

Selecting the Right Wheat Variety?

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Input costs increasing

- Need \$160 to \$180 per acre to pay costs and provide family living.
- At low wheat prices, we are increasingly dependent on the environmental influence on potential crop yields.
 - Risk increases even more

Once the crop is chosen?

- Pricing, Production and Cost Determines Profit.
- Emphasis on practices to maintain yield potential
- Emphasis on managing input costs to reflect economic return
- When the crop is planted, costs will be incurred to meet yield potential.

Selecting a wheat variety

- Yield (generally includes yield affecting factors)
- % protein
- Lodging
- Shatter
- Disease-damage and DON
- Yield stability
- Other factors like maturity, test weight, falling numbers, sprouting, response to fungicide

Yield Trial Information

- What information do you have or need to choose the best performing varieties for your farm next year? (yield and other traits):
 - University Trials.
 - Seed Company Trials.
 - My On-Farm Trials.
 - Trials Located Near My Farm.

- How do you interpret or use yield trial information:
 - What is better – multiple years versus multiple locations?
 - How useful is trial information from my own farm versus university trial in the region?

Where do I find yield trial data?

 [http://www.ag.ndsu.nodak.edu/aginfo/
variety/index.htm](http://www.ag.ndsu.nodak.edu/aginfo/variety/index.htm)



North Dakota Agricultural Experiment Station
 315 Morrill, NDSU
 Fargo, ND 58105
 (701) 231-7655
 fax: (701) 231-8520

2005 Variety Trial Data
 from all NDSU Research Extension Centers

- [Agriculture,
Natural
Resources](#)
- [Lawn, Garden,
Flowers
Trees/Shrubs](#)
- [Business,
Community,
Leadership](#)
- [Family,
Home,
Youth, 4-H](#)
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Alfalfa	Barley	Buckwheat	Canary	Canola
Chickpea	Corn	Crambe	Drybean	Durum
Fieldpea	Flax	Forages	HRSW	Lentil
Lupin	Millet	Mustard	Oats	Safflower
Soybean	Specialty Crops	Sunflower Non-Oil	Sunflower Oil	Triticale
Winter Rye	Winter Spelt	Winter Wheat		

[See the 2004 Variety Trial Data](#)

The Publications to the right will be linked as soon as they become available.

The Web (HTML) version will load much quicker than the PDF version.

The PDF version would be the best

Pub #	Title (all 2005 trial data for 2006 recommendations) HTML Version	PDF Version
A-574	Hard Red Spring Wheat Variety Selection Guide	PDF
A-1049	Barley, Oat, Rye, and Flax Variety Selection Guide	PDF
A-1067	Durum Wheat Variety Selection Guide	PDF
A-1124	Canola Variety Trials	PDF
A-793	Hybrid Corn Performance Results	PDF

2005 Hard Red Spring Wheat Variety Trials

(data being added when it becomes available)

- [2005 HRSW Variety Trials: Dryland - Carrington](#) (PDF Only)
- [2005 HRSW Variety Trials: Irrigated - Carrington](#) (PDF Only)
- [2005 HRSW Variety Trials: Tri-County - Wishek](#) (PDF Only)
- [2005 HRSW Variety Trials: Dryland Recrop Elite - Carrington](#) (PDF Only)
- [2005 HRSW Variety Trials: Barnes County - Dazey](#) (PDF Only)
- [2005 HRSW Variety Trials: Ransom County](#)
- [2005 HRSW Variety Trials: Langdon](#) PDF Version 43K
- [2005 HRSW Variety Trials: Devils Lake-Ramsey County](#) PDF Version 26K
- [2005 HRSW Variety Trials: Pekin-Nelson County](#) PDF Version 26K
- [2005 HRSW Variety Trials: Park River-Walsh County](#) PDF Version 26K
- [2005 HRSW Variety Trials: Cavalier-Pembina County](#) PDF Version 24K
- [2005 HRSW Variety Trials: Perth-Towner County](#) PDF Version 26K
- [2005 HRSW Variety Trials: Williston](#)
- [2005 HRSW Variety Trials: Recrop - Williston](#)
- [2005 HRSW Variety Trials: Notill - Williston](#)
- [2005 HRSW Variety Trials: Burke County, Flaxton](#)
- [2005 HRSW Variety Trials: Divide County, Crosby/Fortuna](#)
- [2005 HRSW Variety Trials: McKenzie County, Arnegard](#)
- [2005 HRSW Variety Trials: Mountrail County, Parshall/New Town](#)
- [2005 HRSW Variety Trials: Mountrail County, Ross](#)
- [2005 HRSW Variety Trials: Williams County, Ray](#)
- [2005 HRSW Variety Trials: Fallow - Minot](#)
- [2005 HRSW Variety Trials: Conventional Recrop - Minot](#)
- [2005 HRSW Variety Trials: No-till Recrop - Minot](#)

Using Yield Trial Information

- Last year based on “Hybrid Choice” Simulation we recommended:
 - Use the average of multiple locations rather than a single location.
 - Multiple locations are as good or better at predicting future performance than multiple years at a single location or multiple locations and multiple years.
 - Best variety decisions for your farm are made from results from several locations rather than results from your farm or a location close to your farm.


Ranking of varieties, mean of multiple trials in 2004

NW locations	Eastern REC	Western REC
Briggs	Briggs	Reeder
Reeder	Steele ND	Briggs
Glenn	Trooper	Norpro
Amidon	Knudson	Knudson
Freyr	Norpro	Parshall

Ranking of varieties grown in 2004 in 2005

NE Counties 05	NE Counties 04
Amidon (3)	Briggs
Briggs (2)	Reeder
Glenn	Glenn
Freyr	Amidon
Dapps	Freyr




What went wrong?

 Disease pressure
in 2005!





Principles Variety Selection

Disease and pest resistance:

-  Genetic resistance to pest and diseases generally 'cheapest' input.
-  Genetic resistance may come with a yield 'penalty'.
-  Previous crop and risk of disease should be a consideration.

Intended market use:

-  Negative correlation between grain protein and grain yield.
-  Uncertainty of premiums and/or discounts.

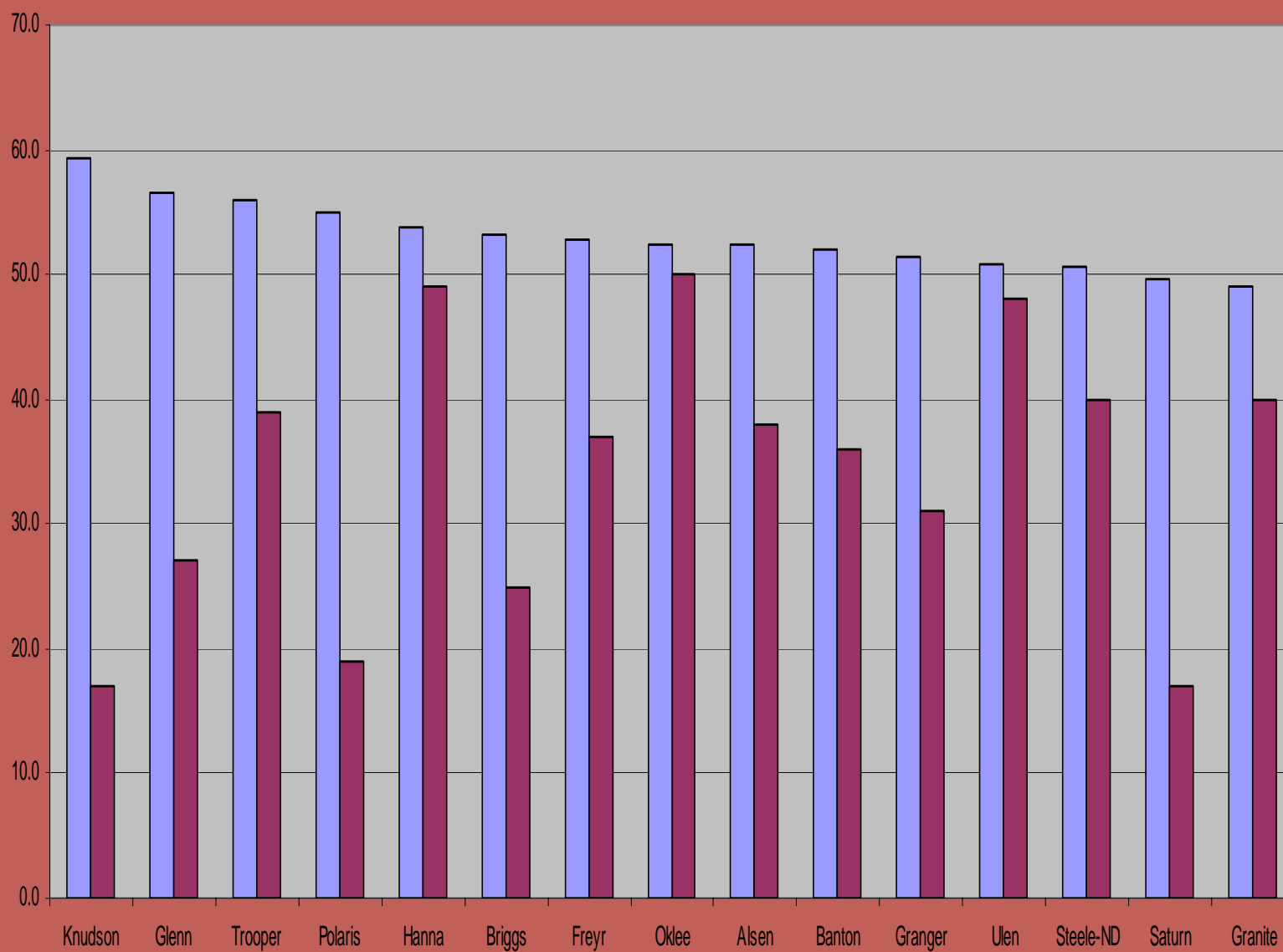
- Plant more than one Variety depending on acreage.
- Consider:
 - Yield potential
 - Disease risks
 - Quality factors
 - Stability -capability of a variety to yield consistently relative to the trial average over locations and years

Disease Reactions of HRS Varieties using Historic NEND Data. Leaf rust from NDSU Rating.

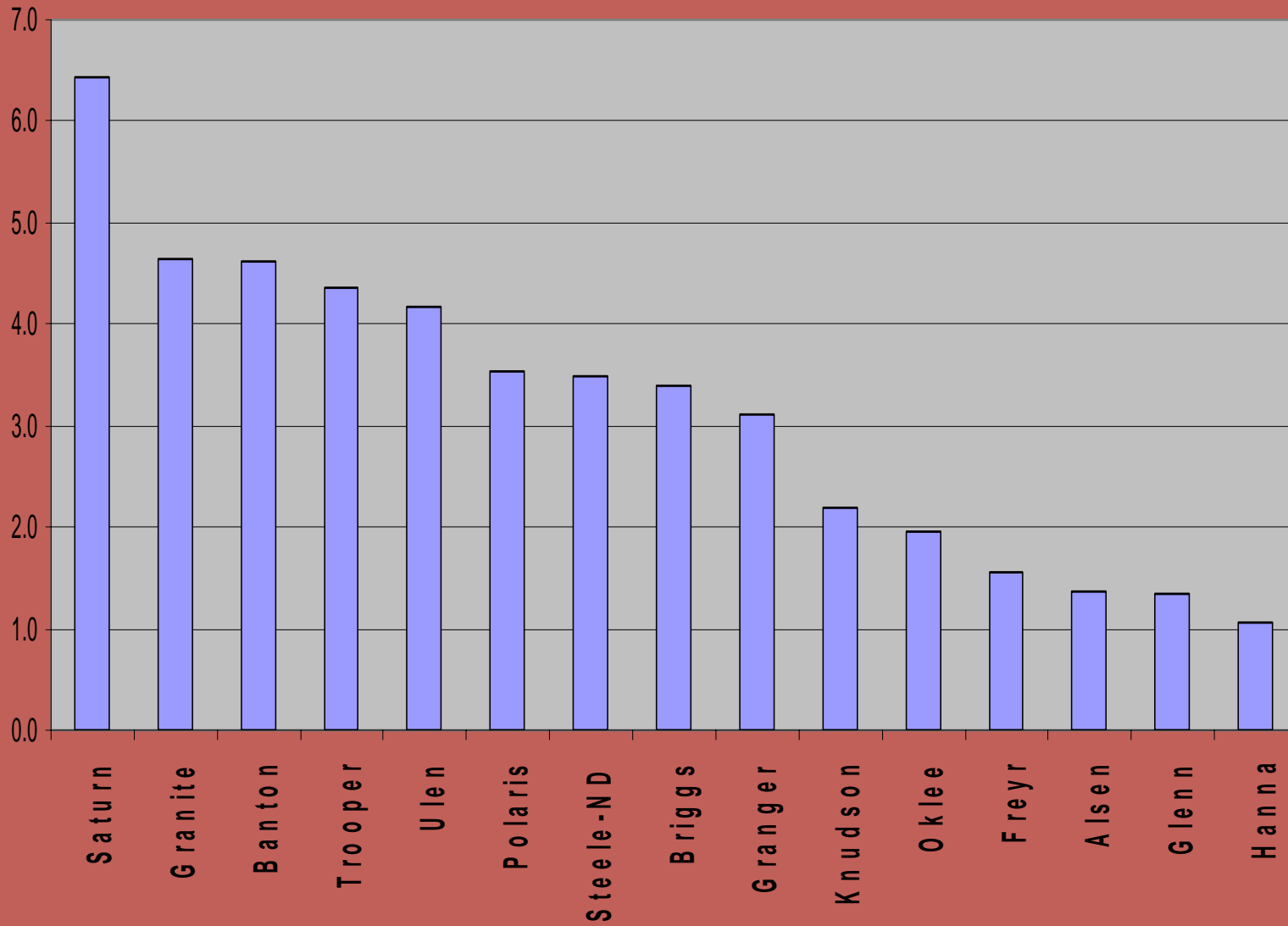
Variety	FHB(Scab) Tolerance	Leaf disease Rating	Leaf Rust	Acreage
	Ratings			82%
Alsen	MR	MS	MR	394000
Banton	VS	MS	R	
Briggs	S	MR	R	251000
Freyr	MR	MS	R	20000
Glenn	MR	MR	R	
Granger	MS	MR	R	
Granite	VS	MS	MR	239000
Hanna	MR	MS	MS/MR	69000
Knudson	MS	MR	MR	80000
Oklee	MS	MS	MS	57000
Polaris	S	MR	MS	
Saturn	VS	MR	MR	
Steele-ND	S	MS	R	20000
Trooper	VS	MS	MS	
Ulen	VS	S	R	

R=Resistant, Mr= Moderate resistance, Ms= Moderately sensitive, S= sensitive, VS= very sensitive

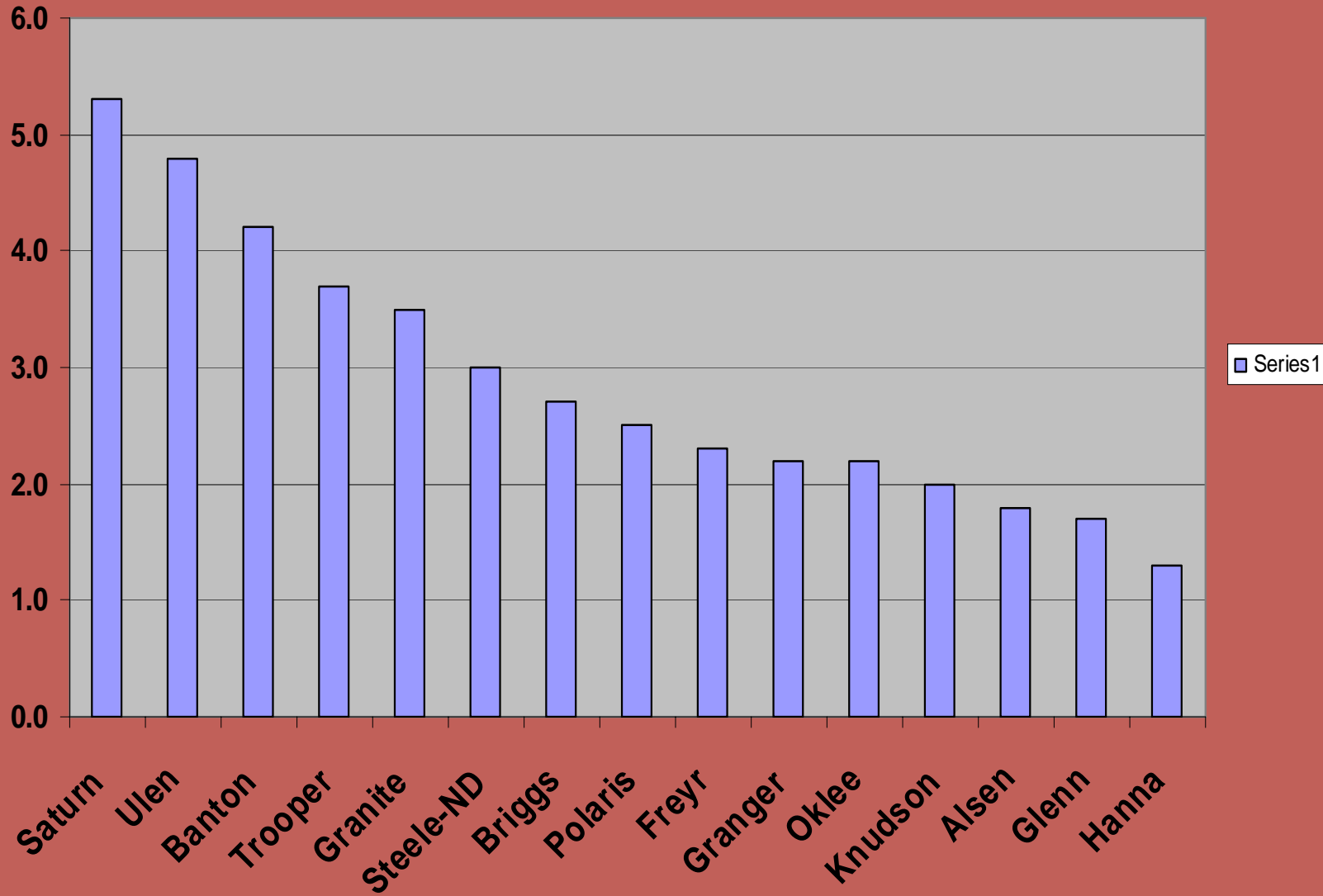
Yield and % leaf disease in NEND HRS 2005



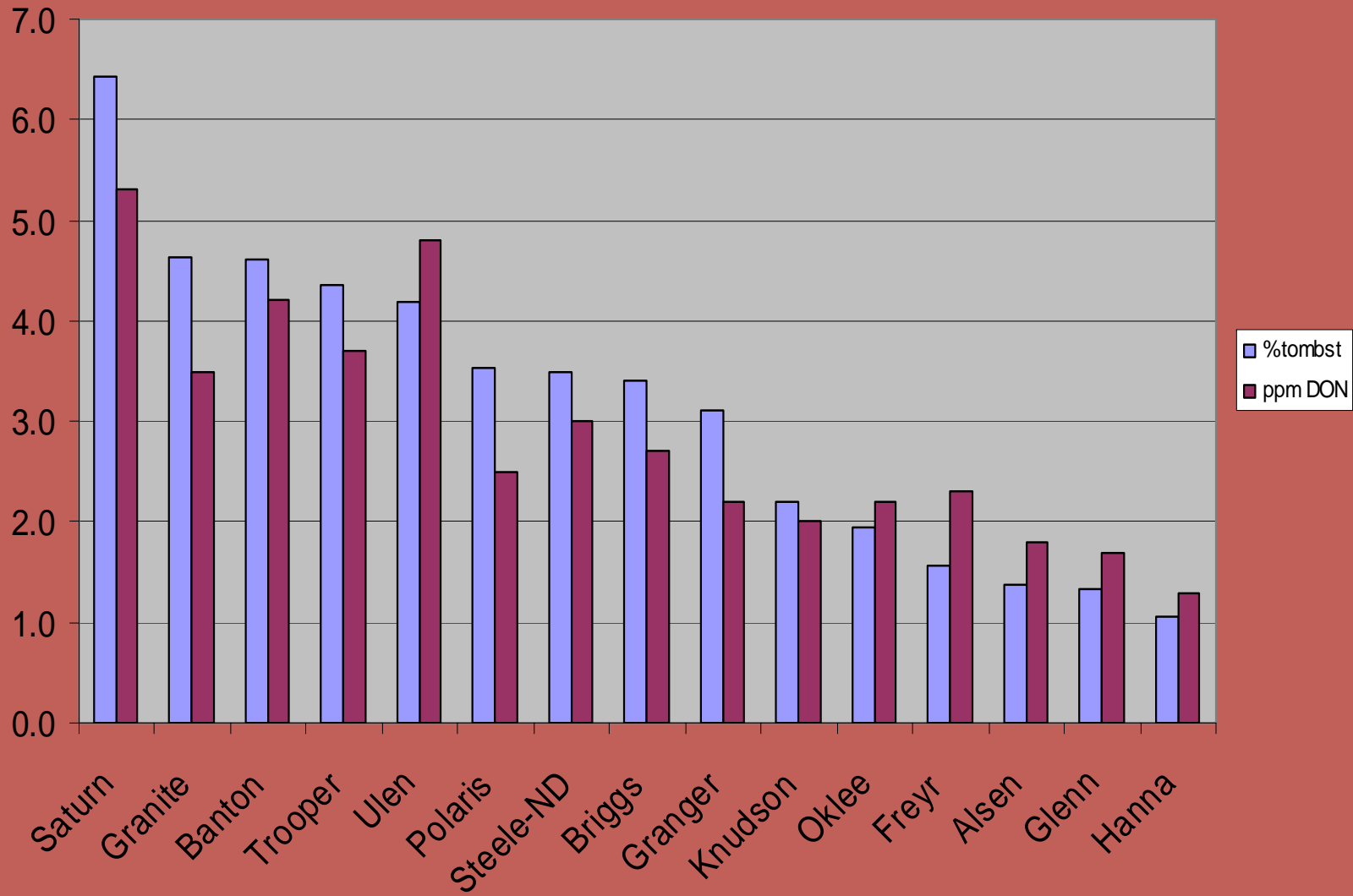
Percent Tombstone in NEND HRS 2005



Don content 2005 HRS in NEND. ppm

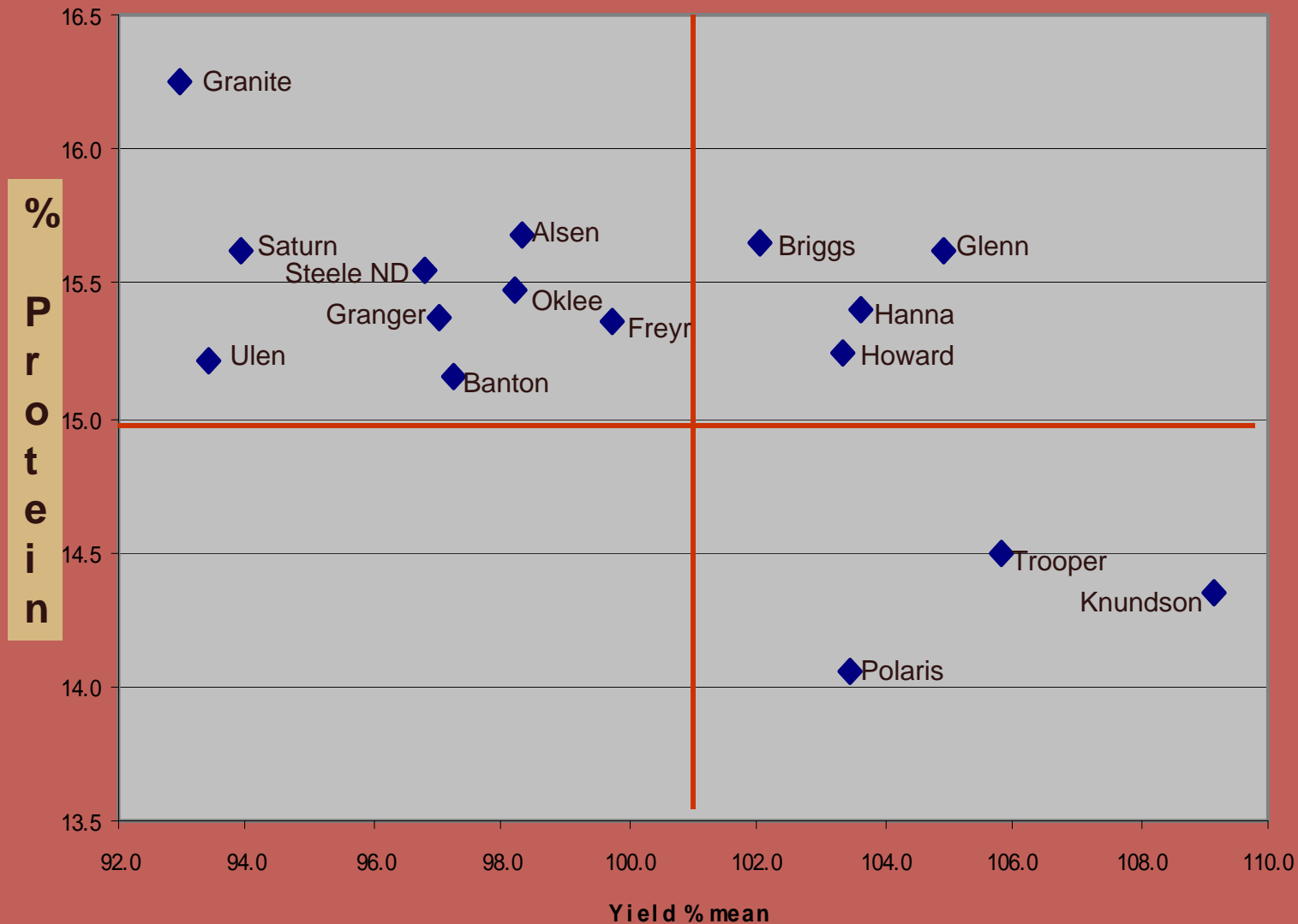


Tombstone and DON in NEND HRS 2005

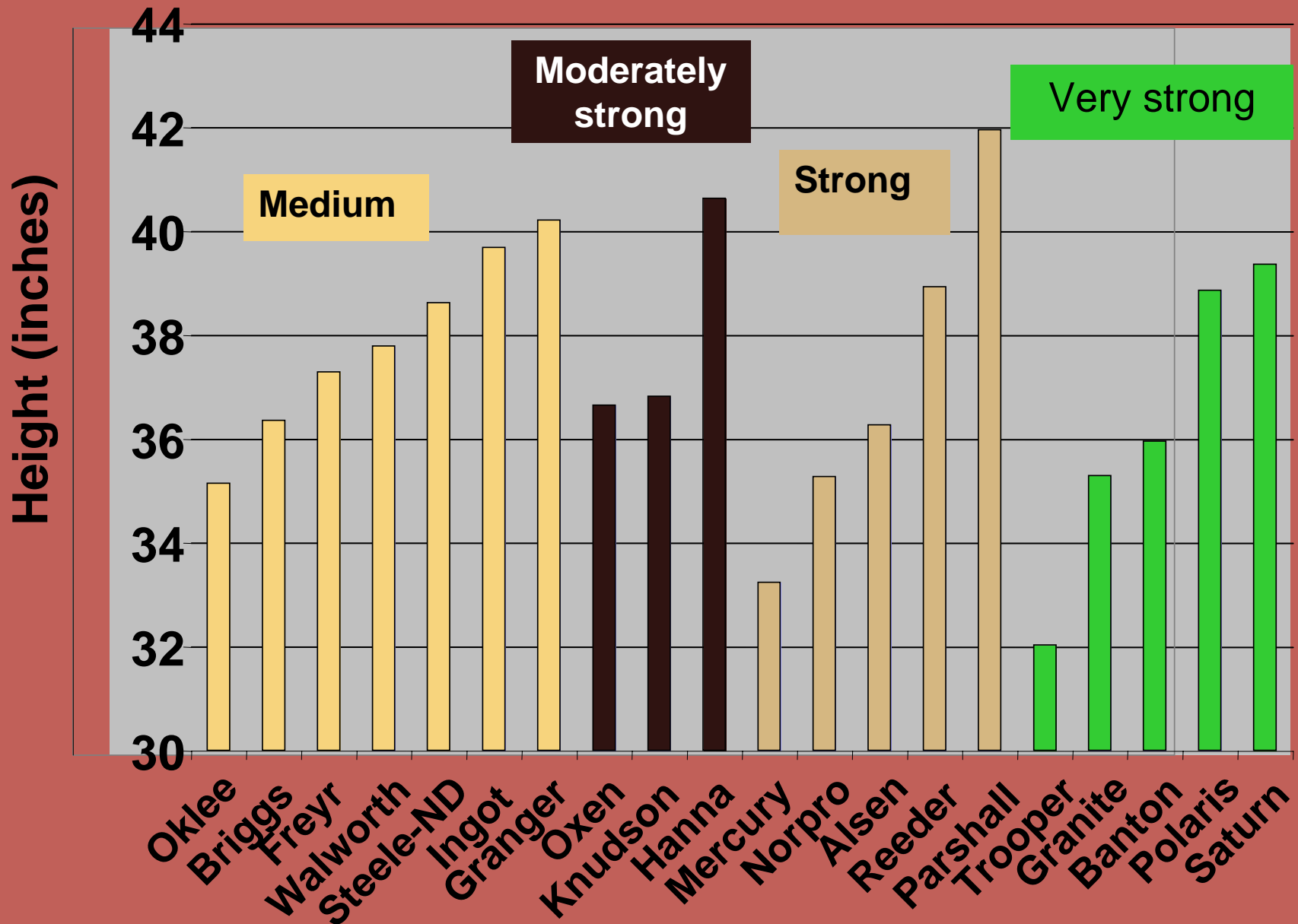


Protein/ yield in NEND. Seven site years

1 site is 2004 6 are 2005







Straw Strength



Lodging with weak straw varieties

Lodging Potential can be Lowered:

-  If planting populations are high, consider lower plant populations
-  Lower PPI nitrogen
-  Split applications of Nitrogen
 -  Supplement before 5lf

Langdon 2004-5

Variety	Shatter (%)
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Granger	14
Oklee	12
Ulen	12
Alsen	9
Banton	7
Freyr	6
Granite	6
Knudson	6
Saturn	6
Briggs	5
Steele-ND	5
Hanna	4
Polaris	4
Glenn	3
Trooper	3

Variety rank and Economic loss in \$ due to Shatter. 2004-5 Langdon Data

NEND

6 site average
2005

6 site average
with shatter

Glenn	135	Glenn	131
Knudson	131	Hanna	124
Hanna	129	Knudson	123
Briggs	127	Trooper	122
Oklee	125	Briggs	121
Trooper	125	Freyr	116
Alsen	125	Polaris	115
Freyr	123	Steele-ND	115
Banton	122	Banton	114
Steele-ND	121	Alsen	114
Granite	120	Granite	113
Polaris	120	Oklee	110
Granger	119	Saturn	108
Ulen	118	Ulen	104
Saturn	115	Granger	103

Variety Stability NEND

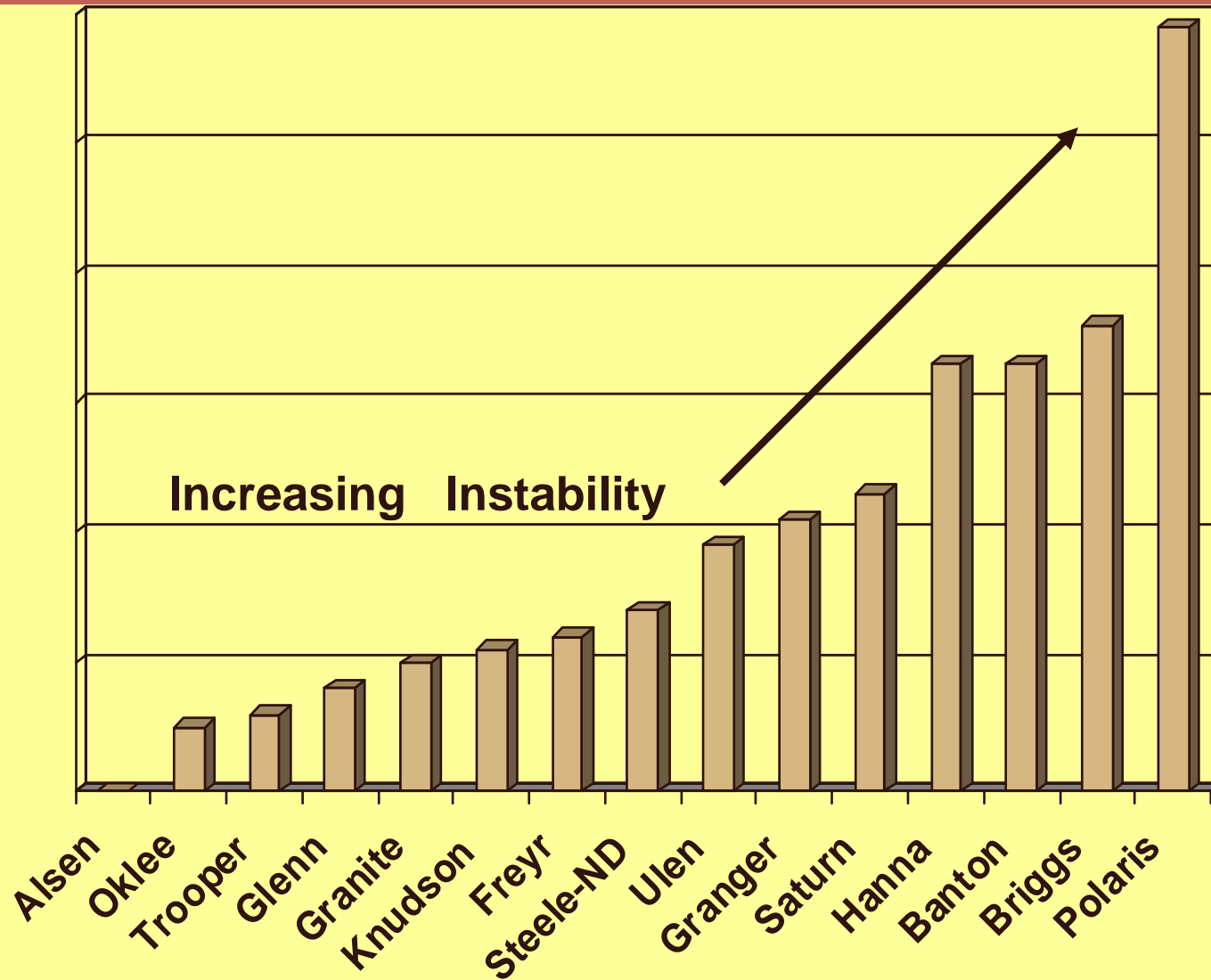
Yield Rankings No Protein Factor

		Pemb	walsh	Nelson	Ramsey	Towner	Langdon
Rank	6 site	Rank					
1.0	Knudson	Knudson	Glenn	Knudson	Knudson	Knudson	Polaris
2.0	Glenn	Trooper	Trooper	Trooper	Saturn	Hanna	Knudson
3.0	Trooper	Oklee	Knudson	Glenn	Briggs	Briggs	Banton
4.0	Polaris	Polaris	Ulen	Hanna	Trooper	Glenn	Glenn
5.0	Hanna	Glenn	Freyr	Briggs	Hanna	Trooper	Hanna
6.0	Briggs	Freyr	Banton	Steele-ND	Glenn	Polaris	Granite
7.0	Freyr	Granger	Oklee	Granger	Freyr	Oklee	Briggs
8.0	Oklee	Alsen	Polaris	Alsen	Polaris	Freyr	Steele-ND
9.0	Alsen	Steele-ND	Alsen	Freyr	Granite	Alsen	Alsen
10.0	Banton	Ulen	Granger	Oklee	Granger	Granger	Trooper
11.0	Granger	Hanna	Saturn	Ulen	Alsen	Ulen	Oklee
12.0	Ulen	Briggs	Hanna	Polaris	Oklee	Banton	Saturn
13.0	Steele-ND	Banton	Briggs	Banton	Steele-ND	Steele-ND	Freyr
14.0	Saturn	Saturn	Granite	Granite	Ulen	Saturn	Granger
15.0	Granite	Granite	Steele-ND	Saturn	Banton	Granite	Ulen

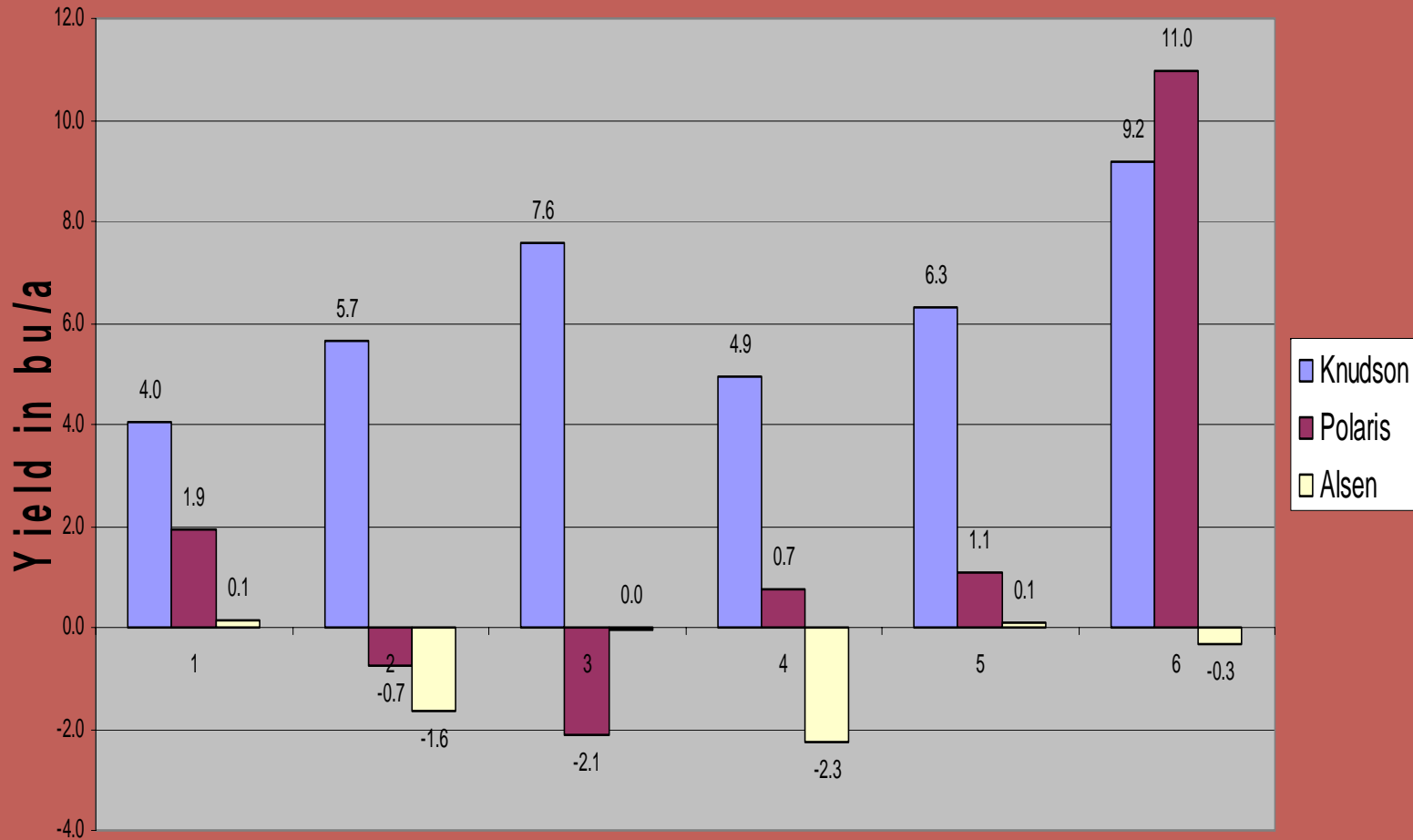
Alsen	0
Oklee	5
Trooper	6
Glenn	8
Granite	10
Knudson	11
Freyr	12
Steele-ND	14
Ulen	19
Granger	21
Saturn	23
Hanna	33
Banton	33
Briggs	36
Polaris	59

Larger number=more
instability

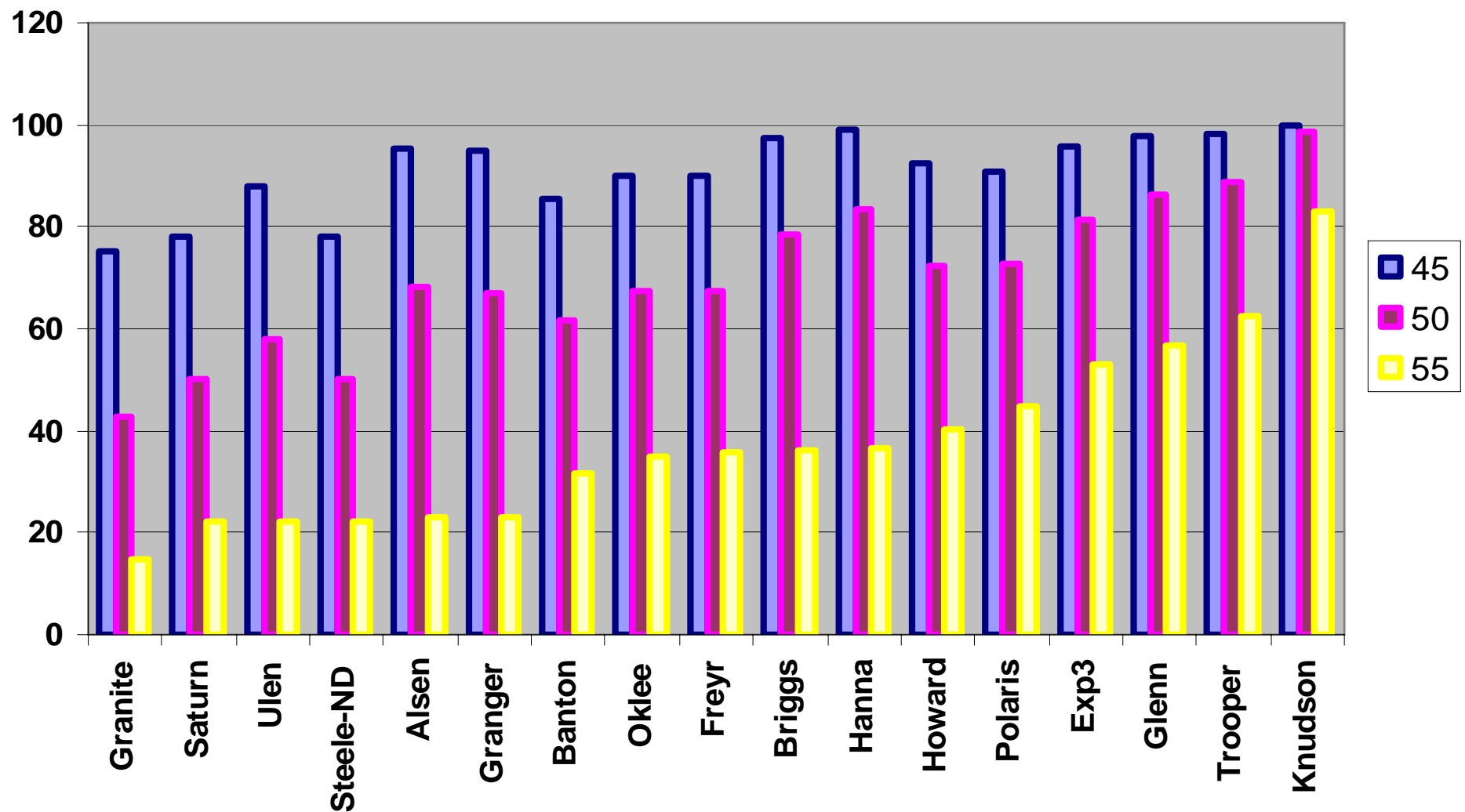
Yield Instability of HRS Varieties in NEND 2005



Variety yield difference from location average NEND 2005



Probability of A variety Achieving a Given yield. Using replicate data from 6 2005 NEND yield trials



Determining the Value of a Variety

Complicated due to quality factors in the marketplace.

No ProteinFactor Langdon yields and rank		>14%Using 2004-5 yields and 3yr ave prt				Carrington Rank
2004-5	2005	2003-5	50cents	30cents	15cents	2005
Polaris	Polaris	Polaris	Dapps	Dapps	Dapps	Bigg Red
Hanna	Dapps	Hanna	Hanna	Hanna	Hanna	Glenn
Dapps	Knudson	Knudson	Briggs	Briggs	Briggs	Granger
Knudson	Banton	Dapps	Granite	Norpro	Polaris	Oklee
Briggs	Glenn	Briggs	Norpro	Granite	Norpro	Briggs
Norpro	Hanna	Norpro	Steele-ND	Steele-ND	Steele-ND	Knudson
Trooper	Granite	Glenn	Alsen	Glenn	Granite	Keystone
Steele-ND	Norpro	Steele-ND	Glenn	Alsen	Knudson	Russ
Glenn	Briggs	Burnside	Saturn	Polaris	Glenn	Polaris
Banton	Steele-ND	Parshall	Parshall	Banton	Trooper	Steele-ND
Granite	Alsen	Granite	Banton	Knudson	Alsen	Ulen
Alsen	Parshall	Reeder	Gunner	Parshall	Banton	Freyr
Burnside	Trooper	Oklee	Freyr	Trooper	Parshall	Alsen
Parshall	Russ	Russ	Polaris	Saturn	Freyr	Banton
Reeder	Express	Alsen	Knudson	Freyr	Reeder	Oxen
Freyr	Oklee	AC Superb	Trooper	Gunner	Saturn	Hanna
Oklee	Bigg Red	Ulen	Granger	Granger	Granger	Granite
Granger	Oxen	Oxen	Reeder	Reeder	Gunner	Ingot
Saturn	Reeder	Saturn	ACAmazon	ACAmazon	ACAmazon	Saturn
Russ	Buck Pronto	AC Amazon	AC Superb	AC Superb	AC Superb	ES54
AC Amazon	Saturn	Ingot	Ulen	Ulen	Ulen	Dapps
Oxen	*Freyr	Gunner				Parshall

Dollars generated at 45 bushel/ac

2004 No disease Yield, Protein & Test Weight	Impact of 05 Disease year On Yield, Protein & Test Weight
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Alsen	159	Alsen	161
Briggs	171	Briggs	164
Freyr	163	Freyr	160
Glenn	168	Glenn	174
Granger	163	Granger	155
Granite	169	Granite	153
Hanna	168	Hanna	166
Knudson	159	Knudson	172
Oklee	162	Oklee	161
Polaris	155	Polaris	158
Saturn	156	Saturn	147
Steele-ND	162	Steele-ND	156
Trooper	161	Trooper	165
		Ulen	154
		Banton	158

Dollars generated at 45 bushel/ac

2004 No disease Yield, Protein & Test Weight	Impact of 05 Disease year On Yield, Protein & Test Weight	2005 Impact of Disease Discounts
Alsen 159	Alsen 161	Alsen 158
Briggs 171	Briggs 164	Briggs 153
Freyr 163	Freyr 160	Freyr 155
Glenn 168	Glenn 174	Glenn 171
Granger 163	Granger 155	Granger 147
Granite 169	Granite 153	Granite 134
Hanna 168	Hanna 166	Hanna 165
Knudson 159	Knudson 172	Knudson 165
Oklee 162	Oklee 161	Oklee 156
Polaris 155	Polaris 158	Polaris 147
Saturn 156	Saturn 147	Saturn 111
Steele-ND 162	Steele-ND 156	Steele-ND 142
Trooper 161	Trooper 165	Trooper 143
	Ulen 154	Ulen 125
	Banton 158	Banton 138

Dollars generated at 45 bushel/ac

2004 No disease Yield, Protein & Test Weight	Impact of 05 Disease year On Yield, Protein & Test Weight	2005 Impact of Disease Discounts	2005 impact of Flowering time Fungicide Application
Alsen 159	Alsen 161	Alsen 158	Alsen 163
Briggs 171	Briggs 164	Briggs 153	Briggs 171
Freyr 163	Freyr 160	Freyr 155	Freyr 170
Glenn 168	Glenn 174	Glenn 171	Glenn 186
Granger 163	Granger 155	Granger 147	Granger 154
Granite 169	Granite 153	Granite 134	Granite 157
Hanna 168	Hanna 166	Hanna 165	Hanna 176
Knudson 159	Knudson 172	Knudson 165	Knudson 167
Oklee 162	Oklee 161	Oklee 156	Oklee 176
Polaris 155	Polaris 158	Polaris 147	Polaris 160
Saturn 156	Saturn 147	Saturn 111	Saturn 140
Steele-ND 162	Steele-ND 156	Steele-ND 142	Steele-ND 162
Trooper 161	Trooper 165	Trooper 143	Trooper 170
	Ulen 154	Ulen 125	Ulen 155
	Banton 158	Banton 138	Banton 163

Fungicide values include subtracting a \$14/ac cost

Varieties Ranked By Dollars generated at 45 bushel/ac

2004 No disease Yield, Protein & Test Weight		Impact of 05 Disease year On Yield, Protein & Test Weight		2005 Impact of Disease Discounts		2005 impact of Flowering time Fungicide Application	
Briggs	171	Glenn	174	Glenn	171	Glenn	186
Granite	169	Knudson	172	Hanna	165	Hanna	176
Glenn	168	Hanna	166	Knudson	165	Oklee	176
Hanna	168	Trooper	165	Alsen	158	Briggs	171
Freyr	163	Briggs	164	Oklee	156	Trooper	170
Granger	163	Oklee	161	Freyr	155	Freyr	170
Oklee	162	Alsen	161	Briggs	153	Knudson	167
Steele-ND	162	Freyr	160	Granger	147	Banton	163
Trooper	161	Banton	158	Polaris	147	Alsen	163
Alsen	159	Polaris	158	Trooper	143	Steele-ND	162
Knudson	159	Steele-ND	156	Steele-ND	142	Polaris	160
Saturn	156	Granger	155	Banton	138	Granite	157
Polaris	155	Ulen	154	Granite	134	Ulen	155
		Granite	153	Ulen	125	Granger	154
		Saturn	147	Saturn	111	Saturn	140

Fungicide values include subtracting a \$14/ac cost

Selecting a wheat variety

- Yield

- % protein

- Lodging

- Straw strength increases with lower populations, lower pre-plant Nitrogen, split applications of N


- Shatter

- Review 2004-5 data

- Disease-damage and DON

- Yield stability

- Other factors like maturity, test weight, falling numbers, sprouting, response to fungicide

 Questions?, Discussion.