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Rice Leaf

June 2019

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

Managing Nitrogen Fertilizer When the Weather Does Not Cooperate

The 2019 planting season has been rough on just about everyone farming rice. For those that got planted before the mid-May rains, N management will be pretty much as normal and yields in those fields should be good as well – all else being equal. However, cool wet weather in the middle of May forced many farmers to abandon their normal practices and many flooded their fields before applying aqua. These farmers will need to apply all of their N after planting and this means applying N fertilizer into water (different than applying it to a dry soil).

We have not done a lot of research on applying N into water efficiently in California as the situations that create the need to do this are not common. However, it is common in Asia, and in the southern US, they are forced to do it more frequently than we are here. So, based on our limited research here and talking with researchers from other regions, here are some considerations when you are having to apply your N fertilizer into water.

1. **Suggested N management program for applying all N fertilizer after planting.** We suggest applying a starter blend containing about 30 lb N/ac 10 to 14 days after planting. About 3 weeks after planting through panicle initiation (PI - about 7 weeks after planting) apply the remaining N as urea. This N should be applied in at least 3 equal splits.
2. **Urea vs ammonium sulfate.** Our research here in California (and my colleagues' research in the southern US) show no benefit of ammonium sulfate over urea.
3. **How much N should I apply?** Historically, when we have had very wet springs, rice yields are lower for a variety of reasons, including increased weed pressure and short cuts taken in land preparation to get the field flooded. Since the yield potential is less, then the optimal N rate will also be less. However, applying N into water is a lot less efficient than applying aqua-N preplant, therefore you will need to apply more N. How much more? I cannot say for certain, but in the south I have heard that in some cases it can be twice as much as one would normally apply. Therefore it is very important to monitor the N status of your crop through the early part of the season.

There are also those that did not get their field flooded before the rains and they applied aqua after the rain. In many cases the aqua-N was applied into a soil that was wetter than normal (usually it is applied when the soil is dry). In a wet soil, the nitrogen will start to convert to nitrate relatively soon and be subject to higher losses. Therefore, to minimize N losses, flood the field as soon as possible after applying aqua. It is difficult to know how much N is lost so we highly recommend assessing the crop at PI using the Leaf Color Chart or GreenSeeker to see if a top-dress is necessary.

Article by Bruce Linquist, UC Davis

A Few Thoughts on Disease Management for 2019

The rough start of the season probably means that things will be difficult all season long. In the case of diseases, there might be a few things to keep in mind.

- Fields that are drained, even early to promote stand establishment, are more susceptible to blast. Blast is a fungal disease that can affect rice during tillering (leaf blast) and during heading (panicle blast). Typically, fungicide treatments are not recommended for leaf blast. Panicle blast infections result in blanked panicles, therefore, preventive fungicide treatments are recommended. Treat at early heading if you see leaf or panicle blast in the field or surrounding fields. Remember that the fungicides registered for blast control work by inhibiting blast spores germination, so any infections that already occurred by the time the application is made will not be controlled.

- The varieties M-104 and M-205 were less tolerant to blast than M-206. Since blast has not been a severe problem for the past 7 years, we do not know how current varieties, such as M-105 and M-209 respond to blast. The variety M-210 is the only variety with genetic resistance to blast.

- The Valley experienced blast epidemics in 2010 and 2011. Those were years with a later than normal planting date.

- Kernel smut has been a problem in the northern part of the Valley. Fungicides that contain propiconazole (Titl, Quilt, Stratego) can reduce the severity of the disease. However, the application timing is at the mid boot stage, not early heading.

- Long grains are more susceptible to kernel smut than medium grains. Of the medium grains, M-209 seems to be the most susceptible.

- Fungicides trials conducted in the past 3 years have shown that registered rice fungicides can reduce the severity of stem rot and aggregate sheath spot. The early heading application timing has been more effective in reducing disease levels than applications made at tillering (propanil timing). Consider a fungicide application for the diseases if the field has a history of them.

Excess nitrogen promotes several diseases: stem rot, kernel smut, blast. This year, lower N rates might be appropriate given the production constrains we are already facing (poor stands, high weed pressure). Lower N rates will result in lower disease levels.

Article by Luis Espino, UCCE

Weed Management: 2019 Season

It has been an unusual start to the season, with late rains and cool temperatures in mid-May. Weed management this year may also be unusual, both in terms of weed growth, as well as herbicide performance (temperature can change efficacy). In preparing fields, several scenarios may have occurred, all which may have different impacts on weed growth, and therefore, weed control:

Scenario 1: All field prep (including seeding), occurred in early May, before rain and cool temperatures

If all field prep (including seeding) was done prior to the rains that occurred around May 15, then weeds and rice germinated and started growing at approximately the same time. The cool temperatures likely slowed the growth of the sedges (smallflower umbrella sedge and ricefield bulrush), but the watergrasses (including mimic), can germinate at lower temperatures, so emergence was likely not slowed much, if any. Emergence will occur over a longer period of time (more slowly), due to the cooler temperatures.

Recommendations: Weed control should focus heavily on grass control throughout the season. Grasses are highly competitive against rice, greatly reducing yields. Herbicides that have longer periods of efficacy are a good idea, due to the longer weed emergence window (cooler temperatures). Granular, into-the-water herbicides will be most effective early in the season, and multiple applications are likely going to be necessary.

Scenario 2: All field prep occurred in early May (before rain), but field was not seeded until a few days after rain

If the field prep was done in early May, including rolling, but the field was not seeded until a few days after the rain, then weeds may have germinated well ahead of the rice. In this case, rice growth will likely be well behind weed growth. Grasses will be even further ahead of rice than in Scenario 1. The added issue in this second scenario is that sedges will also have a head-start on the rice.

Recommendations: Weed control will need to be aggressive (more applications, highest label rates, tank mixing where possible) throughout the season, with a focus on grass control. Sedge control will also be extremely important, since they had a head-start on the rice in this scenario. Herbicides that have longer efficacy are still necessary, due to the longer weed emergence window. Rice will be small at the beginning of the season, in comparison to weed growth stages, so reduced herbicide efficacy is likely, with greater potential injury to rice.

Scenario 3: Field prep started before rain, but was not finished. Additional field prep occurred after rain (discing, rolling, shallow chisel, etc.), before seeding

This is likely the best scenario for weed control, because the initial flush of weeds that germinated with the first rains were mostly controlled by the additional field prep (tillage). So there is a potential for the field to be less weedy than usual, due to the additional mechanical control.

The only exception to this would be if the additional tillage was too deep. If the second tillage event was deeper than 6 inches, then more weed seeds may have been brought up to the soil surface.

Recommendations: Proceed with weed control program as usual. Weed control with normal herbicide program may provide more control than in previous years, if some of the emerged weeds were controlled with tillage.

Scenario 4: Field prep and seeding occurred in late May or early June, after the end of the rain

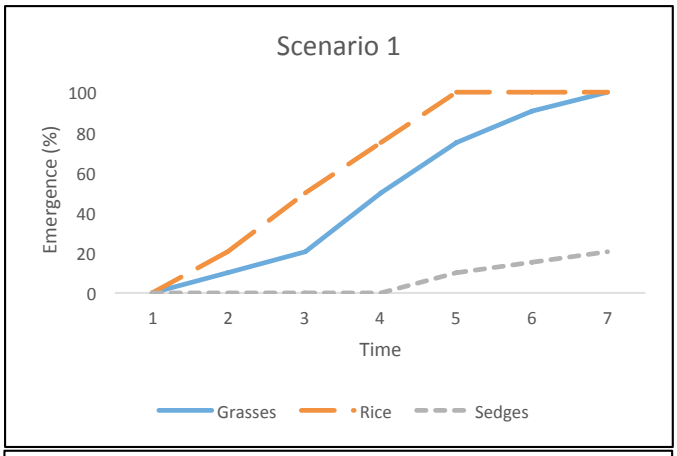
Temperatures were quite a bit warmer towards the end of May and in early June. This means that weed growth will be fast, both sedges and grasses. Rice growth will also be fast, so the rice canopy closure should occur quickly.

Recommendations: Herbicide applications will need to occur more closely together (in sequence). A broad-spectrum program, which targets all species early in the season will be very important. Weeds should emerge quickly and grow rapidly, so timing will be especially important.

Weedmergence Curves

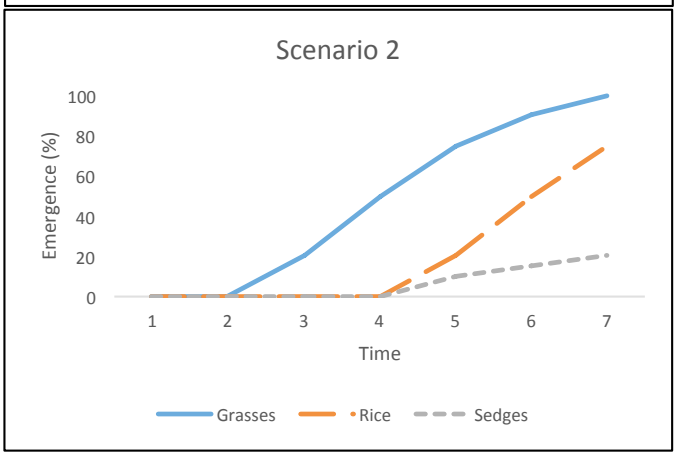
Weeds and rice emergence under the different field preparation scenarios (Scenario 3 is not pictured, but would look similar to Scenario 4). All emergence curves are theoretical, and would vary based on temperature (growing-degree days). Broadleaves are not pictured because no data currently exists on broadleaf emergence in rice.

Article by Whitney Brim-DeForest, UCCE



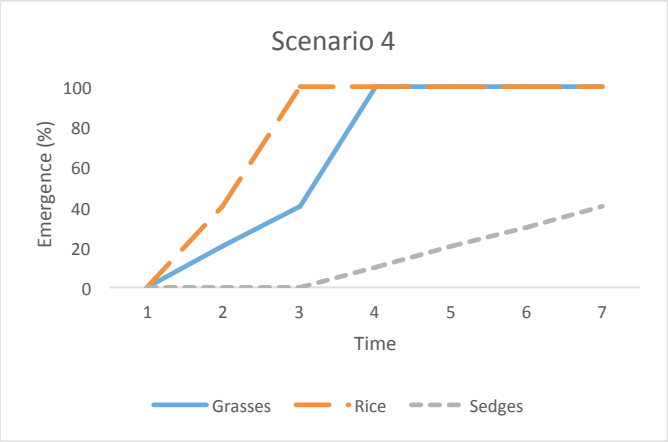
Scenario 1: All field prep (including seeding), occurred in early May, before rain and cool temperatures

Note: Rice and grasses will emerge at approximately the same time, with sedge emergence slowed due to cooler temperatures. Emergence periods will be extended for all weed species, and growth will be slowed.



Scenario 2: All field prep occurred in early May (before rain), but field was not seeded until a few days after rain

Note: Grass emergence will be well ahead of the rice, with sedge emergence occurring closer to the same timing as rice. Weed growth rates should be similar to those in scenario 1, but rice growth will be behind weed growth.



Scenario 4: Field prep and seeding occurred in late May or early June, after the end of the rain

Note: Due to warmer temperatures, everything (grasses, sedges, rice) will be emerging more quickly. Sedge emergence should be most rapid in this scenario in comparison to the previous scenarios.

Save the Date

Weedy Rice Workshop

August 1, 10 am to noon, followed by lunch

Venue and registration link will follow

The workshop will include in-depth updates on the latest research on weedy rice in California, and give growers and PCAs a chance to ask questions and discuss progress in managing this pest.

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