

Alternative Irrigation Management Practices

Paddy Rice Research Group
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Irrigation Strategies

- **Continuous Flood**
- **Straighthead Drain**
- **Intermittent Flood / AWD**
- **Furrow Irrigation / Row Rice**



Irrigation Strategies

- **Continuous Flood**
 - **Standard Best Management Practice**
 - **Most efficient for:**
 - **N management**
 - **Weed control**
 - **Disease management**

Irrigation Strategies

- Continuous Flood
- Straighthead Drain
 - Necessity on some fields
 - Requires careful management
 - Plant resistant cultivars
 - Some fields lose flood at this time, but not on purpose...

Irrigation Strategies

- **Intermittent Flood / AWD**
 - **Potential water savings**
 - **Increased weed control risk?**
 - **Increased disease risk?**
 - **When do I hold flood / dry up?**
 - **Reduction in GHG emissions**
 - **Reduction in 'carbon footprint'**

Irrigation Strategies

- Continuous Flood
- Straighthead Drain
- Intermittent Flood / AWD
- **Furrow Irrigation / Row Rice**
 - Improved rotational option
 - Reduced land preparation
 - Reduced airplane costs
 - Increased herbicide costs?
 - Increased disease control costs?





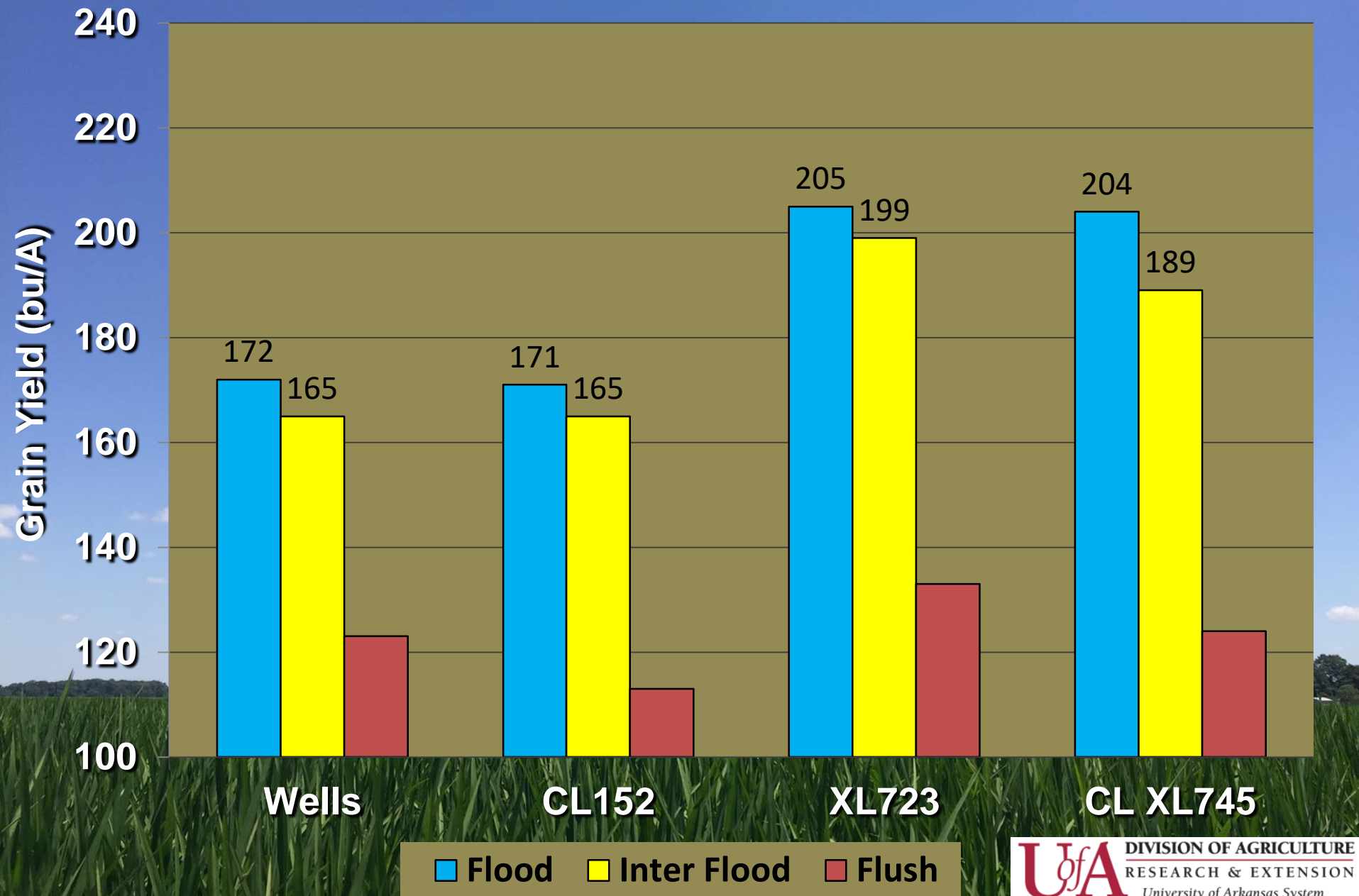
Nitrogen & Irrigation

- **N Management Decisions change according to irrigation practices!**
- **Most yield limiting factor**
 - **Must get it right**

Intermittent Flood

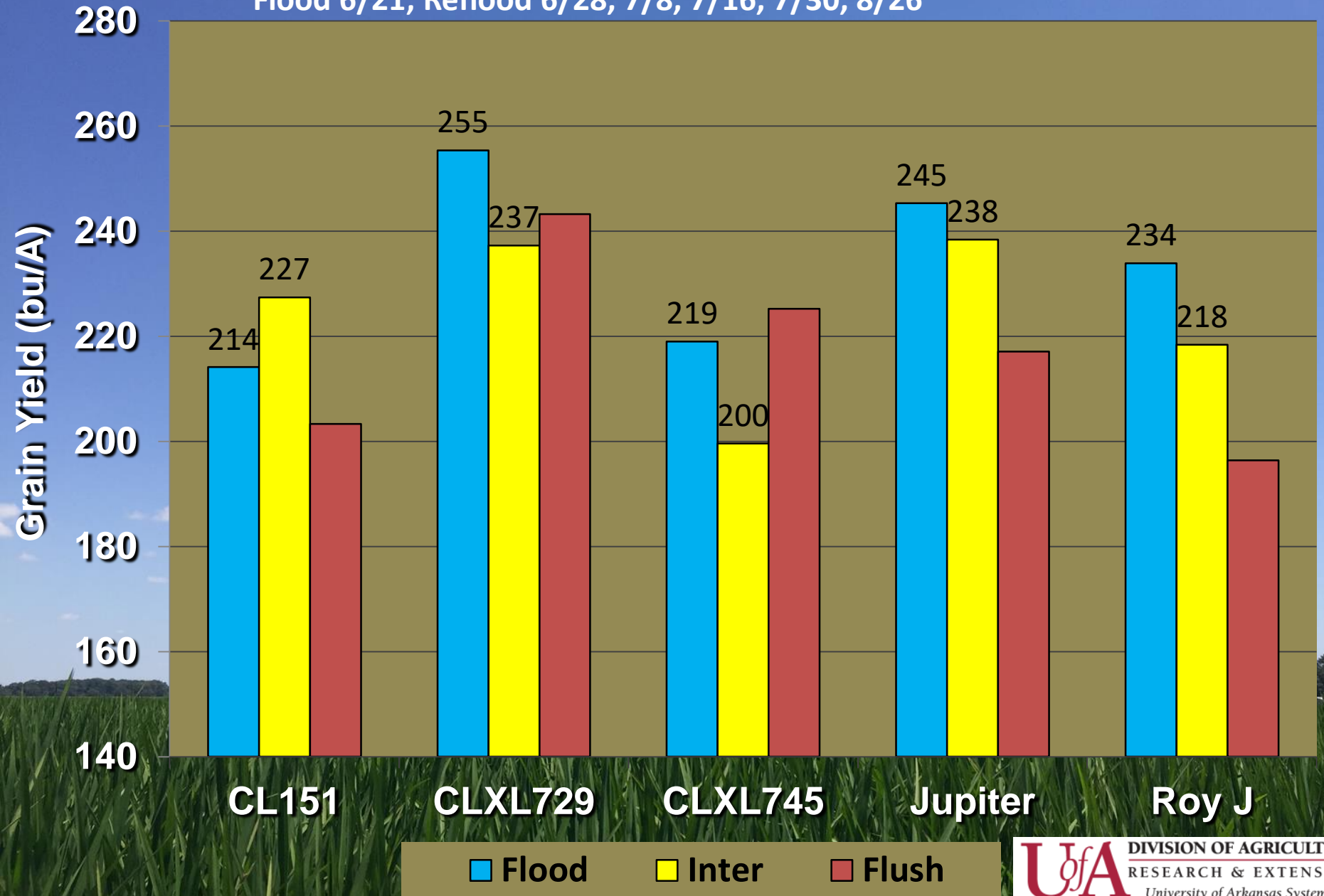
- **Maintain initial flood for 3 weeks**
- **Drydown & flood early and lose N**
 - **Apply more N if happens**
- **Once past 3 weeks, begin AWD**
- **Weed control not an issue, keep muddy**
- **Disease control – blast a concern, sheath blight less**

2012 RREC Irrigation Mgmt



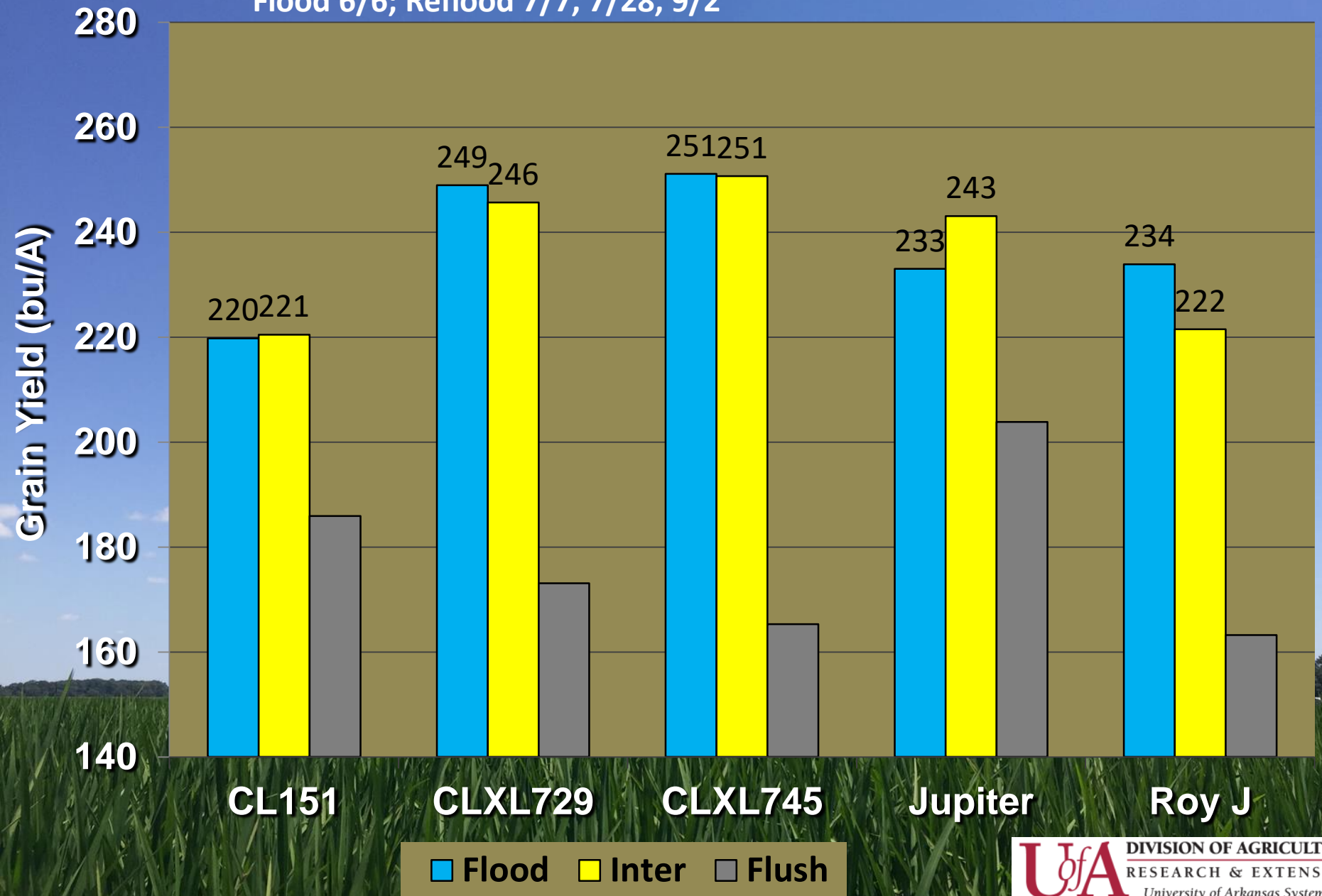
2013 RREC Irrigation Mgmt

Flood 6/21; Reflood 6/28, 7/8, 7/16, 7/30, 8/26

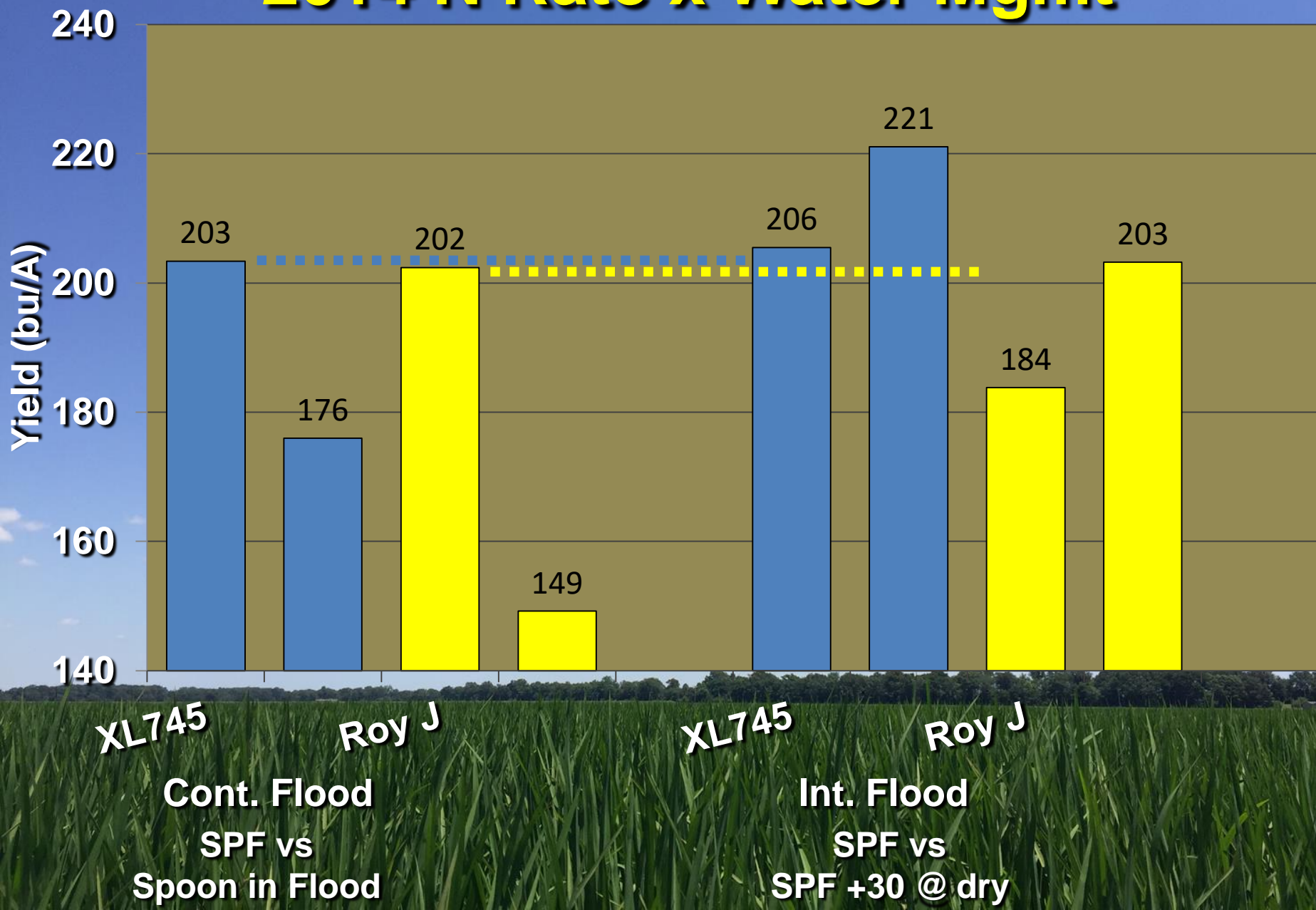


2014 RREC Irrigation Mgmt

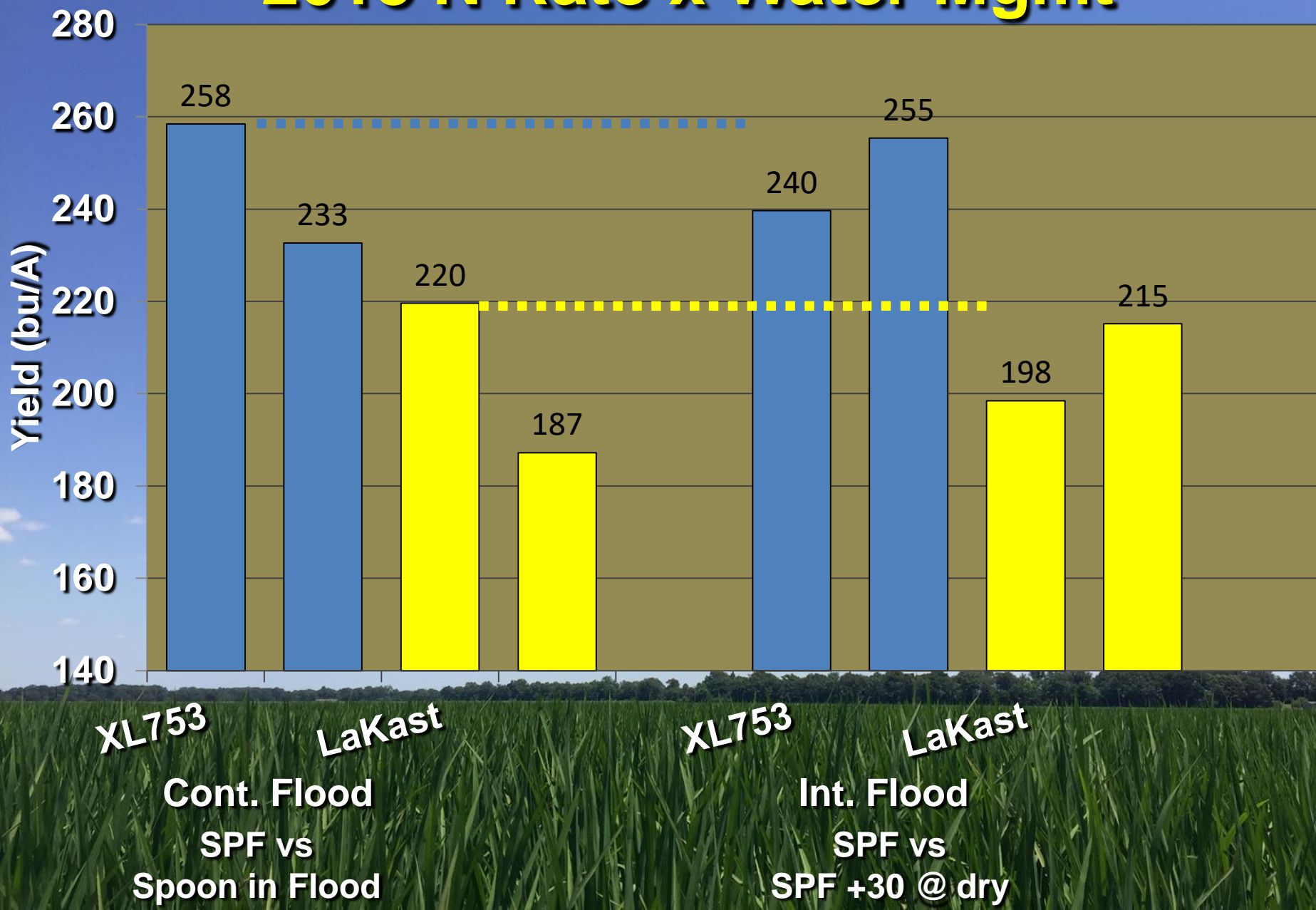
Flood 6/6; Reflood 7/7, 7/28, 9/2



2014 N Rate x Water Mgmt



2015 N Rate x Water Mgmt



Straighthead Drain

- Can be done without hurting yield
- If we know drain will occur, possible to divide up preflood N
 - Avoid potential N loss and same cost
- Weed control not an issue – well canopied
- Re-establishing flood an issue – hot, dry years
- Time accurately based on DD50 program

Furrow / Row Rice

- **Slope of field makes a difference**
 - Shallow slope – no rice in middle
 - Steep slope – rice down middles
- **Need a ‘tail levee’**
 - Capture irrigation water in field
- **Clearfield best bet – more weed control options**
- **Hybrid or variety with good blast package safest options**

Intermittent Flood

- **Must maintain initial flood for 3 weeks**
- **Drydown & flood early and lose N**
 - Apply more N if happens
- **Once past 3 weeks, begin AWD**
- **Weed control not an issue, keep muddy**
- **Disease control – blast a concern, sheath blight less**

AWD Conclusions

- Hybrids more tolerant but varieties also work (but increased risk)
- Maintain initial flood for 3 weeks
 - Early Drydown & reflood leads to N loss & YIELD LOSS
- Can begin AWD 3 weeks after initial flood
 - But what is the trigger to reflood ???
 - Moisture sensors ??? (~20 cb)
- Weed control can remain an issue
- Blast disease a concern with varieties



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