Rice Notes
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In This Issue

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Management of Propanil Resistant Sedges

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Last year, resistance to the herbicide propanil was confirmed in populations of smallflower umbrella sedge and ricefield bulrush. Considering that propanil is a common "clean up" herbicide, used in almost 400,000 rice acres every year, propanil resistant sedges are a significant threat to the rice industry. To make matters worse, populations of these propanil resistant sedges were also found to be resistant or partially resistant to several ALS-inhibiting herbicides (Londax, Sandea and Granite).

Herbicide trials conducted last year showed sedge populations resistant to propanil and ALS-inhibiting herbicides were susceptible to the herbicide Shark H2O. For control of propanil resistant sedge, Shark H2O herbicide can be applied at one of two timings:

- Early, at the 2 to 4 leaf stage of rice, for control of submerged weeds, at a rate of 7.5 oz/a, or
- Twenty to 45 days after seeding, to the foliage of exposed weeds at a rate of 4 oz/a.

Additionally, the herbicides Bolero and Abolish used at standard rates and timings also control propanil and ALS-resistant smallflower umbrella sedge.

Other herbicides will need to be used to control the whole spectrum of weeds present. For example, programs could include an early application of Shark H2O followed by Regiment or propanil; Cerano or Bolero can be followed by a later application of Shark H2O to control escapes. Remember to read and follow the label.

When dealing with herbicide resistant weed populations, do your best to control all weed escapes and late season flushes. Harvest infested checks last, so your equipment does not spread seeds of resistant weeds to uninfested checks.

Growers who are not experiencing reduced efficacy of propanil should implement these well known strategies to delay the development of propanil resistance:

- Avoid repeated use of herbicides with the same mode of action.
- Use different modes of action in mixtures and sequences.
- Use label rates and avoid low rates.

If you suspect propanil resistance, collect mature sedge seeds in problem fields and bring them to the Rice Experiment Station, where they will be tested during the winter. Control failures are not necessarily due to resistance, but can be caused by application problems such as incorrect timing, dosification errors, mixture incompatibilities, etc.

Midseason Nitrogen Fertilizer

Cass Mutters, Farm Advisor, University of California Cooperative Extension, Butte County

The milestone signaling the beginning of the reproductive stage is panicle initiation (PI). At this moment, the cells at the shoot apex, which is just above soil, start transforming into the panicle; however, this "primordial" panicle is not visible yet. All that can be noticed is a light green band at the upper-most internode referred to as "green ring" or PI. About a week later, when the panicle grows to 1/16th of an inch long and is visible with the naked eye, rice is at the panicle differentiation (PD) stage. It is very important to correctly identify when plants reach PI and PD since midseason N should be made at or just prior to this growth interval. The internode elongation that is often used as an indicator actually occurs after PI. Calrose varieties do not respond in terms of yield gain to N topdressing beyond PI based on UC research. In fact applying additional N later in the season may increase disease severity and 'blanking', as well as delay maturity.

Midseason N application may not always be necessary. If the soil has a good supply of N throughout the season, maximum yields can be obtained using pre-plant N fertilizers only. However, there are several factors that prevent this from happening, such as extended drain periods, high soil permeability, or a planned management strategy.

Several methods can be used to estimate the N nutritional status of rice plants at midseason: leaf chemical analysis, chlorophyll meter and the leaf color chart. In all cases, leaf samples should be taken at or slightly before PI. The Y-leaf should be used to determine plant N content. The Y-leaf is the most recently fully expanded leaf. It is important to know the stage of growth when sampling for leaf-N because the N content can vary drastically over time. The adequate N range for tissue N at PI is 3.2 – 3.6% (Table 1); concentrations below this range indicate an N deficiency and warrant topdressing.

Table 1. Guide for leaf nitrogen percentages at different stages of growth.

California short, medium, and long grain varieties			Japanese short grain varieties	
	Total N % (all methods)		Total N % (all methods)	
Plant growth stage	Critical	Adequate	Critical	Adequate
mid-tillering	4.0	4.0–4.6	—	—
maximum tillering	3.6	3.6–4.2	—	—
panicle initiation	3.2	3.2–3.6	2.7	2.7–2.8
flag leaf	2.8	2.8–3.2	—	—

Source: Rice Nutrient Management in California. UC ANR No. 3516.

The chlorophyll meter can be used to estimate N content by measuring the amount of light absorbed by chlorophyll in leaves. The meter must be calibrated against leaf samples analyzed in the laboratory. For cultivar M-205, a meter reading of 32 corresponds to the critical value of 3.3% N. The UC leaf color chart is a very practical, accurate and reliable method to estimate plant N content. It consists on a series of panels with colors that match the color of plants with different N contents (Fig. 1). By comparing the chart with color of the Y-leaves, an estimation of the N status of the rice plant is possible. The chlorophyll meter and the color chart have the advantage of allowing "real time' determination of plant N concentration, whereas the leaf chemical requires a few days for processing. The chlorophyll meter 'samples' a very small area of the leaf (2 x 3 mm). Therefore a large number of readings are necessary to get a reasonable estimation of leaf N levels.

Figure 1. Leaf Color Chart for evaluating nitrogen status in rice.

Keep in mind that greener is not necessarily better. Studies conducted on M205 and M206 at multiple locations demonstrated that tissue N levels at PI above the critical level do not translate into higher yields (Fig. 2).

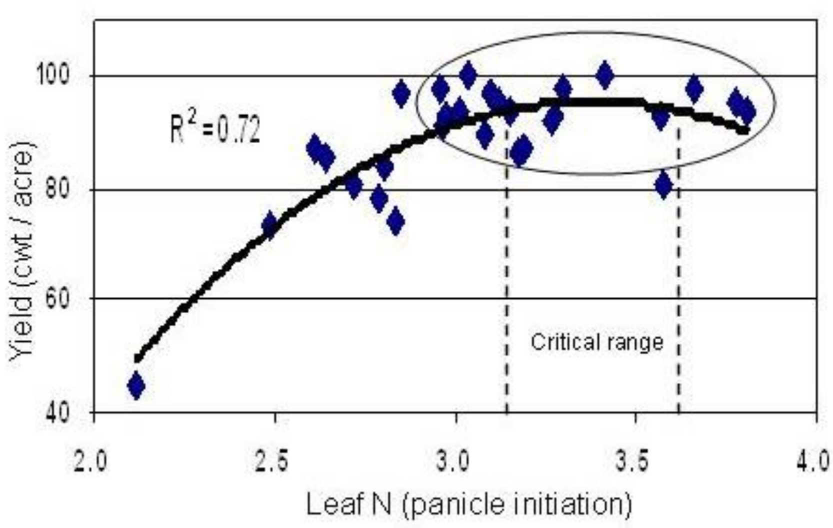


Figure 2. Yield as a function of leaf N at panicle initiation. Pooled across varieties (M-206, M-205) and location.

Bird Habitat Program Continues and Expands

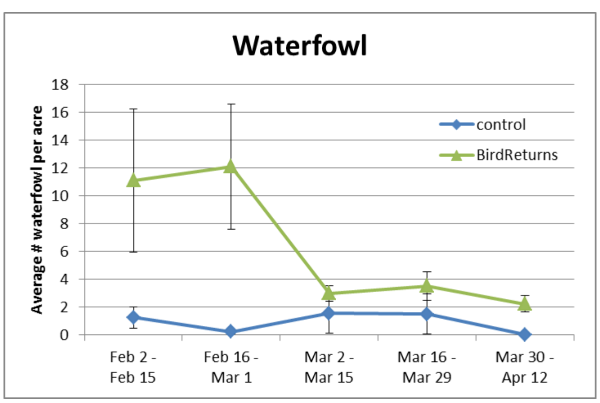
Paul Spraycar, The Nature Conservancy

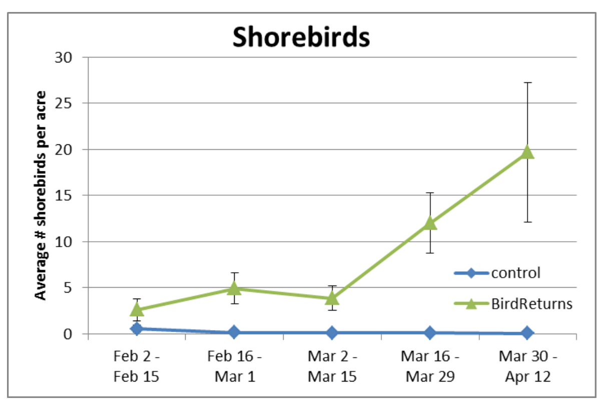
- BirdReturns is a new program from the Nature Conservancy (TNC), organized in cooperation with the California Rice Commission
- BirdReturns compensates growers to provide shorebird habitat – manage your straw and maintain at least 2” of water for 2-8 weeks in fall 2014 or spring 2015
- To apply, farmers submit a competitive bid – name your price
- Deadline to apply: August 1st

The hot, long days of summer have arrived, and that means rice growers are tending their crop, preparing for harvest, and praying for a decent winter. Harvest will be here in no time, but before then growers should consider a shorebird habitat incentive available for fall 2014 and spring 2015.

The program – known as BirdReturns – is being offered by TNC in cooperation with the California Rice Commission. BirdReturns compensates growers to perform straw management and water management of their rice fields. These field conditions, provided at the right times of year, provide critical benefits to shorebirds traveling the Pacific Flyway. The implementation of the program will be as follows:

The pilot BirdReturns program, which took place in February-March 2014, included 10,000 acres of rice fields and several dozen growers. The strong interest and participation demonstrated the significant value of bird-friendly management practices on rice fields. By comparing the participating fields with a collection of other ‘control’ fields throughout the valley, TNC scientists were able to determine the value of the participating growers’ efforts. Here are the results:





Learn more: Visit our website: http://www.birdreturns.org, Email us: birds@tnc.org

Call us: (916) 642-8055

Come see us in person:

BirdReturns Workshops	
Date: Monday July 21	Date: Thursday July 24
Time: 9:00am - 11:30am	Time: 1:30pm - 3:00pm
Location: Colusa Casino Conference Ctr, Colusa	Location: Bonanza Inn, Yuba City

Factors Related to Rice Blast Incidence and Severity

Chris Greer, *Rice Farming Systems Advisor, University of California Cooperative Extension Sutter-Yuba Counties*

It is still too early to know if this is going to be a year with high incidence and severity of rice blast. The most favorable conditions for sporulation, spore germination and infection of plant tissue by the blast fungus include high relative humidity, free moisture on the plant tissue surface and temperatures around 82° F. Temperatures cooler or warmer than this slow down disease development but do not prohibit it. As the season progresses, watch out for mild temperatures, calm mornings and foggy or overcast skies that favor extended free moisture periods, all conditions that promote blast development.

As I have mentioned in the past, there are several factors that may predispose rice plants to infection by the rice blast fungus. First and foremost is the inherent resistance of a specific rice variety. Our California rice varieties do differ in their tolerance to infection by the pathogen. M-104 and M-205 appear to be the least tolerant of the most widely grown commercial varieties while M-202 and M-206 are somewhat more tolerant. M-208 is the only commercially available rice variety in California with a specific resistance gene to race IG-1 of the blast pathogen. IG-1 was the only race of this pathogen known to exist in California until recently. Unfortunately, confirmed cases of limited leaf and neck blast in M-208 fields in recent years indicate that a new race of the pathogen has evolved through mutation or has been introduced into California. M-208 is still resistant to race IG-1 but is not resistant to this new race.

I am more convinced than ever that water management plays a critical role in rice blast disease management. Not only does field drainage increase the risk of disease transmission from seed to seedling but any practice which leads to aerobic conditions within the soil predisposes rice plants to rice blast disease. Drill seeding and draining for stand establishment or herbicide applications that require a drain in water seeded systems increase the risk of infection and plant susceptibility to rice blast. Additionally, rice plants grown in deeper water exhibit increased tolerance to the disease over those grown in shallower water depths. This is apparent where we often see localized increased disease severities associated with high spots within a field or prolonged periods of field drainage. From an irrigation standpoint, maintaining a deep continuous flood is the best option for minimizing the risk associated with rice blast disease.

Rice blast is a very complex disease that has the ability to increase in incidence and severity very rapidly under favorable conditions. Growers should consult with their pest control adviser to determine if a fungicide application(s) should be made to protect developing panicles as they emerge from the boot.

Chris Greer Appointed Vice Provost for University of California Division of Agriculture & Natural Resources

Chris Greer, *Rice Farming Systems Advisor, University of California Cooperative Extension Sutter-Yuba Counties*

It is with mixed emotions that I announce I have accepted an offer to serve as the vice provost of UC Division of Agriculture & Natural Resources effective July 1. I have severed as UCCE rice farming systems advisor since 2002, first in Colusa, Glenn and Yolo counties, and most recently in Sutter, Yuba, Sacramento and Placer counties. I am fortunate to have had the opportunity to work with such a supportive group that makes up the California rice industry. To the growers, pest control advisors, and industry organizations, I want to express my gratitude for your friendship and also for your willingness to always answer unending questions about growing rice to provide a better understanding of the issues you face on a daily basis.

I also want to thank the cooperators who have graciously hosted many on-farm trials that allow UC to conduct the research needed to develop knowledge and solutions to the issues you face. You have been great partners and have made valuable contributions to this work. The California rice industry has demonstrated its willingness to address issues proactively through activities of the California Rice Research Board, California Rice Experiment Station, and the California Cooperative Rice Research Foundation Rice Experiment Station. These organizations have been critical to the work I have conducted and the partnerships and friendships formed will be lasting.

I also want to thank my UC colleagues that have been instrumental in my growth. Some have been around for many years and some are new but they have all become good friends. I will miss the joking and good-natured ribbing that occurs during the spring planting and fall harvest seasons. I have many stories to tell about each one but refrain here for fear of retaliation! The comradery of Cass Mutters, Luis Espino, Michelle Leinfelder-Miles, Jim Hill, Bruce Linquist, Albert Fischer, Larry Godfrey, Ray Wennig, and Ray Stogsdill will be especially missed.

In my new role as vice provost, I will be responsible for guiding all county based academic programs. I will coordinate programs and priorities with those of the Agricultural Experiment Station counterpart units and ensure ANR programs align with UC ANR's strategic vision and are relevant to the people of California. I will serve as the statewide administrative leader for county-based Cooperative Extension programs. The directors of county-based UCCE programs will report to me, as will the executive director of the ANR Academic Personnel Unit. I will be based at the ANR Building in Davis, but will be traveling frequently to meet with colleagues throughout the state.

I hope to keep in touch with many of you in my new role and look forward to interactions with the California rice industry in my new capacity. I have great respect for the California rice industry and wish you all the best.