Delta Rice Pest Management Update

Michelle Leinfelder-Miles
Delta Crops Resource Management Advisor

SJC and Delta Field Crops Meeting
January 24, 2025

UC CE

Delta rice acreage has been increasing, and yields are comparable to the statewide average

	2023	2022	2021	2020	2019	2018	2017
SJC Acreage	10990	8930	7070	4990	4360	3620	3060
Proportion of statewide acreage in SJC	N/A	4%	2%	1%	0.9%	0.7%	0.7%
Average SJC Yield (cwt/ac)	102	101	95	88	81	86	82
Average Statewide Yield (cwt/ac)	N/A	90	92	89	86	88	86

Delta pest pressures and management differ from the Sacramento Valley

- All acreage is drill-seeded.
- Weeds are the key pests, but diseases and insects may become problematic in some years.
- We can use integrated pest management practices to manage many pests:
  - Focus on long-term prevention.
  - Properly identify and monitor pests.
  - Compare populations to critical thresholds, if they have been developed.
  - Use cultural and chemical practices to solve pest problems.

Loyant Herbicide Trials

UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

Delta trials 2019-2022

- Trial objective: Evaluate the crop tolerance and weed control of Loyant (florpyrauxifen-benzyl, Corteva Agriscience) in drill-seeded rice.
- Results recap:
  - Good activity on watergrass species, with similar weed control and yield to the grower standard program.
  - Leaf curling may occur under stress conditions, but symptoms are short-term.
  - Tank mixes will be needed to manage the weed spectrum in the Delta system (e.g. sprangletop).

2022-23 trials indicate that Loyant has efficacy on cattails

- Cattails may emerge ahead of the rice crop and compete with the rice.
- We evaluated:
  - Loyant at 1.33 pt/a plus MSO
  - Loyant 2.66 pt/a plus MSO
  - Grandstand at 1 pt/a plus MSO
  - Loyant (1.33) and Grandstand (1) tank mix
- Applied on cattails that were 2-3 leaves up to 6 feet.
- Loyant (1.33 pt) provided complete control when cattails were less than 3 feet tall.
- Growers should be mindful of drift: pistachios and grape are highly-sensitive; almond, walnut, and peach are minorly damaged. (Recovery seen within 6 weeks.)

Armyworm Management

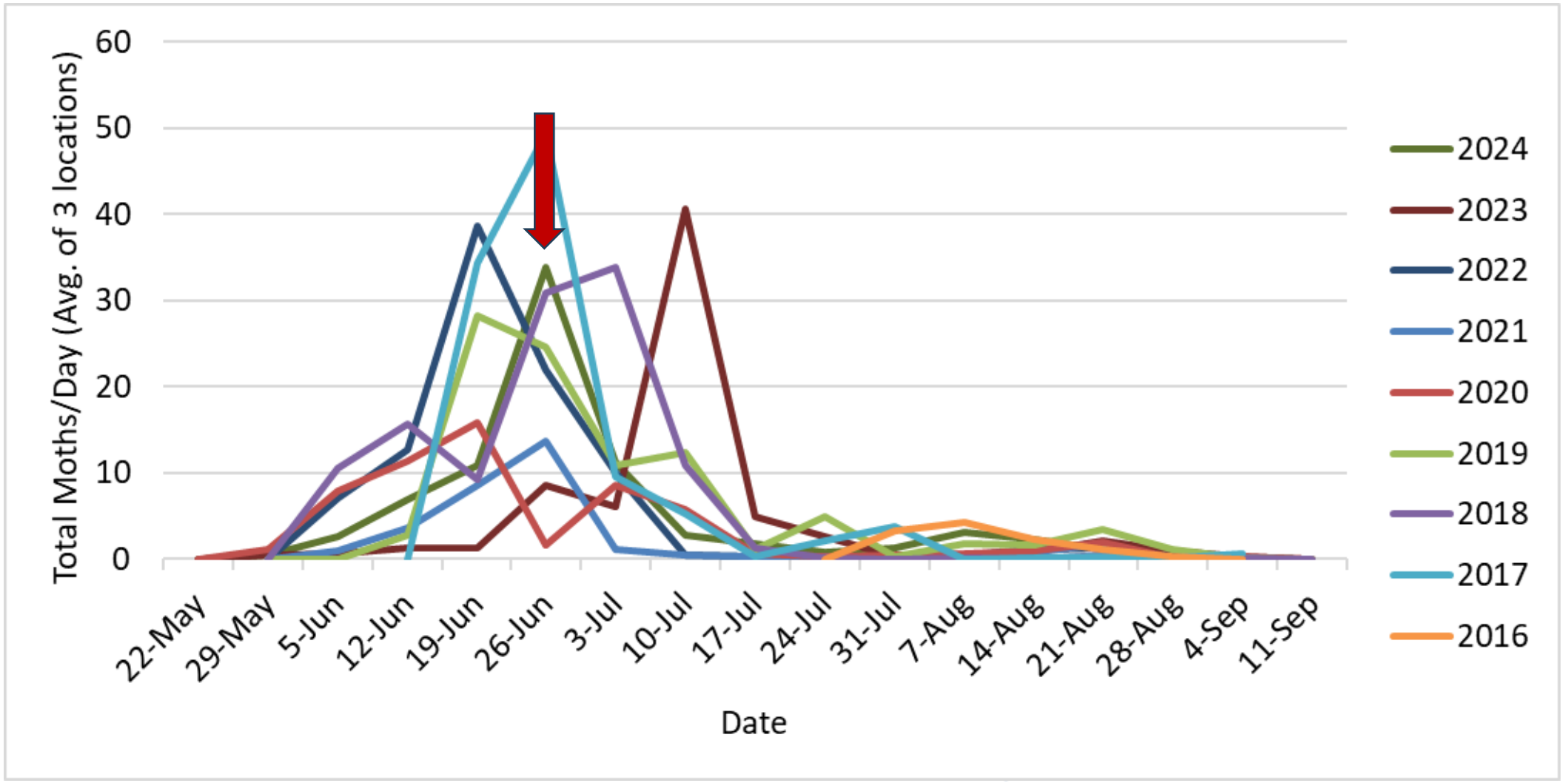
UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

True armyworms identification

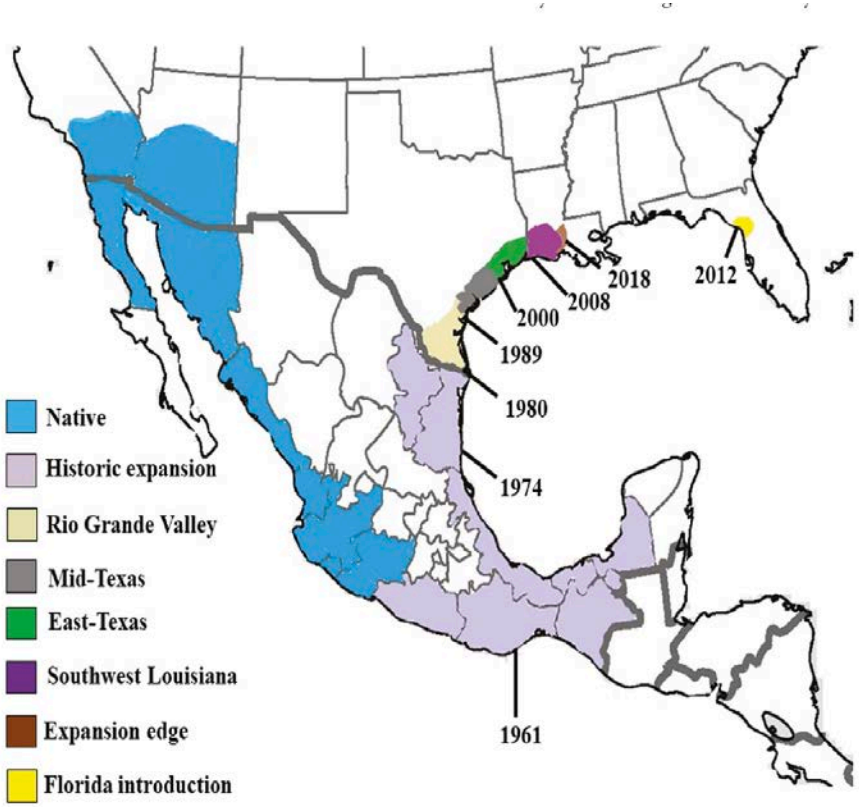
Armyworm monitoring and damage

Photo courtesy L. Espino, UCCE

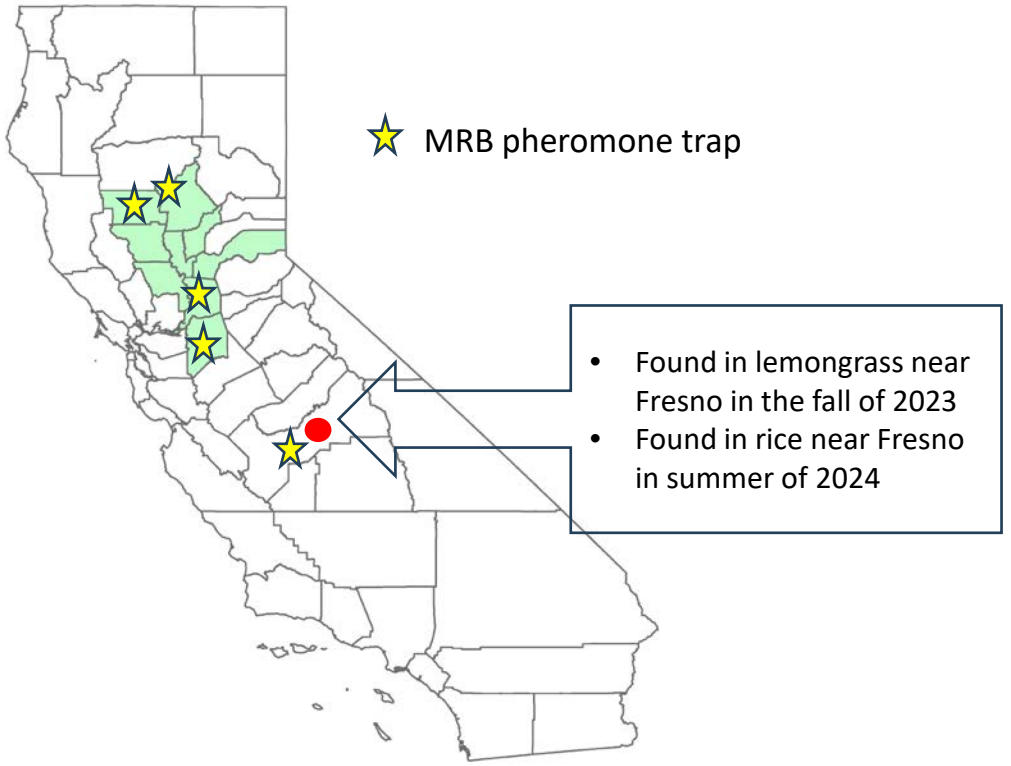
Delta true armyworm trap counts (2016-2024)



Mexican Rice Borer



Kang et al. 2022



- Found in lemongrass near Fresno in the fall of 2023
- Found in rice near Fresno in summer of 2024

Map courtesy Luis Espino, UCCE
Photos courtesy lsuagcenter.com

Weedy Rice Update

UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension

Weedy Rice is rice with undesirable characteristics (e.g. shattering, dormancy)

- Sometimes called “red rice” because some types have a red pericarp.
- “Type 1” weedy rice is tall in stature and has high shattering and dormancy.
- We identified weedy rice in the Delta in 2016 and became aware of a few farms having it.

Determining whether it's weedy rice or watergrass

Weedy rice (just like cultivated rice) has both a ligule and auricles.

Best management practices

- Use only ***certified seed***.
- ***Rogue plants*** early to prevent seed from shattering. After heading, bag panicles and remove them. Confirm red pericarp with KOH test.
- ***Clean equipment*** well, and harvest weedy rice infested fields last.
- ***Crop rotation or fallowing*** may be needed where infestations are severe.
- Because seed can have high dormancy, ***avoid tillage or use only light or shallow tillage*** when ever possible. Avoid post-harvest tillage.
- The organic herbicide Suppress is registered for ***spot spraying***.

Disease Observations

We have identified stem rot and aggregate sheath spot on some Delta farms in recent years

- Diseases have similar life cycles.
- In-season monitoring at tillering will be important for management.
- Quadris (*azoxystrobin*) is registered and is most effect when applied at tillering.
- Post-season straw management (i.e. burying residue) is a best management practice.

K fertility may be another consideration for disease management

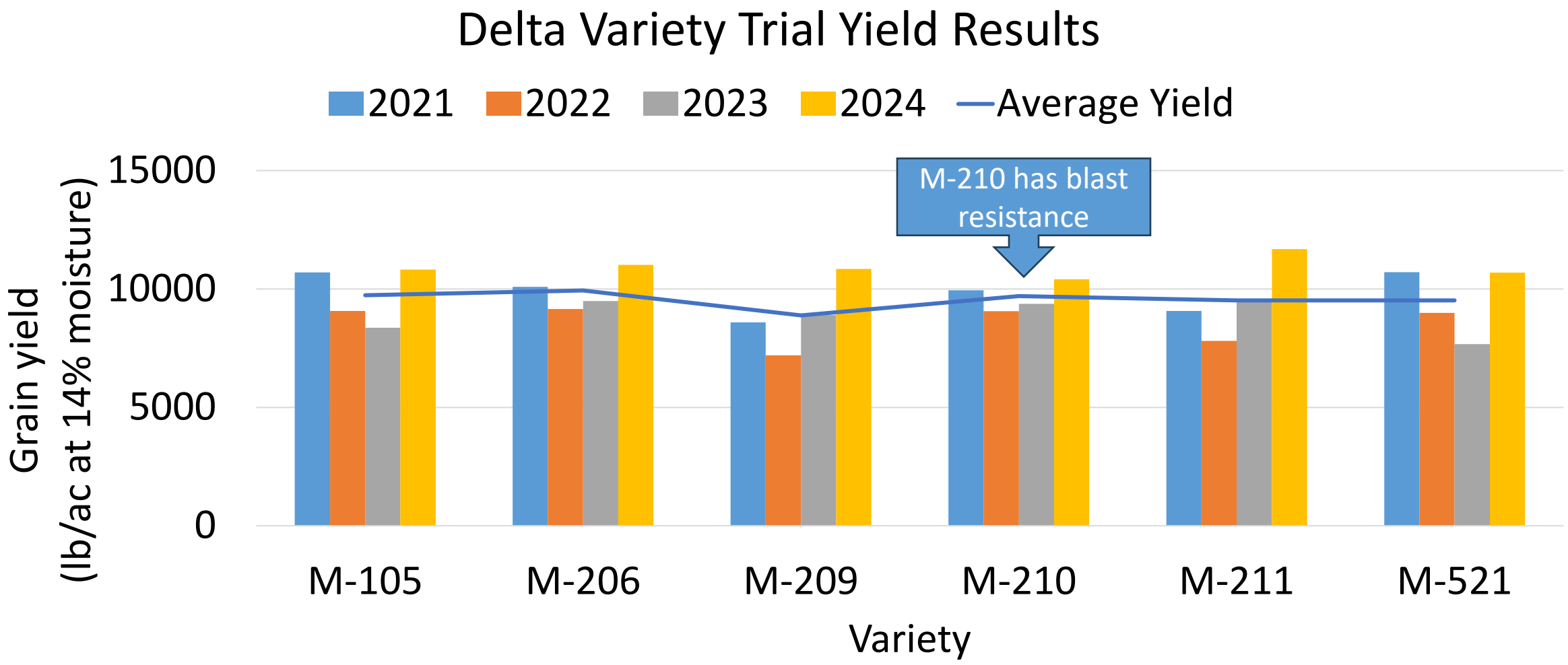
- K deficiency:
  - Symptoms may appear as leaf margin yellowing/bronzing or brown spots.
  - Known to worsen stem rot and aggregate sheath spot.
  - Is common on some Delta soils.
- K removal:
  - 26 lb K/ac with grain (90 cwt crop)
  - 28 lb K/ac with every ton of straw
- Soil and tissue testing recommended.
- For tissue test: between tillering and panicle initiation, the Y-leaf should have a K concentration of at least 1.5%. At heading, the flag leaf should have a K concentration of at least 1.2%.

Photos courtesy IRRI (Rice Knowledge Bank) and AgFax.

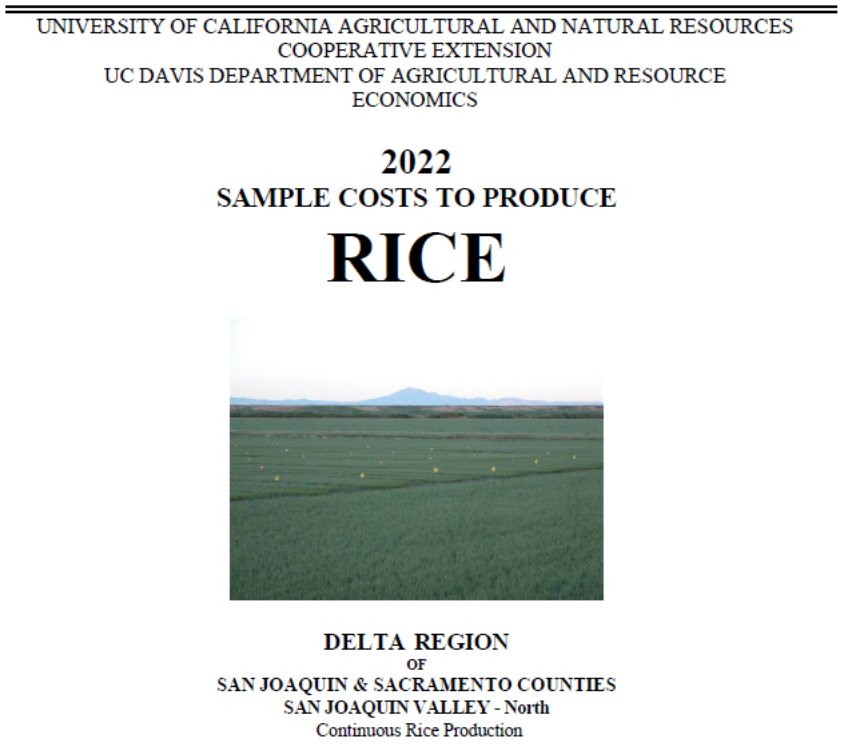
We did not observe rice blast in 2024

- Leaf blast lesions are diamond shaped, and where infections are severe, cause dead patches in the field.
- Neck blast can produce blanked panicles.
- Spores move by wind, and the disease is favored by free moisture on plant surfaces.
- Spores can infect seed; use certified seed.
- Disease favored by excess nitrogen, like application overlaps.
- Quadris and Stratego are register and are most effective at early heading (20-50% heading).

Disease management with variety selection



We developed a cost of production study to characterize the Delta rice system



UNIVERSITY OF CALIFORNIA AGRICULTURAL AND NATURAL RESOURCES
COOPERATIVE EXTENSION
UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS

2022
SAMPLE COSTS TO PRODUCE
RICE

DELTA REGION
OF
SAN JOAQUIN & SACRAMENTO COUNTIES
SAN JOAQUIN VALLEY - North
Continuous Rice Production

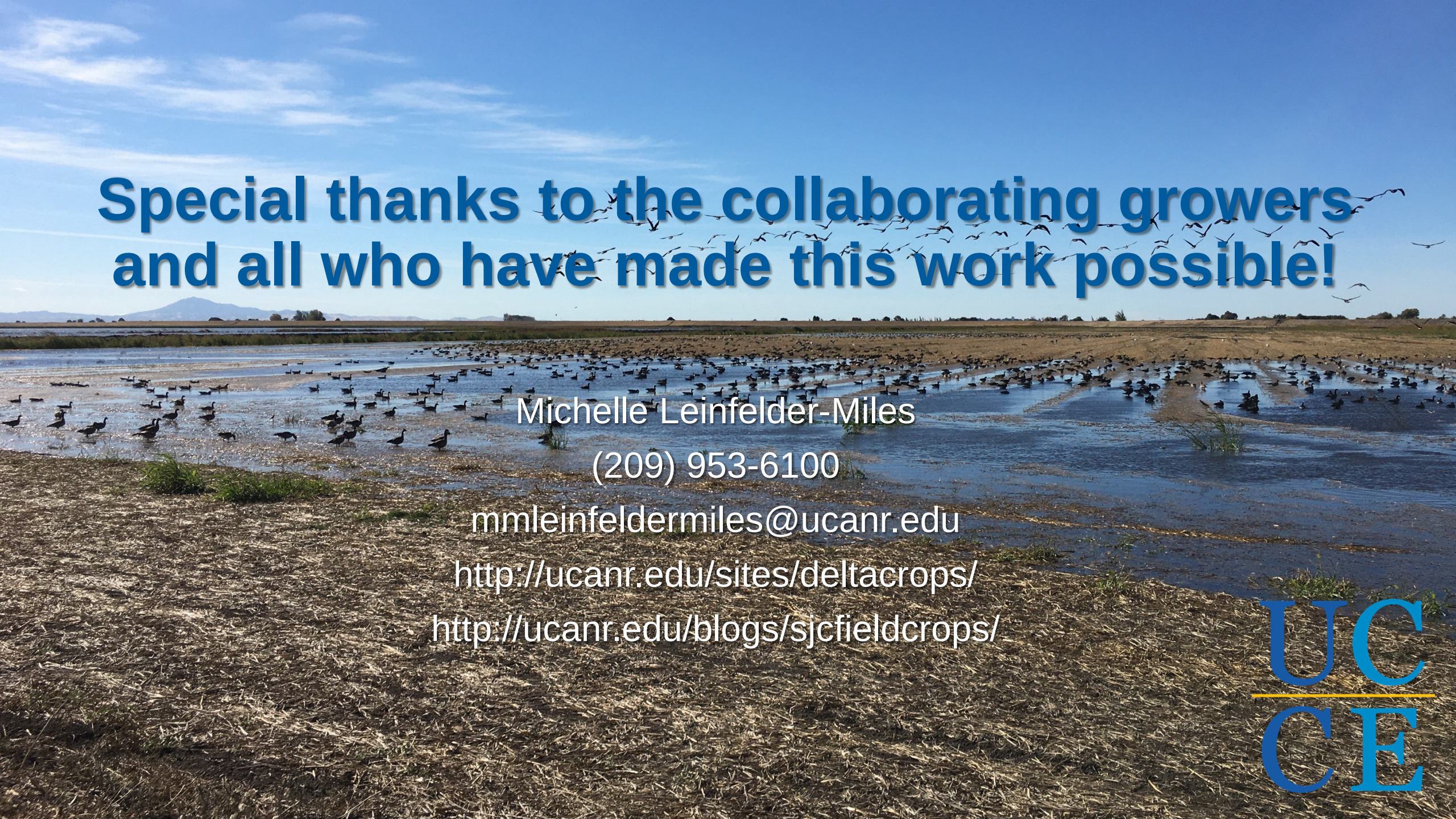
Michelle Leinfelder-Miles	UCCE Farm Advisor, San Joaquin County, Delta Region
Bruce Linquist	UCCE Rice Specialist, UC Davis
Paul Buttner	Manager, Environmental Affairs, California Rice Commission
Jeremy Murdock	Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis
Brittney Goodrich	UCCE Specialist, Department of Agricultural and Resource Economics, UC Davis

Funding Source: This cost study was funded by the Department of Agricultural and Resource Economics at University of California Davis

Cost of Production studies available at:

https://coststudies.ucdavis.edu/en/current/commodity/rice/

UC CE UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources Cooperative Extension



Special thanks to the collaborating growers and all who have made this work possible!

Michelle Leinfelder-Miles
(209) 953-6100
mmleinfeldermiles@ucanr.edu
http://ucanr.edu/sites/deltacrops/
http://ucanr.edu/blogs/sjcfieldcrops/