice chair. The center director, CAFES dean and CAFES faculty member have non-voting status on the EAC. The function of the EAC will be to assist in setting center priorities and developing center publicity and advancement.

During the first three years of the center, the CEC and EAC will meet two to three times per year with meetings open to members of the dean's council and CAFES management team. In subsequent years the CEC and the EAC will meet twice per year and as needed. The center director and advisory board chairperson will meet virtually or in person once per month to discuss progress and any new issues.

Table 1. Current Executive committee and Advisory Committee members

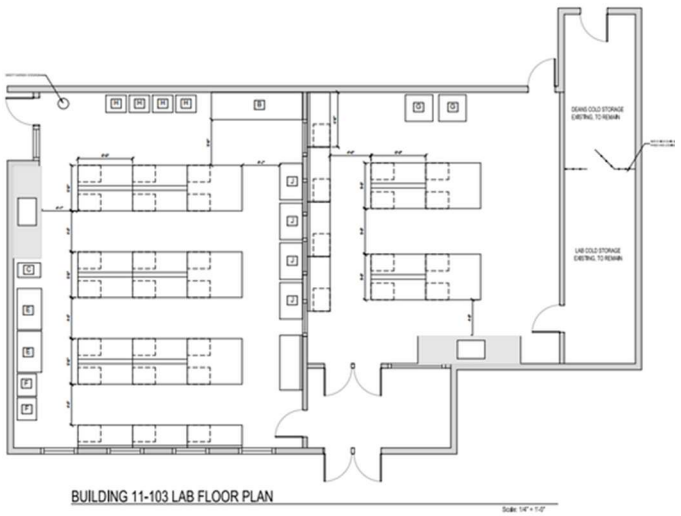
Last Name	First Name	CEC/EAC	Organization	Term
Grieshop	Matthew	CEC	CAFES	2022-
Thulin	Andy	CEC	CAFES	2022-
Decock	Charlotte	CEC	CAFES	2022-2025
Hamlin*	Russ	CEC/EAC	Grimmway Farms	2022-2025
Grimm	Brandon	CEC/EAC	Grimmway Farms	2022-2025
Harmon	Kyle	EAC	Braga Fresh	2022-2025
Hight	Chris	EAC	Betteravia Farms	2022-2025
De Ann**	Davis	EAC	Western Growers	2022-2025
Diesl	Ben	EAC	Grimmway Farms	2023-2026
Bella-Colfer	Gina	EAC	Wilbur-Ellis	2023-2026
Beckett-Parr	Jessy	EAC	CCOF Foundation	2024-2027
McKeon	John	EAC	Earthbound Farms	2024-2027

** Current Chairperson **Current Vice-Chairperson*

CENTER FACILITIES

The administrative offices of the center are housed in room 114 of the agricultural sciences building. This consists of an office partitioned into a two-room suite. This space serves as the office space for the director and student employees. Lab 103 of the agricultural sciences building has been renovated into the Grimm Family Soil Health and Sustainability Laboratory. The lab includes a clean, analytical laboratory space to support soil health and biology research as well as a soil processing laboratory space (Fig. 2). We have also acquired a small laboratory located at the Crop's Unit (Room 1). This facility is being used to expand our soil processing capacity and has provided a staging ground for our plant protectant efficacy work.

Figure 2: Architectural sketch of the Grimm Family Soil Health and Sustainability Laboratory



The center's land base is farmland managed by the Cal Poly Plant Sciences division. Currently there are ~11 certified organic acres available with an additional 9 acres in transition (Fig 3). Our current proposal is to maintain certification on already certified acreage and focus this area on organic production to support Cal Poly enterprise courses and senior projects as well as research that can be completed within USDA NOP guidelines. The "organic sandbox" is managed following organic principles but is not certified. The rationale for this is to provide an area where research that may need non-NOP compliant practices can be conducted. For example, evaluation/development of new organic inputs that have not yet been approved by the USDA NOP and the maintenance of "positive controls" that use conventional practices.

Figure 3: Map showing certified organic fields and the proposed "Organic Sandbox"

CENTER FUNDING

Funding for the center is entirely derived from advancement and competitive grants. The $5 million initial gift from the Grimm family is providing the startup funds for the center ($4 million for operating and $1 million for lab remodel) with another $164,785 provided by external donors, for a total donation base of $4,164,785. We continue to actively pursue federal, state, local, and foundation competitive funding opportunities with $1,541,626 raised to support organic projects over the next three years. At our present rate of growth, we anticipate exhausting our initial donation base by December 2028.

2022-2023 Expense Recap

To date, nearly all center expenditures have been supported by our donation base. Beginning in October 2023 we have begun shifting expenditures to contracts resulting from successful grant proposals. Total fiscal year expenses for 2022, 2023 and 2024 (to date) were $139,792, $381,889, and $156,143, respectively for a total of $677,823 between January 2022 and October 2023. Personnel costs make up 85% of total expenditures to date. Table 2 provides a breakdown of expense areas for the center over its first 22 months.

Table 2: Center Expenses and Balances by Fiscal Year (July-June).

Payroll Expenses	Total	2022	2023	2024 (October)
Staff Salaries	$ 325,043	$ 78,210	$ 169,203	$ 77,630
Student and Intermittent Wages	$ 45,960	$ 1,048	$ 30,099	$ 14,813
Fringe Benefits	$ 197,077	$ 46,800	$ 104,204	$ 46,073
Graduate Student Tuition	$ 9,096	$ -	$ -	$ 9,096
Subtotal	$ 577,176	$ 126,058	$ 303,506	$ 147,612
Operating Expenses				
Supplies & Materials	$ 18,477	$ 1,288	$ 12,501	$ 4,688
Equipment	$ 47,656	$ 2,245	$ 45,411	$ -
Fiscal Fees	$ 10,487	$ 225	$ 10,217	$ 45
Services (phone, network, printing)	$ 1,708	$ 431	$ 879	$ 398
Travel	$ 6,106	$ 601	$ 5,454	$ 50
Vehicle costs	$ 1,822	$ -	$ 619	$ 1,202
Recruitment	$ 9,836	$ 8,600	$ 975	$ 260
Hosting/Meetings	$ 4,557	$ 344	$ 2,327	$ 1,886
Subtotal	$ 100,647	$ 13,734	$ 78,383	$ 8,530
Total Expenses	$ 677,823	$ 139,792	$ 381,889	$ 156,143

2022-2023 Grant Funding

A large portion of the center director and affiliated faculty's efforts have been spent developing external grant proposals. So far, the center has led over $33.3 million in grant proposals with $1,501,873, successfully raised – *one of the unfunded proposals accounted for $31 million of the total requests*. The center funding success rate by proposal is 7/11 or 64%. Table 3 provides a breakdown of funded and unfunded proposals.

Grant funds are being used to offset some of the center's base salary and fringe expenses with a conservative estimate of grant funds offsetting 20% of these total costs. However, most grant funds are oriented around funding project specific graduate student labor, undergraduate student labor, intermittent labor, and operational costs for specific projects.

Table 3: Center granting activity. Total indicates total grant amount, direct indicates funds available after Cal Poly indirect charges, Center Total indicates amount attributable to center projects/activities.

FUNDER	GRANT TITLE	Co-PIs
	FUNDED	
CDFA ARI IPM	Development and delivery of organic pest management outreach materials for California specialty crop growers	Ding
USDA NOP TOPP	Organic Workforce Development	Mike, Decock
CDFA FREP	The role of irrigation management for improving nitrogen use efficiency for broccoli grown with nitrate-contaminated irrigation water	Decock, Dr. Cahn (UC ANR)
CSU ARI	Effects of reduced tillage, ground cover and residue management on nitrogen dynamics in organic vegetable cropping systems	Decock
USDA SCRI	Taming agriculture's elephant: broadening the conversation about field equipment sanitation practices for specialty crops	National Team
USDA NLGCB	Fostering experiential learning through the evaluation of a regenerative vegetable system	Decock
CDFA ARI IPM	As below so above? The role of plant and soil health and nutrition on vegetable pest and disease management.	Ding, Decock
	PENDING	
WSARE	Identification of the Core Competencies Needed for a Western Region Organic CCA Certification Add-On	Mike, Decock
	UNFUNDED	
NSF Engine	Organic Practices and Water Use	Decock
CDFA ARI IPM	Field Evaluation of Organic and Reduced Risk Plant Protectants for Central Coast Brassica Crops	Ding
USDA NRCS	Building upon organic practices to scale climate smart systems for California vegetable and berry growers	CCOF, UCANR, RCDs
USDA EGP	Expanding Cal Poly Soil Science Research and Teaching Capacity with a Total Organic Carbon and Nitrogen Analyzer	Decock
	WITHDRAWN	
CDFA PEB	Comprehensive Pest Prevention Program Analysis	

Financial Summary and Projections

Over the first 22 months, we have demonstrated that the center can generate significant competitive grant funding and that the bulk of the center's expenses are personnel related. We have begun exploring fee for service or contract research and expect that the center is highly likely to be competitive in this arena. What is unclear, is whether "soft" sources of funding will sustainably

support the director (estimated personnel cost of $250,000 per year) and support technicians (estimated personnel costs of $90,000 per year/technician).

INSTRUCTIONAL OUTCOMES

Student learning and success is central to the overall mission and goals of Cal Poly San Luis Obispo. The center contributes to this by providing a variety of hands-on opportunities for individual students (see center undergraduates above) as well as by participating in regular scheduled courses and serving as a "client" for student projects.

Teaching/Regular Courses

AGC 425. Multimedia Storytelling in Agriculture and Science: In Fall of 2023, Grieshop again served as the commercial client For Moses Mike's course. Students were tasked with producing short "Tik Tok" style videos for social media outlets. In this instance students were allowed more freedom in selecting topics related to consumer education of organic agriculture. We expect the delivery of 18+ short videos focusing on organic communications, these will be released via the Cetner's Instagram page.

PLSC 470. Current Issues in California Organic Agriculture: In Spring of 2023, Grieshop and Decock co-taught a two credit, PLSC 470, advanced topics course called: "Current Issues in California Organic Agriculture." The course had 16 students enrolled and consisted of a weekly two hour seminar that featured a guest speaker from organic industry. Students completed a weekly written evaluation of the course and a final "video blog" assignment. Grieshop's role in the course is being supported by USDA TOPP funding and will continue for at least the next four years.

AGC 225. Digital Communication in Agriculture and Science In winter of 2023 Grieshop served as the commercial client for Moses Mike's course. Students were tasked with developing nine podcasts on organic issues. Podcast topics were developed by Cal Poly students with input from CCOF. Podcast recording was streamed live via a Twitch channel and podcast postproduction yielded both video (YouTube) versions as well as audio (Pod Bean) versions (see social media section). Podcasts are now being released monthly beginning in September of 2023. This project will continue for at least four more years as part of the USDA TOPP funded project.

AGC 425. Multimedia Storytelling in Agriculture and Science: In Fall of 2022, Grieshop served as the commercial client for Moses Mike's course. Students were tasked with producing short "Tik Tok" style videos for social media outlets. Videos focused on teaching buyers and consumers organic facts including the difference between "bad bugs" (i.e., aphids, caterpillars) vs. "good bugs" (i.e., lacewings, syrphid flies, lady bird beetle larvae). Eighteen short videos focusing on organic communication were produced, with six that are being released via the center's Instagram page.

Guest Lectures

1. “Organic Agriculture” AG 452 Issues in California Agriculture March 2, 2022. (Grieshop).
2. “IPM Thresholds” PLSC 427. Disease and Pest Control Systems for Ornamental Plants. March 2, 2022. (Grieshop)
3. “Organic Agriculture and Wines” WVIT 102. Global Wine and Viticulture. April 11, 2022.
4. “Solid Set Canopy Delivery Systems” PLSC 581. Graduate Seminar in Crop/Fruit Production. April 14, 2022. (Grieshop).
5. “Organic Management of Weeds” PLSC 321. Weed Biology and Management., April 25, 2022. (Grieshop)
6. “Climate Change and Agriculture” FSN 516. Population Health and Epidemiology, May 24, 2022. (Grieshop)
7. “Careers in Academia” PLSC 428. Advances in Plant Pathology. October 13, 2022.
8. “The Grimm Family Center for Organic Production and Research” CAFES Ambassadors. October 6, 2022. (Grieshop)
9. “Consumer Perceptions of Organic Agriculture” AGC 425. Multimedia Storytelling in Agriculture and Science., September 23, 2022 (Grieshop)
10. “Field Trip to Braga Fresh” AGC 425. Multimedia Storytelling in Agriculture and Science. October 22, 2022 (Grieshop)
11. “Organic Insect Pest Management” PLSC 315. Principles of Organic Crop Production., November 7, 2022 (Grieshop)
12. “Organic Agriculture” AG 452 Issues in California Agriculture. February 1, 2023.
13. “Pigs and Organic Pest Management for Michigan Apples” PLSC 327. Vertebrate Pest Management. February 10, 2023. (Grieshop)
14. “Biological Control” PLSC 427. Disease and Pest Control Systems for Ornamental Plants. February 12, 2023. (Grieshop)
15. “Organic Insect Pest Management” PLSC 420. Organic Crop Production Systems. March 1, 2023.
16. “The Organic Movement, USDA National Organic Program and Genetically Modified Crops” BRAE 220. Introduction to Biological Systems., March 8, 2023. (Grieshop)
17. “Organic Management of Weeds” PLSC 321. Weed Biology and Management., October16, 2023. (Grieshop)
18. “Organic Insect Pest Management” PLSC 315. Principles of Organic Crop Production., October 30, 2023 (Grieshop)

Graduate Student Committees (Outside Advisor)

- Christopher Hight (MS Winter 2022). Major Advisor: Charlotte Decock. Grieshop served as a committee member.
- Riley Blair (Spring 2024) Major Advisor: Shunping Ding. Grieshop serves as a committee member.
- Emily Mae Locke-Paddon (Spring 2026) Major Advisor: Shunping Ding. Grieshop serves as a committee member.
- Edgar Monterroso (Spring 2026) Major Advisor: Shunping Ding. Grieshop serves as a committee member.

Undergraduate Student Projects

- Materials Engineering Senior Project. Black Soldier Fly (BSF) Waste Management and Animal Feed Project. William Burns (Spring 2023-Winter 2024). *Students have developed a BSF rearing system*

using post-consumer kitchen wastes from Cal Poly Food Services and will be evaluating poultry feed efficiency of BSF in collaboration with the Animal Sciences department.

- BRAE 128 Undergraduate project (Fall 2023): Owl Box and Hawk Perches I. Five *undergraduate students are building two owl boxes and 4 hawk perches for the organic farm.*
- BRAE 128 Undergraduate project (Fall 2023): Owl Box and Hawk Perches II. Five *undergraduate students are building two owl boxes and 4 hawk perches for the organic farm.*
- BRAE 128 Undergraduate project (Fall 2023): Sprinkler Reflectors. *Five undergraduate students are building 20 improved impact sprinkler reflectors for the organic farm.*
- BRAE 128 Undergraduate project (Fall 2023): Owl Box and Hawk Perches II. *Five undergraduate students are designing and building a new sign for the organic farm based on the new student designed center and farm "Bishop's Peak" logo.*
- BRAE 465 Senior project (Fall 2023): Mobile Evaporative Produce Cooler. Samuel Monkton. *Sam has designed and is fabricating a small scale produce cooler for the organic farm that will allow workers to cool produce in the field to improve harvest quality.*

RESEARCH OUTCOMES

Nitrogen Mineralization of 12 Organic Fertilizers at five temperatures.

Grimmway Farms provided the fertilizers and soil/substrate for this experiment. We incubated 12 fertilizers on a single soil collected from a site near Bakersfield at five temperatures ranging from 41-77°F for 35 days at 50 mg N/kg soil (~100 lb N/acre). Ammonium and nitrate concentrations and % N mineralized were determined after 1, 7, 28, and 35 days of incubation. Figure 4 shows the 35-day performance of these fertilizers categorized by source material (bonemeal, chicken manure compost, dairy manure compost, mixed feedstocks, and poultry litter). Dairy manure-based fertilizers had consistently low mineralization rates while the others had higher N mineralization rates. Temperature had variable effects on N mineralization rates for the non-dairy-manure based fertilizers, with rates peaking at 59° F and chicken manure compost and bonemeal-based fertilizers performing better than the others at the highest temperature of 77° F. ***The take home message from this trial is that growers should consider their soil temperature when choosing an organic fertilizer. Chicken manure compost and mixed feedstocks provided the most consistent behavior between 41 -68° F, chicken manure compost and bonemeal manure were best at 77° F.***

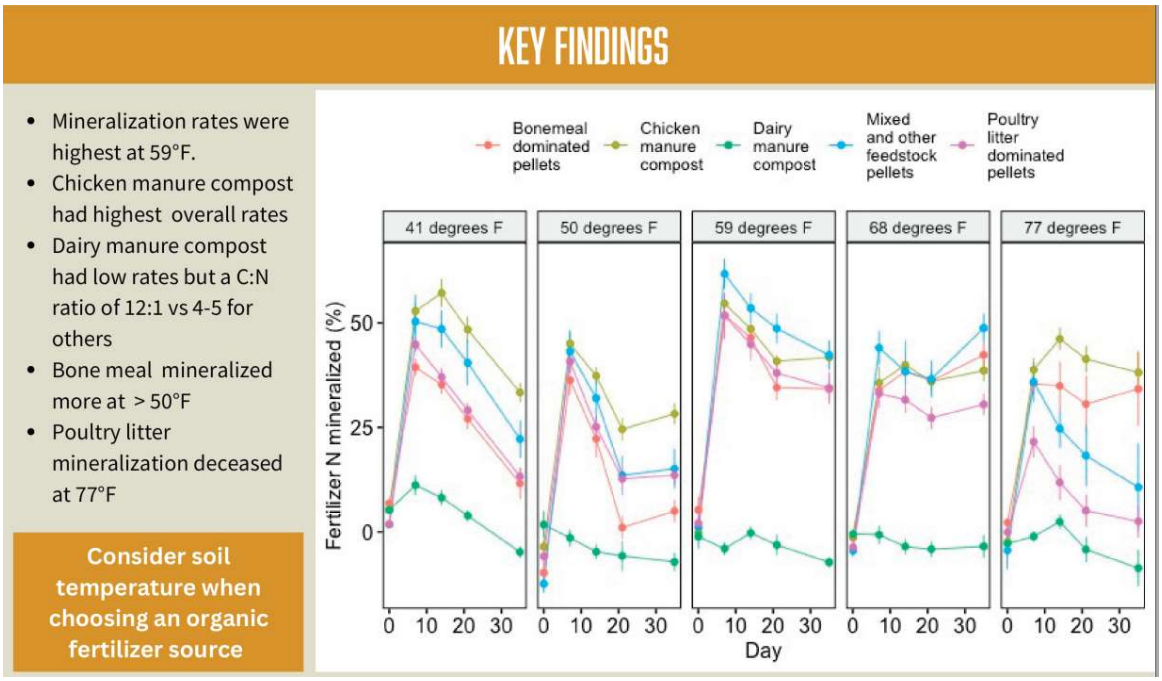


Figure 4: Soil N mineralization over a 35-day incubation period at five temperatures (5°, 10°, 15°, 20°, and 25° C) for fertilizers with five different ingredients (12 fertilizers placed in five categories).

Nitrogen Mineralization of One Organic Fertilizer in 72 Different soils at one temperature.
We incubated soil from 72 organic vegetable production fields from the Santa Maria Valley at 77°F for 28 days with and without an 8-5-1 organic fertilizer at 50 mg N/kg soil (~100 lb N/acre). We measured soil physical, chemical, and biological properties. Ammonium and nitrate concentrations and % N mineralized were determined after 1, 7 and 28 days of incubation. Figure 5 shows a frequency histogram of the number of soils by % N mineralization over 7 and 28-day periods. A table providing correlations of soil measurements to mineralization rate at 7 days is also provided. Mineralization rates ranged from -31-78%! Mineralization rates were positively correlated to Soil Organic Matter, pH, Calcium, Clay %, and Magnesium and negatively correlated to Exchangeable sodium %, EC and Sand %. ***One take home message of this trial is that soils with <2% SOM may benefit from faster mineralizing fertilizers compared to soils with >4% SOM.***

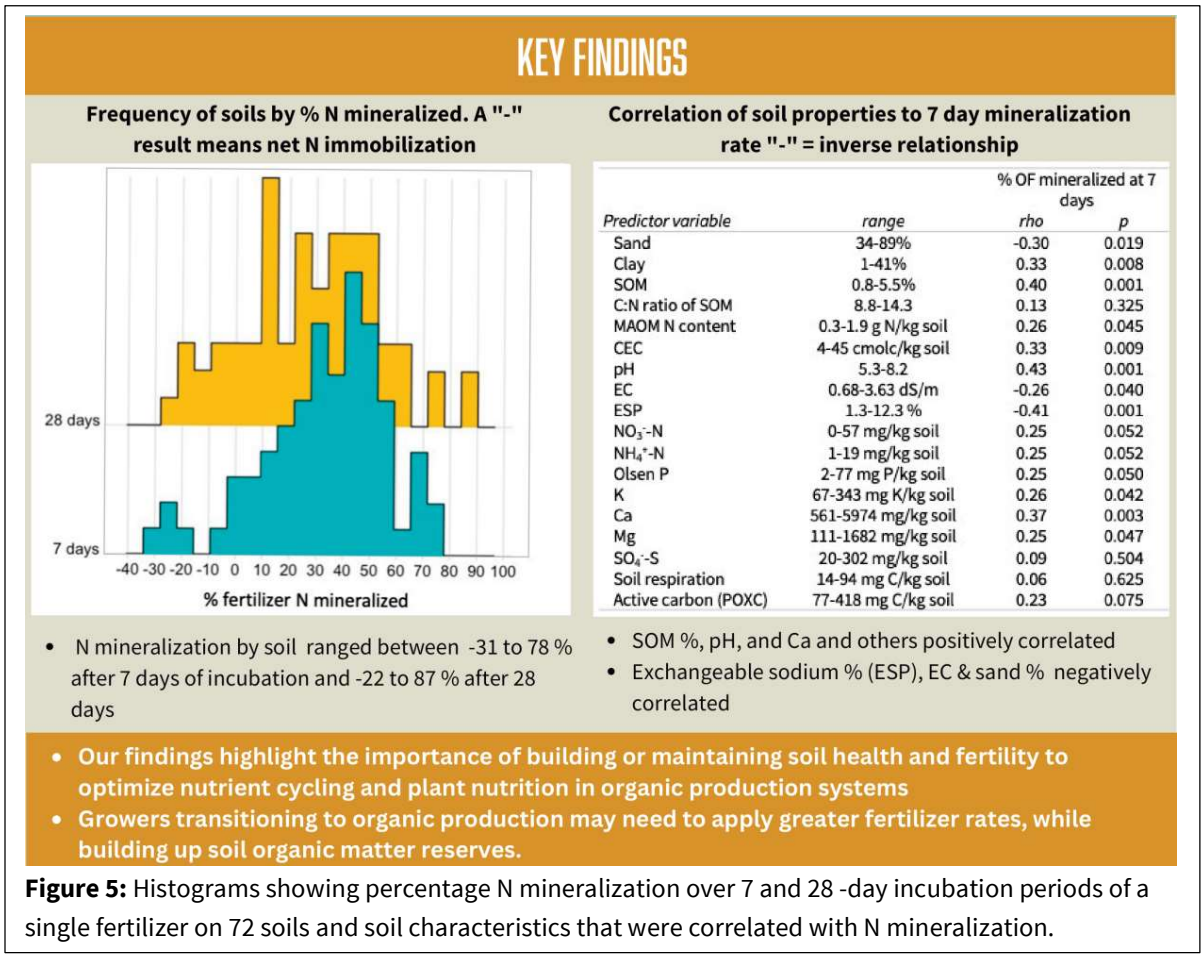


Figure 5: Histograms showing percentage N mineralization over 7 and 28 -day incubation periods of a single fertilizer on 72 soils and soil characteristics that were correlated with N mineralization.

Nitrogen Mineralization of Organic Fertilizers with Different Pellet Density Indexes (PDI).

The third soils project evaluated how fertilizer pellet density (PDI) affects N mineralization of a Naturesafe brand organic fertilizer with materials and funding donated by Naturesafe. We evaluated N mineralization across three pellet densities (76%, 84%, 91%), the unpelleted source material (mash), and a non-fertilized control treatment (to allow calculation of % N mineralized). Pellets were homogenized or left intact and mixed into soil collected from a commercial vegetable field in Salinas, California. Fertilizer N was added at a rate of 111 mg N/kg soil. Soil was incubated in 5-gallon buckets with 2250g of soil/bucket and subsamples extracted with a miniature soil probe for measurements over time. Each treatment combination was replicated five times and incubated at room temperature for five weeks. Total N mineralization was slightly higher for all the homogenized (ground pellets) compared to the unground pellets. Pellet density did not affect N mineralization, but overall mineralization rates were low, which may have been due to a high level of nitrate in the test soil (Fig. 6). ***Take home message: pellet density does not appear to increase nor decrease N mineralization rate. Denser pellets increase the mass of pellets that can be loaded into applicator hoppers, extending the acreage that can be treated with a single load.***

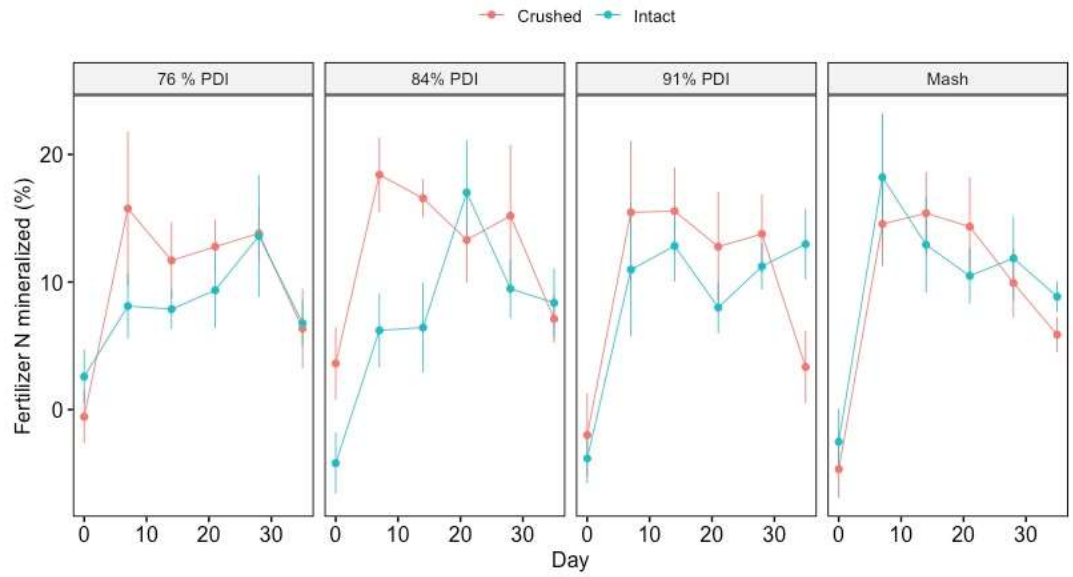


Figure 6: Change in the percent of fertilizer N mineralized throughout the incubation for the four fertilizer products in the crushed and intact pellet treatments.

Pest Management Efficacy Tables

The organic arthropod and disease management efficacy table project is being led by Matthew Grieshop and Shunping Ding and consists of a metanalysis of available efficacy data for arthropod and disease management tactics culminating in easy-to-use guides that will provide growers and PCAs with distilled information in look up tables and infographics. The project is focusing on leafy greens, brassica crops, caneberries and blueberries. Ding and Grieshop have received $120K in funding from the CDFA ARI IPM program. We have developed the workflow for running the metaanalysis for this project and developed a preliminary efficacy table for cabbage feeding caterpillars for our first field day (Fig. 7). We are nearing completion of the insecticide literature review and about 50% complete with the plant pathology literature review. ***This project will provide California organic growers with easy-to-use summaries of organic plant protectant efficacy.***

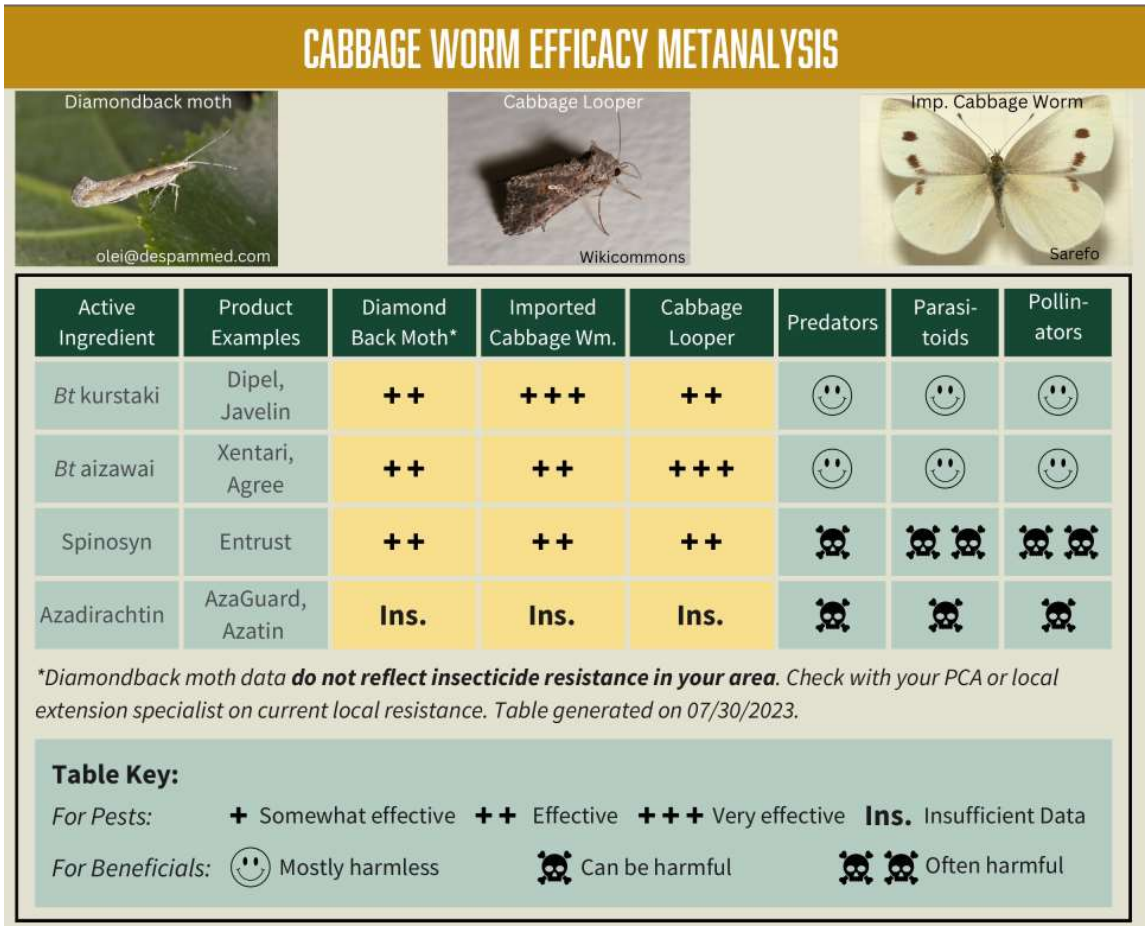


Figure 7: Example of the efficacy tables we are creating. This one summarizes >200 efficacy trials for products commonly used for caterpillars on cabbage.

Mating Disruption for Diamondback Moth

Matthew Grieshop and Marco Fernandez completed four trials evaluating two experimental mating disruption formulations for diamondback moth (DBM). Mating disruption functions by "flooding" an area with female sex pheromone, making it more difficult for males to find females, thereby preventing future generations of moths. Mating disruption is used widely in organic tree crops and is used in Asia for DBM. DBM is becoming an increasingly important pest of cole (brassica) crops due to the development of resistance to nearly all classes of insecticides.

We evaluated 10 m long Shin-Etsu ropes (8/acre) and 20 cm Shin-Etsu twin tube dispensers (400/acre) in two broccoli and two cauliflower fields located near Guadalupe CA and operated by Betteravia farms. The project was funded in partnership with Pacific Biocontrol, the Western US distributor of Shin-Etsu mating disruption products. Our objective was to evaluate whether smaller more distributed point sources (400/acre) or larger more aggregated point sources (8/acre) would reduce DBM damage. The first trial was conducted on broccoli beginning in late May 2023. The latter three trials included one additional broccoli field and two cauliflower fields and began in Late July 2023. For each trial large contiguous fields of > 10 acres were split into three subplots. Trials lasted approximately 30 days as determined by the initiation of harvest activities. Adults were monitored using pheromone traps with three traps spaced within the center of each experimental plot and damage evaluations (damaged leaves and # of feeding events) were conducted immediately preceding harvest by sampling at least 100 plants within each plot.

Results are presented in Table 4. In both broccoli plantings mating disruption significantly reduced damage with the twin tube treatment having the numerically lowest damage, however mating disruption did not significantly reduce trap capture. In contrast, for cauliflower no significant differences were found for damage but mating disruption significantly reduced trap capture. Overall populations of DBM were very low throughout the study making it difficult to determine if mating disruption could contribute to economic control of DBM. ***Take home message: both MD formulations can disrupt DBM and that a greater density of smaller point sources may provide more disruption than a lower density of larger point sources.***

Table 4. Mean ± SEM Trap captures and total incidence of foliar damage per five plants for 2023 diamondback moth trial. Numbers within a column followed by different letters are significantly different (alpha =0.05).

	Trap	Damage	Trap	Damage
	Broccoli 1		Broccoli 2	
Control	29 ± 18.3	18.2 ± 1.5a	5.7 ± 1.8	17.4 ± 0.7a
Ropes	5.3 ± 1.2	12.6 ± 1.2ab	4 ± 2.1	7.1 ± 1.1b
Twin Tube	4.3 ± 3.4	7.4 ± 2.2b	2.3 ± 1.5	2.9 ± 1.4b
	Cauliflower 1		Cauliflower 2	
Control	3.7 ± 1.2a	5.3 ± 1.5	17 ± 2a	12.7 ± 4.5
Ropes	1.3 ± 0.3ab	4.5 ± 2.5	2 ± 0.6b	6.4 ± 1.3
Twin Tube	0.3 ± 0.3b	5.6 ± 1.2	3.3 ± 0.9b	7.4 ± 1.9

Downy Mildew Resistance in Arugula:

The downy mildew resistance in arugula project is being managed by Shunping Ding with efforts led by Reilly Blair, a M.S. graduate student. Blair has identified multiple seed lines with potential resistance in laboratory trials and is in the final steps of completing analysis of a small-scale field validation. ***This project will provide arugula breeders with an evaluation of current arugula line resistance to downy mildew.***

NOP Compliant Fungicide Trials

Ding and Marco Fernandez have led efforts in evaluating organic fungicides for a variety of specialty crops. These projects are funded through a combination of center funds and funds provided by industry. Table 5 provides a summary of the products tested since Spring 2023. We will report the outcome of these studies in Plant Disease Management Reports publications, through the center website as well as at our next field day.

Table 5: NOP compliant fungicide trials completed during summer and winter 2023.

Crop	Disease	Pathogen	Organic pesticide tested and rate	Application method	Season	Location
Pepper	Phytoph-thora blight	*Phytoph-thora capsici*	Epidgard (0.4% v/v), Fosphite (0.3% v/v)	Drip and foliar application	Summer 2023	Cal Poly, Field 25
Tomato	Fusariu m wilt	*Fusarium oxyspor-um*	Fosphite (0.3% v/v)	Drip	Summer 2023	Cal Poly, Field 25
Wine grape	Powdery mildew	*Erysiphe necator*	Cinnerate (25 fl oz/ac), Epidgard (0.4% v/v), Howler Evo (2.5 lb/ac), Shielder (4 lb/ac), Problad Verde (45 fl oz/ac), Serenade ASO (16.4 fl oz), Theia (1.5 lb/ac)	Foliar application	Summer 2023	Cal Poly, Trestle Vineyard
Brassica	Downy mildew	*Hyalopero -nospora parasitica*	Cinnerate (32 fl oz/ac), ProBlad Verde (32 fl oz/ac), ProBlad Verde (45 fl oz/ac)	Foliar application	Winter 2023	Cal Poly, Field 25
Lettuce	Downy mildew	*Bremia lactucae*	Cinnerate (32 fl oz/ac), ProBlad Verde (32 fl oz/ac), ProBlad Verde (45 fl oz/ac), Serenade ASO (2 qt/ac), Howler EVO (1.25 lb/ac)	Foliar application	Winter 2023	Cal Poly, Field 25

Reduced Tillage, Integrated Cover Crops

California organic vegetable production systems are energy intensive and involve extensive reworking of soils. In the central coast region, vegetable bed systems often receive more than 20 tractor passes per year for ground clearing, bed shaping, planting between rotations. There is increasing interest in systems that reduce the need for intensive soil disruption through the incorporation of reduced tillage and continuous coverage practices. Figure 8 shows such a system at a Braga Fresh test field. We have secured three years of external funding to work on this project. We will be evaluating four production systems: 1) a standard 80" control, 2) a "Braga" style 80" bed with cultivation only in the transplant row and permanent cover crops, 3) an 80" bed with cultivation only in the transplant rows but no cover crops, and 4) an 80" "bed less" panting with reduced cultivation and permanent cover crops.

Figure 8: Image of reduced tillage, continuous cover crop test system at Braga Fresh.

We have three grant funded projects to support the development of a replicated trial evaluating these systems. The objectives of the first project (USDA NLGCB) are evaluation of the feasibility/scalability of these systems, their impact on soil quality, and to use them as an asset for Plant Sciences and Natural Resources Management and Environmental Sciences enterprise classes and senior projects. The objective of the second project (Cal State ARI) is to evaluate the nitrogen and water dynamics among our treatments. The Objectives of the third project (Cal State ARI-IPM) is to evaluate connections between soil quality/health and plant sap analysis across the four treatments. So far, we have established a successful test planting for the experiment (Figure 9) on the organic farm and will begin planting our first replicate in January of 2024. ***This project will provide a unique learning laboratory for Cal Poly organic students while evaluating higher risk organic vegetable production systems.***


Figure 9: Cal Poly test plot with cabbage and Sudan grass.

SCRI Sanitation of Field Equipment Planning Project

We have received a USDA SCRI planning grant to organize a national scope grant on the development of field equipment sanitation to mitigate risks to food safety and weed, plant pathogen and other pest infestations. While specialty crop growers and professionals know field equipment sanitation is important, we lack a clear framework for describing what it means, how to validate it, or the economic tradeoffs of cleaning and sanitation approaches. Our SCRI planning grant will address this multifaceted problem by developing a transdisciplinary team of researchers, surveying existing grower practices and needs, creating an annotated bibliography, and the development of a USDA SCRI CAP proposal on the development of a unified framework for specialty crop equipment sanitation. Our project directly addresses SCRI legislatively mandated priorities two "Efforts to identify and address threats from pests and diseases" and five "Methods to prevent, detect, monitor, control, and respond to potential food safety hazards in the production and processing of specialty crops, including fresh produce." It aligns with USDA Strategic Goals two "Ensure America's Agricultural System is Equitable, Resilient, and Prosperous and four "Provide All Americans Safe, Nutritious Food." Our project will develop: 1) a transdisciplinary field equipment sanitation Community of Practice (COP), 2) a survey of industry needs and opportunities, 3) a field sanitation annotated bibliography, and 4) a USDA SCRI CAP proposal for a future RFA. These outputs will be produced through a series of online meetings and an in-person meeting to be held at the Cal Poly campus (Fig. 10). So far, the team has developed a short questionnaire on grower field equipment sanitation practices and are developing a full survey. ***This project will lead to the development of a large (>$4 million) proposal that will support development of equipment sanitation protocols that will benefit the preventative aspects of organic pest management.***

Figure 10. Relationship of project activities to SCRI CAP development.

OUTREACH OUTCOMES

Certified Crop Advisor (CCA) Organic Add-on Certification

We are developing an Organic Specialty certification for Western Certified Crop Advisors (WCCA) in collaboration with WCCA and funded by USDA TOPP. We have submitted a WSARE professional development grant to fund a series of meetings with organic professionals to develop a more robust set of learning objectives and program evaluation. We expect to begin this project in mid to late 2024 with most of the project activities occurring in 2025 and 2026. Project deliverables will be hosted by WCCA. The proposed Organic Agriculture Specialty Certification for CCAs will include learning objectives, assessments and both printed and video learning materials. Decock and Mike are the key collaborators on this project. The project has already been vetted by the WCCA committee and we have established a timeline with them (Figure 11). Development of this project will involve recruitment of an agricultural communications post-doctoral research associate who will lead the development of training videos. ***This project will lead to the development of a certification system for CCAs wanting to demonstrate knowledge of organic production systems and regulations.***

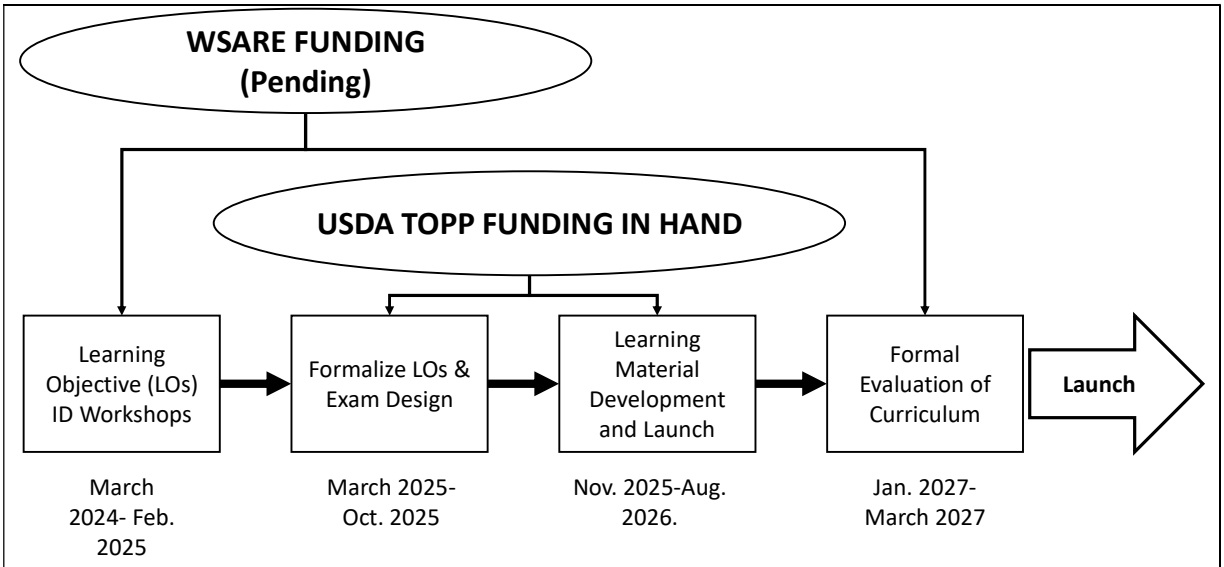


Figure 11. Proposed timeline for development and launch of an organic CCA add on certification.

Social Media

Our team has significantly increased our social media presence over the last eight months. This has included a complete overhaul of the center webpage, development of Instagram and LinkedIn sites and the release of podcasts in both audio and video (YouTube) formats. To date we have released three one-hour and two-20 minute "organic chat" podcasts, with eight more one-hour and at least eight more 20-minute podcasts to be released by next Fall. Social media outputs have largely been created in collaboration with Faculty Affiliate Mike through two of his courses.

1. **Website:** Grimm Family Center for Organic Production and Research https://organic.calpoly.edu/
2. **Podcasts:** Live in 205: The Organic Podcast. https://grimmfamilycenter.podbean.com/ Table 6 provides a list of podcasts recorded to date.
3. **YouTube:** GrimmOrganicCenter. https://www.youtube.com/@GrimmOrganicCenter
4. **Instagram:** GRIMMORGANICCENTER https://www.instagram.com/grimmorganiccenter/ (1,518 followers).
5. **LinkedIn:** Grimm Family Center for Organic Production and Research https://www.linkedin.com/company/grimmfamilycenter/ (465 Followers)

Table 6. Podcast topics and guests for AGC 225 - Digital Communication in Agriculture and Science winter quarter 2023

Recorded Date	Topic	Guest/s
02/08/2023	Introductory episode (Released)	NA
02/10/2023	Organic Fertilizers (Released)	*Jake Evans* CEO/owner True Organics
02/15/2023	Organics and Ethics (Released)	*Amanda Frye* Assistant Professor Cal Poly Liberal Studies
02/17/2023	Public understanding of organic and sustainable agriculture terms, concepts	NA
02/22/2023	Organic Certification	*Kelly Korman* Livestock Certification Supervisor CCOF
02/24/2023	Marketing Organic Produce	*David Bright* VP of Marketing Grimmway farms
03/01/2023	Organics and Pop Culture	*Valeria Carrasco* Cal Poly Graduate Food/Fitness Influencer

03/03/2023	Organic News	NA
03/08/2023	Comparing and Contrasting Organic and Conventional Production Systems	*Eric Morgan* VP Environmental Science and Resources Braga Fresh *Gina Bella-Colfer* Key Account Manager-Organics Wilbur Ellis

We have also released two "Organic Chat" podcasts, each featuring a short interview of a Cal Poly organic staff or student affiliates.

Outreach Presentations

To date, center personnel have presented 21 talks/posters including 14 invited talks and 3 student talks/posters. ** *indicates invited talk* ‡ *indicates student talk*

1. **"A Conversation with Matthew Grieshop - Director for the Grimm Family Center for Organic Production Research and Education" Casa Dumetz Winery Friday Event. September 30, 2022. Los Alamos CA. (Grieshop).
2. "Improving soil health in dryland forage production with composting and reduced tillage" Healthy Soils Project Field day at Cal Poly's Chorro Creek Ranch. October 22, 2022. San Luis Obispo, CA. (Decock)
3. ** "Invite a Colleague –Introduction to the Grimm Family Center for Organic Production and Research" 2022 Agricultural Research Institute Annual PI Meeting. October 22, 2022. Sacramento CA. (Grieshop).
4. ‡ "The effect of irrigation management on N budgeting in Broccoli Production" Poster presentation at the 2022 FREP/WPHA Nutrient Management Conference. October 26-27, 2022. Visalia, CA. (Bella, Decock).
5. "Effects of Cover Crops on Soil Health and Greenhouse Gas Emissions in a Californian Lemon Orchard" Poster presentation at the 2022 ASA-CSSA-SSSA annual joint meeting. November 6-9, 2022. Baltimore, MD. (Feldtkeller, Rodriguez-Paiatsyka, McCool, M., Stubler, Decock)
6. ** "Can Farmers Grow Organic Leafy Greens Regeneratively?" Panel Discussion. 2023 Ecofarm Conference. January 19, 2023. Asilomar California. (Grieshop).
7. "Improving Soil Health with Compost & Vermiculture" Presentation at Vineyard Team Tailgate Event. January 20, 2023. Paso Robles, CA. (Decock)
8. ** "Reevaluating Organic Agriculture Through a Regenerative Lens" 2023 California Plant and Soil Conference. February 8, 2023. Fresno California. (Grieshop).
9. ‡ "The effect of temperature and fertilizer source on organic fertilizer mineralization" Poster presentation at the 2023 California Plant and Soil Conference. February 7-8, 2023. Fresno, CA. (Egerstrom, Elola, Grieshop, Decock)
10. ** "Let's chat about organic management of Diamondback moth" 2023 Central Coast CAPCA Conference. March 16, 2023. Santa Maria California. (Grieshop).

11. ** “Introducing the Grimm Family Center for Organic Production and Research” CCOF San Luis Obispo Chapter Meeting. June 1, 2023. San Luis Obispo California. (Grieshop).
12. ** “Organic Certification Basics” 2023 Cal Poly Avocado Field Day. August 02, 2023. San Luis Obispo California (Grieshop).
13. **“Promoting soil health in avocado orchards” Presentation at 2023 Avocado field day at Cal Poly. August 2, 2023. San Luis Obispo, CA (Decock).
14. **”Climate mitigation in agroecosystems across California's Central Coast Region” Invited talk at the 2023 Ecological Society of America Meeting, August 7-10, 2023. Portland, OR. (Decock, Lazcano, Wong, Falcone, Gonzalez-Maldonado, Yao, Malama, Wilson, Lee, Barnes, Widle, Johnson, Best, Gordon, McCool, Feldtkeller, Rodriguez-Paiatsyka, Pressler, Balint, Stubler, Babin)
15. “Managing nitrogen to meet changing regulations: considerations for organic inputs and irrigation management” Presentation at the 2023 Reiter Ranch Manager Workshop at Cal Poly. September 22, 2023. San Luis Obispo, CA (Decock)
16. ** “Development and Delivery of Organic Pest Management Outreach Materials for California Specialty Crop growers” 2023 Agricultural Research Institute Annual PI Meeting. October 18, 2023. Sacramento CA. (Grieshop).
17. ** “As below so above? The role of plant and soil health and nutrition on vegetable pest and disease management” 2023 Agricultural Research Institute Annual PI Meeting. October 18, 2023. Sacramento CA. (Grieshop).
18. ** “Viewing the California Sustainable Pest Management Roadmap from an Agroecological and Applied Toxicological Perspective” Keynote address for the 2023 Applied IPM Ecologist Association Meeting. November 6, 2023. Visalia California. (Grieshop).
19. ‡ “Temperature impacts nitrogen mineralization of organic fertilizers” Poster presentation at the 2023 FREP/WPHA Nutrient Management Conference. November 8-9, 2023. Modesto, CA. (Egerstrom, Elola, Grieshop, Decock)
20. ** “Climate change mitigation and adaptation through soil conservation in Central Coast Vineyards – Lessons learned from controlled field trials” 2023 Sustainable Ag Expo, November 14-15, 2023. San Luis Obispo, CA. (Decock)
21. ** “Roadmap to a Sustainable Pest Management Future for Organics” Panel at 2023 Organic Grower Summit. November 30, 2023. Monterey California. (Grieshop).

Organic Center Field Days and Tours

Beginning in Spring 2023 we began providing field tours and held our first field day. The purpose of these tours is to highlight center activities to potential collaborators and donors.

1. USA/Erickson LCC tour. May 15, 2023. Tour provided as part of a larger campus tour organized by Russ Kabaker. 10 attendees.
2. Cliff Family Foundation tour and meeting. May 16, 2023. Tour of farm and discussion with members of the Cliff Family Foundation board. Five attendees.

3. J. Lohr Vineyards & Wine tour and meeting. June 5, 2023. Met with J. Lohr senior leadership as part of a CAFES program to discuss CAFES agricultural sustainability activities. (Grieshop, Decock, Ding)
4. Cuesta College Environmental Biology Class Field Trip. July 03, 2023. Tour of farm with Cuesta College students. 7 attendees. (Grieshop)
5. Griffiths Foods Board Visit. July 24-25, 2023. Helped organize tour of Salinas and campus, including faculty discussions. (Grieshop, Decock, Ding, Mike).
6. Grimm Family Center for Organic Production and Research Field Day. August 3, 2023. Our first field day was held in conjunction with the Strawberry center field day. Drs Decock, Ding and Grieshop, center graduate students and Kelly O'Neil gave presentations on ongoing center projects. 75 attendees.
7. California Leafy Greens Research Board. August 17, 2023. Field tour and faculty visit organized by the center. Drs. Decock, Ding, Grieshop, Mike as well as Ashraf Tubelieh (PLSC) and Sara Kuwahara (BRAE) gave presentations to board members on ongoing projects. 12 attendees.
8. California Agriculture Leadership Foundation DC Exchange group. September 16, 2023. Short tour and talk provided as a larger tour organized by CAFES for EPA and USDA officials. 17 attendees. (Grieshop).

INDUSTRY PARTNERSHIPS

1. February 2022-present: two to three field visits per year to Braga Fresh production fields to gather grower needs and observe farming practices (Grieshop, O'Neal, Decock)
2. April 2022-present: two to three field visits per year to Betteravia Farms production fields to gather grower needs and observe farming practices (Grieshop, O'Neal, Decock)
3. September 2022-present: Grieshop serves as the Technical Representative for the California Organic Program Advisory Council (CDFA advisory board).
4. February 2023: assisted CCOF foundation with the development of a Request for Proposals for their portion of USDA NOP Transition to Organic Partnership Programs. (Grieshop)
5. April 2023-present: Ongoing collaborations with Pacific Biocontrol on the development of mating disruption for diamondback moth (Grieshop, Fernandez)
6. July 2023-present: working with the Western CCA council to develop an add-on certification focusing on Western specialty crop organic agriculture. Funded by USDA TOPP. (Grieshop, Decock, Mike).
7. August 2023-present: Organized monthly grant planning meeting for national team on field equipment sanitation including an online questionnaire for growers. (Grieshop)
8. October 2023 Co-organized the 2023 Agricultural Research Institute Industry Panel (Grieshop)
9. October 2023 Provided consultation on the Western Growers' Association Platform 10 Biological Pesticide Request for Proposals (RFP). (Grieshop)
10. October 2023-present: co-organizing a group of organic growers, CCOF, WGA, IFPA representatives to address ongoing conflicts between food safety and organic policy compliance standards. (Grieshop)

11. November 2023 Organized a PCA listening and brainstorming session at the 2023 Association of Applied IPM Ecologists annual meeting in Visalia, CA (11/06/2023) (Grieshop)

PUBLICATIONS

Peer Reviewed

- Decock, C., Hight, C., Kim, S., Tubeileh, A., Grieshop, M. Soil Properties Control Nitrogen Mineralization from An Organic Fertilizer. Submitted. Soil Science Society of America Journal
- Decock, C., Egerstrom, S., Elola, L., Grieshop, M. Temperature Sensitivity of Nitrogen Mineralization Rates Depend on Organic Fertilizer Type – In preparation. Target Journal: Soil Science Society of America Journal.
- Ahumada, A., Fernandez, M., Grieshop, M. Field Evaluation Two Mating Disruption Dispensers for Diamondback Moth in Broccoli and Cauliflower. – In preparation. Target Journal: Arthropod Management Tests.

Trade Articles and Popular Media

1. "What Does Organic Really Mean" Interview in CalPoly Magazine. Spring, 2022. https://magazine.calpoly.edu/spring-2022/what-does-organic-really-mean/
2. "Cal Poly's Grimm Family Center for Organic Production and Research" OPN Connect Newsletter. August 4, 2022. https://www.organicproducenetwork.com/article/1725/cal-polys-grimm-family-center-for-organic-production-and-research
3. "Research center aims to grow and create awareness for organic production" Fresh Plaza. April 6, 2023. https://www.freshplaza.com/north-america/article/9518715/research-center-aims-to-grow-and-create-awareness-for-organic-production/
4. "'Good Bugs' Educating the public on what it means to be organic" Cultivate, April 6, 2023. https://issuu.com/cafes.calpoly.edu/docs/cultivate_spring_2023_final_
5. "Cal Poly's Grimm Family Center for Organic Production and Research Forges Industry Partnerships" OPN Connect Newsletter. August 31, 2023 https://www.organicproducenetwork.com/article/2058/cal-polys-grimm-family-center-for-organic-production-and-research-forges-industry-partnerships
6. October 6: Entomologist Matthew Grieshop, Director of Grimm Family Center for Organic Production and Research at Cal Poly. Down on the Farm with Tom Willey (Podcast). October 6, 2023. https://podcastaddict.com/episode/http%3A%2F%2Ftdwilleyfarms.com%2Fwp-content%2Fuploads%2Fpowerpress%2F10-06-23_episode.mp3&podcastId=4114231

HONORS & AWARDS

1. 2023 Cal Poly Cafes 2023 New Scholar Award. Cal Poly CAFES Faculty and Staff Award Ceremony. June 18, 2023. San Luis Obispo California (Ding).
2. 2023 Cal Poly Cafes 2023 Diversity, Equity, and Inclusion Award. Cal Poly CAFES Faculty and Staff Award Ceremony. June 18, 2023. San Luis Obispo California (Mike).
3. 2023 WRCAA Allan Romander Esteemed Mentor Award. Western Region Certified Crop Advisers annual meeting. September 28, 2023. Visalia California. (Grieshop).

UNIVERSITY SERVICE

The center has become an important part of the Cal Poly CAFES community. A primary function of centers is to integrate activities across departments. The types of services provided by center personnel include serving on hiring committees and participation in college level committees and boards.

Hiring Committees

Grieshop has served on multiple hiring committees for CAFES in support of both center and CAFES operations.

1. Organic Farm Supervisor. May 2022-August 2022. Grieshop chaired this search committee.
2. Dairy Products Technology Director. September 2022-March 2023. Grieshop chaired this committee.
3. Organic Plant Protection Technician. December 2022-March 2023. Grieshop served as a committee member.
4. Plant Sciences Manager. August 2023-November 2023. Grieshop chaired this search committee.
5. Strawberry Center Entomologist. June 2023-November 2023. Grieshop served as a committee member.

Cal Poly Committees, Meetings, Service

1. Ongoing: Attend weekly CAFES Management meetings (Grieshop)
2. Ongoing: Attend weekly department meetings (Plant Sciences, Natural Resource Management and Environmental Sciences, Agriculture Education and Communications, Biological Resource and Agricultural Engineering, Food Safety and Human Nutrition) (Grieshop, Decock, Ding, Mike)
3. Ongoing: Attend biannual Dean's Advisory Council meetings
4. 10/2022-6/2023: organize and sponsor monthly "3rd Thursday" organic chat for allied and interested faculty, staff, and students (Grieshop)
5. 04/2023: Developed and ran a "good bug, bad bug" booth at the Cal Poly Open House in collaboration with Plant Sciences (Grieshop)
6. 06/2023: organize a unified recruitment process for undergraduate opportunities on the organic farm or in center projects (Grieshop, Decock, Ding, O'Neil) *additional support provided by Jill Caggiano from the crops unit.*
7. 06/2023-09/2023: organize and sponsor a biweekly "Lunch and Lean" program for full time undergraduate employees of the crops unit and organic center research projects (Grieshop, Decock, Ding, O'Neil) *additional support provided by Jill Caggiano from the crops unit*
8. 11/2023-Present: organize and sponsor monthly "3rd Thursday" Organic Cetner meeting for affiliated faculty, staff, and students (Grieshop, Decock)

GOALS FOR 2022-2023 AND STATUS (~~strikethrough~~ indicates accomplished)

Fundraising:

- ~~Develop USDA SCRI planning grant on field equipment sanitation (if pre-proposal is accepted)~~
    - Submitted an additional ARI IPM grant that was funded ($525K)
    - Submitted a pending NCSARE grant.
- Resubmit USDA equipment grant.
    - *Put on hold until completion of lab 103*.
- Continue networking with potential donors including drafting of a "Center Ongoing Supporter" category.
    - *Seeking Advisory Committee insight into fund raising.*
- ~~Continue soliciting product evaluation agreements from organic fertilizer and plant protectant companies.~~

Governance:

- ~~Recruit two to three additional EOC members~~
- Prepare Cal Poly Center proposal for submission to the academic senate.
    - *Put on hold at suggestion of dean's office.*

Staffing:

- ~~Recruit two to four additional students for center activities~~
- Develop lab manager position for Grimm Family Sustainable Soil Lab
    - *In Process*

Facilities:

- ~~Initiate Lab 103 remodel - estimated groundbreaking by June 1, 2023~~
- ~~Plan and layout vegetable plant protectant efficacy management plots~~

Projects:

- ~~Develop outreach materials from nutrient management projects.~~
- ~~Continue summarizing plant protectant literature.~~
- ~~Finalize initial organic outreach videos and podcasts and begin dissemination.~~
- ~~Initiate minimum tillage cover crop organic Vegetable trials.~~
- ~~Complete Diamondback moth mating disruption trial in Santa Maria area~~
- ~~Establish arugula downy mildew resistance field trial.~~

Talent Development:

- ~~Teach special topics course and collect student feedback.~~
- Draft Organic Scholars document and develop short list of potential funders.
    - *Put on hold, focused on development of events for both organic production and research undergraduate employees.*
- ~~Hold four social events targeting organically inclined faculty, staff, and students.~~

Outreach:

- ~~Add collaborating faculty to center webpage.~~
- ~~Develop center Instagram and LinkedIn accounts.~~
- ~~Roll out organic videos and podcasts.~~
- ~~Organize and hold first center field day (August 3, 2023)~~

GOALS FOR 2023-2024

Fundraising:

- Continue networking with potential donors.
- Develop strategy for development of a standing endowment or other mechanism to provide stable operating funds.
- Continue soliciting product evaluation agreements from organic fertilizer and plant protectant companies.

Governance:

- Recruit two to three additional EOC members
- Prepare Cal Poly Center proposal for submission to the provost.
    - *This is 90% complete.*

Staffing:

- Recruit two-four additional students for center activities
- Recruit lab manager position for Grimm Family Sustainable Soil Lab
- Recruit third graduate student for reduced tillage, integrated cover crops trial
- Identify replacement student or staff member for managing social media projects (current student graduates in Spring)

Facilities:

- Grimm Family Soil Health and Sustainability Laboratory opening event (January/February 2024?)
- Open lab to faculty
- Establish sustainable pest management vineyard in sandbox.

Projects:

- Continue communications with WCCA and CCOF on organic CCA add on certificate project.
    - *Timing and activities will depend on the outcome of WSARE grant.*
- Develop additional outreach materials from nutrient management projects.
- Continue summarizing plant protectant literature.
- Develop plant protection tables and handouts.
- Record and disseminate additional outreach videos and podcasts.
- Establish minimum tillage cover crop Organic Vegetable trials.
    - Four replicates
    - Begin horticultural, irrigation/nitrogen, and sap analysis measurements.
- Complete survey and schedule grant planning meeting for SCRI sanitation grant
- Develop additional organic fungicide trials (evaluate eight or more products)
- Develop additional organic insecticide efficacy trials (evaluate three or more products)

Publications:

- Have three or more peer reviewed publications accepted or published.
- Have center outcomes or efforts in three or more trade or industry print or online publications.

Talent Development:

- Teach second round of special topics course (Spring 2024)
- Draft Organic Scholars document and develop short list of potential funders.
- Hold 10 or more social events targeting organically inclined faculty, staff, and students.

Outreach:

- Further develop center webpage
- Develop five or more organic handouts/bulletins from ongoing research projects.

- Present center outputs and efforts at five or more conferences or grower meetings
- Develop at least eight long form podcasts and 12 short form podcasts.
- Identify additional marketing partners for organic videos and partners.
- Organize and hold second center field day (August 2023)