Delta Rice Pest Management Update

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UC CE

This presentation will describe:

The Delta rice production system

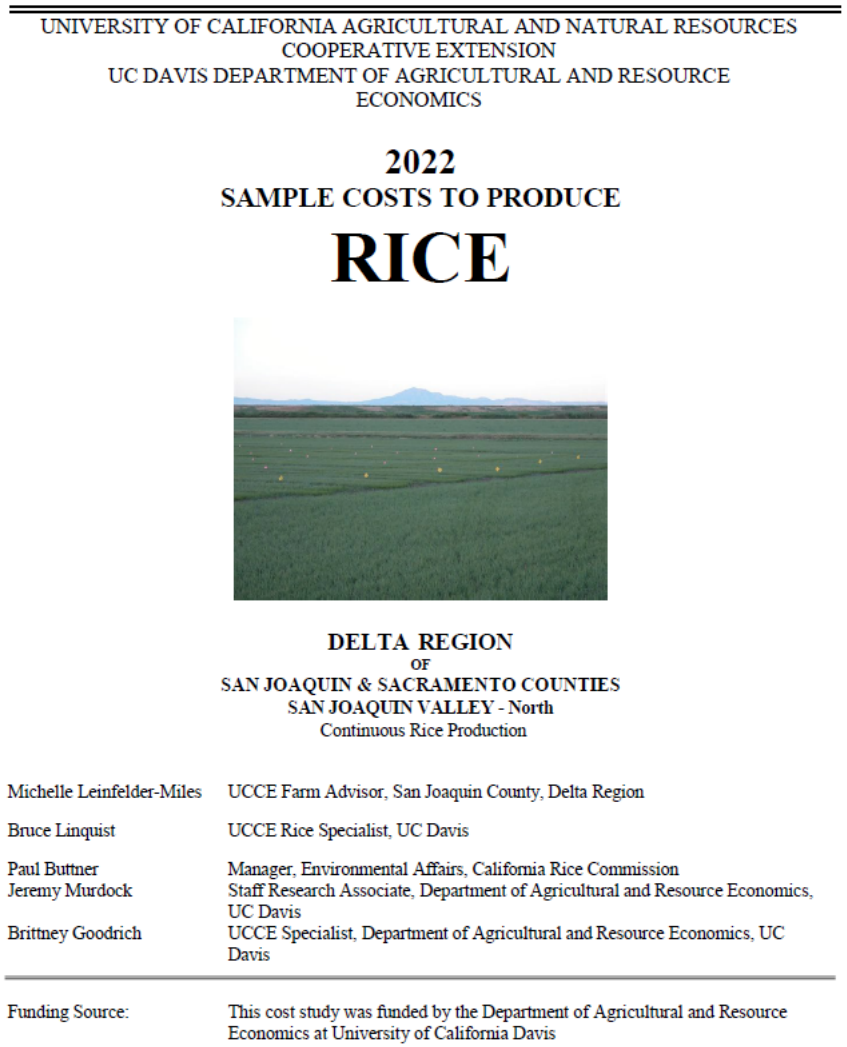
Pest management studies in the Delta

Other Delta rice research that is underway

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

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

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



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2022
SAMPLE COSTS TO PRODUCE
RICE

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

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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/

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Delta conditions and practices differ from those in the Sacramento Valley.

- Cool temperatures limit variety selection to only very-early and early maturing varieties.
- Predominant variety in the Delta and across the state is M-206. Some acreage of M-105.
- All acreage is drill-seeded.
- Weeds are the key pests, but diseases and insects may become problematic.

Loyant Herbicide Trials

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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.

Weedy Rice Update

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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.

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 available for ***spot spraying***.

Armyworm Management

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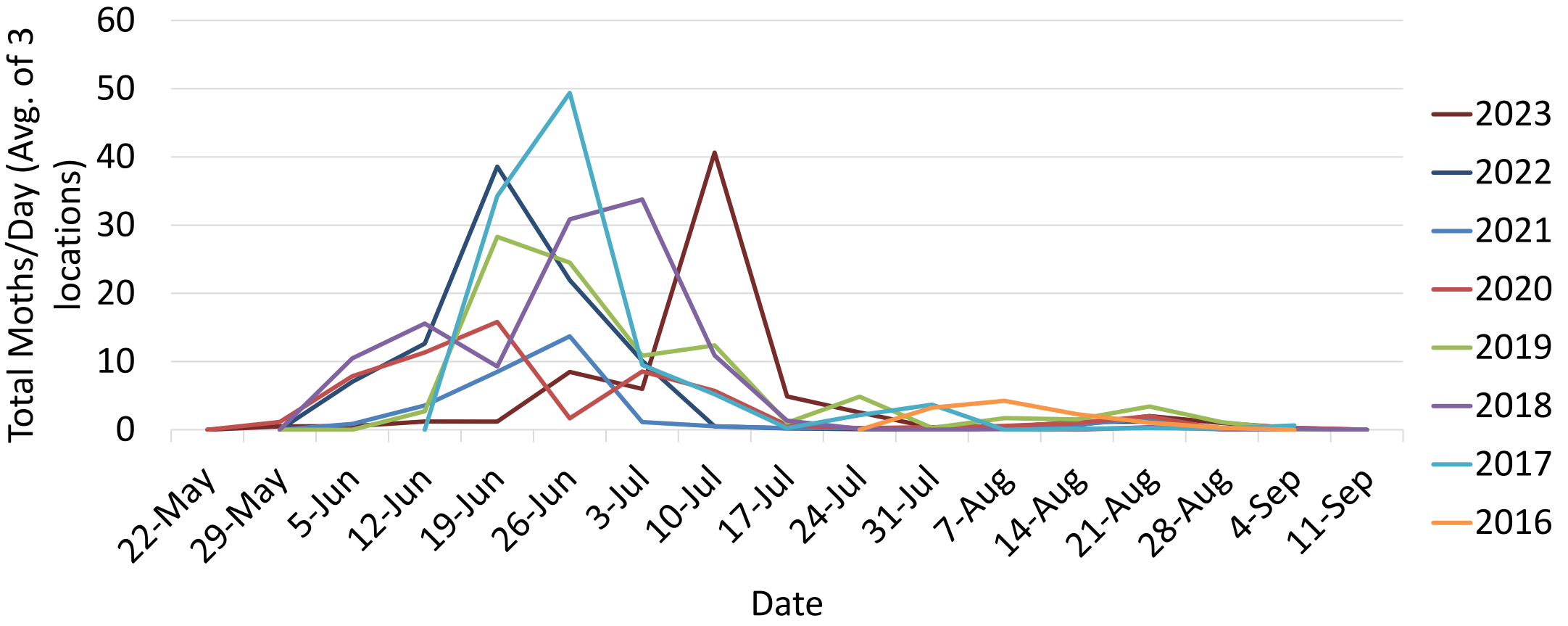
Armyworm Damage

Delta True Armyworm Trap Counts (2016-2022)



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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.

Other Delta rice research projects

2022 Variety Trial Results

Variety	Yield at 14% Moisture (lb/ac)	Harvest Moisture (%)	Seedling Vigor (1-5)	Days to 50% Heading	Lodging (0-100)	Plant Height (cm)
M-206	9150	16.5	4.8	111	0	82
M-105	9070	16.3	4.8	107	0	84
M-210	9060	15.9	4.9	111	0	85
CM-101	8350	14.4	4.7	110	0	83
M-211	7810	17.2	4.8	120	0	83
M-209	7200	18.3	4.8	122	0	82

2022-2025 Cover Crop Trials

Evaluating whether a mixed winter cover crop improves soil carbon and nitrogen dynamics and/or rice yield.

In systems where rice is grown year after year, the cover crop provides plant diversity, and perhaps some crop rotation benefits.

Evaluating different species for winter survivability:

- Woolypod vetch
- Purple vetch
- Bell bean
- Balansa clover
- Field pea
- Biomaster pea
- Yellow mustard
- Turnip
- Rye
- Oats

Thank you!

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