2021 Arkansas Rice Quick Facts

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

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

2020 Rice Season Facts:

- 1,441,000 acres harvested
- 166.7 bu/acre (7,500 lb/acre) state average yield
- Average dates in 2020 Rice Research Verification Program (RRVP)
  - Planting: May 14
  - Emergence: May 15
  - 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 (1st to 4th leaf stage) – rice generally puts on one leaf per week, can occur in 15 - 25 days.
- Tillering (1st to 4th 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 exsert 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^2) for conventional, non-hybrid cultivars and ~11 seeds per ft^2 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^2 have emerged above soil surface (4-5 plants per ft^2 for hybrids). http://dd50.uada.edu
- Count the number of plants in one ft^2 in at least 10 random locations in the field.
- Desired stand is 12 to 18 plants per ft^2 (6 to 10 plants per ft^2 for hybrids).
- Stand uniformity is as important as stand count.

General Suggested Recommended Seeding Dates

Geographic Region	Optimum[1]		Absolute[2]	
	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

[1] Seeding during optimum time frame does not guarantee high yields or suggest crop failure cannot occur.

[2] 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[1]

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

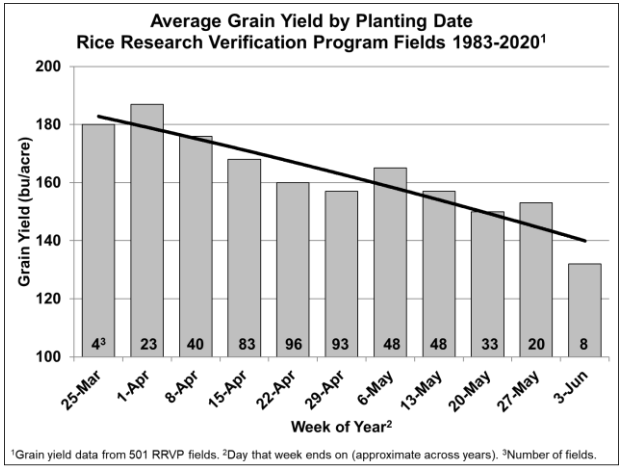
[1] Use of fungicide and/or insecticide seed treatments can increase plant stand and vigor.

Visit the **RICESEED** 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 1983-2020[1]



[1]Grain yield data from 501 RRVP fields. [2]Day that week ends on (approximate across years). [3]Number of fields.

DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

AR RICE

Fertilization:

Nitrogen (N):

- Rice cultivars differ in the amount of N fertilizer required to produce optimum grain yields.
- Refer to 2021 Rice Management Guide for specific cultivar recommendations.
- Two N application options:
  - Single preflood: 100% N applied preflood on dry soil (must maintain timely & season-long flood).
  - Two-way split: Apply ~70% of N preflood on dry soil; apply remainder (45 lb N/acre) at least 3 weeks after preflood N AND internode elongation started.
- Treat preflood 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-in. sample depth) and clay soils (12-in. sample depth). For more information: 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 in.

Phosphorus (P_2O_5) recommendation

pH	Mehlich-3 Soil Test P (ppm)			
	< 9	9-16	17-25	26-50
	---------- lb of P_2O_5 per acre ----------			
≥ 6.5	70	60	50	0
< 6.5	50	40	30	0

Potassium (K_2O) recommendation

Mehlich-3 Soil Test K (ppm)			
< 61	61-90	91-130	> 130
---------- lb of K_2O 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_4-S soil test value is < 5 ppm or past deficiency has occurred.
- 100 lb of ammonium sulfate 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 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[1] per acre
Silt Loam – with pan	10
Silt Loam – no pan	15
Clay and Silty Clay	20
Sandy Loam	25

[1] 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 5th leaf or 1st 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 in. 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:

- Biotypes of barnyardgrass have been identified with resistance to Command, Newpath/Preface, Facet, Propanil, 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 or Sharpen early followed by Basagran plus Propanil early post or Loyant preflood.
- Rice should be at least 2-leaf prior to Sharpen POST application. Rate POST should not exceed 1 oz/acre with 1% crop oil concentrate.
- Do not plant conventional (non-herbicide tolerant) or Provisia rice the year following Newpath/Preface 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.uada.edu/rice
http://riceadvisor.uada.edu
http://dd50.uada.edu/
http://www.arkansasvarietytesting.com
http://arkansascrops.uada.edu

UofA DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System