

## 2021 Rice Season Facts:

- 1,198,000 acres harvested
- 169.6 bu/acre (7,630 lb/acre) state average yield
- Average dates in 2021  
Rice Research Verification Program (RRVP)
  - Planting: May 11
  - Emergence: May 24
  - Harvest: Sept. 14
- 45 lb = 1 bu; 100 lb = 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 in.; 7.5-in. 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.uada.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

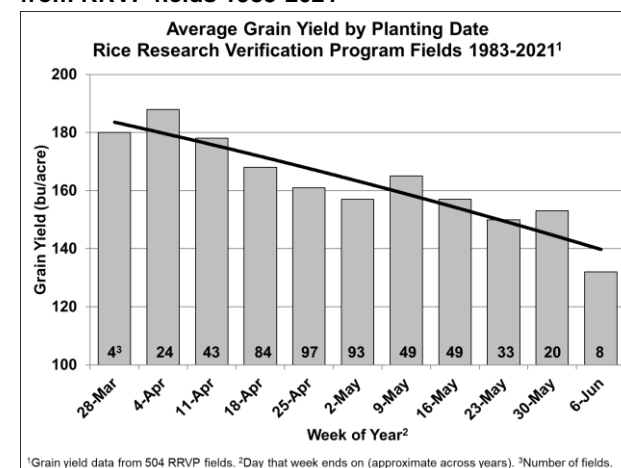
<sup>1</sup> Use of fungicide and/or insecticide seed treatments can increase plant stand and vigor.

Visit the **RICSEED** calculator program at <https://riceadvisor.uada.edu/srate/> for help calculating appropriate seeding rates.

## Seeding Rate Conversions

Seeds per square foot	Row Spacing in Inches		
	6	7.5	8
	Seeds per row foot		
	Hybrids		
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
	Pureline Varieties		
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

## Average Grain Yield by Planting Date (Week of Year) – from RRVP fields 1983-2021



## **Fertilization:**

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

- Refer to 2022 Rice Management Guide for specific cultivar recommendations.
- For hybrids: utilize 120-150 lb N/acre pre-flood followed by 30 lb N/acre at late boot.
- For varieties: utilize either a single pre-flood option (100% N applied pre-flood on dry soil followed by timely flood) or two-way split option (~70% N applied pre-flood on dry soil and 45 lb N /acre at least 4 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 (AMS). 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-in. sample depth) and clay soils (12-in. 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.

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

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

pH	Mehlich-3 Soil Test P (ppm)			
	< 9	9-16	17-25	26-50
----- lb 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
----- lb 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 lb of AMS provides 24 lb of plant available S.

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

- Zinc deficiency normally occurs on silt and sandy loam soils or on precision graded fields.
- Apply 10 lb 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 lb actual Zn per acre as EDTA chelate to drained soil and fertilize with 100 lb/acre 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 <sup>1</sup> per acre
Silt Loam – with pan	10
Silt Loam – no pan	15
Clay and Silty Clay	20
Sandy Loam	25

<sup>1</sup> GPM = gallons per minute.

- Use blue gates with poly pipe, set levee gates high enough to store rainfall but still prevent washouts.
- Use UA “Rice Irrigation” or Delta Plastics “Pipe Planner” to design Multiple Inlet Rice Irrigation (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. 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:**

- Biotypes of barnyardgrass have been identified with resistance to Command, Propanil, Facet, Newpath/Preface, Grasp, Regiment, Clincher, Ricestar, & Loyant. Best control is achieved using a program approach with overlapped residuals at the front of the season including Command PRE and Prowl + Bolero Delayed PRE.
- Rice flatsedge and umbrella sedge resistance to ALS chemistry is now common. Control options should start with RiceBeaux/Bolero or Sharpen early followed by Basagran + Propanil early post or Loyant pre-flood.
- Recommend Sharpen (3 oz/acre) PRE for broadleaf & sedge residual control, and use ALS such as Gambit (1-2 oz/acre) pre-flood for both POST and residual control of broadleaves and yellow nutsedge.
- Do not plant conventional (non-herbicide tolerant) or Provisia/MaxAce rice the year following Newpath/Preface applications to avoid injury from herbicide carryover.
- Provisia herbicide can only be sprayed on Provisia-tolerant rice cultivars. Highcard herbicide can only be sprayed on MaxAce 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.uada.edu/rice>

<http://riceadvisor.uada.edu>

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

<http://www.arkansasvarietytesting.com>

<http://arkansascrops.uada.edu>

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