



## Managing late planted rice

*W Brim-DeForest, L Espino, B Linqvist, K Al-Khatib*

Here are some thoughts on how to manage rice when the planting date is later than normal. Late planting may be due to a number of reasons such as weather, machinery breakdown, water availability, etc. Regardless, UC research has shown that delayed planting reduces yield potential. Yields tend to be about 5 sacks/acre less when planted at end of May compared to beginning of May - approximately 1 sack/ac for each week delay in May. Furthermore, late planting pushes harvest later into fall where rains may delay harvest, reduce quality and drive up drying costs. At the end there are a few "Frequently Asked Questions".

### Land preparation

Land preparation typically starts at the beginning of April when soils are dry enough to open the ground - allowing soils to dry out faster. Currently in mid-April, little to no ground has been opened up with potentially more rain in the forecast. Try not to skimp too much on seedbed preparation. Drying the soil increases the dissolved oxygen in the soil profile. This oxygen is vital to the root respiration of the seedling until the aerenchym cells form at about the fourth leaf. Rice planted into wet, unaerated soil will often 'yellow-up', which is not necessarily due to lack of nitrogen but the diminished capacity of the roots to take up the nitrogen.

### Varietal selection

Good variety selection is key. Consider a short duration variety that is cold tolerant. M-206 and M-105 are both good options. The shorter duration will allow for earlier harvest. However, cold tolerance is important as well. Seed supplies for the shorter duration varieties may fall short of demand.

### Water management

A late planting date shifts the early booting stage (when rice is sensitive to cool temperatures and blanking) later in the year when night time temperatures are lower. Thus, in addition to proper variety selection, it will be important to raise flood water height to about 8 inches between PI and heading to protect the emerging panicle from the cold temperatures.



## Fertility management

**Nitrogen rate:** Do not over apply N. Over application will delay harvest and increase risk of blanking. Given these risks, a shorter growing season, and the reduced yield potential due to late planting, consider reducing overall N rate by 5-10% from what you typically apply.

**Starter fertilizer:** Apply P and K only if needed. If the soil P values are above 15 ppm (Bicarbonate P) or if soil K values are above 120 ppm, applications of these nutrients may not be necessary. If P and K are not needed then do not apply a starter and apply all N as aqua. If applying a starter fertilizer, consider applying 20-30 days after planting. This has several benefits: it eliminates a pass before planting allowing for earlier planting, it reduces scum build up (more likely in a late planted year due to warmer weather), and it can replace the post-herbicide N application that many growers have been doing. Also the demand on custom applicators will be greater this year due to the compressed planting season. Delaying the application of P and K may help avoid some of the pre-plant rush.

**Top-dressing N:** Only top-dress if necessary. A leaf color chart is a good tool to determine if it is necessary. Unnecessary top-dressed N increases costs, delays harvest and can reduce yields. UC research continues to confirm that splitting N between a preplant and top-dress N application has no yield benefit compared to applying it all preplant.

At all costs avoid a situation where there is N fertilizer in the field and it is not possible to flood the field. In wet years, this can be a problem as rainfall may necessitate halting fertilizer applications or other field work after fertilizer operations have already begun. If fertilizer gets wet and you are not able to flood it is almost impossible to figure out how much N is potentially lost. Good planning and checking weather forecasts will help avoid these situations. A couple of days delay in planting is likely better than getting caught in the above scenario, which will not only result in fertility management problems but also complicate weed management.

## Weed management

It is likely that the weather will be warmer at later planting dates. Weeds will emerge and grow quickly, due to the warmer temperatures. Late watergrass and early watergrass may emerge before the rice in a flooded field. Thus herbicide application timing becomes critical. It will be important to apply herbicides based on weed and rice growth stages, not based on days after seeding. This is not a good year to farm by the calendar. If applications are made based on the number of days after seeding, they will be applied too late, and this will result in poor control. In general, applications should be as early as possible based on the labeled recommendations for each herbicide.

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Due to warm temperatures, some herbicides will work better. This will be good for weed control, but the herbicides will also be harder on the rice, causing more phytotoxicity than normal. You may see greater stand reduction with Cerano. ALS-inhibitors (Granite GR/SC, Sandea, Halomax, Londax, Strada, and Regiment) may cause stunting especially when applied at early growth stages but the rice should recover.

### **Pest management**

Late planting will result in warmer temperatures during seedling development. Seedling pests like tadpole shrimp (TPS) and rice water weevil (RWW) will develop faster and have the capacity to cause more injury. Tadpole shrimp eggs need a period of dehydration before hatching in the spring. With the wet weather, there may be fewer eggs hatching than in dry spring years. However as ground is worked, TPS on the soil surface will dry and will be ready to hatch when fields are flooded. Under warm weather, TPS will grow and reach a size that can injure rice as quickly as 5 days after the flood is initiated. Germinating rice seeds and seedlings that only have a coleoptile (no green tissue yet) are preferred by the TPS. Monitor your fields closely during this time and use an insecticide if TPS are present before the rice has any green tissue.

Rice water weevil (RWW) overwinters in vegetated areas around rice fields and fly to flooded fields during warm and calm nights. Usually the period of RWW flight is extended over several weeks starting in April. However due to the current conditions, a more concentrated flight period once temperatures rise is possible. If you are in an area with a history of RWW problems, consider border treatments soon after the seedlings break the water line. Remember that with the pyrethroids control adults, preventing them from laying eggs on the rice seedlings. Once the eggs hatch and the larvae dig in the mud, the pyrethroids cannot kill them. Belay® controls adults, but can also control larvae, allowing for treatments when larvae are found feeding on rice roots. Nevertheless, Belay® can only be applied until the third tiller is initiated (when the 6<sup>th</sup> true leaf emerges).

It is unclear how late planting will affect armyworms. Infestations occur when plants are younger than usual, which would make the effect of defoliation more severe. On the other hand, the wet winter and spring may have reduced overwintering populations. In any case, UC will monitor armyworm moth flight during the season and will be distribute this information through the UC Rice On-line website. Last year's monitoring showed that flight peaks are detected one to two weeks before armyworms are seen in the field. This information can be used to time scouting.

Blast has not been much of a problem for the past two years. However looking back at the 2010 season when blast was a widespread problem through the valley, late planting appears to be one of the factors that may contribute to the problem. As plants age, they become more resistant to blast infections. Younger plants during weather periods that allow for blast

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development may allow for more infections that can increase incidence (number of plants affected) and severity (how bad the infections are). In a 'good' blast year, managing the crop to limit conditions that favor blast is the best way to prevent infections. To prevent blast, avoid excessive N fertilization, avoid draining the field during crop development, plant less susceptible varieties (M-206, M-208), and avoid plant stresses like nutrient deficiencies, salinity and herbicide injury. If planting varieties that are less tolerant, such as M-209, M-205, M-105, or M-104, keep a close eye on the field during boot and heading.

## No-till rice

No-till may be a practice that is considered in a late planted year. In the absence of tillage work, it has the potential benefits of allowing an earlier planting and reduced costs associated with tillage operations. Weed control costs may be reduced. In previous work at the Rice Experiment Station showed that yield potential in no-till systems was similar to conventional systems. Here are some things to consider when practicing no-till:

1. Select the proper fields. Field should not be rutted from the previous seasons harvest events. The field should not have a straw mat across the surface (i.e. from using a cage roller in the fall) which could impact root penetration. Some standing stubble is not a problem as it helps young seedling to stay in place in the event of high winds. If emerged weeds are present: Apply a non-selective herbicide, such as glyphosate to kill emerged weeds. It is recommended to apply glyphosate by ground rig, not by air, to avoid drift issues. Flood fields 24-48 hours after application and seed into the flooded field.
2. Use a higher seeding rate to ensure good stand density.
3. Although the pre-plant glyphosate application should kill most grasses, it will be necessary to follow up with a sedge and broadleaf herbicide at the 3-4 leaf stage of rice.
4. Avoid disturbing the soil that brings new weeds to the surface. All fertilizers should be applied to the surface with no incorporation. This means using urea pellets instead of aqua. We recommend applying urea preplant to the soil before flooding. Flooding will help move the urea into the soil. Do not apply urea immediately after flooding. If not applied before flooding, wait about 3 weeks and apply the urea at that time. Apply starter fertilizer by plane after rice leaves have emerged above the soil surface to avoid scum. A top-dress N application may be necessary as N fertilizer applied to soil surface is generally not used as efficiently as injected aqua. Use a leaf color chart to help make this decision.
5. Keep water level low in field until roots anchor into soil.



#### Frequently asked questions

*I have applied my aqua and then it rained preventing me from rolling the field and applying starter fertilizer. What should I do?*

Under these circumstances, flood the field ASAP and apply the starter blend by plane 20-30 days after planting. Allowing the aqua to sit in an unflooded soil for a long period of time allows the fertilizer to begin to convert to nitrate (NO<sub>3</sub>) which will be lost when the field is flooded (due to denitrification). It is very difficult to estimate how much is lost so further N fertility management becomes a bit of a guessing game.

*I finished my land preparation and it rained before I could apply my fertilizers and roll the field. Do I need to do another tillage pass to kill germinating weed seeds?*

If weeds have started to germinate, the best way to get rid of them is to use a non-selective herbicide, such as glyphosate. Tillage can bring up more weed seeds from below the soil surface, especially if it is deep tillage. Furthermore, some emerged weeds may not be killed with tillage. This is especially true of ricefield bulrush, which has roots that are rhizomes (tubers) that can re-sprout after tillage.

If using glyphosate, make sure the weeds have 1-2 leaves, to ensure that the herbicide can be taken up by the plant. Applications to bare soil will be ineffective, as it is not a soil-active herbicide. After application, wait 24-48 hours, flood, and immediately seed into the flooded field. It is recommended to apply glyphosate by ground rig, not by air, to avoid drift issues.