



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts,
Dr. Yeshi Wamishe, & Dr. Tommy Butts
Oct. 16, 2020 No. 2020-27

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Harvest Progress

“There’s fire on the mountain, lightning in the air, gold in them hills and it’s waitin’ for me there.”

From rain through the first six months of the year to Tropical Storm Cristobal to start June to Hurricane Laura to end August to Hurricane Delta to start October, what a long, strange trips it’s been. The end is coming into view, but there’s many a slip twixt a cup and a lip.

Harvest progress (**Table 1**) has improved dramatically in the last couple of weeks. This has allowed us to now get very close to harvest progress in recent years. The long-term forecast from here looks volatile so expected progress over the next couple of weeks is uncertain.

Table 1. Harvest progress by week, 2016-2020.

Year	Week 37	Week 38	Week 39	Week 40	Week 41
2020	24	44	57	70	83
2019	44	61	72	82	89
2018	47	70	77	88	92
2017	59	78	88	94	97
2016	73	84	91	96	98

* Week 35 corresponds with ~Sept. 1 each year.

Preliminary Research Yield Trial Results

The preliminary yield results from small plot cultivar testing research trials is now available. These include the Commercial Rice Trials (CRT) and Planting Date Studies. Final results of these trials, including milling data, will be available by early December.

View the report here:

[2020 Arkansas Rice Cultivar Testing Preliminary Yield Reports](#)

Cercospora (Narrow Brown Leaf Spot) Seems to be Increasing in Rice

Narrow brown leaf spot (NBLs), also called Cercospora leaf spot, is one of the late-season diseases of rice. The fungus can infect leaves (**Fig. 1**), sheaths (**Fig. 2**), and panicles (**Fig. 3**) including pedicels and glumes.

In recent years it has seemed that NBLs has been found more frequently in mild, wet seasons. In 2019 and 2020 the occurrence has been particularly notable. Given the amount of potassium (K) deficiency obvious in many fields during these two seasons, it shouldn’t necessarily be a surprise. This disease may be partly to blame for some of the lower yields experienced by growers in the state this year, though several other factors are also likely responsible.

Fig. 1. Narrow Brown Leaf Spots (NBLs) are narrow and elongated parallel to the leaf veins and may become very severe on more susceptible cultivars and may cause severe leaf necrosis.



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Fig. 2. In severe situations NBLS can cause severe leaf and sheath necrosis.



Fig. 3. Severe NBLS on Jupiter in 2019.



It leads to premature death of leaves and leaf sheaths, and premature ripening of grains. In severe cases, it can cause lodging. Due to only occasional severe epidemics, NBLS has not been considered as an economic factor. However, in severe disease

situations 20-40% grain yield loss has been reported in Louisiana. Severe damage caused by NBLS can also decrease milling yields.

NBLS is reported to occur more in K deficient soils. While excessive nitrogen (N) fertilization is sometimes blamed for higher incidence and severity of certain rice diseases, adequate K fertilization is praised for improving general crop health. In most K deficient soils, brown spot of rice appears first and has been used as an indicator of stress, mostly K deficiency. Rice plants take up K to accomplish several physiological activities important for good plant growth and health.

Symptoms of NBLS

- Typical lesions on leaves and upper leaf sheath are light to dark brown, linear, and progress parallel to the vein. They are 2-10 mm long and 1-1.5 mm wide.
- Lesions on leaves of highly susceptible cultivars may enlarge and connect together, forming brown linear necrotic regions. The lesions tend to be narrower, shorter, and darker on resistant cultivars.
- On upper leaf sheaths, symptoms are similar to those found on the leaf. On lower sheaths, the symptom is a “net blotch” or spot where cell walls are dark brown and intracellular areas are tan to yellow.
- Abundant sporulation occurs on the lesions during extended wet periods.
- On glumes, lesions are usually shorter but can be wider than those on the leaves. Brown lesions are also found on pedicels.

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Factors affecting NBLS development

- Susceptibility of cultivars to one or more prevalent races of the fungus.
- Prevalence of pathogenic races on leading and widely grown cultivars.
- Growth stage (although rice is susceptible at all growth stages, it is more susceptible from panicle emergence to maturity).

Management of NBLS

- Use resistant cultivars. This can be unreliable due to development of new races.
- Keep fields clean.
- Remove weeds to eliminate alternate hosts that allow the fungus to survive and infect new rice crops. Weedy rice can be more affected by NBLS.
- Use balanced nutrients; particularly make sure that adequate K is applied.
- In susceptible cultivars, apply propiconazole-containing fungicides between booting to heading stages. Fungicides containing propiconazole have shown activity against NBLS if applied as recommended (Fig. 4).

Fig. 4. Propiconazole sprayed strip (left) and untreated strip (right) at LSU. Courtesy Dr. Don Groth.



Fall Vs Spring Applied Phosphorus (P) & Potassium (K)

“I’m actually getting ground worked this fall. Should I apply fertilizer now or wait until spring?”

The short answer is to wait – the closer we can apply nutrients in relation to plant demand the more efficient they will be utilized. Generally speaking, it is fine to apply P, K, and zinc (Zn) fertilizers in the fall or the spring. Of these, Zn is probably the safest to apply at any time.

Phosphorus and K can be riskier when applied in the fall versus in the spring, though for different reasons. Phosphorus is more stable in the soil and isn’t likely to be lost unless you have erosional soil loss, but may be converted to a form that is less plant available (less soluble). Potassium generally will be attracted to and held on the cation exchange sites (CEC) in the soil, but recent finding suggest that K dissolved in water may be prone to leaching and runoff to a greater extent than once thought.

For soils in the medium and optimum soil test categories, it is unlikely that a difference in crop response will be observed whether fertilizer is applied in the fall or the spring (a wider range of application window with little to no change in crop response). For soils in the low and very low soil test categories, there is a greater need for these nutrients to maximize yield and any potential losses can lead to significant yield reductions.

Therefore, fall applied P and K increase the risk that P and/or K may not be available in sufficient amounts when the crop needs it in the spring and summer the following year. Areas that are flooded for waterfowl or prone to flooding should always avoid fall applications of P and K.

The safer play is to wait until spring to apply fertilizers which gives us the best opportunity to

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increase their availability to the rice plant during the growing season. Deficiencies have been observed with both approaches, so crop monitoring is still a key to avoiding in-season issues.

Fall Herbicides Ahead of Rice

Lots of questions coming in regarding fall weed control and fall applied herbicides, especially residuals, on ground intended for rice in 2021.

The primary weed I'd be concerned with right now is the first flush of Italian ryegrass. Ryegrass has already started emerging across the state, and research has shown successful control of the first flush of Italian ryegrass in the fall will drastically reduce the density and size of ryegrass plants in the spring. To effectively manage this weed on ground intended for rice, a shallow tillage event to kill small emerged seedlings is a good first option. Following that, any emerged seedlings can be killed with clethodim (if no suspected resistance) or paraquat. Glyphosate may also be an option in areas where herbicide resistance is not yet a concern; however, glyphosate-resistant ryegrass has been reported throughout much of Arkansas now.

Be aware, with the cooler temperatures we are now experiencing, a systemic herbicide like clethodim or glyphosate will be slower-acting than normal and overall, less effective. Paraquat is likely the best option to avoid potential herbicide resistance issues and will handle the cooler temperatures a little bit better, but ryegrass should be small at the time of application. For more information on Italian ryegrass management, please see our recently released fact sheet [FSA2191, Management of Italian Ryegrass in Agronomic Crops](#).

As far as other weed species go, most should not be a concern at this point in time and would not be

economical to manage with a fall-applied herbicide. Most winter annual weeds (excluding Italian ryegrass and annual bluegrass) that would be emerging now are typically easy to control with a spring burndown application, and as previously mentioned, paraquat would help manage the Italian ryegrass and would also help with the annual bluegrass (*Poa annua*). If summer annual weeds have escaped from this season, most, if not all, are headed out with already viable seeds, so a herbicide will not help in this scenario. If there are other weeds still growing or emerging, the cooler temperatures we are now experiencing will slow down growth, and whenever a frost occurs, should naturally kill these weed species.

In terms of residual herbicides, this is probably the most unfortunate news for rice growers. There are no labeled residual herbicides, especially for grasses, that can be applied in the fall ahead of a rice crop due to potential crop injury. Research from Drs. Ben Lawrence and Jason Bond at Mississippi State University showed that several residual herbicides applied in the fall (Dual Magnum, Treflan, and Zidua SC) resulted in rice injury and yield loss the following year (Lawrence et al. 2018).

Overall, the most economical option for managing weeds ahead of rice (excluding Italian ryegrass and annual bluegrass) at this point of the year is to let Mr. Jack Frost take care of them. A shallow tillage event and/or paraquat should be considered to manage Italian ryegrass and annual bluegrass and would help with other weeds at this time as well. Good luck out there and hope your harvest is bountiful.

Reference: Lawrence BH, Bond JA, Edwards HM, Golden BR, Montgomery GB, Eubank TW, Walker TW (2018). Effect of fall-applied residual herbicides on rice growth and yield. *Weed Technol* 32:526-531.

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Managing Row Crop Residue Burns

As we move through harvest, it's time to start managing crop residue in fields. A number of organizations have been involved in the past few years in developing the Arkansas Voluntary Smoke Management Guidelines for Row Crop Burning which can be found [HERE](#).

Check out the PDF ([Arkansas Voluntary Smoke Management Guidelines for Row Crop Burning](#)) for a better understanding of all aspects of burning. At the end of the day, you need to know these items:

1. Call the Arkansas Agriculture Department's (AAD) Dispatch Center at **1-800-830-8015**.
2. Give them name, location of field, acres, crop type, and time of planned burn.
3. Get a burning recommendation!

A few major DON'T items:

- DO NOT BURN if winds exceed 15 mph.
- DO NOT BURN if humidity is below 20%.
- DO NOT BURN when the wind direction could send smoke directly into roadways or communities.
- DO NOT leave your fire unattended.

With your help, we can effectively burn crop residue to eliminate pests and minimize tillage, while keeping our fires under control and out of our communities.

Additional Information

Arkansas Rice Updates are published periodically to provide timely information and recommendations for rice production in Arkansas. If you would like to be added to this email list, please send your request to rice@uaex.edu.

This information will also be posted to the Arkansas Row Crops blog (<http://www.arkansas-crops.com/>) where additional information from Extension specialists can be found. More information on rice production, including access to all publications and reports, can be found at <http://www.uaex.edu/rice>.

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