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Whitney Brim-DeForest
UCCE Farm Advisor
Sutter, Yuba, Sacramento
and Placer Counties

Save the Dates!

CAPCA Sutter-Yuba Chapter Lunch

Lunch: 12:00-1:30PM

Date: Friday, December 16, 2016

Location: To Be Determined

Topic: Weed Management in Rice

Speaker: Whitney Brim-DeForest (UCCE Rice Advisor, Sutter, Yuba, Placer, Sacramento)

Hosted by CAPCA Sutter-Yuba, this is an opportunity to interact with UCCE Rice Advisor Whitney Brim-DeForest in an informal setting to talk about managing weeds in rice. Lunch is free, and CE credits are pending. Please RSVP to Leanne Becker (Leanne.Becker@valent.com)

UCCE Winter Rice Grower Meetings

January 26, 2017: Richvale & Glenn

January 27, 2017: Colusa & Yuba City

Weedy Rice Update

Whitney Brim-DeForest, UCCE Rice Advisor

This year, through the efforts and cooperation of growers and PCA's, we have identified weedy rice (aka red rice) on over 8,000 acres in Butte, Glenn, Colusa, Sutter, Yuba, Placer and Yolo counties. As scary as that may sound, it is still only a small percentage of the total rice acreage in California (about 2%). Since identification is the first step in management, we are well on our way to getting a handle on the problem.

Several growers have asked why weedy rice (aka red rice) is important to control--it is rice, after all. So here is a bit of background:

Weedy rice affects the rice industry in several ways:

- 1) **Reducing milling quality:** Due to the extra milling required to remove the red bran, the number of cracked and broken kernels will increase, therefore decreasing the value.

- 2) **Hybridization with our varieties:** Weedy rice can cross with domesticated varieties in the field. If there is a high number of weedy plants in a field, the odds that this will occur is even greater. The hybrids (between weedy rice and domesticated varieties) are a new population of weedy rice, and they may have different characteristic than their parents (more vigorous growth, for example)
- 3) **Yield decreases:** Since weedy rice *shatters* (falls off of the panicle before harvest), once the population reaches a critical number in the field, yields will decrease significantly. Yield reductions in the southern US can be as high as 60%.
- 4) **Weed management cost:** Weedy rice cannot be managed by chemical means. Therefore, any control efforts have to be through cultural practices. One of the most effective methods is to hand-pull it out of the field. Labor, as we all know, is very expensive.

As we continue to work on controlling weedy rice over the next several years, we encourage growers and PCA's to continue to work with the UCCE Rice Advisors. If you suspect you have it in your field, give us a call to come out and confirm the identification. We have several different populations that all look slightly different from one another. We will be discussing these in greater detail in the next few months, and an identification guide is in the process of being developed.

For growers with confirmed infestations, the Best Management Practices (BMP's) are as follows:

Best Management Practices for Weedy Red Rice University of California Cooperative Extension

To prevent and eliminate infestations, follow these guidelines:

Equipment:

- Equipment coming into California from areas known to have red rice infestations will be subject to inspection by the County Ag Commissioner in the destination county.

Planting:

- Only use certified seed.
- Do not use an infested field as a seed field.

During the season:

- Red rice plants are easiest to identify at the heading stage.
- For minor infestations, rogue red rice plants from the field. Be careful not to shatter red rice seeds while handling headed plants. Bag headed plants for transportation out of the field and dispose of in an appropriate manner (burn them or put in dumpster).
- For larger infestations, a burn down herbicide such as glyphosate may be used to kill red rice plants. Work with your Agricultural Commissioner to ensure compliance with pesticide use regulations.
- Keep the water on the field with no drainage during the season. Red rice germination is promoted when water is drained from field for stand establishment, foliar herbicide applications, etc.

At harvest:

- The affected field may be harvested but make sure you do not contaminate other fields by moving equipment that may carry red rice seed from one field to the next.
- The best option would be to harvest the affected field last in your sequence.

- If harvesting the affected field last is not possible, clean all harvesting equipment thoroughly before moving from the affected field to the next field.
- Straw should be cut as low as possible to the ground to facilitate burning.
- Make sure paddy rice does not get into the seed channel. Minimal moving and mixing of grain should help ensure this.

After harvest:

- Harvesting equipment (combine, bank outs, trailers, etc.) should be thoroughly cleaned *in affected field* to make sure there is no carry over of red rice seed to other fields.
- Cleaning procedures should include the removal of all plant material from the equipment including mud from tires or tracks that may contain seeds.

Winter management:

- If possible, burn straw in affected field. Prioritize burning fields with red rice infestations before burning other fields. Prioritization of infested fields will occur at the county level, so notify your County Ag Commissioner if your field is infested.
 - If straw was not cut as close to ground as possible at harvest, cut straw close to ground to reduce the amount of green plant material to obtain an effective burn.
 - Spread and fluff-up straw using a rake or other implement to achieve the most effective burn possible.
 - Burn field on day when conditions are most favorable for achieving an effective burn. A slow and intense burn is the most effective to kill red rice seeds.
 - Come back after the burn into affected areas with a propane burner (used in orchards for flaming weeds) to burn exposed seeds on the soil surface. This will provide more heat to destroy seeds than the open field burning.
 - Propane burner use will be more effective after removal of the majority of the plant material by open field burning and is also much safer.
- ***Do not perform*** fall tillage as this may bury red rice seed.
- It is unknown whether or not winter flooding affects red rice seed at this time, so infected fields can be flooded if the grower chooses to do so. Updated information will be forthcoming once more research is done.

Long-term management:

- Fallowing is the best approach to eliminate red rice from a field. Fallowing allows the maximum number of surface seeds to be destroyed. Use tillage or glyphosate on emerged plants.

Fallow management:

- Do not till before flooding in the spring
- Flood, block the drain and then allow the water to subside into the soil
- Wait for red rice to emerge (approximately 2 weeks), then spray with glyphosate.
- About 2 weeks after application of glyphosate, or when soil is dry enough for equipment, disc the soil.
- After discing, reflood, block the drain, and then allow water to subside into the soil
- Repeat the glyphosate application about two weeks after red rice seedling emergence

1st Annual Rice Weed Course Results: can we correctly identify rice field weeds?

Whitney Brim-DeForest, UCCE Rice Advisor

On September 16, we held our 1st Annual Rice Weed Course. We had a good number of attendees (almost 60), and the feedback was mostly positive. Aside from allowing us to get to know many growers and PCA’s a bit better, the course gave us some insight into what we (the UCCE Weed Scientists) need to work on in our extension program.

We asked some general weed management questions of the attendees before and after the course, and had a weed identification quiz. Attendees did remarkably well (very close to 100% correct) on questions related to weed management and regulations. Weed identification, on the other hand, needs some improvement!

Here are a couple of the questions we asked (and the results):

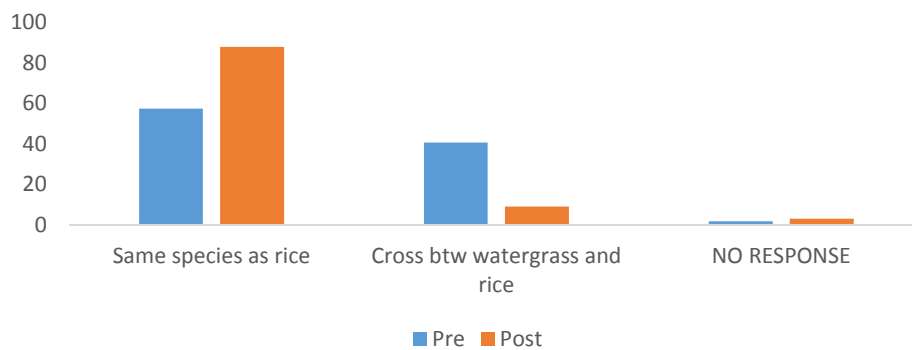


Participants head to the field at the 1st Annual Rice Weed Course (Biggs, CA).

Photo Credit: Dana Dickey, Rice Research Board

“Weedy Rice” (aka “Red Rice”) is...

- a. *The same species as our domesticated rice*
- b. *A cross between watergrass and rice*

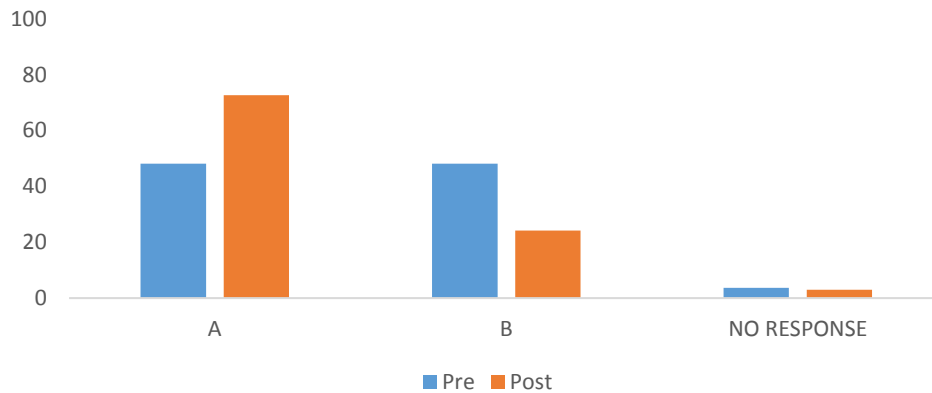
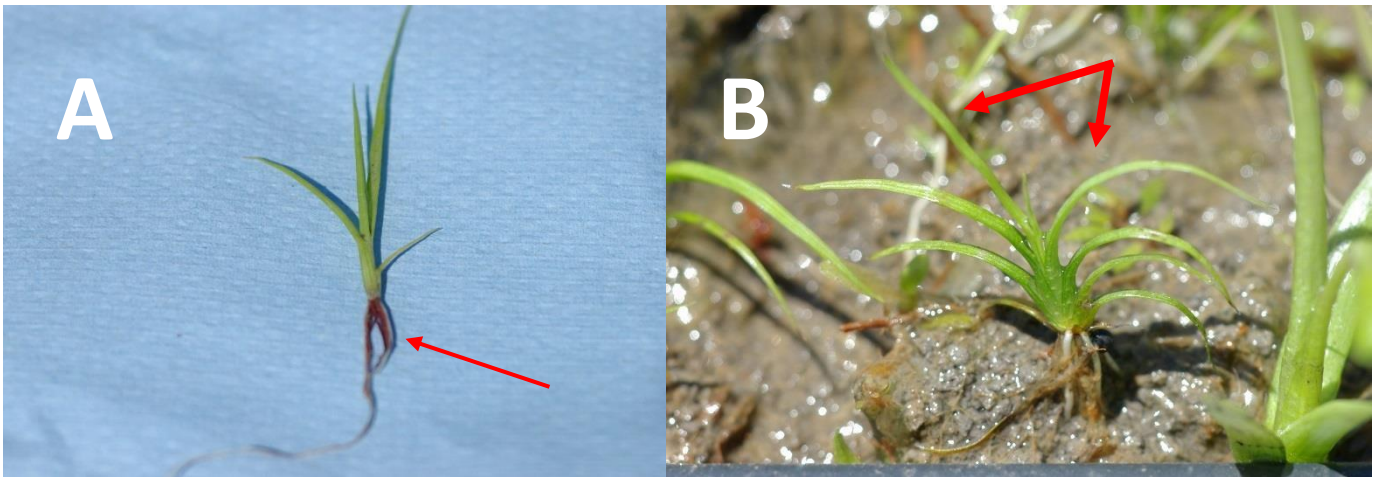


CORRECT ANSWER:

A—Weedy rice (aka “red rice”) is the same species as our domesticated rice!

Results: Before the class, many people (about 40%) thought that weedy rice (aka red rice) was a cross between watergrass and rice. After the course, most attendees (87%) answered the question correctly. Weedy rice is the same species as domesticated rice (both are *Oryza sativa*), which is why it is so difficult to control. Any herbicide that would control weedy rice would also control our domesticated rice varieties!

Which of the following photos is smallflower umbrella sedge soon after emergence?



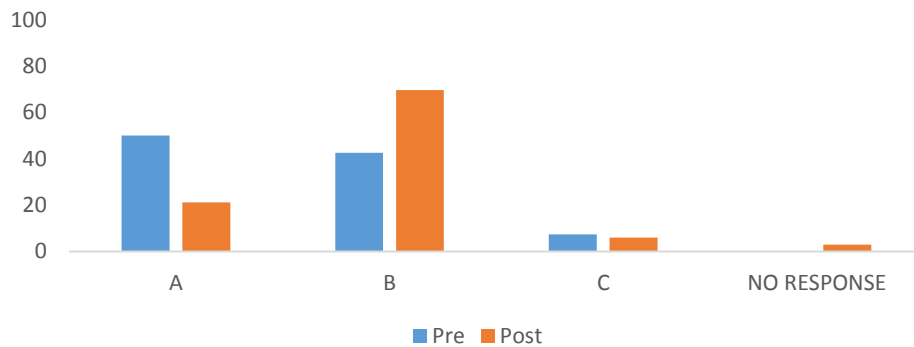
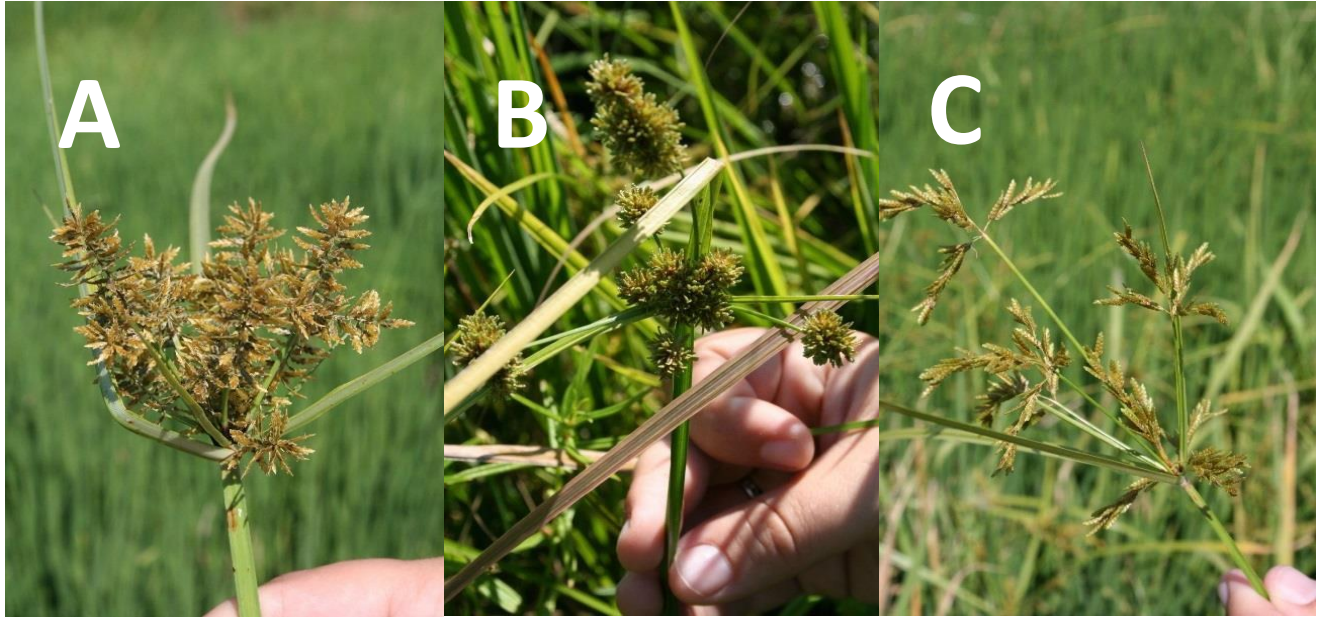
CORRECT ANSWER:

A—Smallflower umbrella sedge is the photo on the left.

Results: Before the class, half of the attendees could not correctly distinguish between smallflower umbrella sedge (A) and ricefield bulrush (roughseed) (B) soon after germination. After the class, the number had increased to 72%. One tip to distinguish between the two is to look at the roots—smallflower umbrella sedge always has a red colored root (see arrow in photo above), even when it is fully mature! Ricefield bulrush (roughseed) leaves make a flat-fan pattern when newly emerged.

Which of the photos show smallflower umbrella sedge at flowering?

- a. A
- b. B
- c. C



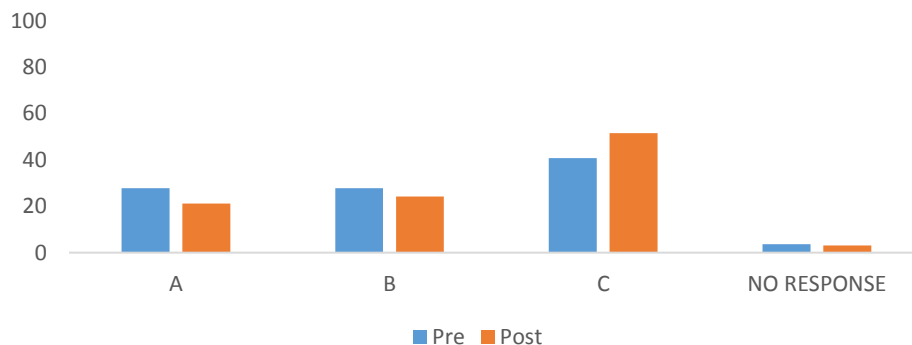
CORRECT ANSWER:

B—Smallflower umbrella sedge is the photo in the middle.

Results: Before the class, half of the attendees (50%) identified the first picture as smallflower umbrella sedge. After the class, 69% correctly identified smallflower umbrella sedge as the second photo (B). Unfortunately, there are no quick tips to identifying smallflower umbrella sedge at flowering. However, if ready to harvest, the seed is very tiny and bright yellow. In comparison, the seeds of the other two sedges are brown and black in color. The other weeds are whitemargined flatsedge (A) and ricefield flatsedge (C).

The picture below shows (left to right):

- Late watergrass, early watergrass, barnyardgrass
- Barnyardgrass, late watergrass, early watergrass
- Late watergrass, barnyardgrass, early watergrass

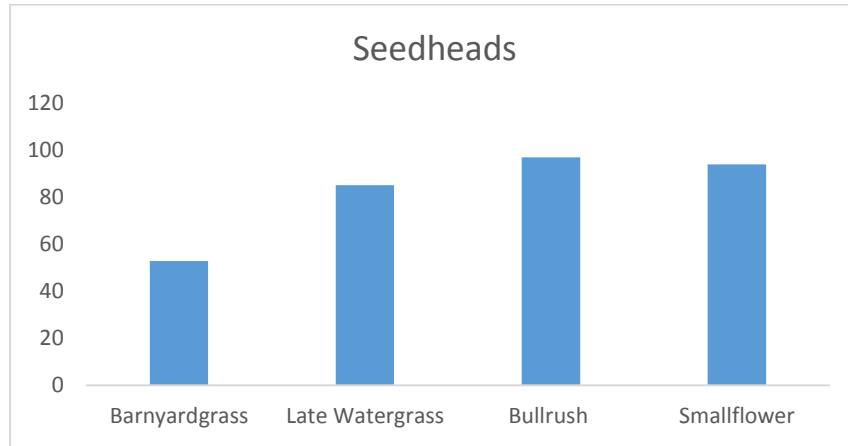


CORRECT ANSWER:

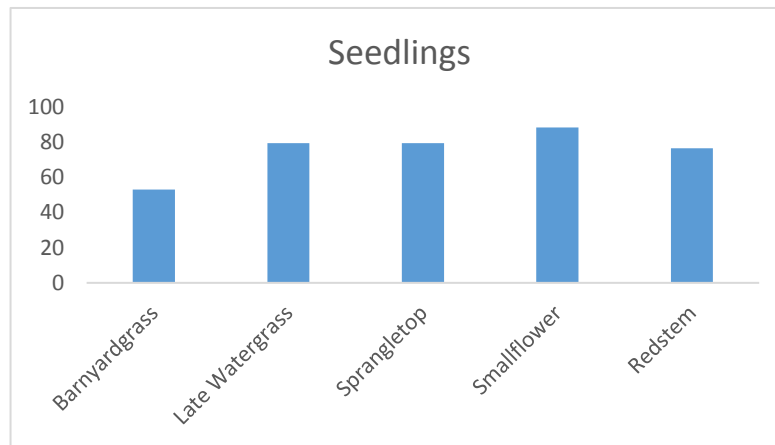
C—The grasses (left to right) are late watergrass, barnyardgrass, and early watergrass.

Results: Distinguishing between the three species of grasses is difficult. Before the class, 40% of attendees correctly identified the three weeds. By the end of the class, that number had increased to 51%. Barnyardgrass seed is smaller than late and early watergrass seed. Barnyardgrass can have awns (see arrow in photo above--the long “hair” protruding from the end of the seed), or no awns. Seeds can be awned and not awned on the same plant, and even on the same seedhead. Seeds tend to be reddish in color when immature. Barnyardgrass stems are usually reddish at the base. Late watergrass seed never has awns. Early watergrass seed always has awns. Early and late watergrass seeds are similar in size.

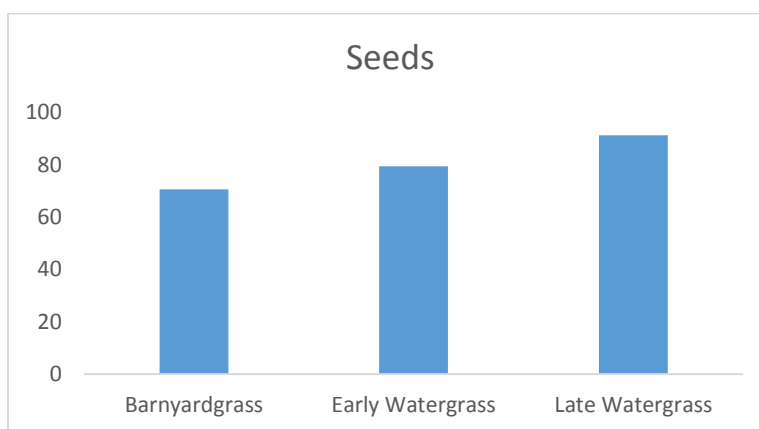
The average score on the rice weed identification quiz was 79%. The quiz was conducted after our session on weed identification, so perhaps our weed identification session needs some improvement! Attendees scored highest in the “Seedheads” category. The grasses (barnyardgrass and late watergrass) had the lowest averages: 53% and 85% respectively. The highest score was for the ricefield bulrush (97%), followed by the smallflower umbrella sedge (94%).



In general, attendees did not do as well in the “Seedlings” identification category. Barnyardgrass identification was the poorest, with an average of 53%. Smallflower umbrella sedge identification was highest, at 88%.



In the “Seeds” identification category, barnyardgrass was again the least correctly identified, with an average of 71%. Attendees did the best on the late watergrass seed identification—the score was 91%.



So, in conclusion, the results of the course indicate that we need to increase our extension efforts in weed identification, particularly for the grasses. We will also emphasize early weed identification (soon after emergence), which is our most critical point for weed control. Stay tuned for ideas and information!



2016 Armyworm Wrap Up

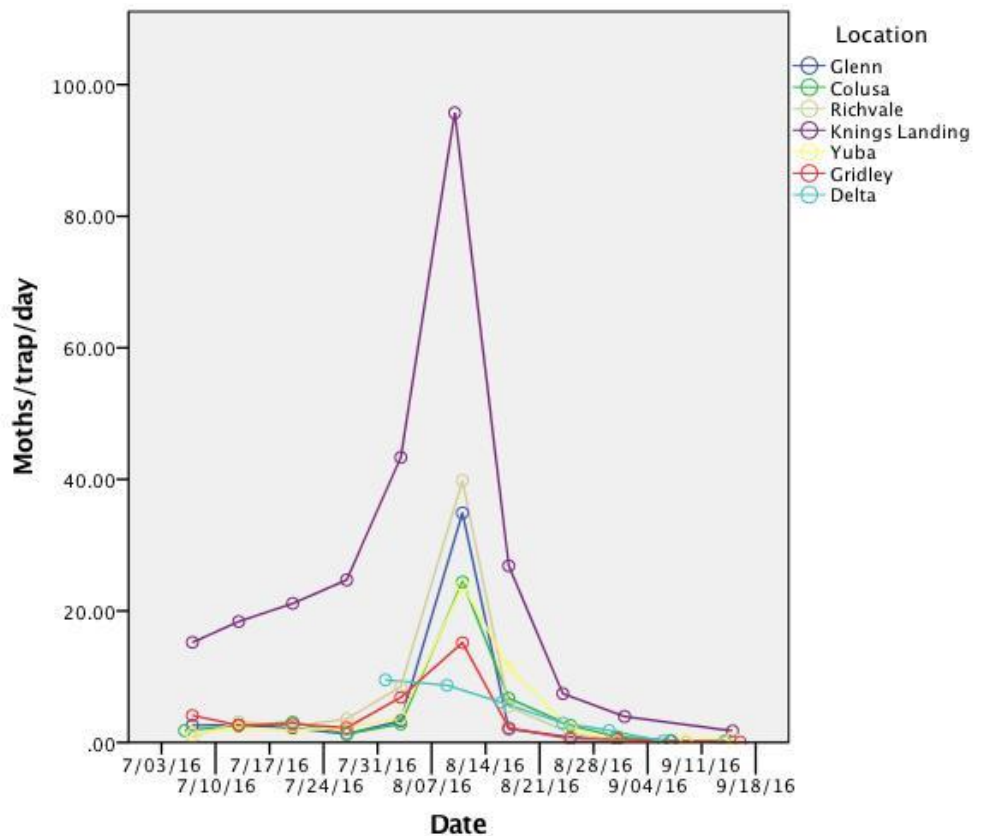
Luis Espino, UCCE Rice Advisor, Colusa, Glenn, Yolo

Overall, armyworm infestations were not as severe as last year. At the beginning of the season there were some very early infestations; however, those infestations may have been detected early because growers and PCAs were scouting closely after last year's outbreak. In most cases, the early infestations that were brought to my attention consisted of small worms, which usually go unnoticed until a few weeks later in the season.

In late August, a second infestation peak occurred. However, this infestation was similar to what we see in normal years. Nevertheless, I saw some injury that might have been approaching treatment levels.

The armyworm moth trapping conducted this year started a little later than I wanted. Next year I hope to start trapping in late May or early June so the first armyworm peak can be detected timely. Number of moths trapped remained low until August, when they started to increase and reached a peak in all locations in the Sacramento Valley. The moth peak observed in early to mid-August corresponds to the increased injury observed in late August, when eggs laid by those moths reached the 3rd and 4th instars.

This year's moth trapping confirmed what we have seen in previous years: we can use the trap numbers as an indication of when monitoring needs to be intensified. For example, a week after the August peak would have been a good time to check for armyworms. However, injury is not necessarily related to high moth numbers. Even though moth catches at the Knights Landing field were the highest we have ever seen, very little injury was seen in that field. Maybe natural enemies were able to reduce the worm population, or simply moths preferred to lay eggs in the tomato field next door.



Useful Websites

University of California Rice Online
www.rice.ucanr.edu



The UCANR Rice group has put together a website that now provides resources on a variety of topics related to rice production in California. New tools include the Phosphorous Fertilizer Budget and Application Calculator, as well as the Rice Degree Day Model. If you need assistance with the website or more information on how to use the tools, feel free to contact Whitney (wbrimdeforest@ucanr.edu) to arrange a time to go over the website together.



UC Rice Blog
www.ucanr.edu/blogs/riceblog

The UCCE rice advisors post timely information on the blog about important information related to the industry including new pests and pesticides, rice meetings, and anything else we find that we think may be of interest. Subscribe to the blog by signing up here: www.ucanr.edu/blogs/blogcore/subscribe.cfm

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