# Delta Rice Pest Management Update

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## This presentation will:

Focus on the Delta rice production system.

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

# Delta rice production system

| San Joaquin County Rice* | | | | | |
|---|---|---|---|---|---|
| | 2021 | 2020 | 2019 | 2018 | 2017 |
| Acreage | 6600 (est.) | 4990 | 4360 | 3620 | 3060 |
| Average Yield (cwt/ac) | N/A | 87 | 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.

## Management opportunities and challenges:

- All acreage is drill-seeded.
- Weeds are controlled by pre-plant tillage and by herbicides.
- Weeds are generally sprayed by ground pre-flood.
- Permanent flood is established around the 3-4 leaf stage of rice.
- Windy conditions can compromise optimal timing of chemical applications.

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

How to use IPM to manage Delta rice pests:

- 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.

# Armyworm Monitoring

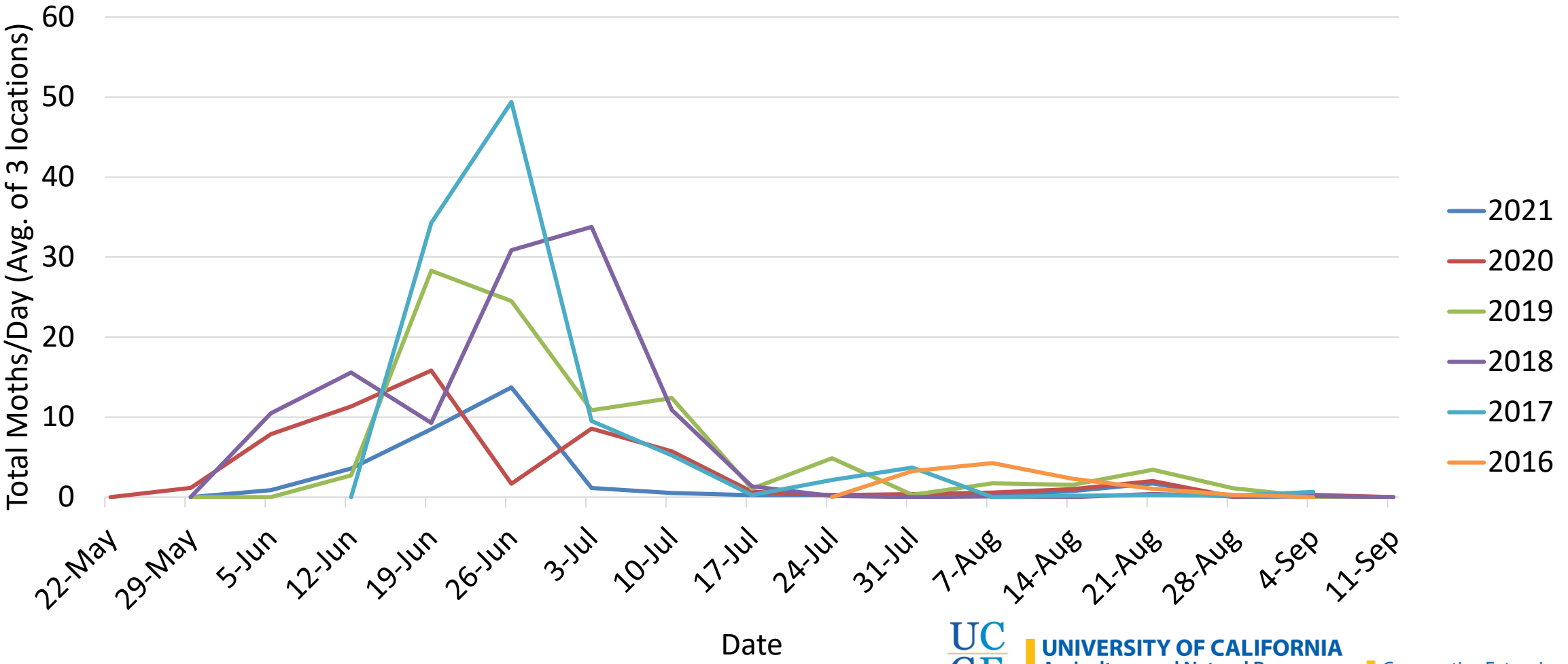
# Delta armyworm monitoring has been occurring since 2016

- Deployment of pheromone bucket traps and blog updates during the season.
- Cooperated with the CA Rice Commission on getting Section 18 emergency approvals of methoxyfenozide (Intrepid 2F)

# Armyworm Damage



# True Armyworm Delta Trap Counts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# Nearby vegetation probably influences armyworm pressure and damage

# Herbicide Trials - Loyant

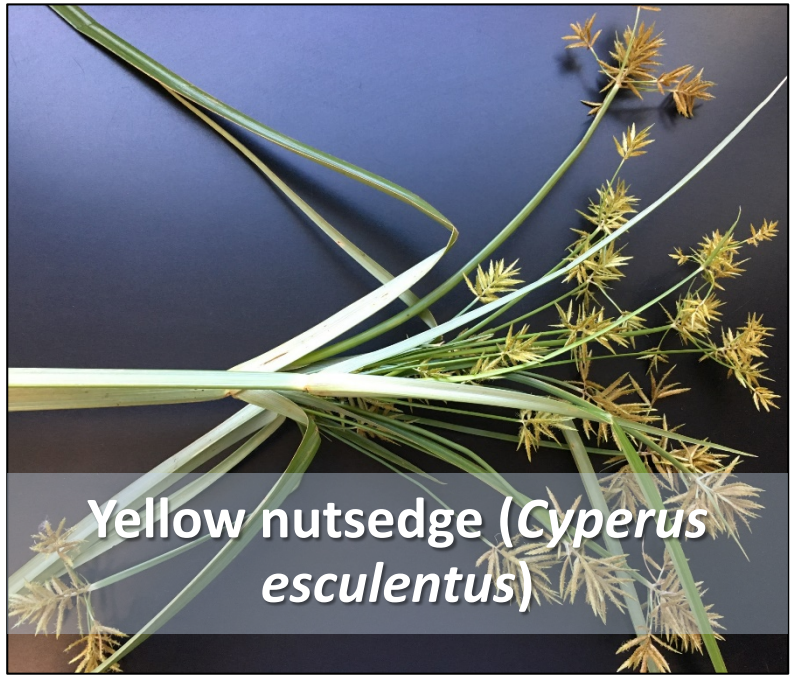
# Delta trials 2019-2021

- Trial objective: Evaluate the crop tolerance and weed control of Loyant (florpyrauxifen-benzyl, Corteva Agriscience) in drill-seeded rice.
- New chemistry for CA
- 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).

# Weeds in the Trial

Watergrass and Barnyardgrass (*Echinochloa* spp.)

Sprangletop (*Leptochloa fusca*)



Yellow nutsedge (*Cyperus esculentus*)

# 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 *("Control")* | 5.5 pt |
| Loyant, Prowl H2O, Super Wham, MSO | 1.33 pt, 5.5 pt, 6 qt, 0.5 pt |

# Crop injury observations included leaf tip burn and leaf curl

- In all years, we observed tip burning with all treatments, particularly in propanil treatments. Symptoms were generally gone by 14 DAT.
- Under certain environmental or stress conditions, Loyant will cause leaf curling that may persists for several weeks.

# We observed good weed control with Loyant, but tank mixes will be needed

- In 2019 and 2020, trials showed that Loyant and Loyant tank mixes had good efficacy on *Echinochloa* spp. (watergrass and barnyardgrass)
    - Similar weed control and yield to the grower standard program
- In 2021, trial showed poor control on yellow nutsedge, which may have been influenced by delayed flood-up conditions
- Loyant does NOT have efficacy on sprangletop

**We observed that Loyant may be used post-flood to help control grasses that escaped the pre-flood program.**

# 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 typical weeds in the Delta system.

# Weedy Rice

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

- Sometimes called “red rice” because some types have a red pericarp.
- We identified weedy rice in the Delta in 2016 and are aware of a few farms having it, with infestations ranging from low to severe.
- “Type 1” weedy rice is tall in stature and has high shattering and dormancy.

# UCCE research and extension objectives

- Assess the distribution of weedy rice.
- Disseminate information on what we know to be best management practices.
- Research trials to better understand weedy rice biology and management, including:
  - Cultural practices
  - Herbicides for spot spraying
  - ROXY rice technology

# 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.
- 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.

# Stem Rot Update

# 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 effect when applied at tillering.

# Acknowledgments


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# Thank you!

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