

Spring Wheat in 2008

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Outline of Discussion Points

- Variety selection and key traits to consider
- Fertility management (Nitrogen)
- Management Timing
- Grading characteristics

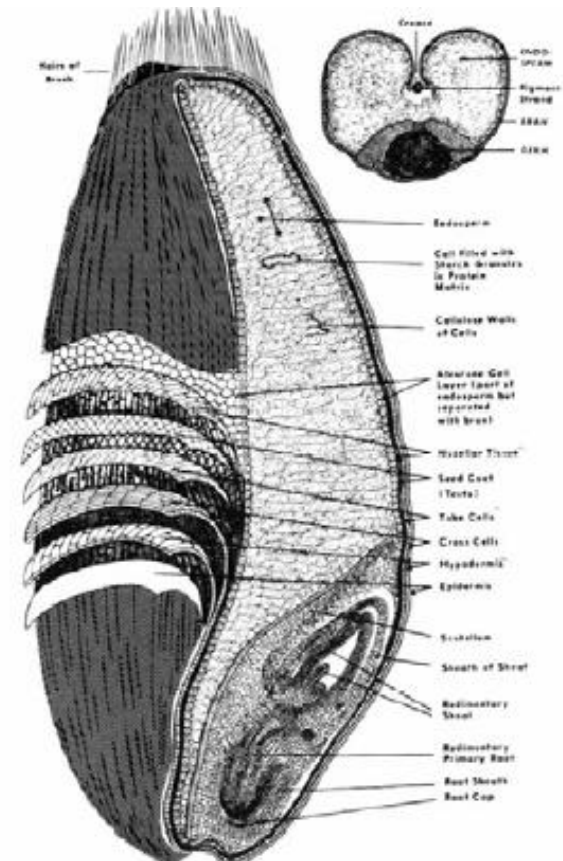
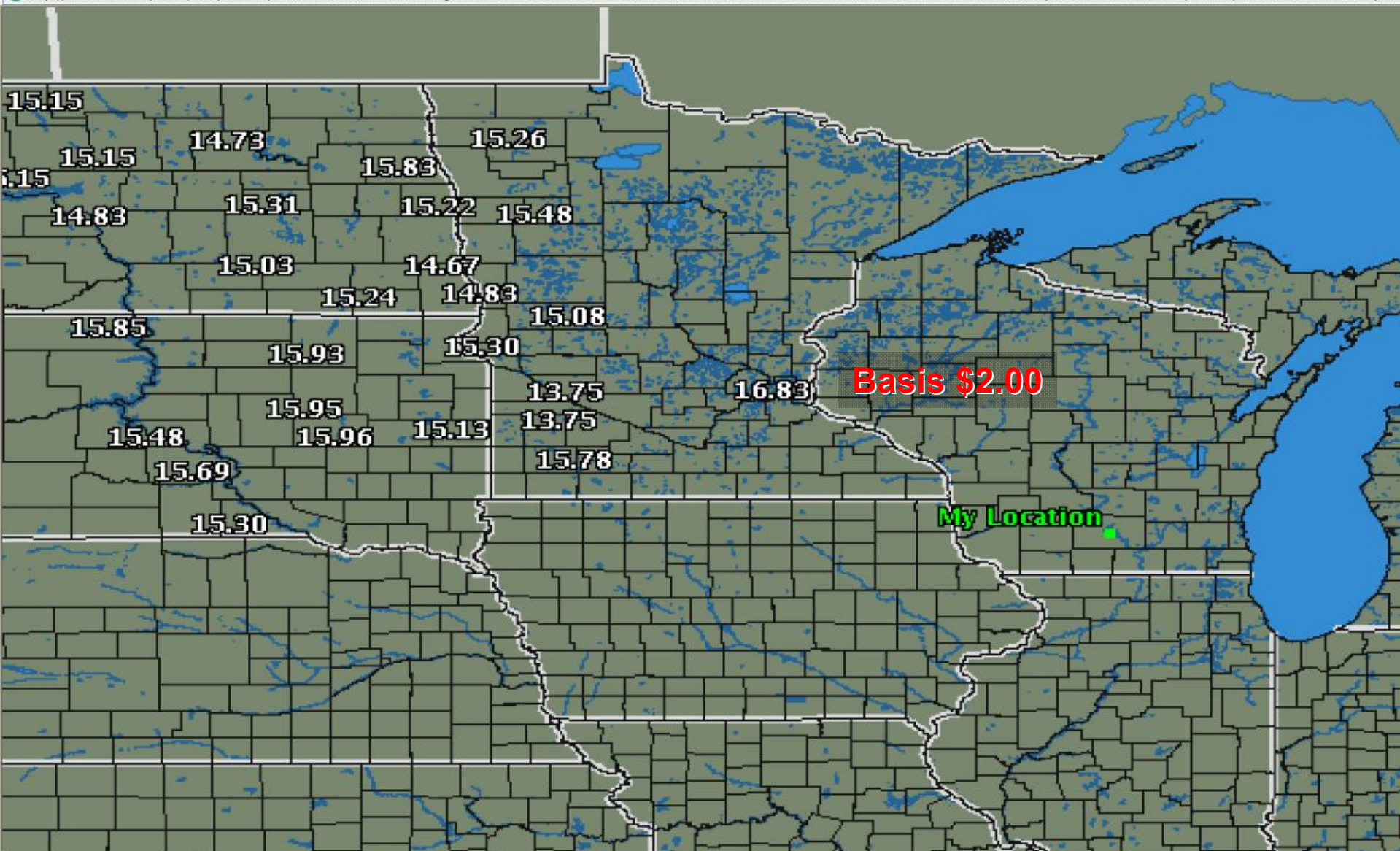
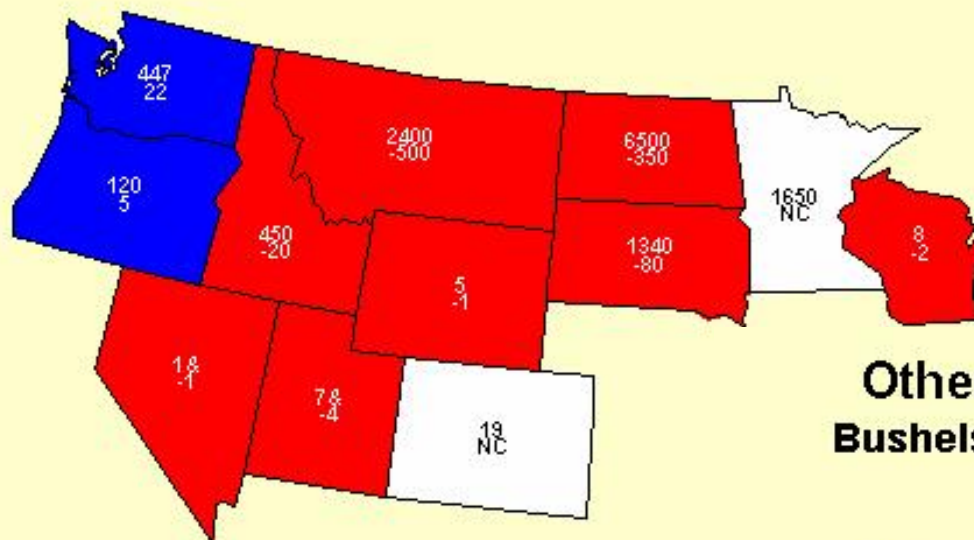


Fig. 3. Longitudinal and cross sections of a wheat kernel.

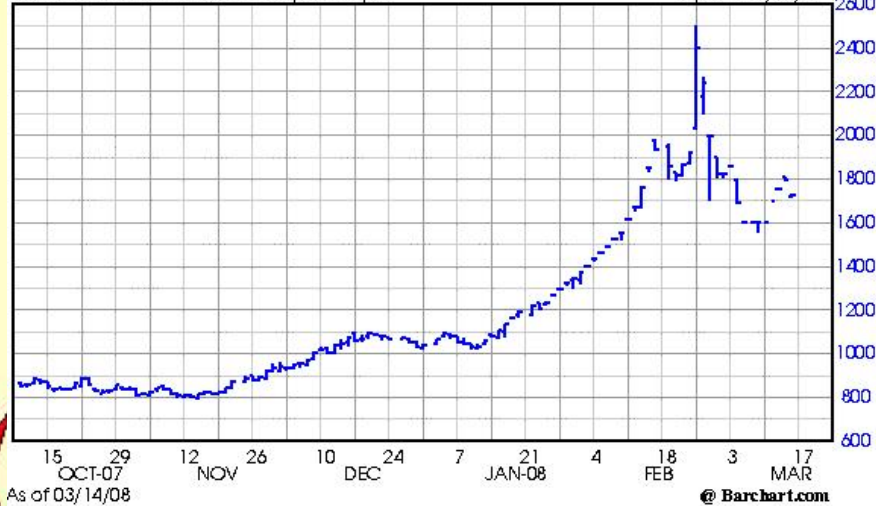


2007 Other Spring Wheat Harvested

Acres (000) and Change From Previous Year

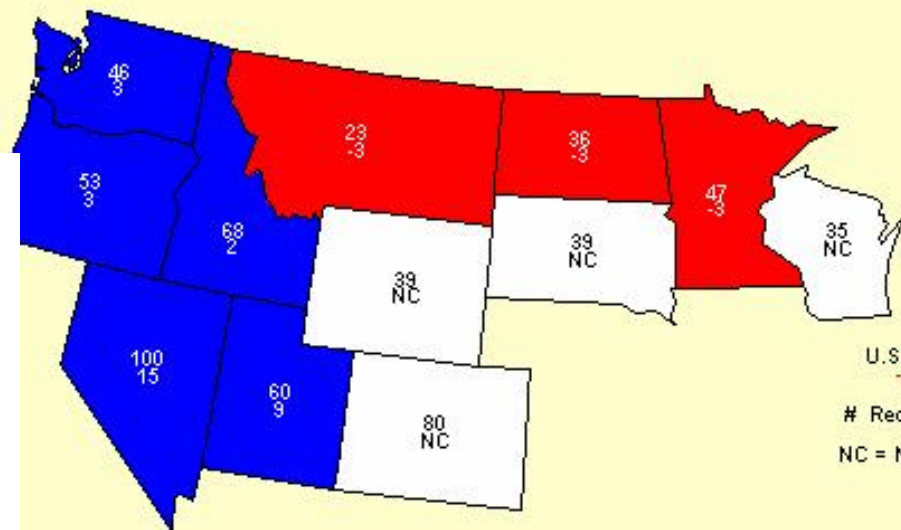


SPRING WHEAT MAR 2008 ... daily OHLC plot



Other Spring Wheat Yields 2007

Bushels and Change From Final Forecast

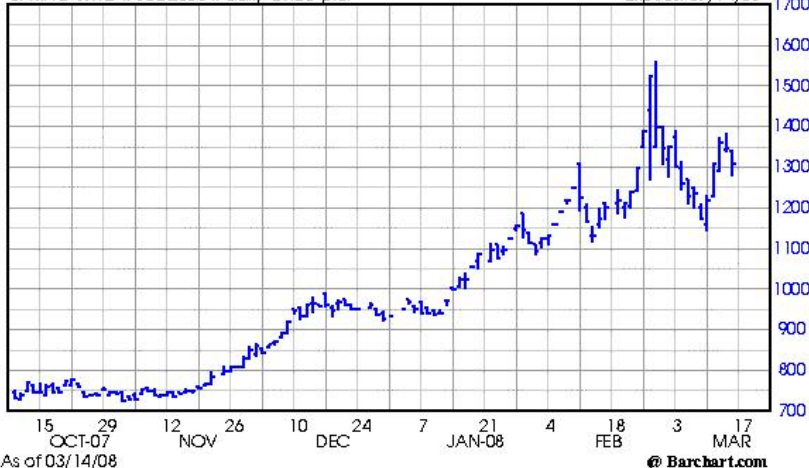


U.S. 37.0
-2.3

Record High
NC = No Change

USDA-NASS
09-28-07

SPRING WHEAT JUL 2008 ... daily OHLC plot



Grading Characteristics

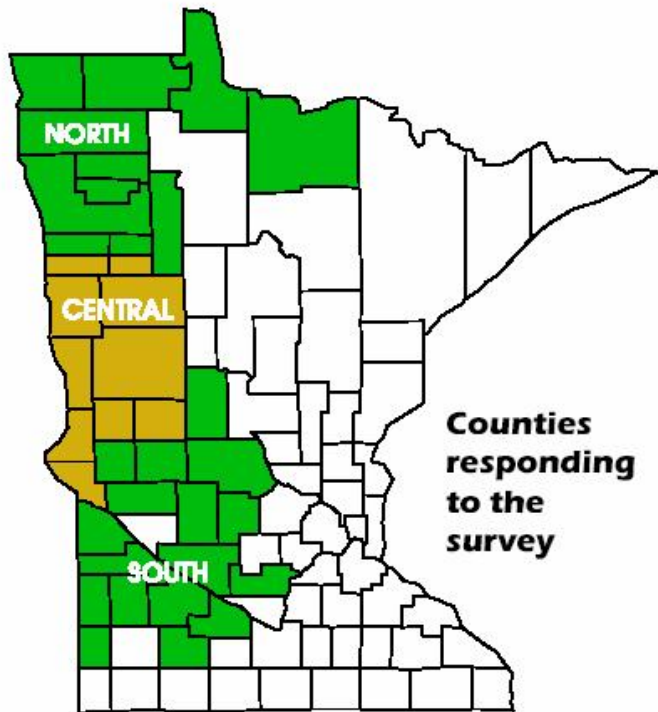
- Wheat Grades: #1 58.0 pound test weight
 - Subclasses:
 - Dark northern spring: (>75% dark, hard, vitreous)
 - Northern spring: (25-74% dark, hard, vitreous)
 - Red spring: (>25% dark, hard, vitreous)
- Protein: 14.0% (based on 12% moisture)
 - #1 factor in determining value of your wheat
- Falling number: alpha-amylase activity
 - 250 to 300 base value required for baking

Variety Selection

It's easy, varieties are actually named



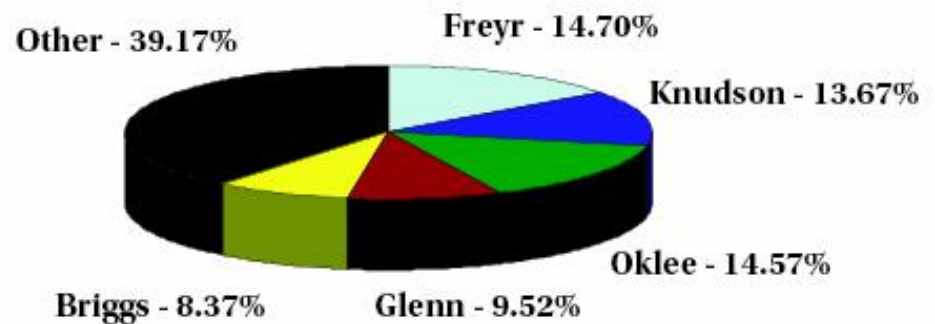
Variety Survey - 2007



Minnesota Wheat Research
& Promotion Council
2600 Wheat Drive • Red Lake Falls, MN 56750
800-242-6118 • email: mnwheat@gvtel.com

Top Five Varieties in Minnesota, 2007

Total Acres Surveyed in 2007: 465,205



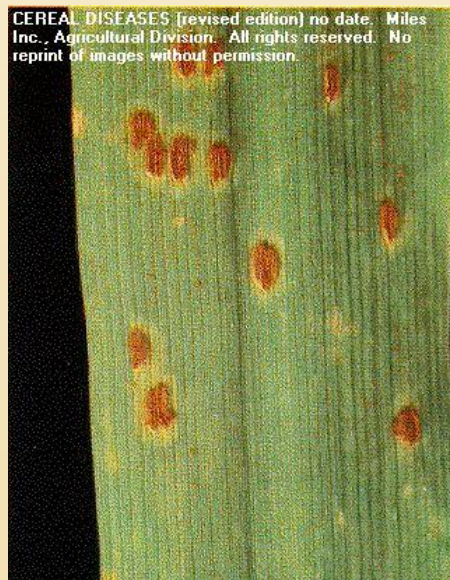
FHB Ratings

<i>Variety</i>	<i>Year of Release</i>	<i>FHB Rating</i>
Bigg Red	2004	3
Glenn	2005	3
Alsen	2000	4
Faller	2004	4
Freyr	2007	4
Hat Trick	2007	4
Banton	2002	5
Briggs	2002	5
Granger	2004	5
Kelby	2006	5
Oklee	2003	5
RB07	2007	5
Rush	2006	5
Traverse	2006	5
Ada	2006	6
Fireball	2006	6
Granite	2002	6
Howard	2006	6
Knudson	2001	6
Steele-ND	2004	6
Trooper	2004	6
Ulen	2004	6
Polaris	2003	7
Oxen	1996	8

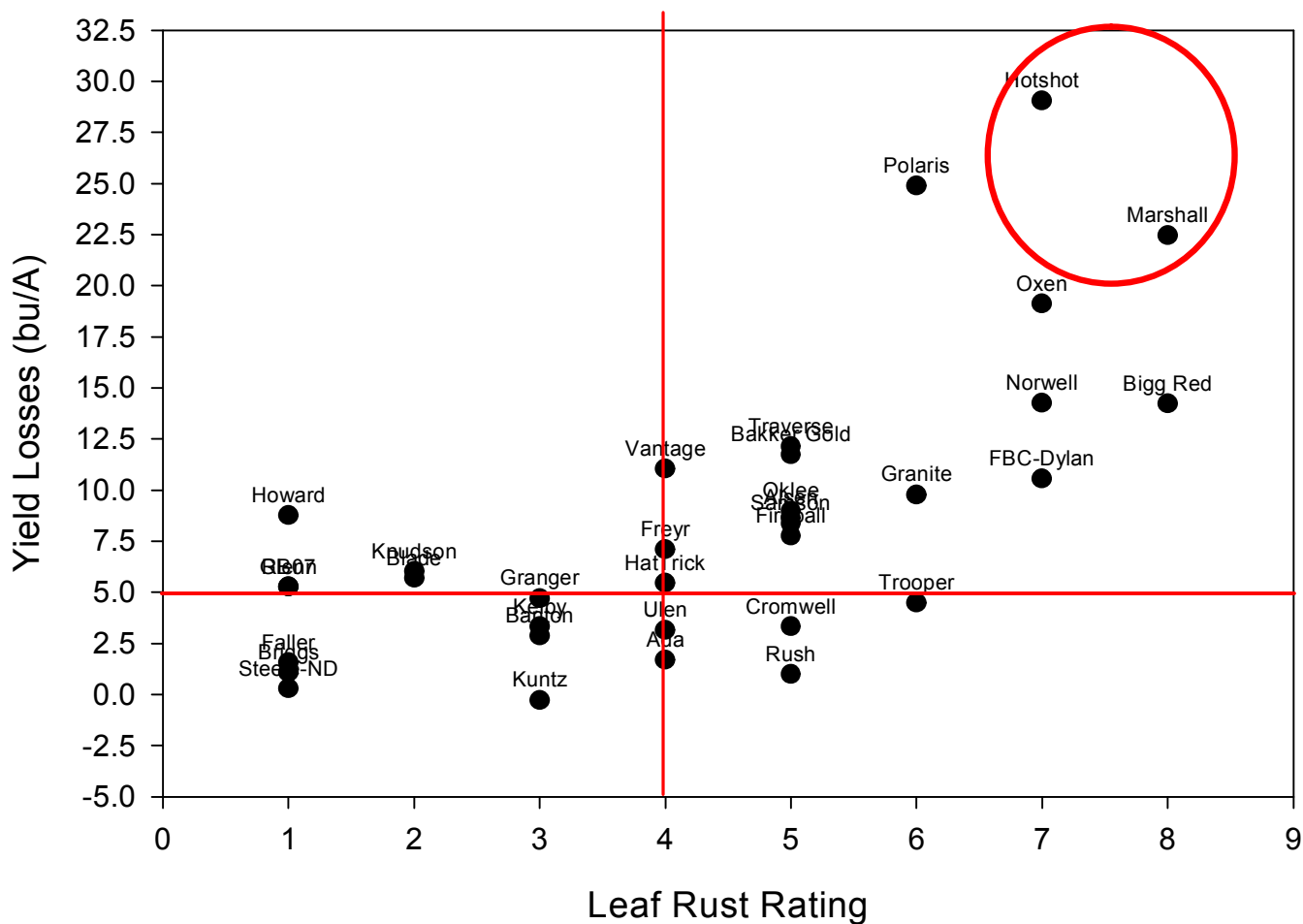


Variety	Leaf Rust Rating	Source of Resistance
Briggs	1	Lr34 + others
Faller	1	Lr21
Glenn	1	Lr21
Howard	1	Lr21
RB07	1	Lr21
Steele-ND	1	Lr21
Blade	2	
Knudson	2	
Banton	3	
Granger	3	
Kelby	3	
Kuntz	3	
Ada	4	
Freyr	4	
Hat Trick	4	
Ulen	4	
Vantage	4	
Alsen	5	
Bakker Gold	5	
Cromwell	5	
Fireball	5	
Oklee	5	
Rush	5	
Samson	5	
Traverse	5	
Granite	6	
Polaris	6	
Trooper	6	
FBC-Dylan	7	
Hot Shot	7	
Norwell	7	
Oxen	7	
Bigg Red	8	
Marshall	8	Lr34, 2a, 10, and 13

Leaf Rust Ratings



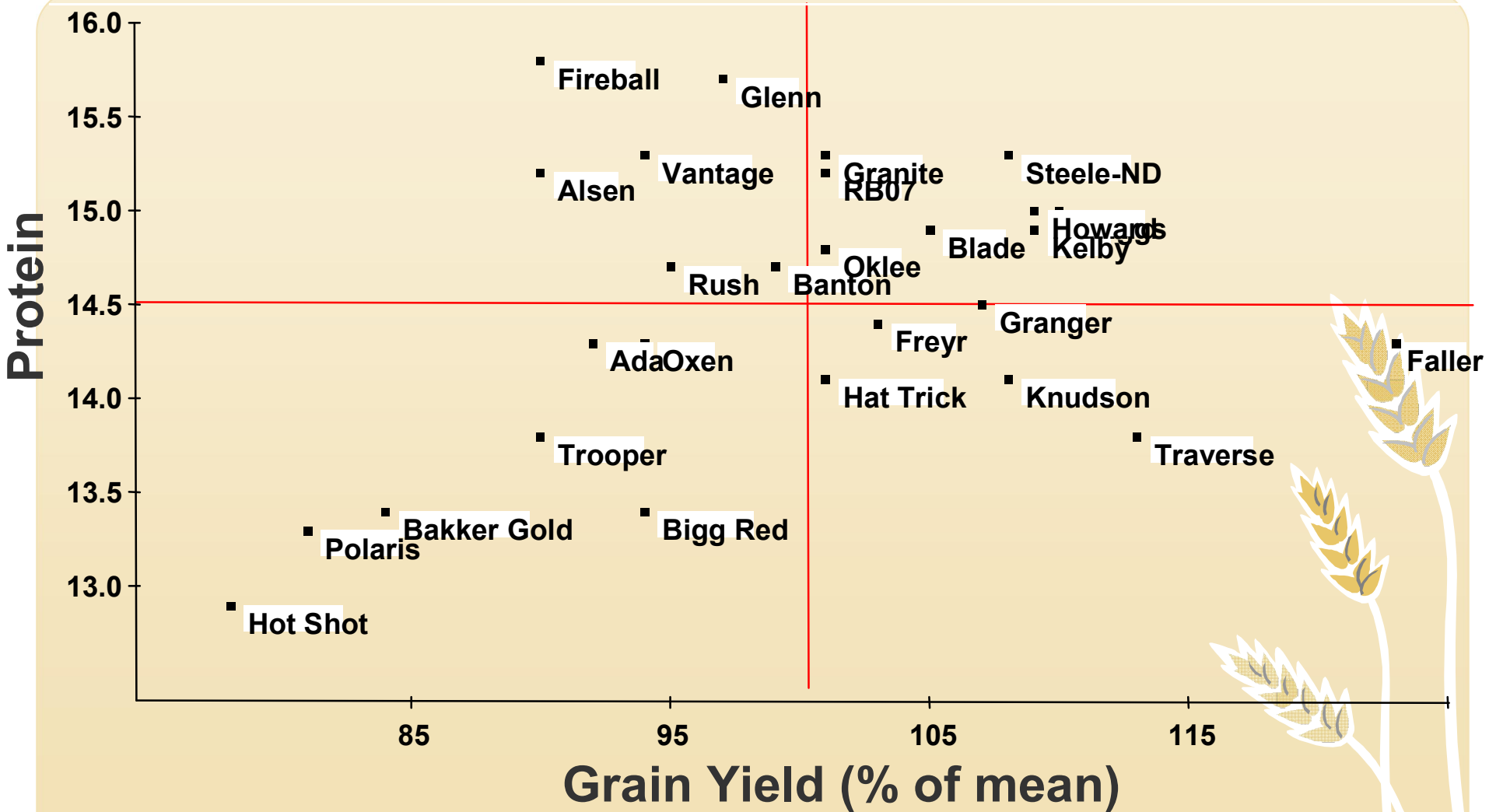
Southern Locations



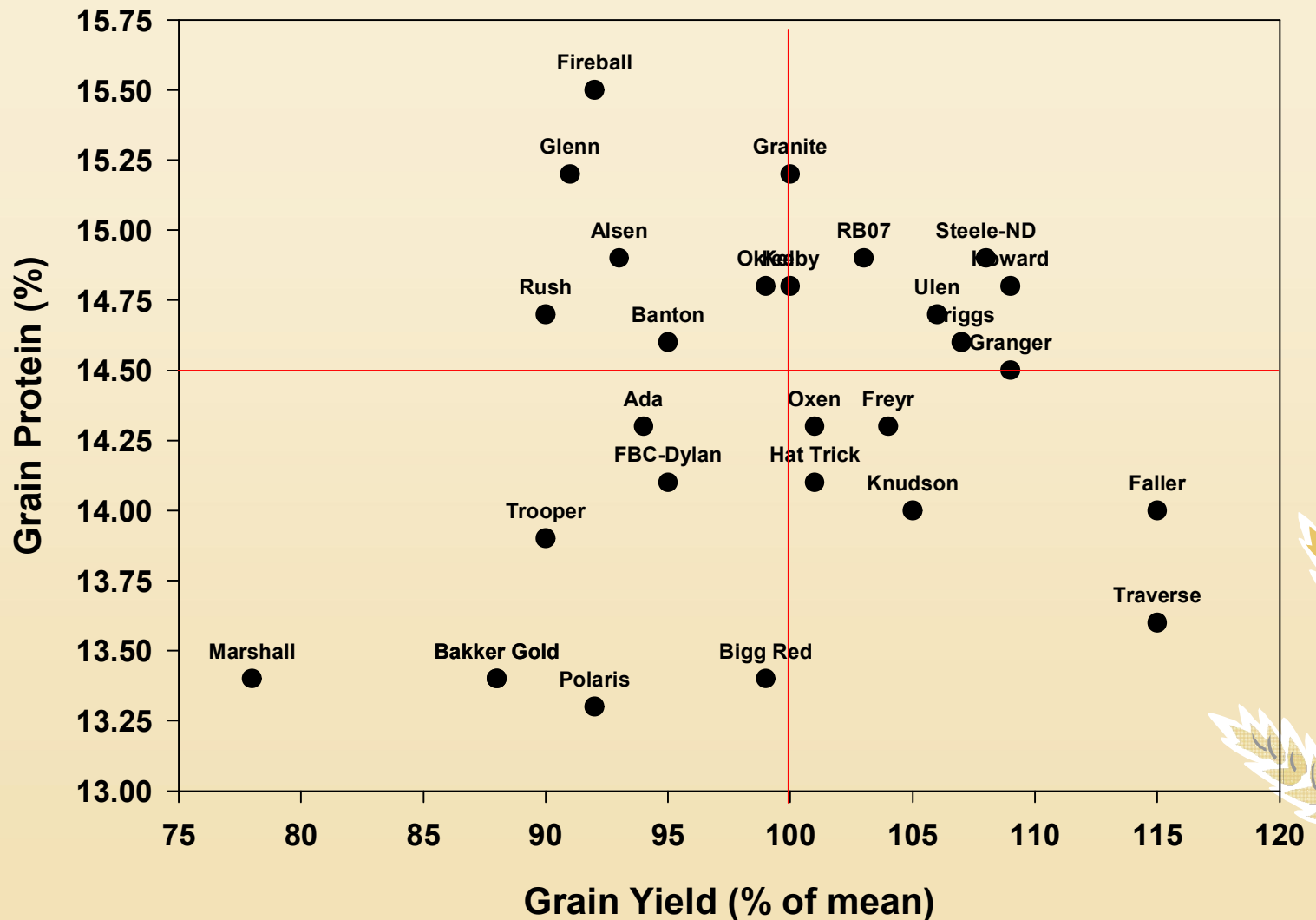
Straw Strength

<i>Variety</i>	<i>Plant Height</i>	<i>Straw Strength</i>	<i>Variety</i>	<i>Plant Height</i>	<i>Straw Strength</i>
Bakker Gold	31	Very Strong	Ada	31	Medium Strong
Granite	29	Very Strong	Faller	32	Medium Strong
Polaris	31	Very Strong	Knudson	30	Medium Strong
Rush	29	Very Strong	Oxen	31	Medium Strong
Trooper	29	Very Strong	RB07	30	Medium Strong
Vantage	29	Very Strong	Bigg Red	34	Medium
Alsen	32	Strong	Briggs	32	Medium
Banton	32	Strong	FBC-Dylan	31	Medium
Fireball	29	Strong	Freyr	32	Medium
Glenn	34	Strong	Granger	35	Medium
Hat Trick	30	Strong	Howard	32	Medium
Kelby	28	Strong	Oklee	31	Medium
Marshall	30	Strong	Steele-ND	33	Medium
			Traverse	34	Medium
			Ulen	32	Medium

Scatter Plot - 2007



Southern Average (2006-2007)



Picks

<i>Variety</i>	<i>Pluses</i>	<i>Minuses</i>
RB07	Balanced	
Faller	Yield	Protein, Straw strength?
Howard	Balanced	
Glenn	FHB, Quality	Yield, Threshability
Freyr	FHB	Straw strength
Steele-ND	Balanced	Straw strength
Granger	Yield	Straw strength
Briggs	Balanced	Straw strength
Knudson	Yield	Protein

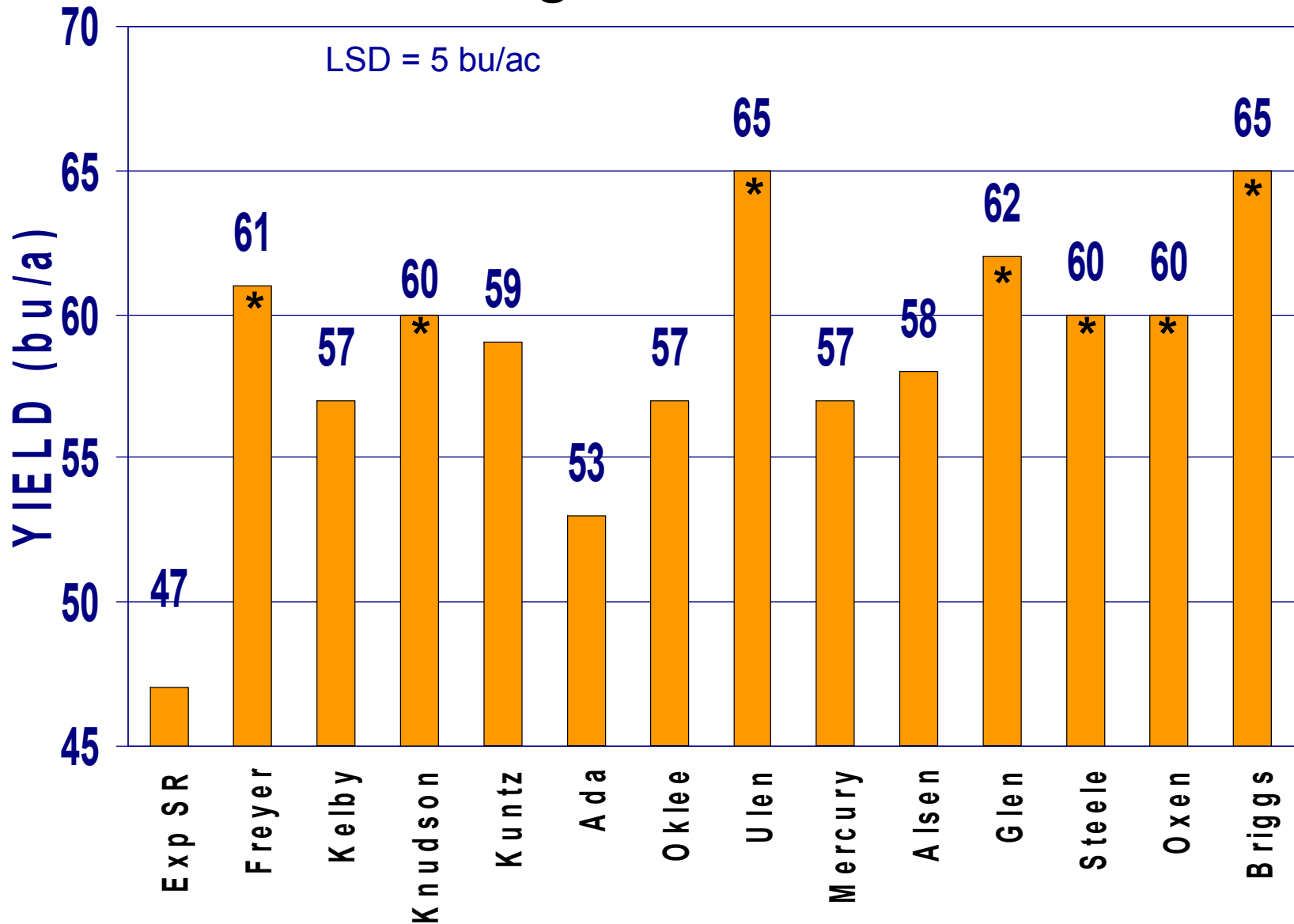


WHEAT

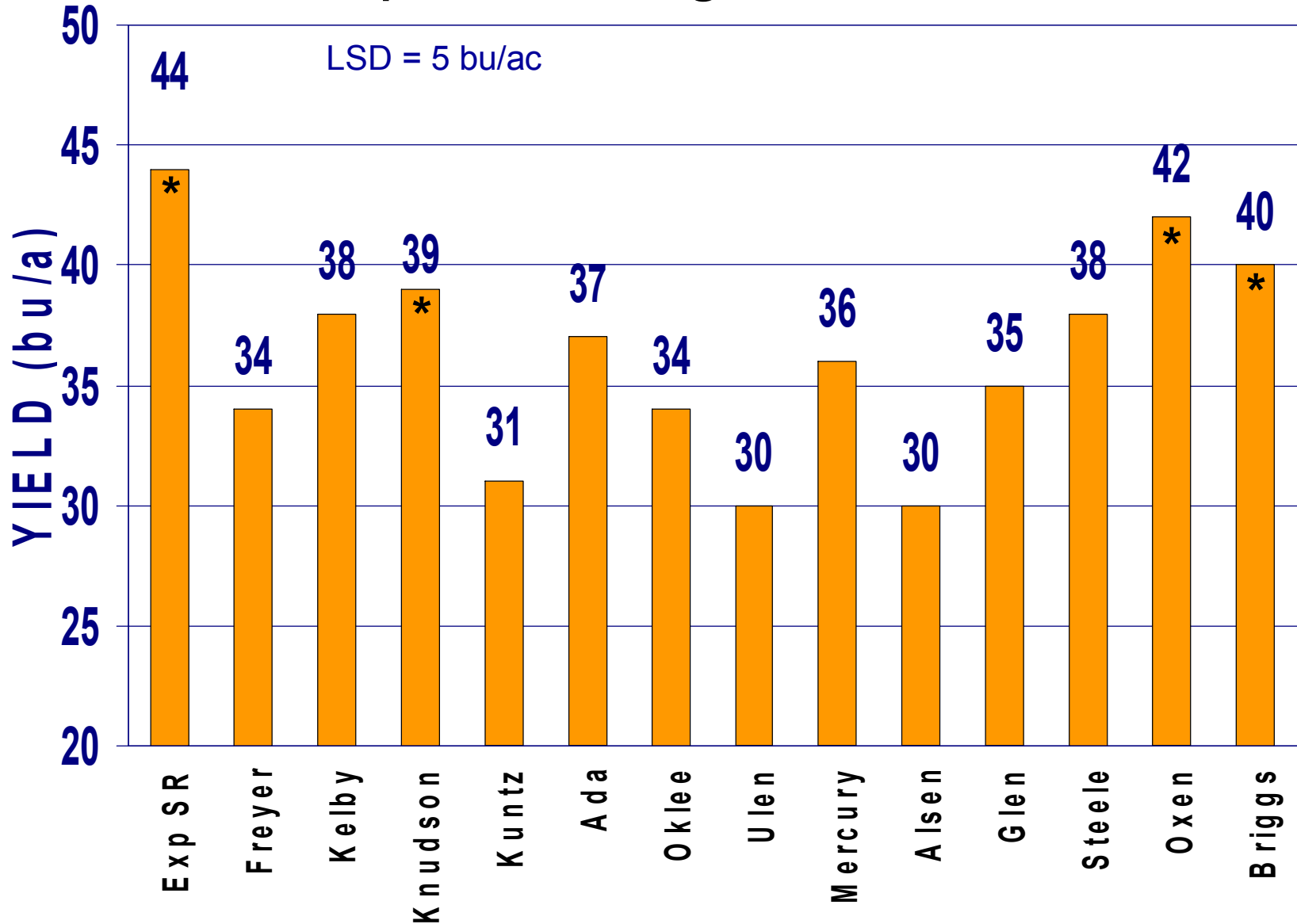
Table 10. Performance of spring wheat varieties in Wisconsin (2007)

Variety	Origin	Class ^a	Arlington							Spooner, irrigated				
			Yield	Ht.	Lodg- ing ^b	Test wt.	Head date	—Dis— PM ^c	LS ^d	Yield	Ht.	Lodg- ing ^b	Test wt.	Head date
			(bu/a)	(in)		(lb/bu)		(%)	(%)	(bu/a)	(in)		(lb/bu)	(bu/a)
01S0202-2S	AgriPro	SR	47	27	1.0	59.6	6-16	88	0	44*	27	2.3	54.3	6-11
Freyer	AgriPro	HR	61*	32	1.7	60.6	6-18	26	0	34	32	1.8	56.5	6-13
Kelby	AgriPro	HR	57	29	1.0	60.9	6-17	49	0	38	28	1.0	57.5	6-11
Knudson	AgriPro	HR	60*	28	1.0	61.3	6-18	59	1	39*	26	1.3	57.1	6-14
Kuntz	AgriPro	HR	59	29	1.0	60.5	6-17	52	0	31	28	1.0	54.6	6-14
Ada	MN	HR	53	29	1.8	62.5	6-17	70	0	37	26	1.0	53.9	6-14
Oklee	MN	HR	57	29	1.3	61.6	6-17	52	0	34	29	1.5	56.2	6-11
Ulen	MN	HR	65*	32	1.7	60.8	6-16	10	0	30	32	1.8	56.2	6-11
Mercury	North Star	HR	57	27	1.2	60.9	6-17	52	0	36	27	1.0	55.7	6-12
Alsen	ND	HR	58	31	1.3	60.3	6-18	19	26	30	31	1.0	56.1	6-14
Glen	ND	HR	62*	33	1.5	62.2	6-16	19	0	35	34	1.0	55.7	6-11
Steele	ND	HR	60*	32	1.7	60.8	6-16	9	0	38	31	1.5	53.9	6-12
Oxen	SD	HR	60*	30	1.8	59.7	6-17	52	0	42*	30	1.0	54.8	6-11
Briggs	SD	HR	65*	31	2.5	61.5	6-16	27	0	40*	30	2.0	54.1	6-10
Mean			59	30	1.5	60.9	6-16	42	2	36	29	1.4	55.5	6-12
LSD (0.10) ^e			5	1	0.5	0.5	1	14	4	5	2	0.5	1.3	1

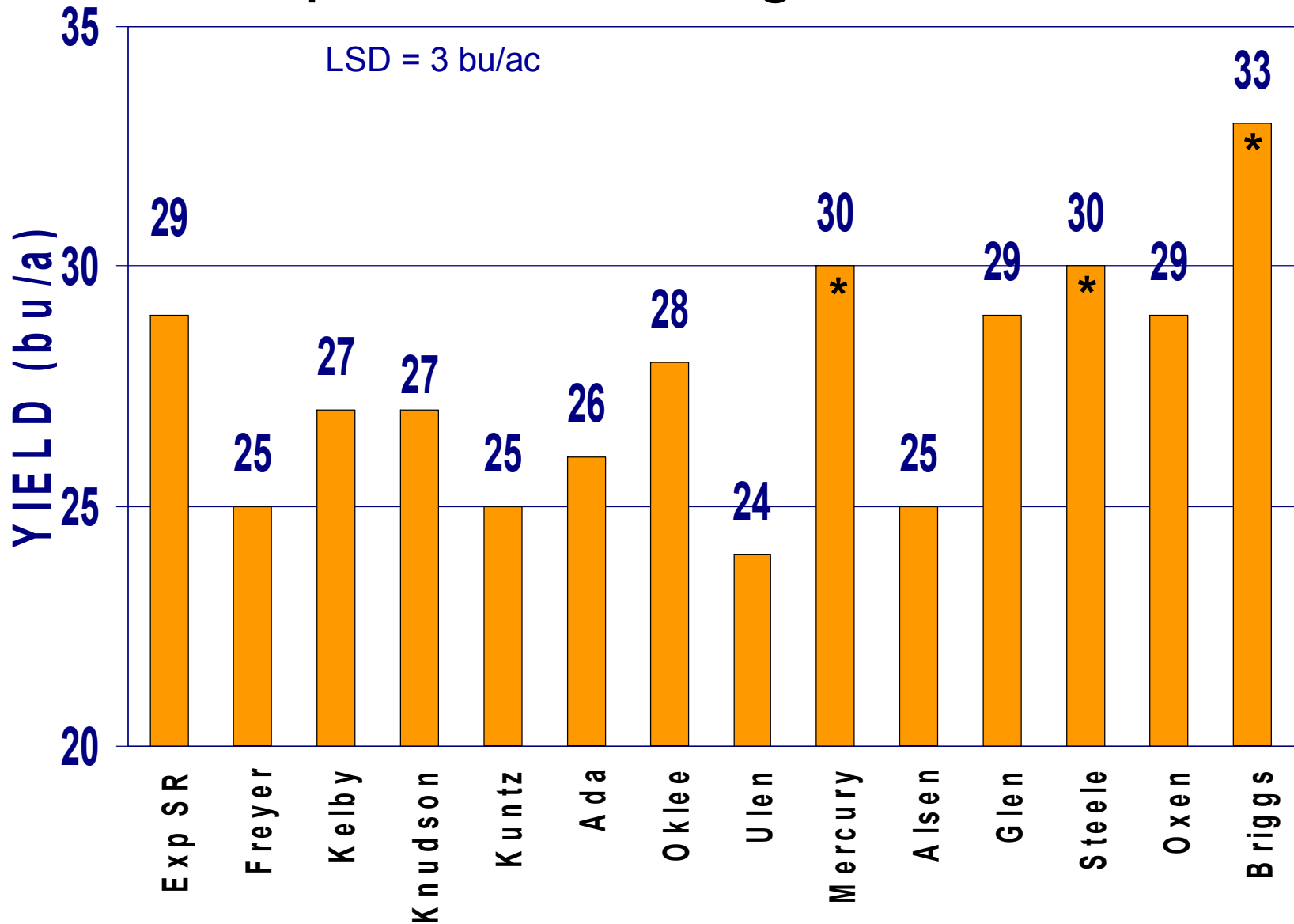
Spring Wheat Grain Yield Arlington, WI 2007



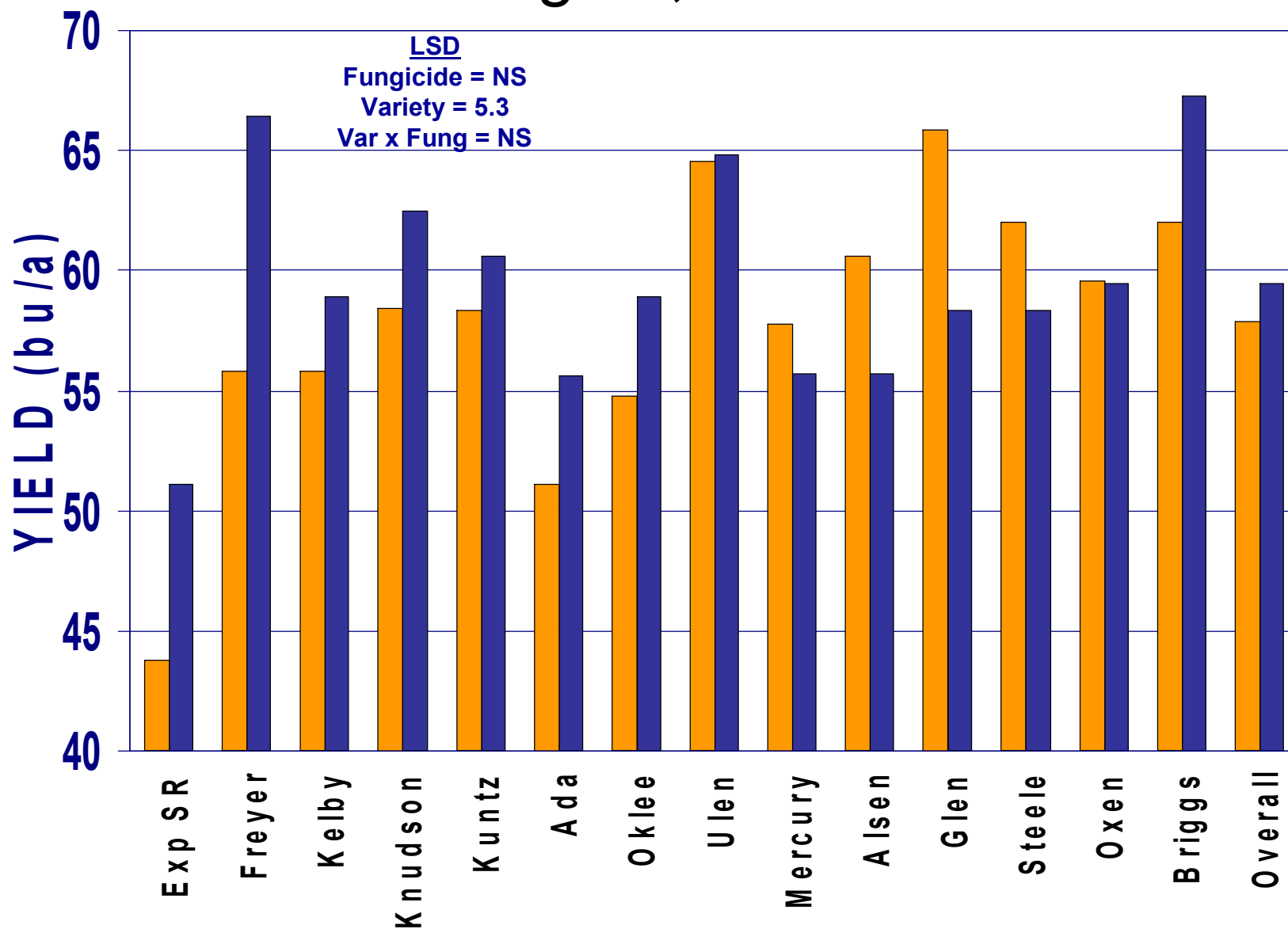
Spring Wheat Grain Yield Spooner Irrigated 2007



Spring Wheat Grain Yield Spooner Non-Irrigated 2007



Spring Wheat Variety x Fungicide Arlington, WI 2007



Seeding Operations

‘This is not your grandfather’s drill’



Population

$$\text{SDR} = \frac{[(\text{Desired Stand in Plants/Acre}) / (1 - \text{Expected Stand Loss})]}{[(\text{Seeds/Pound}) \times (\text{Percentage Germination})]}$$

Initial Stands:

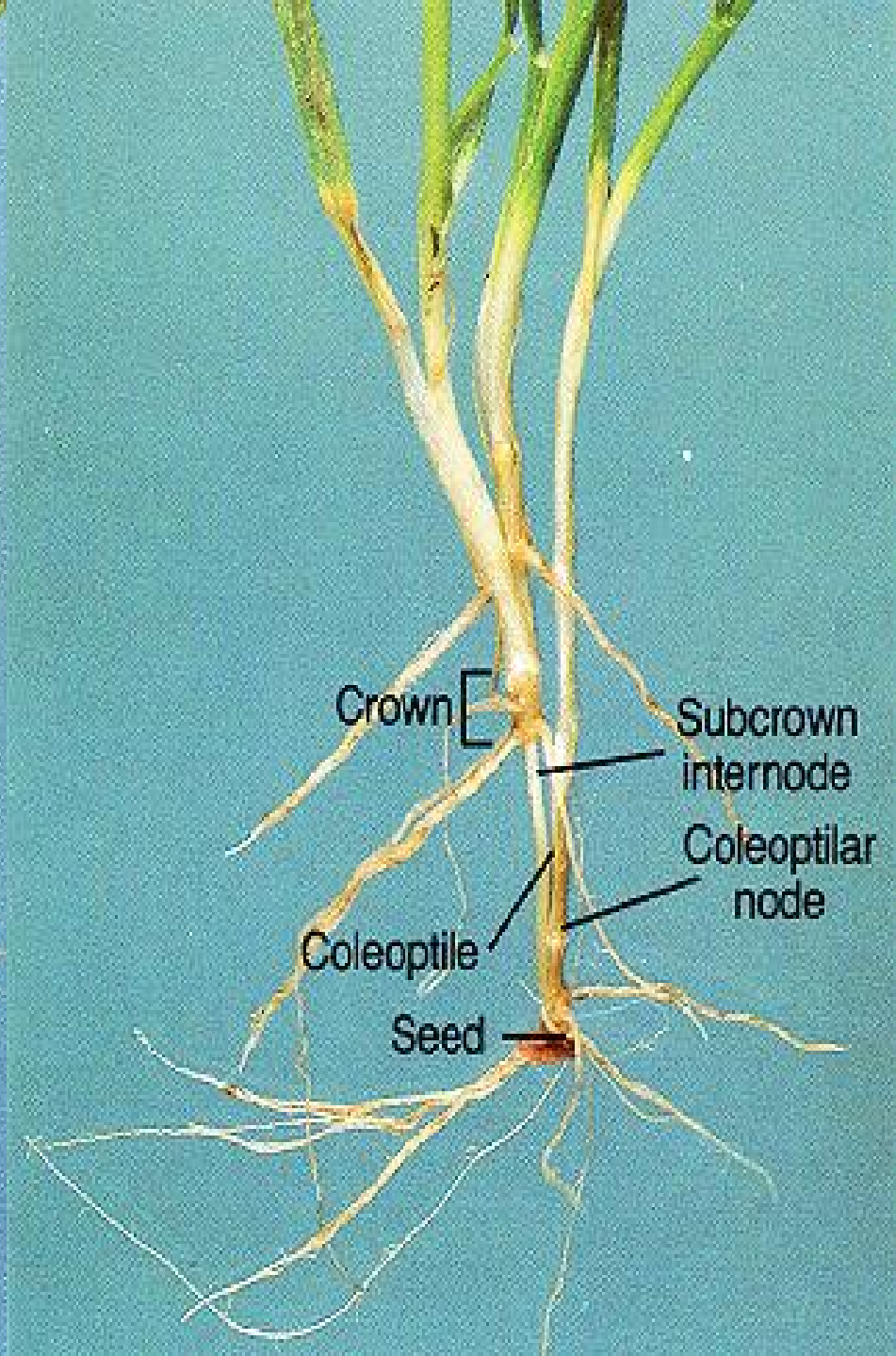
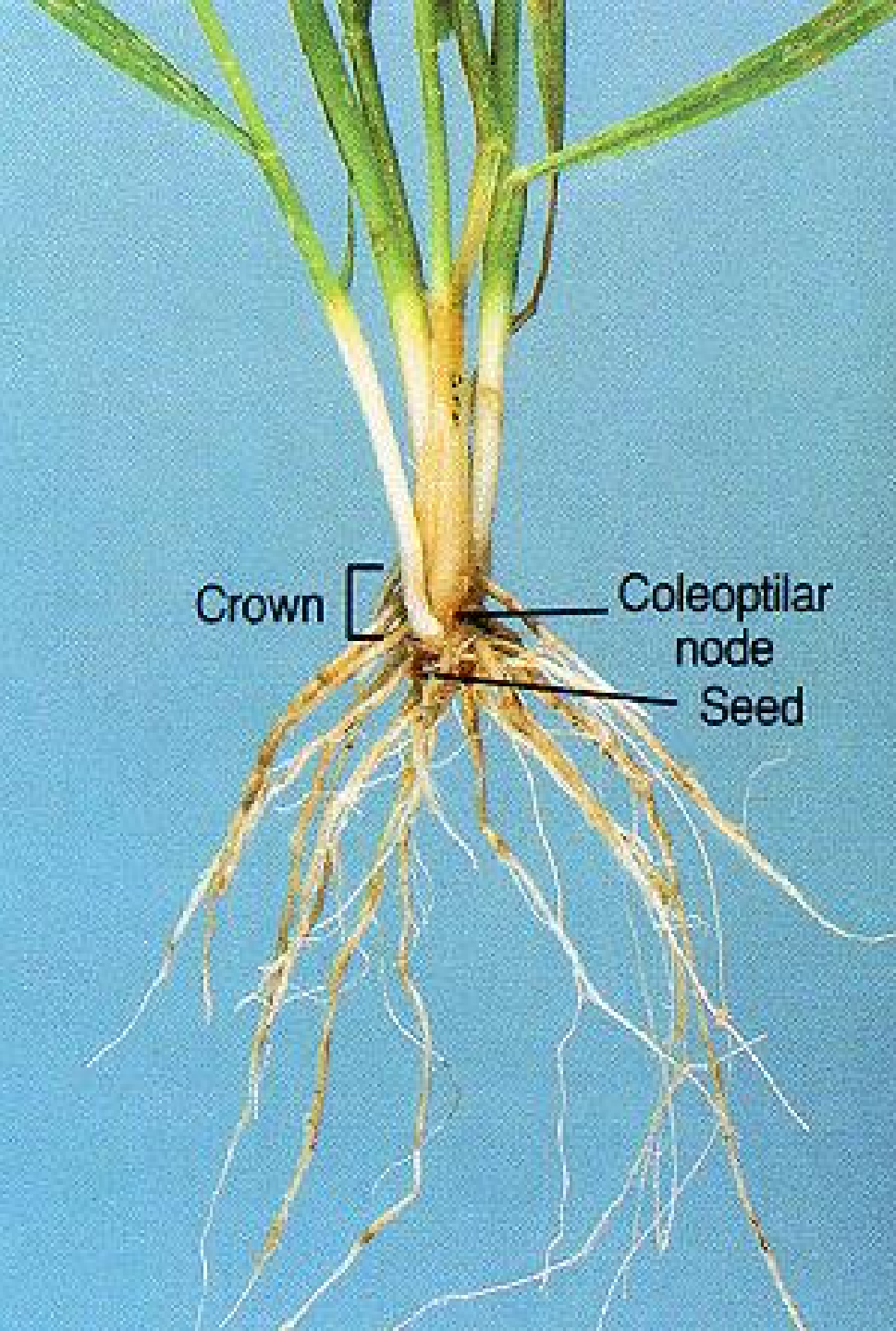
<i>Crop</i>	<i>Plants per acre (times 1 million)</i>	<i>Plants per sq. ft.</i>
Winter wheat	1.0	23
Spring wheat	1.30 – 1.35	30 – 32
Barley	1.25 – 1.30	28 – 30
Oats	1.25 – 1.30	28 – 30



Depth

- Depth control critical component:
 - You can not afford a delay in emergence.
 - Increases problems with root rots.
- Ideal seeding depth is 1" - 1.5"





Temperature

Minimum, optimum, and maximum growth temperatures for small grains.

Crop	Growth Temperature		
	Minimum	Optimum	Maximum
	----- °F -----		
Wheat	37-39	75-77	86-90
Barley	37-39	68-70	82-86
Oat	37-39	68-70	82-86

Q: What is the correct order to plant small grains?

Q: Has the drought in WI helped our spring wheat?

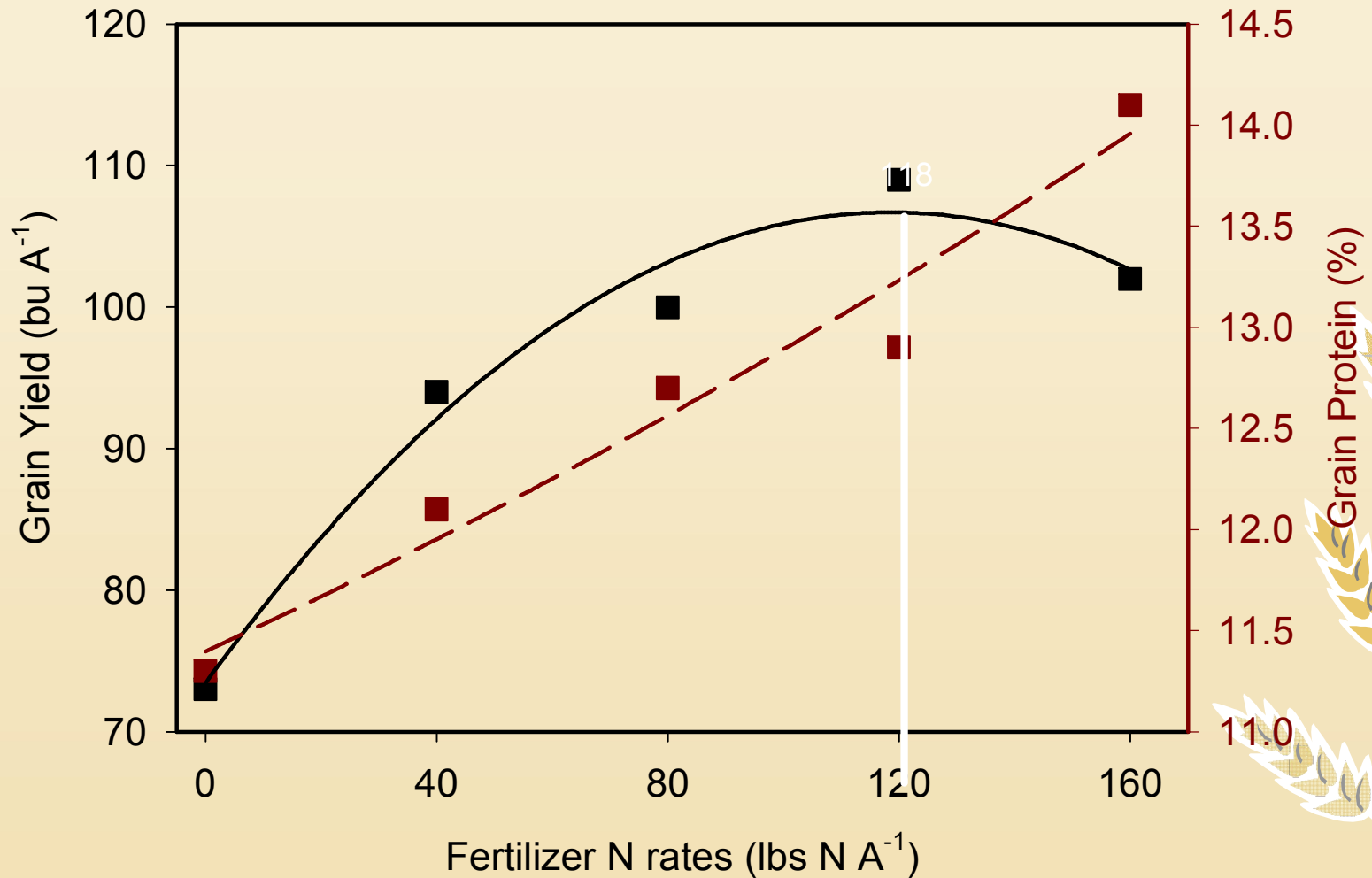
UNIVERSITY OF MINNESOTA

EXTENSION

Fertility Management

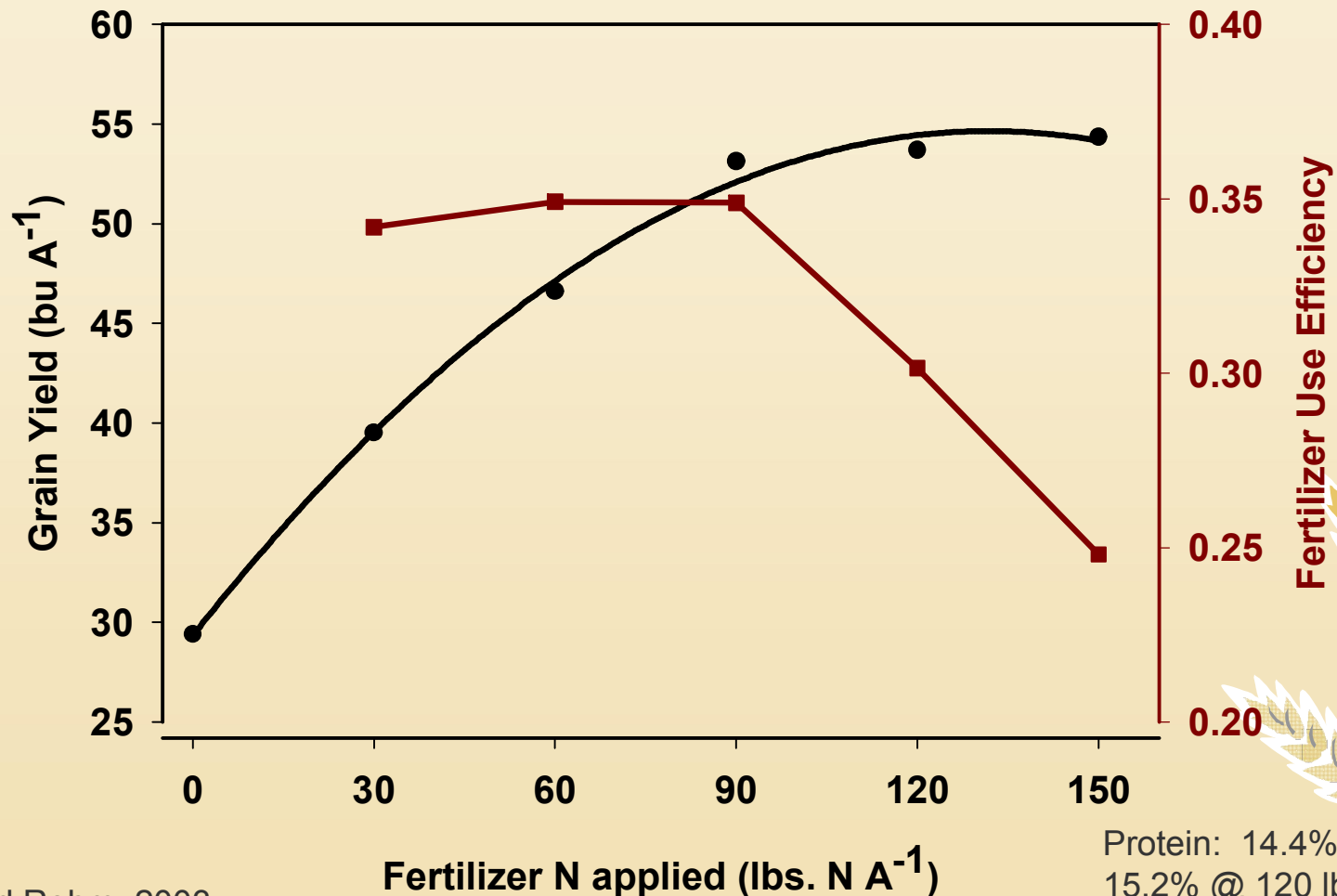


Grain Yield vs Protein



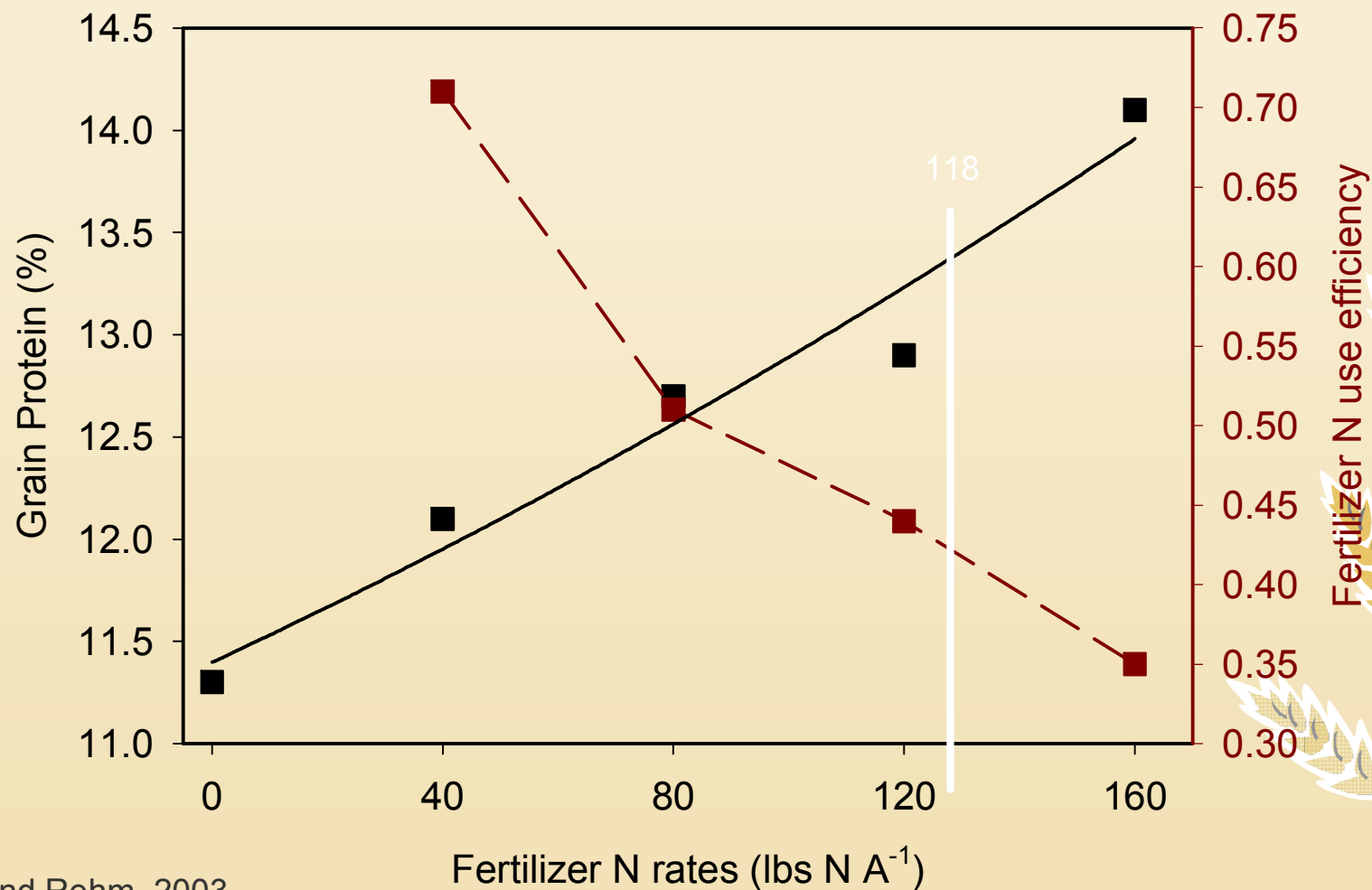
Sims and Rehm, 2003

Grain Yield versus NUE



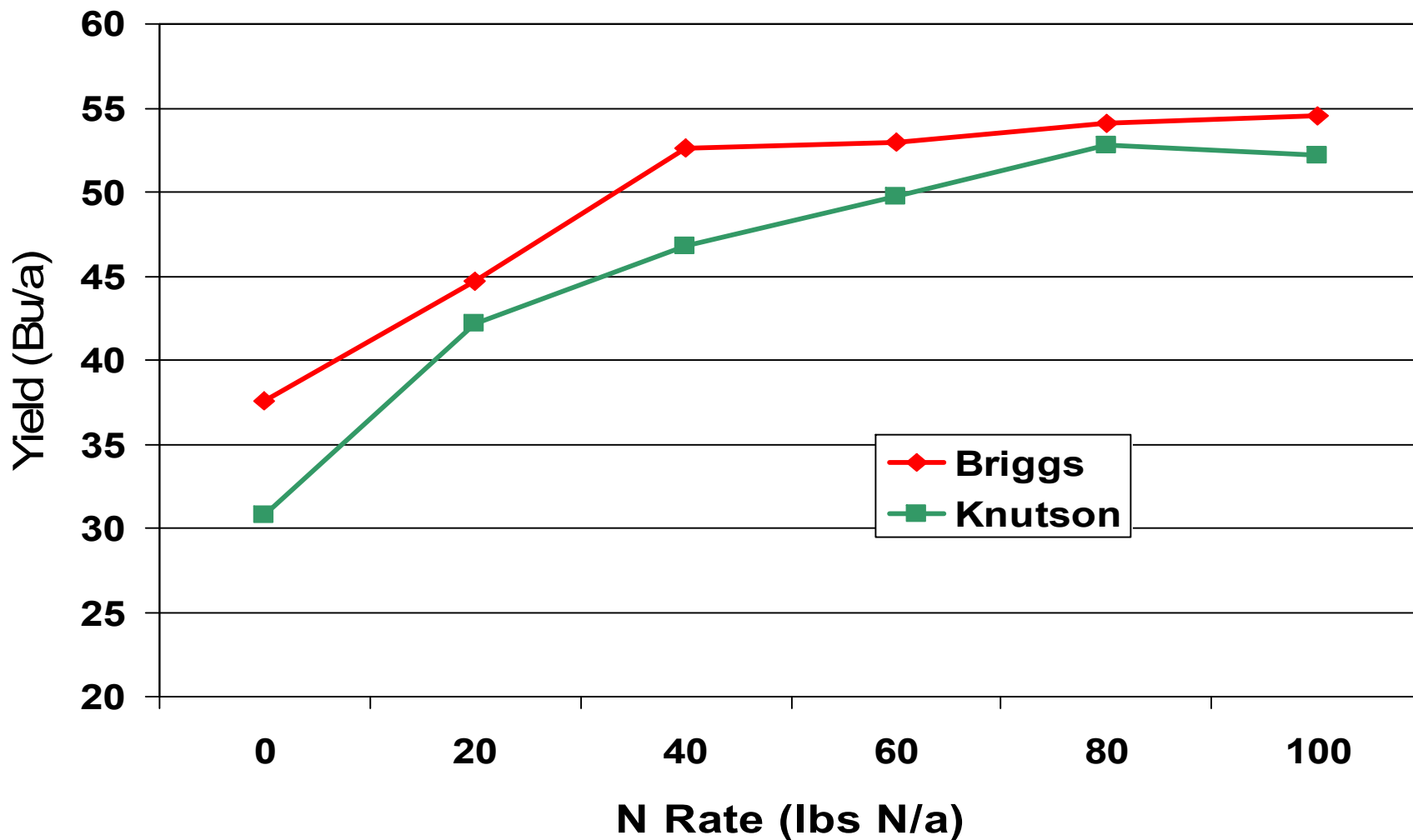
Sims and Rehm, 2003

Grain Protein versus NUE



Sims and Rehm, 2003

Spring Wheat Response to N at Spooner, WI 2007



Fertility Management

- Soil test.
 - To get a reference point
- Apply according to recommendation:
 - Refer to Small Grains Field Guide
 - Eastern MN and OM% >3.0: 70 lb N/A
 - Western MN: $N_{rec} = (YG \times 2.5) - STN - NPC$ (=40lb N/A for soybean)
 - WI
 - 60 lb N/a for 2.0 to 9.9% OM
 - 90 lb/a for <2.0% OM
- Split applications:
 - Be aware that N can not be rate limiting at 5 leaf stage
 - Splits only recommended for very sandy soils.



Management Stages



Optimizing Scouting Time

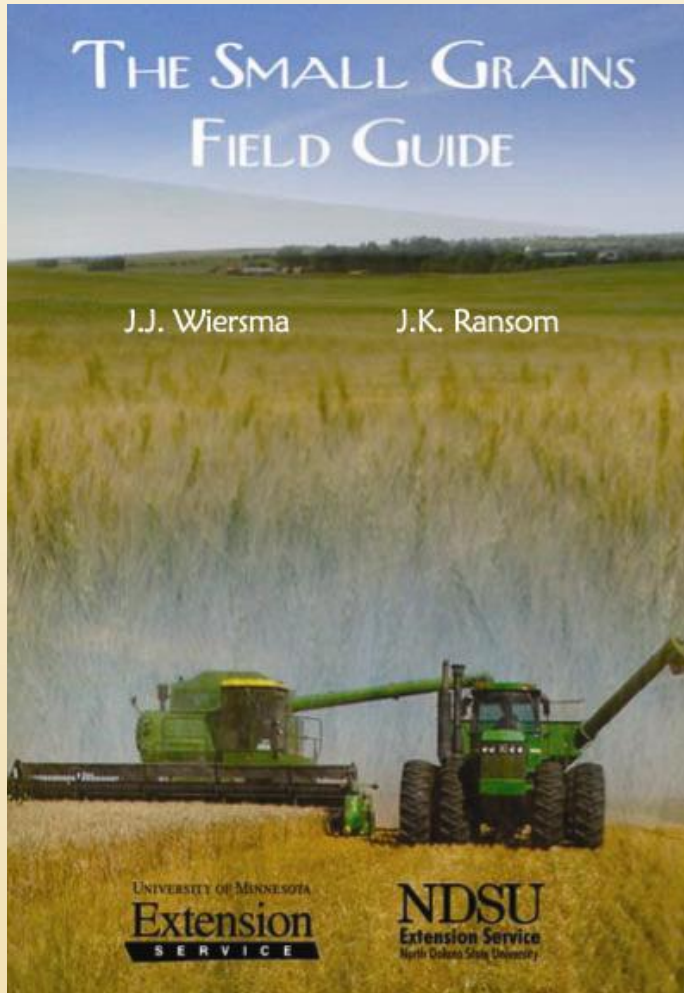
- In HRSW:
 - Fifteen distinct crop growth stages.
 - Five of these are critical in HRSW:
 - 2 leaf stage - stand count, weed ID)
 - 4 to 5 leaf stage - weed ID, insects, and fungi
 - flag leaf emergence - insects, and fungi
 - heading to flowering - insects, and fungi
 - physiological maturity - pre-harvest management



Scouting Activities

Timing Stage	Growth Stage (Zodaks)	Scouting Activities			
		Agronomic	Weeds	Insects	Diseases
2–Leaf Stage	12	Stand count	Scout for weeds	-	-
4 – 5 Leaf Stage	14-15	Estimate yield (if jointing has started)	Scout for weeds	Scout for aphids & grasshoppers	Scout for leaf diseases (powdery mildew)
Flag Leaf Emergence	37	-	-	Scout for aphids & other insects (armyworms)	Scout for leaf diseases
Anthesis	60	Estimate yield	-	Scout for OWBM	Evaluate need for FHB treatment
Physiological Maturity	90	-	Evaluate need for pre-harvest herbicide program	-	-

Acknowledgements



- Order:
 - (800) 876-8636
 - (701) 231-1882
 - shop.extension.umn.edu

- Jochum Wiersma
 - Phone: (218) 281-8629
 - Email: wiers002@umn.edu



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