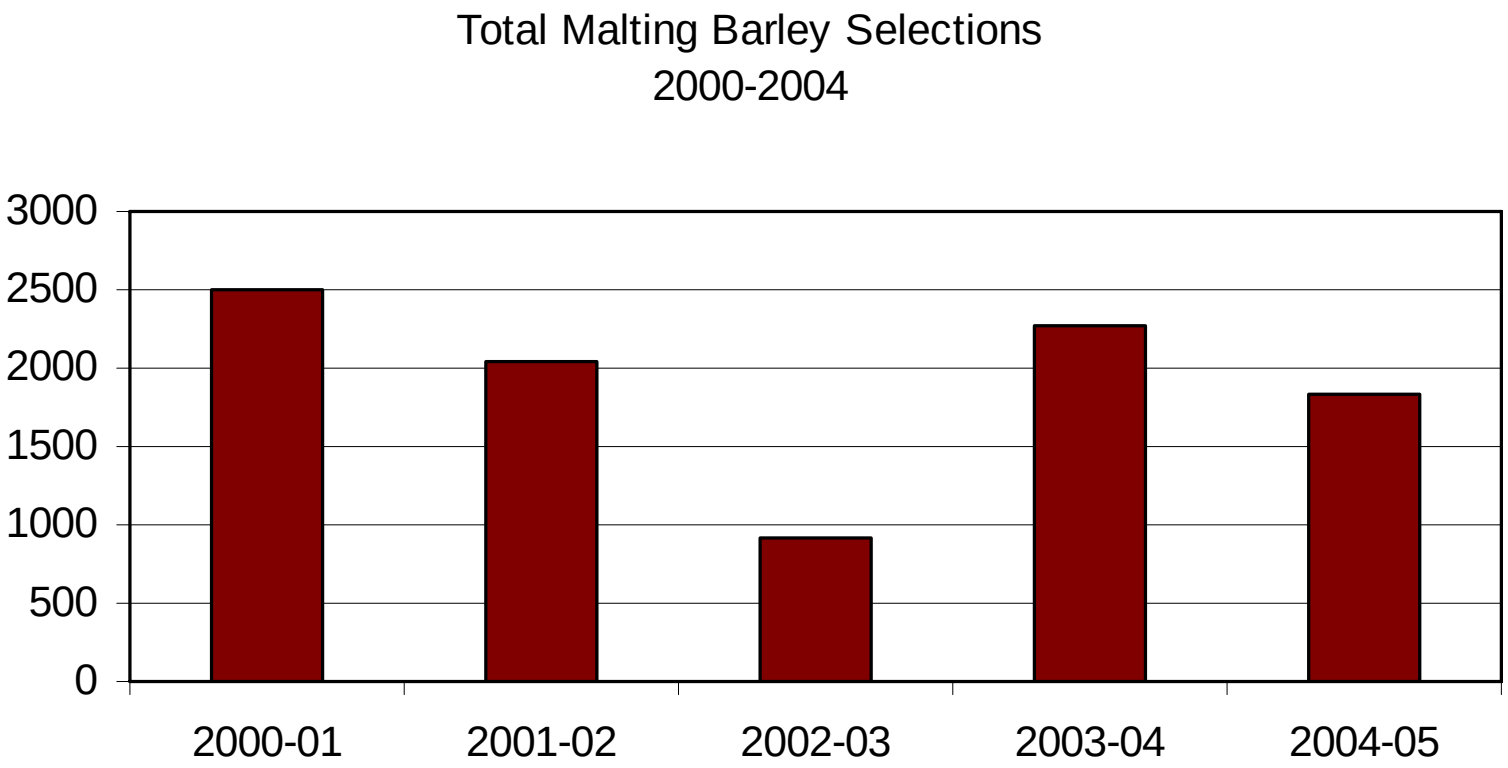
Agronomic Management Practices For Improving Selection Rate For Malting Barley

Crop Production Week

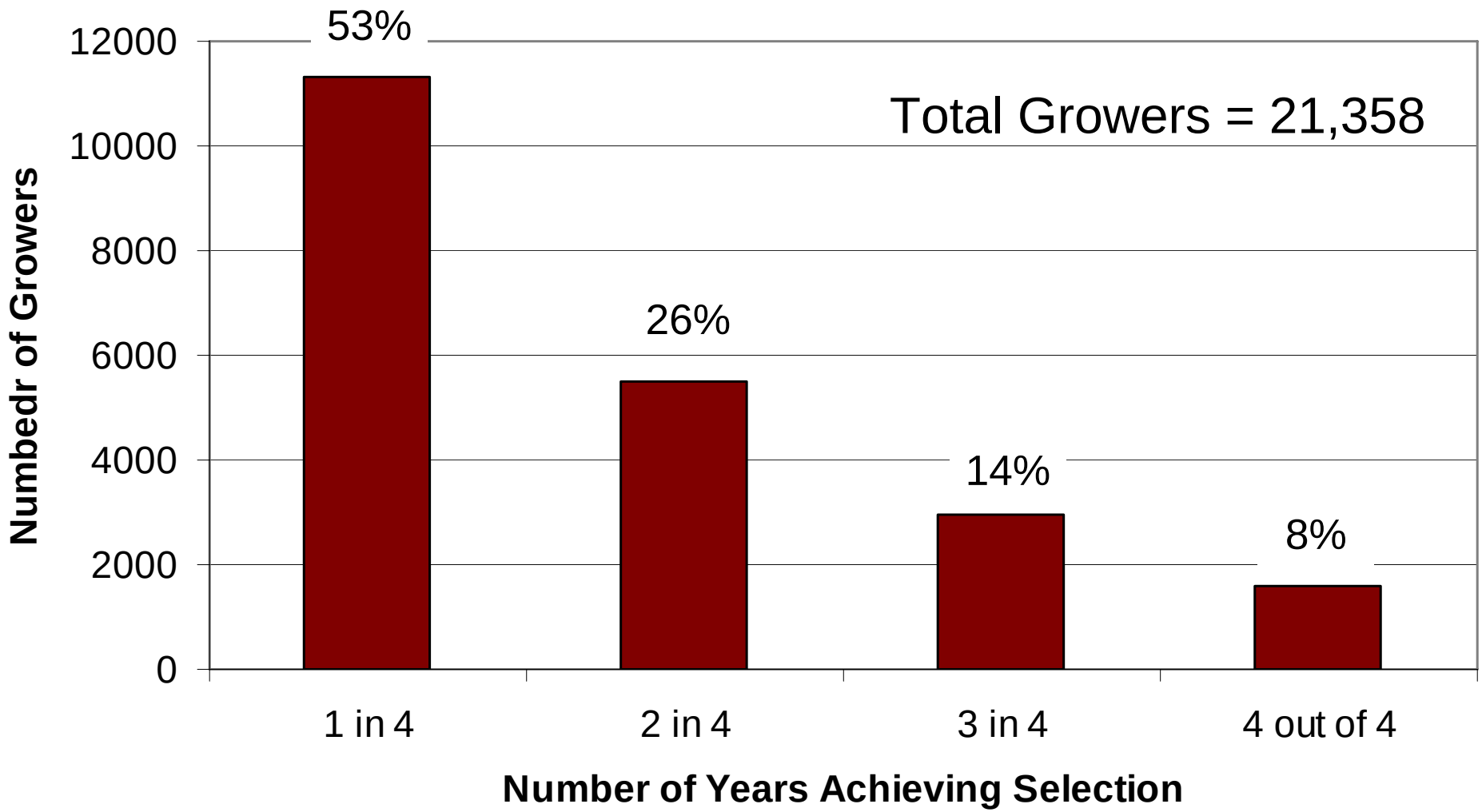
January 13, 2006

Mike Grenier, Agronomist
Product Development and Marketing Support

Malting Barley Pool Size



Consistent selections over the years: 2000, 01, 03, and 04

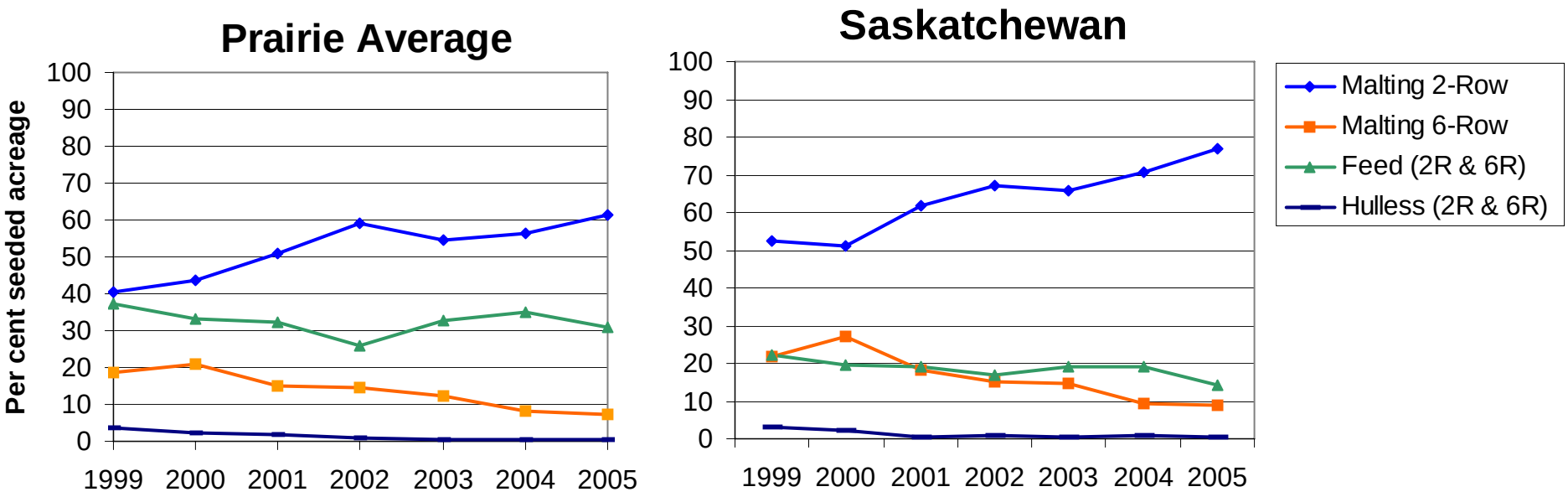


Malting Barley Specification Requirements

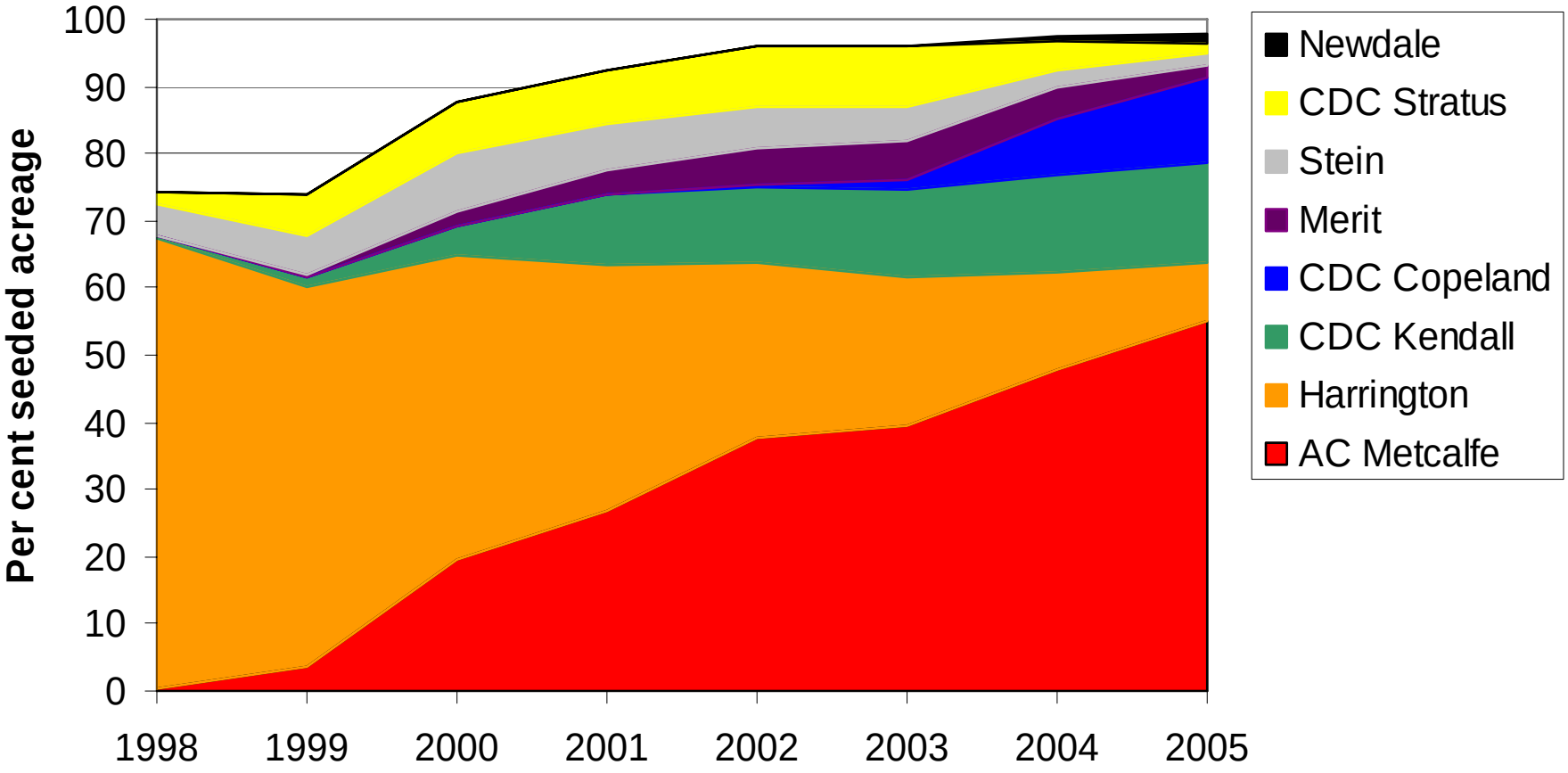
- Variety Purity
- Mature with high germination and vigour
- Protein content
- Plump and uniform
- Bright and clean
- Moisture <13.5%
- Disease free
- No frost damage
- No desiccants
- No insect damage or foreign material

CWB Variety Survey 1998-2005

Barley Acreage by Type



Two-row Malting Barley
CWB Survey 1998-2005



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Recommended Malting Barley Varieties 2006-07

Recommended Two-Row Barley Varieties

VARIETY	DOMESTIC	EXPORT	MARKET DEMAND
AC Metcalfe[4]	Established	Established	Stable, High Demand
CDC Kendall[1,5]	Established	Growing	Increasing Demand
CDC Copeland[4]	Established	Growing	Increasing Demand
Harrington[4]	Established	Established	Stable, Demand
Stein[1]	Limited	Limited	Low Demand
Merit[1,2,3,5]	Established	Limited	Low Demand

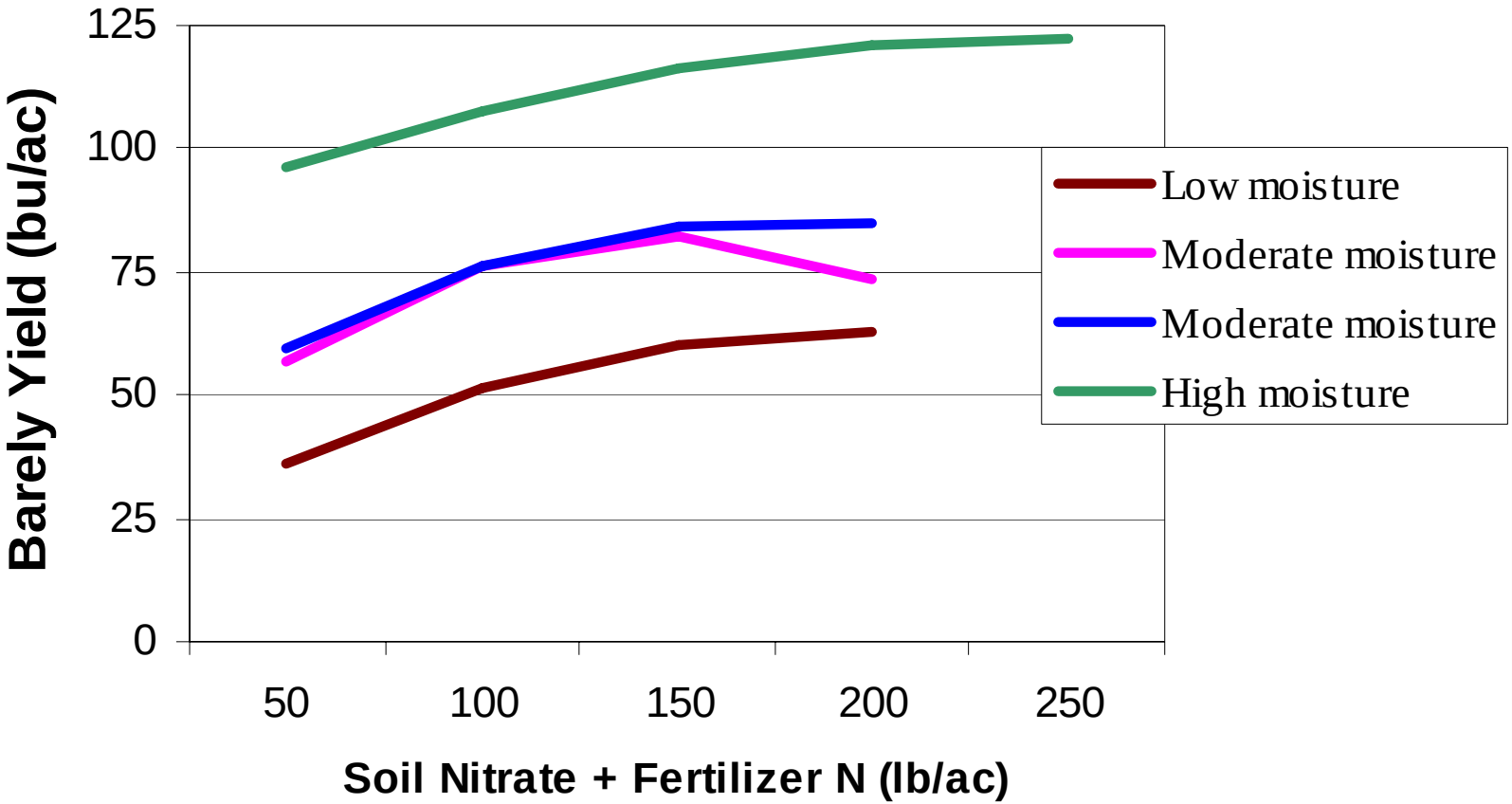
Newdale (TR258), Calder (TR262), and CDC Select (TR153) are not yet being grown for the commercial market. Production is limited to quantities required for testing and market development.

Protein Premiums for Two-row Malting Barley 2005-06

Protein Payment Schedule on Two-row Malting Barley

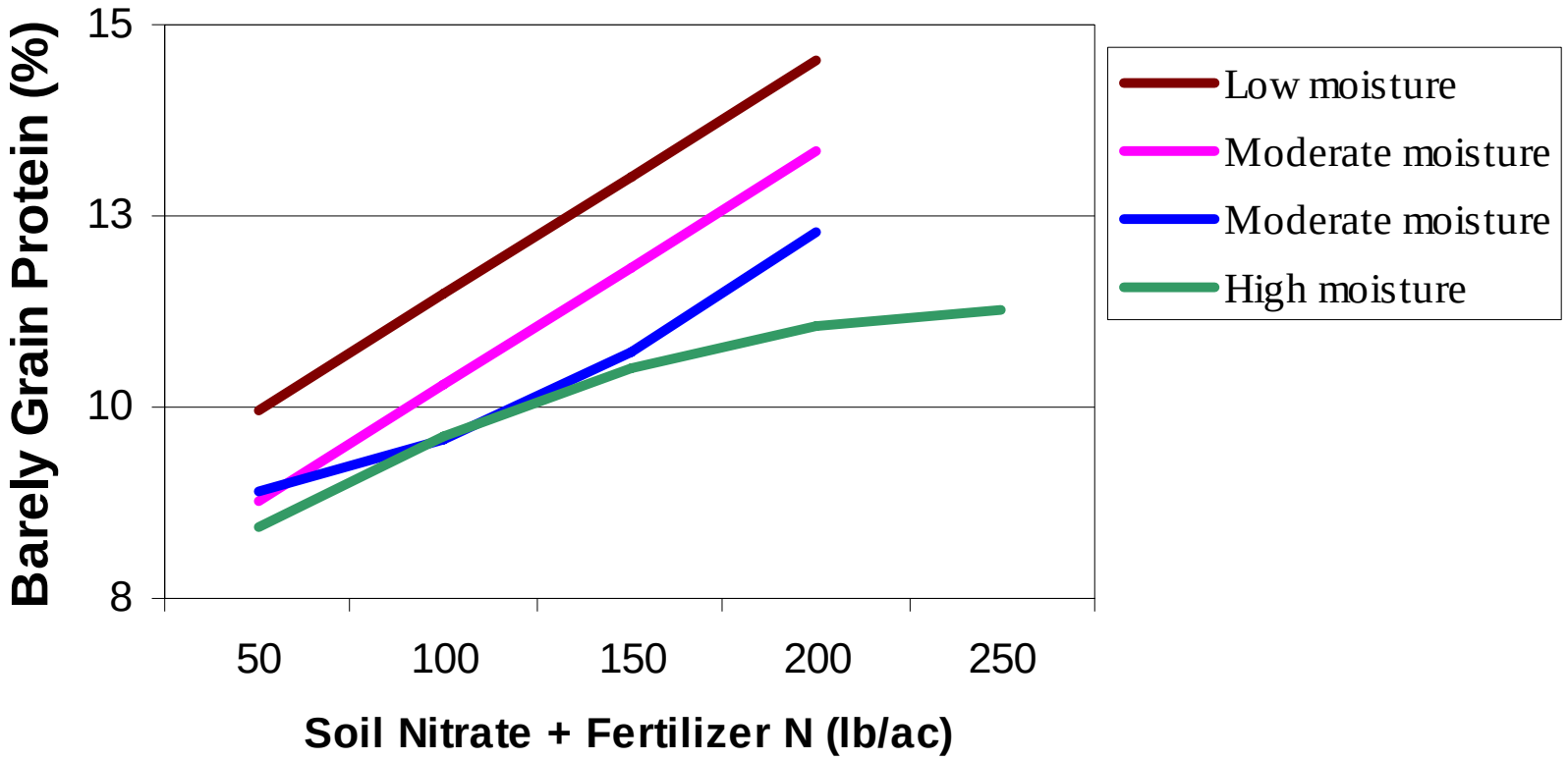
Protein Level (%)	Price adjustment ($/tonne)	Protein Level (%)	Price adjustment ($/tonne)
12.6	0	11.7	3.00
12.5	0.60	11.6	3.30
12.4	0.90	11.5	3.60
12.3	1.20	11.4	3.90
12.2	1.50	11.3	4.20
12.1	1.80	11.2	4.50
12.0	2.10	11.1	4.80
11.9	2.40	11.0	5.10
		10.9	
11.8	2.70	and below	5.40

Effect of N and moisture on barley yield



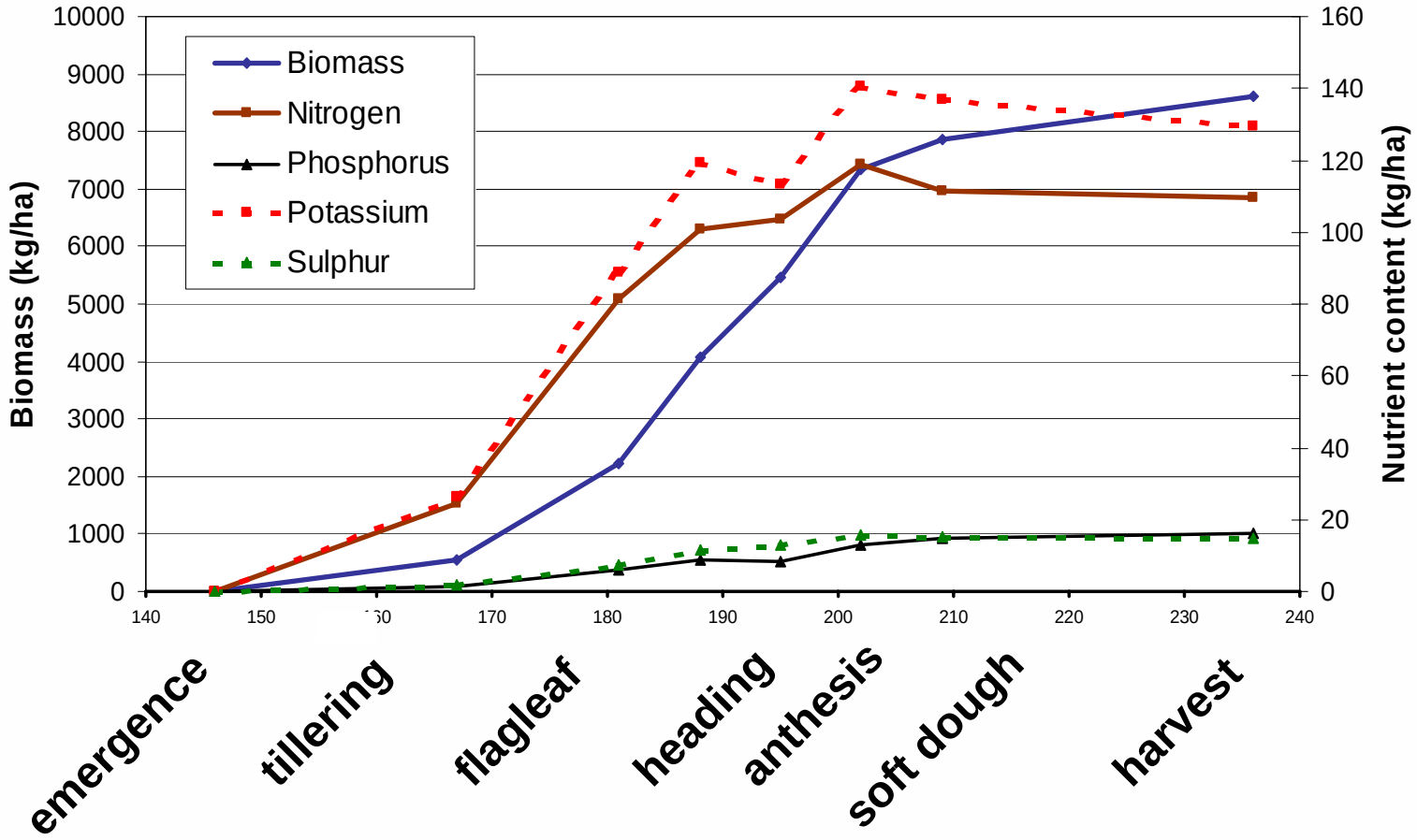
Adapted from McKenzie, Agronomy workshop 2001

Effect of N and moisture on barley grain protein



Adapted from McKenzie, Agronomy workshop 2001

Pattern of Nutrient Uptake by Barley



Johnston et. al. 1999

Succeeding with Malting Barley

- In collaboration with Prairie Malt established research & demonstration site near Biggar SK.
- Sponsor SSCA Malting Barley field tours
- Demonstration site with East Central Research Foundation in Canora SK.

Focus on management practices to optimize yield and quality:

- Variety demonstration
- Seeding rate study
- Fertilizer programs

Biggar Site Details
Stubble: Pea
Precip: 16 inches
Soil test results:

N03-N	9 lb/ac	(Deficient)
P	21	(Marginal)
K	>540	(Sufficient)
S04-S	12	(Marginal)

Fertilizer Treatments

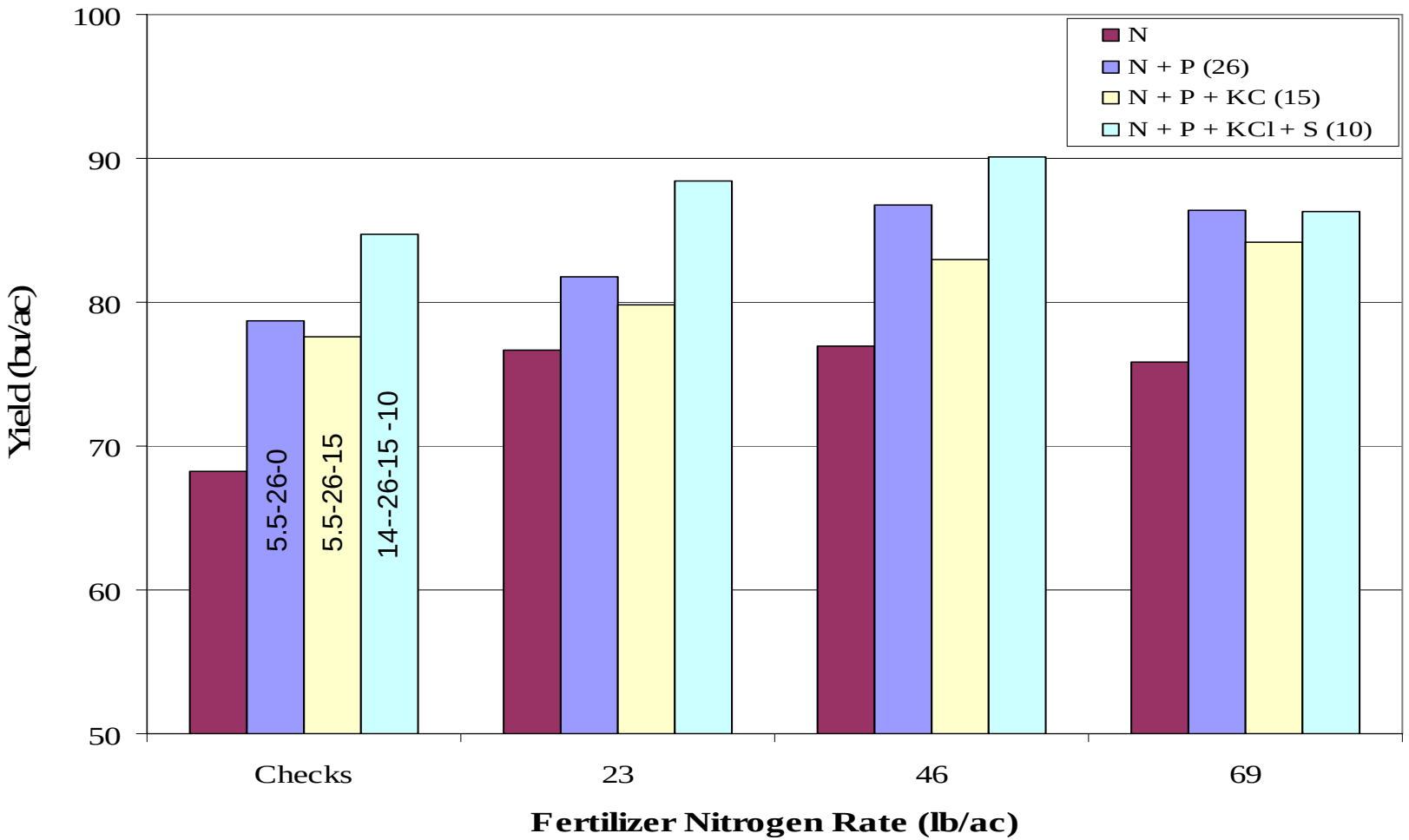
N - P - K - S

1. 23 - 0 - 0 - 0
2. 23 - 26 - 0 - 0
3. 23 - 26 - 15 - 0
4. 23 - 26 - 15 - 10
5. 46 - 0 - 0 - 0
6. 46 - 26 - 0 - 0
7. 46 - 26 - 15 - 0
8. 46 - 26 - 15 - 10
9. 69 - 0 - 0 - 0
10. 69 - 26 - 0 - 0
11. 69 - 26 - 15 - 0
12. 69 - 26 - 15 - 10

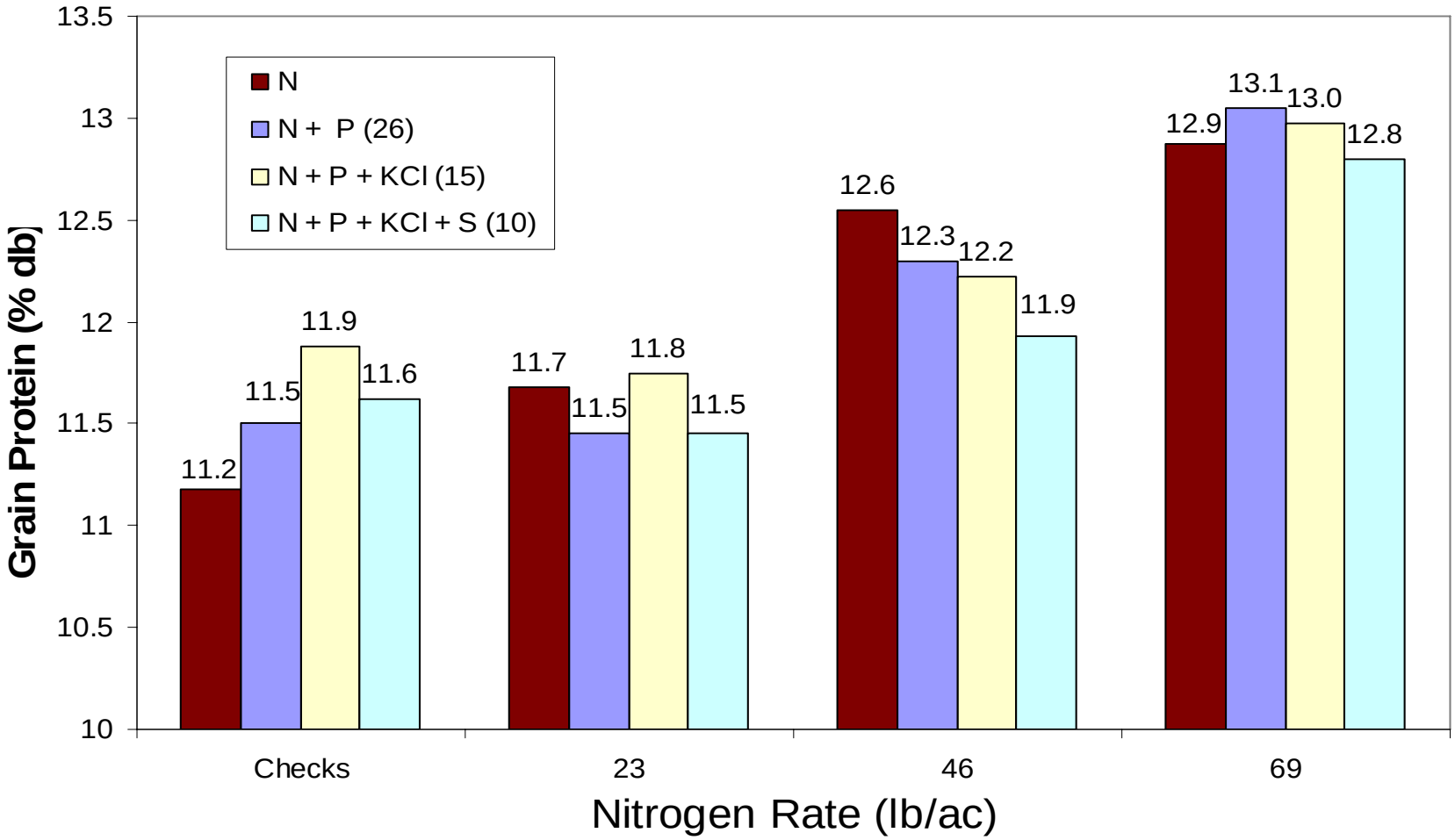
Checks:

1. 0 - 0 - 0 - 0
2. 5.5 - 26 - 0 - 0
3. 5.5 - 26 - 15 - 0
4. 14 - 26 - 15 - 10

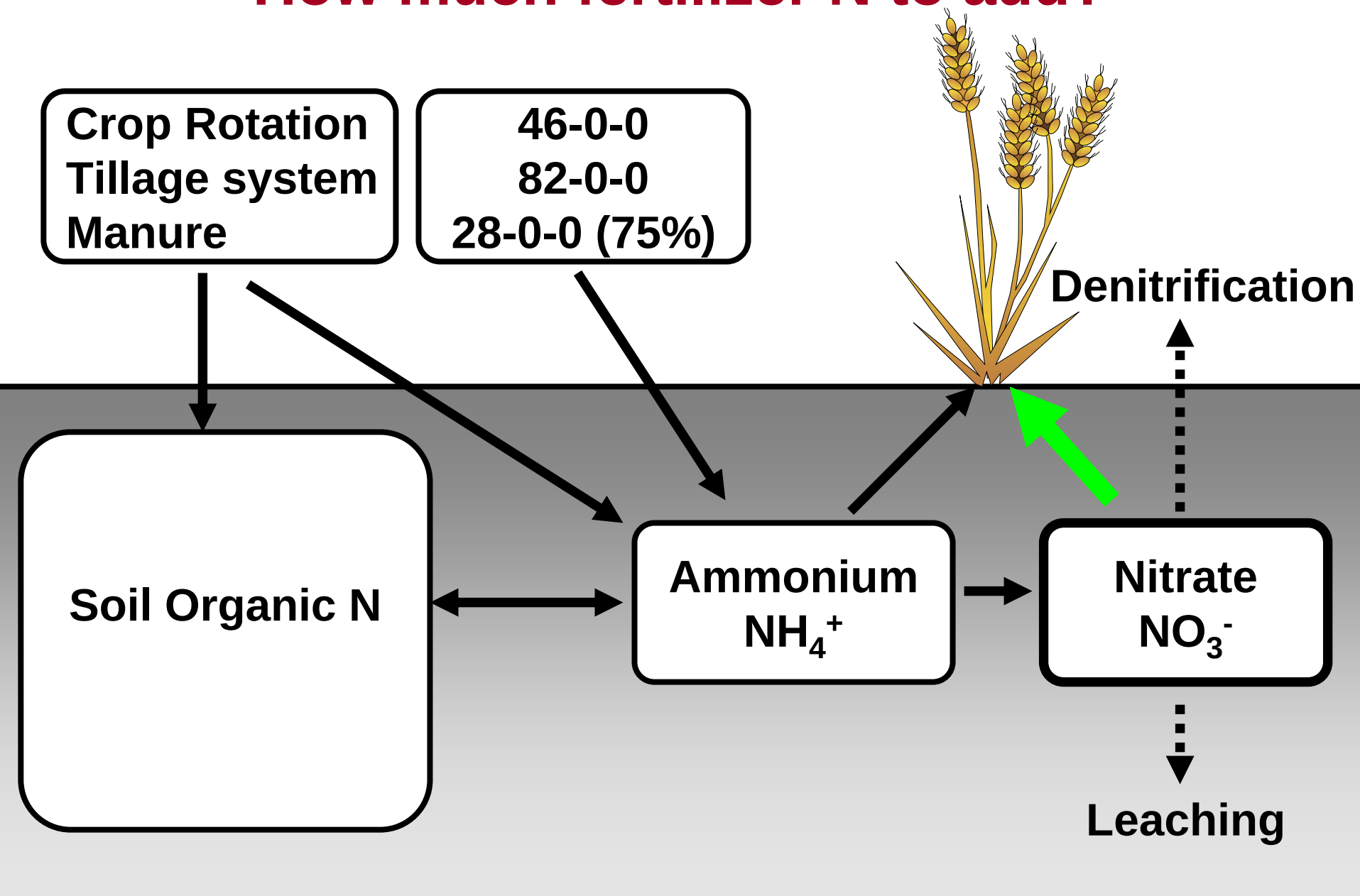
Effect of fertilizer on yield



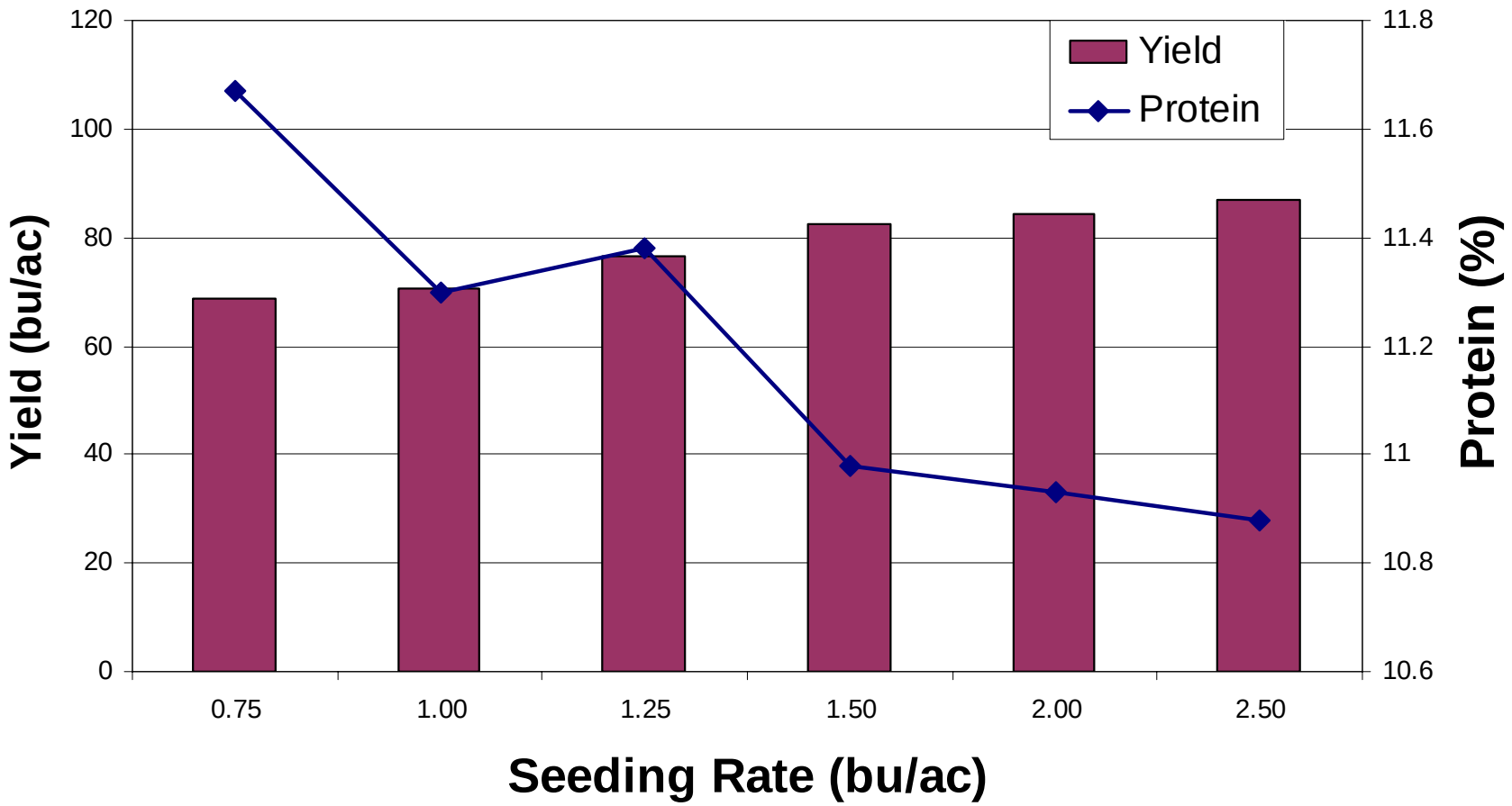
Effect of fertilizer on protein



Protein Management in Malting Barley
How much fertilizer N to add?



Impact of seeding rate on yield and protein



Seeding rate calculations

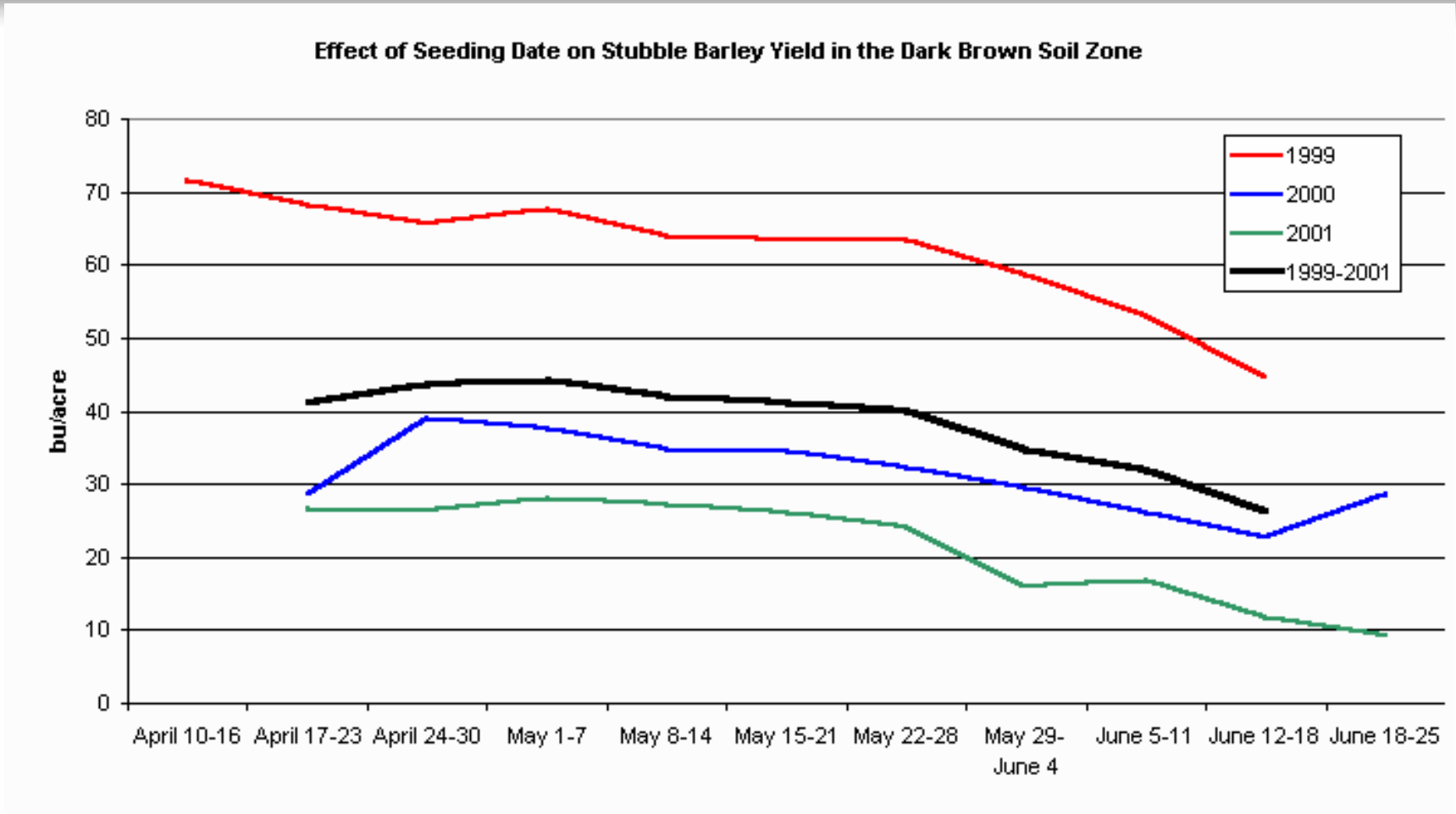
Understand the impact of kernel weight on seed rate

- Harrington: 38 to 40 g 1000 kernel weight
- AC Metcalfe: 42 to 43

	Target plant stand densities	
Seed rate (lb/ac)	20 pl/sq ft	25 pl/sq ft
Harrington	83	104
AC Metcalfe	87	109

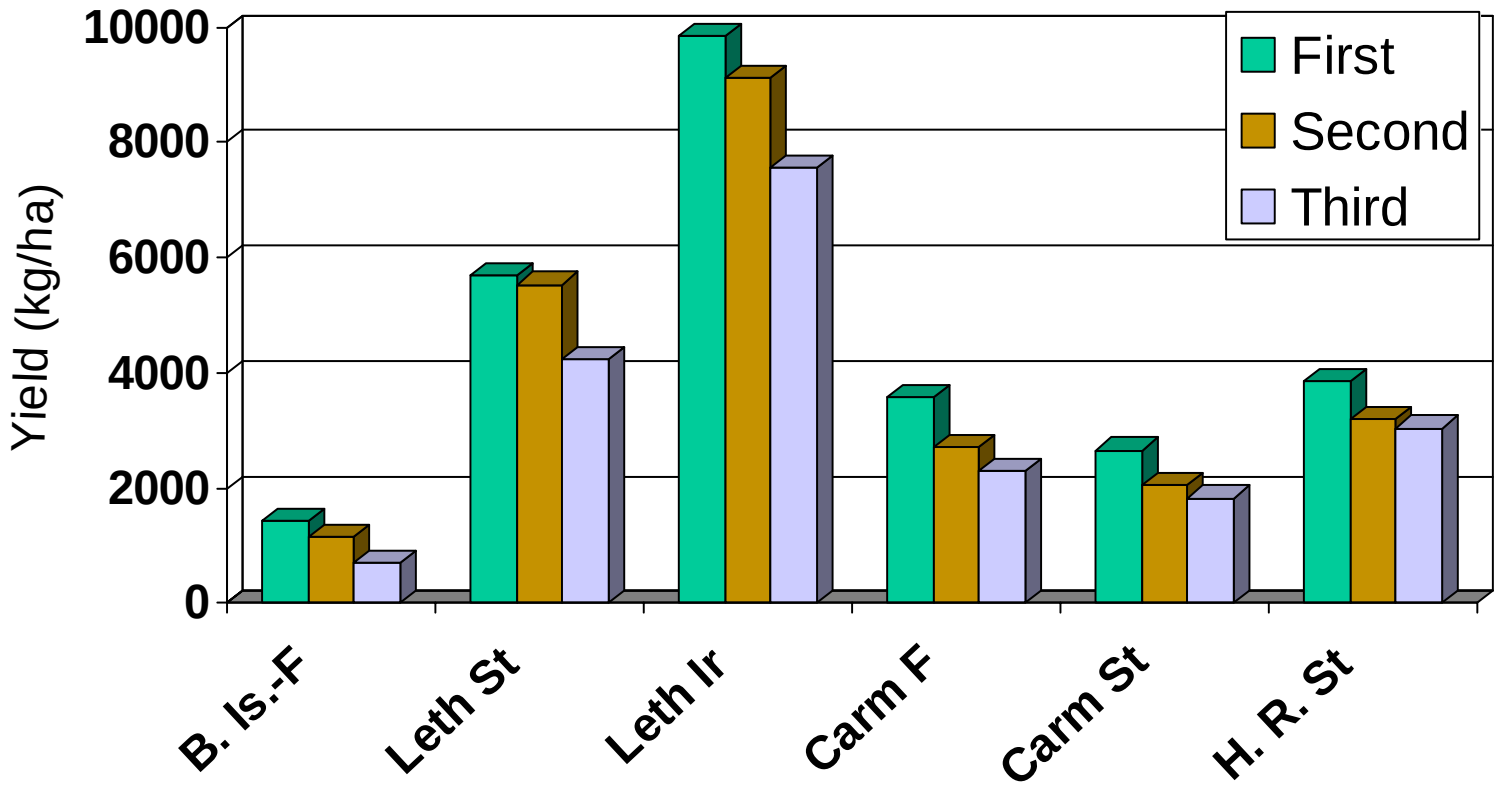
Note: Assumes 95% germination, 3% mortality, and 7 inch row spacing

Farmer reported yield data for Alberta: Dark Brown Soil Zone



Source: Alberta Agriculture Food and Rural Development (www1.agric.gov.ab.ca)

Effect of seeding date on yield - 2001
R. McKenzie, AAFRD Lethbridge



Effect of seeding date on protein - 2001
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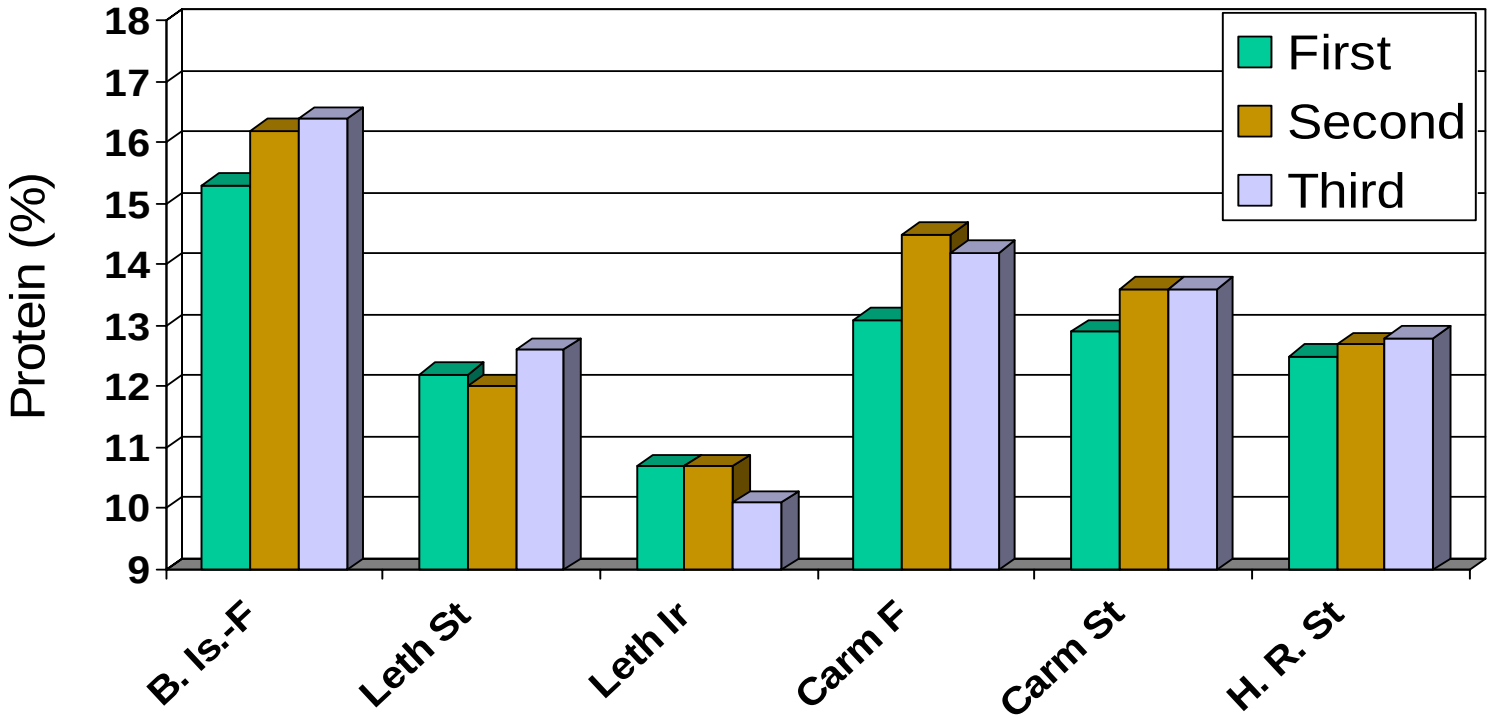

Harvest Management

- Straight cutting
  - Increasing trend with adoption of two-row varieties
- Moisture content
  - Bin aeration capacity
- Field variability and uniformity
  - Differential harvesting where required
- Combine settings and handling
  - Levels of peeling and broken

Predicting germination loss during storage

- Weathering conditions can lead to incipient pre-germination (not visible to the eye)
- Can results in loss of condition during storage as compared to dry dormant grain
- Identified need for a rapid and objective test. Research project led by Canadian Grain Commission, CWB and Industry
- Initial project results are very encouraging, demonstrated useful management tool
- Industry evaluating potential for test to predict loss in storage prior to delivery

Predicting Germination Loss During Storage

- Instrumentation is same as for measuring falling number in wheat

- Length of germination viability is also related to storage conditions, in particular moisture content

Rapid Visco-Analyzer (RVA)

Ability to reduce risk for growers in discussion with selectors relative to storage management and delivery requirement.

Quality in the Bin

Bin Storage Quality Monitoring

- Germination Condition
- Re-check samples
- Pest infestations

Monitor bin storage closely and submit re-check samples where necessary.

Six-row Opportunities

- Remains base demand for six-row malting barley
  - Domestic
  - US
- Watch for contracting opportunities in your area
- Management considerations
  - Adaptability and yield potential of varieties
  - Harvest management
  - Segregation relative to type and variety purity

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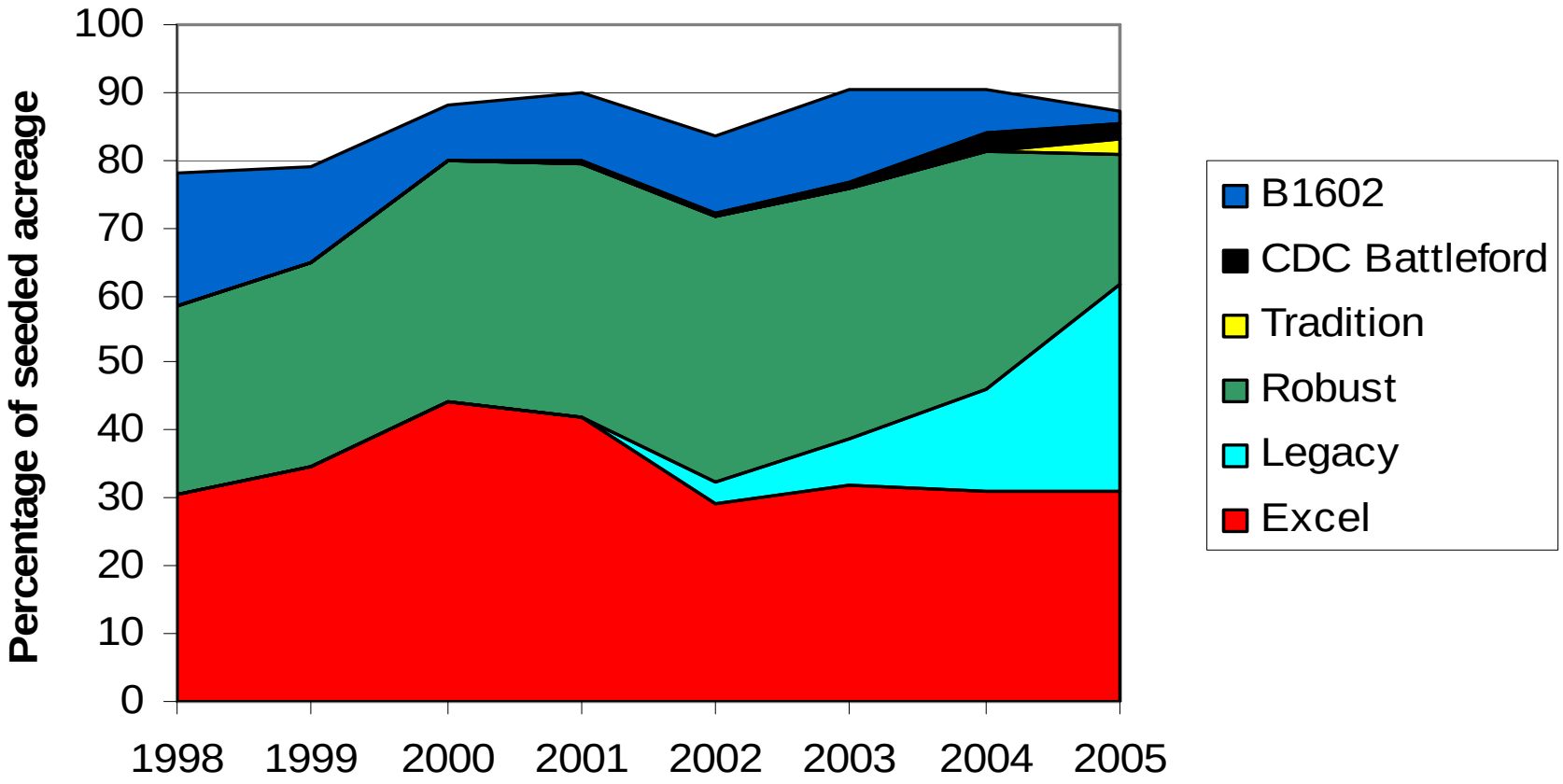
Recommended Malting Barley Varieties 2006-07

Recommended Six-Row Barley Varieties

VARIETY	DOMESTIC	EXPORT	MARKET DEMAND
Legacy[1,2,3,5]	Growing	Growing	Increasing Demand
Excel	Established	Established	Declining Demand
Tradition[1,2,3]	Limited	Growing	Increasing Demand
Robust	No Market	Limited	Declining Demand
CDC Battleford[4]	Limited	No Market	Increasing Demand

CDC Tisdale (BT462), CDC Springside (BT478), CDC Clyde (BT490) and CDC Laurence (BT494) are not yet being grown for the commercial market. Production is limited to quantities required for testing and market development.

Six-row Malting Barley
CWB Survey 1998-2005



Summary

- Select a recommended variety adapted for your region
- Fertilizer Program should:
  - Target total N supply of soil + fertilizer to optimize yield and protein. Suggested 1.2 lbs of N per bushel of target yield.
  - Use soil test
    - Consider recommendations for additional nutrients such as P, K and S when levels are marginal to deficient
- Seed early
- Target seeding rate to achieve 20 to 25 plants per square foot.

Summary

- Follow good harvest management practices to get best quality into the bin
- Monitor bin storage conditions and stay in contact with your selector

Watch for more information in:

SAFFR Varieties of Grain Crops 2006

Go Malting publication from CWB

Saskatchewan Soil Conservation Association Meetings planned for:

March 9 in Kindersley

March 13 in North Battleford

March 14 in Watson

March 15 in Balcarres

Acknowledgments

Dr. Ross McKenzie, Alberta Agriculture Food and Rural Development

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Garth Massie, Prairie Malt Limited

Questions?


A research and development field site
Succeeding
with
Malting Barley
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