Emerging Weeds Issues

Whitney Brim-DeForest and Michelle Leinfelder-Miles Rice Growers Meeting February 11, 2021



Watergrass Update





UNKNOWN WATERGRASS SPECIES



- Two fields identified in 2017
- 10 populations collected in 2018 for herbicide screening





- Sent to 2 Echinochloa experts (one in Texas, one in Canada), results inconclusive
- Genetic work needed, currently soliciting outside funding
 UNIVERSITY OF CALIFORNIA Agriculture and Natural Resources
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Herbicide Screening

- 10 populations collected in 2018 for herbicide screening
- 4 from Butte County, 2 from Glenn County, 3 from Sutter County, and 1 from Yolo County
- Two known susceptible populations added as a comparison
- Screened using highest labeled field rate
- Conducted in greenhouse in 2020
- Herbicides applied at 2-leaf stage of grass (early application timing in field), corresponds to DOS-1.5 leaf stage of application
- Percent control (biomass and plant no.) at 14 days after application
- 4 replications (pots) per biotype



Trade Name	Active Ingredient	Rate	Rate (a.i.)
Cerano®	Clomazone	12 lb ac ⁻¹	673 g ha ⁻¹
Bolero®	Thiobencarb	23.3 lb ac ⁻¹	3918 g ha ⁻¹
Butte®	Benzobicyclon + Imazosulfuron	7.5 lb ac ⁻¹	306 g ha ⁻¹
Granite GR [®]	Penoxsulam	15 lb ac ⁻¹	40 g ha ⁻¹
Clincher®	Cyhalofop	15 fl oz ac ⁻¹	263 g ha ⁻¹
Regiment®	Bispyribac-sodium	0.57 oz ac ⁻¹	32 g ha ⁻¹
SuperWham [®]	Propanil	6 qt ac ⁻¹	6726 g ha ⁻¹













Overview: Watergrass (preliminary data)

- 10 of the 10 unknown samples were not controlled (less than 50% by biomass, in comparison to the untreated controls) by Granite GR® or Butte®
- 9 of the 10 samples were not controlled by Bolero®
- 6 of the 10 were not controlled by Cerano®.
- SuperWham®, Regiment®, and Clincher® controlled 10 of 10 samples (at least 60% control)
- Some failures still likely due to application/timing issues
- Collected 64 additional samples in 2020, will continue to look for identification information, as well as control methods



Preliminary Recommendations

- Screening implies that control of this new biotype/species will need to be prioritized early in the season
- Possible early-season treatments could be:
 - Stale seedbed using a non-selective herbicide
 - Pre-plant Abolish® followed by Cerano® or Butte® or Granite GR®
 - Cerano® followed by Butte® or Bolero® or Granite GR®
 - Butte® followed by Granite GR® or Bolero®
- Keep in mind: there is still a strong likelihood that a followup application may still be required later in the season, even with these early-season applications



Loyant Trials



Loyant Trials in Drill-Seeded Rice

- Loyant (florpyrauxifen-benzyl, Corteva Agriscience) is registered for rice in the southern US but would be a new chemistry in California.
- Loyant has 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). No activity on sprangletop.
- What is the weed control efficacy and crop tolerance of Loyant in California drill-seeded rice?
- Full report (2019 and 2020) is available from my website: <u>https://ucanr.edu/sites/deltacrops/Rice/</u>.



Weed Counts



Herbicide Program* (Treatment)	14 DAT	21 DAT	28 DAT	35 DAT	42 DAT
Loyant	3	5	2ab	3ab	4 c
Loyant/Clincher	2	3	1ab	3ab	5 bc
Loyant/Granite	4	3	1 b	9ab	15ab
Loyant/RebelEX	2	3	1ab	4ab	9abc
Grower standard	1	1	1 b	2 b	4 c
Prowl	3	0	8a	15a	21a
Loyant/SuperWham	1	2	1 b	2 b	3 c
Average	2	2	2	5	9
Coefficient of Variation (%)	113	74	154	119	95
P value	0.1757	0.2314	0.0191	0.0085	0.0011

*Loyant applied at 1.37 pints. All Loyant treatments included Prowl H2O and MSO. All applied at 3-4 lsr. Permanent flood established days later.



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Crop Injury

- We observed leaf rolling in the Loyant treatments until about 42 DAT.
- Corteva has observed this in prior testing.
- Associated with environmental stessors (e.g. heat, cold, drought).



Summary

- No difference in yield among treatments. Loyant treatments yielded similarly to Grower Standard.
- Loyant has shown good activity on *Echinochloa* species, but tank mixes may be needed depending on field weed composition.
- Loyant treatments may show leaf rolling for several weeks after application, but this did not seem to impact rice maturity or yield.
- Results indicate that Loyant could be used in drill-seeded rice herbicide programs to provide a different chemistry for resistance management.



Weedy Rice



Weedy Rice - Background

- Weedy rice is rice with undesirable characteristics (e.g. shattering, quality).
- It is sometimes called "red rice" because some types have a red pericarp.
- UCCE research and extension objectives include:
 - 1. Assessing the distribution of weedy rice.
 - 2. Disseminating information on what we know to be best management practices.
 - 3. Conducting research trials to better understand weedy rice biology and management, including ongoing testing with herbicides.

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;

Research Developments

- SUPPRESS® herbicide (Westbridge Agricultural Products) is a chemistry labeled in CA for organic production (a.i. caprylic acid and capric acid)
- Could be used for spot spraying in 2021, but per the label, the field will need to be drained before application.
- Timing: after the last grass herbicide has been applied, but before the weedy rice has started to flower (generally no earlier than 60 days after seeding).
- Reflooding: recommended within 48 hours of application



Thank you!

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