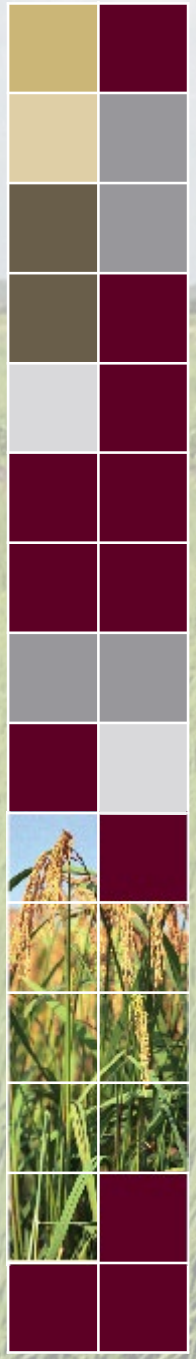


Texas Rice Research Update

L. T. (Ted) Wilson

Professor, Center Director, Jack B. Wendt Endowed Chair in Rice Research

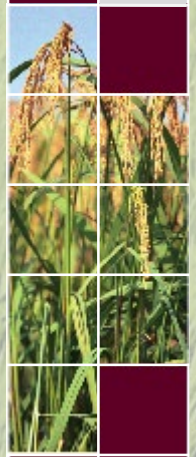
Rice Outlook Conference

December 7, 2023

Indian Wells, California

Presentation Overview

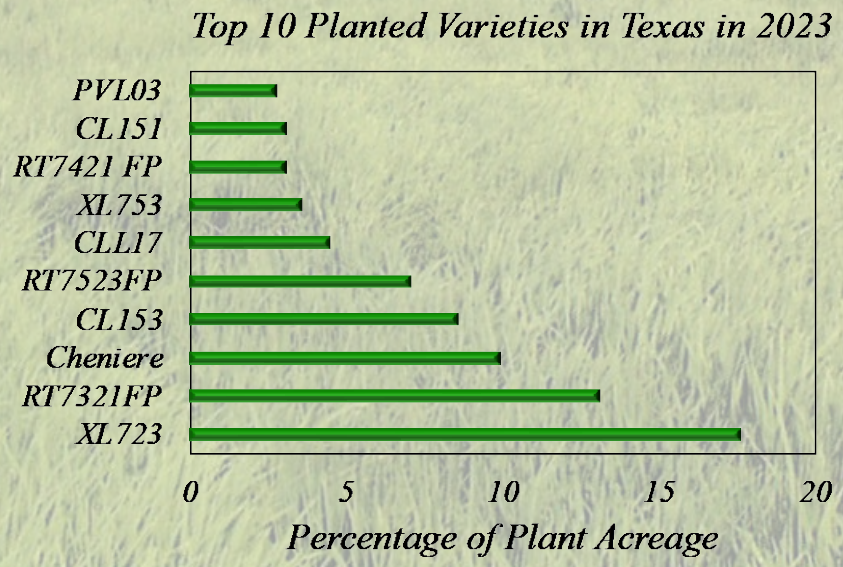
- *2023 Texas rice crop update*
- *Factors that affect grain quality*
- *Tradeoffs between selecting for yield versus grain quality*



2023 Texas Rice Crop Update

2022 Acreage	2023 Acreage	Acreage Change	% MC Ratooned	XL723	RT7321FP	Cheniere	CL153	RT7523FP	CLL17	XL753	RT7421 FP	CL151	PVL03
191,648	145,606	-24%	45%	17.6%	13.1%	9.9%	8.6%	7.1%	4.5%	3.6%	3.1%	3.1%	2.8%

Wilson, L. T., Y. Yang, J. Wang, B. Morace, J. Samford, and M. Enard. 2021. Texas Rice Crop Survey, http://beaumont.tamu.edu/CropSurvey



Main Crop Yield, %H, %T

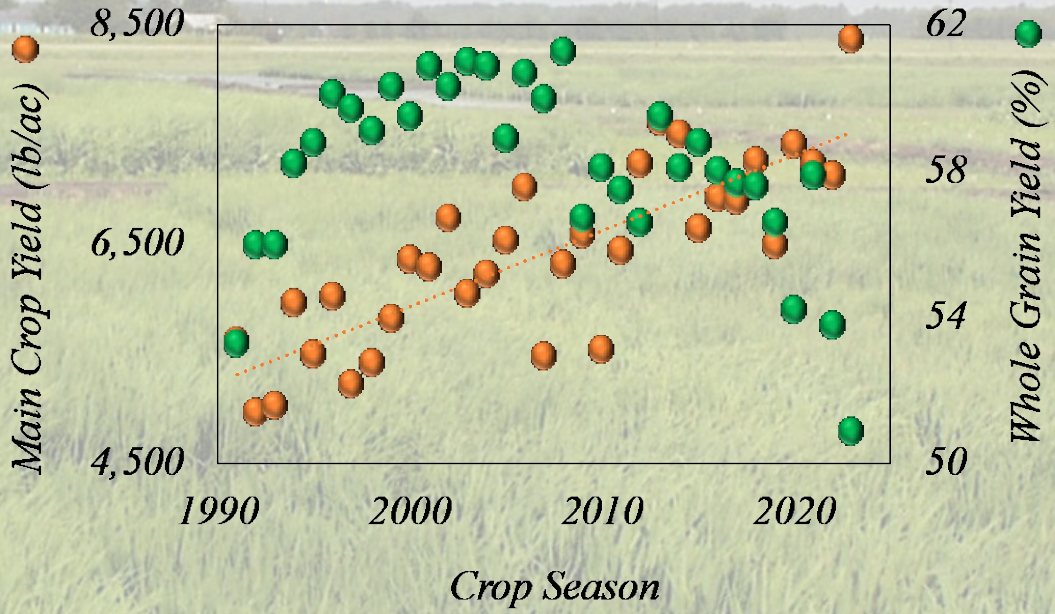
Variety	*Variety Type*	*Yield lb/ac*	*Milling Yield (%H)*	*Milling Yield (%T)*
CL151	*Inbred*	*8,104*	*48.7*	*69.8*
RT7421 FP	*Hybrid*	*6,960*	*40.0*	*62.0*
XL753	*Hybrid*	*8,807*	*49.2*	*69.9*
RT7523FP	*Hybrid*	*8,172*	*54.4*	*68.8*
CL153	*Inbred*	*7,744*	*53.4*	*69.5*
RT7321FP	*Hybrid*	*8,377*	*45.7*	*68.7*
Total (All varieties)		***8,376****	***50.9****	***69.4*****
Historic (last 20 years)	*All*	*7,850*	*58.9*	*71.1*

**Main crop yield highest in the last 33 seasons*

***Head rice yield lowest in the last 33 years*

****Total milling yield lowest in the last 25 years*

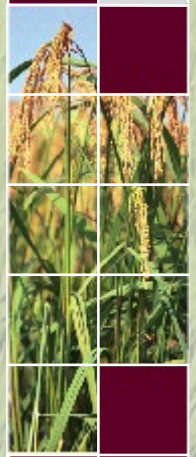
2023 Texas Rice Crop Update



- *Grain yield has increased at a rate of 69 lbs/ac/yr from 1991-2023*
- *Whole grain milling yields steadily increased when inbred varieties dominated production, but steadily decreased as hybrid production has increased*
- *Analysis showed a highly significant negative effect of average temperatures during a season interacting with main crop yield on main crop whole grain %*

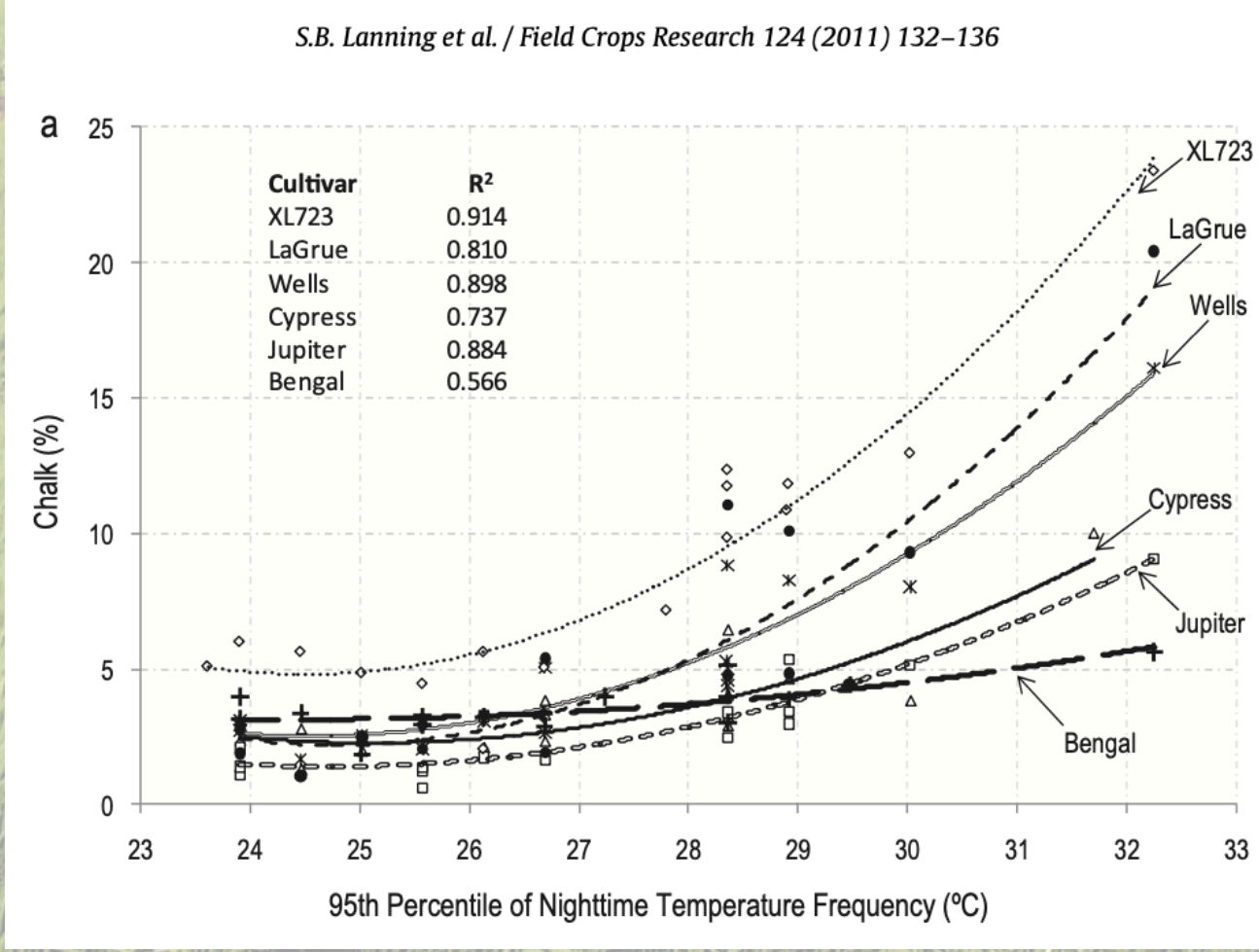
Factors that Affect Grain Quality

- *Nighttime temperatures during grain filling*
- *Position of grain within a panicle caused by seasonal variation in carbohydrate supply for growth*
- *A variety's vigor and to a degree its yield potential*
- *Whether the variety is an inbred or a hybrid*



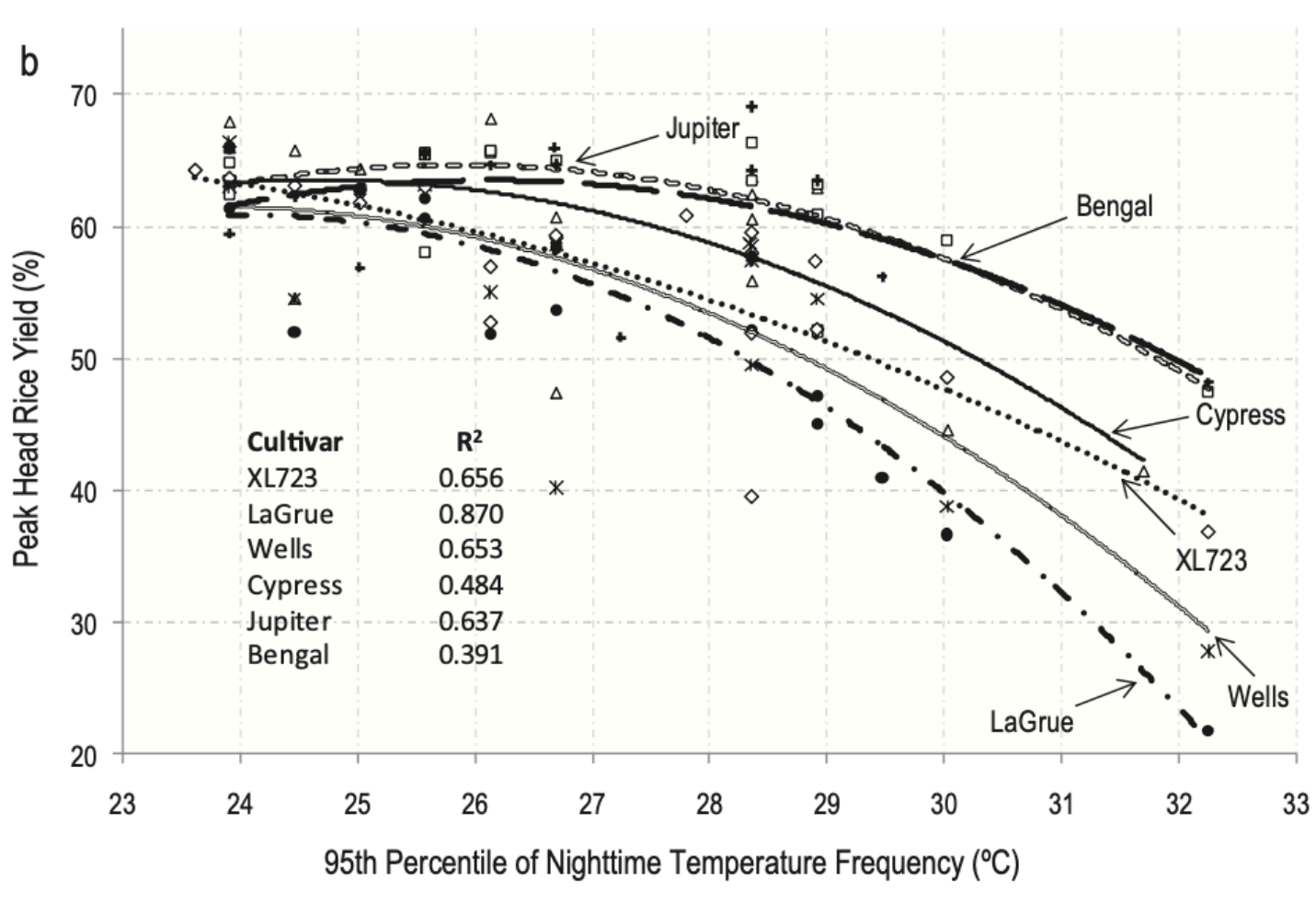
Factors that Affect Grain Quality

The effect of nighttime temperatures during grain filling



Factors that Affect Grain Quality

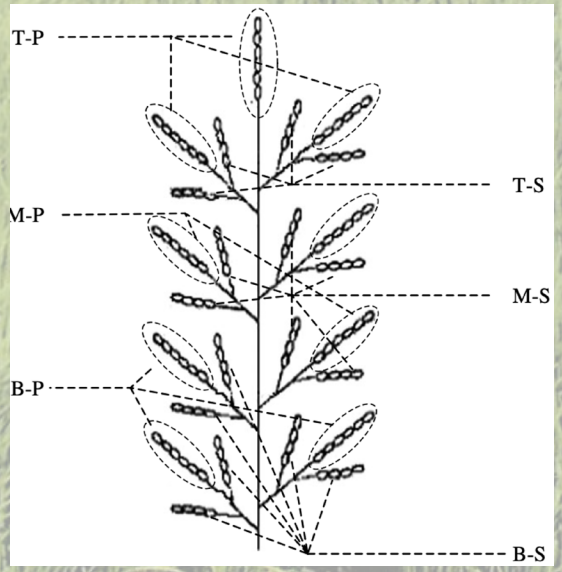
The effect of nighttime temperatures during grain filling

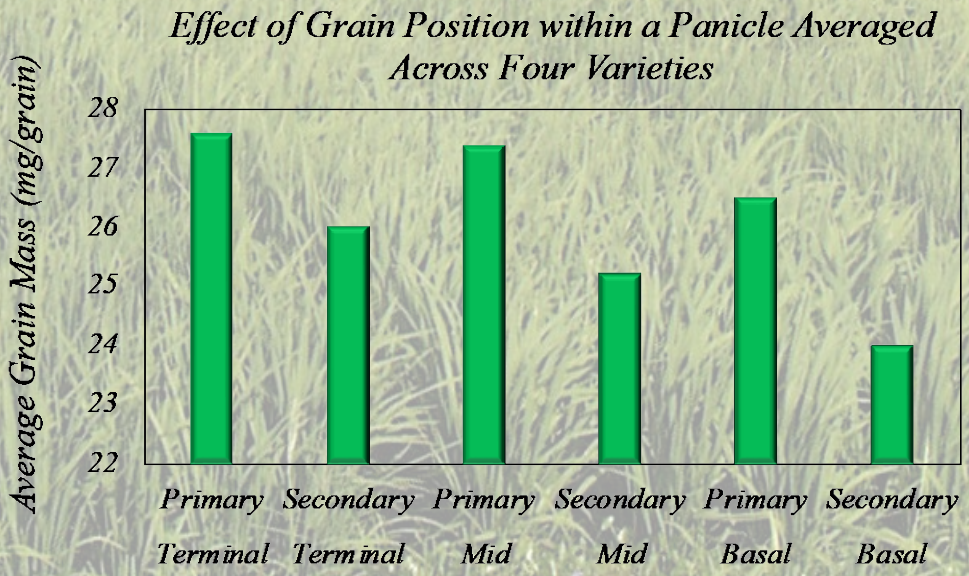


Factors that Affect Grain Quality

Position of grain within a panicle caused by seasonal variation in carbohydrate supply for growth

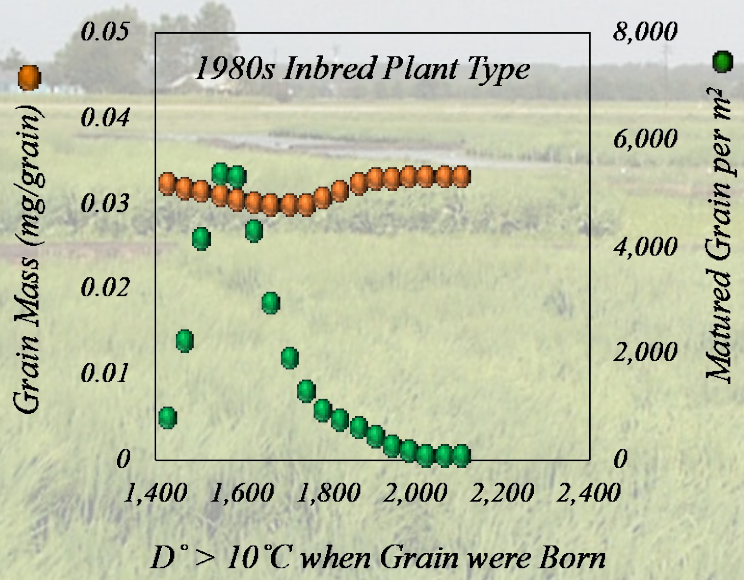
- The size of a grain at maturity is progressively smaller the later the grain is produced on a panicle
- Similarly, later a panicle is produced the smaller the size of its grain, with its latest produced grain usually the smallest

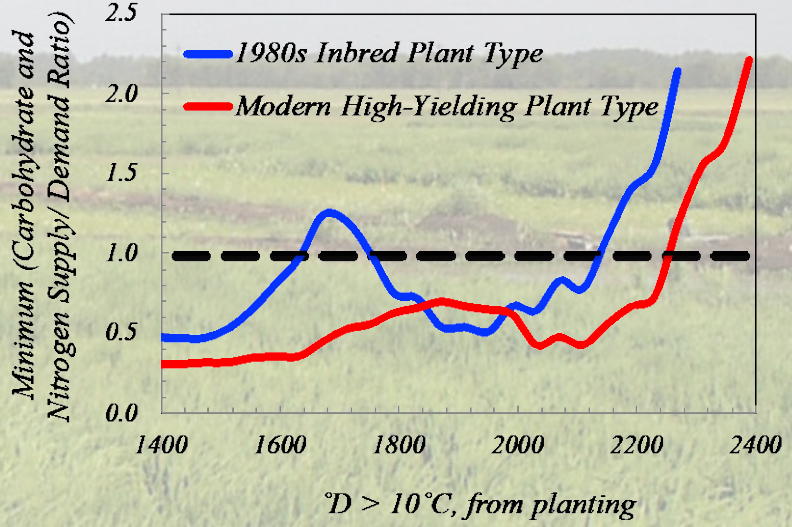


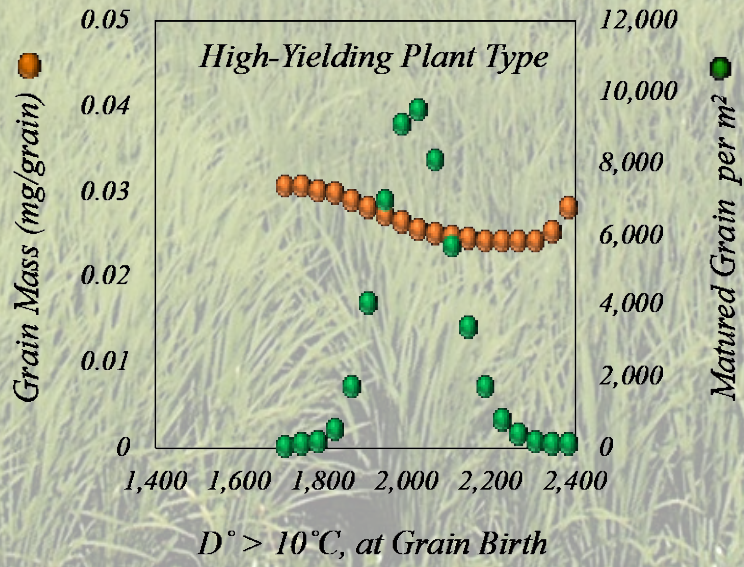


Factors that Affect Grain Quality

A variety's vigor and to a degree its yield potential





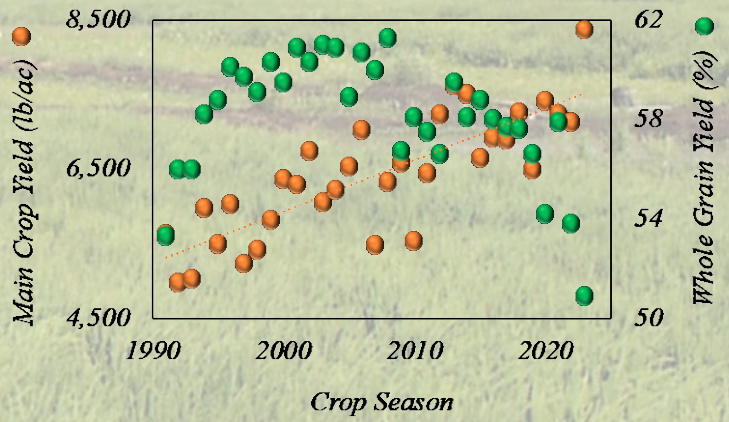


Variety Type	Modern Inbred Grain Size Variability	Average Relative C.V.
Historic Inbreds	0.076	0.603
2011-2020 Inbreds	0.126	1.000
Current Hybrids	0.141	1.120
Future Varieties (focus on yield increase)	0.148	1.175
Future Varieties (focus on yield increase)	0.101	0.802

Tradeoffs between Selecting for Yield versus Grain Quality

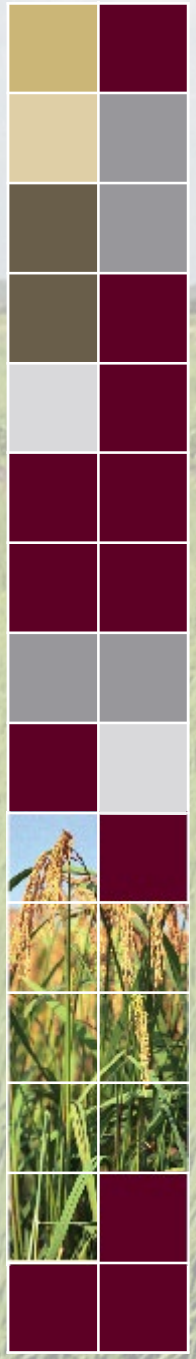
Focus on developing high-yielding plant types

- *Higher yields with decreased grain quality (major increase in chalkiness and grain size variability)*
- *Decreased market price*
- *Possibly continued loss of global markets*



Focus on developing plant types that balance yield increase with increased grain quality

- *Modest expected yield increases*
- *Increased grain quality with decreased chalkiness and grain size variability*
- *Increases in market prices*
- *Reversal of losses of global markets*
- *Require a modification to the current pricing structure to place greater emphasis on grain quality*



Thank You!

http://beaumont.tamu.edu