

# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03

## Warm weather has provided a quick start to rice in southwest Louisiana

Warm and dry conditions, with a couple of small showers mixed in to help maintain soil moisture, has provided a quick start to the rice crop this year. The USDA-NASS Louisiana Crop Progress Report ([click here to see report](#)) for the week ending March 26 has us currently 42% planted for the state and approximately 13% ahead of our 5-year average. While this estimate is tremendously faster than we have

seen for several of the past few and very wet years, I would venture to say that we are even farther along than 42% in the state. In the southwest part of the state, where we grow approximately 75% of our rice, I would predict that we were about 85% completed on Friday night (March 24<sup>th</sup>) prior to the rainfall that we saw that night. A few acres have been planted in the northeast however, planting really has not had a chance to kick-off in earnest since they have received more rainfall and the clay

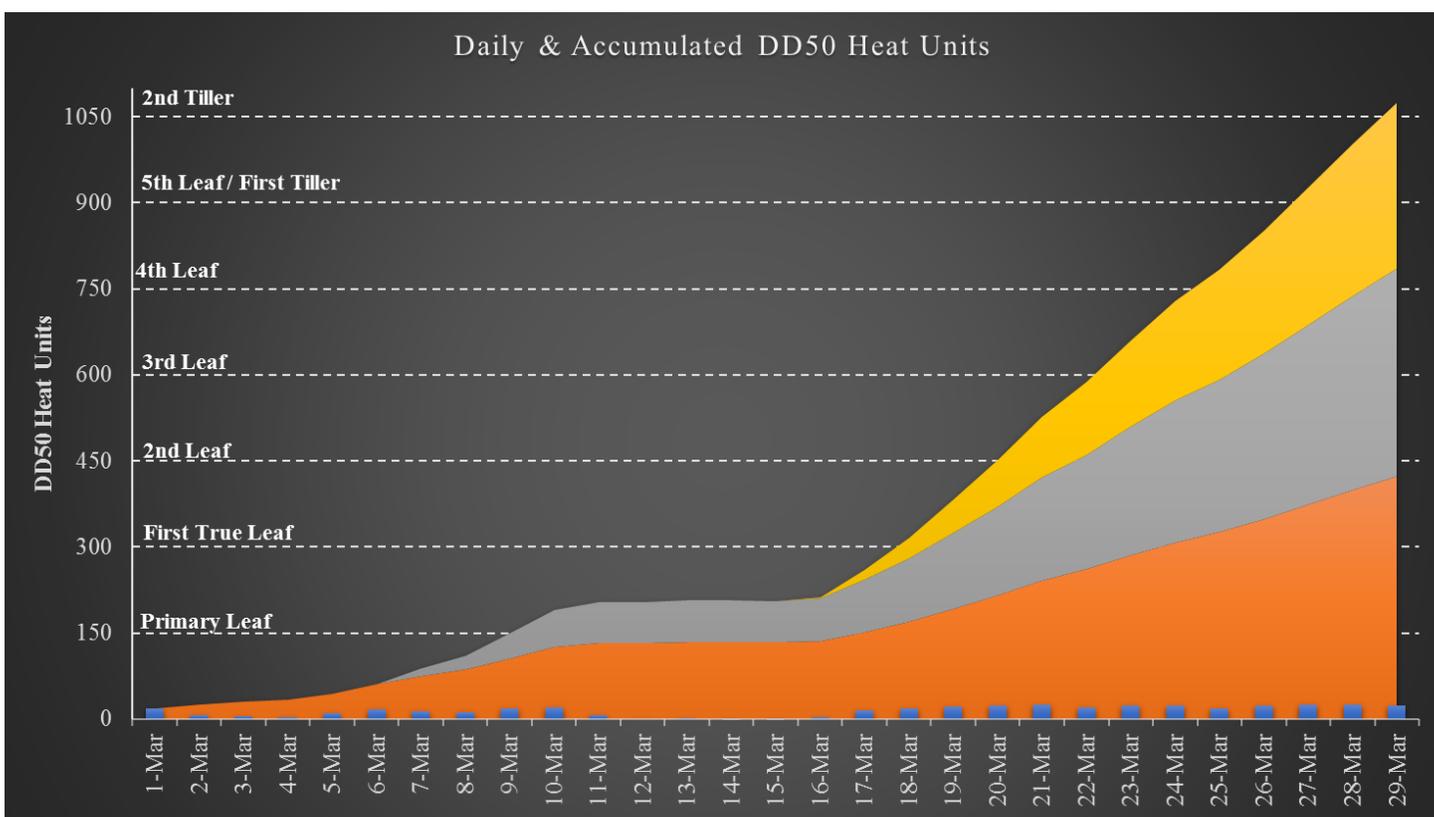


Figure 1. Daily and accumulated DD50 heat units at the Rice Research Station in March of 2017.

# LOUISIANA RICE NOTES

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March 30, 2017

No. 2017-03

soils in that region have not had a good chance to dry out enough for the drills to roll across the fields. With that in mind, I would predict that we were approximately 65% planted in the state by Monday (March 26) and 36% ahead of our 5-year average. Either way, we have more rice in the ground now than we typically do this time of year.

Not only do we have a lot of rice planted but the rice seems to be jumping out of the ground and growing at breakneck speed. I would estimate that a significant amount of the rice in the southern part of the state is around that 2- to 3-leaf stage of development right now. I have even been told that we have a few fields which have already established the permanent flood and we have not even reached April yet! How can this be possible you ask? Well, it has to do with the warm conditions we have had this year. Here at the Rice Station we have had 11 days in the month of March where the daytime highs have been 80°F or above. We are accumulating more daily heat units than normal this time of year. The number of heat accumulated each day above 50°F each day, with adequate soil moisture and no other limiting factors, can be used to estimate rice growth and development. These heat units are often referred to DD50 heat units which is the backbone of the DD50 program. DD50 heat

units can be calculated by getting the average daily temperature and subtracting 50.

$$DD50 = \left[ \frac{(\text{daily high temperature} - \text{daily low temperature})}{2} \right] - 50$$

In general, it takes between 75 to 175 heat units for each subsequent leaf to emerge during the seedling stages of rice development. Rice emergence begins with the appearance of the coleoptile (shoot), followed by the primary leaf, first true leaf, the second leaf, and continues until the fifth leaf or first tiller

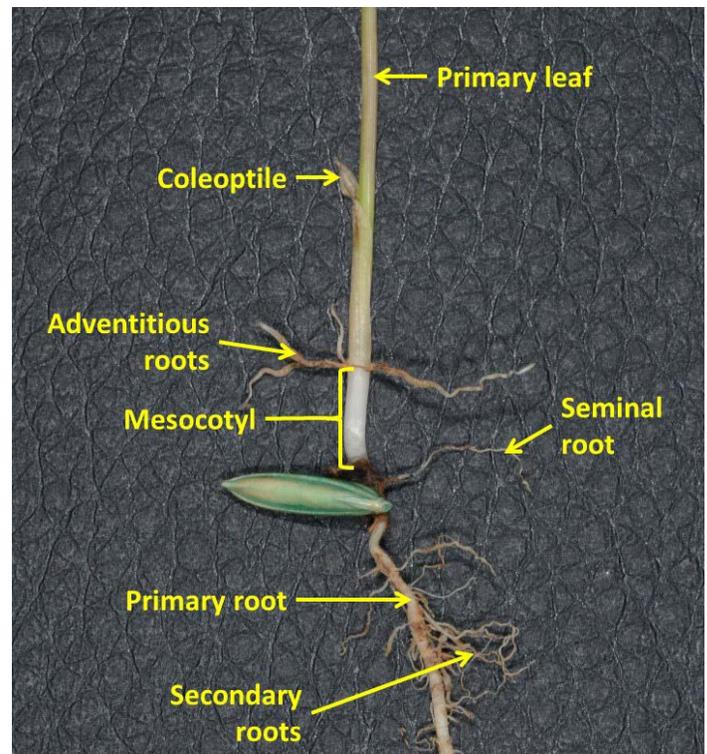


Figure 2. Rice seedling part identification at the primary leaf stage of development.



# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03

emerges. Of course, the actual number of DD50 units needed for each stage of seedling development can vary depending the variety being grown. However, 150 DD50 units per rice leaf emergence would be a good estimate for most of our semi-dwarf varieties that we are currently growing. Using this criterion and our currently accumulated DD50 heat units for rice emerging at three different times (March 1, March 7 and March 14), I plotted where we should expect rice development to be at this time (Fig. 1). You can see from the figure that we would expect that rice emerging on March 14 would currently be at the first true leaf stage of development and closely approaching that second leaf. Rice emerging on March 7<sup>th</sup> would be just be getting that 4<sup>th</sup> leaf to emerge. The rice planted in mid-February and emerging around March 1 would be at, or approaching, that second tiller. I tested these predictions with Dr. Linscombe's date of planting trial here at the Station, and DD50 seems to be a pretty accurate predictor of rice development this year.

Since much of the rice in our area is at the 2- to 3-leaf stage of seedling development, most of my calls this week have been on starter nitrogen fertilizer applications and possibly getting away with a single post emergence herbicide application. I decided to address each briefly in this issue.



## Getting away with one post-emergence herbicide? Be sure to follow Clearfield Stewardship Guidelines.

So far this year everything seems to be running smoothly. The ground has been dry and warm making planting progress quickly and rice to emerge rapidly. Timely, but not excessive, rainfall events have helped move along rice development at a quick pace. Residual herbicides seem to be holding weeds at bay nicely across the region this year too. I could not ask for a better start to the season. With the quick development of the rice and the good weed control from our residual herbicides, I have heard some speak about "getting away with a single post-emergence herbicide application" this year.

The last few years have been agronomically and economically challenging to say the least and I am all in when it comes to cutting costs where you can. However, **if you are growing Clearfield rice varieties or hybrids you must follow the Clearfield Stewardship Guidelines.** The guidelines are there for a reason and they are meant to prolong the Clearfield technology to control red rice. The Stewardship Guidelines state that: *After*



# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03

*obtaining the applicable license by purchasing the herbicide, apply two applications of Newpath herbicide as labeled or one application of Newpath herbicide followed by one application of Clearpath herbicide or vice versa. Clearpath herbicide may be substituted for only one of the Newpath herbicide applications but not both. The second application provides residual for extended weed control. Beyond herbicide may be applied as the second application after the first application of Newpath herbicide or Clearpath herbicide.*

Unfortunately, we have lost the Clearfield technology in some places across the state to outcrossing. So, let's not lose this technology on any more acres in Louisiana. Be sure to follow the Clearfield Stewardship Guidelines that can be seen on the HorizonAg website ([click here to view](#)).

## **The skinny on starter nitrogen fertilizer applications in rice**

There are always many questions every year about starter nitrogen (N) applications in the drill-seeded, delayed flood rice. So, I thought it would be prudent to answer some of these questions now, so that you can determine if you want to include a starter N application. The most common question I generally get is, "Will a starter N application result in a yield

response at the end of the year?" Previous research on starter N applications in Louisiana and Mississippi have shown that a starter N application of 20 pounds of N per acre will not always result in a grain yield increase at the end of the year. However, you are more likely to see a starter fertilizer N yield response in a clay soil as compared to silt loam soil. This is most likely due to the ability of clay soils to fix or make ammonium-N temporally unavailable for uptake and the slower diffusion rate of ammonium-N observed in clay soils. Coincidentally, these are also the same reasons that we often see that we typically need 30 pounds of N per acre more on clay soils as compared to silt loam soils.

Another often asked question: "Is there an agronomic advantage to using a starter N application in rice?" The answer here is an emphatic yes. While you should not expect a yield advantage from a starter N application, there are advantages of the application that cannot be denied. One advantage is that it will stimulate faster vegetative growth. This is especially evident in cooler weather when the rice seems to grow very slowly. Faster early season growth will lead to a rice stand that is more competitive with weeds and, in turn, will result in a stand that can be flooded a week or so earlier than rice not utilizing a starter

# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03



Figure 3. Fertilizer being applied on rice by airplane.

fertilizer application. This is highly beneficial for rice because the flood is our biggest weed control tool that we have in our toolbox. Starter N applications will also stimulate uptake of other plant essential nutrients like phosphorus (P), potassium (K), sulfur (S), and zinc (Zn). When I diagnose an in-season P or Zn nutrient deficiency in rice, I almost always recommend that a 100 pounds of ammonium sulfate (AMS; 21-0-0-24S) accompany the P or Zn fertilizer. The N from the starter seems to help the rice take up the other nutrients faster and the plants recover sooner. If a soil test indicates that a soil is low in S then a 100 pound application of AMS will also provide 24 pounds of sulfate-S. If phosphorus is limiting, DAP (diammonium phosphate; 18-46-0) or a mixture of triple superphosphate (TSP; 0-46-0) and 100 pounds of AMS are both good options to provide the needed P and starter N.

One of the biggest negatives about starter N applications in rice is the efficiency of

the application. Only about 2 pounds of the N from a 20 pound per acre application actually makes it into the rice plant prior to the tillering stage of development and flood establishment. The remaining 18 pounds of the applied N will be in the nitrate-N form by the time the flood is established. The nitrate-N will be turned into a gas and be lost through a natural process called denitrification once the flood is established and the oxygen is depleted from the submerged soil. This is why you should never count the starter N fertilizer N application in your seasonal N target. Approximately 120 – 150 pounds of N per acre is generally adequate for most varieties and soils.

I personally like to use starter N applications in rice because of all of the positive things they bring to the table, even though they are probably not going to result in a measurable economic advantage at the end of the season. If you do decide to use a starter N consider the following. Be sure to incorporate the fertilizer N into the soil quickly with an irrigation event (or rainfall) to get the nutrient to the roots of the plant. This is especially important if you are using urea. If you are using urea and cannot irrigate the N in quickly, consider treating the urea with a urease inhibitor. Since the application is so inefficient, consider not using more than 21 pounds of N per acre. If you are not incorporating the N into

# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03

the soil prior to planting, consider applying the N around the 2-leaf stage of development just prior to an irrigation event.

## Planning your 2017 disease management program - by Don Groth

Varieties have been selected, and the rice crop has been planted; so, two of the most important rice disease cultural management practices, planting early and using resistant or less susceptible varieties, are complete. Points that you still need to consider are to establish and maintain the permanent flood to suppress blast, do not over fertilize with nitrogen, know which varieties are susceptible or very susceptible to blast, sheath blight, and *Cercospora*, keep a close eye on them for disease development, keep track of rice growth stages so fungicide applications can be done correctly, and have a fungicide resistance prevention plan.

The primary diseases that fungicides are used for include sheath blight, blast, *Cercospora*, and the grain smuts. Fungicide trials have been conducted at the Rice Research Station since the early 1980s. The studies demonstrated that fungicide selection was important in sheath blight, blast, and *Cercospora* control. Effective fungicide use must be based on the presence of the most damaging disease in a field. This is determined

by knowing the varietal susceptibility, field disease history, weather conditions in your area, and, most importantly, by scouting for disease in the field multiple times during the growing season.

Propiconazole-containing fungicides –



Figure 4. Severe sheath blight in rice.

Tilt, PropiMax, Bumper, Stratego, Quilt, and Quilt Xcel – were most effective against *Cercospora* and kernel smut. But Tilt, PropiMax, and Bumper were very weak against sheath blight and have no activity against blast when used alone. Based on research from Arkansas, propiconazole is most effective against kernel smut and some activity against false smut. Application at the mid- to late-boot stage is most effective. The strobilurin fungicides have activity against both sheath blight and blast. Azoxystrobin-



# LOUISIANA RICE NOTES

Drs. Dustin Harrell and Don Groth

March 30, 2017

No. 2017-03

containing fungicides – Quadris, Quilt, and Quilt Xcel – were more effective against sheath blight than the trifloxystrobin-containing fungicides, Gem and Stratego. But the trifloxystrobin-containing fungicides were somewhat more effective against blast. The SDHI fungicides, Sercadis and Elegia, are effective against sheath blight including the strobilurin-resistant sheath blight pathogen. Sercadis has some *Cercospora* activity. If the strobilurin-resistant *Rhizoctonia solani* is present in the field, Sercadis or Elegia must be used to control sheath blight; however, these fungicides have no activity against blast. Reports of SDHI resistance in the sheath blight pathogen population are not substantiated at this time. A new fungicide, Amistar Top, may be available late this year for rice. It contains both azoxystrobin and difenoconazole and will add to our fungicide resistance arsenal. It has sheath blight, blast, and *Cercospora* activity when applied at the correct growth stage.

Multiple fungicide applications may be necessary to manage multiple diseases in a field because of selective activity, disease severity, and label restrictions. There are limitations on fungicide application timings. You must read and follow the label. Also, check fungicide prices to determine the most cost-effective program. For additional information and current disease control

options, contact your local LSU AgCenter extension agent for information and advice.

## Additional Information

Louisiana Rice Notes is published periodically to provide timely information and recommendations for rice production in Louisiana. If you would like to be added to this email list, please send your request to [dharrell@agcenter.lsu.edu](mailto:dharrell@agcenter.lsu.edu).

This information will also be posted to the LSU AgCenter website where additional rice information can be found. Please visit [www.LSUAgCenter.com](http://www.LSUAgCenter.com).

## Upcoming

- |         |   |
|---------|---|
| May 31  | Southwest Louisiana Rice Tour, Fenton, LA                                 |
| June 28 | LSU AgCenter H. Rouse Caffey Rice Research Station Field Day, Crowley, LA |
| July 12 | Northeast Louisiana Rice Field Day, Oak Ridge and Rayville, LA            |
| July 18 | Northeast Region Rolling Crop Field Tour, Morehouse Parish                |



# LOUISIANA RICE NOTES

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March 30, 2017

No. 2017-03

## Rice Text Message Group

If you have not joined the rice text message group, please take the time to do so. This is a great way to get critical rice-related news very quickly as it occurs. In addition, rice meeting and other reminders are often sent out via text. To join, simply send a text message to this phone number: **81010** with this message: **@larice**.

Remember, you can keep in touch with what is going on in the Louisiana rice industry by using:



	<b>Louisiana Rice</b> <b>@LouisianaRice</b>
	<b>LSU AgCenter H. Rouse</b> <b>Caffey Rice Research</b> <b>Station</b>
	<b>Louisiana Crops</b> <b>Website @</b> <a href="http://www.louisianacrops.com">www.louisianacrops.com</a>
	<b>LSU AgCenter Official</b> <b>Website @</b> <a href="http://www.lsuagcenter.com">www.lsuagcenter.com</a>

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