

Delta Rice Pest Management Update

Michelle Leinfelder-Miles
Delta Crops Resource Management Advisor

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This presentation will:

Describe how we can use the principles of Integrated Pest Management (IPM) to effectively manage pests.

Focus on the Delta rice production system.

IPM is a process for solving pest problems while minimizing risks to people and the environment

- Focus on long-term prevention of pests or their damage.
- Properly identify pests and monitor their populations.
 - Compare populations to critical thresholds, if they have been developed.)
- Use cultural and chemical practices to solve pest problems
 - Prevention, sanitation, water management, and pesticides.

Delta rice production

San Joaquin County Rice						
	2022	2021	2020	2019	2018	2017
Acreage	8000 (est.)	7070	4990	4360	3620	3060
Average Yield (cwt/ac)	Not available	95	88	81	86	82

*Most of the rice grown in SJC is grown in the Delta. Data from SJC Agricultural Commissioner's Crop Reports. Additional Delta rice acreage in Sacramento County.

Given that acreage has been steadily increasing, and that the Delta production system differs from the Sacramento Valley system, UC will be releasing a **cost of production study for Delta rice** in 2023. Cost studies are published here: coststudies.ucdavis.edu/en/current/.

Pest management opportunities and challenges in the Delta production system

Cool temperatures limit variety selection to only very-early and early maturing varieties.

All acreage is drill-seeded.

Weeds are the primary pests.

Weeds are managed by pre-plant tillage and by herbicides, which are sprayed by ground followed up establishment of permanent flood.

Windy conditions can compromise optimal timing of chemical applications.



Loyant Herbicide Trials

Delta trials 2019-2022

- Trial objective: Evaluate the crop tolerance and weed control of Loyant (florpyrauxifen-benzyl, Corteva Agriscience) in drill-seeded rice.
- Company trials indicated good efficacy on broadleaf weeds (e.g. ducksalad, redstems), smallflower umbrella sedge, and ricefield bulrush. It has some activity on *Echinochloa* spp. (e.g. barnyardgrass, watergrass).
- Registered in August 2022; no 2022 use due to 60-day REI.



Weeds in the Trials (2019-2021)



We trialed different rates and product combinations

Materials	Rate (unit of product/acre)
Loyant, Prowl H2O, MSO	1.33 pt, 5.5 pt, 0.5 pt
Loyant, Clincher, Prowl H2O, MSO	1.33 pt, 15 fl-oz, 5.5 pt, 0.5 pt
Loyant, Granite SC, Prowl H2O, MSO	1.33 pt, 2.8 fl-oz, 5.5 pt, 0.5 pt
Loyant, RebelEX, Prowl H2O, MSO	1.33 pt, 20 fl-oz, 5.5 pt, 0.5 pt
Regiment, Sandea, Prowl H2O, Super Wham, MSO, UAN-32	0.2 oz, 0.8 oz, 5.5 pt, 6 qt, 16 fl-oz, 2%
Prowl H2O (<i>“Control”</i>)	5.5 pt
Loyant, Prowl H2O, Super Wham, MSO	1.33 pt, 5.5 pt, 6 qt, 0.5 pt

2019-2021 results indicate that Loyant has efficacy on important weeds in the Delta rice production system

- Good activity on *Echinochloa* 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 trial suggests that Loyant may have efficacy on cattails

- 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 six feet tall.
- Loyant (2.66 pt) provided complete control when cattails were less than 3 feet tall.
- Trial will continue in 2023.



Weedy Rice Update

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

- 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.
- Infestations have ranged from low to severe, but no new reports of it in 2022.



Photo courtesy Brim-DeForest, UCCE

Best management practices

- Use only ***certified seed***.
- ***Rogue plants*** early to prevent seed from shattering. After heading, bag panicles and remove them.
- ***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.
- ***No herbicides are approved for spot spraying*** at this time.
- We have observed reductions in the weed seed bank where post-harvest management included mowing but no tillage, followed by winter flooding, which helps with seed deterioration.

Armyworm Management

Armyworm Damage

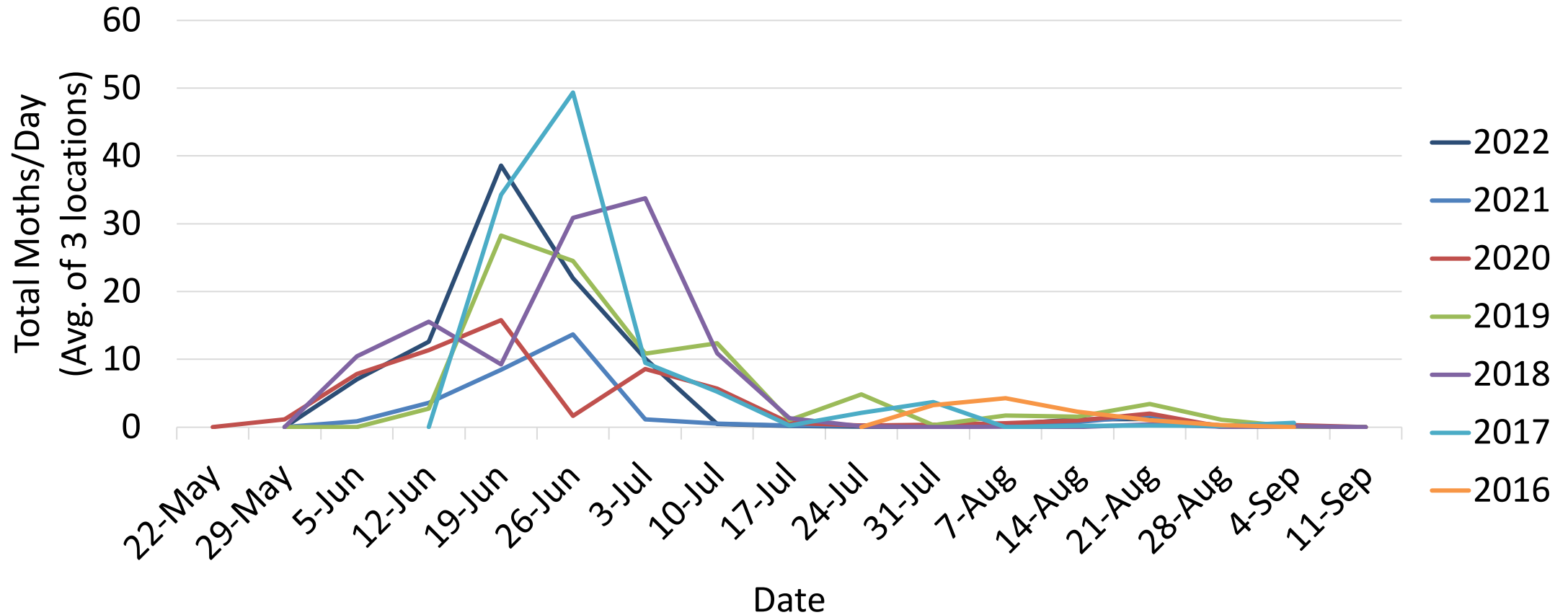


Delta armyworm monitoring using pheromone bucket traps has been occurring since 2016

- UCCE has cooperated with the CA Rice Commission to get Section 18 emergency approvals of methoxyfenozide (Intrepid 2F) in past years.
- Update: EPA has registered Intrepid for CA rice; DPR has requested additional information. So, Section 18 is no longer an option, but hopefully full registration comes through before the use season.



Delta True Armyworm Trap Counts (2016-2022)



Disease Observations

Stem rot has become a problem on some Delta farms in recent years

- Has been observed during harvest season, after fields are drained.
- Post-season straw management (i.e. burying residue) has helped to manage the problem at some sites but not others.
- In-season monitoring at tillering will be important for management.
- Quadris (*azoxystrobin*) is registered and is most effective when applied at tillering.



We identified rice blast at one field

- 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).



We have also identified panicle branch rot in several fields

- Causes lesion on the panicle node, similar to rice blast.
- Does not tend to cause grain blanking, but it may cause incomplete grain filling and reduce milling quality.
- Has also been identified in the Sacramento Valley.
- We need to gather more information on this disease.





Thank you!

Michelle Leinfelder-Miles

(209) 953-6100

mmleinfeldermiles@ucanr.edu

<http://ucanr.edu/sites/deltacrops/>

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