

RICE



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DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

INFORMATION

January 2019

2019

Rice Management Guide



ARKANSAS
R  **CE**
CHECK-OFF



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2019 Recommended Rice Cultivars for Arkansas

Based on multiple years of advanced yield testing, below are the recommended rice cultivars for planting in 2019. Just because a cultivar is not listed does not mean it cannot be grown successfully, but testing indicates the cultivars listed to be the highest and most consistent performers in grain yield and milling yield across a wide range of environmental and management conditions.

| Conventional Long Grain Varieties | Conventional Long Grain Hybrids | Clearfield Long Grain Varieties | Clearfield Long Grain Hybrids | Conventional Medium Grain Varieties |
|-----------------------------------|---------------------------------|---------------------------------|-------------------------------|-------------------------------------|
| Diamond | RT XP753 | CL151 | RT Gemini 214 CL | Titan |
| LaKast | RT XP760 | CL153 | RT 7311 CL | Jupiter |
| Roy J | | | RT CLXL745 | |

Grain yield and milling yield results for Arkansas Rice Performance Trials (ARPT) and Producer Rice Evaluation Program (PREP) on-farm trials, 2016-2018.

| Cultivar | Grain Type | Days 50% Hdg | Lodg-ing Rating | Milling Yield % Head Rice - % Total Rice | | | | Grain Yield Bushels per Acre | | | |
|------------------|------------|--------------|-----------------|---|-------|-------|-------|---------------------------------|------|------|------|
| | | | | 2016 | 2017 | 2018 | MEAN | 2016 | 2017 | 2018 | MEAN |
| CL151 | L | 83 | S | 54-70 | 59-70 | 54-70 | 56-70 | 179 | 197 | 179 | 185 |
| CL153 | L | 86 | MR | 57-70 | 61-71 | 57-71 | 59-71 | 181 | 192 | 185 | 186 |
| Diamond | L | 86 | MS | 53-69 | 58-69 | 53-70 | 55-69 | 199 | 209 | 203 | 204 |
| LaKast | L | 84 | S | 52-70 | 58-70 | 54-70 | 55-70 | 184 | 200 | 195 | 193 |
| PVL01 | L | 90 | MS | — | 59-70 | 55-69 | 57-70 | — | 169 | 166 | 168 |
| Roy J | L | 91 | MR | 54-70 | 60-71 | 54-70 | 56-70 | 189 | 195 | 194 | 193 |
| RT 7311 CL | L | 82 | S | 50-69 | 53-70 | 51-70 | 51-70 | 218 | 228 | 222 | 222 |
| RT CLXL745 | L | 80 | S | 48-70 | 55-70 | 53-71 | 52-70 | 202 | 209 | 204 | 205 |
| RT Gemini 214 CL | L | 86 | S | 52-69 | 57-69 | 53-70 | 54-69 | 227 | 218 | 230 | 225 |
| RT XP753 | L | 82 | MS | 46-69 | 53-70 | 51-71 | 50-70 | 236 | 231 | 236 | 235 |
| RT XP760 | L | 87 | S | 52-69 | 57-69 | 54-70 | 54-69 | 217 | 219 | 224 | 220 |
| Jupiter | M | 87 | S | 56-68 | 61-70 | 53-69 | 56-69 | 194 | 207 | 200 | 200 |
| Titan | M | 81 | MS | 50-69 | 54-68 | 49-70 | 51-69 | 204 | 216 | 205 | 209 |

For more information on cultivar performance and disease ratings visit the Extension rice page at <http://www.uaex.edu/rice> under 'Results of Arkansas Rice Cultivar Testing'.



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Total Net Return based on ARPT and PREP grain yield and milling yield results, 2016-2018, and production costs from Enterprise Budgets.

| Cultivar | Grain Type | Avg Grain Yield | Avg Milling Yield | Production Cost ¹ | Net Return (\$ per Acre) ² | | | |
|--------------------|------------|-----------------|-------------------|------------------------------|---------------------------------------|-----------|-----------|-----------|
| | | | | | 2016 | 2017 | 2018 | MEAN |
| CL151 | L | 185 | 56-70 | \$ 773.38 | \$ 88.78 | \$ 190.65 | \$ 85.65 | \$ 121.69 |
| CL153 | L | 186 | 59-71 | \$ 773.38 | \$ 109.33 | \$ 177.89 | \$ 127.96 | \$ 138.39 |
| Diamond | L | 204 | 55-69 | \$ 693.74 | \$ 252.70 | \$ 317.47 | \$ 275.45 | \$ 281.87 |
| LaKast | L | 193 | 55-70 | \$ 693.74 | \$ 183.29 | \$ 280.93 | \$ 242.53 | \$ 235.58 |
| PVL01 ³ | L | 168 | 57-70 | \$ 773.38 | — | \$ 55.29 | \$ 24.90 | \$ 40.09 |
| Roy J | L | 193 | 56-70 | \$ 693.74 | \$ 210.89 | \$ 267.66 | \$ 242.78 | \$ 240.45 |
| RT 7311 CL | L | 222 | 51-70 | \$ 835.07 | \$ 190.45 | \$ 256.32 | \$ 219.81 | \$ 222.19 |
| RT CLXL745 | L | 205 | 52-70 | \$ 835.07 | \$ 113.00 | \$ 174.83 | \$ 144.35 | \$ 144.06 |
| RT Gemini 214 CL | L | 225 | 54-69 | \$ 835.07 | \$ 241.57 | \$ 220.06 | \$ 265.76 | \$ 242.46 |
| RT XP753 | L | 235 | 50-70 | \$ 820.61 | \$ 271.01 | \$ 285.97 | \$ 312.92 | \$ 289.97 |
| RT XP760 | L | 220 | 54-69 | \$ 820.61 | \$ 204.96 | \$ 240.67 | \$ 252.78 | \$ 232.80 |
| Jupiter | M | 200 | 56-69 | \$ 693.74 | \$ 232.00 | \$ 316.89 | \$ 253.55 | \$ 267.48 |
| Titan | M | 209 | 51-69 | \$ 693.74 | \$ 259.89 | \$ 333.07 | \$ 270.59 | \$ 287.85 |

¹ Production cost based on Total Specified Expenses in 2019 Crop Enterprise Budgets for Arkansas Field Crops Planted in 2019.

² Numbers based on current cash bid price minus basis of \$4.82 per bushel and corrected for milling yield based on long grain loan prices of \$4.54 for whole kernel and \$2.77 for broken and medium grain loan prices of \$4.36 for whole kernel and \$2.77 for broken.

³ Production cost for PVL01 utilized budgets for Clearfield varieties, which may differ from actual costs.

It is highly recommended to relate the production costs to those on your own farm / fields to more accurately gauge potential economic returns for your operation.

Adding any net return back to the production cost for that cultivar will give the total revenue - then you can subtract your production costs to better represent potential net return for your operation.



Soil Testing Recommendations

Soil sample depth for phosphorus (P), potassium (K), and zinc (Zn) recommendations is 0 to 4 inches.

Phosphorus (P_2O_5) recommendation

| pH | Mehlich-3 Soil Test P (ppm) | | | |
|-------|--------------------------------------|------|-------|-------|
| | < 9 | 9-16 | 17-25 | 26-50 |
| | _____ lbs 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 |
| _____ lbs of K_2O per acre _____ | | | |
| 120 | 90 | 60 | 0 |

Zinc (Zn) recommendation

- Zn deficiency normally occurs on silt or sandy loam soils or on precision graded fields.
- On these soils when soil-test Zn is < 4.1 ppm and pH is > 6.0, apply 10 lbs of actual Zn per acre as a granular fertilizer before rice emergence.
- Apply Zn seed treatments to supply 0.25 to 0.5 pounds of Zn per cwt of seed.
- For salvage of Zn deficiency, apply 1 pound actual Zn per acre as EDTA chelate to drained soil and fertilize with 100 lbs ammonium sulfate (AMS) and re-flood.



RICE

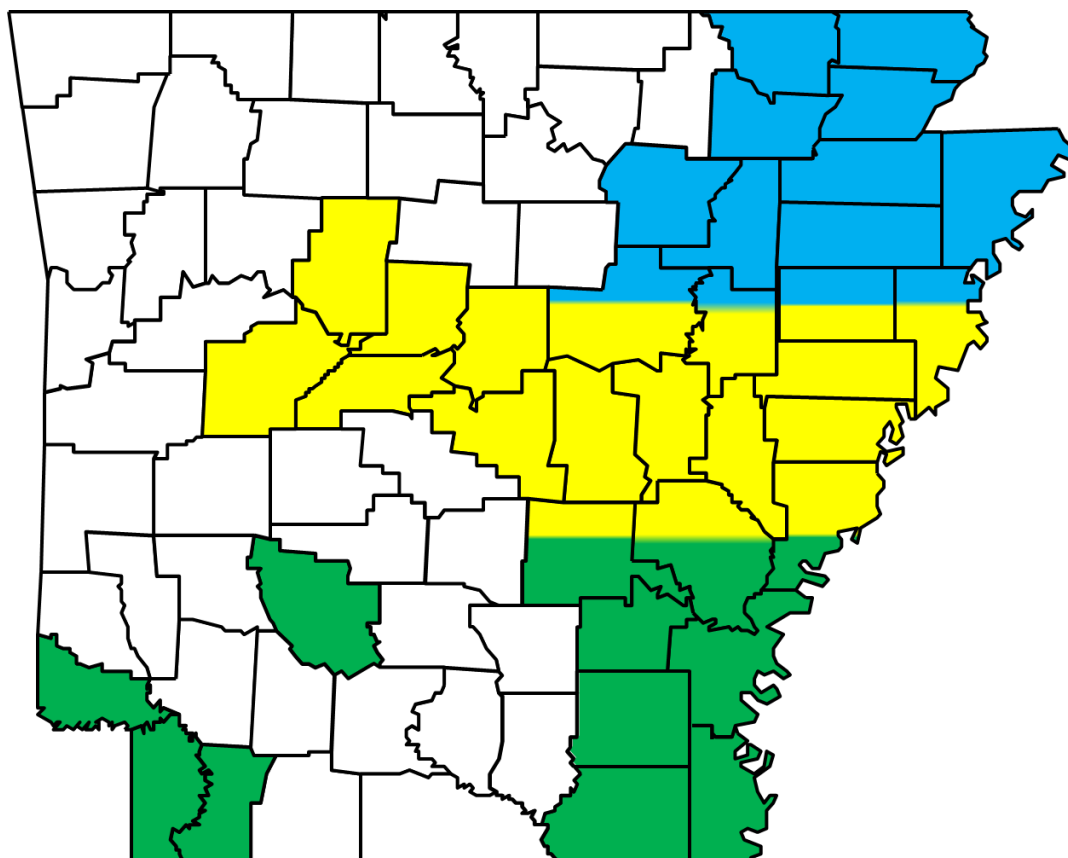
Recommended Optimum Seeding Date for Rice by Geography

General optimum and absolute recommended seeding dates by geographic region in Arkansas are based on yield potential and management considerations.

| Geographic Region | Optimum ¹ | | Recommended Absolute ² | |
|-------------------|----------------------|---------|-----------------------------------|---------|
| | Begin | Cut-off | Begin | Cut-off |
| North | April 10 | May 10 | April 1 | June 5 |
| Central | April 1 | May 15 | March 25 | June 10 |
| South | March 28 | May 20 | March 20 | June 15 |

¹ Seeding during the optimum time frame does NOT guarantee high yields or suggest that crop failure cannot occur when rice is seeded during these times.

² Recommended absolute does NOT mean that a successful rice crop cannot be grown if seeded outside of the dates listed. Success may be evaluated and/or interpreted using various parameters (i.e. cropping system, cash flow, field reclamation, etc.) and may differ among specific cultivars.

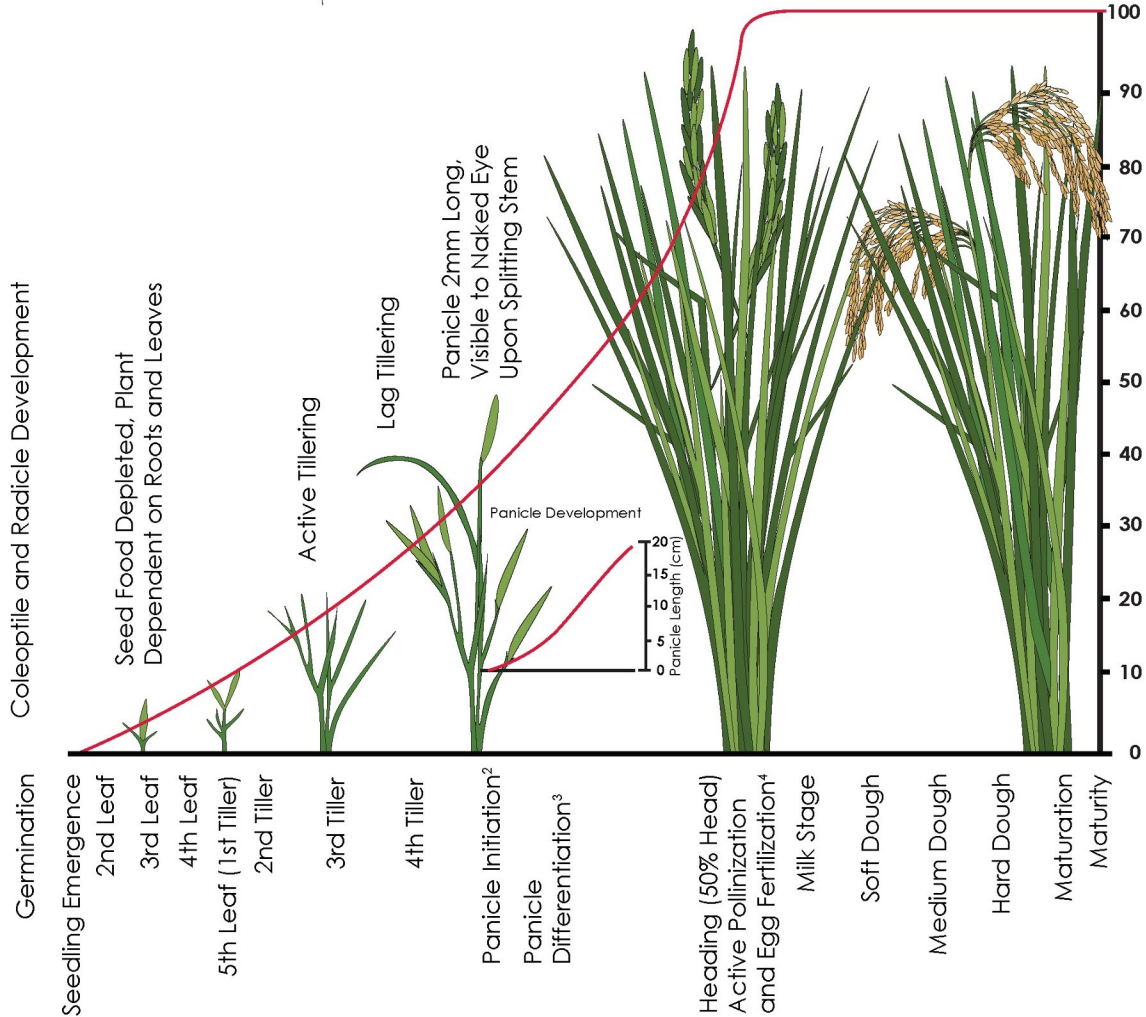
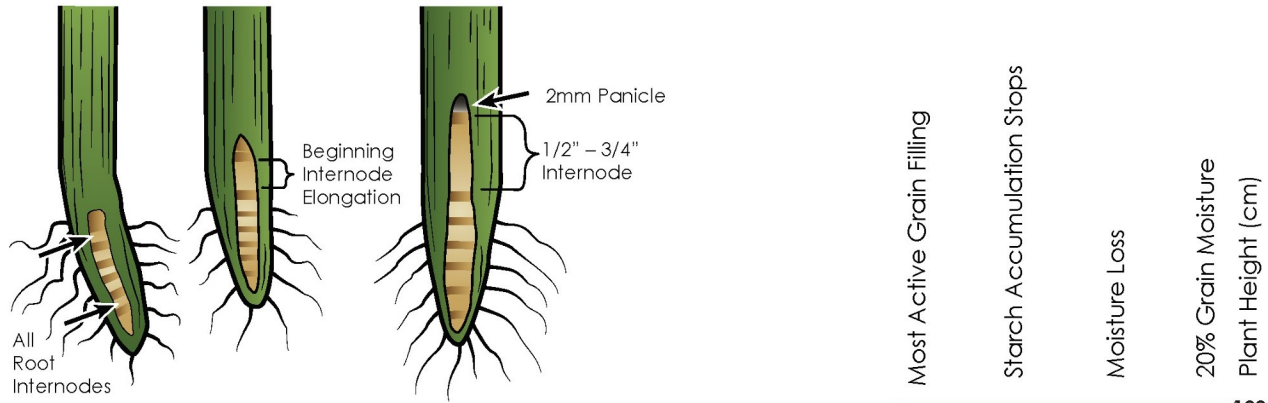


| | |
|---------|---|
| North |  |
| Central |  |
| South |  |



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INTERNODE ELONGATION



| | | | | | | |
|------------------------|----------------------------|----------------------------|-----------------------|--------------------------|----------------------------|---|
| 5-20 Days ¹ | 15 to 25 Days ¹ | 24 to 42 Days ¹ | Variable ⁴ | 3-5 Days | 19 to 25 Days ¹ | 30 to 45 Days ¹ |
| STAGE I VEGETATIVE | | | | STAGE II REPRODUCTIVE | | STAGE III GRAIN FILLING & MATURATION |

¹ Under warm conditions use the lesser number of days and under cool conditions use the greater number of days.

² The reproductive stage begins with panicle initiation.

³ Stage III begins when 50% of the florets are pollinated.

⁴ Variable time – 0 to 25 days (dependent upon cultivar).



RICE

Seeding, Emergence, & Plant Stands

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 (ft²) for conventional, non-hybrid cultivars and ~11 seeds per ft² 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.
- In furrow irrigated rice, increase seeding rate by 10% to achieve faster canopy closure.

Determining Emergence & Final Plant Stands:

- **DD50** Emergence – date when 10 plants per ft² have emerged above soil surface (4-5 plants per ft² for hybrids). <http://dd50.uaex.edu>
- Count the number of plants in one ft² in at least 10 random locations in the field.
- Desired stand is 12 to 18 plants per ft² for conventional, non-hybrid cultivars and 6 to 10 plants per ft² for hybrids.
- Stand uniformity is as important as stand count.

Converting seed counts between seed per square foot and seed per row foot.

| Seed per square foot Varieties | Drill Row Width | | | Seed per square foot Hybrids | Drill Row Width | | |
|--------------------------------------|-------------------|------|------|------------------------------------|-------------------|------|-----|
| | 6" | 7.5" | 8" | | 6" | 7.5" | 8" |
| | Seed per row foot | | | | Seed per row foot | | |
| 24 | 12.0 | 15.0 | 16.0 | 8 | 4.0 | 5.0 | 5.3 |
| 30 | 15.0 | 18.8 | 20.0 | 9 | 4.5 | 5.6 | 6.0 |
| 36 | 18.0 | 22.5 | 24.0 | 10 | 5.0 | 6.3 | 6.7 |
| 42 | 21.0 | 26.3 | 28.0 | 11 | 5.5 | 6.9 | 7.3 |
| 48 | 24.0 | 30.0 | 32.0 | 12 | 6.0 | 7.5 | 8.0 |



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2019 Recommended Seeding Rates & Adjustments for Rice Cultivars in Arkansas

Pounds seed per acre at various seed densities for selected rice cultivars.

| Cultivar | Seed per lb | Seeding Rate (seed/ft ²) | | | | | | | |
|------------------|-------------|--------------------------------------|----|----|----|----|----|-----|-----|
| | | 10 | 12 | 14 | 25 | 30 | 35 | 40 | 45 |
| | | lbs / acre | | | | | | | |
| ARoma 17 | 19,460 | — | — | — | 56 | 67 | 78 | 90 | 101 |
| Cheniere | 20,826 | — | — | — | 52 | 63 | 73 | 84 | 94 |
| CL111 | 18,515 | — | — | — | 59 | 71 | 82 | 94 | 106 |
| CL151 | 19,243 | — | — | — | 57 | 68 | 79 | 91 | 102 |
| CL153 | 19,377 | — | — | — | 56 | 67 | 79 | 90 | 101 |
| CL163 | 18,771 | — | — | — | 58 | 70 | 81 | 93 | 104 |
| CL172 | 19,061 | — | — | — | 57 | 69 | 80 | 91 | 103 |
| CL272 | 18,012 | — | — | — | 60 | 73 | 85 | 97 | 109 |
| Diamond | 18,763 | — | — | — | 58 | 70 | 81 | 93 | 104 |
| Jazzman-2 | 20,122 | — | — | — | 54 | 65 | 76 | 87 | 97 |
| Jupiter | 17,463 | — | — | — | 62 | 75 | 87 | 100 | 112 |
| LaKast | 18,118 | — | — | — | 60 | 72 | 84 | 96 | 108 |
| PVL01 | 20,115 | — | — | — | 54 | 65 | 76 | 87 | 97 |
| RT 7311 CL | 19,184 | 23 | 27 | 32 | — | — | — | — | — |
| RT CLXL4534 | 19,662 | 22 | 26 | 31 | — | — | — | — | — |
| RT CLXL729 | 20,124 | 22 | 26 | 30 | — | — | — | — | — |
| RT CLXL745 | 19,529 | 22 | 27 | 31 | — | — | — | — | — |
| RT CLXP756 | 19,327 | 23 | 27 | 32 | — | — | — | — | — |
| RT Gemini 214 CL | 20,590 | 21 | 25 | 30 | — | — | — | — | — |
| RT XL723 | 19,877 | 22 | 26 | 31 | — | — | — | — | — |
| RT XP753 | 19,512 | 22 | 27 | 31 | — | — | — | — | — |
| RT XP760 | 20,207 | 22 | 26 | 30 | — | — | — | — | — |
| Roy J | 19,645 | — | — | — | 55 | 67 | 78 | 89 | 100 |
| Titan | 16,341 | — | — | — | 67 | 80 | 93 | 107 | 120 |
| Wells | 18,160 | — | — | — | 60 | 72 | 84 | 96 | 108 |

¹ Only recommended under optimum conditions² with addition of an insecticide/fungicide seed treatment.

² Assumes good seedbed, drill-seeded, silt loam, optimum planting date, and conventional tillage.

Additive factors increasing optimum seeding rate.

| Variable | % Added | Variable | % Added |
|------------------------|---------|-------------------------|---------|
| Seeding Method | | Seedbed Preparation | |
| Dry seeded-drilled | 0 | Good | 0 |
| Dry seeded-broadcast | 20 | Fair | 10 |
| Water seeded-broadcast | 30 | Poor | 20 |
| Soil Texture | | Seeding Date | |
| Sand | 0 | Early (before April 15) | 10 |
| Silt | 0 | Optimum | 0 |
| Clay | 20 | Late (after June 1) | 20 |

Factors additive to a max of 50% above optimum.

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



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Rice Drill Calibration Worksheet

Number of Cups (5 recommended per section) (A) _____

Drive wheel

Circumference (inches/12) (B) _____ feet

Number of turns (minimum of 15) (C) _____

Distance covered (D) _____ feet
(A x B x C)

Calibration by Weight

Weight of seed caught (grams/454) (E) _____ lbs

Seeds/lb of lot used (indicated on seed bag) (F) _____

Row width (inches/12) (G) _____ feet

Number of seeds per:

Foot of Row (E x F) / D _____

Square Foot (E x F) / (D x G) _____

Calibration by Seed Count

Number of seeds caught (H) _____

Number of seed/row foot (H / D) _____



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Plant Populations for Various Row Spacing

Optimum plant populations (stand) for various row spacings.

| Plants per row ft | 6" drill | 7" drill | 7.5" drill | 8" drill | 9" drill | 10" drill |
|-------------------|------------------------|----------|------------|----------|----------|-----------|
| | Plants per square foot | | | | | |
| 1 | 2.0 | 1.7 | 1.6 | 1.5 | 1.3 | 1.2 |
| 2 | 4.0 | 3.4 | 3.2 | 3.0 | 2.7 | 2.4 |
| 3 | 6.0 | 5.1 | 4.8 | 4.5 | 4.0 | 3.6 |
| 4 | 8.0 | 6.9 | 6.4 | 6.0 | 5.3 | 4.8 |
| 5 | 10.0 | 8.6 | 8.0 | 7.5 | 6.7 | 6.0 |
| 6 | 12.0 | 10.3 | 9.6 | 9.0 | 8.0 | 7.2 |
| 7 | 14.0 | 12.0 | 11.2 | 10.5 | 9.3 | 8.4 |
| 8 | 16.0 | 13.7 | 12.8 | 12.0 | 10.7 | 9.6 |
| 9 | 18.0 | 15.4 | 14.4 | 13.5 | 12.0 | 10.8 |
| 10 | 20.0 | 17.1 | 16.0 | 15.0 | 13.3 | 12.0 |
| 11 | 22.0 | 18.9 | 17.6 | 16.5 | 14.7 | 13.2 |
| 12 | 24.0 | 20.6 | 19.2 | 18.0 | 16.0 | 14.4 |
| 13 | 26.0 | 22.3 | 20.8 | 19.5 | 17.3 | 15.6 |
| 14 | 28.0 | 24.0 | 22.4 | 21.0 | 18.7 | 16.8 |
| 15 | 30.0 | 25.7 | 24.0 | 22.5 | 20.0 | 18.0 |
| 16 | 32.0 | 27.4 | 25.6 | 24.0 | 21.3 | 19.2 |
| 17 | 34.0 | 29.1 | 27.2 | 25.5 | 22.7 | 20.4 |
| 18 | 36.0 | 30.9 | 28.8 | 27.0 | 24.0 | 21.6 |
| 19 | 38.0 | 32.6 | 30.4 | 28.5 | 25.3 | 22.8 |
| 20 | 40.0 | 34.3 | 32.0 | 30.0 | 26.7 | 24.0 |

Suggested hybrid final stand

Suggested variety final stand

Research suggests final plant stands in the highlighted ranges are needed to regularly achieve optimum grain yields. However, failure to achieve these stand densities does not mean that a profitable crop cannot be produced at stands less than or greater than these described.

Stand densities less than 3 plants/ft² for hybrids and less than 5 plants/ft² for varieties may not result in a profitable net return. These situations need to be evaluated on a case-by-case basis to determine the profitability of keeping the existing crop versus replanting.



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Insecticide Seed Treatments for Rice

It is strongly recommended that an insecticide seed treatment be used in rice. Research has shown a positive return 80% of the time when using an insecticide seed treatment. Select the appropriate product based on cost and insect control needs. However, grain yield, stand, and vigor benefits have been repeatedly noted even in the absence of insect pressure. Insect control benefits diminish greatly 35+ days after planting.

Insecticide seed treatments for rice insect management.

| Insecticide | Rate (fl oz) per 100 lbs seed | Active Ingredients | Notes |
|------------------|-------------------------------|---|---|
| CruiserMaxx Rice | 7.0 | thiamethoxam Also contains the Fungicides: azoxystrobin fludioxonil mefenoxam | <ul style="list-style-type: none"> • CruiserMaxx Rice contains a package of an insecticide and fungicides. • DO NOT plant or sow Cruiser-treated seed by aerial application. • Cruiser is NOT labeled for use in water-seeded rice. • DO NOT use treated fields for aquaculture of edible fish or crustaceans. • DO NOT exceed 120 lb seed per acre. |
| Dermacor X-100 | 1.5 - 6.0 (see label) | chlorantraniliprole | <ul style="list-style-type: none"> • Can be used on dry-seeded rice. • Seed treated with Dermacor CANNOT be soaked or pre-germinated before planting. |
| NipsIt INSIDE | 1.92 | clothianidin | <ul style="list-style-type: none"> • Use only on dry-seeded rice. • DO NOT spray crop with another neonicotinoid insecticide after using NipsIt INSIDE. • DO NOT use near fish or crawfish farms. |

Rice insecticide seed treatment performance ratings.

| Insecticide | Chinch Bug | True Armyworm | Rice Water Weevil (adult) | Rice Water Weevil (egg) | Rice Stalk Borer | Grape Colaspis |
|------------------|------------|---------------|---------------------------|-------------------------|------------------|----------------|
| CruiserMaxx Rice | 6 | 2 | 6 | 7 | — | 8 |
| Dermacor X-100 | 1 | 8 | 1 | 8 | 8 | 2 |
| NipsIt INSIDE | 6 | — | 6 | 7 | — | 8 |

Read and follow all label directions when using these products.



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Fungicide Seed Treatments for Rice

It is strongly recommended that fungicide seed treatments be used to manage the seedling disease complex in rice. These seed treatments generally provide ~14 days of protection to enable plants to “outrun” seedling disease issues. Prolonged cool, wet conditions may allow seedling disease to overcome the seed treatments.

Fungicide seed treatments for rice seedling disease management.

| Insecticide | Rate (fl oz) per 100 lbs seed | Active Ingredients | Notes |
|---|-------------------------------|---|---|
| Pythium diseases | | | |
| Allegiance FL | 0.75 - 1.5 | metalaxyl | |
| Apron XL | 0.32 - 0.64 | mefenoxam | • Use higher rates for early planting or other severe disease situations. |
| Rhizoctonia seedling diseases, general seed rots | | | |
| RTU-Vitavax-Thiram | 6.8 | carboxin + thiram | • May use as a pour-on hopper-box treatment. |
| Vitavax 200 | 4.0 | | |
| Maxim 4 FS | 0.08 - 0.16 | fludioxinil | • Use higher rates for severe disease situations. |
| Vibrance | 0.03 | sedaxane | |
| Pythium, Rhizoctonia, general seed rots | | | |
| Vitavax 200 | 4.0 | carboxin + thiram | |
| + Allegiance FL | + 0.375 | + metalaxyl | |
| Apron XL LS | 0.32 - 0.64 | mefenoxam | • Use higher rates for early planting or severe disease situations. |
| + Maxim 4 FS | + 0.08 - 0.16 | + fludioxinil | |
| Dynasty | 0.153 - 1.53 | azoxystrobin | • Usually sold with Apron XL and Maxim on rice to improve seedling disease control. |
| Trilex 2000 | 1.0 - 2.0 | trifloxystrobin + metalaxyl | • See label. |
| EverGol Energy | 1.0 | prothioconazole + penflufen + metalaxyl | |
| CruiserMaxx Rice | 7.0 | azoxystrobin + fludioxonil + mefenoxam + thiamethoxam (insecticide) | • See in insecticide seed treatment table for additional information. |

All are commercial seed treatment only.

Read and follow all label directions when using these products.



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2019 Recommended Nitrogen Rates & Distribution for Rice Cultivars in Arkansas

| Cultivars | Single Preflood N Rate ^z | Rates and Distribution for 2-way Split Application | | | |
|--|---|--|---------------------------------|----------------------------------|----------------------------------|
| | | Total N Rate | Preflood N Rate ^y | Midseason N Rate ^x | Late Boot N Rate ^w |
| | | lbs N / Acre | | | |
| CL151 ^v | 100 | 120 | 75 | 45 | — |
| Della-2, Jazzman-2, Roy J | 115 | 135 | 90 | 45 | — |
| Cheniere, CL111, CL153, CL163, CL172, CL272, Cocodrie, Diamond, Jupiter, LaKast, PVL01, Titan, Wells | 130 | 150 | 105 | 45 | — |
| RT CLXL4534, RT CLXL729, RT XL723 | — | 120 | 90 | — | 30 |
| RT 7311 CL, RT CLXL745, RT Gemini 214 CL, RT XP753, RT XP760 | — | 150 | 120 | — | 30 |

^z Conditions required for use of optimum single preflood N rate: 1) field can be flooded timely (<7 days); 2) preflood urea is treated with a recommended urease inhibitor that includes NBPT; or ammonium sulfate is used as the N source; 3) can maintain a 2- to 4-inch flood depth for at least 3 weeks following flood establishment, and 4) the pre-flood N must be applied uniformly across the field (no streaking).

^y N rate for rice on silt loam soils following soybean in rotation. Rates may need adjustment based on factors below.

^x Apply midseason N in one application a minimum of 3 weeks after the preflood N application AND internode elongation has started; both conditions must be met to receive maximum benefit from the midseason N.

^w Hybrids receive additional N at late boot rather than midseason. Refer to DD50 for proper timing of this application.

^v Total of 120 but may be split 75-45 or 90-30.

Early N Rate Adjustments

| | |
|--|--|
| INCREASE 30 lbs N/A on CLAY SOIL | DECREASE 10 lbs N/A following FALLOW |
| INCREASE 20 lbs N/A following RICE Or stand <10 plants/ft ² for varieties or <3 plants/ft ² | OMIT early N rate following FISH, LONG-TERM PASTURE, or FIRST YEAR AFTER CLEARING |
| INCREASE 10 lbs N/A following SORGHUM, | |

Nitrogen Conversions: Urea needed (lbs) = [lbs N recommended x 100] / 46



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2019 Recommended Urease Inhibitors for Rice in Arkansas

List of tested and recommended NBPT-containing urease inhibitors and suggested application rates for urea in rice.

| Product Name | Recommended Volume Qt per Ton Urea | NBPT Concentration % | Weight lbs Per Gallon | Manufacturer |
|----------------|---------------------------------------|-------------------------|--------------------------|-------------------------|
| Agrotain Ultra | 3.0 | 26.7 | 8.84 | Koch Fertilizer, LLC |
| Arborite AG-NT | 3.0 | 24.0 | 9.15 | Weyerhaeuser NR Co.† |
| Factor | 3.25 | 24.5 | 9.09 | Rosen's, Inc. |
| N-Fixx PF | 3.0 - 4.0 | unknown‡ | 8.50 | Helena Chemical |
| NitroGain¶ | 4.0 | 20.0 | 8.92 | Arclin, Inc. |
| NitroGain¶ | 3.0 | 26.7 | 9.00 | Arclin, Inc. |
| N-Veil | 3.0 - 5.0 | 26.7 | 8.92 | Invictus Crop Care, LLC |
| Contain | 4.0 | unknown‡ | 8.50 | AgXplore |
| Nitrain | 3.0 | 26.7 | 8.93 | Loveland Products |
| Limus | 3.0 | 16.88# | 9.06 | BASF |

† Arborite AG-NT distributed by Gavilon Fertilizer.

‡ Unknown, the product label does not specify the concentration of NBPT in the product.

¶ NitroGain will be sold containing a single trade name (NitroGain) with one of two concentrations. Anyone using this product should pay close attention to the NBPT concentration listed on the label to match the appropriate product use rate which may vary with NBPT concentration.

Limus contains 16.88% NBPT and 5.63% NPPT, which is a proprietary inhibitor owned by BASF.

N-STaR or Nitrogen Soil Test for Rice

- N-STaR provides field-specific N rates for silt loam and clay soils.
- Silt loam soils (CEC less than 25) should be sampled to a depth of 18 inches.
- Clay soils (CEC greater than 25) should be sampled to a depth of 12 inches.
- Depth of sampling is extremely important - samples deeper or shallower than the prescribed depth can affect N recommendations.
- 10 samples are recommended per field, but a single sample should represent no more than 10 acres (e.g. a 50 acre field will need ten samples, but a 150 acre field should have at least 15 samples).
- Each individual sample is kept separate - do not aggregate!
- Cost is \$10 per sample for analysis.
- For more information: nstarlab@uark.edu

N-STaR
Nitrogen Soil Test for Rice



Determining Rice Midseason N Needs Using Trimble® GreenSeeker® Handheld

Guide to rice midseason N applications using GreenSeeker (GS).

| Reference Plot GS Average | Apply Midseason N if Field GS Reading <u>Less</u> Than |
|------------------------------|---|
| 0.80 | 0.70 |
| 0.75 | 0.65 |
| 0.70 | 0.61 |
| 0.65 | 0.56 |

Application recommendation based on greater than 50% chance of response to midseason nitrogen application.

Valid for both varieties and hybrids.

Using GreenSeeker allows for making objective decisions on midseason N management in rice. Follow these steps to successfully use GreenSeeker in Rice:

- A **Reference Plot** (minimum 5' x 5' area) must be present in EVERY INDIVIDUAL FIELD. This **Reference Plot** should have 50-100 units of N more than the producer's preflood N rate (only 30-60 grams needed or 1/4 - 1/3 of a standard measuring cup). The **Reference Plot** allows for a GreenSeeker reading to be taken in an area with maximum fertilizer-N uptake. The larger the field, the more **Reference Plots** needed - i.e., one **Reference Plot** per 50 acres.
- GreenSeeker readings should be taken after Green Ring AND no earlier than 3 weeks following preflood N incorporation.
- GreenSeeker readings should be taken throughout the field – preferably a minimum of 10 readings – with each reading being an average of 10 steps (depress trigger while walking the 10 steps - resulting number will be an average of area covered).
- GreenSeeker readings are no longer valid once plants reach the late boot stage (flag leaf fully exerted).
- The average GreenSeeker reading from the **Reference Plot** is then divided by the average readings from the field. If the resulting value is greater than 1.15 then there is more than a 50% chance of a response to midseason N.

Example – a **Reference Plot** value of 0.8 divided by a field average value of 0.69 = 1.16. Since 1.16 is greater than 1.15, a response to midseason N will occur more than 50% of the time. The higher the ratio, the greater the chance of a response to midseason N applications.



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Irrigation Recommendations

Recommended pumping rates for different soil textural groups

| Soil Textural Group | Gallons per Minute (GPM) per Acre | |
|----------------------|-----------------------------------|---------|
| | Minimum | Desired |
| Silt loam - with pan | 10 | 10 |
| Sandy loam | 15 | 25 |
| Silt loam - no pan | 10 | 15 |
| Clay and silty clay | 15 | 20 |

Apply permanent flood ~ the 5th leaf or 1st tiller stage.

Multiple Inlet Rice Irrigation (MIRI)

- MIRI reduces cold water effect and time and energy cost to flood up on precision and contour fields.
- Use 2.5" blue gates so adjustments can be made & all levees flood up evenly. Flow rate is 75 GPM.
- Measure flow with a meter or plumb bob:
 - Divide GPM by number of acres; then multiply by number of levees per acre; then divide by 75 GPM (flow rate per blue gate) to determine number of blue gates needed in each levee.
 - Ex. $1200 \text{ GPM} / 42 \text{ A} = 28 \times 6 \text{ A per levee} = 168 \text{ GPM needed} / 75 \text{ GPM} = 2.24 \text{ blue gates}$.
- A mobile app (Rice Irrigation) is available for phones and tablets to design MIRI on Google Play and the Apple App Store. Pipe Planner can also design MIRI (www.pipeplanner.com) using web browsers.
- Use 9 mil or 10 mil pipe.
 - Flow < 1200 GPM use 12 inch
 - 1200 - 2200 GPM use 15 inch
 - Flow >2200 GPM use 18 inch
- Use a wire to punch holes in pipe to prevent air entrapment. Set levee gates so that they are as high as comfortable, keep 1-2 inches of freeboard so levees spill only after large storm events.
- Use 4" pipe about 3 feet long in bar ditches for multiple inlet (no pipe needed for side inlet).
- Do not overbuild levees where poly pipe will cross, pressure drop will prevent water from getting to end.

Alternate Wetting & Drying (Intermittent Flooding) Recommendations:

- Establish permanent flood as normal and maintain for 21 days.
- Keep soil wet or damp at top of paddy and bottom of paddy still flooded.
- Ensure adequate moisture at the specific stages of
 - (1) internode elongation, and
 - (2) flowering and grain fill.



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Plant-Back Recommendations for Burndown Herbicides

| Herbicide | Rice | Soybean | Corn | Wheat |
|----------------------|------------------|---------|------|-------|
| 2,4-D | 21d ¹ | 14d | 7d | 7d |
| Dicamba ² | 22d | 14d | I | 22d |
| FirstShot | I | 7d | 14d | I |
| Goal | 10m | 7d | 30d | 10m |
| Glyphosate | I | I | I | I |
| Glufosinate | I | I | I | 70d |
| Harmony GT | I | I | I | I |
| LeadOff | 10m | 30d | I | 3m |
| Python | 6m | I | I | 4m |
| Sharpen | I | 1m | I | I |
| Valor/Afforia | 30d | I | 30d | 30d |
| Verdict | FY | I-4m | I | 4m |
| Zidua | 12m | I | I | 30d |

¹ I = immediately; d = days; m = months; and FY = following year.

² As this is written, the proposed cutoff date for all dicamba applications is April 15 statewide. Check the Arkansas State Plant Board website (www.aad.arkansas.gov) for updated regulations on dicamba.

Rainfall-free Periods for Postemergence Rice Herbicides

| Herbicide | Time Before Rainfall | Herbicide | Time Before Rainfall |
|-----------|----------------------|----------------------|----------------------|
| 2,4-D | 6 hrs | Newpath | 4 hrs |
| Aim | 1 hr | Permit / Permit Plus | 4 hrs |
| Basagran | 8 hrs | Propanil | 6 hrs |
| Beyond | 4 hrs | Provisia | 1 hr |
| Bolero | Nothing on label | Regiment | 8 hrs |
| Clincher | 1 hr | Ricestar HT | 1 hr |
| Facet | Nothing on label | Sharpen | 1 hr |
| Grasp | 1 hr | Storm | 8 hrs |
| League | 6 hrs | Strada | 6 hrs |
| Loyant | 2 hrs | Ultra Blazer | 4 hrs |



RICE

Preemergence Herbicides Weed Response Ratings (0= no control, 10 = 100% control)

| Herbicides | Herbicide MOA | Grasses | | | | | | | | Broadleaf Weeds | | | | | | | | | | | | | | Sedges | | | | | |
|----------------------------|---------------|----------------------------|-----------------------|-----------|--------------|----------|---------------|-----------------------------------|----------------------------------|--------------------|-----------|-----------|---------|-----------------|-----------|--------------|----------------------------|-------------------|------------------------------------|-----------------------|-----------------|---------------------|-----------|-----------|--------------|------------|-----------|----------------|-----------------|
| | | Barnyardgrass ¹ | Broadleaf signalgrass | Crabgrass | Fall panicum | Red rice | Rice cutgrass | Sprangletop (loosehead / bearded) | Sprangletop (tighthead / Amazon) | Ammania (red stem) | Dayflower | Ducksalad | Eclipta | False Pimpernel | Gooseweed | Groundcherry | Hemp sesbania (coffeebean) | Indian jointvetch | Northern jointvetch (early indigo) | Palmleaf morningglory | Pigweed, Palmer | Pitted Morningglory | Smartweed | Texasweed | Water hyssop | Flatsedges | Spikerush | Umbrella sedge | Yellow nutsedge |
| League | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | - | 5 | - | - | - | - | 9 | 8 | 8 | 2 | 0 | 2 | 7 | 8 | - | 8 | - | 0 | 8 |
| Prowl ² | 3 | 8 | 6 | 8 | 7 | 0 | 0 | 6 | 6 | 0 | 0 | 4 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Facet ⁴ | 4 | 9 | 9 | 9 | 9 | 0 | 0 | 0 | 0 | 3 | 5 | 3 | 8 | 3 | 3 | 8 | 6 | 7 | 7 | 7 | 4 | 7 | 0 | 0 | 6 | 5 | - | 0 | 0 |
| Facet+Prowl ² | 4,3 | 9 | 9 | 9 | 9 | 0 | 0 | 7 | 7 | 3 | 5 | 3 | 8 | 3 | 3 | - | 7 | 7 | 7 | 8 | 6 | 8 | 0 | 0 | 6 | 5 | - | 0 | 0 |
| Facet +Bolero ² | 4,8 | 9 | 9 | 9 | 9 | 0 | 0 | 8 | 8 | 6 | 7 | 7 | 9 | 7 | 5 | - | 8 | 8 | 8 | 8 | 5 | 8 | 5 | - | 6 | 8 | 7 | 4 | 0 |
| Command +quinclorac | 13,4 | 10 | 10 | 10 | 10 | 0 | 0 | 9 | 9 | 3 | 6 | 3 | 8 | 3 | 4 | 8 | 7 | 8 | 8 | 8 | 4 | 8 | 6 | 0 | 6 | 5 | 7 | - | 0 |
| Bolero ² | 8 | 7 | 5 | 7 | 7 | 0 | 0 | 7 | 7 | 7 | 8 | 7 | 8 | 8 | 6 | - | 5 | 5 | 5 | 5 | - | 5 | 5 | - | 7 | 7 | 7 | 4 | 4 |
| Bolero ³ | 8 | 8 | 7 | 7 | - | 8* | 0 | 8 | 8 | 3 | 6 | 6 | - | 5 | 6 | - | - | - | - | - | - | - | - | - | 5 | 7 | 5 | 3 | 3 |
| Command ⁴ | 13 | 9 | 9 | 9 | 9 | 0 | 0 | 9 | 9 | 0 | 3 | 3 | 3 | - | 0 | - | 2 | 3 | 3 | 4 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

¹ Some biotypes of barnyardgrass are resistant to Command, propanil, Facet, both Facet & propanil, & Newpath, Grasp, & Regiment.

² Delayed PRE ³ Water seeded ⁴ PRE/delayed PRE * Water seed pinpoint flood culture

Read and follow all label directions when using these products.

Midseason Herbicides Weed Response Ratings (0= no control, 10 = 100% control)

| Herbicides | Herbicide MOA | Grasses | | | | | | | | Broadleaf Weeds | | | | | | | | | | | | | | Sedges | | | | | |
|-------------------------|---------------|----------------------------|-----------------------|-----------|--------------|----------|---------------|-----------------------|----------------------|--------------------|-----------|-----------|---------|-----------------|-----------|--------------|----------------------------|-------------------|------------------------------------|-----------------------|-----------------|---------------------|-----------|-----------|--------------|------------|-----------|----------------|-----------------|
| | | Barnyardgrass ¹ | Broadleaf signalgrass | Crabgrass | Fall panicum | Red rice | Rice cutgrass | Sprangletop (bearded) | Sprangletop (Amazon) | Ammania (red stem) | Dayflower | Ducksalad | Eclipta | False Pimpernel | Gooseweed | Groundcherry | Hemp sesbania (coffeebean) | Indian jointvetch | Northern jointvetch (early indigo) | Palmleaf morningglory | Pigweed, Palmer | Pitted Morningglory | Smartweed | Texasweed | Water hyssop | Flaisedges | Spikerush | Umbrella sedge | Yellow nutsedge |
| 2,4-D | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 9 | 9 | 9 | 9 | 6 | 5 | 9 | 5 | 5 | 9 | 8 | 9 | 6 | 0 | 9 | 8 | 8 | 3 | 5 |
| 2,4-D + Propanil | 4,7 | 6 | 6 | 2 | 6 | 0 | 0 | 6 | 6 | 9 | 9 | 8 | 9 | 9 | 8 | 5 | 9 | 8 | 8 | 8 | 9 | 9 | 7 | 0 | 9 | 8 | 8 | 3 | 6 |
| Grandstand + propanil | 4,7 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 9 | - | 6 | 6 | 8 | 7 | 3 | 9 | 8 | 9 | 9 | 7 | 9 | 5 | 0 | 8 | 5 | 8 | 5 | 3 |
| Propanil | 7 | 4 | 4 | 4 | 4 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 4 | 4 | 0 | 4 | 8 | 5 | 5 | 3 | 6 | 0 | 3 | 0 | 8 | 5 | 7 | 5 | 3 |
| Propanil + Ultra Blazer | 7, 14 | 5 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 5 | 2 | 4 | 5 | 5 | 2 | 5 | 9 | 6 | 6 | 7 | 7 | 8 | 7 | 0 | 8 | 6 | 7 | 5 | 4 |
| Ultra Blazer | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 9 | 0 | 0 | 3 | 6 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |

¹ Some biotypes of barnyardgrass are resistant to Command, propanil, Facet, both Facet & propanil, & Newpath, Grasp, & Regiment.

Read and follow all label directions when using these products.



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Early Postemergence Herbicides Weed Response Ratings

(0= no control, 10 = 100% control)

| Herbicides | Herbicide MOA | Grasses | | | | | | | | | Broadleaf Weeds | | | | | | | | | | | | | | | Sedges | | | |
|-------------------------|---------------|----------------------------|-----------------------|-----------|--------------|----------|---------------|-----------------------|----------------------|--------------------|-----------------|-----------|---------|-----------------|-----------|--------------|---------------|-------------------|------------------------------------|-----------------------|-----------------|---------------------|-----------|-----------|--------------|------------|-----------|----------------|-----------------|
| | | Barnyardgrass ¹ | Broadleaf signalgrass | Crabgrass | Fall panicum | Red rice | Rice cutgrass | Sprangletop (bearded) | Sprangletop (Amazon) | Ammania (red stem) | Dayflower | Ducksalad | Eclipta | False Pimpernel | Gooseweed | Groundcherry | Hemp sesbania | Indian jointvetch | Northern jointvetch (curly indigo) | Palmleaf morningglory | Pigweed, Palmer | Pitted Morningglory | Smartweed | Texasweed | Water hyssop | Flatsedges | Spikerush | Umbrella sedge | Yellow nutsedge |
| Clincher | 1 | 8 | 9 | 5 | 9 | 0 | 2 | 9 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Provisia fb Provisia | 1 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ricestar HT | 1 | 9 | 9 | 8 | 7 | 0 | 2 | 9 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grasp | 2 | 8 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 7 | 8 | 9 | 8 | - | - | 8 | 8 | 8 | 8 | 4 | 0 | 5 | 7 | 7 | 8 | 9 | 8 | 0 | 6 |
| Londax | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 7 | 9 | 8 | 9 | 9 | 0 | 6 | 6 | 6 | 5 | 0 | 5 | 6 | 0 | 9 | 8 | 8 | 0 | 6 |
| Newpath fb Newpath | 2 | 9 | 9 | 9 | 9 | 9.5 | 9 | 8 | 7 | 8 | 5 | 7 | 0 | 0 | 5 | 9 | 0 | 0 | 0 | 5 | 0 | 7 | 9 | 5 | 0 | 9 | 9 | 0 | 8 |
| Permit | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 8 | 3 | 5 | - | 4 | 6 | 9 | 3 | 6 | 0 | 0 | 4 | 4 | 5 | - | 8 | - | 0 | 9 |
| Permit Plus | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 9 | 7 | 7 | - | 4 | 8 | 9 | 5 | 7 | 3 | 0 | 5 | 8 | 5 | - | 8 | - | 0 | 9 |
| Gambit | 2 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 9 | 9 | 8 | 8 | - | 4 | 8 | 9 | 9 | 7 | 3 | 0 | 6 | 8 | 7 | - | 8 | - | 0 | 9 |
| Regiment | 2 | 8 | 0 | 0 | 0 | 0 | 7 | 3 | 2 | 6 | 9 | 9 | 7 | - | 0 | - | 8 | 7 | 7 | 4 | 0 | 5 | 10 | 7 | 6 | 8 | - | 3 | 5 |
| Strada | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 7 | 6 | 7 | - | - | 4 | 9 | 8 | 9 | 3 | 0 | 4 | 5 | 6 | - | 9 | - | 0 | 7 |
| Facet | 4 | 8 | 9 | 7 | 6 | 0 | 2 | 0 | 0 | 3 | 3 | 3 | 9 | 3 | 3 | 8 | 8 | 8 | 8 | 8 | 4 | 8 | 0 | 0 | 3 | 5 | - | 0 | 0 |
| Loyant ² | 4 | 7 | 8 | 0 | - | 0 | - | 6 | 6 | 10 | 10 | 10 | 10 | 10 | 9 | - | 10 | 10 | 10 | 5 | 9 | 8 | 6 | - | 8 | 10 | - | 10 | 7 |
| Grandstand + Permit | 4,2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 8 | 4 | 5 | - | - | 4 | 8 | 9 | 9 | 9 | 4 | 9 | 7 | 9 | - | 9 | - | 3 | 9 |
| Facet + propanil | 4,7 | 9 | 9 | 7 | 9 | 0 | 2 | 4 | 5 | 6 | 5 | 6 | 9 | 7 | 5 | 8 | 9 | 9 | 9 | 8 | 8 | 8 | 6 | 6 | 8 | 9 | 9 | 3 | 5 |
| Grandstand + propanil | 4,7 | 9 | 9 | 7 | 9 | 0 | 0 | 4 | 5 | 9 | 5 | 8 | 9 | 8 | 8 | 4 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | 8 | 8 | 9 | 9 | 3 | 5 |
| Basagran | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 9 | 6 | 8 | 7 | 7 | 0 | 3 | 3 | 3 | 8 | 0 | 3 | 7 | 0 | 8 | 8 | 8 | 7 | 6 |
| Basagran + propanil | 6,7 | 9 | 9 | 7 | 9 | 0 | 2 | 4 | 5 | 9 | 9 | 7 | 9 | 8 | 7 | 4 | 9 | 9 | 9 | 8 | 7 | 5 | 8 | 6 | 9 | 9 | 9 | 8 | 7 |
| Propanil | 7 | 9 | 9 | 7 | 9 | 0 | 1 | 4 | 5 | 6 | 5 | 7 | 8 | 7 | 5 | - | 9 | 9 | 9 | 4 | 7 | 4 | 6 | 6 | 8 | 9 | 9 | 5 | 4 |
| Propanil fb propanil | 7 | 9 | 9 | 7 | 9 | 0 | 2 | 7 | 8 | 6 | 6 | 7 | 9 | 7 | 5 | - | 9 | 9 | 9 | 5 | 9 | 5 | 8 | 6 | 8 | 9 | 9 | 6 | 6 |
| Propanil + Londax | 7,2 | 9 | 9 | 7 | 9 | 0 | 2 | 4 | 5 | 9 | 8 | 7 | 9 | 8 | 9 | 0 | 9 | 9 | 9 | 9 | 7 | 9 | 8 | 5 | 8 | 9 | 9 | 6 | 8 |
| Propanil + Permit | 7,2 | 9 | 9 | 7 | 9 | 0 | 1 | 4 | 5 | 6 | 9 | 7 | 8 | 7 | 5 | 6 | 10 | 9 | 9 | 4 | 7 | 4 | 6 | 5 | 8 | 9 | 9 | 3 | 9 |
| Propanil + Prowl | 7,3 | 9 | 9 | 7 | 9 | 0 | 1 | 9 | 9 | 7 | 5 | 7 | 9 | 7 | 6 | - | 9† | 9† | 9† | 5 | 7 | 5 | 6 | 4 | 7 | 9 | 7 | 3 | 5 |
| Propanil + Bolero | 7,8 | 9 | 9 | 7 | 9 | 0 | 2 | 9 | 9 | 8 | 8 | 8 | 9 | 9 | 6 | - | 9† | 9† | 9† | 5 | 0 | 5 | 6 | 4 | 9 | 9 | 9 | 8 | 5 |
| Aim | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 7 | 5 | 7 | - | - | 8 | 9 | 6 | 6 | 10 | 6 | 10 | 9 | 3 | 7 | 0 | 0 | 3 | 0 |
| Sharpen | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 7 | 5 | 9 | - | 7 | 8 | 9 | 9 | 9 | 9 | 9 | 10 | - | 8 | 8 | 8 | - | 6 | 6 |
| Ultra Blazer + propanil | 14,7 | 8 | 8 | 7 | 8 | 0 | 1 | 4 | 5 | 6 | 5 | 7 | 8 | 7 | 5 | 8 | 9 | 6 | 9 | 8 | 9 | 8 | 7 | 3 | 8 | 8 | 8 | 2 | 5 |

¹ Some biotypes of barnyardgrass are resistant to Command, propanil, Facet, both Facet & propanil, & Newpath, Grasp, & Regiment.

² Inconsistent results with Loyant on barnyardgrass were observed in 2018.

† Postemergence control only.

Read and follow all label directions when using these products.



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Application Rate Range and Notes for Common Rice Herbicides

| Active Chemical per Broadcast Acre | Rate per Acre | Notes |
|------------------------------------|--|---|
| Newpath 2 AS | 4.0 - 6.0 oz/A | Do not exceed 6 oz/A per application on CL varieties and 4 oz/A per application on CL hybrids. |
| Clearpath | 0.5 lb/A | Add 1% v/v crop oil concentrate. |
| Beyond 1 AS | 5 oz/A | Surfactant or crop oil required. Cutoff: PI+14 days for CL varieties and PI for CL hybrids. |
| Provisia 0.88 EC | 15.5 oz/A followed by 15.5 oz/A | Add 16 oz COC. Sequential program: 1-2 leaf FB 4-5 leaf (preflood). Use residual program at planting. Broadleaf tank mixes with 1st application, avoid tank mixes with 2nd application. Do not mix with propanil or Grandstand. Avoid drift to non-PV rice. |
| Facet L | 22 - 43 oz/A | Rice seed exposed to spray may be severely injured. Tomatoes & cotton extremely sensitive. |
| Loyant | 1 pt/A | Add MSO. No more than 7 days prior to flooding. Do not get on soybean. Best in program with multiple residual herbicides. See MP44 for additional notes. |
| Command 3 ME | 0.8 - 1.6 pt/A or 12.8 - 25.6 oz/A | Injury may increase with low seeding rates. 0.8 to 1.1 pt/A on silt loam soils 1.3 to 1.6 pt/A on clay soils |
| League | 6.4 oz/A | May carry over to soybean on very high pH soils. |
| Bolero 8E | 4 pt/A | Rice seed must have imbibed its germination water prior to application. |
| Prowl H ₂ O 3.8 CS | 2.1 pt/A | Rice seed must have imbibed its germination water prior to application. |
| Propanil (4 lb form.) | 3 - 4 qt/A | Two applications 5-7 days apart for hard-to-kill weeds. |
| Ricestar HT 0.58 EC | 24 oz/A | Excellent soil moisture critical for good activity. Tank mixing with broadleaf & sedge herbicides can cause loss of grass activity. |
| Clincher 2.38 EC | 15 oz/A | Add 1 qt/A COC. Excellent soil moisture needed for good activity. |
| Permit 75 WG | 1 oz/A | Add NIS or COC. |
| Permit Plus 75 WG | 0.75 oz/A | Add 1% COC. |
| RiceBeaux 6 SC | 4 qt/A | Apply to sealed soil only. Rice must have imbibed germination water. |
| Regiment 80 WP | 0.4 - 0.63 oz/A | From 4-leaf rice to joint movement. Use proper adjuvants. |
| Grasp 2 EC | 2 - 2.3 oz/A | Add 1 qt/A COC or MSO. |
| Sharpen | 1 oz/A + 1% v/v COC | 2- to 3-leaf rice. Up to PI. Do not apply before full 2nd leaf. |

Consult the MP44 - Recommended Chemicals for Weed and Brush Control for more details.
Read and follow all label directions when using these products.



RICE

Fungicide Rates & Timings for Disease Management in Arkansas Rice

Fungicides for sheath blight management.

| Fungicide | Rate per Acre fl oz | Active Ingredients | Notes |
|-------------|------------------------|---------------------------------|---|
| Quadris | 8.5 – 12.5 | azoxystrobin | <ul style="list-style-type: none"> Fungicides to control sheath blight should be applied when scouting indicates more than 35% positive stops in cultivars rated S or VS; or when more than 50% positive stops in cultivars rated MS. Scout between panicle differentiation and early heading. Maximum benefit from a single fungicide application achieved when made before the disease has damaged the upper 3 leaves of the canopy. |
| Stratego | 16.0 – 19.0 | trifloxystrobin + propiconazole | |
| GEM | 3.8 – 4.7 | trifloxystrobin | |
| Quilt Xcel | 14.0 – 27.0 | azoxystrobin + propiconazole | |
| Sercadis | 4.5 – 6.8 | fluxapyroxad | |
| Elegia | 32.0 | flutolanil | |
| Amistar Top | 10.0 – 15.0 | azoxystrobin + difenconazole | |

Fungicides for prevention of kernel smut and false smut.

| Fungicide | Rate per Acre fl oz | Active Ingredients | Notes |
|-------------|------------------------|---------------------------------|--|
| Tilt 3.6 EC | 6.0 | propiconazole | <ul style="list-style-type: none"> Apply at early to late boot but before heading begins to SUPPRESS kernel smut and/or false smut. Applications made after heading starts will be INEFFECTIVE. Fields most likely to benefit will be those planted to a susceptible cultivar and using excessive nitrogen. |
| Propimax | 6.0 | propiconazole | |
| Stratego | 19.0 | trifloxystrobin + propiconazole | |
| Quilt Xcel | 21.0 | azoxystrobin + propiconazole | |
| Amistar Top | 10.0 - 15.0 | azoxystrobin + difenconazole | |

Fungicides for prevention of neck blast.

| Fungicide | Rate per Acre fl oz | Active Ingredients | Notes |
|-------------|------------------------|---------------------------------|---|
| Quadris | 10.0 - 12.5 | azoxystrobin | <ul style="list-style-type: none"> Keep flood depth at least 4 inches to suppress early leaf blast & neck blast. Fungicides for prevention of neck blast work best if applied twice: <ul style="list-style-type: none"> First application at late boot Second application when panicles of main tillers are 50-75% emerged but the neck is still in the boot. |
| GEM | 3.1 – 4.7 | trifloxystrobin | |
| Stratego | 19.0 | trifloxystrobin + propiconazole | |
| Quilt Xcel | 21.0 – 27.0 | azoxystrobin + propiconazole | |
| Amistar Top | 15.0 | azoxystrobin + difenconazole | |

* 21 oz of Quilt Xcel contains 6 oz of Tilt equivalent and 12 oz of Quadris equivalent.

* 19 oz of Stratego contains 5.5 oz of Tilt equivalent and 4.7 oz of GEM equivalent.

Read and follow all label directions when using these products.



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Arkansas Rice Cultivar Reactions to Common Diseases and Lodging

| Cultivar | Sheath Blight | Blast | Straight-head | Bacterial Panicle Blight | Stem Rot | Kernel Smut | False Smut | Lodging |
|------------------|---------------|-------|---------------|--------------------------|----------|-------------|------------|---------|
| ARoma 17 | MS | MS | — | MS | — | S | S | MR |
| CL111 | VS | MS | S | VS | VS | S | S | MS |
| CL151 | S | VS | VS | VS | VS | S | S | S |
| CL153 | S | MS | — | MS | — | S | S | MR |
| CL163 | VS | S | — | MS | — | MS | — | MS |
| CL172 | MS | MS | — | MS | — | S | S | MR |
| CL272 | S | MS | — | VS | — | MS | — | MR |
| Della-2 | S | R | — | MS | — | — | — | — |
| Diamond | S | S | — | MS | S | S | VS | MS |
| Jazzman-2 | S | MS | — | VS | — | S | S | — |
| Jupiter | S | S | S | MR | VS | MS | MS | S |
| LaKast | MS | S | MS | MS | S | S | S | MS |
| PVL01 | S | S | — | S | — | VS | VS | MS |
| Roy J | MS | S | S | S | S | VS | S | MR |
| RT 7311 CL | MS | R | — | — | — | MS | S | MS |
| RT 7321 FP | MS | — | — | — | — | S | MS | S |
| RT 7323 FP | S | — | — | — | — | MS | VS | S |
| RT CLXL729 | MS | R | MS | MR | S | MS | S | S |
| RT CLXL745 | S | R | R | MR | S | S | S | S |
| RT Gemini 214 CL | S | MR | — | — | — | MS | VS | MS |
| RT 7501 | S | — | — | — | — | S | S | — |
| RT XP753 | MS | R | MS | MR | — | MS | S | MS |
| RT XP760 | MS | MR | — | MR | — | MS | VS | S |
| Titan | S | MS | — | MS | — | MS | MS | MS |
| Wells | S | S | S | S | VS | S | S | MS |

Reaction: R = Resistant; MR = Moderately Resistant; MS = Moderately Susceptible; S = Susceptible; VS = Very Susceptible
Cells with no values indicate no definitive Arkansas disease rating information is available at this time. Reactions were determined based on historical and recent observations from test plots and grower fields across Arkansas and other rice states in southern USA. In general, these ratings represent expected cultivar reactions to disease under conditions that most favor severe disease development.



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Insecticide Rates & Thresholds for Insect Management in Arkansas Rice

Insecticides for rice stink bug management.

| Insecticide | Min-Max Rate | Active Ingredients | Notes |
|-------------------------|-----------------|--------------------|---|
| Sevin 80 S | 1.25 - 1.875 lb | Carbaryl | <ul style="list-style-type: none"> • Check infestation levels weekly or bi-weekly following 75% panicle emergence using a 15-inch diameter sweep net. • Apply insecticide when 5 or more stink bugs per 10 sweeps are present during the first 2 weeks after fields initially reach 75% panicle emergence; or when 10 stink bugs per 10 sweeps are present thereafter. • Sampling stink bugs should be conducted between 8-10 a.m. and 6-8 p.m. to get the best estimate of the population. Repeat treatment as necessary to maintain control. |
| Sevin XLR or 4 F | 2 - 3 pt | Carbaryl | |
| Tenchu 20 SG | 7.5 - 10.5 oz | Dinotefuran | |
| Malathion 57% EC | 1 - 1.5 pt | Malathion | |
| Prolex, Declare 1.25 CS | 1.28 - 2.05 oz | Gamma-cyhalothrin | |
| Proaxis 0.5 CS | 3.2 - 5.12 oz | Gamma-cyhalothrin | |
| Warrior II 2.08 CS | 1.6 - 2.56 oz | Lambda-cyhalothrin | |
| Mustang Max | 2.64 - 4.0 oz | Zeta-cypermethrin | |

Thresholds for additional insect pests of rice.

| Insect | Threshold | Scouting Procedure |
|------------------------------|--|--|
| Chinch Bug | Treat when bugs are causing stand reduction | <ul style="list-style-type: none"> • Check seedling rice, particularly fields bordering wheat. |
| Fall Armyworm, True Armyworm | Treat when 6 or more armyworms per square foot early season. Late season treat when fall armyworms are damaging flag leaf. | <ul style="list-style-type: none"> • Early season watch rice bordering wheat for migration of true armyworms into field (damage can occur quickly when armyworms move in). |
| Grasshopper | Treat when damage is evident. | <ul style="list-style-type: none"> • Watch field borders, particularly near grassy areas. |
| Greenbug | 2 to 3 greenbugs per plant on 1- to 2-leaf stage rice. | <ul style="list-style-type: none"> • General visual observation. |
| Rice Water Weevil | See MP144 for details. | <ul style="list-style-type: none"> • Inspect the youngest leaf on 40 rice plants at each stop for adult feeding scars. Avoid areas with thin stand. DO NOT count older leaves with scars. |

Read and follow all label directions when using these products.



Drain Timing and Harvest

Drain Timing Recommendations

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 on silt loam soils panicles should have 2/3 straw-colored kernels; or on clay soils panicles should have 1/3 straw-colored kernels prior to draining.

Harvest Aids

Only use harvest aids when grain moisture is BELOW 25% and ABOVE 18%.

- Sodium chlorate at 3-6 lb a.i. per acre.
- Harvest within 4 to 7 days after application.
- Used to desiccate foliage but also reduces grain moisture.
- When used properly, does not reduce head rice yields.
- Hybrids may have a reduced window of safe application.

Harvest Timing and Grain Moisture

- Optimal harvest grain moisture for Long Grain Cultivars is 19 to 21 percent.
- Optimal harvest grain moisture for Medium Grain Cultivars is 22 to 24 percent.

Estimated Drying Costs Based on Grain Moisture Content

| Moisture Content (%) | Cost (\$ per bushel) |
|----------------------|----------------------|
| < 13.5 | 0.25 |
| 13.6 - 18.9 | 0.30 |
| 19.0 - 21.9 | 0.35 |
| > 22.0 | 0.50 |



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Calibration and Conversion Factors

GPM = gallons per minute

GPA = gallons per acre

mph = miles per hour

W = nozzle spacing (in.) for broadcast spraying

= spray width (in.) for single nozzle, banded or boomless spraying

= row spacing (in.) divided by nozzles per row for directed spray

Formulas:

$$\text{GPM (per nozzle)} = \frac{\text{GPA} \times \text{mph} \times \text{W}}{5,940}$$

$$\text{GPA} = \frac{5,940 \times \text{GPM (per nozzle)}}{\text{Mph} \times \text{W}}$$

Conversion Factors

| | | | | | |
|---------|---|-------------------------|----------|---|--------------------|
| 1 g | = | 0.0022 lb | 1 ha | = | 2.471 A |
| 454 g | = | 1 lb | 0.405 ha | = | 1 A |
| 1 kg | = | 2.2 lb | 1 kg/ha | = | 0.893 lb/A |
| 1 m | = | 3.283 ft | 1 bu/ha | = | 0.405 bu/A |
| 2.54 cm | = | 1 in | 1 bu/A | = | 45 lb/A |
| 1 yd | = | 3 ft | 3.6 bu/A | = | 1 barrel |
| 1 L | = | 0.265 gal | g/L | = | Parts per thousand |
| 3.785 L | = | 1 gal | mg/L | = | Parts per million |
| 1 gal | = | 4 qt / 8 pt / 128 fl oz | mg/kg | = | Parts per million |

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For more information please visit the Extension rice page at <http://uaex.edu/rice>.

Additional information on topics throughout this publication may be found in:
Arkansas Rice Production Handbook,
MP44 - Recommended Chemicals for Weed and Brush Control,
MP144 - Insecticide Recommendations for Arkansas, and
MP154 - Arkansas Plant Disease Control Products Guide.

The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by the University of Arkansas System Division of Agriculture is implied. The agrichemical recommendations herein are consistent with current federal and state pesticide labeling as of the date of this publication. Revisions in labels can occur at any time. For your safety before using any recommended product, ALWAYS READ THE PRODUCT LABEL.

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