

# 2018 Arkansas Rice Quick Facts

Dr. Jarrod Hardke – Rice Extension Agronomist  
 Ralph Mazzanti – Program Associate, Rice Verification  
 Ron Baker – Program Associate, Rice Verification



## 2017 Rice Facts:

- 1,093,000 acres harvested
- 164.4 bu/acre (7,400 lbs/acre) state average yield
- Average dates in 2017
  - Rice Research Verification Program (RRVP)
  - Planting: April 12
  - Emergence: April 24
  - Harvest: Sept. 11
- 45 lbs = 1 bu; 100 lbs = 1 cwt; 1 cwt = 2.2 bu
- 12% grain moisture is dry

## Growth and Development:

Vegetative stages – Germination to panicle initiation

- Germination – occurs when seed is exposed to moisture, oxygen, and temperatures above 50°F.
- Emergence – occurs in 5 - 28 days depending on the environment.
- Pre-tillering (1<sup>st</sup> to 4<sup>th</sup> leaf stage) – rice generally puts on one leaf per week, can occur in 15 - 25 days.
- Tillering (1<sup>st</sup> to 4<sup>th</sup> tiller) – can occur in 24 - 42 days.

Reproductive stages – Panicle initiation to maturity

- Panicle initiation (PI) – sometimes referred to as “green ring” or beginning internode elongation (BIE).
- Panicle differentiation (PD) – ½ inch to ¾ inch IE.
- 50% heading – time when 50% of panicles begin to exert from the boot.
- Grain fill to maturity – can occur in 30 - 45 days.
- Maturity – approximately 20% grain moisture.

## Seeding:

- Ideally, plant when soil is 60°F @ 4 in. depth.
- Good seed-to-soil contact is required.
- Seed depth should be ¼ - 1 ½ in.
- Under favorable conditions, drilled seeding rate should be ~30 seeds per square foot (ft<sup>2</sup>) for conventional, non-hybrid cultivars and ~11 seeds per ft<sup>2</sup> for hybrids.
- Seeding methods include: dry seeded-drilled, dry seeded-broadcast and water seeded-broadcast.
- Recommended drill row widths are 4 to 10 inches; 7.5-inch drill-row widths are most common.

## Determining Emergence & Final Plant Stands:

- **DD50** Emergence – date when 10 plants per ft<sup>2</sup> have emerged above soil surface (4-5 plants per ft<sup>2</sup> for hybrids). <http://dd50.uaex.edu>
- Count the number of plants in one ft<sup>2</sup> in at least 10 random locations in the field.
- Desired stand is 12 to 18 plants per ft<sup>2</sup> (6 to 10 plants per ft<sup>2</sup> for hybrids).
- Stand uniformity is as important as stand count.

## General Suggested Recommended Seeding Dates

Geographic Region	Optimum <sup>1</sup>		Absolute <sup>2</sup>	
	Begin	Cut-off	Begin	Cut-off
South	Apr 1	May 20	Mar 20	June 15
Central	Apr 10	May 15	Mar 25	June 10
North	Apr 15	May 10	Mar 25	June 5

<sup>1</sup> Seeding during optimum time frame does not guarantee high yields or suggest crop failure cannot occur.

<sup>2</sup> Recommended absolute does NOT mean a successful rice crop cannot be grown if seeded outside of the dates listed.

## Additive Factors Increasing Optimum Seeding Rate<sup>1</sup>

Variable	% Added
<b>Seeding Method</b>	
Dry seeded-drilled	0
Dry seeded-broadcast	20
Water seeded-broadcast	30
<b>Soil Texture</b>	
Sand	0
Silt	0
Clay	20
<b>Seedbed Condition</b>	
Good	0
Fair	10
Poor	20
<b>Seeding Date</b>	
Early (Before April 5 – 15 South to North)	10
Optimum	0
Late (After June 1)	20

<sup>1</sup> Use of fungicide and/or insecticide seed treatments can increase plant stand and vigor.

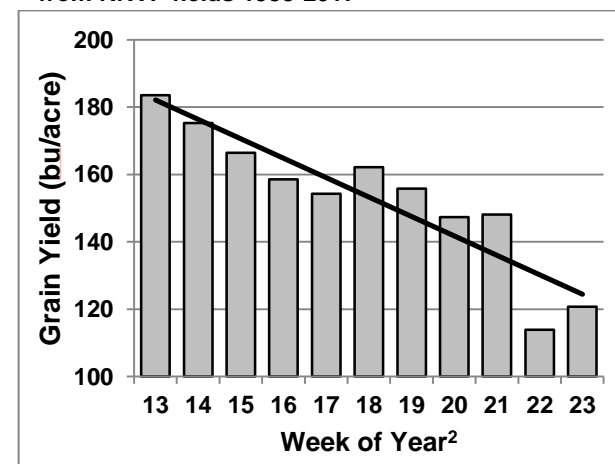
## Seeding Rate Conversions

Seeds per square foot	Row Spacing in Inches		
	6	7.5	8
	Seeds per row foot		
8 *	4.0	5.0	5.3
9 *	4.5	5.6	6.0
10 *	5.0	6.3	6.7
11 *	5.5	6.9	7.3
12 *	6.0	7.5	8.0
24 †	12.0	15.0	16.0
30 †	15.0	18.8	20.0
36 †	18.0	22.5	24.0
42 †	21.0	26.3	28.0
48 †	24.0	30.0	32.0

\* Applies to hybrids † Applies to conventional varieties.

Visit the **RICESEED** program at <http://riceseed.uaex.edu> for help calculating appropriate seeding rates.

## Average Grain Yield by Planting Date (Week of Year) – from RRVP fields 1983-2017<sup>1</sup>



<sup>1</sup> Grain yield data from 459 RRVP fields.

<sup>2</sup> Week 13 is typically the last week of March/first week of April while Week 23 is typically the second week of June.

## **Fertilization:**

### **Nitrogen (N):**

- Rice cultivars differ in the amount of N fertilizer required to produce optimum grain yields.
- Refer to 'Recommended N Rates & Distribution Amounts' for specific cultivar recommendations.
- Two N application options:
  - Single pre-flood: 100% N applied pre-flood on dry soil (must maintain timely & seasonal flood).
  - Two-way split: Apply ~70% of N pre-flood on dry soil; apply remainder (45 lbs N/acre) at least 3 weeks after pre-flood N AND internode elongation started.
- Treat pre-flood urea with NBPT-containing urease inhibitor if timely flooding is a concern (> 2 days for silt loam soils, > 7 days for clay soils) or use ammonium sulfate. Do not treat urea if applying into flood.
- N-STaR or Nitrogen Soil Test for Rice provides field-specific N rates for silt loam (18-inch sample depth) and clay soils (12-inch sample depth). For more information: [nstarlab@uark.edu](mailto:nstarlab@uark.edu).
- Use Greenseeker handheld and reference plot to determine midseason N needs.
  - Reference plot value divided by average field value: > 1.15 apply midseason; < 1.15 NO midseason.
- Nitrogen sources:
  - Urea (46-0-0) & Ammonium Sulfate (21-0-0-24).

Soil Sample depth for phosphorus (P), potassium (K), & Zinc (Zn) recommendations is 0 to 4 inches.

### **Phosphorus (P<sub>2</sub>O<sub>5</sub>) recommendation**

pH	Mehlich-3 Soil Test P (ppm)			
	< 9	9-16	17-25	26-50
	----- lbs of P <sub>2</sub> O <sub>5</sub> per acre -----			
≥ 6.5	70	60	50	0
< 6.5	50	40	30	0

### **Potassium (K<sub>2</sub>O) recommendation**

Mehlich-3 Soil Test K (ppm)			
< 61	61-90	91-130	> 130
----- lbs of K <sub>2</sub> O per acre -----			
120	90	60	0

### **Sulfur (S):**

- Rice does not normally require sulfur fertilizer to produce high yields in Arkansas.
- Sulfur is most likely to be needed on sandy soils.

- Sulfur may be needed when the SO<sub>4</sub>-S soil test value is < 5 ppm or past deficiency has occurred.
- 100 lbs of ammonium sulfate provides 24 lbs of plant available S.

### **Zinc (Zn):**

- Zinc deficiency normally occurs on silt and sandy loam soils or on precision graded fields.
- Apply 10 lbs of Zn per acre as a granular fertilizer before emergence on silt and sandy loam soils when soil-test Zn is < 4.1 ppm and pH is > 6.0.
- For salvage of Zn deficiency, apply 1 pound actual Zn per acre as EDTA chelate to drained soil and fertilize with 100 lbs AMS and re-flood.
- Zinc-treated seed should contain 0.25 to 0.50 lb Zn per hundredweight (cwt) of seed following treatment.

### **Irrigation:**

Pump capacity needed for rice.

Soil Textural Group	GPM* per acre
Silt Loam – with pan	10
Silt Loam – no pan	15
Clay and Silty Clay	20
Sandy Loam	25

\* GPM = gallons per minute.

- Use blue gates with poly pipe, set levee gates high enough to store rainfall but still prevent levee break.
- Use UA "Rice Irrigation" or Delta Plastics "Pipe Planner" to design MIRI.
- Apply permanent flood ~ the 5<sup>th</sup> leaf or 1<sup>st</sup> tiller stage.

Drain rice based on two conditions, time AND maturity:

- Rice crop should be 25-30 days past 50% heading (25 days for long-grain, 30 days for medium grain).
- AND have 2/3 straw-colored kernels (silt loam soils) or 1/3 straw-colored kernels (clay soils) prior to draining.

### **Insects:**

- Scout on a regular basis to avoid insect problems.
- Insecticide seed treatments strongly recommended for rice water weevil and grape colaspis.
- Following 75% heading, rice stink bug (RSB) treatment threshold for the first two weeks is ≥5 RSB per 10 sweeps using a 15 inch sweep net. Treatment threshold after the first two weeks until maturity is ≥10 RSB per 10 sweeps.
- Refer to 'MP144 Insecticide Recommendations for Arkansas' for the latest insecticide recommendations.

## **Diseases:**

- Rice disease development subject to three factors over time: susceptible variety, virulent pathogen, and favorable environment.
- Treat based on proper scouting, field history, and environmental conditions, as appropriate.
- Fungicides for sheath blight control: Apply when scouting indicates >35% positive stops in Very Susceptible (VS) or Susceptible (S) cultivars or >50% positive stops in Moderately Susceptible (MS) cultivars from PD to early heading.
- Refer to 'MP154 Ark. Plant Disease Control Products Guide' for current fungicide recommendations.

## **Weed Control:**

- Barnyardgrass with multiple resistance to Newpath, Facet, and Propanil has been identified. Control options include Command PRE, Prowl + Bolero Delayed PRE, and Ricestar or Clincher POST.
- Rice flatsedge and umbrella sedge resistance to ALS chemistry is now common. Control options should start with RiceBeaux or Sharpen early followed by Basagran plus Propanil early post.
- Rice should be at least 2 leaf prior to Sharpen POST application. Rate POST should not exceed 1 oz/A with 1% crop oil concentrate.
- Do not plant conventional (non-Clearfield) rice the year following Newpath applications.
- Loyant and Provisia are two new herbicides available for use in 2018. Provisia can only be sprayed on Provisia-tolerant rice cultivars.
- Refer to 'MP44 Recommended Chemicals for Weed and Brush Control' for the latest herbicide recommendations.

**For more information visit our web sites:**

<http://www.uaex.edu/rice>

<http://dd50.uaex.edu/>

<http://riceseed.uaex.edu/>

<http://www.arkansasvarietytesting.com>

<http://www.arkansas-crops.com>

**U of A** DIVISION OF AGRICULTURE  
RESEARCH & EXTENSION  
University of Arkansas System