

# 2019 Arkansas Rice Quick Facts

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## 2018 Rice Season Facts:

- 1,427,000 acres harvested
- 167.1 bu/acre (7,520 lbs/acre) state average yield
- Average dates in 2018
  - Rice Research Verification Program (RRVP)
  - Planting: April 20
  - Emergence: May 5
  - Harvest: Sept. 14
- 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.

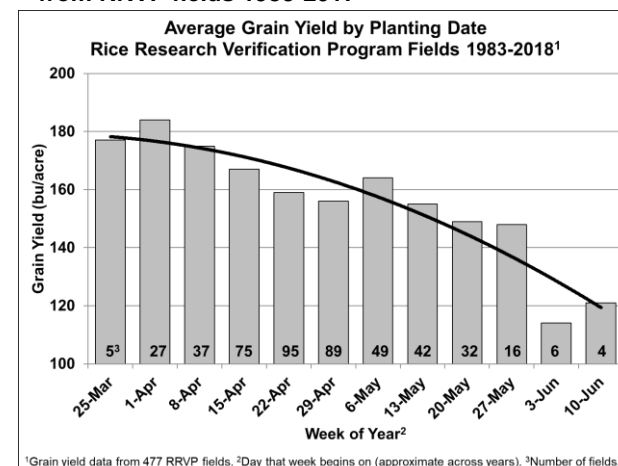
## Seeding Rate Conversions

| 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 477 RRVP fields. <sup>2</sup> Day that week begins on (approximate across years). <sup>3</sup> Number of fields.

## **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 |
| ≥ 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 are now common. Control options should start with RiceBeaux or Sharpen early followed by Basagran plus Propanil early post or Loyant pre-flood.
- 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) or Provisia rice the year following Newpath applications to avoid injury from herbicide carryover.
- Provisia herbicide 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>

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