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H. Rouse Caffey RICE RESEARCH STATION NEWS

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Optimal Drill-Seeded Rice-Planting Window Based on Eight Years of a Date of Planting Experiment

Rice yield and quality are highly influenced by the planting date. Typically, later-planted rice has reduced yield and milling quality. Similarly, rice planted too early is at risk for poor germination and stand, which can lead to reduced yields. Each year the Breeding Project at the H. Rouse Caffey Rice Research Station conducts a date of planting (DOP) experiment to quantify the optimal planting date. Data exists from this study for the last 20 years. This experiment focuses on the effect of different planting dates on 12 different varieties, representing the most commonly grown varieties in Louisiana and new potential varieties. This data also allows us to determine if a given variety is more or less sensitive to earlier or later planting.

Every year these lines are planted over eight different dates with three replicate plots in each planting. The goal is to space the plantings out every two weeks starting in late February. This study was initially planted with a water-seeding method until 2011, at which point it was switched to a drill-seeding method. In 2018, it was reported that approximately 75% of rice in Louisiana was drill seeded. Since these two planting methods have different optimum planting windows, only years from 2011 to 2018, when rice was drill-seeded, will be presented here.

Across the eight years of the study, a total of 42 varieties were tested, representing all key market classes grown in Louisiana, including Clearfield, Provisia, and hybrid materials. Due to rain events, the exact planting dates vary year to year; thus, the data was grouped into planting windows. The agronomic traits discussed include grain yield, whole kernel milling yield, and days to 50% heading.

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Photos taken July 23

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Special Dates of Interest:

- **H. Rouse Caffey Rice Research Station Annual Field Day June 26, 2019**

Optimal Drill-Seeded Rice-Planting Window Based on Eight Years of a Date of Planting Experiment

Cont.

The results of the experiment show that each trait was strongly affected by planting date. The average yield across all eight years shows its highest values when planted in planting window W2 and W3 (from March 11 to March 31) (Figure 1a). Earlier planting dates show highly variable values. In years 2011 and 2017, planting window W1 resulted to be the optimum planting date, but for the remaining years, yield was significantly lower than later plantings due to unfavorable climatic conditions. After the optimal planting window, there is a clear and significant trend of yield reduction as the planting date is delayed. Yield is also affected by other environmental factors that vary year to year; thus, in some years, the optimal planting date is observed to be later. For example, in 2013, 2015, and 2018, planting window W4 (mid-April) showed the highest yield values.

Milling yield is significantly influenced by different planting windows as well (Figure 1b). The graph expresses milling yield as grams of whole kernel over a kilogram of rough rice, where a value of 600 would be equivalent to 60%. The highest average values are consistently observed during the early planting windows, which are from late February to the end of March. After this optimal window, milling yield drops at planting window W4 and increases with later planting windows. This trend is likely explained by the period in which grain maturation occurs during the growing season. When rice is planted in the earlier windows, it is flowering, and the grain is maturing before the extremely high temperatures in mid-summer. The rice planted in mid-April is typically maturing during the hottest time of the summer months, leading to a reduction in milling yield. Similar to yield, milling is greatly affected by other environmental factors that vary year to year. Thus, in 2013, 2015, and 2018, milling yield did not vary significantly across planting dates.

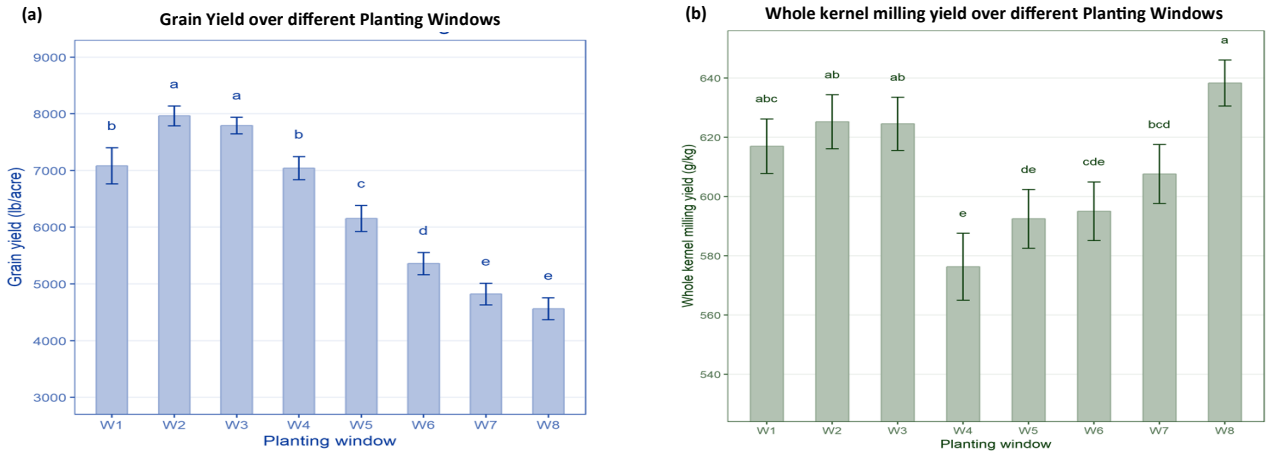

Figure 1: ***(a)*** *Average of grain yield and* ***(b)*** *whole kernel milling yield across different planting windows. Planting windows are defined as: W1 = Feb. 23 - March 5; W2 = March 11 - March 22; W3 = March 27 - March 31; W4 = April 11 - April 23; W5 = April 30 - May 1; W6 = May 11 - May 16; W7 = May 25 - June 6; W8 = June 9 - June 20.*

Rice maturity, measured as the amount of days until 50% of rice panicles are heading, is significantly affected by planting date (Figure 2). The amount of days required for flowering is highly correlated with the amount of growing degree days, which is the accumulation of heat units throughout the year. Therefore, there is very clear trend that the later the rice is planted, the earlier it reaches flowering (Figure 2). This trend is observed in production fields when farmers plant their fields over a period of a few weeks, and then it is all ready for harvest at the same time.

The optimal planting date is expected to vary year to year, but the results of these studies provide a very clear optimal window for drill-seeded rice in Southwest Louisiana. Although weather conditions and forecast, soil temperatures, and specific producer considerations need to be taken into consideration each year, the cumulative data across multiple years of this study suggests that the optimal planting window is from March 10 to April 1. There is a slight reduction of yield during this period, but this reduction is not drastic. However, there is a clear drop off in yield and quality as rice is planted after April 1, and the rate of yield reduction increases as the planting date is delayed. The theoretical optimal planting date is calculated as March 20. Using this date as 100% yield potential, it takes three weeks (April 9) until we see a 5% reduction in yield. However, the next 5% yield reduction occurs after only nine days (April 18), and the next 5% reduction after only seven days (April 25).

In summary, it is best to strive for earlier planting when the weather conditions permit. In a year with a mild winter and a warm weather forecast, one should feel more comfortable planting before the optimal window observed in this study. In addition to crop performance, earlier planting mitigates the risk associated with hurricanes, as the hurricane season picks up in August and September along the Gulf Coast.

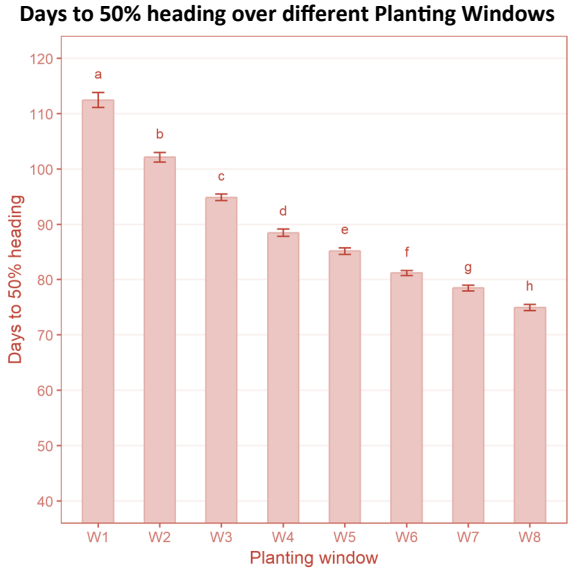

Figure 2: *Days to 50% heading over different planting dates.*

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Provisia applied in a Mixture with Residual Herbicides

In 2018, Provisia rice was grown across the state of Louisiana. Most of the fields where it was produced had an existing problem with Newpath and Beyond resistant red rice or weedy rice. On a smaller scale, Provisia rice was grown in fields with difficult to control barnyardgrass, Amazon sprangletop and/or Nealley's sprangletop. The use of other herbicides will be needed in a Provisia rice system since the herbicide Provisia has no activity on broadleaf weeds and limited activity on sedges. It is also important to apply herbicides that have activity on grasses to take some pressure off Provisia herbicide and to help manage or slow the development of resistance.

In the spring of 2017, RiceCo, now UPL, received a label for RiceOne. This new herbicide is a prepackage mixture of clomazone plus pendimethalin. Due to the presence of pendimethalin in the mixture, this herbicide cannot be applied as a preemergence treatment immediately after planting. This herbicide mixture controls barnyardgrass, broadleaf signalgrass, Amazon sprangletop and fall panicum prior to weed emergence. RiceOne also has activity on many small seeded broadleaf weeds prior to emergence. RiceOne may be applied as a surface broadcast application, as a delayed preemergence application,or an early postemergence treatment to rice. Early postemergence applications will need another herbicide to control emerged weeds. RiceOne rates are soil texture dependent; therefore, refer to the RiceOne label for proper rates. Do not apply RiceOne to water-seeded rice.

RiceOne applied at 36 oz/acre provides the equivalent of Command at 12.8 oz/acre and 24 oz/acre of ProwlH2O. The rice weed management project evaluated Provisia mixed with RiceOne and the individual components, Command and ProwlH2O, at the equivalent rates found in the RiceOne rate of 36 oz/acre. For clarification, RiceOne has a different formulation of clomazone, the active found in Command, and pendimethalin, the active found in ProwlH2O. All the mixtures evaluated were applied to emerged barnyardgrass, CL111, hybrid rice, and red rice, and this allowed us to evaluate if any antagonism of Provisia occurred.

Barnyardgrass control at 14 to 42 days after treatment was 94 to 98% control with no antagonism observed. The same trend was observed for control of red rice, CL111, and the hybrid. Provisia provided postemergence control of the emerged barnyardgrass and the rice lines, and the RiceOne provided the residual control for later emerging grasses and small seeded broadleaf weeds.

The addition of multiple herbicides with differing sites of action in a single mixture can help prevent or reduce the development of herbicide-resistant weeds, and this mixture can be part of a strategy to manage existing herbicide resistant weeds. Multiple weed species infest rice fields in Louisiana and rarely is there single monoculture of weeds present. The Provisia rice production system can be effective at controlling problem grasses found in Louisiana rice production.

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Provisia alone

Provisia mixed with RiceOne

Provisia mixed with Command

Sun Protection

As farmers, the sun is our best friend and worst enemy. Basically, we harvest the energy from the sun through plant photosynthesis to produce our crops. The bad part is sunlight has UV rays that can cause skin cancer and eye problems unless we protect ourselves. After my most recent dermatologist visit I noticed this photo hanging in my office of farmers building a rice levee years ago and saw several important facts about sun safety. Both men are wearing long sleeve heavy weight shirts, long pants or coveralls and broad brim hats. I know they are probably not wearing sunscreen nor UV eye protection but they are probably much better protected from sunlight UV rays than most farmers today who wear short pants, thin short sleeve shirts and baseball hats.

There are several basic sun protection steps we should follow to protect ourselves when outdoors. Sunscreen is an essential protection and comes in many types and strengths. This is measured as SPF and run from very low 5-10 to over 100. The recommendation is a SPF of 15 to 30 or higher sun block. The higher the number the better and longer the protection. All exposed skin should be protected. One of the worst mistakes people make about sunscreen is they think once it is applied its protection last all day long. The truth is sunscreen wears off over time or comes off with sweat or washing and must be reapplied regularly. Read and follow the label (Where have we heard that before?). Eye protection in the form of UV filtering glasses or sun glasses should be worn that are rated 99% or higher UV filtering. Baseball hats help protect the face but not the rest of the head, ears and neck. A broad brim hat or a hat with a cloth flap that covers the ears and neck should be used to give good protection. Clothing is an important protective barrier against UV light. It should cover the whole body, no shorts nor short sleeves, and be thick enough to block the sun. Today, many pieces of clothing have an SPF rating and some are manufactured for outdoor use to be cool and comfortable and have a high SPF protection. Other useful protection ideas include staying in the shade or out of direct sunlight whenever possible and avoid being outside during the brightest times of the day. Remember, you are not totally protected in the shade and you are still receiving UV damage on a cloudy day.

One important point I have to make is that I am not an authority on sun protection and the reader should become familiar with correct and recommended UV light protection methods. Several suggested websites with additional information are The World Health Organization (https://www.who.int/uv/sun_protection/en/), Skin Cancer.Org (www.skincancer.org/prevention/sun-protection), and the CDC (https://www.cdc.gov/cancer/skin/basic_info/sun-safety.htm) to list just a few. The fact is skin cancer is increasing in the agricultural community and we have to take it seriously. As someone who has had a lot of skin problems (not melanoma luckily), including numerous biopsies and way too many spots on the skin burned off with liquid Nitrogen, I encourage everyone to take sun protection seriously and see your doctor or dermatologist often, especially if you have any questionable spots on your skin. Previously published in Louisiana Farm and Ranch 15:4.

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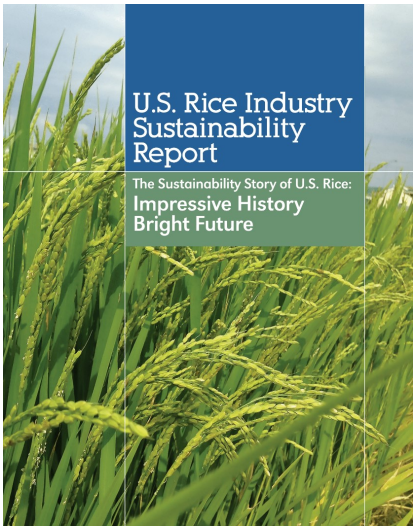
Please join us for the H. Rouse Caffey Rice Research Station Annual Field Day

Crowley, La., June 26, 2019

The USA Rice Industry Sustainability Report is now available online and as hard copies. To access online: https://www.usarice.com/sustainability/sustainability-report

For a hard copy, please contact Steve Linscombe slinscombe@usarice.com



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Focus

Dustin Reiners

Dustin Reiners of Branch has been working at the Rice Research Station since March 2017.

He works with the farm crew, and that involves running whatever piece of equipment is needed to work the ground. Dustin said he prefers driving a tractor while pulling a shank.

Dustin said he learned about working on a farm from his brother, Bradley Reiners, who worked on a farm near Branch.

He said he likes working at the station because of the relaxed workplace atmosphere. “It’s pretty easy going. You know what you’ve got to do.”

Dustin attended Notre Dame High School in Crowley. He played football as the varsity punter, field goal kicker and kick-off kicker for 4 years.

When Dustin isn’t working at the station, he’s occupied with his recreational pursuits. “If it’s hunting season, I’m hunting ducks and geese. If it’s not hunting season, I’m fishing for bass.”

Dustin’s boss, Farm Manager Bill Leonards, said he’s glad to have Dustin on his crew. “I think the station is lucky to have someone like him. He’s not afraid to try new things and work on the larger equipment. It’s getting harder and harder to find someone like that.”

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