HEALTHY FOOD SYSTEMS | HEALTHY ENVIRONMENTS | HEALTHY COMMUNITIES | HEALTHY CALIFORNIANS

Rice Leaf

November 2021

UC CE University of California Agriculture and Natural Resources | Cooperative Extension Butte County

Save the Date!

2022 Rice Grower Meetings

January 24: Richvale (morning) and Glenn (afternoon)

January 25: Colusa (morning) and Yuba City (afternoon)

January 26: Woodland (morning)

Contents November 2021

Managing rice straw when winter flood water is uncertain

In most years, California rice farmers manage their winter straw by flooding a field where the rice straw has either been chopped or chopped and incorporated. In these cases, the flood water helps to ensure good decomposition.

This year, however, is different. Many growers are faced with having no water to flood their fields over the winter. Good straw decomposition is important as it will impact nitrogen management decisions the following year.

It may also affect the survival of stem rot and aggregate sheath spot sclerotia, the fungus resting structures, in the soil. Too much straw will tie up nitrogen fertilizer early in the season and will also serve as a host for stem rot and aggregate sheath spot. So, what are the options besides burning?

Options

First, removing straw is an option. Driving around, I have seen a lot of straw bailing going on. Bailing rice straw removes about half of the rice straw.

This is a good start, but it would still be nice to make sure the rest of it gets decomposed by following the suggestions in the second option.

The second option is to do the best possible to make sure rice straw decomposes without winter flooding. Simply chopping the rice straw and leaving it on the surface will likely not do the trick – especially if there is not much rain over the winter.

It is really important to make sure there is good soil-water-straw contact to ensure good decomposition. For this to occur you need to incorporate your rice straw. Studies were conducted here in California in the late 1990s which compared burning, bailing, incorporation and rolling of rice straw.

They found that incorporating rice straw resulted in the greatest amount of straw decomposition and the least straw remaining the following spring. This result was seen in both fields that were flooded and those that were not. When the fields are not flooded, rainfall can provide water for good decomposition.

Article by Bruce Linquist, UCCE Rice Specialist

2021 California Crop Improvement Rice Seed Report

Statistics:

Due to the drought, rice acres in California saw a substantial decline to a total of ~405,000 acres, a 21% decline from 2020 and the smallest since 1992. The seed program saw a 9% decline, falling from all time highs in 2019 (30,663 acres) and 2020 (30,655 acres), to 27,989 acres applied in 2021. Excluding 'Field Inspection Only' (fields transitioning varieties) and rejected acres, 24,559 acres were approved for seed in 2021. M-206 remains the #1 Calrose variety in terms of acres applied, constituting 30% of the acres applied. The five Rice Experiment Station varieties that are marketed under the Calrose brand make up 79% of the total rice seed acres applied. These five Calrose varieties and their acres applied are M-206 (8,483), M-209 (5,447), M-105 (3,094), M-211 (2,827), and M-210 (2,338).

Activity:

The training of two new inspectors took place on 8/5, and rice inspections commenced on 8/9 with a total of 4 rice inspectors. Early inspection of fields in the QA program were prioritized due to higher lodging potential and these received their first inspection by 8/17.

Scouting fields for presence of red rice was emphasized and inspectors' eyes were trained in commercial fields known to have red rice. A total of 939 acres were rejected due to presence of red rice. Fewer than 200 red rice plants were observed across 10 applications, and biotypes observed were Types 1, 2, 5, 6, & 7. Below is table showing a breakdown of red rice (RR) observations by inspection program (Certified seed and Quality Assurance).

With the anticipated full registration of oxyfluorfen for rice in CA in 2023, the first Foundation class seed production of a ROXY variety (19Y4000) was inspected and passed in 2021. Oxyfluorfen resistant rice will be an important tool in combating common weeds and red rice. At the Rice Experiment Station this year, the effectiveness of oxyfluorfen against non-ROXY rice was demonstrated by mixing Koshihikari seed in some of th.e herbicide trial plots.

As in the past, Timothy Blank (lead rice inspector) inspected all the Quality Assurance production due to the intricacies of the varieties and the program. Inspections in the certified seed program were divided by region among the four inspectors. Seed field inspections were completed in late September.

Rice is the #2 crop in the CCIA program by acreage and the least fluctuating major seed crop over the years. Through self-regulation, California's rice industry is unique compared to other rice growing regions in that it has adopted requirements that the planting seed be inspected by an approved third-party to meet industry standards. The CCIA remains committed to providing the rice industry with this vital service.

Article by Timothy Blank, California Crop Improvement Association, tjblank@ucdavis.edu

Program	Applied acres (includes 'Inspection Only')	Approved acres	Rejected w/ RR	% Rejected of Applied acres	# Apps	# Apps w/ RR	% of Apps w/ RR
Certified	26,881	23,720	670	**2.5%**	355	7	**2.0%**
Q.A.	1,108	839	269	**24.3%**	29	3	**10.3%**
Total	27,989	24,559	939	**3.4%**	384	10	**2.6%**

Weedy Rice Survey and Season Wrap Up

2020 Survey Update

Weedy rice was found in California on a large scale in 2016, over 8 counties, after having been only found in a few fields in one county prior to 2008. In 2020, University of California Cooperative Extension conducted a comprehensive survey. The objectives of this survey were to determine: 1) presence-absence of weedy rice, 2) to determine infestation level, and 3) to determine if there was any pattern to the distribution of weedy rice biotypes.

A survey was conducted from June thru September 2020 across eight counties (Glenn, Butte, Colusa, Sutter, Yolo, Yuba, Placer and Sacramento). Each field was surveyed on an individual basin level. Each basin was surveyed by patrolling the parameter and visually and physically inspecting. All known biotypes (1 to 7) were recorded. Once the weedy rice was identified in the basin, a rating system was used to assess the level of the infestation from 0 to 6, with 0 being the absence of weedy rice, and 6 being 25% or more of the basin infested. The rating system (Table 1) was applied to each basin.

2020 Results Summary

The total acreage of basins found infested with weedy rice was 2,237; 20.7% of the basins surveyed contained weedy rice (Table 2). Biotype 1 was most common (54.5% of the basins) followed by Biotype 2 (30.9%). No basins were found with Biotype 5 or Biotype 7 (Table 3).

The majority of infested basins (34.7%) were rated infestation level 3 (less than 5 patches of plants), or infestation level 2 (27.4%) (less than 10 individual plants) (Table 4). None of the basins were rated at the highest infestation level 6.

2021 Survey Update

In 2021, 39 fields were inspected for the presence of weedy rice. The total acreage inspected was 2,497 acres and the total acreage infested was 1,525 acres. The fields are in Yuba (1,506 acres), San Joaquin (985 acres), and Sutter (12.5 acres) counties.

2021 Samples Collected

We had lots of calls in 2021, but the vast majority were not weedy rice (not red pericarp, non-shattering). Many were off-types or varietal contaminants. Preliminary findings are: one previously-infested ranch in Yuba County with Type 5, three new ranches infested in Glenn County (2 with Type 5, and 1 with Type 1), and one previously-infested ranch in Butte County with two new biotypes (Type 2 and Type 3).

We encourage growers and PCA's to please continue calling us with suspected infestations, as the smaller the infestation, the easier it is to control it.

Call your Farm Advisor: Michelle Leinfelder-Miles (SJ County), Luis Espino (Butte and Glenn Counties), and Whitney Brim-DeForest (Sutter, Yuba, Placer, and Sacramento Counties). For Colusa and Yolo County, please call either Whitney or Luis.

Article by Whitney Brim-DeForest, UCCE Rice Farm Advisor.

Table 1. Rating system utilized for visual assessments of weedy rice infestations. Basins were rated individually.

Infestation Rating	Infestation Level per basin
0	No plants
1	<10 individual plants
2	>10 individual plants
3	Less than 5 patches of plant
4	5 or more patches
5	10-25% of basin infested
6	>25% of basin infested

Table 2. Weedy rice infestations in 2020 per County, acreage surveyed, acreage infested, and percent of acreage infested (%).

Counties	Surveyed (ac)	Infested (ac)	Infested (%)
Butte	1823	430	23.59
Glenn	1155	388	33.59
Colusa	1226	330	26.92
Yuba	1666	415	24.91
Sutter	3318	642	19.35
Placer	305	32	10.49
San Joaquin	0	N/A[a]	N/A[a]
Sacramento	0	N/A[a]	N/A[a]
Yolo	1288	0	0.00
Total	**10781**	**2237**	**20.75**

Table 3. Weedy rice infestations (2020) per individual weedy rice biotype in acreage surveyed and percent of acreage infested (%), where total acreage was 2237 ac. No acreage was found infested with Biotypes 5 or 7.

Biotype	(ac)	%
1	1220	54.54
2	692	30.93
3	292	13.05
4	13	0.58
5	0	0.00
6	20	0.89
7	0	0.00
Total	**2237**	**100.00**

Table 4. Weedy rice infested acres (2020), percent of infested acres, and percent of total acres surveyed. Total infested acreage was 2237. Infestations were rated on a scale of 0 to 6.

Infestation Level	(ac)	% of Infested Acres	% of Total Acres
0	8544	N/A	79.3
1	472	21.1	4.4
2	612	27.4	5.7
3	777	34.7	7.2
4	234	10.5	2.2
5	142	6.4	1.3
6	0	0.0	0.0
Total Uninfested	**8544**	**N/A**	**79.3**
Total Infested	**2237**	**100.0**	**20.7**

Arthropod and Disease Update

Overall, the 2021 season did not have a lot of arthropod problems. The slow flood at planting may have provided good conditions for tadpole shrimp to be an issue, but the cooler temperatures during planting helped slow down the shrimp. A trial I conducted this year showed that rice seedlings are susceptible to shrimp injury only until the first true leave is visible, even if plants are still underwater. Seedling injury was severe when TPS were present during germination and reduced stand up to 99% and yields up to 65%. Once seedlings had a first true leave, they were well anchored and were not harmed by the shrimp.

Armyworm populations were the lowest since 2015. It seems this was a regional trend, with areas north of California experiencing a similar armyworm population decline. In our traps, the number of moths we were catching weekly was lower than what we had been getting for the past three years (figure 1). Using trap data and worm population estimates from field searches, we have determined that peak worm density occurs a week or two after moth numbers peak in the traps. This gives us some good information about the timing when fields need to be monitored closely.

Regarding diseases, 2021 was also a year of low pressure. I did not see any blast in the Valley, however, I did hear from some PCAs and growers that had seen very low levels. I inspected a few M-210 fields where blast had been suspected in the past. M-210 is blast resistant, therefore blast should not develop to epidemic levels on this variety. Given the year we had, I did not find any blast in these fields. Similarly, kernel smut was not a problem. In 2018 kernel smut became a considerable problem in the northern part of the Valley but levels have remained low since then.

One disease that I have heard some growers had issues with was stem rot. The disease can go unnoticed until drain time, when plants lodge and then dry very quickly, resulting in blanking. Many trials I have conducted have shown that azoxystrobin (the active ingredient in Quadris) can reduce the disease severity significantly when applied at very early heading. However, if the field does not have a history of stem rot, it can be difficult to determine if a treatment is needed.

A common question about the management of stem rot is the difference in susceptibility among varieties. This year I conducted a trial that compared fungicide treated and untreated plots of several common varieties. The results indicate that very early varieties like S-102 and CM-101 show higher severity, and later varieties like M-209 and M-211 show less; however, the effect on yield was similar for all varieties (on average, 4% yield reduction). The results of this trial are still being analyzed, so I hope to provide more updates during our winter meetings in January.

Article by Luis Espino, UCCE Rice Farm Advisor.

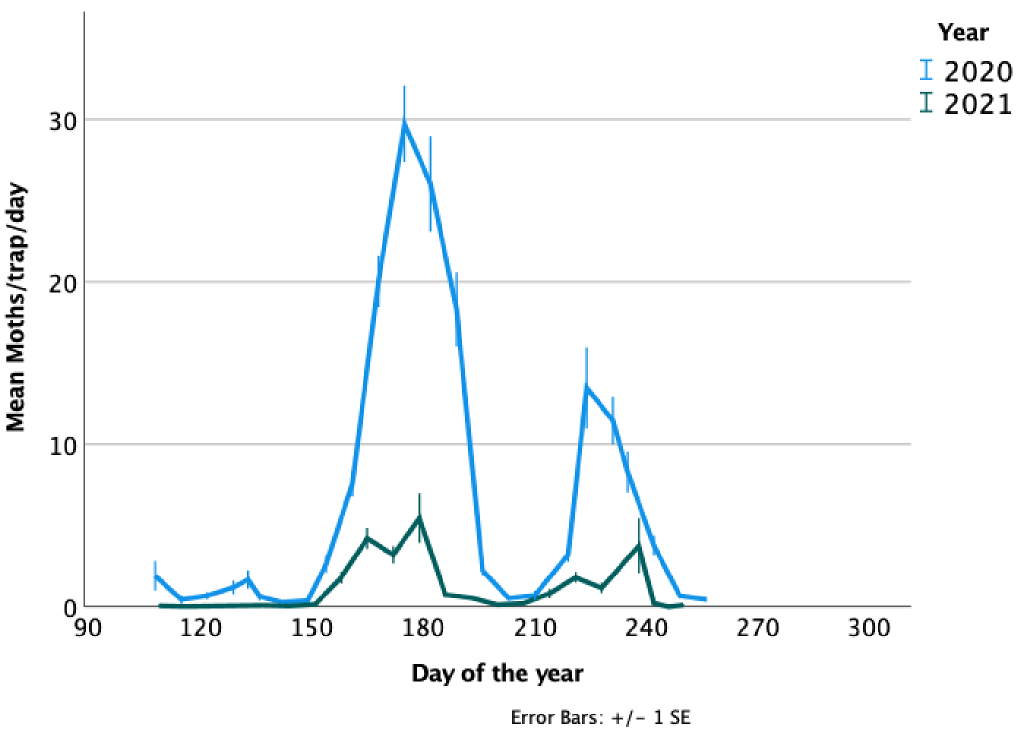

Figure 1. Average number of moths caught per day in armyworm pheromone traps in 15 rice fields across the Sacramento Valley. Day 150 = May 30, 180 = June 29, 210 = July 29, 240 = August 28.

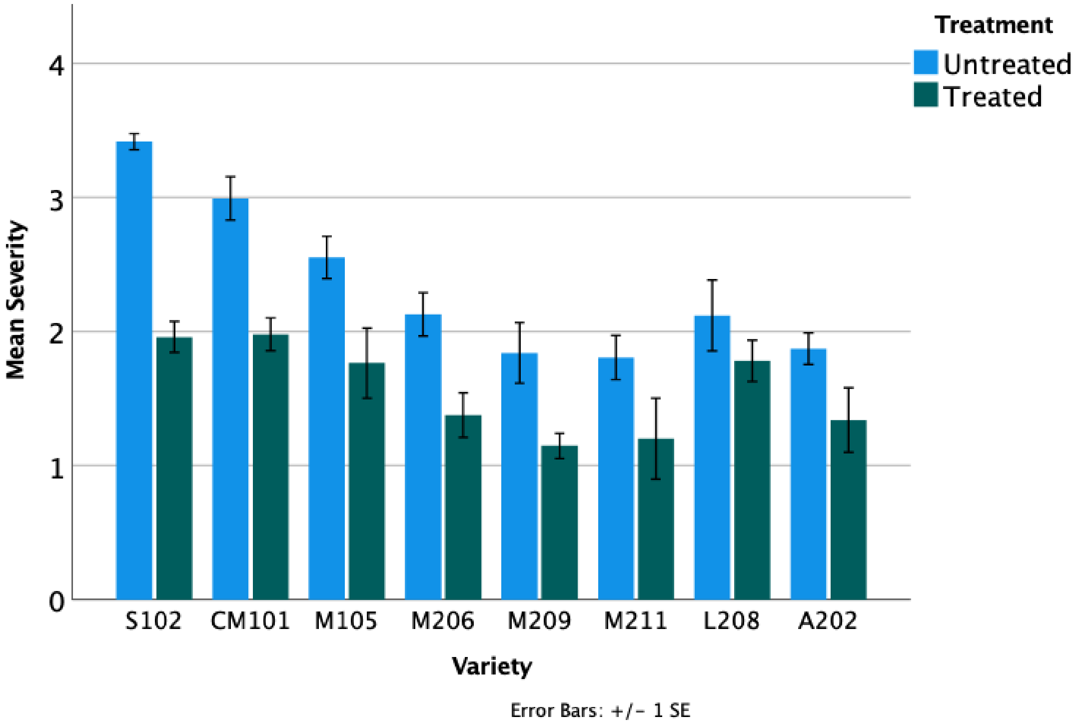

Figure 2. Average stem rot severity of fungicide treated and untreated rice varieties. The severity scale goes from 0 (no symptoms) to 4 (tiller rotted through).