2018 Review
Jarrod Hardke – Rice Agronomist

• It was cold...

• Then it was hot...

• Weed control, or lack thereof

• Cool at the right time

• Despite difficulties, crop looked strong
<table>
<thead>
<tr>
<th>Cultivar</th>
<th>2012</th>
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<th>2014</th>
<th>2015</th>
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Arkansas Avg. Rice Yield 2001-2018

Yield (bu/A)

2001 2003 2005 2007 2009 2011 2013 2015 2017 2018
2018 Variety Variability

- Why were varieties more variable?
  - N Use Efficiency
    - Hot, dry conditions challenge N efficiency in form of reduced incorporation and increased volatilization
  - Preflood N Delays
    - The longer it takes N to be incorporated past a certain point, the more yield we lose that we can’t get back
2018 Variety Variability

• Hybrids and Varieties – similar fertilizer N use efficiency
  — Meaning they take up fertilizer N in similar amounts

• Hybrids have greater soil N use efficiency than Varieties
  — Meaning hybrids take up soil N in greater amounts

• Can bridge N gaps when they occur
2018 Variety Variability

• Maturity continues to work for AND against us
• Early maturity has all been taken from vegetative stage
  — Reproductive hasn’t changed
• Less time to fertilize and flood by critical stage
• More penalty when delayed
# AR Rice Cultivar Testing Results

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Type</th>
<th>50% Hdg</th>
<th>Lodging</th>
<th>Milling HR-TR</th>
<th>Grain Yield (bu/acre)</th>
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<td>2016-2018 MEAN</td>
<td>2016</td>
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<td>MR</td>
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<td>51-69</td>
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# 2019 Recommended Rice Cultivars for Arkansas

<table>
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Suboptimal Nitrogen Mgmt
Diamond – RREC Loam Soil

Grain Yield (bu/A)
Suboptimal N Management

• Dry soil ALWAYS best

• If soil is muddy:
  — Apply extra 20-30 lbs N preflood

• Spoon feed – 4-5 apps of 100 lbs urea
Arkansas Rice Production Trends
Percent of Acres Burned

Percent
Crop Residue Management

• Burning of fields becoming an increasing issue
• Fall weather has enabled a few consecutive years of better conditions for burning rice residue
• Need to be smart
• Voluntary Smoke Management Guidelines now available with number to call...
2019 Planning

• A lot has depended on luck last few years

• Many things went well in 2017-18 that we shouldn’t take credit for…

• Acreage flat to increasing

• Difficult to spread planting dates – but it is one way to spread RISK

• Focus on economic bottom line – not just yield!
Grape Colaspis (Lespedeza Worm)
# Fungicide ST x Insecticide ST x Seed Rate

**Grain Yield (bu/A)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yields</th>
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<td>40 AMDV</td>
<td>e 40 sd + Fung1</td>
</tr>
<tr>
<td>30 AMDV</td>
<td>e 30 sd + Fung1</td>
</tr>
<tr>
<td>50 AMDV</td>
<td>de 50 sd + Fung1</td>
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<tr>
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<td>cde 50 sd + NO ST</td>
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<tr>
<td>50 SS</td>
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<tr>
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<td>30 SS</td>
<td>bcde 30 sd + Fung2</td>
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<tr>
<td>30 CRMX+V</td>
<td>abcde 30 sd + Fung1 + Cruiser</td>
</tr>
<tr>
<td>50 NIS</td>
<td>abcd 50 sd + Fung2 + NipsIt</td>
</tr>
<tr>
<td>50 CRMX+V</td>
<td>abc 50 sd + Fung1 + Cruiser</td>
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<tr>
<td>40 NIS</td>
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</tr>
<tr>
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<td>ab 30 sd + Fung2 + NipsIt</td>
</tr>
<tr>
<td>40 CRMX+V</td>
<td>a 40 sd + Fung1 + Cruiser</td>
</tr>
</tbody>
</table>

**Significance Levels:**

*P* < 0.1

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**Note:**
- *SD* indicates seed rate.
- *Fung1* and *Fung2* indicate fungicide treatments.
- *Cruiser* indicates insecticide treatment.
- *NipsIt* indicates another insecticide treatment.
- The letters (a, b, c, d, e) indicate significant differences at the 0.1% level.
IST combinations for control of RWW 2018
Pine Tree Research Station

62 days after planting
Planted April 19

RWW average/3 cores

- Untreated Check
- CMR High Rate
- CMR
- Nipsit
- CMR+Fortenza
- Dermacor
- CMR High Rate+Fortenza
IST combinations for control of RWW-Pine Tree

- **Untreated Check**
- **CMR**
- **CMR+Fortenza**
- **Dermacor**
- **CMR High Rate**
- **CMR High Rate + Fortenza**

Bushels/acre

Planted April 19

- Untreated Check: a
- CMR: b
- CMR+Fortenza: a
- Dermacor: a
- CMR High Rate: ab
- CMR High Rate + Fortenza: ab

Legend:
- Blue: CMR High Rate + Fortenza
- Orange: Dermacor
- Gray: CMR+Fortenza
- Yellow: NipsIt
- Blue: CMR High Rate
- Green: CMR
- Blue: Untreated Check
Rice Stink Bug
Impact of spraying too early for RSB

![Bar graph showing the impact of spraying at different stages of plant development.

- **RSB/10 Sweeps**
- **UTC**
- **Early Boot**
- **Late Boot**
- **10% Headed**
- **40% Headed**
- **75% Headed**

Numbers within bars represent days after application.

P<0.01

- **a** indicates a significant difference from UTC.
- **b** indicates a significant difference from other stages.

Days after application:
- Early Boot: 21
- Late Boot: 17
- 10% Headed: 13
- 40% Headed: 10
- 75% Headed: 7

Numbers within bars represent days after application.
Thresholds for Rice Stink Bugs

• For weeks 1 and 2 after 75% heading, treat if sampling gives an average of 5 bugs (adults and nymphs) per 10 sweeps

• For weeks 3 and 4 after 75% heading, treat if sampling gives an average of 10 bugs (adults and nymphs) per 10 sweeps
RSB Termination

~20%
50-60%
>80%
BillBugs in Row Rice
Billbug damage in row rice-Jackson county
Row rice billbug studies-Jackson County
Number of Blank Heads-Aug 29

<table>
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<tr>
<th>Treatment</th>
<th>Blank Heads/50ft²</th>
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<td>CMR+Fortenza</td>
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<td>CMR</td>
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<td>Dermacor</td>
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<td>Prevathon</td>
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<tr>
<td>CMR+Prevathon</td>
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<td>UTC</td>
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<tr>
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<tr>
<td>Nipsit</td>
<td>5</td>
</tr>
<tr>
<td>Nipsit+CMR</td>
<td>3</td>
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<tr>
<td>Nipsit+Fortenza</td>
<td>0</td>
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Rice Insect Control Take Home

• IST’s for GC and RWW
  • Combinations have the ability to control both

• Foliar timing for RWW is critical
  • Pre-flood applications should be considered if timing between planting and permanent flood is >35 days, for areas known for high populations of RWW

• Confident in our current RSB thresholds
  • Applications can be terminated at 60% hard dough

• Rice Billbug is a major concern for row rice acres
  • Limited knowledge currently
  • IST combos with either Fortenza or Dermacor appear to have good control
Rice
Weed Control 2019
Tom Barber and Tommy Butts
Extension Weed Scientists
JK Norsworthy, HE Wright
2018 Overview - Weeds

• No rain for pre-emergence herbicide activation

• Too dry for post-emergence herbicide activity

• Lots of failures
Cleanest plots had more than 2 residuals up front in 2018...If they were activated.
Loyant Issues in 2018

Off-target movement

Varietal sensitivity

Lack of performance
Command FB Loyant 2018
Obey FB Command FB Loyant
Why the variability in Loyant control?

- Barnyardgrass too big and high populations?
  - Used as rescue?
- Soil moisture?
  - Time till flood matters
- Coverage
  - Failures with both ground and air applications
- Tank-mixtures/antagonism
- Are some populations more tolerant than others?
Barnyardgrass Screening Samples (Response to Loyant)

14 days after 4-leaf application

- Loyant (1X)

- Control ranged from 0 to 100%
- Average = 67%
Grasp 3 weeks after treatment
Loyant 3 weeks after treatment
2,4-D 3 weeks after treatment
Grasp 3 weeks after treatment
Soybean is very sensitive to Loyant
2019 Loyant Recommendations

- Must be part of a program; Great fit in row-rice
- Multiple residuals fb early POST
  - Don’t rely on a PRE followed by Loyant pre-flood
- Timing should be on small barnyardgrass 3-4 leaf and flood within 7 days.
- Don’t rely on Loyant as silver bullet or rescue product
- More injury as been observed on Hybrid, medium grain and Diamond.
- Check website for allowed tankmixes.
- Loyant not volatile; all off target from physical drift or inversion
  - Recommended 1 mile buffer by air
Row Rice

- Flushing is no longer as an option for activation
- Broadleaves will move up on the most wanted list!
- Similar to levee weed control
- Flood not there as weed barrier
- May open doors for crop rotations
4 weeks after late-postemergence application - Marianna

Command + Facet L fb
Ricestar HT fb
Loyant + Prowl fb
Grasp

Non-treated check
Row Rice Summary

• Row-rice weed control will likely cost more $$
  • Hybrid rice w/low population leaves room for weeds
• Plant early to reduce weed competition early
• Load up on Residuals up front: Command +
  • Sharpen or Facet L, or both
  • Prowl + Bolero delayed PRE
• Add residuals early POST, split Command or Prowl
• Watch moisture levels for POST grass control
  • Clearfield/ Newpath fits well for grass control with added residual
• Loyant great on Pigweed no help on grass
Limited acres available
Similar to ClearField with increased IMI tolerance
4 varieties available
Paired with herbicides from ADAMA
 Preface = Imazethapyr (Newpath)
 Postscript = Imazamox (Beyond)
 Rates are the same
• Had about 50,000 acres in 2018
• Barnyardgrass and “weedy” rice control was excellent
• 15.5 fl oz/A twice, add COC provided best control
• Avoid tank-mixes in second shot
• Use a good residual upfront for best results – similar to CL program with added emphasis on broadleaves and sedges!
• Variety concerns.....
• Is now in AR breeding program
In the pipeline: benzobicyclon

- Rogue and Rogue Plus
- 2020-2021
- Post flood only
- Broad-spectrum activity
- Very good on sprangletop and aquatics
- Activity on barnyardgrass, sedges and redrice
Weedy Rice Control with Benzobicyclon

Stuttgart - 6 weeks after treatment
1X Rate of Benzobicyclon
8 days after treatment
What about Warrant/ Zidua on rice?

- They are not labeled!
- They can cause injury!
- They may show up in rice residue!
- If someone does apply these in season and it shows up in rice at checkpoints....It will be devastating to **ALL** Arkansas Rice Industry!!!
- Do not apply off-label products!
Hybrid Rice Production in Arkansas

- Established 2010
- Target market: Arkansas rice producers
- Objectives:
  - Develop hybrid parental lines including EGMS male sterile for two line hybrid line production; CMS male sterile, maintainer, and restorer lines for three-line hybrid rice production
  - Develop high yield, good milling and cooking quality hybrid rice cultivars
  - Improve hybrid rice seed quality including low chalk, intermediate amylose content, medium gelatinization temperature long grain, and non aroma
  - Effective hybrid rice production
Resent Significant Achievements

• Developing new environment genic male sterile (EGMS) line that is used for developing hybrid rice through two-line hybrid rice production system. The male sterile possesses genes associated with semi-dwarf plant height, non aroma, long grain seed, intermediate amylose content, and medium gelatinization temperature.

• Developing experimental hybrid lines resulting from the new males sterile line and elite cultivars/advance rice lines. In addition, two experimental hybrid line will be tested in 2019 Arkansas Rice Performance Trials (ARPT).
CLL15 Quick Facts


- 5-10 bushels yield advantage over CL153, CL172, and CL151 in Arkansas statewide trials

- Good milling yields similar to CL151 and CL153

- Lodging resistance rating similar to CL153 and CL172 but much better than CL151

- Similar maturity as CL151 but 1-2 days earlier than CL172 and CL153

- About 1-2 inches shorter than CL153 and CL151, slightly taller than CL172

- Blast resistance similar to CL153 and CL172 and having $Pi$-kh and $Pi$-ta genes

- Susceptible to sheath blight, similar to CL151, CL153 and CL172

- Susceptible to bacterial panicle blight, similar to CL172

- Typical southern long grain cooking quality

- Slender kernel, chalkiness lower than CL151 and higher than CL153 and CL172
CLM04 Quick Facts

✔ Pedigree: Neptune//Bengal/CL161/3/Jupiter

✔ Yield 10-15 bushels higher than CL272 and similar to Jupiter and Titan in Arkansas statewide and Mid-South regional trials

✔ Milling yields similar to Jupiter

✔ Lodging resistance similar to Titan and better than Jupiter

✔ Similar maturity as Jupiter and CL272 but 5-7 days later than Titan

✔ 1-2 inches taller than CL272 and Titan, 2-3 inches taller than Jupiter

✔ Blast resistance similar to CL272 and Titan but better than Jupiter, having Pi-ks and Pi-z genes

✔ Susceptible to sheath blight, similar to CL272, Jupiter and Titan

✔ Susceptible to bacterial panicle blight similar to Titan but much better than CL272

✔ Typical southern medium grain cooking quality

✔ Low chalk and plump kernel size similar to Titan
Greenhouse and Growth Chambers, 2018

High Nighttime Temps
Cell:  501-837-0273
Twitter:  @BobScottWeedDr
Email:  bscott@uaex.edu
http://www.uaex.edu/rice
http://www.arkansasascrops.com

Thanks:
Jarrod Hardke
Tom Barber
Tommy Butts
Gus Lorenz
Nick Batemen
Ben Thrash
Ehsan Shakiba
Xueyan Sha
Karen Moldenhauer
Jason Norsworthy
Manny Esguerra
Many others….