Grimm Family Center for

2026 FIELD DAY

Organic Production and Research

INDEX

WELCOME

Thank you for attending the 2026 Grimm Family Center for Organic Production and Research Field Day in our new “Organic Sandbox.”

The Sandbox proivides support to Cal Poly researchers evaluating organic inputs and practices and “living laboratories” for students.

Our first plantings are evaluating biological fungicides for fusarium in lettuce and tomato, providing a space to explore the use of furrow planted trap crops, and providing insect, disease, and weed pest populations for research and teaching.

We’d like to give a special thanks to this year’s sponsors. You can check them out on page 26 of the program.

Thank you for joining us!

Director: Dr. Matthew Grieshop

FIELD DAY SCHEDULE

TIME	DESCRIPTION
12:30 PM	Registration
1:00 PM	Opening Remarks
1:15 PM	Student and Researcher Presentations
2:00 PM	Station 1 Visit
3:00 PM	Station 2 Visit

SOIL HEALTH AND FERTILITY SESSION OVERVIEW

This session explores how management influences soil processes, from short-term fertilizer mineralization to the long-term relationships between soil health and agronomic and environmental performance.

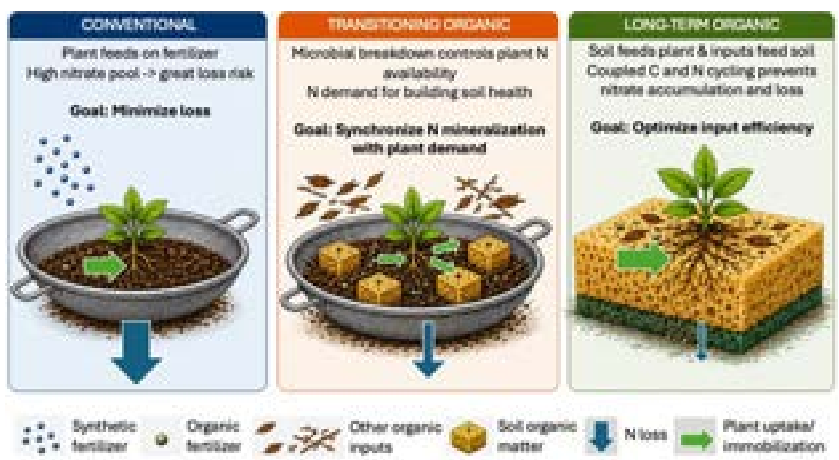
BALANCING SHORT- AND LONG-TERM FERTILITY GOALS

- In conventional systems, N is supplied primarily through plant-available fertilizers, with management focused on maximizing crop uptake while minimizing environmental losses.
- In organic systems, crops rely on microbial mineralization of organic inputs and soil organic matter, making the timing and amount of N availability less predictable.
- Over time, building soil health strengthens carbon and nitrogen cycling, increasing the soil's capacity to supply crops with N while reducing nitrate accumulation and loss.
- **Our research examines how to build soil health efficiently and how to adjust nutrient management as soils transition from fertilizer-driven to increasingly soil-supported crop nutrition.**

FRAMEWORK FOR SOIL HEALTH–BASED ORGANIC FERTILITY MANAGEMENT

From fertilizer-driven toward soil-supported crop nutrition

The 4R Nutrient Stewardship framework emphasizes the right source, rate, timing, and placement of nutrients. In organic systems, these decisions depend on the biological processes that regulate nutrient availability.



SESSION OVERVIEW

This session examines different components of the Framework for Soil Health-Based Organic Fertility Management

Why do timing and placement matter? Understanding how fertilizer placement influences N mineralization and synchronizing N release with crop demand.

Fine-tuning N availability with liquid fertilizers. Exploring whether small additions of liquid fertilizer influence N mineralization from pelleted organic fertilizers.

Does soil health matter? A case study linking measured soil health indicators with grower ratings of vineyard performance in commercial vineyards.

NOTES

GETTING MORE NITROGEN FROM ORGANIC FERTILIZERS: WHY TIMING AND PLACEMENT MATTER

Sustained availability of mineralized nitrogen has important implications for soil fertility management and vegetable production in the California Central Coast region. Here, we investigate how fertilizer placement and application timing influence nitrogen availability from organic fertilizer in a laboratory simulation.

BACKGROUND

- **4R nutrient stewardship** (right rate, time, source, and placement) is central to nitrogen (N) management, but remains challenging in organic systems as organic N must be mineralized by soil microorganisms before crops can utilize it
- **Fertilizer placement** (broadcast vs. banded) and **timing** (single vs. split applications) alter substrate availability and microbial access, influencing N mineralization
- These tradeoffs suggest that 4R practices in organic systems may function differently than in conventional production

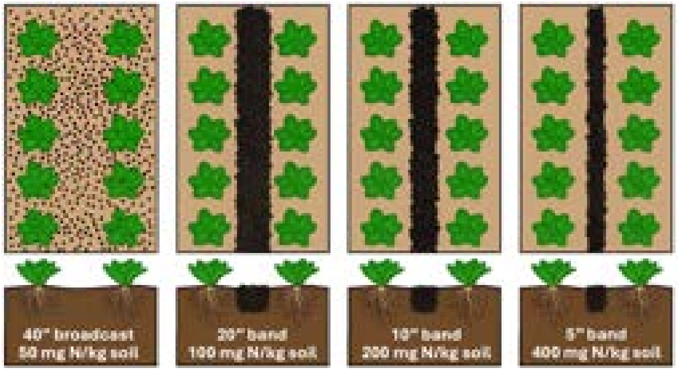


Figure 1. Realized FN concentrations with varying fertilizer band widths and fertilizer placement, assuming 100 lbs N/acre applied on 40" raised beds, incorporated to 6" depth.

EXPERIMENTAL SETUP

- 12-week laboratory incubation experiments using soils from organically managed vegetable fields on California's Central Coast (Table 1).
- A pelleted 8-5-1 organic fertilizer was applied in a single or two split applications at concentrations ranging 50-400 mg N/kg soil.
- The lower rate represented broadcast applications, while higher rates simulated banded applications ranging 5-20 inches (Fig. 1).
- Split application treatments received 50% of the total fertilizer N at the start of the incubation and 50% at the midpoint.
- Soil samples were collected periodically over 84 days and analyzed for ammonium and nitrate.

Soil ID	Location	Soil Texture	$NO_3^- + NH_4^+$ (mg N/kg soil)	% C
Soil A	Santa Maria	Fine sandy loam	47.98	0.59
Soil B	San Luis Obispo	Silty clay loam	17.03	1.98
Soil C	Soledad	Gravelly sandy loam	95.37	0.68

Table 1. Site Soil Traits

Image 1. Incubation vessels during laboratory simulation

Organic fertilizer nitrogen availability depends on microbial mineralization, making timing and placement critical management decisions. Organic nitrogen management strategies may need to differ from conventional 4R approaches to improve efficiency and crop uptake.

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Ria Chhabra, Dr. Matthew Grieshop, Anna Rodriguez-Paiatsyka, Allison McLoughlin, & Dr. Charlotte Decock

KEY FINDINGS

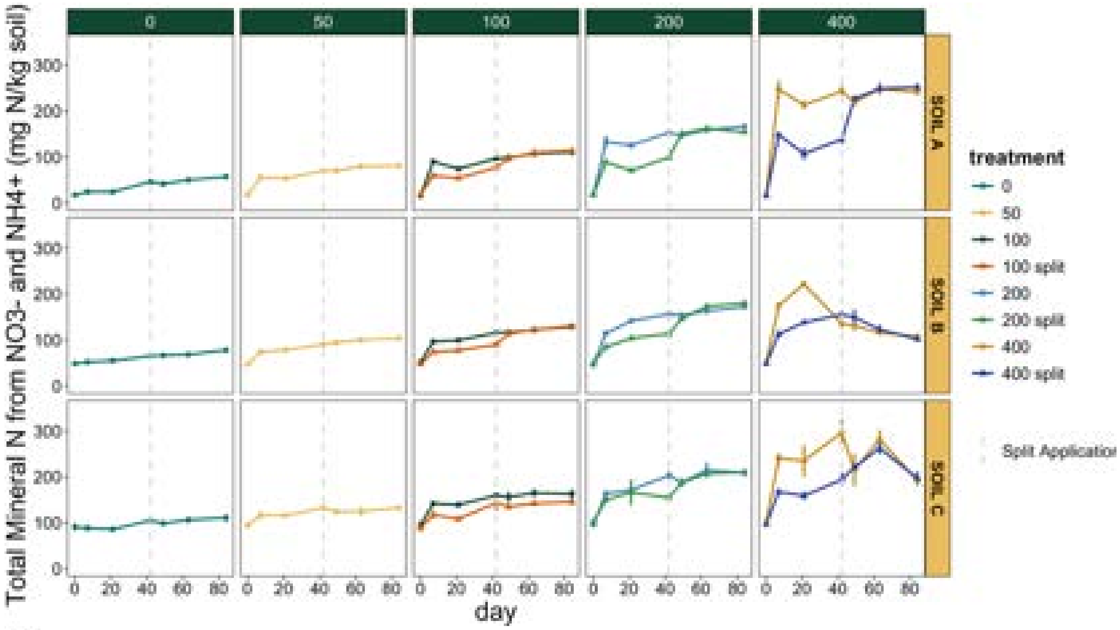

Figure 2. Mineralized fertilizer N concentrations (mg N/kg soil) over the 12-week incubation period by soil type and fertilizer treatment

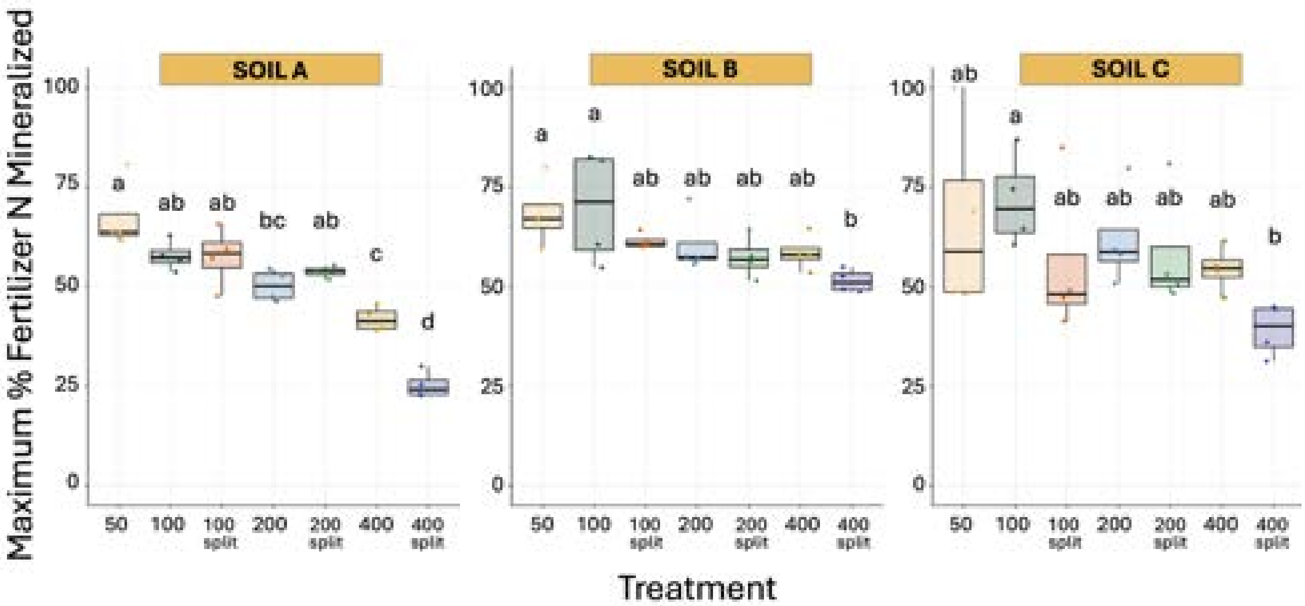

Figure 3. Maximum percent of fertilizer nitrogen (NO3- and NH4+) mineralized over the 12-week incubation period, by soil type.

WHAT WE LEARNED

Banding increases Nitrogen concentration but reduces efficiency

Higher fertilizer concentrations and simulated banded applications increased soil mineral N but reduced fertilizer efficiency. When soil N is sufficient, banding may not improve N efficiency over broadcasting.

Split application strategies influence timing of available N, not total N supply

Split applications released N more gradually but did not increase final mineral N. Split applications should be used to better match crop demand, not increase N availability.

Sustained N availability from fertilizer is soil-specific

Soil properties strongly influence organic fertilizer N availability. Higher soil organic matter can improve N availability and fertilizer efficiency over time.

Ria Chhabra, Dr. Matthew Grieshop, Anna Rodriguez-Paiatsyka, Allison McLoughlin, & Dr. Charlotte Decock

IMPACTS OF SIDEDRESS LIQUID AMMONIUM FERTILIZERS ON PREPLANT PELLET MINERALIZATION IN ORGANIC SYSTEMS

In organic systems, nutrients in fertilizers become plant-available only after microbial mineralization, which varies with fertilizer type and soil properties, including soil organic carbon (SOC) content. This study evaluated how liquid organic fertilizers influence nitrogen (N) mineralization from organic fertilizer pellets to improve nutrient management decisions.

OBJECTIVES

1. Understand the impact of liquid fertilizers on pellet mineralization.
2. Determine the role soil organic matter (SOM) content plays in fertilizer mineralization.

EXPERIMENTAL DESIGN

- 12 treatments replicated four times and on loam soil with high vs. low SOM
- 8-week laboratory incubation with 2 types of solid fertilizers added on the first day and 3 types of liquid fertilizers added weekly over the last half of the experiment
- Fertilizers applied at 100 ppm (mg total N/kg soil), with liquids accounting for 20% of total N
- Weekly soil subsampling to extract and quantify nitrate and ammonium concentrations

Image 1. Low and high SOM soils

Solid Fertilizer				
4-4-2	**8-5-1**	**No Solid**		**Liquid Fertilizer**
4-4-2 (100ppm)	8-5-1 (100ppm)	No Solid	**No Liquid**	
4-4-2 + LOCA (80+20ppm)	8-5-1 + LOCA (80+20ppm)	No Solid + LOCA (20ppm)	**LOCA**	
4-4-2 + SPH (80+20ppm)	8-5-1 + SPH (80+20ppm)	No Solid + SPH (20ppm)	**SPH**	
4-4-2 + Mix (80+20ppm)	8-5-1 + Mix (80+20ppm)	No Solid + Mix (20ppm)	**LOCA + SPH mix**	

Table 1. Fertilizer treatments, replicated four times across low and high SOM soils

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KEY FINDINGS

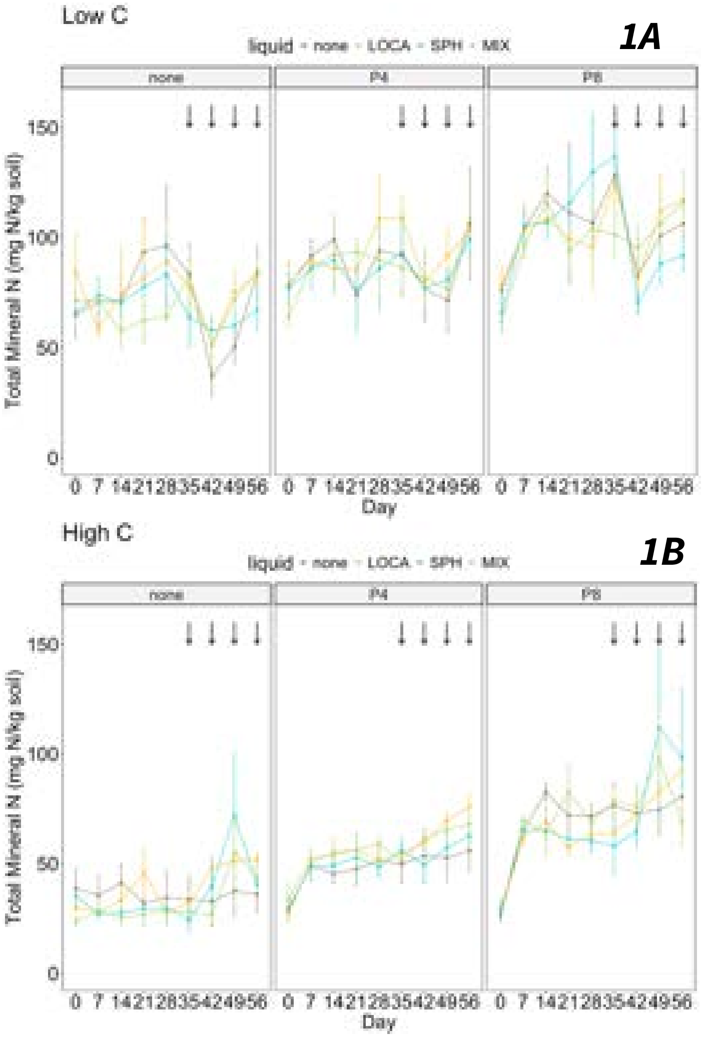


Figure 1. Total Mineralized Nitrogen in Low Carbon (1A) and High Carbon (1B) Soils over eight weeks

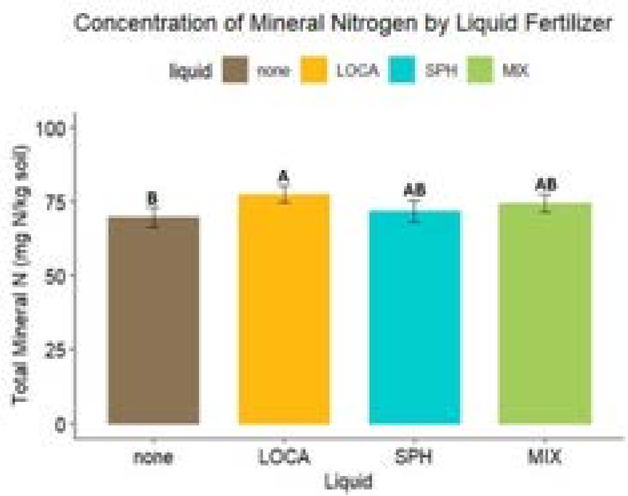


Figure 3.

Liquid organic certified ammonium increased the concentration of mineral N relative to control treatments receiving the same amount of total N, but no liquid fertilizer. Fig. 3 Mineral N increased throughout the incubation in high SOC soils (Fig. 2), while in the low SOC soils, the concentration rose initially and declined in the second half of the incubation (Fig.1).

WHAT DOES THIS MEAN FOR GROWERS?

- *Liquid fertilizers (especially organic certified ammonium) can be an important tool for in-season adjustments of N availability.*
- *Nitrogen dynamics are variable across SOM content, making SOM an important management consideration*

NEXT STEPS

- Analyze microbial respiration data
- Understand the monetary cost of the treatments

Ava Curtis, Caroline Thomsen, Anna Rodriguez-Paiatsyka, Dr. Matt Grieshop, & Dr. Charlotte Decock

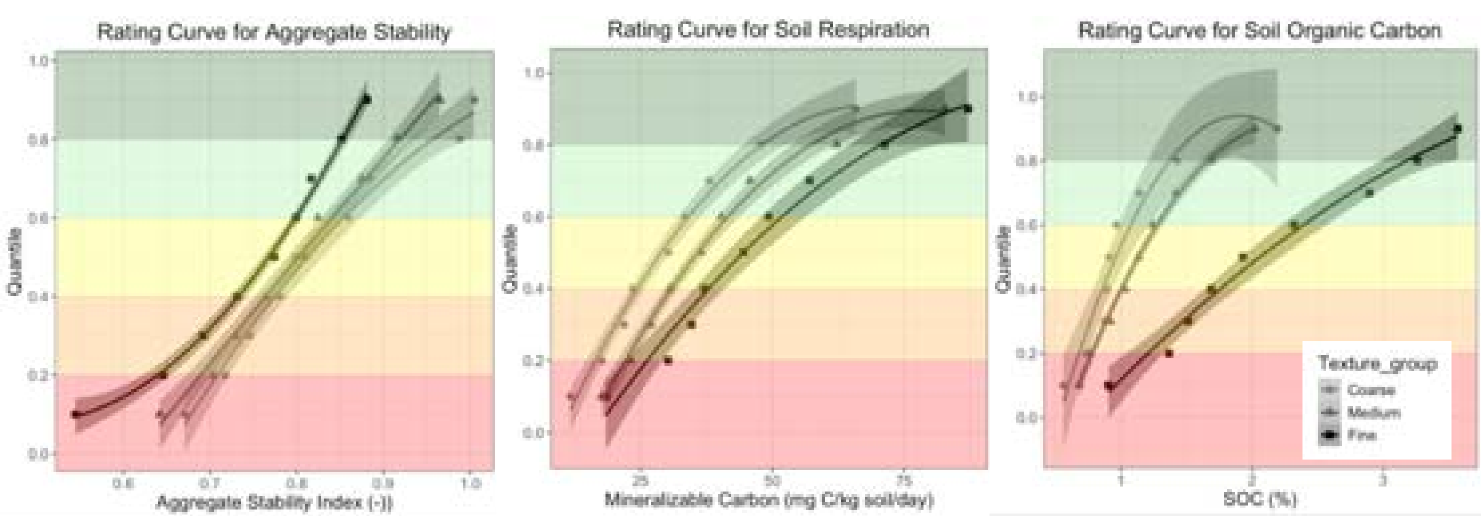
EXPLORING THE CONNECTION BETWEEN REGENERATIVE PRACTICES, SOIL SCORING FUNCTIONS, AND GROWER PERCEPTIONS

This study explores how soil health improvements are associated with environmental and agricultural outcomes related to productivity, water regulation, nutrient cycling, and pest and disease pressure based on grower perceptions in California vineyard systems.

SOIL HEALTH IMPROVEMENTS FROM REGENERATIVE MANAGEMENT

- Healthy soils are the foundation of productive, resilient agricultural systems.
- Regenerative practices are promoted to improve soil health and farm performance, but demonstrating their benefits under real farming conditions is essential.
- Using California vineyards as a case study, we examined whether healthier soils were associated with better grower-rated production outcomes.

SOIL SCORING FUNCTIONS



- Soil health tests were conducted to produce rating curves, providing growers with knowledge of how their systems are fairing in comparison to others in the region.
- Three soil health indicators were used, plus an overall soil health score averaged across all indicators:
  - Aggregate Stability Index (ASI) – soil structure stability
  - Mineralizable Carbon (MinC) – microbial activity and available organic matter
  - Soil Organic Carbon (SOC) – total organic matter and carbon storage

Sonia LeMonier &
Dr. Charlotte Decock

ASSOCIATIONS BETWEEN SOIL HEALTH INDICATORS AND GROWER PERCEIVED VINEYARD OUTCOMES

Significant correlations between soil health indicators (top) and outcomes (left).

		ASI Vine	ASI Alley	MinC Vine	MinC Alley	SOC Vine	SOC Alley	Overall Score
Productivity	Grape Quality			*				**
	Quality Change			**		***		
	Qual Variability			**	*			*
	Field Homogeniety	**		*	**		**	**
	Field Homo Change				**	**	***	**
	Vine Balance			*			*	
	Vine Balance Change		*				*	
Pest & Disease	Suckering Change				**		**	
	Weed Pressure				**		**	
	Disease Pressure				**			
	Disease Change	*		*				*
	Insect Pressure	*						*
	Beneficial Insects			***	***	***	***	***
	Insects Change			***	***	***	***	***
Water	Irrigation			*				
	Erosion			*	**	*	**	*
	Erosion Change			*		**	**	**
	Puddles							**
Nutrients	Nutrient Deficiency				*			
	Nutrient Change					*		**
	Micronutrients	**		***	***	***	***	***
	Total N			***	**	***	***	***
	Total P			***	***	***	**	***
	Total K			***	***	***	*	**
	Gypsum				*		**	*

Legend

=<0.05* No significance
=<0.01** Desirable Outcome
=<0.001*** Variable Outcome
Undesirable Outcome

Productivity: Grape quality and field homogeneity improve, while vine balance, suckering, and homogeneity change were variable or negative.

- **Weed & Disease Pressure:** Both declined; insect pressure sometimes rose, but beneficial insects increased.
- **Water Regulation:** Irrigation needs, erosion, and puddling all decreased.
- **Nutrients:** Fewer nutrient deficiencies and reduced NPK, micronutrient, and gypsum applications.

KEY FINDINGS

- Higher MinC and SOC were consistently linked to more positive agronomic outcomes.
- Soil health was a stronger predictor of positive outcomes than adoption of individual management practices.
- Because there are many pathways to improving soil health, management should be tailored to local conditions.
- Regular monitoring can help track progress and guide adaptive management, especially when crop- and region-specific interpretation tools are available.

EVALUATION OF FUNGICIDES FOR CONTROL OF DOWNY MILDEW

Downy mildew of lettuce is caused by the oomycete pathogen *Bremia lactucae*. After infection, plant leaves will show chlorotic patches and then progress to angular lesions. White sporulation can be observed on the underside of the leaves where the infection occurs. Growing resistant cultivars is the most effective way of managing downy mildew. Fungicide application is another option when resistant cultivars are not available. The trial was conducted to test the efficacy of an organically approved product in controlling lettuce downy mildew

EXPERIMENTAL DESIGN

The trial was conducted in Field 25 on the Cal Poly campus. Lettuce, *Lactuca sativa*, Romaine, cv. Coastal Star was transplanted on 10/21/2025 in double rows with 11 inches between plants. A randomized complete block design consisting of ten treatments was used in this trial; each treatment was replicated four times using 20-foot plots. Experimental applications were made on A = 11/25/2025; B = 12/2/2025; C = 12/9/2025; D = 12/16/2025; E = 12/23/2025. All treatments were applied at 60 psi and 50 gal/A using a Maruyama MS40Li battery-powered sprayer.

ASSESSMENT

Downy mildew severity

- Assessed on 12/19/2025 by rating 10 plants within each plot.
- Severity rating scale: 0 = no downy mildew; 1 = downy mildew on the bottom and lower wrapper leaves of the plant; 2 = downy mildew present on wrapper leaves; 3 = downy mildew on cap leaves.

Downy mildew incidence

- Measured as the percent of the total number of plants in each plot showing any downy infection.

Marketable yield

- From each plot, 10 plants were harvested and weighted.

Figure 1. Photos of the experimental plot and downy mildew-infected plants. A. Experimental plot. B. Leaf showing chlorotic patches caused by downy mildew. C-E. Downy mildew sporulating on the underside of the leaves.

Kallol Das, Jim Green, & Dr. Shunping Ding

Table 1. Treatment information, disease rating results for 12/29/2025, and yield results on 1/9/2026.

Trt. No.	Materials	Adjuvants	Rate	Unit	Applications	Downy Mildew		Yield (lb)	SE
						Severity	SE		
1 (GS)	Previcular Flex	DYNE-AMIC	32	fl oz/A	AC	0	0 C	9.7	1 A
	REVUS 250 SC	DYNE-AMIC	8	fl oz/A	BD				
2	Eject	Silwet (3 oz/100 gal)	32	fl oz/A	ABCDE	0	0 C	8.6	0.8 A
3	Amara ★	Silwet (3 oz/100 gal)	96	fl oz/A	ABCDE	0.3	0.1 BC	11.7	0.9 A
4	NAI-8379	Silwet (3 oz/100 gal)	8.2	fl oz/A	ABCDE	0.4	0.1 BC	12.6	1.1 A
5	NAI-9074	Silwet (3 oz/100 gal)	2.7	fl oz/A	ABCDE	0.5	0.1 B	9.7	0.8 A
6	Untreated Control					1.3	0.2 A	9.4	1.8 A
7	Cevya	DYNE-AMIC	5	fl oz/A	ABCD	0.6	0.1 B	12.5	0.4 A
8	Zampro	DYNE-AMIC	14	fl oz/A	ABCD	0	0 C	12.6	1.3 A
9	LifeGard WG ★	DYNE-AMIC	4.5	oz/A	AC	0	0 C	11.9	0.9 A
	REVUS 250 SC	DYNE-AMIC	8	oz/A	BD				
10	Howler EVO ★	DYNE-AMIC	24	fl oz/A	AC	0	0 C	11.2	0.8 A
	REVUS 250 SC	DYNE-AMIC	8	fl oz/A	BD				
11	Zayin ★		32	fl oz/A	ABCDE	0	0 C	8	0.9 A
12	Zayin ★	Syl-Coat (4 fl oz/100 gal)	32	fl oz/A	ABCDE	0	0 C	8.5	1 A
13	GPZM1		20	fl oz/A	ABCDE	0.5	0.1 B	8.5	1.3 A

★ = *National Organic Program Compliant Product*

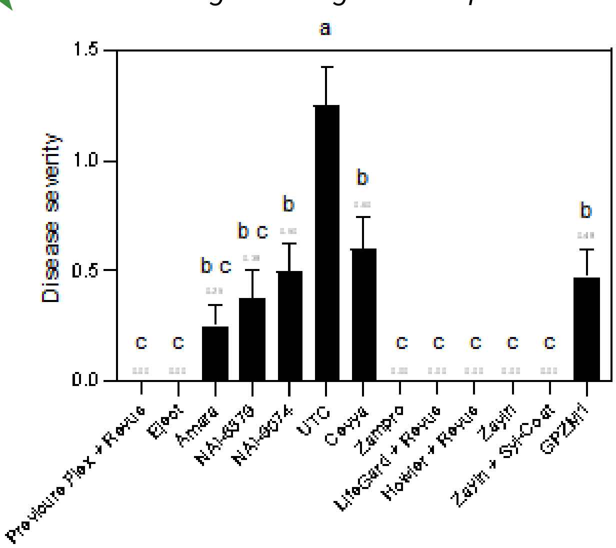


Figure 2. Lettuce downy mildew severity from treatment groups and non-treated control group.

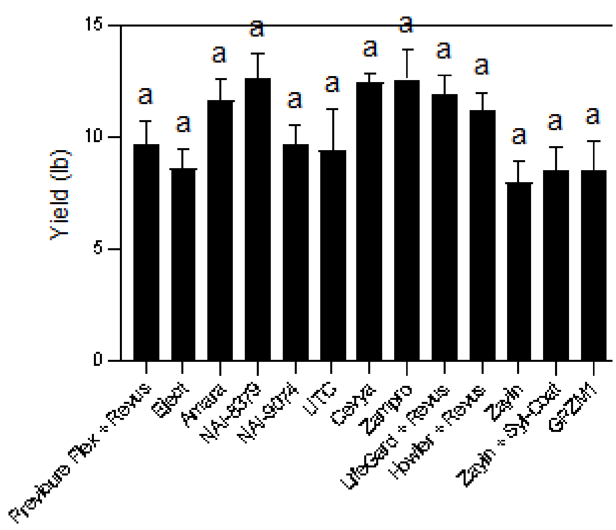


Figure 3. Lettuce marketable yield from different treatment groups.

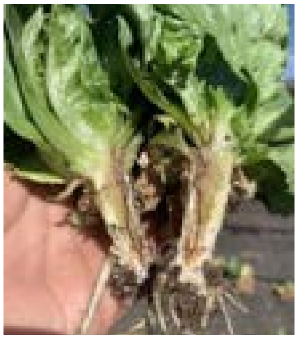
- The climate of California's central coast is conducive to downy mildew of lettuce.
- Fungicide application significantly reduced downy mildew severity compared to the non-treated control.
- The application of organic fungicides can achieve downy mildew control comparable to synthetic fungicides, but more applications may be needed.

ESTABLISHING A FUSARIUM WILT INFESTED PLOT FOR LONG-TERM STUDY OF FUSARIUM WILT DISEASES

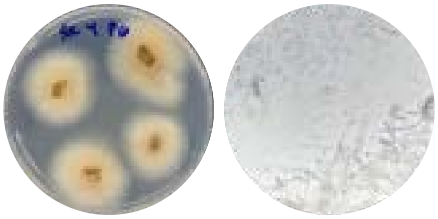
Fusarium wilt of lettuce is a destructive soil-borne disease caused by *Fusarium oxysporum* f. sp. *lactucae* that disrupts water and nutrient transport, leading to yellowing, stunting, wilting, and plant death. The pathogen can persist in soil for many years, making the disease difficult to manage once a field becomes infested. As Fusarium wilt becomes increasingly common in major lettuce-producing regions, there is a growing need for effective management strategies. To support this effort, we are establishing a uniformly infested field plot to evaluate and compare approaches for reducing the disease's impact on lettuce production.

EXPERIMENTAL DESIGN

Diseased plants collected from commercial production field



Pathogen isolated from symptomatic plants, identified, and subcultured to produce inoculum



Pathogen culture mixed into field soil

Conduct experiments: fungicide trial, varietal trial, etc.

Infected plants will be incorporated into the field upon experimental completion to maintain infestation

Kallol Das, Alisa Novitskaya, & Dr. Shunping Ding

NOTES

FOOD SAFETY AND SUSTAINABILITY: MANAGING SHARED GOALS

Understanding the connections, tradeoffs, and opportunities for co-management.

Why Can These Goals Seem to Conflict?

Food safety expectations come from regulations, audits, and customers. Sustainabiliy expectations come from organic certification, auditors, and customers.

Occasionally, these expectations may conflict.

SUSTAINABILITY GOAL	FOOD SAFETY CONCERN
Increase wildlife habitat	Reduce potential sources of dangerous microbes
Maintain hedgerows and riparian areas	Minimize wildlife intrusion into production fields
Apply compost and other biological soil amendments	Prevent contamination from improperly treated materials
Increase biological diversity	Reduce opportunities for human pathogens to contaminate produce

The goal is NOT to choose one over the other.

Successful growers use co-management practices that support both food safety and environmental stewardship.

Co-Management Builds Resilient Farms

No wildlife exclusion program, sanitation program, or vector management plan is 100% effective.

Healthy, biologically diverse systems provide multiple layers of protection.

- Diverse habitats support natural enemies of pests
- Healthy soils and diverse microbial communities improve soil function and plant health
- Ecosystem diversity increases stability and resilience to disturbances
- Systems with low animal and microbial diversity are easier for unwanted animals and human pathogens to reside and proliferate in

Hazard is Not the Same as Risk

Hazard
A biological, chemical, or physical agent capable of causing harm.

×

Exposure
The opportunity for the hazard to come into contact with produce.

=

Risk
The likelihood that the hazard results in conamination

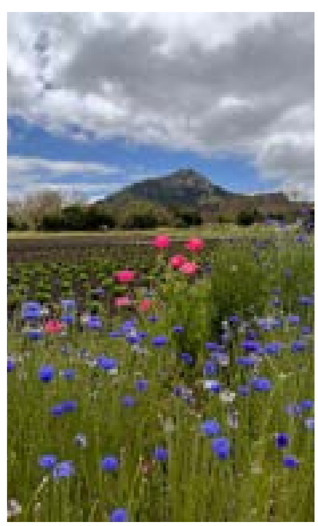
Risk = Hazard × Exposure

A hazard may exist without creating significant food safety risk if exposure to the crop is effectively managed.

Balancing Multiple Goals

Produce Safety | Soil Health | Water Quality | Biodiversity | Regulatory Compliance | Profitability

Good management evaluates the goals, risks and benefits of each practice and implements measures that reduce overall risk while maintaining productive, resilient farming systems.



KEY MESSAGE

Food safety and sustainability are most successful when managed together using science-based risk assessment and continuous improvement.

Effective co-management reduces food safety risk while promoting healthy soils, clean water, and biodiversity for future generations.

Gina Bella-Colfer, John McKeon, Joelle Mosso, Taylor van Rossum & Dr. Matt Grieshop

MANAGING FOOD SAFETY RISKS WHILE SUPPORTING SUSTAINABILITY

Practical tools for biodiversity and soil health practices. The objective is not to eliminate biodiversity or biological soil amendments, but to assess, mitigate, monitor, document, and improve.

BIODIVERSITY PRACTICES

Hedgerows, riparian buffers, insectary plantings, cover crops, habitat restoration

Risk Assessment

- Which wildlife species are present?
- Which species present meaningful food safety risk?
- When are they active?
- Are crops exposed?

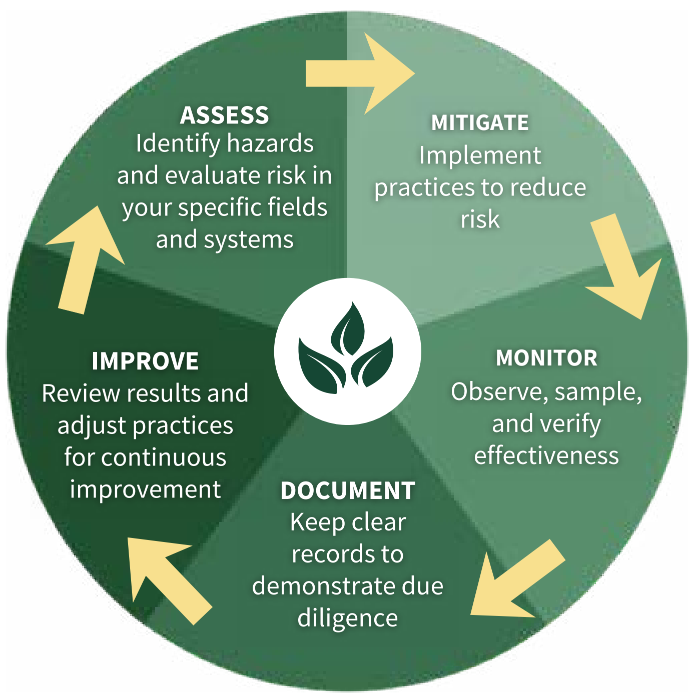
Monitoring Tools

- Camera traps
- Wildlife observations
- Track surveys
- Scat monitoring
- Employee field observations
- Harvest inspections

Risk Mitigation

- Maintain harvest buffers when contamination is observed
- Remove contaminated produce
- Target mitigation toward high-risk species
- Use exclusion practices where appropriate
- Adjust management seasonally as wildlife activity changes

Use this continuous cycle to reduce risk and strengthen both food safety and sustainability.



This cycle demonstrates that risks are being actively managed, not ignored.

BIOLOGICAL SOIL AMENDMENTS

Compost, pelleted manure products, other biologically derived fertilizers

Good Management Practices

- Purchase from reputable suppliers
- Maintain compost process verification or certification documentation
- Store materials to prevent contamination
- Prevent cross-contamination during transport and storage
- Follow applicable application timing requirements
- Keep complete application records
- Train employees on handling procedures.

Documentation Demonstrates Due Diligence

Auditors and buyers often want evidence that management practices are being implemented consistently.

Wildlife monitoring logs	Compost certificates	Application records	Employee training records	Corrective action documentation	Field inspection logs

Documentation demonstrates that risks are being actively managed, not ignored.

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COMMUNICATING WITH AUDITORS AND RETAIL PARTNERS

Demonstrate how you manage both food safety and sustainability

Shift from "Either/Or" to "Yes, and..."

Instead of viewing biodiversity and food safety as competing priorities

*"Yes, we maintain habitat, **and** we actively manage food safety risks associated with that habitat."*

Prepare Before the Audit

Successful audits begin long before the auditor arrives.

KNOW	ORGANIZE	DEMONSTRATE
Monitoring records	Employees understand procedures	Problems are documented and correct
Compost documentation	Monitoring occurs routinely	Management decisions are supported by evidence
Corrective actions	Management decisions are supported by evidence	

Build Relationships Through Transparency

Auditors are evaluating whether risks are understood and managed. Growers who are prepared, organized, and transparent often have more productive audits and fewer corrective actions.

Describe your monitoring program, risk assessment, and corrective actions.

Questions You May Be Asked

Question	Effective Response
How do you manage wildlife risk?	Describe your monitoring program, risk assessment, and corrective actions.
Why did you install this hedgerow?	Explain its conservation purpose and how associated food safety risks are monitored and managed.
How do you know your compost is safe?	Provide supplier documentation, treatment records, storage procedures, and application records.
How do you know your program is working?	Share monitoring data, employee training, internal reviews, and improvements made over time.

KEY MESSAGE

Conservation practices can be intentional, science-based, and compatible with food safety objectives.

Communicate Using Evidence, Records, and Science-Based Decisions

A clear communication process shows your commitment to both food safety and sustainability.

1. PRACTICE Implement conservation and soil health practices that support resilient systems.

→ **2. RISK ASSESSMENT** Identify potential hazards and evaluate exposure to crops.

→ **3. MONITORING** Use appropriate tools to monitor wildlife, inputs, and conditions.

→ **4. DOCUMENT** Keep accurate records of practices, monitoring, and corrective actions.

→ **5. COMMUNICATE** Share information clearly with auditors, buyers, and partners.

= **DEMONSTRATED DUE DILIGENCE** Builds trust and supports long-term partnerships.

Gina Bella-Colfer, John McKeon, Joelle Mosso, Taylor van Rossum & Dr. Matt Grieshop

FOOD SAFETY PRACTICES

within a balanced ecosystem

Produce food safety relies on comprehensive practices addressing climate, land use, inputs, wildlife, water, and soil health. Sustainable practices like hedgerows, insect habitats, grass filtration, and non-crop vegetation can promote biodiversity and balanced ecosystems while improving food safety.

SUSTAINABLE FOOD SAFETY

Designing systems to monitorand characterize risks while establishing balanced ecosystems may lead to improved food safety and sustainability outcomes.

UNSUPPORTED BELIEF

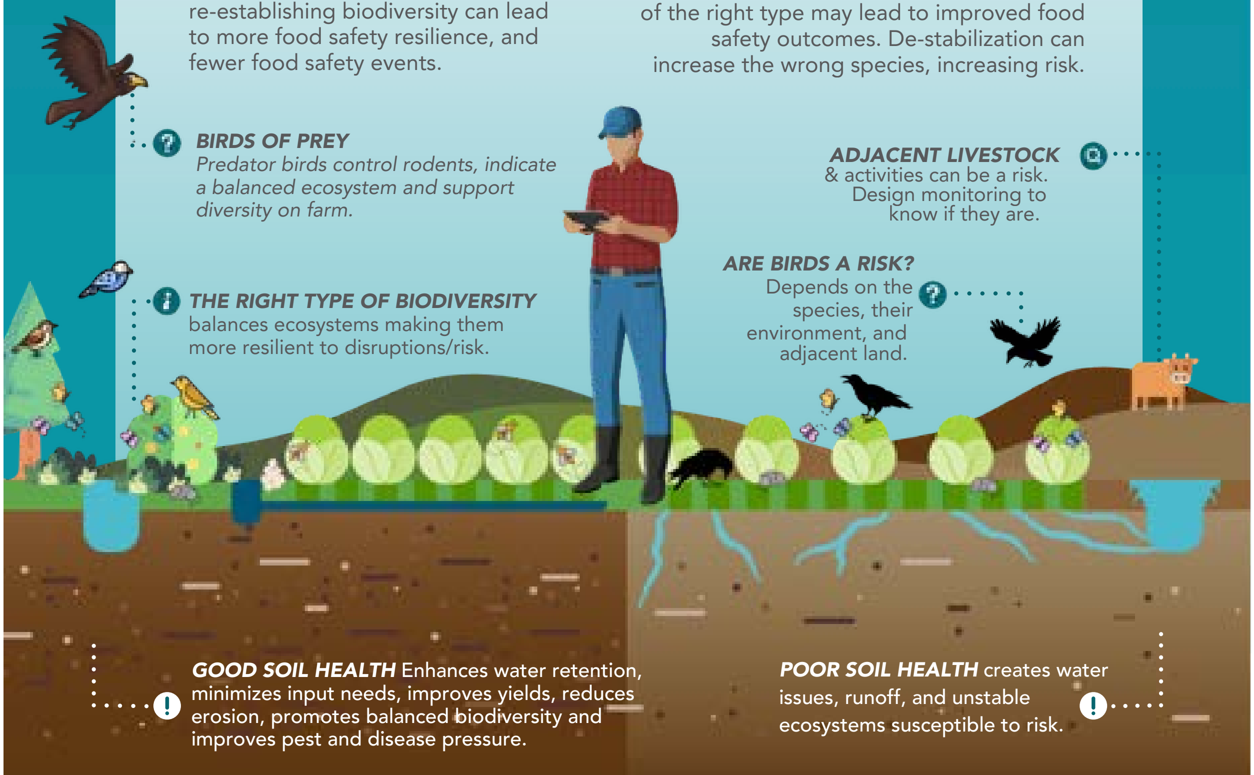
Minimizingbiodiversity & eliminating wildlife/harborage would lead to improved food safety outcomes.

RISK-BASED MONITORING

Characterizing risksandestablishing/ re-establishing biodiversity can lead to more food safety resilience, and fewer food safety events.

RESEARCH SHOWS

Minimizing biodiversity didn'timprove outcomes per se, and increased biodiversity of the right type may lead to improved food safety outcomes. De-stabilization can increase the wrong species, increasing risk.



Provided by: Western Growers Science and select Coalition for Food Safety & Sustainability (Industry, Researcher, Produce stakeholder contributors)

NOTES

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TRAP CROPS AND THEIR USE IN AGRICULTURE

Trap crops are a valuable sustainable pest management tool, particularly for pests that are difficult to control using conventional methods such as insecticides or biological control. By planting a more attractive host near the cash crop, trap crops concentrate pest populations in a defined area, reducing damage to the primary crop and allowing for more targeted management. This approach can lower pesticide use, conserve beneficial insects, and improve overall pest suppression.

WHAT DO TRAP CROPS DO?

- Trap crops provide an alternate food source to pests in place of cash crops.
- They draw pests off of crops and dilute pest pressure.
- The trap crop is often a preferred plant by the pests compared to the crop that is being grown.

Image 1. Flea beetle damage on baby kale

WHAT DO TRAP CROPS LOOK LIKE?

DAIKON RADISH TRAP CROP FOR FLEA BEETLES

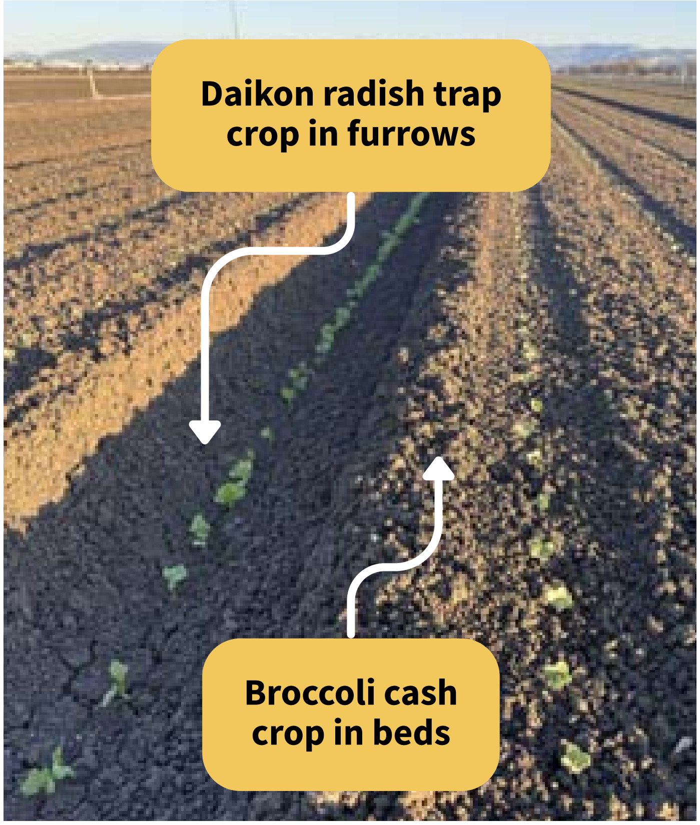

Image 2.

SUNFLOWER TRAP CROP FOR CUCUMBER BEETLES

Image 3. Photo by J. Vaughan

Kimberly Horton, Mary Nascimento, & Dr. Matt Grieshop

HOW DO YOU USE TRAP CROPS?

- Plant trap crops on the edges of fields or in the furrows to use the irrigation already in the field for the cash crop.
- If the trap crop is slow-growing, plant before the cash crop. This will allow the trap crop time to grow and take on the pest pressure.
- Considerations: Weed pressure in the field; how will the trap crop be removed?

PEST	TRAP CROP	CASH CROP
Bagrada Bug	Daikon Radish	Brassicas
Flea Beetles	Daikon Radish	Brassicas & Head Lettuce
Flea Beetles	Corn	Head Lettuce
Cucumber Beetles	Sunflowers	Cucurbits
Beet Leafhoppers	Beets	Tomatoes
Lygus Bugs	Alfalfa	Strawberries

Table 1. Trap Crop Matrix

Image 4. Alyssum with Flea Beetles

Image 5. Corn Trap Crop for Flea Beetles in Head Lettuce

Image 6. Daikon Radish Trap Crop for Bragada Bug in Broccoli

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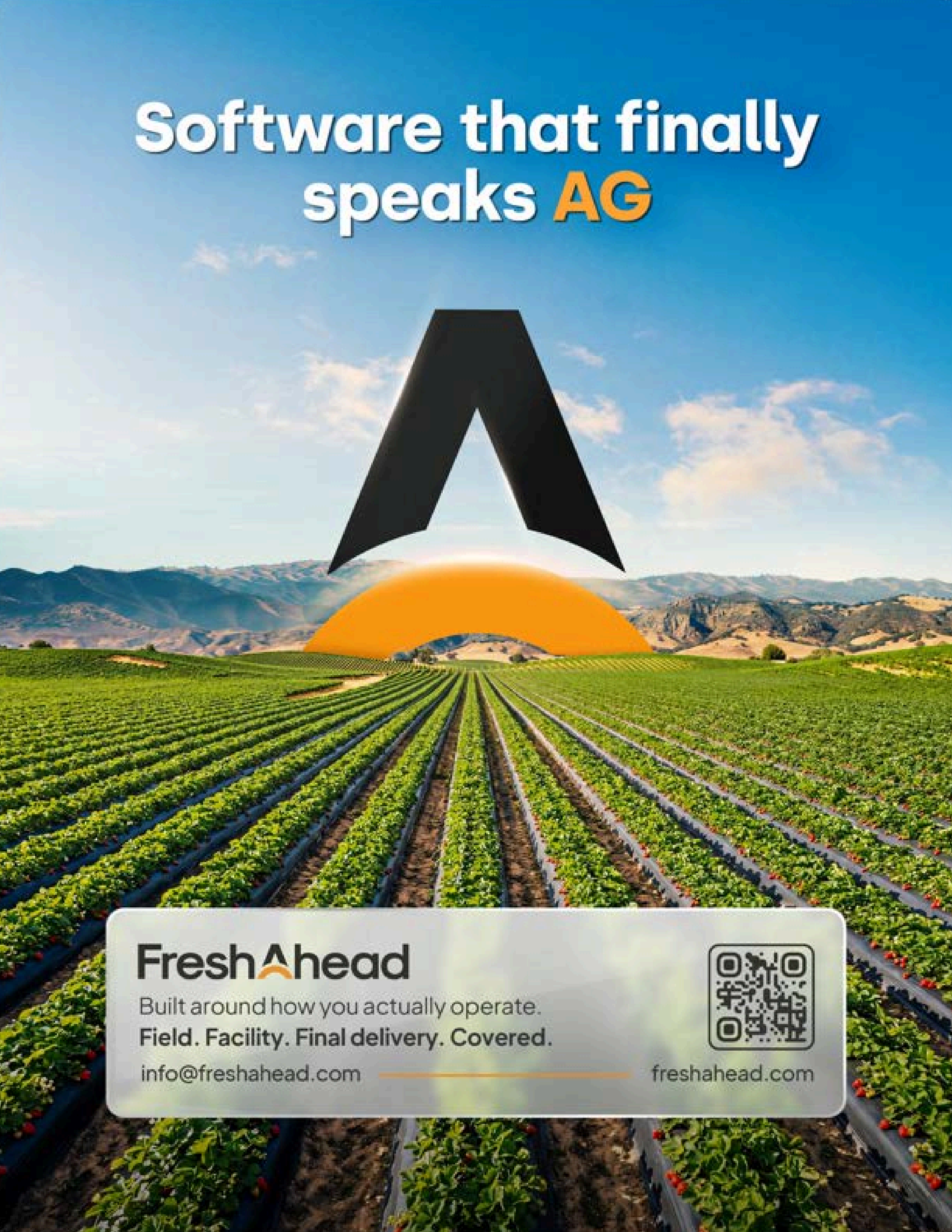
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