2024 Coastal Vegetable Disease Update

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Outline

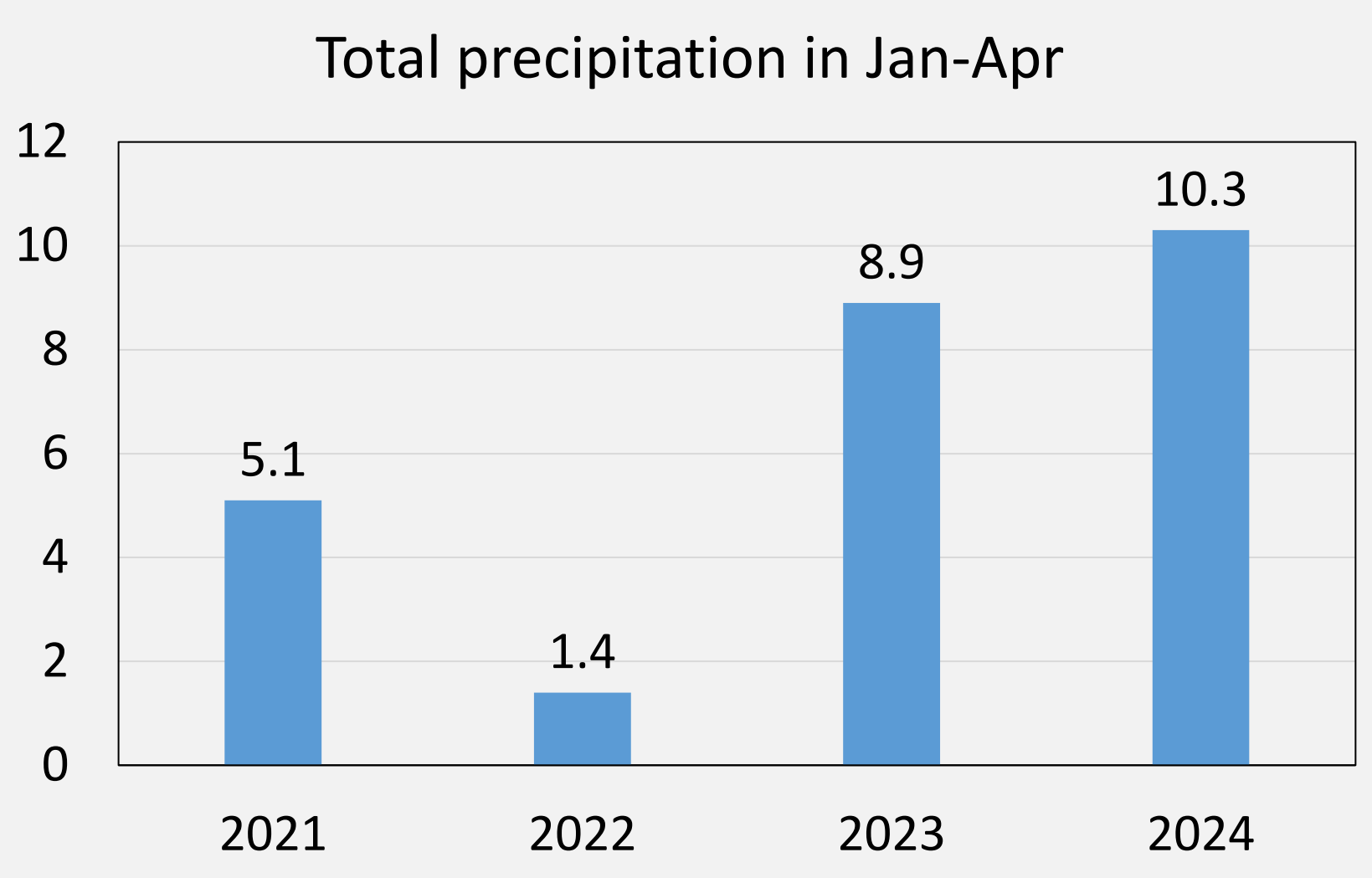
- Lettuce new and emerging diseases
- Broccoli pin rot fungicide trial

Wet winter of 2023

Photo by KTVU FOX

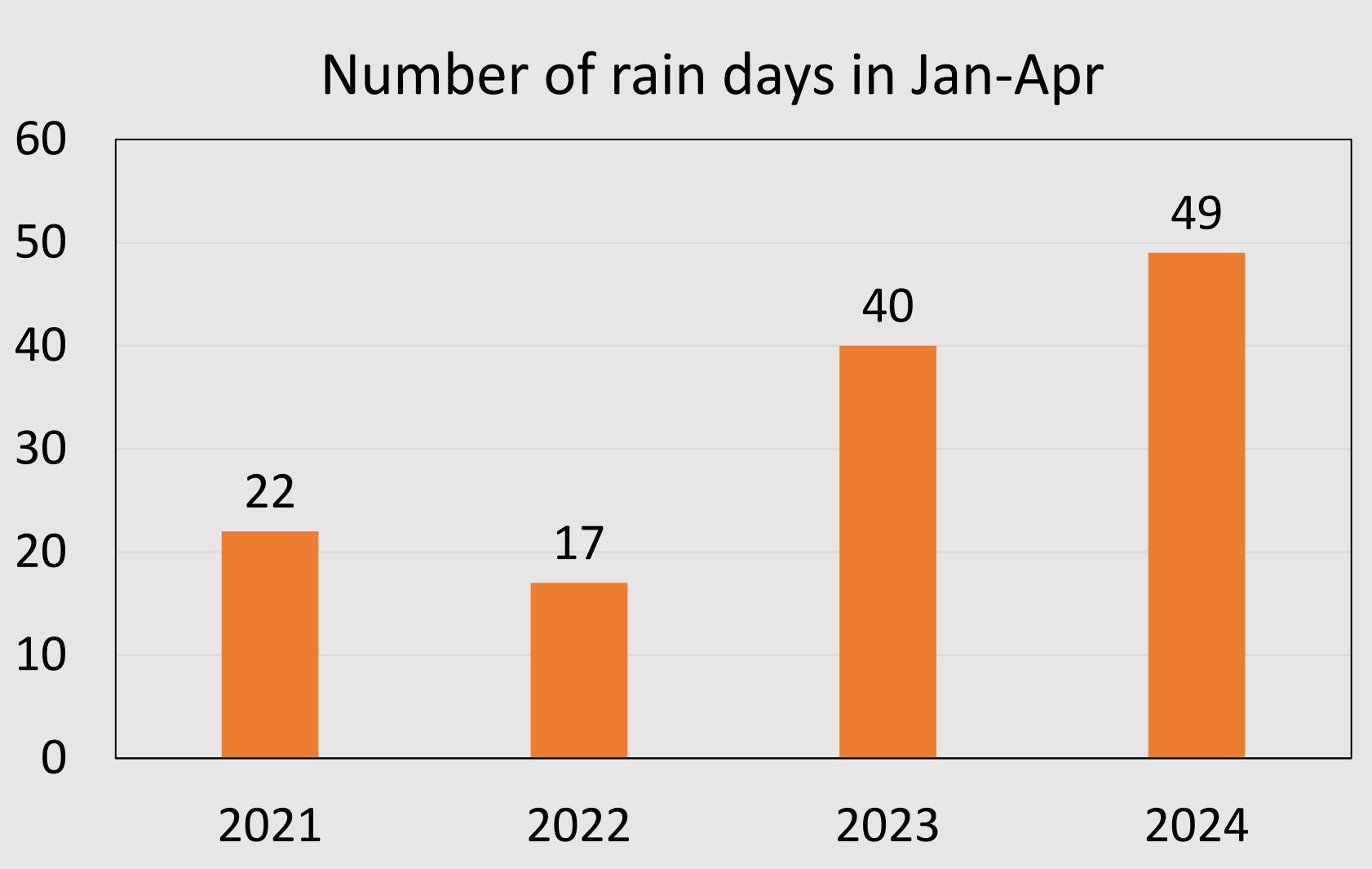
Photo by Ag Alert

2023 & 2024: wet winter and spring



Weather data: South Salinas (CIMIS #142)

2023 & 2024: wet winter and spring



Weather data: South Salinas (CIMIS #142)

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2024: severe lettuce anthracnose and celery late blight

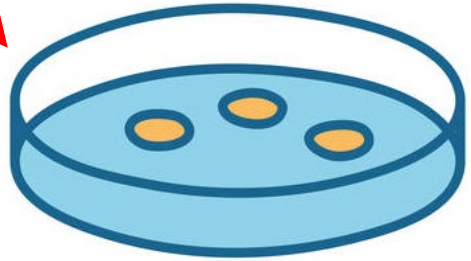
Lettuce anthracnose

Celery late blight

Phytophthora stem rot on lettuce?

- In 2023, a report of a noticeable die-out of romaine lettuce
- Sample was processed with UCCE Monterey County diagnostic lab
- *Phytophthora* sp. was recovered.
- New to Salinas Valley- conduct pathogenicity test

Confirmed its pathogenicity



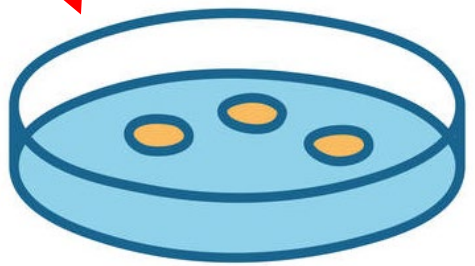
Wei Belisle, CDFA

Suzanne Latham, CDFA

Cheryl Blomquist, CDFA

Tyler Bourret, USDA

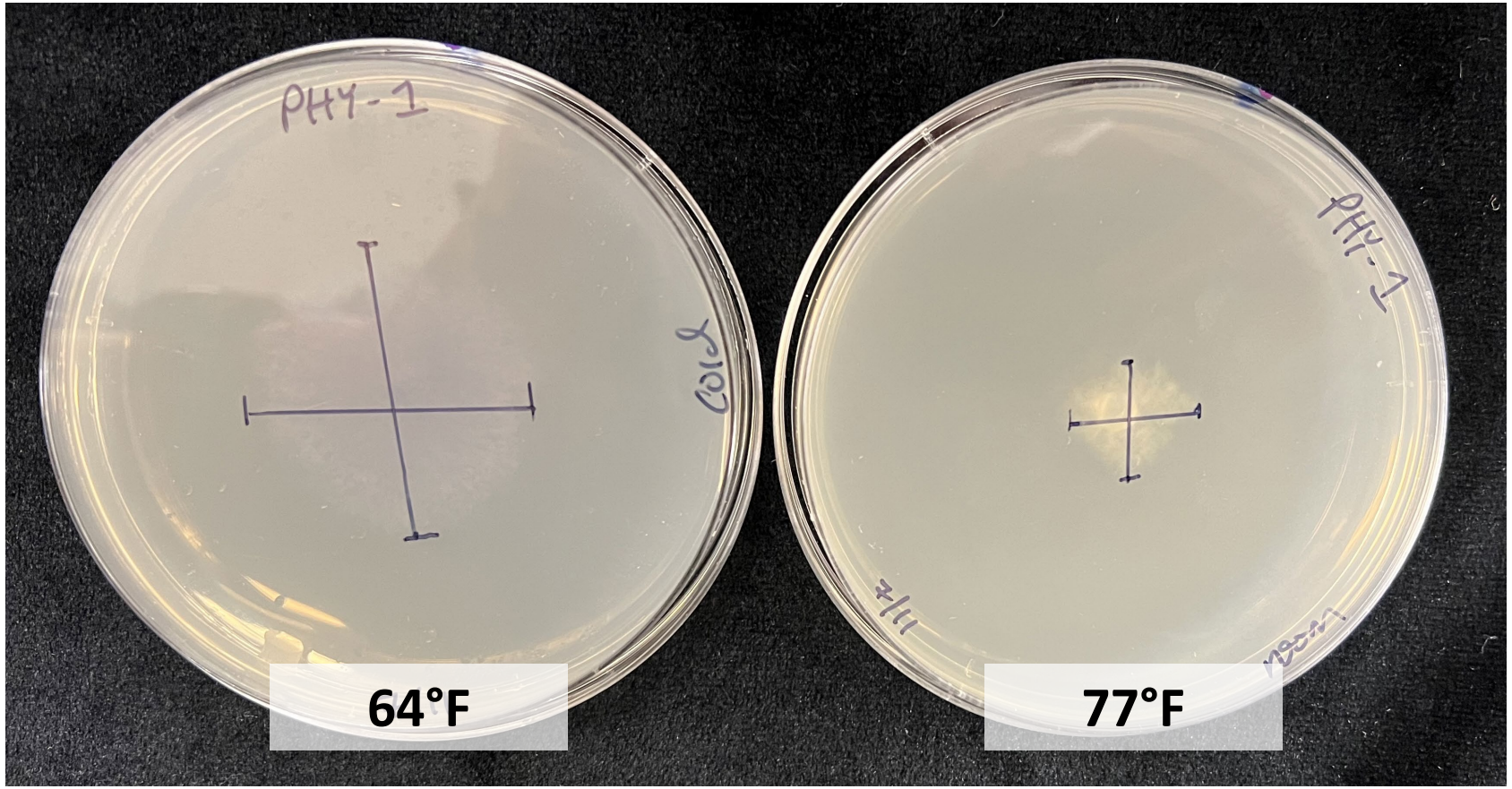
Confirmed its pathogenicity



An emerging disease

- In 2024, 5%-75% loss in other four fields
  - Gonzales and Soledad
  - Romaine and iceberg
  - Infect young plants
  - Spring (March-May)

It prefers cold weather



Conclusions and potential future work

Lettuce Phytophthora stem rot:

- Mostly observed in spring. Might be severe after the wet winter.
- Disease seems to be variety dependent; some varieties are highly susceptible.
- Fungicides are not labeled for Phytophthora in CA lettuce.

Lettuce ammonium toxicity: a common disorder in spring

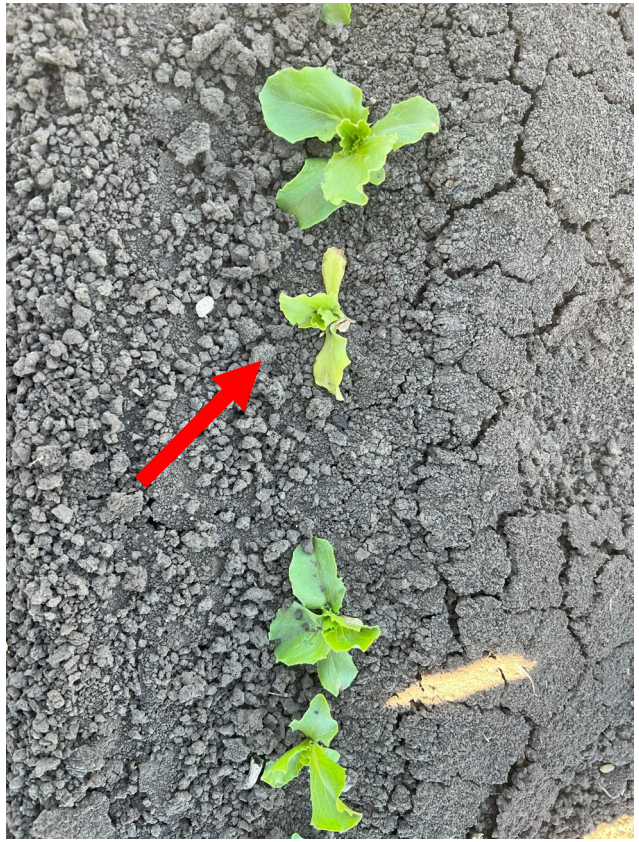
- Symptoms
  - Stunted, temporary leaf wilting
  - Root vascular discoloration (red, brown, black), hollow
- Young plants

Lettuce ammonium toxicity: a common disorder in spring

- Cool soil temperatures is favorable to the buildup of ammonium
  - Nitrification slows down

- Using ammonium containing nitrogen fertilizers or fertilizers (urea) that are converted to ammonium

Lettuce Fusarium wilt



Comparison of symptoms

Adapted from Smith and Koike 2015

	Ammonium toxicity	**Phytophthora stem rot**	**Fusarium wilt**
Time of year	Early spring	Spring	Summer through fall
Stunted young plants	Yes	Yes	Yes
Root vascular discoloration	Red, brown, black	Brown, black	Red, brown
Root exterior surface	White, healthy	White, healthy	White, healthy
Affect mature plants	No	Yes	Yes
Field distribution	Random, scattered	In patches	In patches

Confidential diagnostic service

- Supported by California Leafy Greens Research Board
- UCCE Monterey office
- 1432 Abbott St. Salinas, CA

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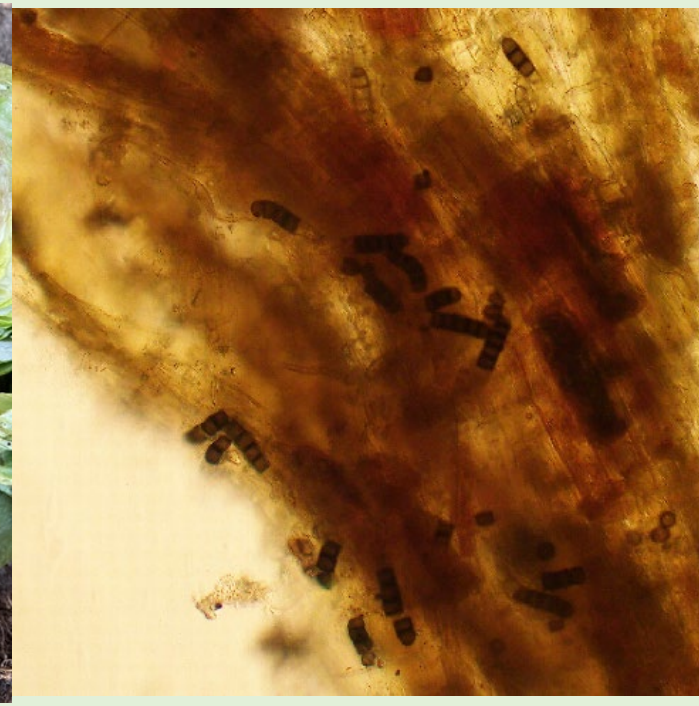

Broccoli pin rot

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One of the causes of pin rot: Alternaria head rot

- Caused by fungi *Alternaria* spp.
- Head rot: yellow spots and turn brown and black
  spread from bud to stem

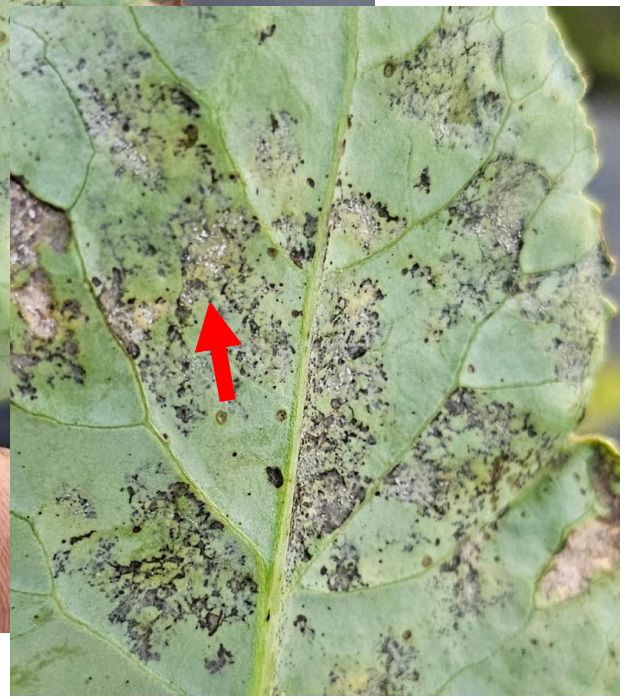
Brown bead (environmental)

Cauliflower Alternaria head rot

Alternaria leaf spot

- Caused by fungi *Alternaria* spp.
- Leaf spot: round, target-spot lesions; shot-holes

Downy mildew



2023 Fall on-farm fungicide trial (Broccoli Alternaria head rot)

- Plot size: 30 ft*40 inch, one untreated bed on each side, 4 reps

- CO_2 backpack sprayer
- 30 psi
- 35 gpa
- Double TeeJet 8004E flat fan nozzles

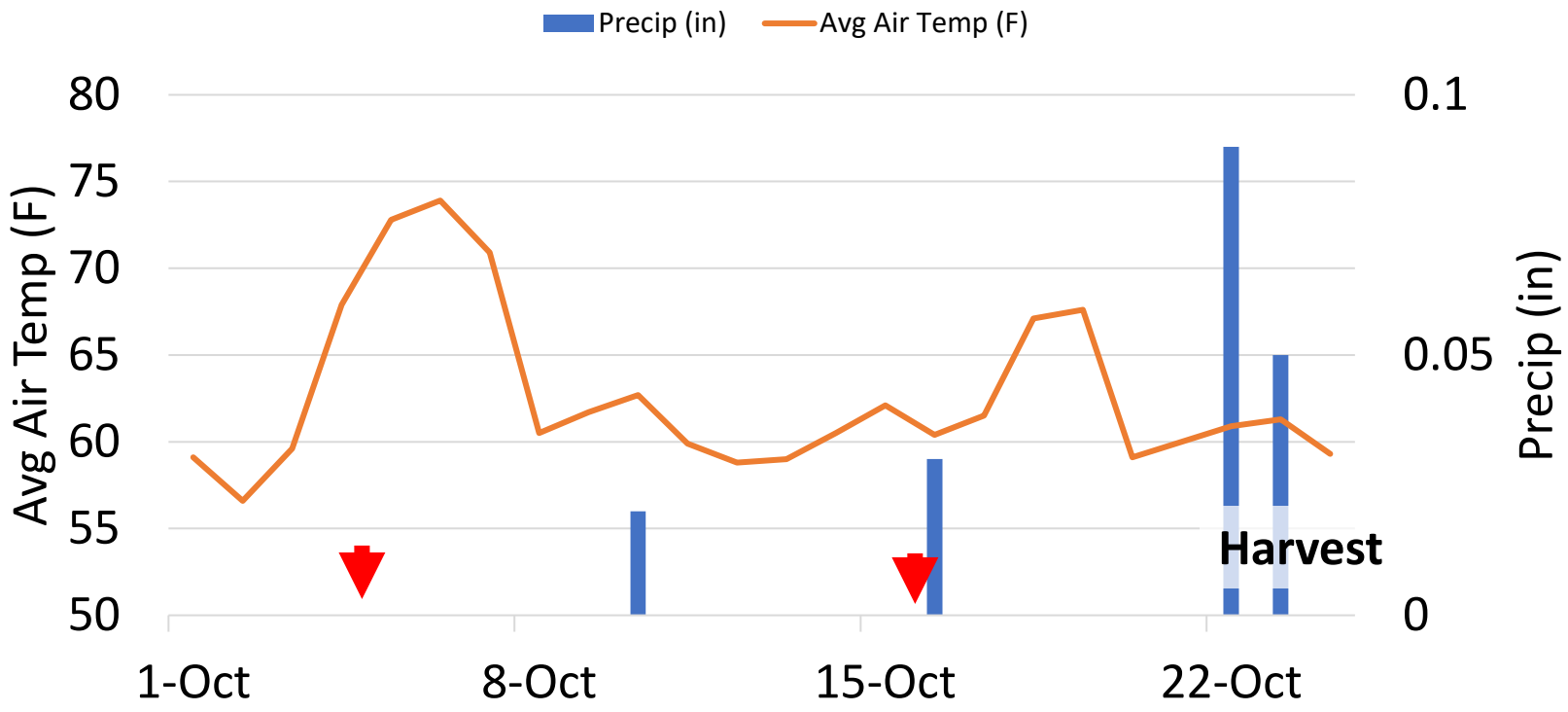
- Non-ionic surfactant Dyne-Amic 0.08% v/v

Seven products tested

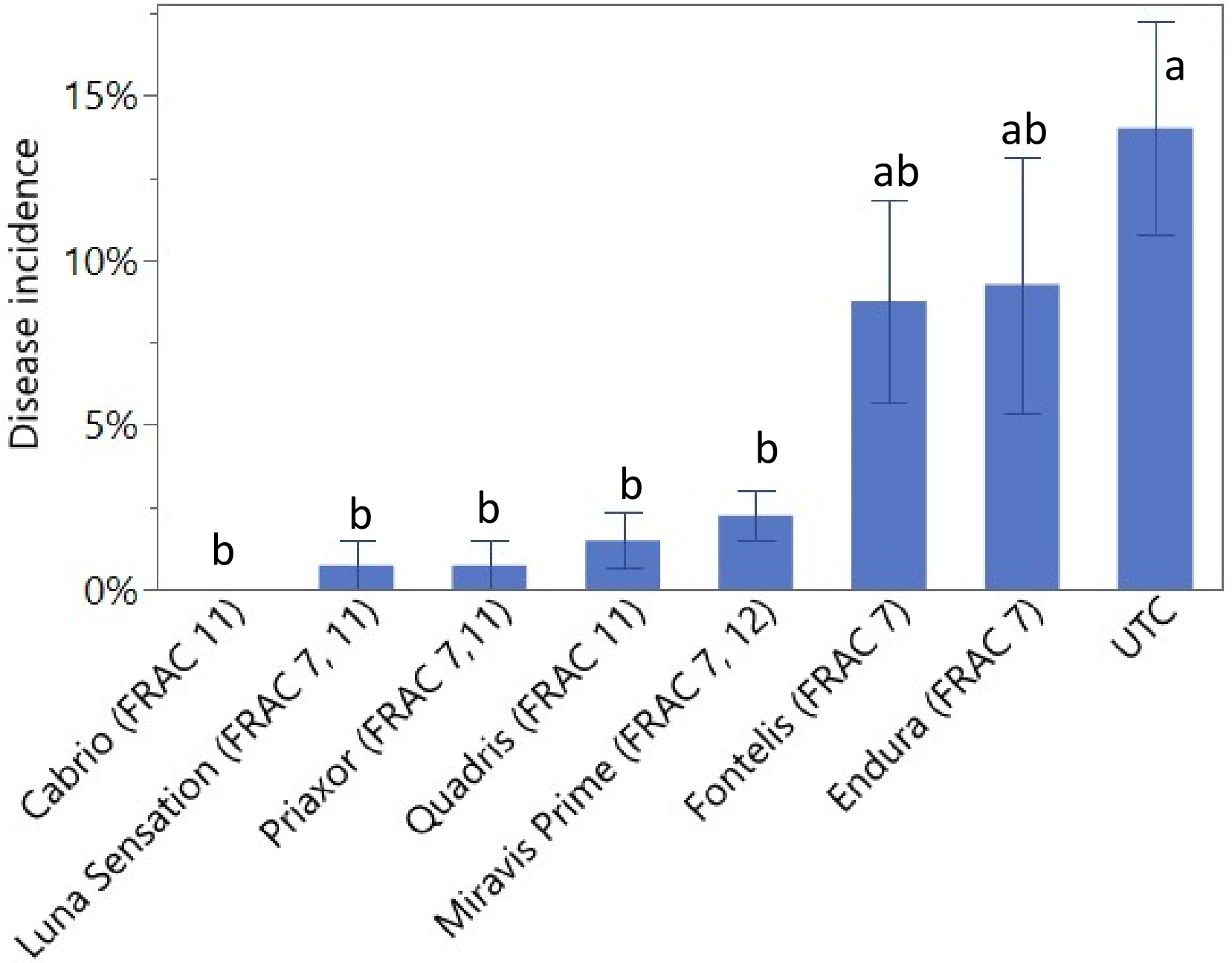
Product and rate/A	Active ingredient	FRAC group	PHI (day)
Nontreated	-	-	
Endura 9 oz	Boscalid	7	0
Fontelis 30 fl oz	Penthiopyrad	7	0
Quadris 15.5 fl oz	Azoxystrobin	11	0
Cabrio 16 oz	Pyraclostrobin	11	0
Priaxor 8.2 fl oz	Fluxapyroxad Pyraclostrobin	7, 11	3
Luna Sensation 7.6 fl oz	Fluopyram Trifloxystrobin	7, 11	0
Miravis Prime 11.4 oz	Pydiflumetofen Fludioxonil	7, 12	7

2023 Fall on-farm fungicide trial

- Two fungicide application
  - Oct. 4: head diameter 1 inch
  - Oct. 16: 7 days before harvest
- Disease incidence (%) within the middle 15 ft of the plot



CIMIS 214: Salinas South


Disease incidence
15%
10%
5%
0%
b
b
b
b
b
ab
ab
a
Cabrio (FRAC 11)
Luna Sensation (FRAC 7, 11)
Priaxor (FRAC 7,11)
Quadris (FRAC 11)
Miravis Prime (FRAC 7, 12)
Fontelis (FRAC 7)
Endura (FRAC 7)
UTC

Other management?

- Clean seed
- Crop rotation: pathogen survives on undecomposed crop residue
- Use drip irrigation instead of overhead irrigation
- Variety with lumpy broccoli head is more susceptible

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Alternaria head rot (pin rot) of broccoli and research update on fungicide evaluation

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Broccoli head rot, also known as pin rot, can cause significant problems, especially in fall broccoli production in Salinas Valley. Two types of head rot are affecting broccoli, including bacterial head rot and Alternaria head rot (Koike 2010). Differences between those two types can be seen in the previous blog post: https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=3861. Here we focus on the Alternaria head rot, caused by the fungi *Alternaria* spp.

Symptoms. All aboveground parts of broccoli are subject to infection including heads and leaves. Head rot symptoms start as yellow spots and then turn brown and black (photo 1). **The infection can spread from buds to stems (photo 2).** With secondary bacteria or fungi infection, further decay occurs.The initial yellow spots resemble brown bead (photo 3), a broccoli disorder that can potentially be caused by excessive temperature, poor growth, or nutrient and water deficiency. However, the brown bead doesn't rot the stem, and no sign of fungi is presented on the buds. **For uncertain cases, scraping the buds to see if the stem rot or fungi are presented is a useful technique.** Leaf spot symptoms start as small yellow spots on the old leaves and then form dark, concentrical rings like a target (photo 4). The old spots may become brittle and split open or fall out as shot holes. The high number of leaf spots per plant indicates a higher disease pressure and could be a signal for fungicide application.

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Acknowledgments

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- University of California Cooperative Extension

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Thank you! Questions?

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