



Seeing red

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New grass species joins weedy rice as weeds that tested California growers and PCAs in 2018

• By Vicky Boyd,
Editor •

Although the number of rice acres in California infested with weedy rice — also known as red rice — has remained fairly stable the past few seasons, a new biotype popped up in one field in 2018.

Add to that a new and yet-identified relative of watergrass, and University of California Cooperative Extension has asked growers and pest control advisers to continue to report any suspicious rice weeds this coming season.

Whitney Brim-DeForest, UCCE farm adviser for Sutter, Yuba, Placer and Sacramento counties, made the request as she gave an update on weedy rice and emerging weed issues during recent UC winter rice meetings.

During the 2018 season, 25 samples suspected of being weedy rice were submitted to UC for testing, she says. Of those, five were confirmed as weedy rice from four new sites. One site had two different biotypes.

“It’s still around, but not a whole lot more,” Brim-DeForest says. “One of the strange things this year is we had a bunch of Arborio rices submitted.”

Altogether, the state has about 10,000 weedy-rice infested acres, an amount that has remained fairly constant the past few years. Genetic testing of five biotypes has found they differ from weedy and red rice types found in the Mid-South.

One of the disappointing findings from the 2018 samples is a new type being referred to as



Dr. Whitney Brim-DeForest

type 6, she says. It was found in one location in Butte County.

The newcomer has reddish awns early after heading and black hulls at maturity. It is distinguishable from type 4, which also has black hulls, by the height of the plants. Type 6 is tall, type 4 is not.

For more information on weedy rice, including identifying features, visit <http://www.caweedyrice.com/>.

Seeds can remain for years

An informal survey at the Woodland UCCE meeting found about one-third of respondents suspected a weedy rice infestation in their fields during the past two years. More than half — 57 percent — say they reported it to UCCE.

Brim-DeForest encouraged growers and PCAs to continue to report suspected weedy rice infestations to UCCE, noting the grower's name and field location are kept confidential. This enables farm advisers to monitor the field and work with the grower to develop a control program, she says.

Ridding a field of a weedy rice infestation is not a one-year effort, either. From 2016-2018, Brim-DeForest conducted a seedbank study in 10 known weedy rice fields to gauge how long seeds can remain.

From each field, she collected 34 soil samples, which were then washed to separate the seeds from the soil. The seeds were subjected to potassium hydroxide, which turns the bran on weedy rice seed red.

“For the most part, we’ve seen an actual increase in the amount of seed we’ve found in the fields — the number of seeds per meter squared and the total number,” she says. “I don’t know if this is a trend or just variability. I’ll be checking with the growers to see if we can correlate some of the increases or decreases to grower practices.

“Most of the growers are trying very hard to try to get the weedy rice out of their field, so we’re seeing less coming up. But there’s still a lot in the seedbank.”



Type 6 is a new biotype of weedy rice found in California. Five other biotypes had previously been identified — photo courtesy UC Cooperative Extension

In response to the weedy rice outbreak, the California Department of Food and Agriculture implemented new rules requiring growers to plant only certified seed or seed produced under an approved quality assurance program beginning with the 2019 season. In addition, handlers are required to seek proof the rice delivered to them was grown with certified or quality assurance program seed.

Testing drone-aided scouting

Scouting for weedy rice can be an arduous task, so UCCE looked at whether drones could be enlisted to survey from the sky. In theory, the unmanned aerial systems could cover a lot more ground and from a different perspective than humans on foot.

Sean Hogan, a UC informatics and geographic information system coordinator, flew a drone mounted with two different types of cameras. One detected red-green-blue light wavelengths and the other multi-spectral wavelengths.

Hogan flew at both 40 feet and 70 feet elevation over a rice field with a known weedy rice type 1 infestation before it had headed. At the same time, a farm adviser ground truthed the field geo-referencing each weedy rice find with GPS.

Although the drone survey was able to detect a large clump of weedy rice, it failed to detect individual plants, Brim-DeForest says.

“It was a little bit disappointing for the first time, but we won’t give up,” she says. “Maybe a different timing (during weedy rice growth), but we don’t want to go too much later.”

Brim-DeForest also started an experiment on the UC Davis campus to look at how each weedy rice type responds to one of two treatments: a rotation of rice followed by sorghum, or a spring stale seedbed.

A new grassy weed

UC farm advisers also confirmed a new watergrass relative in seven different fields between 2017 and 2018. They have yet to determine the species, although it belongs to the *Echinochloa* genus, Brim-DeForest says. *Echinochloa* includes barnyardgrass, early watergrass and late watergrass — also known as “mimic.”

The new weed matures about mid- to late July. It is small-seeded and has long, purple awns on all seedheads.



“This new one has really long pink awns, even at maturity,” Brim-DeForest says. “It looks kind of bushy.”

Seed head of the unknown watergrass species (*Echinochloa* spp.) Notice the visible purple awns — photo courtesy UC Cooperative Extension

Early watergrass has awns but a larger seed size. Late watergrass is not awned. Barnyardgrass has smaller seeds and may or may not be awned.

An informal survey of UC winter rice meeting attendees in Woodland found 28 percent suspect they have the new weed in their fields, 39 percent did not and 33 percent were unsure. As with weedy rice, she encourages growers and PCAs to call the local farm adviser’s office should they suspect this new watergrass species.