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# LOUISIANA RICE NOTES

**Drs. Dustin Harrell & Don Groth**

**May 10, 2016** **No. 2016-04**

**Drier Weather**

Over the past several days we have seen much drier weather over southwest Louisiana as well as in the northeast Louisiana rice production area. A lot of the flooded areas in the southwest part of the state are now back to normal levels. Many producers who were dealing with stretched rice are now seeing that the rice is standing up on its own accord. It is amazing what a few days of sunshine will do in a short amount of time!

With that said, rice has finally begun to be planted, in earnest, in the northeast part of the state. We hope to plant all three of our northeast Louisiana rice research locations this week. This year we will have three on-farm research locations in northeast Louisiana this year. The locations will be near Gilbert, Oak Ridge and Monroe. Our northeast Louisiana Rice Field Day will be at the location just east of Oak Ridge on July 13. This will be the first time that the field day will be held at this location. We hope to see you there.

While rice is just beginning to be planted in northeast Louisiana, rice in the southwest part of the state is at, or very near, green ring. Since rice was at this critical stage, I thought it would be a good time to review "mid-season" N fertilization recommendations in rice.

**Mid-season Nitrogen Fertilizer Applications**

In dry seeded (drill or broadcast), delayed flood rice production systems in Louisiana, it is recommended that nitrogen (N) fertilizer should be applied in two applications. The first application should be applied just before the permanent flood is established. This application should be approximately two-thirds of the rice crop's seasonal need. The actual rate will vary according to soil type, variety grown, and personal experience at a particular location. This N fertilizer should be applied on dry ground, and the flood should be established as soon as possible after the application. The second N fertilizer application should occur at mid-season and can be applied into the standing flood. One of the most common questions I receive every year is, "why can N fertilizer be applied into a flood at mid-season but cannot be applied into a standing flood early in the season?" The answer to this question is really quite simple. The initial flood in rice is established when the rice is at the 4- to 5-leaf stage of development. At this time, the rice root system is not fully developed and it can only take up the applied N very slowly. In fact, research has

*Figure 1. Rice plant showing the accumulation of chlorophyll often referred to as "green ring." Green ring can be used to estimate the panicle initiation (PI) growth stage and beginning internode elongation (BIE).*

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shown that fertilizer N applied at this time will take approximately three weeks for 75% or more of it to be taken up by the rice plant. This means that N loss mechanisms like ammonia volatilization and nitrification-denitrification have plenty of time to occur before the rice can take up the fertilizer N. Of course, if the flood can be established quickly after N fertilizer is applied and the soil becomes anaerobic (oxygen is removed), the flood water can actually stabilize the N in the ammonium ($NH_4^+$) form. If this occurs, the rice can then take it up as it needs it over the next few weeks, and the N losses from ammonia volatilization and nitrification-denitrification will be minimized. The rice root system at mid-season will be fully developed and can take up the same amount of fertilizer N in approximately three days. In this situation, the rice plant actually outcompetes N loss mechanisms. This is why we can apply fertilizer N in the flood at mid-season and not early in the season.

So how do we determine when it is time to apply our "mid-season" fertilizer N application in rice? Well, we determine when to apply our mid-season fertilizer N based on the physiological development stage of the rice plant. Mid-season N should be applied during the time period between rice panicle initiation (PI) and panicle differentiation

*Figure 2. Rice plant at the panicle differentiation (PD) growth stage of rice development. PD generally occurs when the first internode elongates approximately ½ inch.*

(PD). Panicle initiation (PI) occurs at approximately the same time as beginning internode elongation (BIE), or jointing, and signifies the change from vegetative to reproductive growth. The rice panicle at PI cannot be seen by the naked eye and can only be seen with a microscope. However, we can look for what we often call "green ring." Before an internode can elongate (jointing) chlorophyll accumulates above the node and forms a distinct green ring (Figure 1).

We can visually see this green ring only for a couple of days. Therefore, we have to be diligent in splitting stems to look for the "green ring." This is how we know when to call the flying service to apply our mid-season fertilizer N. The optimal mid-

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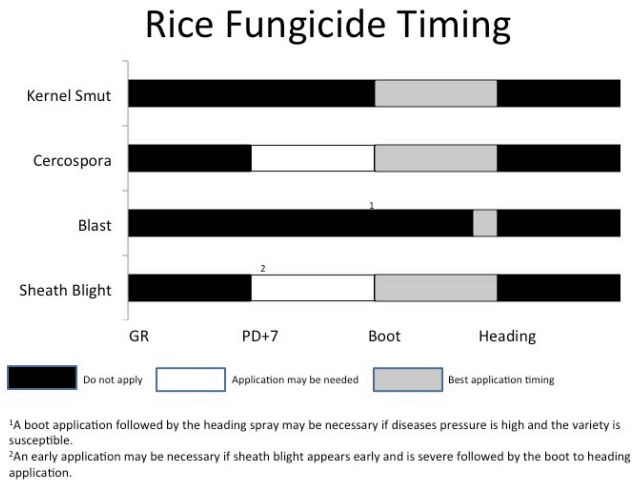
May 10, 2016 No. 2016-04

season N application window closes when the rice reaches PD. At PD, the panicle is approximately 2 mm in length, can be seen with the naked eye, and generally occurs when the internode (or joint) is approximately ½ inch long (Figure 2). Research has shown that mid-season N application are equally efficient when applied anytime during the recommended application window between PI and PD.

**Rice fungicides for sheath blight, blast, grain smuts and Cercospora**

Fungicide season is approaching quickly. Although I have not had any reports of sheath blight, blast, nor Cercospora, we have had warm moist weather this year, which favors disease development. Also, rice from 2015 overwintered due to the warm winter potentially providing early blast and Cercospora inoculum. As rice approaches reproductive stages, sheath blight development will increase. **Remember fungicides need to be applied by 50-70% heading!** As a rule of thumb, you lose 100 lb/A/day the fungicide application is delayed for both sheath blight and blast. Severe blast was found in several Jupiter and CL151 fields last year so keep a close eye on them, other susceptible varieties, and late planted rice. Below is information on various rice diseases, fungicides, and varietal reactions from the Louisiana Disease Control Guide.

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, i.e. heading restrictions on propiconazole fungicides or preharvest intervals. **You must read and follow the label.** Also, check fungicide prices to determine the most cost-effective program, and if you do not need a fungicide (no disease), do not use a fungicide. For additional information and current disease control options, contact your local LSU AgCenter extension agent for information and advice.



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May 10, 2016 No. 2016-04

**Table 1. Symptoms, source of inoculum and management of diseases of rice**

| Disease | |
|---|---|
| **Blast** (*Pyricularia grisea*) | **Symptoms:** Leaf lesions are spindle-shaped and elongated with brown borders and grayish centers. A brownish lesion on the internode at the base of the panicle causes "blasting" of heads followed by breaking over of the head to produce the "rottenneck" symptoms. **Source of Inoculum:** Fungus may overwinter on diseased straw and stubble, or in some cases it may be carried on infested or infected seed. Source of inoculum for early infection has not been satisfactorily worked out. It spreads in the field by means of airborne spores. **Management:** For leaf stages of the disease, maintain proper flood level. Infection levels tend to be less severe where floodwater is maintained at adequate but not excessive depths. Plant varieties resistant to prevalent races of the fungus. (See variety list.) Avoid excessive rates of nitrogen (Nitrogen amounts vary with cropping history, soil type, varieties, etc.). The use of fungicides will be helpful in the management of blast. Fungicide timing is critical for effective control. |
| **Sheath Blight** (*Rhizoctonia solani*) | **Symptoms:** Large spots with cream-colored centers and broad, dark reddish-brown borders appear on sheath, usually beginning near the water line. Alternating wavelike tan and brown bands can extend up the sheath and may include the flag leaf. The wavelike band pattern may extend out on part or the entire leaf surface. **Source of Inoculum:** Fungus is soilborne and persists as sclerotia or mycelia on straw and stubble of rice and grasses. Weed hosts may serve as sources of inoculum. **Management:** Thick stands and excessive nitrogen applications tend to favor disease development. Some varieties are less susceptible than others. (See variety list.) Fungicides may be necessary to suppress disease development. Fungicide-resistant populations exist in some fields. |

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May 10, 2016 No. 2016-04

**Table 1. Symptoms, source of inoculum and management of diseases of rice**

| Disease | |
|---|---|
| **Brown Leaf Spot** (*Bipolaris oryzae*) | **Symptoms:** Dark reddish-brown spots are somewhat circular or oval to slightly elongated. Mature spots have gray centers. Spots usually associated with low nitrogen or maturity of the plant. Spots also may occur on hulls and kernels with a dark brown fungus sometimes present on kernels.<br>**Source of Inoculum:** The fungus is seedborne and also may live from one crop to the next on infected rice straw and stubble. It is spread by airborne spores.<br>**Management:** Maintain good growing conditions through fertilization, land leveling, soil preparation and other cultural practices. |
| **Narrow Brown Leaf spot** (*Cercospora janseana*) | **Symptoms:** Leaf spots are light reddish-brown to brown, long and narrow. Reddish-brown discoloration of the sheath may occur when disease pressure is severe. Disease usually occurs after heading.<br>**Source of Inoculum:** The fungus persists on crop residue and on red rice.<br>**Management:** Varietal resistance offers the best approach to control. (See variety list.) Fungicides may control narrow brown leaf spot. |
| **Seed and Seedling Diseases**<br>**Water Molds** (*Achlya* spp., *Pythium* spp.) | **Symptoms:** Light to dark brown discoloration on soil surface around seed after water is removed. Usually have fluffy fungal growth around seed before water is removed.<br>**Source of Inoculum:** These fungi persist in the soil on organic matter.<br>**Management:** Removing water after seeding will reduce losses. Seeding into clear water reduces the incidence of water mold. Seed treatments may reduce damage. |
| **Seedling Blight** (Several fungi) | **Symptoms:** Young plants have roots and lower stem affected, often resulting in death of the plant. Dark lesion at the junction of seed and root.<br>**Source of Inoculum:** May be seed-borne or soil-borne. |

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May 10, 2016 No. 2016-04

**Table 1. Symptoms, source of inoculum and management of diseases of rice**

| Disease | |
|---|---|
| **Stem Rot** (*Sclerotium oryzae*) | **Symptoms:** Black, discolored areas on leaf sheath near surface of water. Later, small black seed-like sclerotia develop inside leaf sheath and still later inside the stem. Stalks may break over and lodge. **Source of Inoculum:** Fungus persists in the sclerotial stage in soil and on diseased straw and stubble. **Management:** Applications of potassium to the soil may reduce the severity of the disease in some instances. |
| **Kernel Smut** (*Tilletia barclayana*) | **Symptoms:** Black masses of spores replace all or some of the seed endosperm. Often the spores ooze out of the grain, leaving a black mass along the seam of the hulls and on leaves and stem. **Source of Inoculum:** The fungus overwinters in soil and in seeds. **Management:** Avoid high nitrogen rates. Application of propiconazole containing fungicides at boot growth stage reduce incidence. |
| **Straighthead** (Physiological Disorder) | **Symptoms:** Rice heads remain upright at maturity because of lack of grain formation. Hulls usually are crescent or “parrot beak” shaped. **Source of Inoculum:** No organism involved. **Management:** Drain water from field just prior to jointing stage of growth. Leave water off until cracks form in the mud. Then flood again. Some varieties are moderately resistant to this disorder. (See variety list.) |

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# LOUISIANA RICE NOTES

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May 10, 2016 No. 2016-04

**Table 2. Rice variety reactions to common diseases in Louisiana**

*S indicates a susceptible reaction, MS indicates a moderately susceptible reaction, MR indicates a moderately resistant reaction, R indicates a resistant reaction and --- indicates that the reaction is not known.* Varieties labeled S or VS for a given disease may be severely damaged under conditions favoring disease development.

| Variety | Disease | | | | |
|---|---|---|---|---|---|
| | Blast | Sheath Blight | Cercospora | Bacterial Panicle Blight | Straight Head |
| **Caffey** | R | MS | R | MS | MS |
| **Catahoula** | MR | S | R | MS | S |
| **Cheniere** | MS | S | S | MS | MR |
| **CL111** | MS | VS | S | VS | S |
| **CL151** | VS | S | S | VS | VS |
| **CL152** | S | S | MR | MR | MR |
| **CL163** | VS | S | R | MS | --- |
| **CL172** | MS | S | MS | S | S |
| **CL271** | MR | MS | MR | MS | MR |
| **CLXL729** | R | MS | R | R | --- |
| **CLXL745** | R | MR | R | MR | --- |
| **Cocodrie** | MS | VS | S | S | S |
| **Colorado** | S | S | MS | MR | --- |
| **Cypress** | MS | VS | S | S | MR |

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May 10, 2016 No. 2016-04

| | | | | | |
|---|---|---|---|---|---|
| **Della-2** | R | S | MS | MS | MR |
| **Jazzman** | R | MS | S | S | MS |
| **Jazzman 2** | MS | S | S | VS | VS |
| **Jupiter** | S | MS | R | MR | MR |
| **LaKaste** | S | MS | MS | MS | MS |
| **Mernmentau** | S | S | MS | MS | S |
| **Roy J** | S | MR | R | MS | S |
| **Tagart** | MR | MR | R | MS | MR |
| **XL752** | R | MR | R | MR | --- |
| **XL760** | R | MR | R | MR | --- |

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May 10, 2016 No. 2016-04

**Table 3. Efficacy of fungicides in managing diseases of rice**

***Efficacy categories are as follows: P=Poor; F=Fair; G=Good; VG=Very Good; NL = Not Labeled for use against this disease.***

| Fungicide Information | | | | Disease | | | |
|---|---|---|---|---|---|---|---|
| **Class and Mode of Action Group[1]** | **Active Ingredient** | **Product(s)[2]** | **Rate[3] (fl oz)** | **Blast** | **Sheath Blight** | **Cercospora** | **Kernel Smut** |
| QoI Strobilurins<br>Group 11 | Azoxystrobin | Quadris 2.08 SC<br>Equation 2.08 SC | 9-15.5 | G | VG | P | P |
| | Trifloxystrobin | Gem 500 SC | 3.1-4.7 | VG | G | P | P |
| Carboxamides<br>Group 7 | Flutolanil | Elegia 3.8 F | 16-32 | NL | G | NL | NL |
| | Fluxapyroxad | Sercadis 2.47 SC | 4.5-6.8 | NL | VG | NL | NL |
| Demethylation Inhibitors (DMI)<br>Group 3 | Propoconazole | Tilt 3.6 EC<br>Bumper<br>PropiMax | 6-10<br>6-10<br>6-10 | NL | F | G | G |
| Mixed[4] | Azoxystrobin,<br>Propiconazole | Quilt 200 SC | 14-34.5<br>15.8-27 | G | VG | G | G |
| | Azoxystrobin,<br>Propiconazole | Quilt Xcel 2.2 SE | 16-19 | G | VG | G | G |
| | Trifloxystrobin,<br>Propiconazole | Stratego 250 EC | | VG | G | G | G |

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[1]Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

[2]Reference to commercial or trade names is made with the understanding that no discrimination is intended nor endorsement of a particular product by LSU or the LSU AgCenter is implied. Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use. This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Members or participants in the CDWG assume no liability resulting from the use of these products.

[3]Rates are the amount of formulation (product) per acre unless otherwise indicated.

[4]Refer to product label for the fungicide class and mode of action group.

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

**Louisiana Rice**
**@LouisianaRice**

**LSU AgCenter H. Rouse Caffey Rice Research Station**


**Louisiana Crops Website @ www.louisianacrops.com**


**LSU AgCenter Official Website @ www.lsuagcenter.com**

**Upcomming**

| | |
|---|---|
| May 24 | Vermilion Parish Rice Tour, Lake Arthur, LA. |
| May 25 | Southwest Louisiana Rice Tour, Fenton, LA. |
| June 9 | Evangeline Parish Rice Field Day, Mamou, LA. |
| June 15 | LSU AgCenter's H. Rouse Caffey Rice Research Station South Farm Field Day. Crowley, LA. |
| June 29 | LSU AgCenter's H. Rouse Caffey Rice Research Station Field Day, Crowley, LA. |
| July 13 | Northeast Louisiana Rice Field Day, Oak Ridge, LA. |

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## 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.

This information will also be posted to the LSU AgCenter website where additional rice information can be found. Please visit www.LSUAgCenter.com.


### Contact Information


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