

Small Grain Variety Update

Langdon REC - 2016

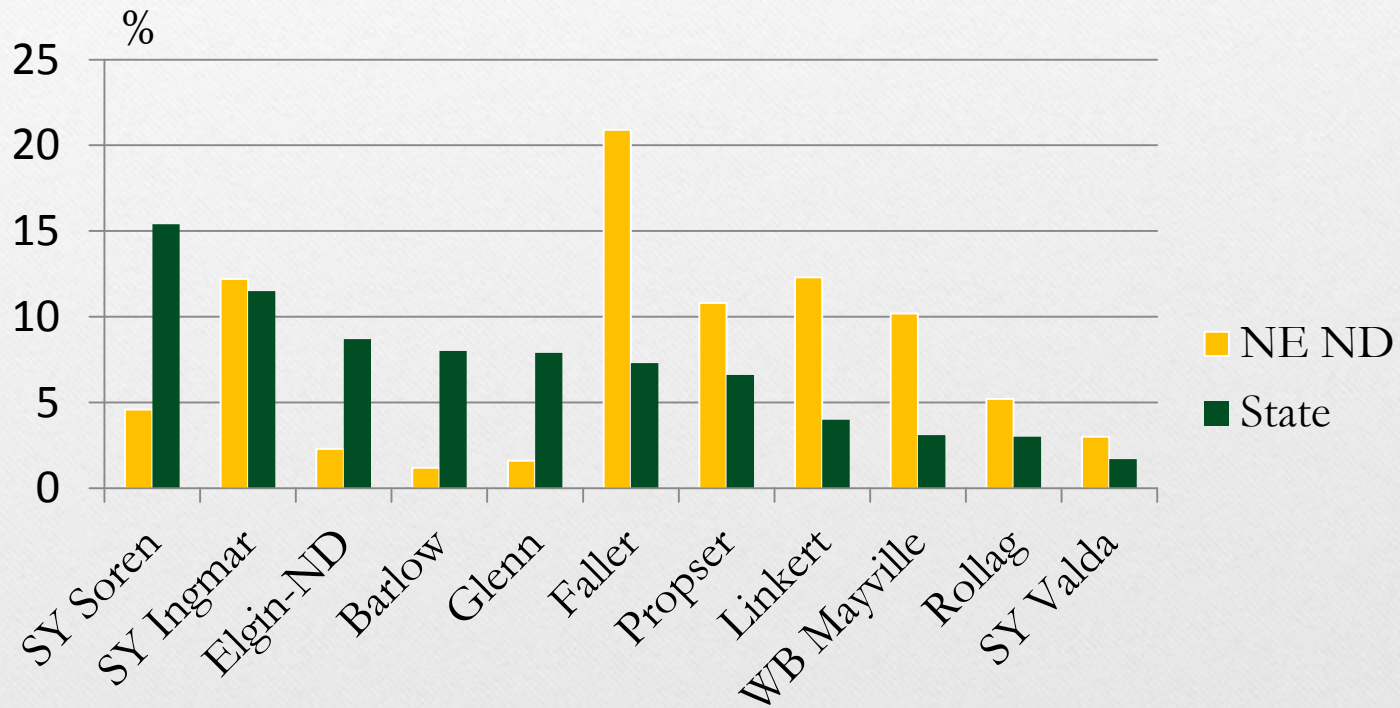
Bryan Hanson - Agronomist

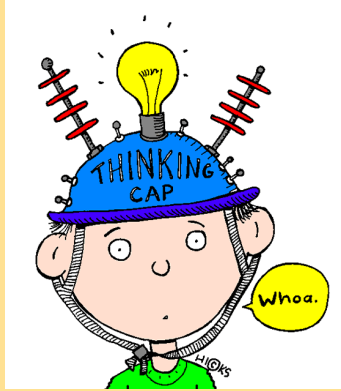
Travis Hakanson - Research Specialist

Lawrence Henry - Research Specialist



HRSW variety acres in 2016





Disease
Resistance

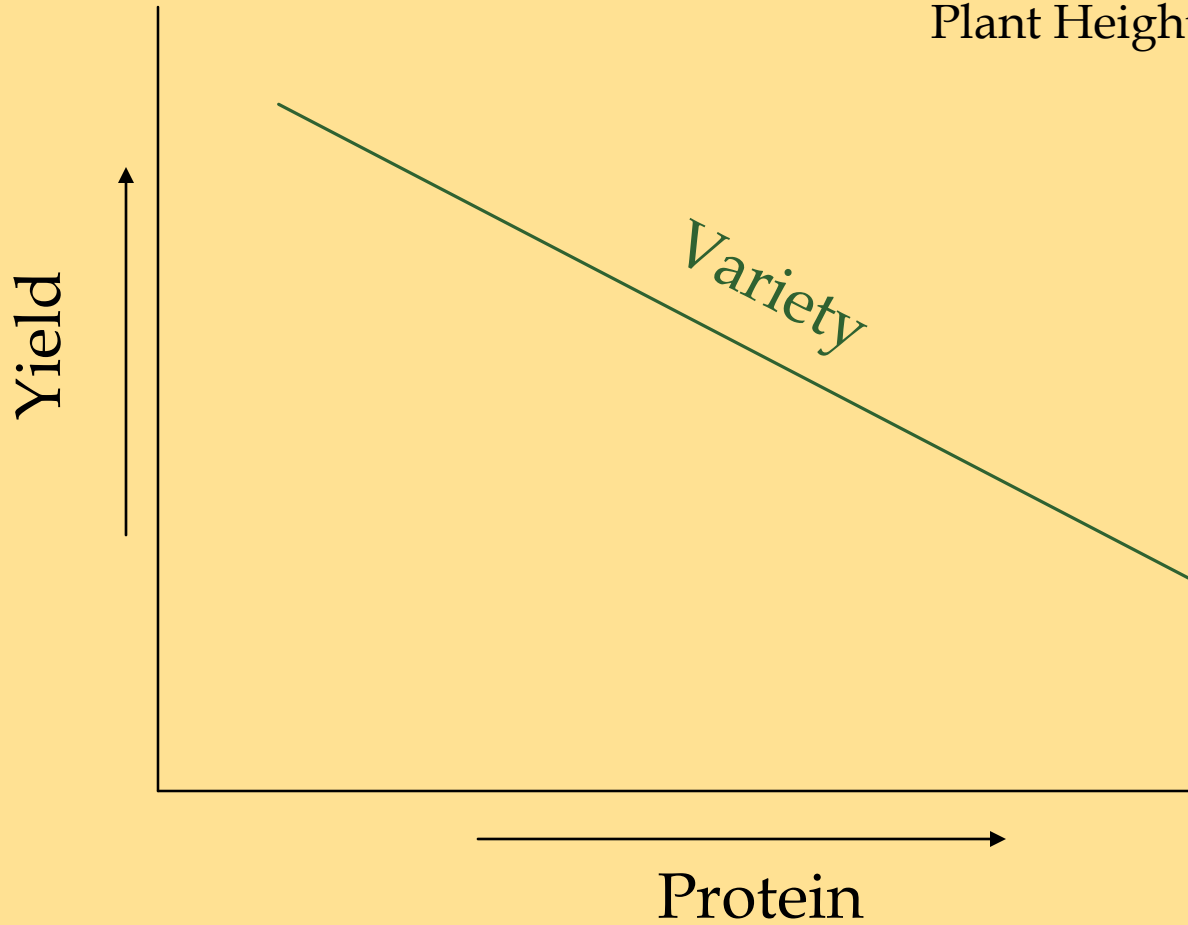
Straw Strength

Plant Height

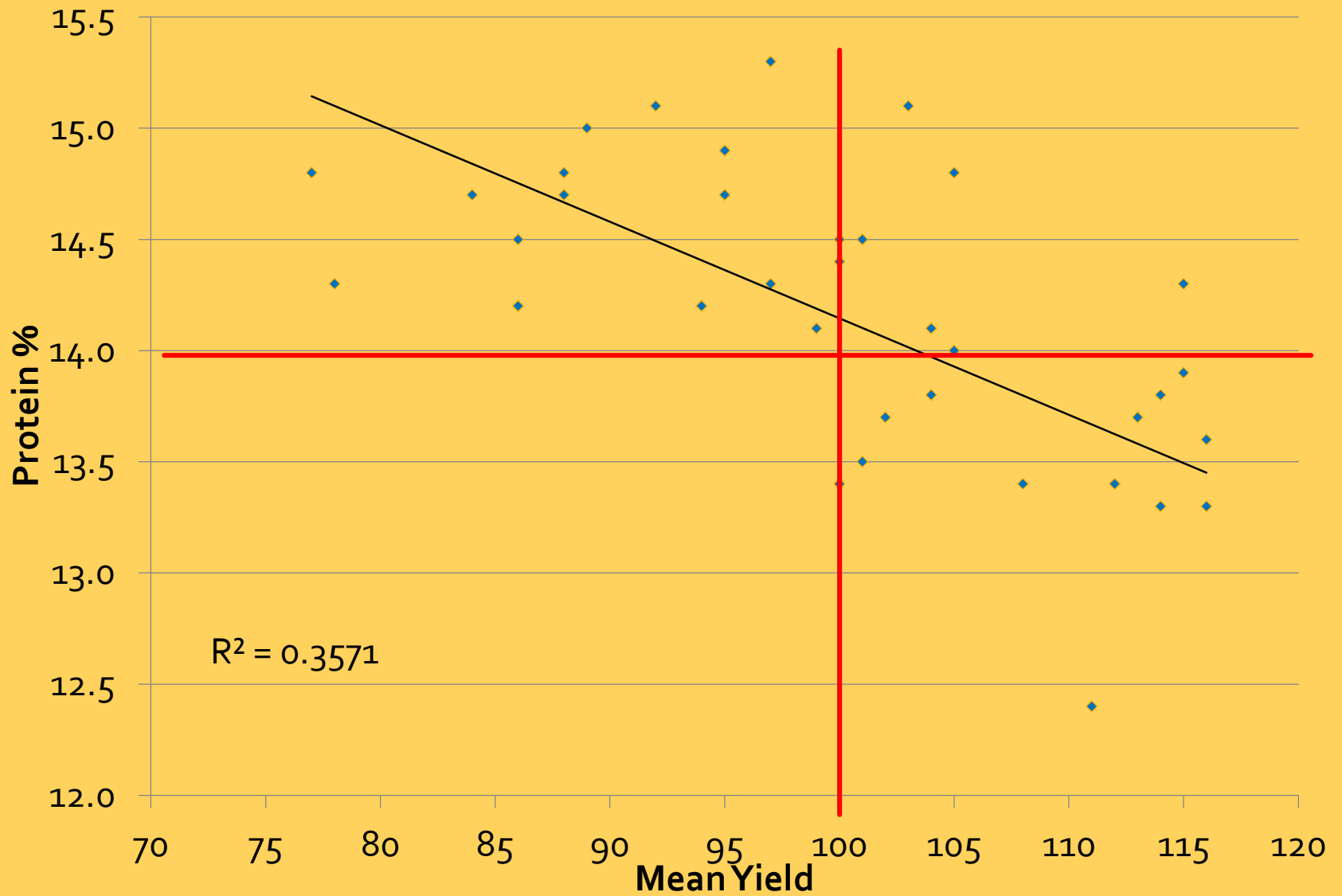
Test Weight

Quality

\$



Langdon 2016 Yield and Protein



Releases in 2016

Variety	Origin
Boost	SD
Surpass	SD
LCS Anchor	Limagrain
Shelly	MN
HRS 3616	Croplan
HRS 3100	Croplan

Releases in 2017

ND VitPro -background is 50% Glenn

- Improved straw strength over current NDSU varieties
- High test weight
- Very high vitreous kernel and protein
- Matures 2 days later than Faller
- Has LR34 rust gene, M-Scab,
- Height is 1 inch shorter than Glenn
- Likely see larger market share in the west

Lang-MN

- Heading 1 day earlier than Prosper,
- Good disease package, good ratings LR, StripeR, BLS, Scab
- Very good test weight and protein
- Height and straw strength similar to Faller
- MN yields similar to Faller

Varieties

NDSU

MN

Glenn
Barlow
Velva
Faller
Prosper
Elgin-ND

Rollag
Linkert
Bolles
Shelly



Varieties

SD

Syngenta/AgriPro

Prevail
Focus
Surpass
Boost

SY Soren
SY Rowyn
SY Ingmar
SY Valda



Varieties

Limagrain

LCS Breakaway
LCS Iguacu
LCS Nitro
LCS Pro
LCS Prime
LCS Anchor

Croplan

HRS 3361
HRS 3419
HRS 3504
HRS 3530
HRS 3616
HRS 3100

Varieties

Monsanto/Westbred

WB Mayville

WB 9507

WB 9653

Meridian

MS Stingray

MS Chevelle

Pulse-USA

Redstone

Prestige

21st Century Genetics

TCG-Cornerstone

TCG-Spitfire

TCG-Wildfire

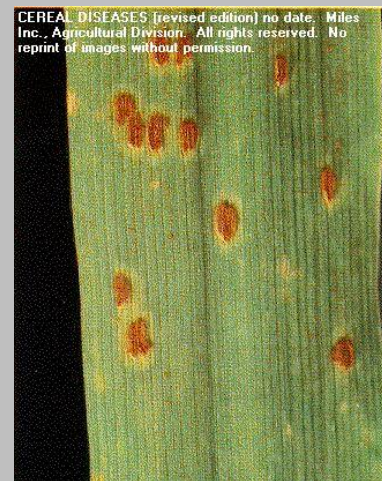


Leaf rust reaction

LCS Breakaway	R
MS Chevelle	R
WB9653	R
SY Valda	R
WB Mayville	R
LCS Nitro	R
Redstone	R
SY Rowyn	MR
SY Soren	MR
HRS 3419	MR
Bolles	MR
Prevail	MR
Forefront	MR
SY Ingmar	MR
WB9507	MR
MS Chevelle	MR
Linkert	MR
WB9653	MR
Focus	MR/MS
Rollag	MR/MS
Shelly	MR/MS
Surpass	MR/MS
TCG-Cornerstone	MR/MS

HRS 3530	MS
Barlow	MS
Elgin-ND	MS
Glenn	MS
LCS Iguacu	MS
MS Stingray	MS
LCS Prime	MS
LCS PRO	MS
Prosper	MS
TCG-Spitfire	MS
TCG-Wildfire	MS
Velva	MS
Prestige	MS
Faller	S

Leaf Rust

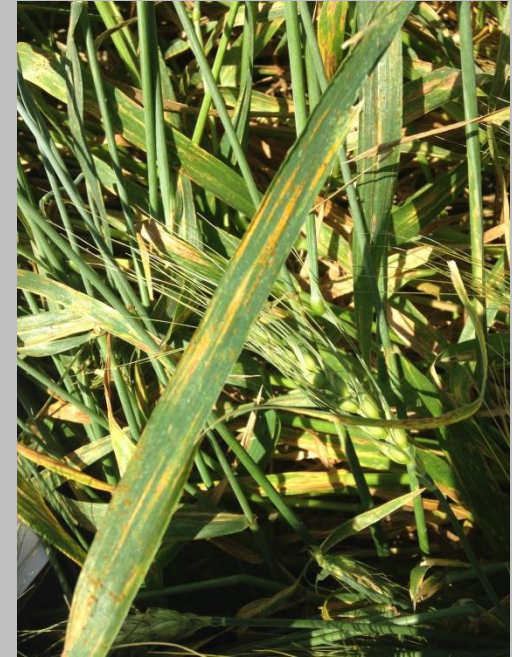


Stripe Rust

Stripe rust reaction

Linkert	R
Rollag	R
HRS 3419	R
MS Chevelle	MR
Bolles	MR
LCS Nitro	MR
Prevail	MR
Barlow	M
Elgin-ND	M
Glenn	M
SY Rowyn	M

SY Valda	MS
LCS Breakaway	MS
WB Mayville	MS
SY Ingmar	MS
LCS Iguacu	MS
SY Soren	MS
Velva	MS
HRS 3361	MS
Focus	MS
WB9653	S
WB9507	S
MS Stingray	S
Prosper	S
Faller	S
HRS 3530	S



Scab Reaction

Glenn	MR
Rollag	MR
HRS 3419	MR
WB9507	MR
Boost	MR
Surpass	MR
Focus	MR
MS Stingray	MR
SY Valda	MR
Barlow	M
Shelly	M
Bolles	M
Elgin-ND	M
Faller	M
LCS Iguacu	M
LCS Breakaway	M
WB9653	M
LCS Nitro	M
LCS Pro	M
Linkert	M
Prosper	M
Linkert	M

SY Rowyn	M
SY Ingmar	M
SY Soren	M
Prevail	M
MS Chevelle	M
HRS 3361	M
Velva	MS
TCG-Cornerstone	MS
TCG-Spitfire	MS
TGC-Wildfire	MS
WB Mayville	S

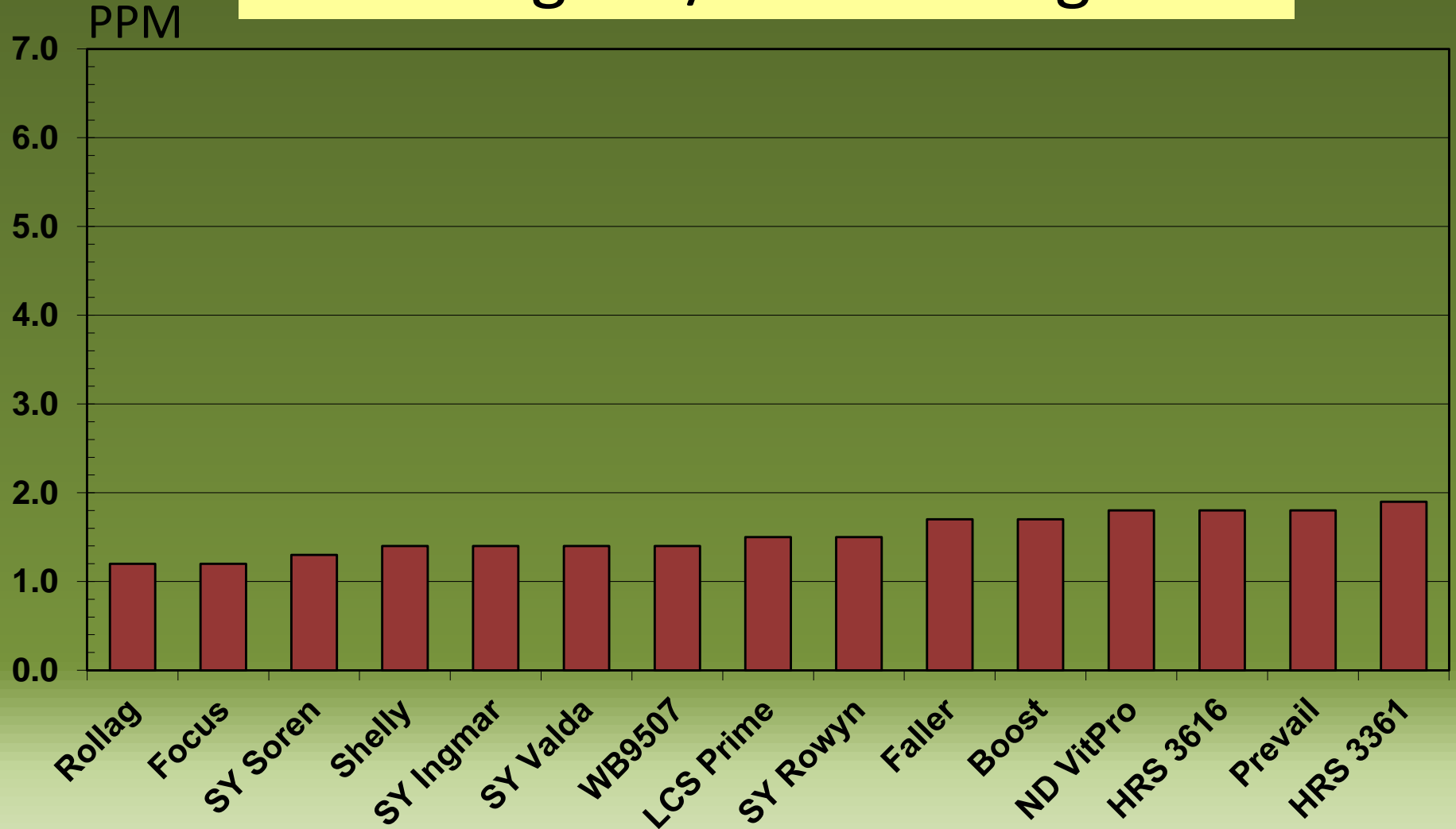
FHB - Scab

- Moderate-Severe FHB pressure in 2016 in northern regions of the state.

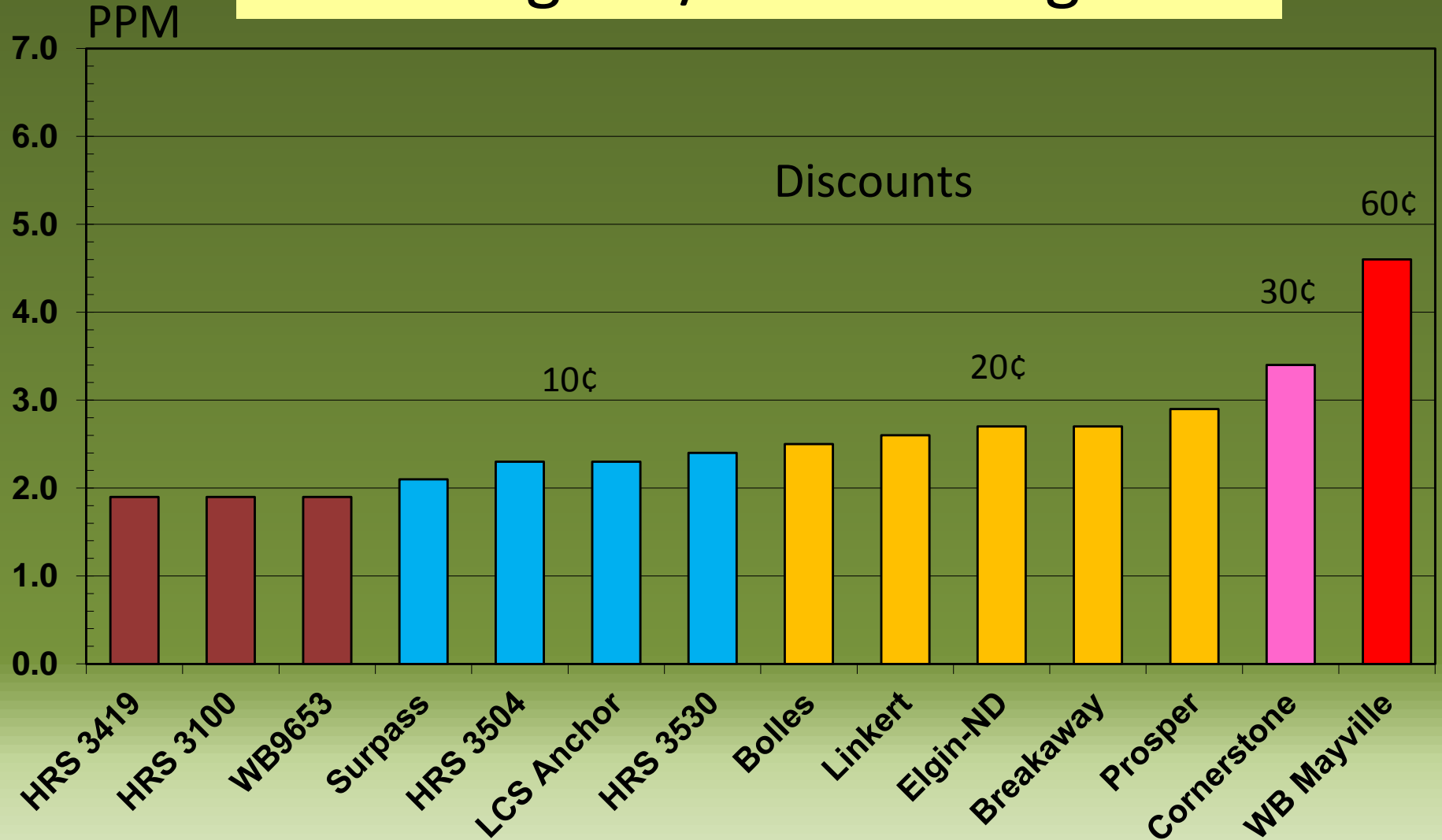


2016 HRSW DON

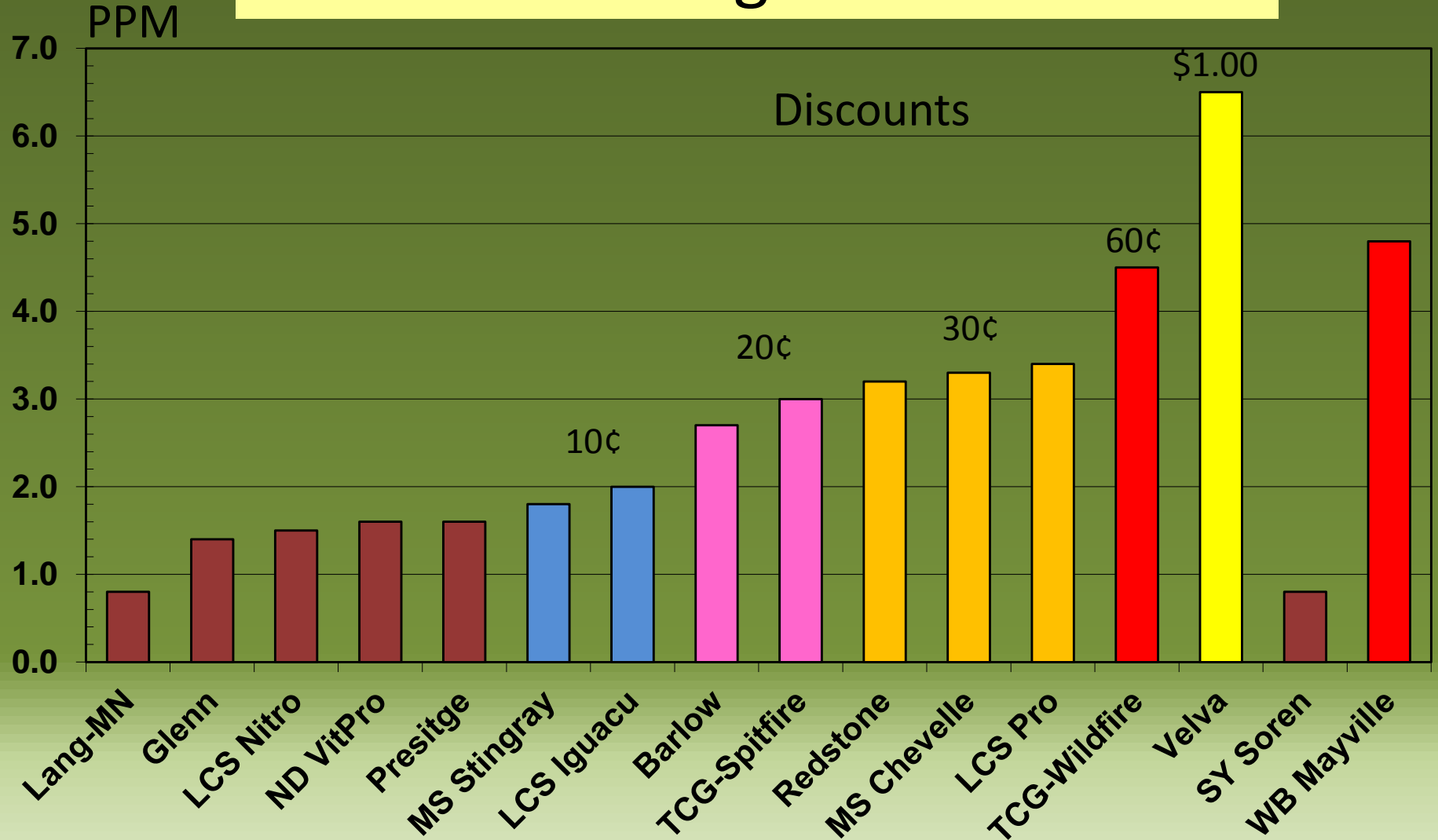
Langdon/Cavalier Avg.



2016 HRSW DON Langdon/Cavalier Avg.



2016 HRSW DON Langdon



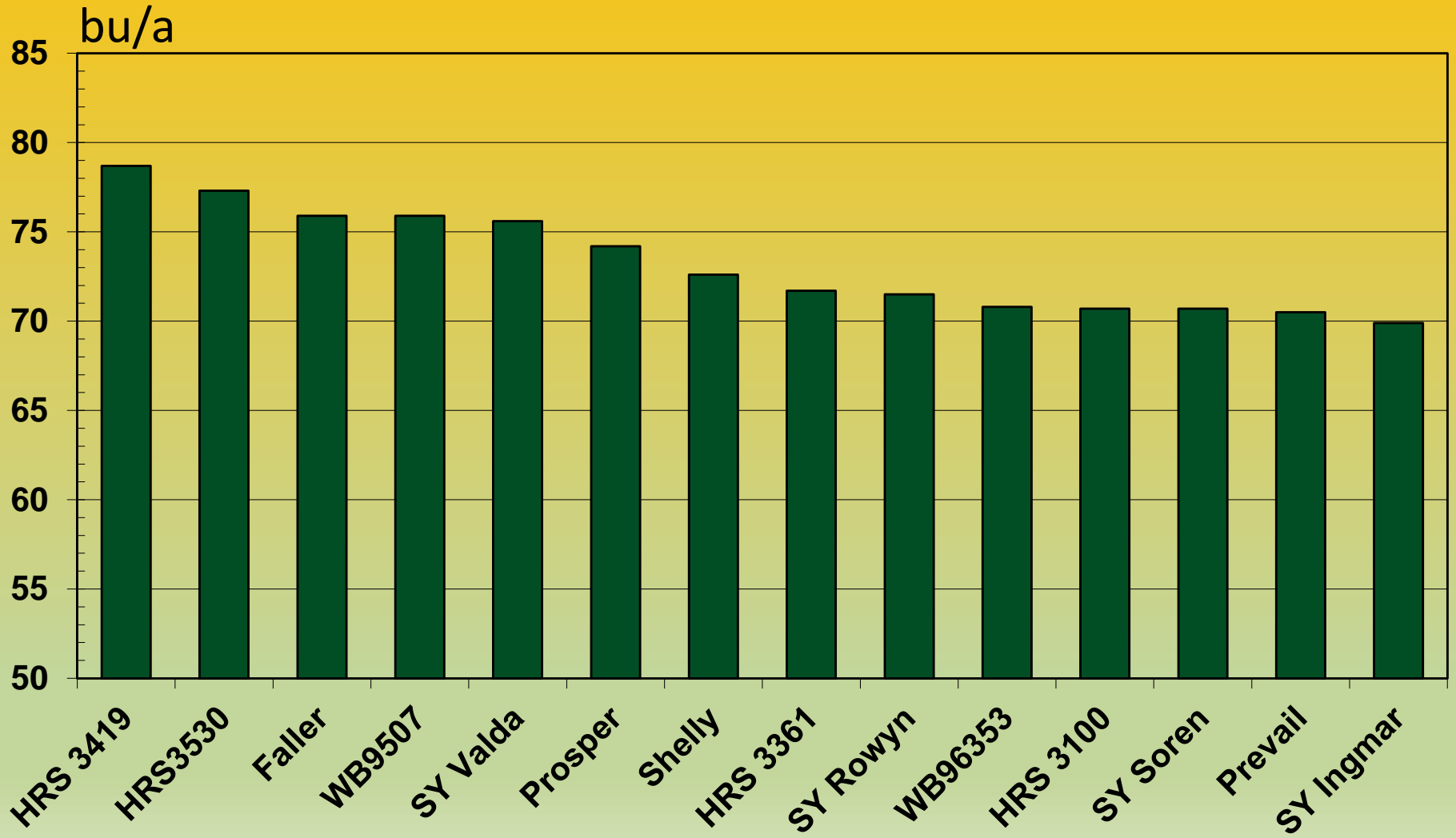
Yield and protein content of top yielding varieties at Langdon (Langdon, Cavalier, Park River, Pekin, Cando), 2016

Variety	Yield (bu/a)	Protein (%)
HRS 3419	78.7	13.3
HRS 3530	77.3	14.2
Faller	75.9	13.6
WB9507	75.9	13.6
SY Valda	75.6	14.0
Prosper	74.2	13.7
Shelly	72.6	13.9
HRS 3361	71.7	13.6
SY Rowyn	71.5	13.9
WB 9653	70.8	13.4

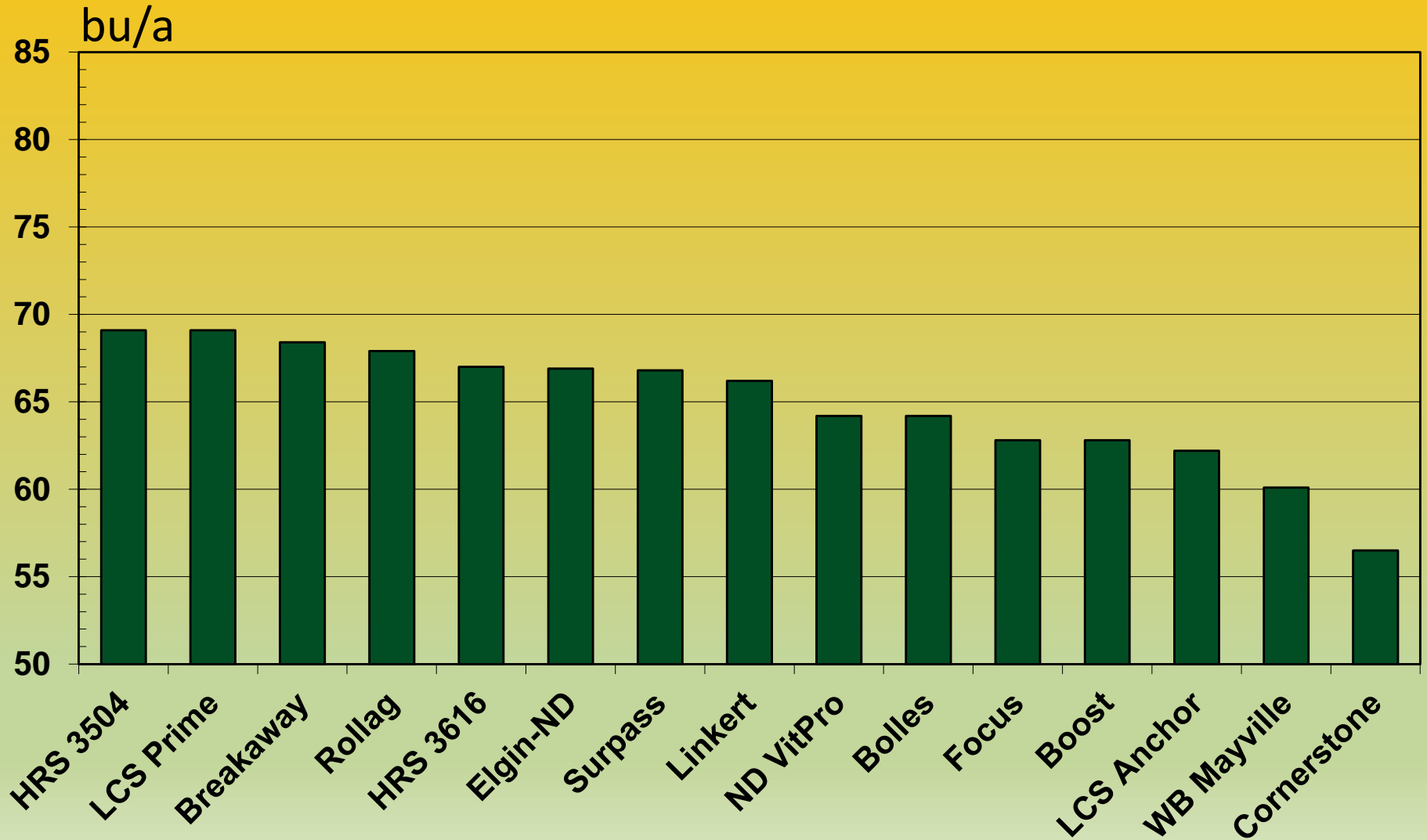
Protein and yield content of top protein varieties at Langdon (Langdon, Cavalier, Park River, Pekin, Cando), 2016

Variety	Yield (bu/a)	Protein (%)
Bolles	64.2	15.7
HRS 3616	67.0	15.2
Boost	62.8	14.9
ND VitPro	64.2	14.8
Rollag	67.9	14.8
SY Ingmar	69.9	14.7
Linkert	66.2	14.6
WB Mayville	60.1	14.6
LCS Anchor	62.2	14.6
Elgin-ND	66.9	14.5
TCG-Cornerstone	56.5	14.5

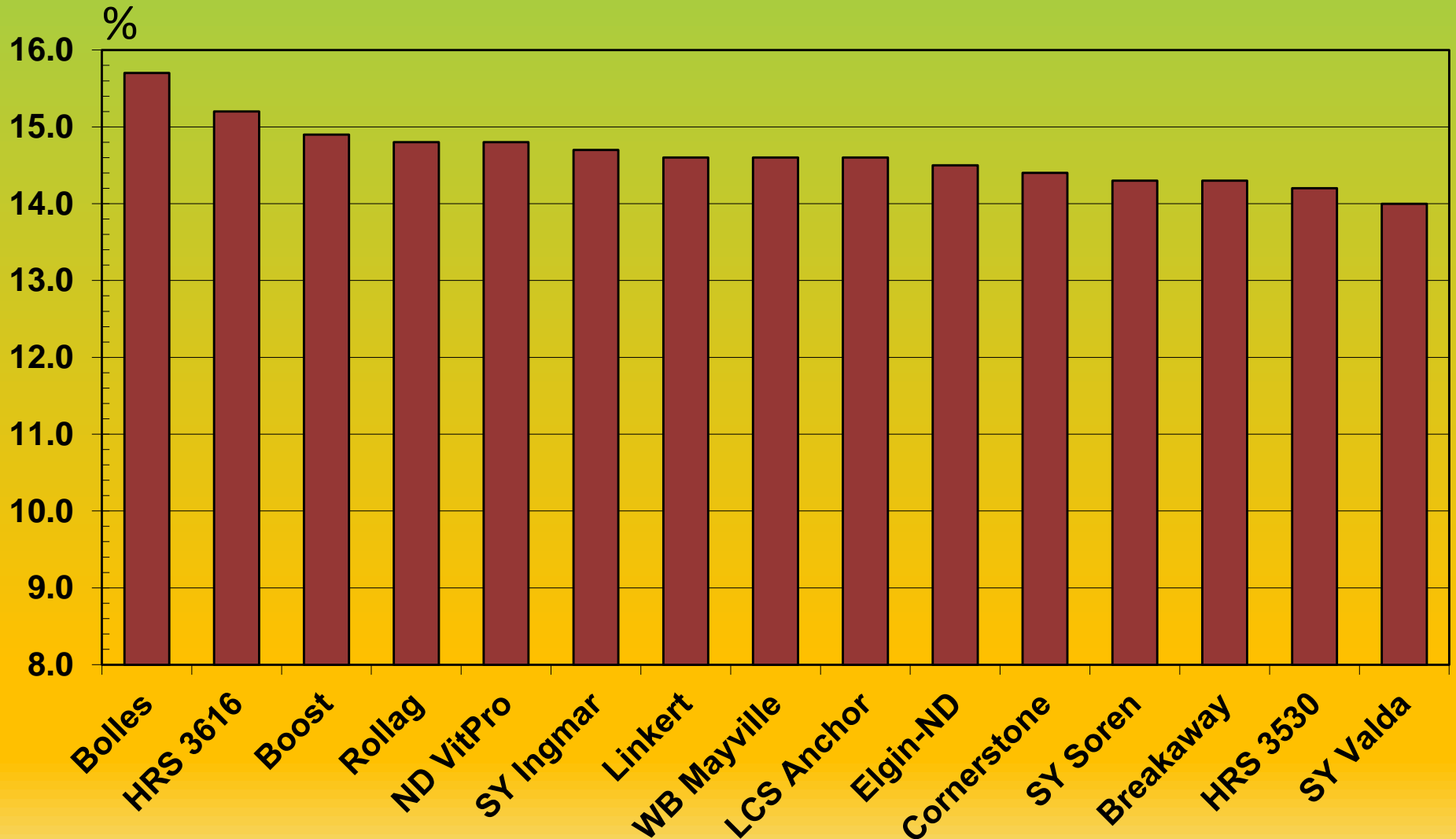
2016 HRSW 5-site Yield



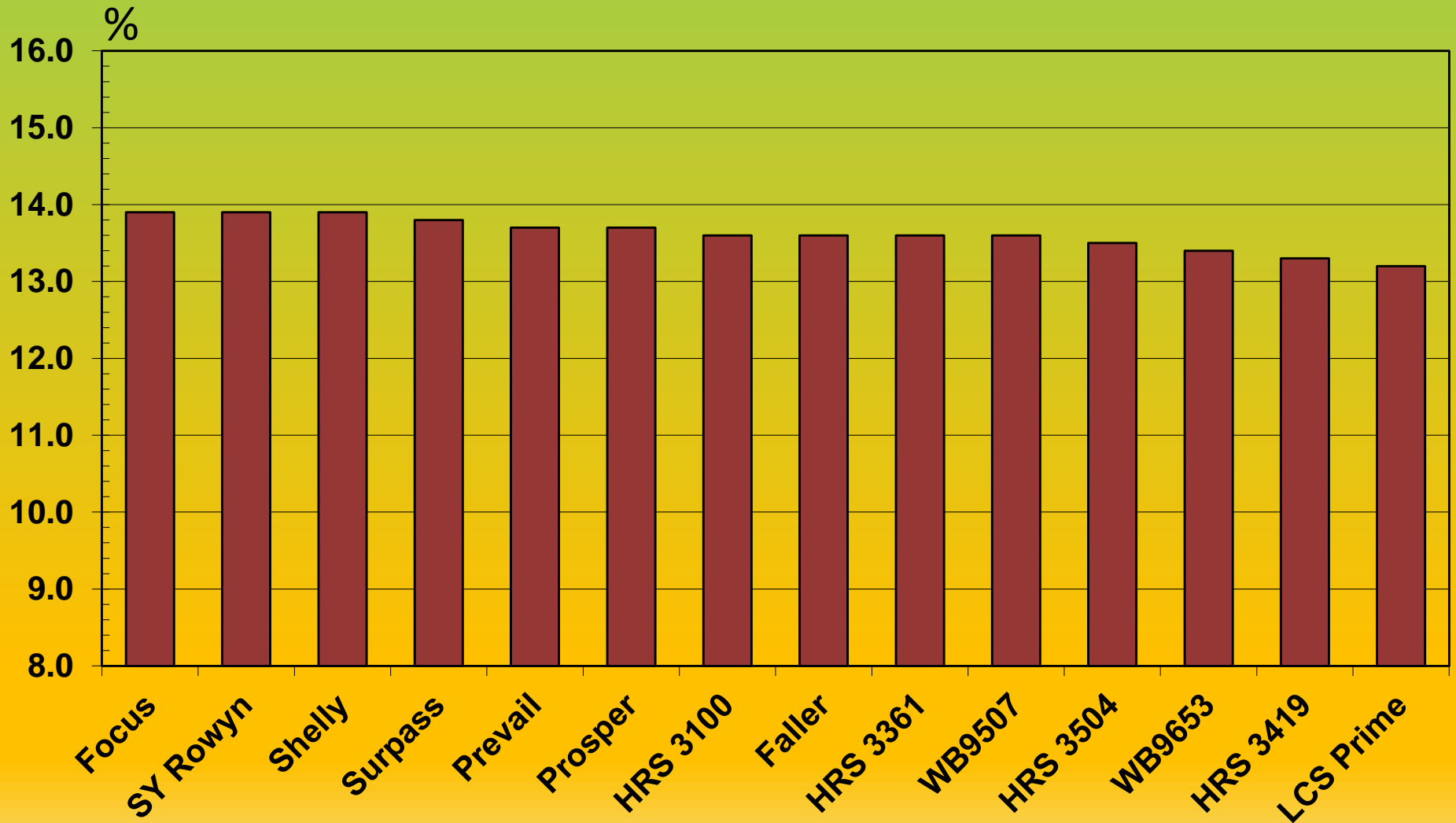
2016 HRSW 5-site Yield



2016 HRSW 5-site Protein



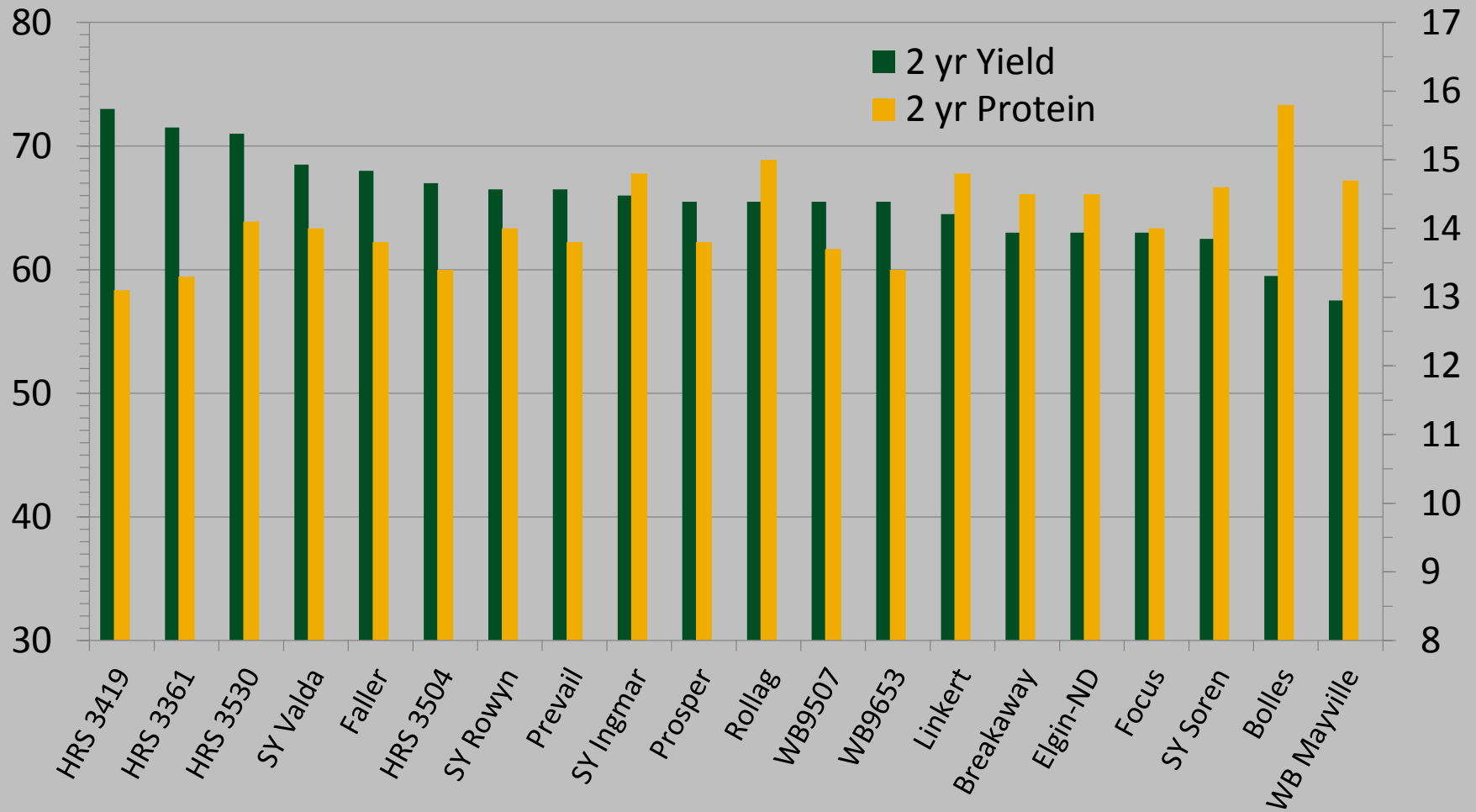
2016 HRSW 5-site Protein



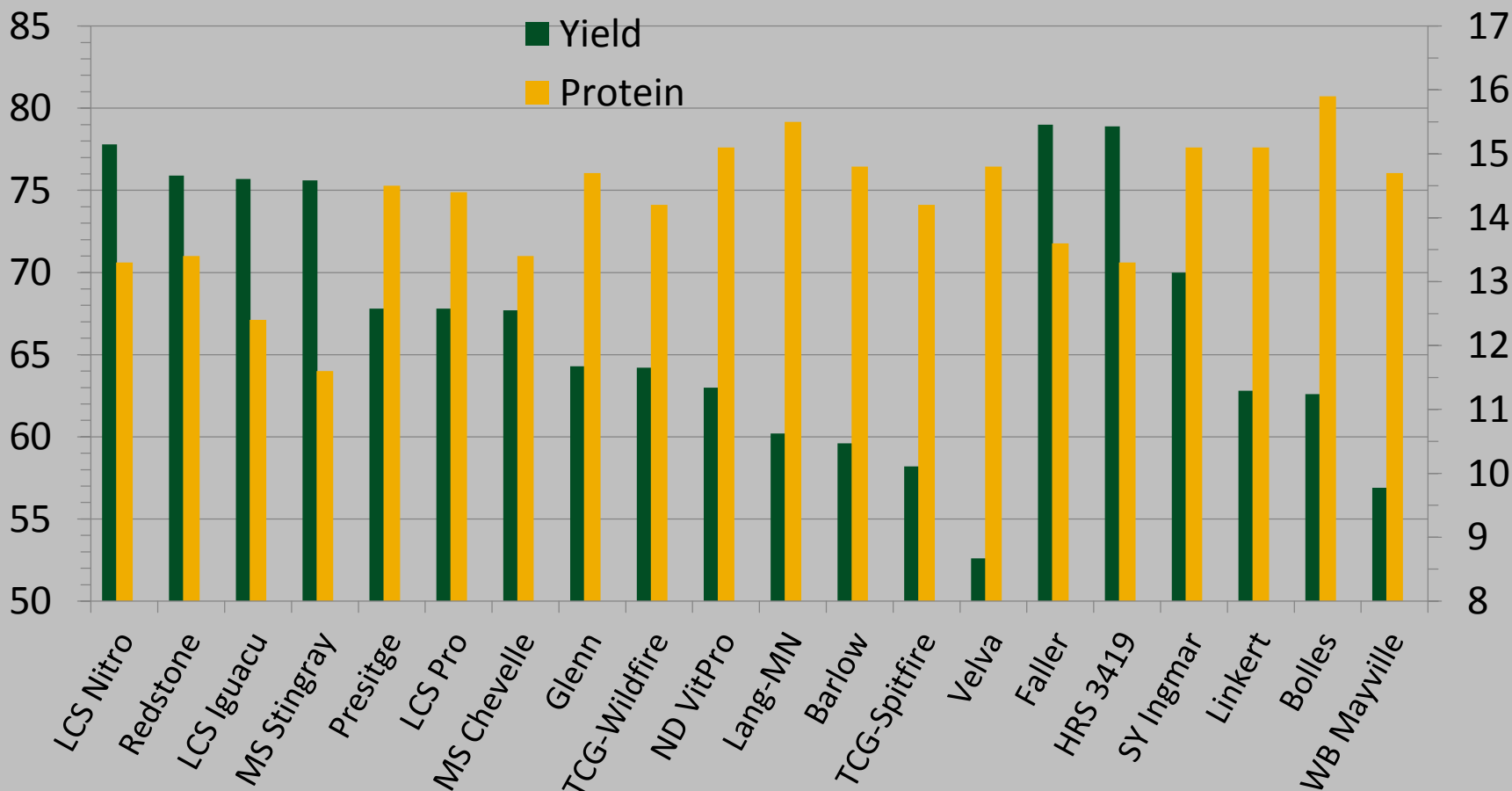
2016 ND VitPro and Lang-MN

Langdon-Variety	Yield - bu/a	Protein %
Faller	79.0	13.6
Bolles	62.6	15.9
ND VitPro	63.0	15.1
Lang-MN	60.2	15.5
Carrington-Variety	Yield - bu/a	Protein %
Faller	88.4	13.6
Bolles	54.5	16.8
ND VitPro	77.6	15.1
Lang-MN	75.9	14.7

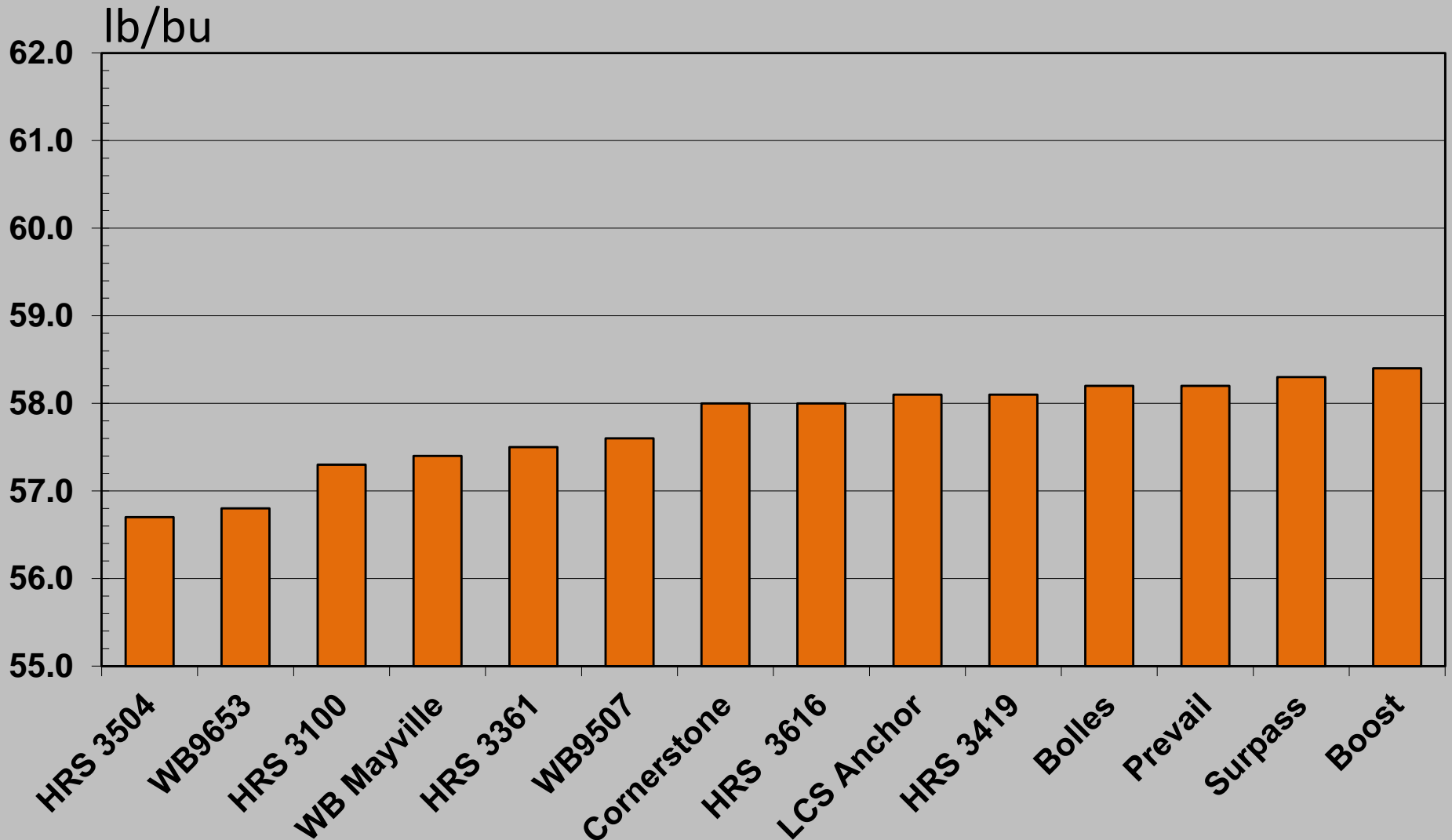
2yr (10 site) yield and protein averages for HRSW varieties at Langdon and off-station, 2015-2016.



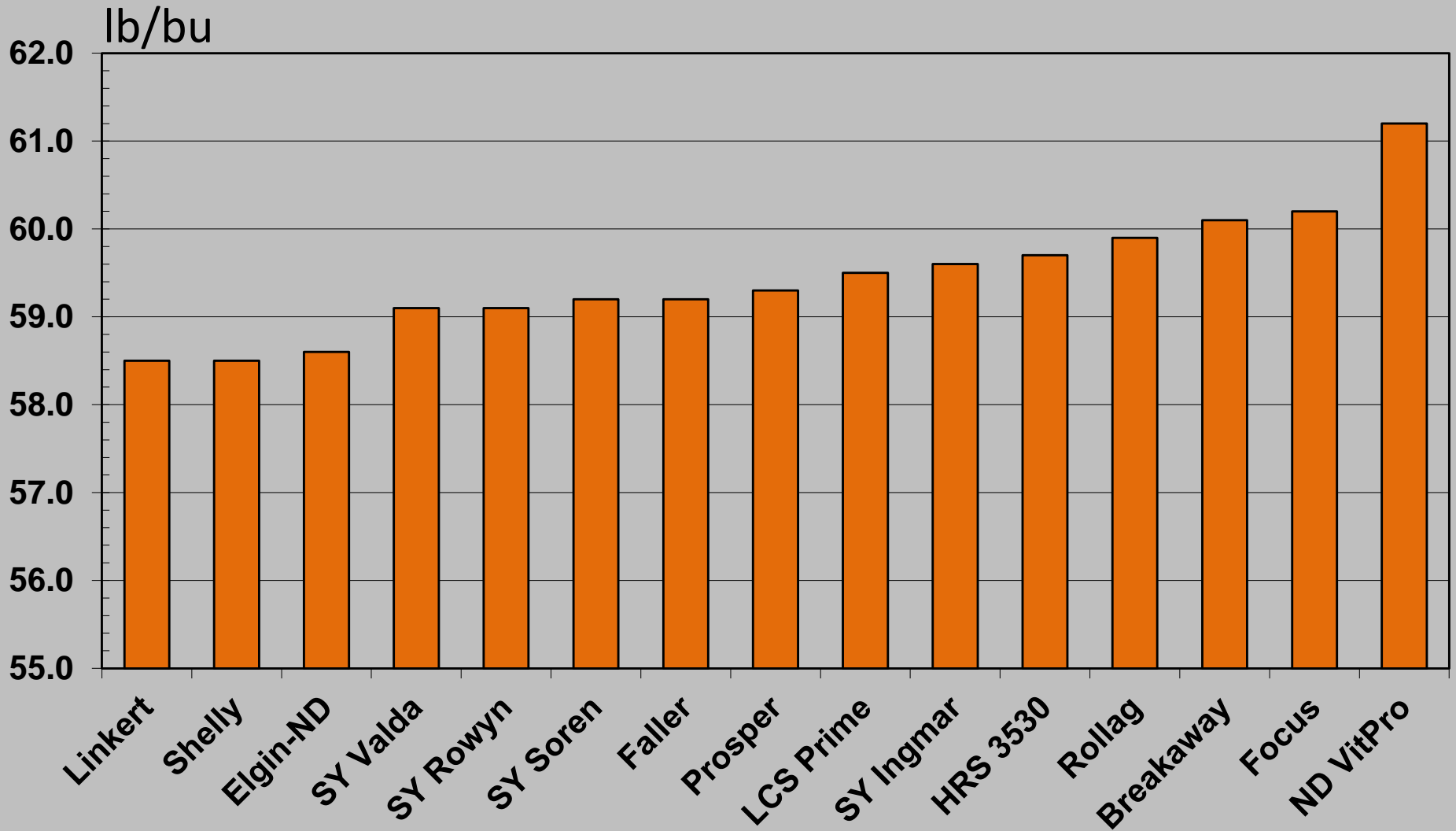
Comparative yield of selected HRSW varieties in Langdon, 2016



2016 HRSW 5-site Test Weight



2016 HRSW 5-site Test Weight



Days to Head - Statewide

61-62	63-64	65-66	67-68
LCS Prime	Boost	Elgin-ND	HRS 3419
Barlow	HRS 3378	Faller	LCS Pro
Surpass	LCS Breakaway	HRS 3361	MS Stingray
SY Rowyn	Linkert	Shelly	HRS 3504
Glenn	MS Chevelle	LCS Iguacu	HRS 3530
Focus	SY Valda	TCG-Spitfire	Redstone
Prestige	Prevail	Prosper	
WB9507	Rollag	Bolles	
ND VitPro	HRS 3616	LCS Nitro	
	SY Ingmar	LCS Pro	
	SY Soren	WB9653	
	WB Digger		
	WB Mayville		
	TCG-Cornerstone		
	TCG-Wildfire		
	LCS Anchor		

Plant Height (in) - Statewide

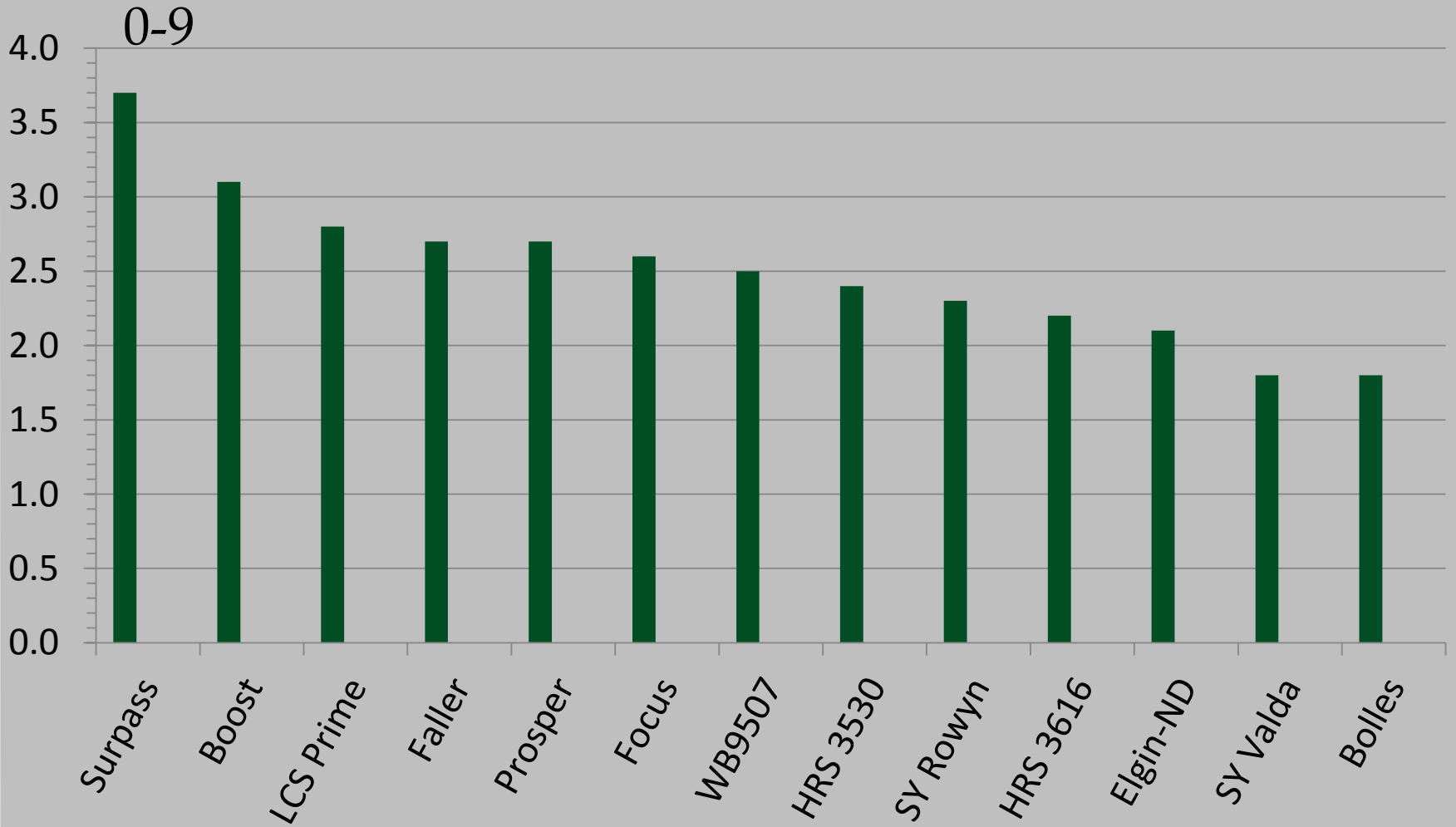
30-31	32-33	34-35	36-37
HRS 3504	HRS 3616	Barlow	Elgin-ND
Linkert	HRS 3361	Faller	Glenn
MS Chevelle	HRS 3100	MS Stingray	HRS 3530
LSC Anchor	HRS 3419	Prosper	HRS 3100
SY Ingmar	LCS Nitro	Velva	TCG-Spitfire
SY Rowyn	LCS Breakaway	Focus	TCG-Wildfire
SY Soren	LCS Iguaca	Shelly	
WB Mayville	LCS Pro	ND VitPro	
Prestige	Bolles		
SY Valda	Redstone		
WB9653	Rollag		
Boost	LCS Prime		
Prevail	WB9507		
Surpass			
TCG-Cornerstone			

Straw Strength- Statewide

1=strongest, 9=weakest

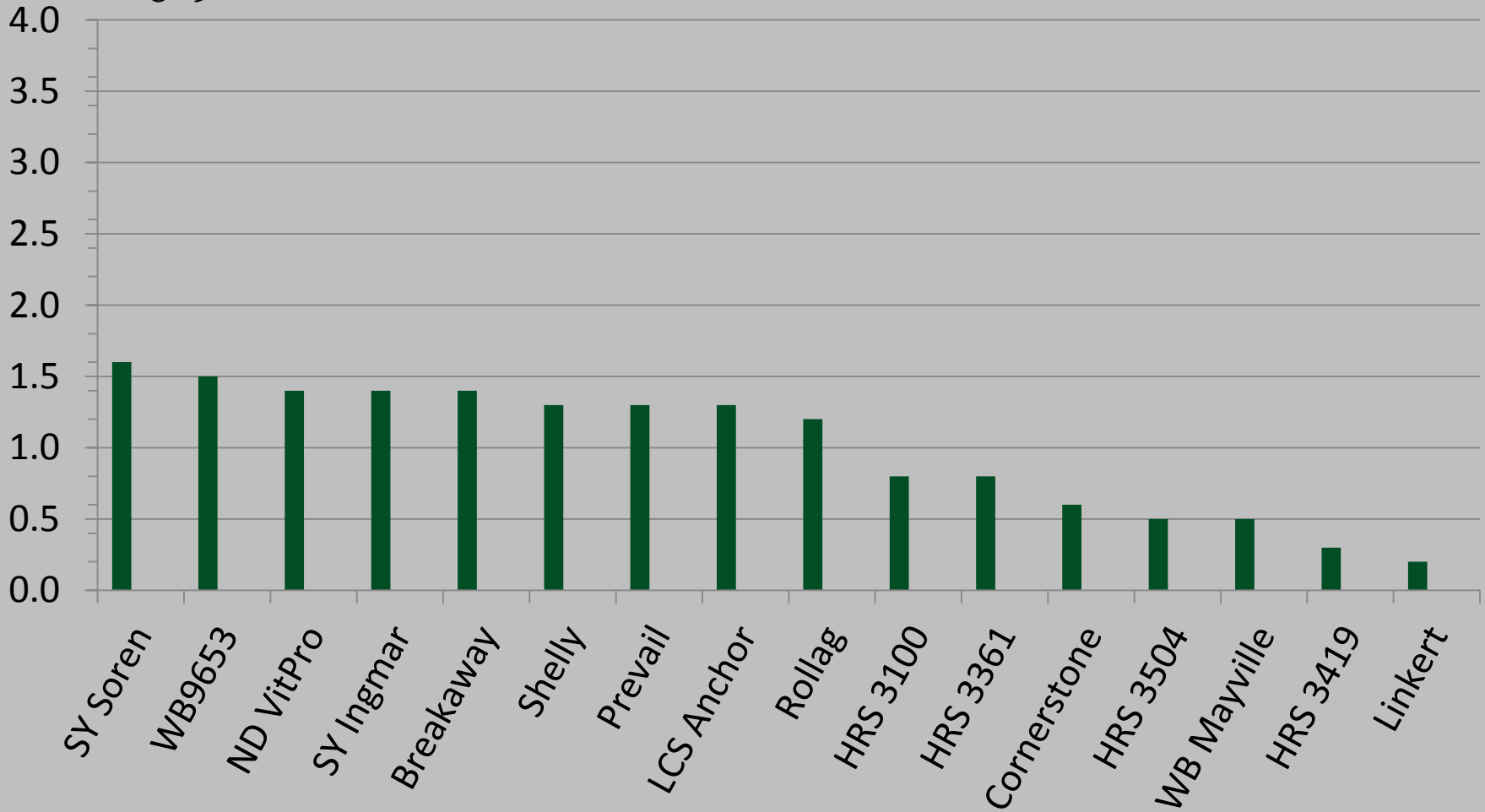
2	3	4	5	6
HRS 3419	HRS 3361	LCS Prime	Elgin-ND	Barlow
Linkert	LCS Iguaca	Glenn	Faller	
	HRS 3504	Velva	Shelly	
	Rollag	HRS 3616	LCS Breakaway	
	Prestige	Prevail	Surpass	
	LCS Anchor	TCG-Cornerstone	MS Chevelle	
	MS Stingray	SY Rowyn	Prosper	
	SY Ingmar	TCG-Spitfire	Boost	
	SY Soren	Bolles	WB9507	
	WB Mayville	HRS 3530	Focus	
	Redstone	LCS Nitro	LCS Pro	
		SY Valda	TCG-Wildfire	
		WB9653		
		ND VitPro		

2016 LODGING 5-SITE



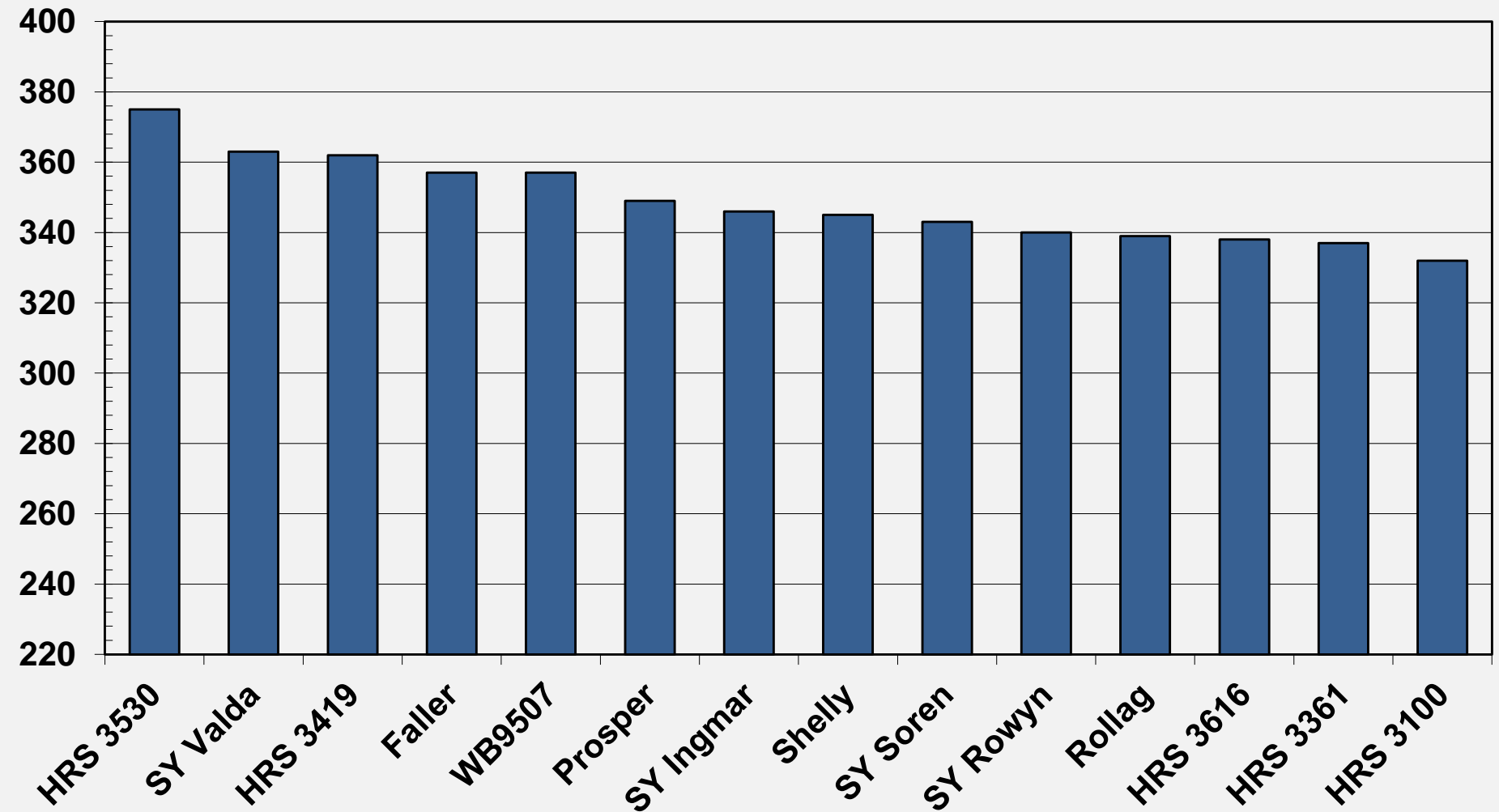
2016 LODGING 5-SITE

0-9



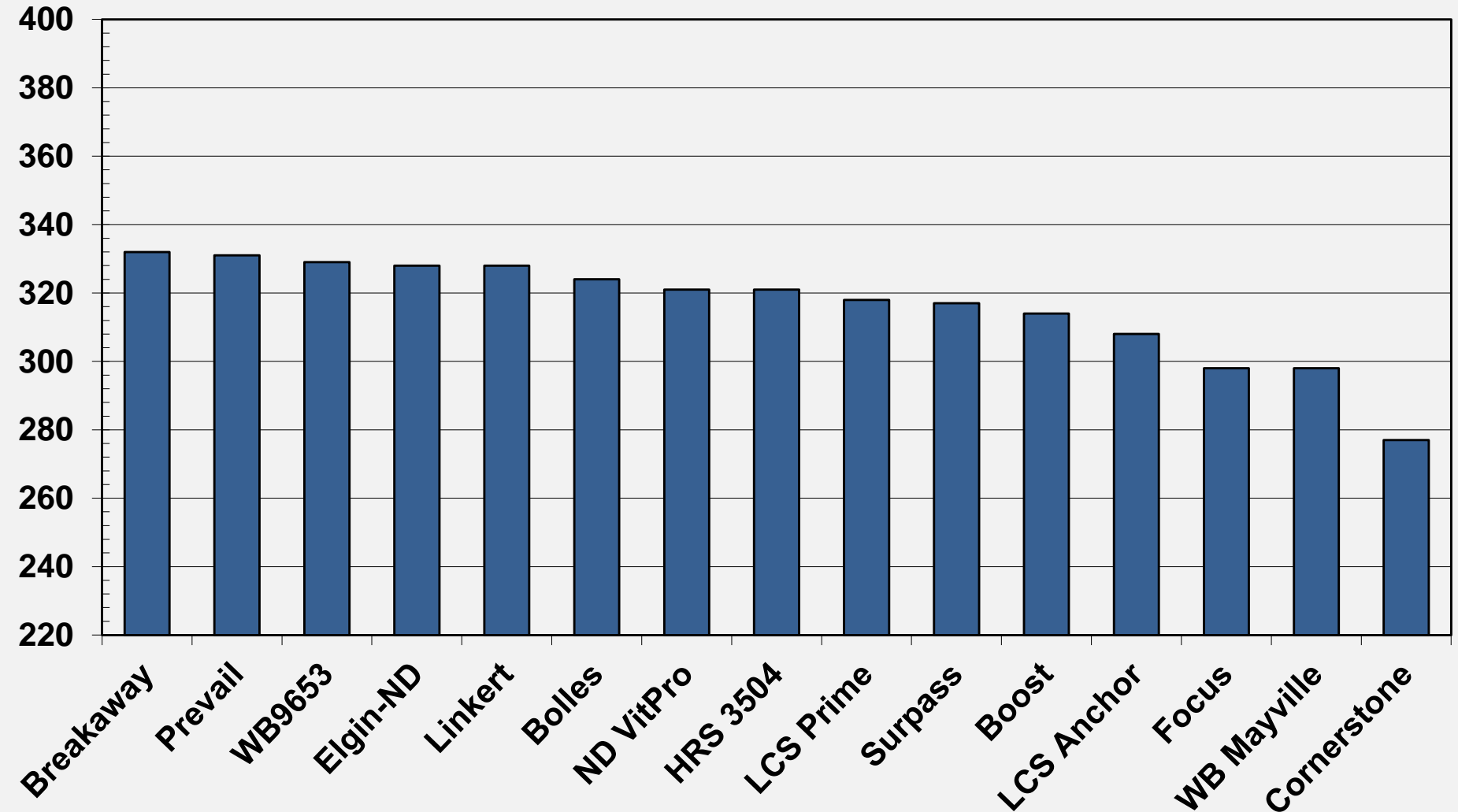
2016 HRSW 5-site - \$Return/a

Langdon Dec 9 quote. \$4.80/bu, protein discount/premium. \$0.05/fifth. 12% to 15% protein



2016 HRSW 5-site - \$Return/a

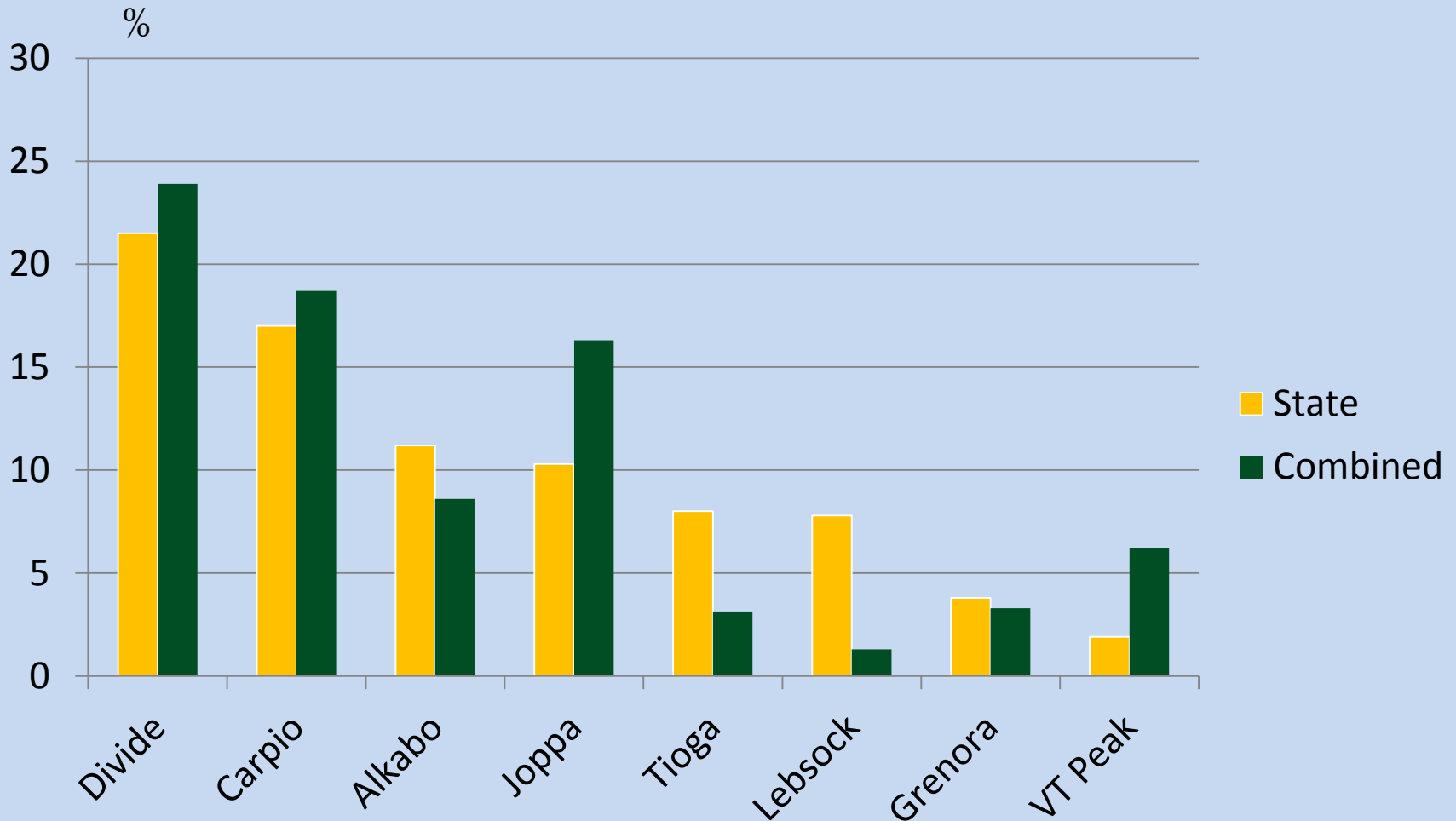
Langdon Dec 9 quote. \$4.80/bu, protein discount/premium. \$0.05/fifth. 12% to 15% protein



Durum



Durum variety acres in 2016



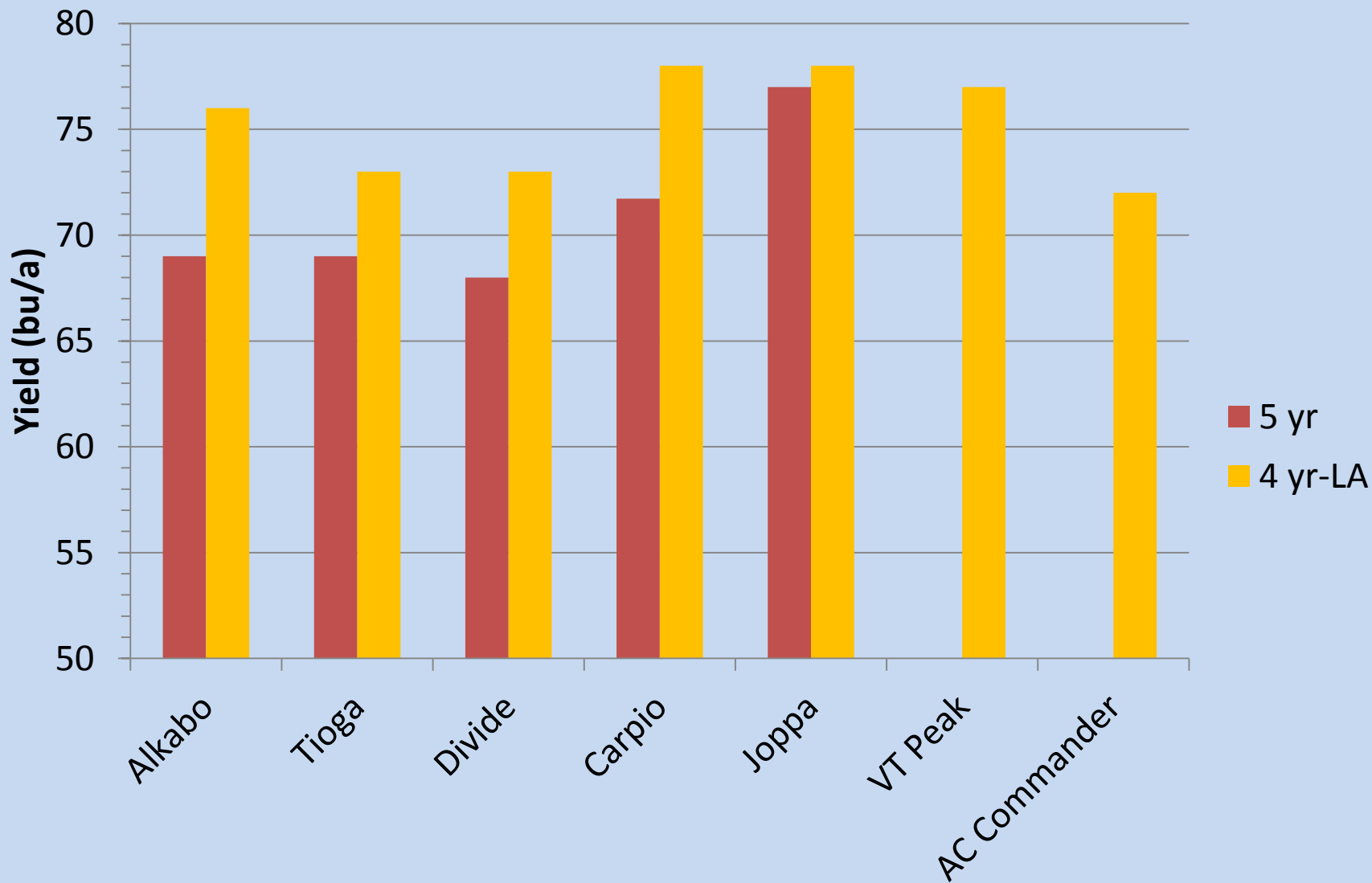
Durum Quality

2010-2015 33 location/years

Variety	Gluten Index
Carpio	91
Joppa	83
Alkabo	47
Divide	76
Grenora	63
Mountrail	22
Tioga	76
Commander	89
Strongfield	65

Yield of durum varieties, 5yrs- 13 locations – Langdon REC

4 yr - Langdon

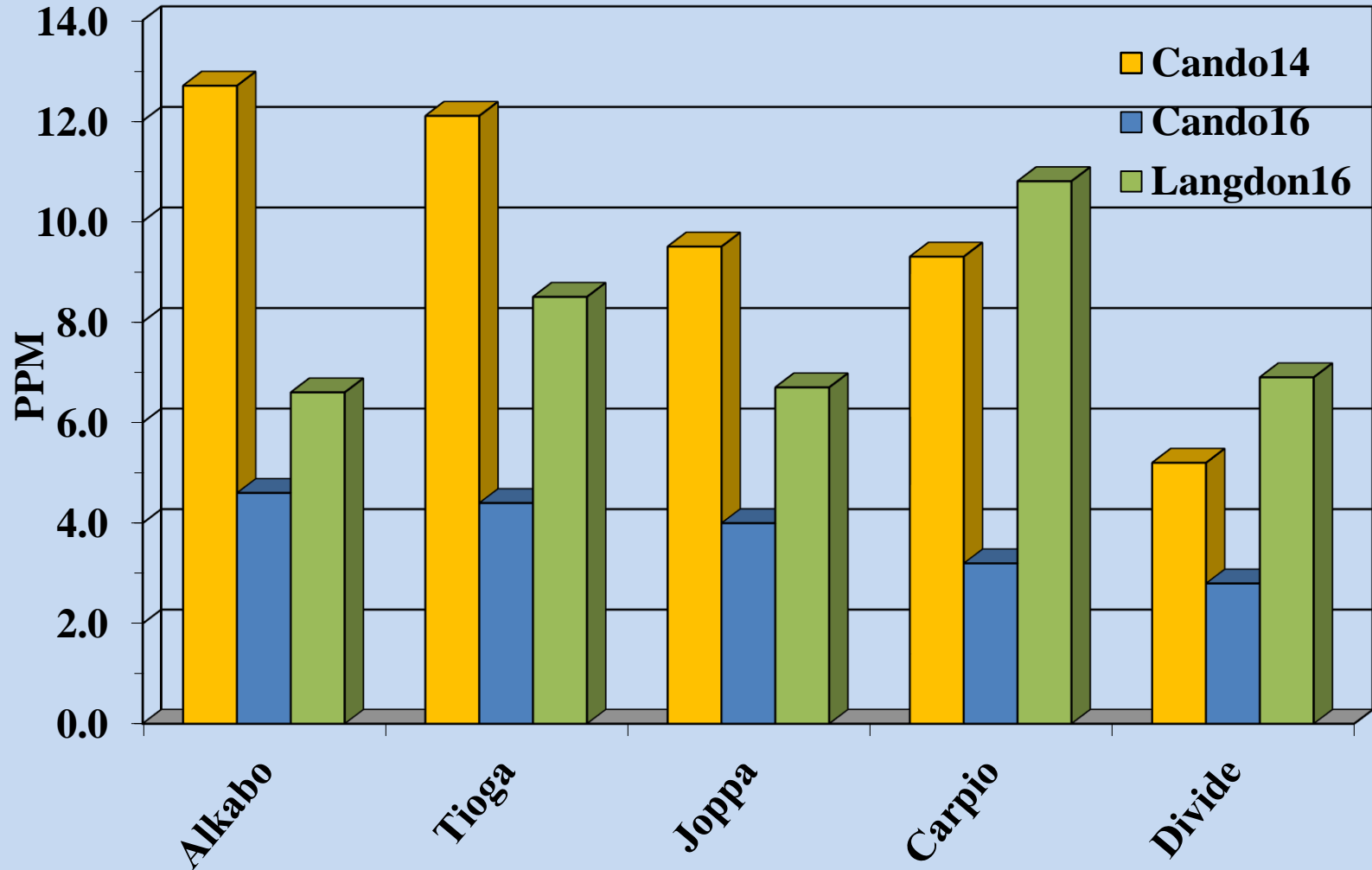


FHB reaction

Variety	Rating
Alkabo	MS
Carpio	M
Divide	M
Grenora	MS
Joppa	M
Tioga	MS



Durum DON



Barley



Increased Demand for Two-rowed Barley from the Midwest US

- Growing use of two-rowed malt by adjunct brewers
 - Two-rowed malt has higher extract
- Growth in craft brewer sector
 - ~7% of total beer sales
 - ~22% of US malt is used by craft
 - 5528 Beer Permits, up dramatically from 2009

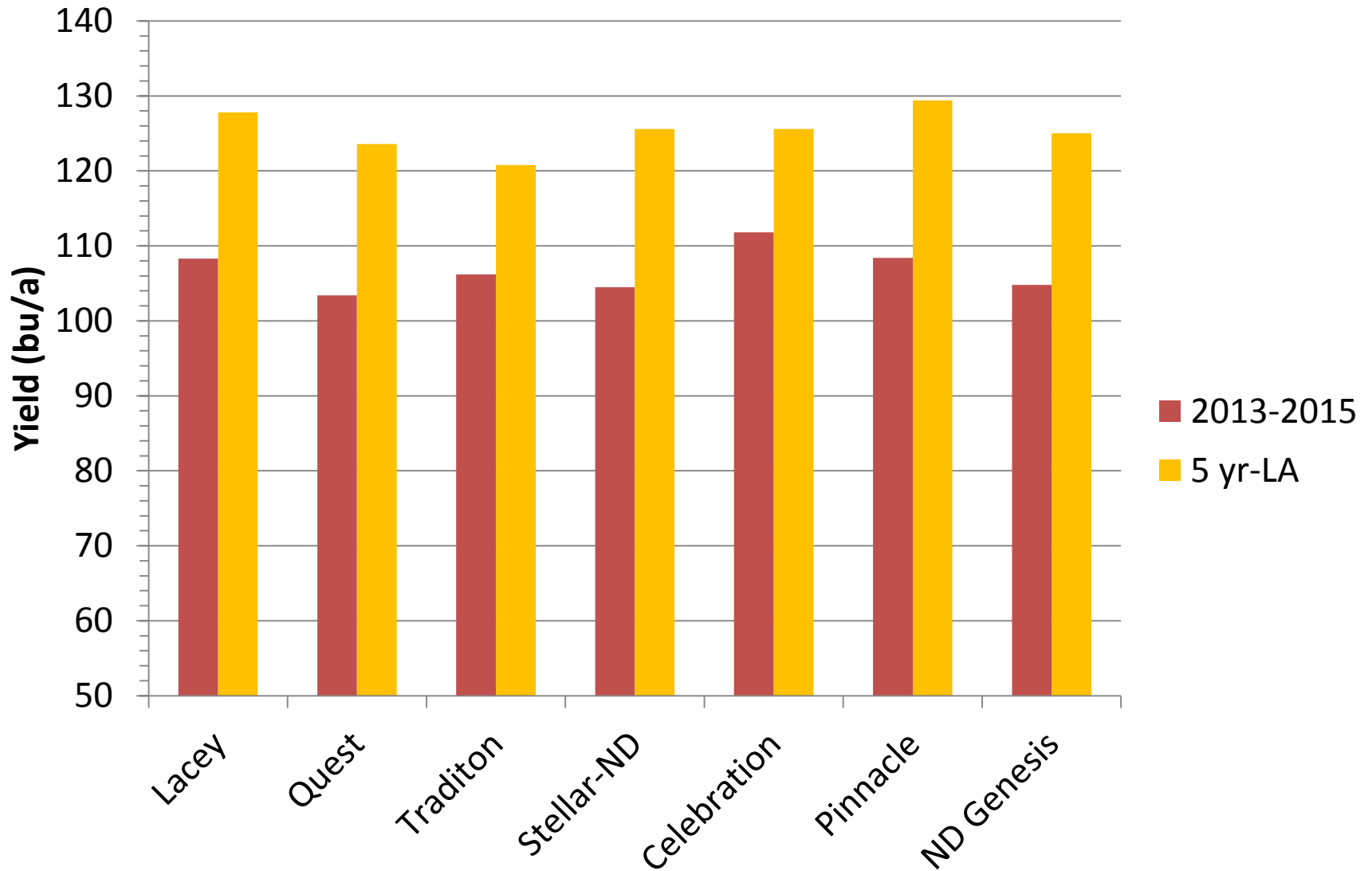
Historical Disadvantages of Two-rowed Barley Compared to Six-rowed Barley

- Inherently lower yielding than six-rowed barley under favorable growing condition.
- Weaker straw than six-rowed barley
- More susceptible to foliar diseases.
- Malt is lower in enzymatic activity

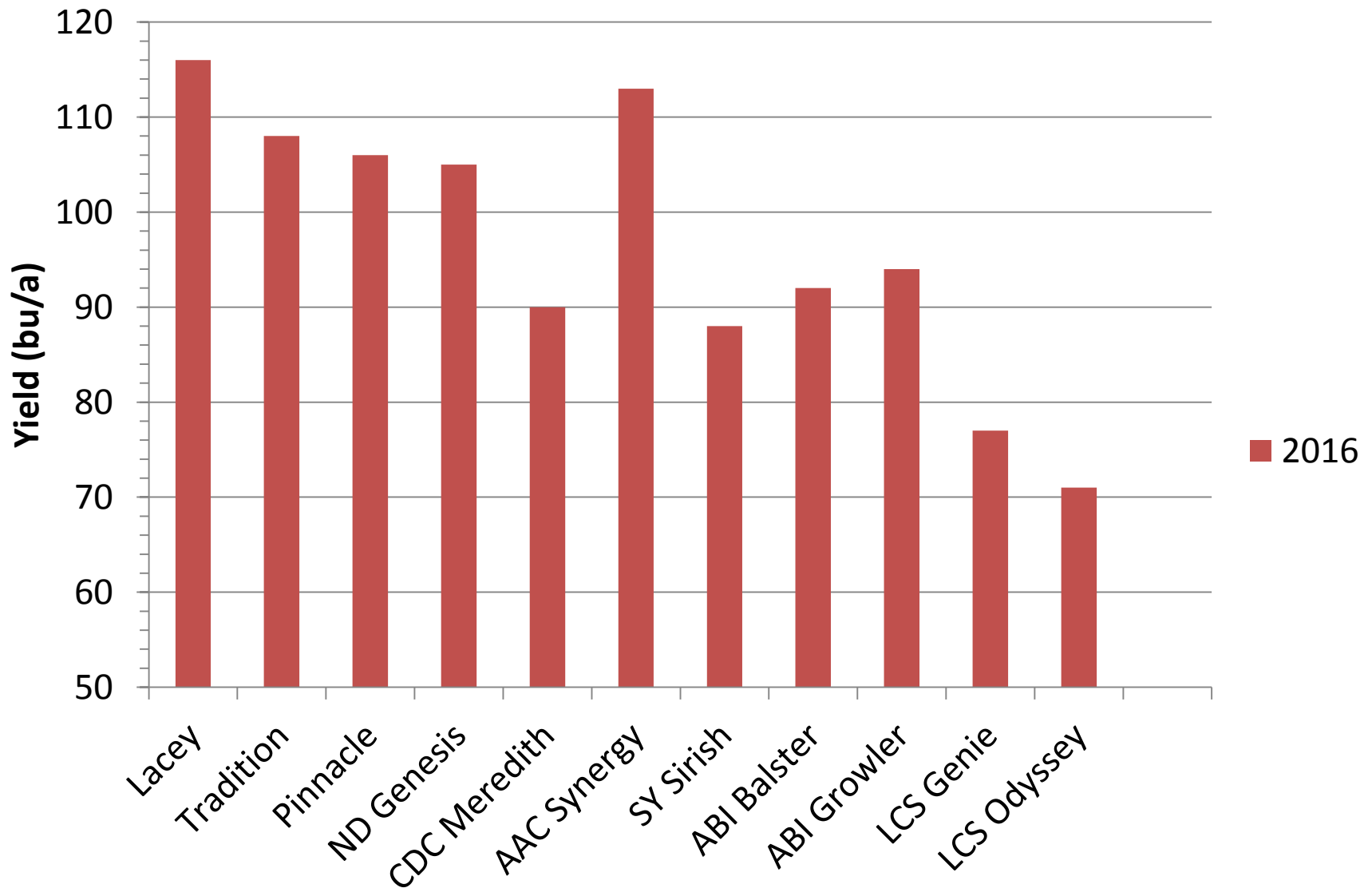
Inherent Advantages of Two-rowed Barley Compared to Six-rowed Barley

- Often lower in grain protein.
- Plumper kernels under drought conditions.
- Often lower in deoxynivalenol (DON).

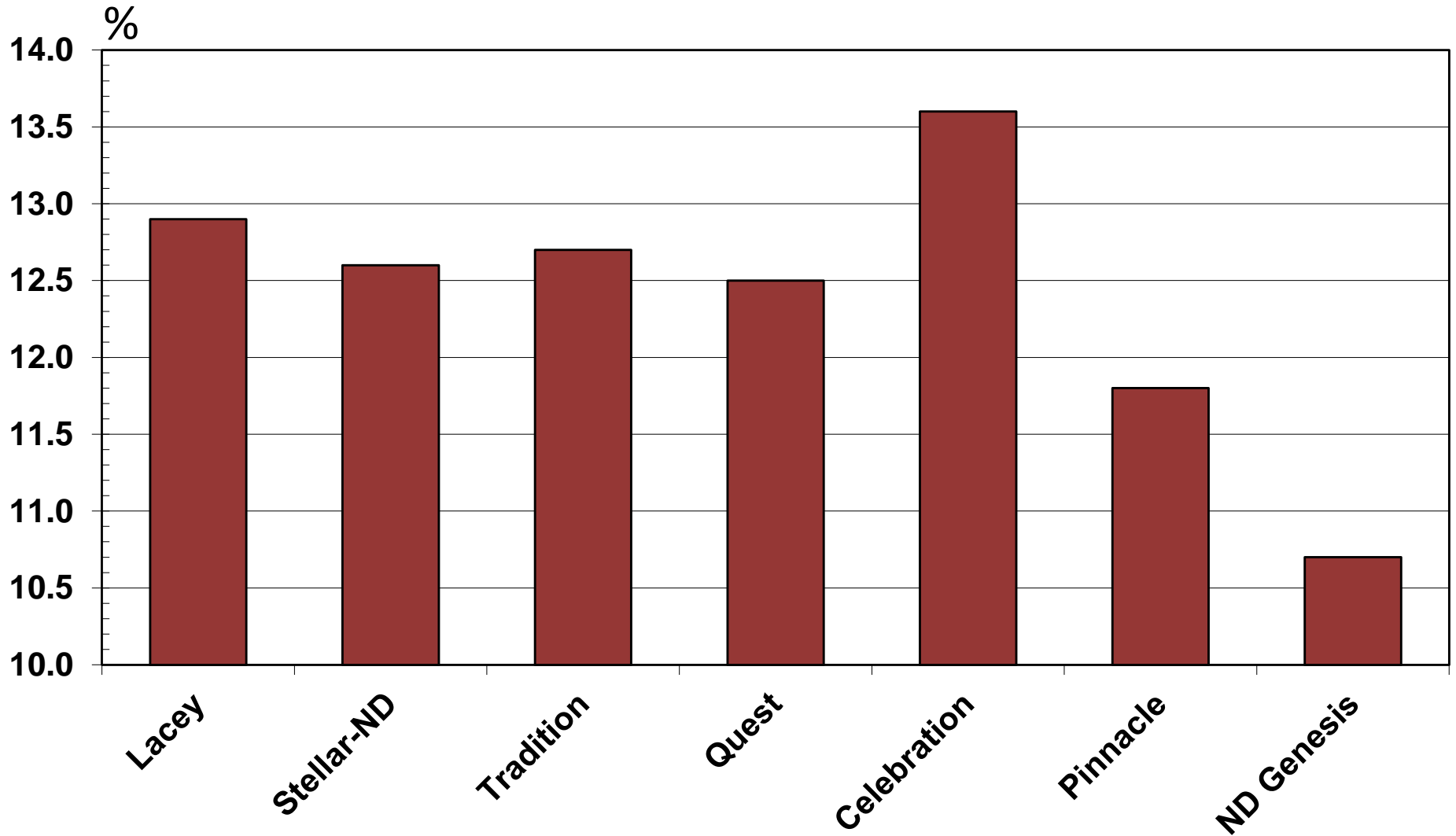
Yield of malting barley varieties in eastern ND, 3 yr average & 5 yr average at Langdon



Comparative yield of selected barley varieties in 2016, Langdon



Protein – Langdon 5 yr



ND Genesis-Seeding Rate Langdon 2015-2016

