Rice Briefs

November 2017

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

2017 Rice Recap

The 2017 cropping season was a crazy one. Although 2017 started out very promising with record rainfall during the winter, the rains persisted into the spring delaying seedbed preparation and planting. Many growers had to take short cuts in order to get their fields planted in a timely manner. These shortcuts included doing field operations when soil was wetter than optimal, skipping some operations, and planting early duration varieties. Planting was typically delayed by 1 to 2 weeks relative to a more typical year. In addition, late rains prevented a lot of acreage from getting planted so acreage is down and estimated to be 462,000 acres - much lower than the 520-550,000 acres in a typical year. After lingering rains came a hotter than average summer. Late planting and warm weather appears to have shortened the time from planting to harvest by about a week. In addition, armyworms were a problem for the second year in a row and there were higher than normal incidences of some diseases, particularly stem rot and kernel smut. In general, there was a lot of lodged rice, some going down even before fields were drained. Many are reporting that rice yields are down about 10%.

Bruce Linquist, UCCE Rice Extension Specialist.

Delta Rice Recap

The 2017 season was marked by weather extremes, including record winter rainfall and high summer temperatures. Despite those, Delta rice growers generally observed an average to above-average season. Total acreage for the Delta south of the Yolo Bypass was roughly 2900 acres. For some growers, acreage was up because they were able to get ground preparation done early, but for others, acreage was down because the ground was late to dry out. Most of the Delta acreage is in San Joaquin County, with a few hundred acres in the "tail" of Sacramento County. The acreage was entirely drill-seeded, as is typical for the Delta, and planted with M.206.

Annual rainfall (October 1, 2016 to September 30, 2017) for the region varied greatly by location. CIMIS (http://www.cimis.water.ca.gov) stations for the south Delta reported rainfall from 16 to 20 inches, but stations in the north Delta reported 28 to 38 inches. Most of this rainfall fell in October through January. Spring rainfall lingered into the month of April, but accumulation of at least a tenth of an inch ceased by mid-

April. Given the high organic matter content of many Delta soils, fields generally dried out for on-schedule planting in late-April through early-May, with few exceptions.

Growers and consultants did not report high pest pressure. Watergrass and sprangletop can be problematic weeds, but these were generally managed well with herbicide programs. We have been trapping armyworms in the Delta during the summer, in cooperation with Sacramento Valley farm advisor. We found moth flights to peak in late June. Some growers indicated needing to spray some of their acreage; however, others did not. For those who sprayed, populations fell and did not resurge later in the season.

Cooler temperatures in the Delta, compared to the Sacramento Valley, make the Delta a challenging place to grow rice. The summer of 2017, however, brought many days over 100^0F. This varied greatly by location, with some areas in the north Delta having approximately 10 days over 100^0F and areas of the south Delta having 25 days over 100^0F, according to CIMIS stations. Hot days meant warmer nights, which was a good thing for Delta rice culture. Delta rice can experience blanking due to low nighttime temperatures, influenced by Delta breezes. We expect blanking to occur when the developing pollen grains are exposed to nighttime temperatures at or below 55^0 F for several hours. Across four Delta CIMIS stations, the average minimum temperature from August 1st to September 15th was 60^0F.

Harvest was generally on-schedule and occurred from late-September to early-October. Anecdotally, yields were up and averaged over 90 cwt/acre. Growers suspect that the higher summer temperatures (including higher nighttime temperatures) resulted in less blanking and higher yields.

Overall, Delta rice growers had an average to above-average year as we close out 2017. Let's hope for a similar 2018.

Michelle Leinfelder-Miles, Delta Farm Advisor, UCCE

End of Year Weedy Rice Update

The 2017 season kicked off with much fanfare regarding weedy rice. Thanks to the vigilance of the entire rice industry, the UCCE Rice Advisors received many calls regarding weedy rice, starting in late June, as growers finished their herbicide applications. Calls continued to come in through July and August. The California Crop Improvement Association (CCIA) began inspecting fields as the rice headed, and suspected plants were pulled and sent to the UCCE Weedy Rice Team for genetic testing.

By the end of the season, we had a total of:

- 53 samples submitted for testing
- Out of the 53, 15 have been confirmed to be weedy rice
- 7 are still pending genetic testing

Eight seed fields were found to be infested with weedy rice and rejected as seed fields:

- 3 were new medium grain seed fields
- 1 was an established medium grain seed field
- 4 were specialty variety seed fields

Commonly Confused with Weedy Rice

There were many calls throughout the season, which indicated that everyone was out inspecting their fields. Thankfully, many of the calls were not weedy rice!

Some commonly things that can be mistaken for weedy rice:

1) Sprangletop: like rice, it has a ligule, so early in the season, before heading, it may be easy to confuse it with weedy rice. However, sprangletop has a white stripe down the middle of the leaf (mid-vein).
2) Elongated Upper Internode (EUI): this is a genetic abnormality of common medium grain rice varieties that causes the part of the stem attached to the rice panicle to elongate. The panicles stick up above the canopy, just like weedy rice. However, the rest of the plant will look just like the variety planted in the field.
3) Bakanae: this disease of rice causes the plants to elongate and appear taller than the surrounding plants, and they also appear lighter in color. However, any panicles produced by the infected plants will be blanks.
4) Fertility Differences: if the field has more or less nitrogen in certain areas, some of the rice plants may appear lighter in color than others.

New Information for Management

We have been working on characterizing some of the biological characteristics of the weedy rice populations. We made considerable progress over the summer, and are happy to report that the dormancy and shattering status of each of the five populations is now known. A summary is below:

Weedy Rice Type 1:

- Straw-hulled
- Awnless
- Red bran (pericarp)
- Pubescent (hairy) leaves
- ***High shattering***
- ***High dormancy***

Weedy Rice Type 2:

- Bronze-hulled
- Awnless
- Red bran (pericarp)
- Pubescent (hairy) leaves
- ***High shattering***
- ***Low dormancy***

Weedy Rice Type 3:

- Straw-hulled
- Awned
- Red bran (pericarp)
- Pubescent (hairy) leaves
- ***High shattering***
- ***High dormancy***

Weedy Rice Type 4:

- Black-hulled
- Awned
- Red bran (pericarp)
- Pubescent (hairy) leaves
- ***High shattering***
- ***High dormancy***

Weedy Rice Type 5:

- Straw-hulled
- Awnless
- Red bran (pericarp)
- Pubescent (hairy) leaves
- ***High shattering***
- ***Low dormancy***

Implications for Management

All weedy rice types found in California so far are high shattering, which means that many of the seeds will fall off the panicle before harvest. Therefore, it is critical to remove plants from the field before they can shatter completely. Any seeds shattering on the soil surface will have the potential to be deposited into the soil seedbank, lengthening the amount of time weedy rice will be infesting the field.

Three of the types found in California have high dormancy: Type 1, Type 3, and Type 4. High dormancy means that once the seeds are in the soil, they will remain there for a long period of time without germinating, even if the grower is doing everything possible to get the plants to germinate so that they can be killed. Two of the types have low dormancy: Type 2 and Type 5. These types will readily germinate the following spring if they are close to the soil surface, so they can be more easily eradicated from a field, if a grower follows all best management practices.

Characteristics	Populations	Duration of time in soil
High dormancy, high shattering	Type 1, Type 3, Type 4	Long-term (may be 10 or more years)
Low dormancy, high shattering	Type 2, Type 5	Shorter (likely to be a few years, but only if more seed is not being put into the soil seedbank)

Summary: We Are Working Together!

Overall, grower and PCA participation in scouting for weedy rice was really high in 2017. Since we can only get rid of it if we know that it is there, this is very encouraging, and we hope that the participation continues into the future. Likewise, those growers that already know they have weedy rice infestations are working hard to eradicate it, following the Best Management Practices. Again, this is very encouraging, as the only way that we can eradicate this pest is as a group, working together.

Whitney Brim-DeForest, Luis Espino, UCCE Farm Advisors; Timothy Blank, California Crop Improvement; and Teresa de Leon, UC Davis.

For more California weedy rice information, visit our website:

caweedyrice.com

Armyworms Again

This year we saw large armyworm populations during late June and early July. Infestations occurred in several parts of the rice growing area, but I think I saw the worst in Glenn and Butte counties. Many growers and PCAs I spoke with thought this year was even worse than 2015. I agree; I saw more affected fields and larger areas defoliated within those fields.

I have to admit I was not expecting to see this many armyworms this year. When we had the first outbreak in 2015, the thinking was that the drought allowed the overwintering larval populations to survive in large numbers, resulting in a build up of moths during May and early June, and worms in late June and early July. This theory was disproven by the wet winter of 2016-2017. With all the rain we got, I was expecting less survival of overwintering larvae and therefore less worm pressure in the summer. I was wrong.

I monitored moth populations during the season using pheromone traps (figure 1). I was surprised to see moth catches in rice fields during early May, when the rice was still under water. This indicates that armyworm moths are flying around and laying eggs in weeds around rice fields early in the season. The moth population increased drastically in early June, and by June 10 I started to find very small worms in rice fields. Using temperature models, I predicted that we would see large armyworms around June 20. Lo and behold, I started getting calls from PCAs finding large armyworms on June 19.

Armyworms were seen in the field through early July. Thanks to the efforts of the California Rice Commission, Intrepid received a Section 18 on June 30 and was available for use by growers. By mid July, the worms were pretty much gone. I know this because I was trying to collect worms for an insecticide trial during the second week of July and I could not find very many. Later in the season, during heading, I did not see armyworm problems in the field. The moth catches did not increase much after mid July.

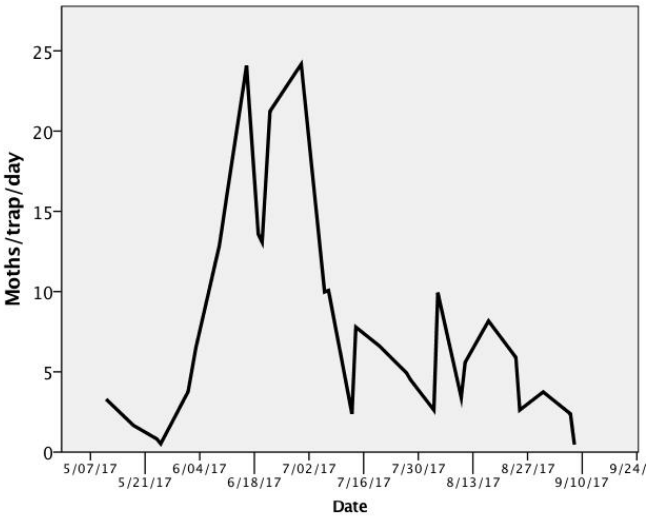

Fig. 1. Average number of armyworm moths trapped per day in rice fields during 2017.

As in previous years, the reports I got in 2017 were that the pyrethroids did not do a good job in controlling the armyworms during the June-July infestation. During this time, I visited several fields treated with Intrepid and Dimilin, and control was excellent. In an insecticide trial I conducted during August, the application of Warrior or Intrepid during early heading protected the panicles from injury.

Product	Rate/a	Number of injured panicles per plot
Warrior II	2.56 fl oz	7.0
Intrepid	10 fl oz	3.8
Sevin	1.5 qt	16.3
Untreated	-	12.8

Table 1. Injured panicles per plot 3 weeks after treatment at heading.

It seems that the armyworm problem is not confined to our region. I have been contacted by researchers from western Canada, Washington and Oregon, with reports of above normal levels of armyworms in grasslands and corn. Whatever the reason for the increase in armyworm population is, it does not seem to be exclusive to our area. Next year, I will continue to monitor armyworm populations using pheromone traps and field scouting to predict when armyworms will show up again and try to give growers and PCAs an early warning so they can monitor their fields closely during these times.

Luis Espino, UCCE Rice Farm Advisor.