Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

AAFC Agronomy Research

William May

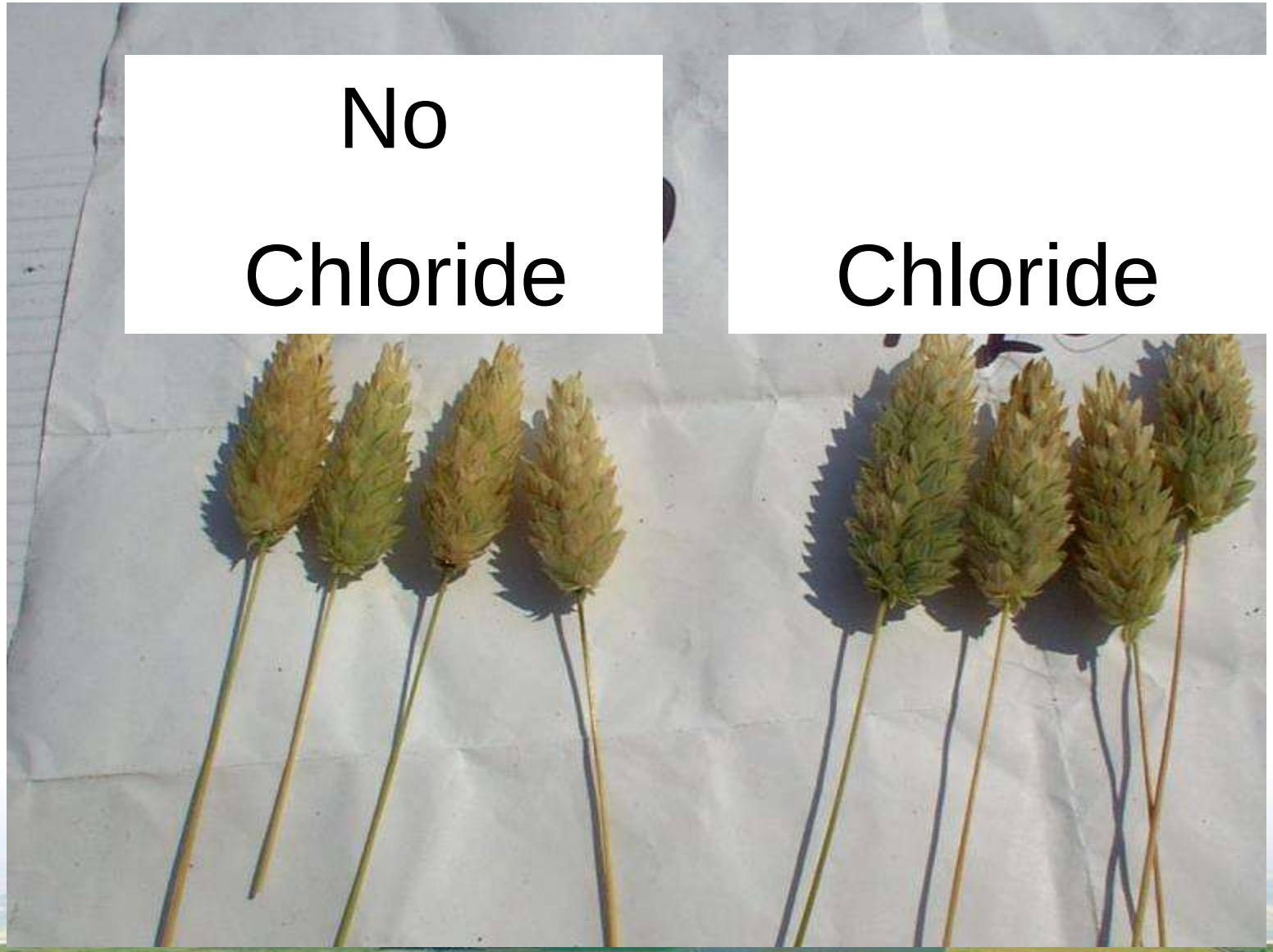
Agriculture and Agri-food Canada

Indian Head, Saskatchewan, Canada

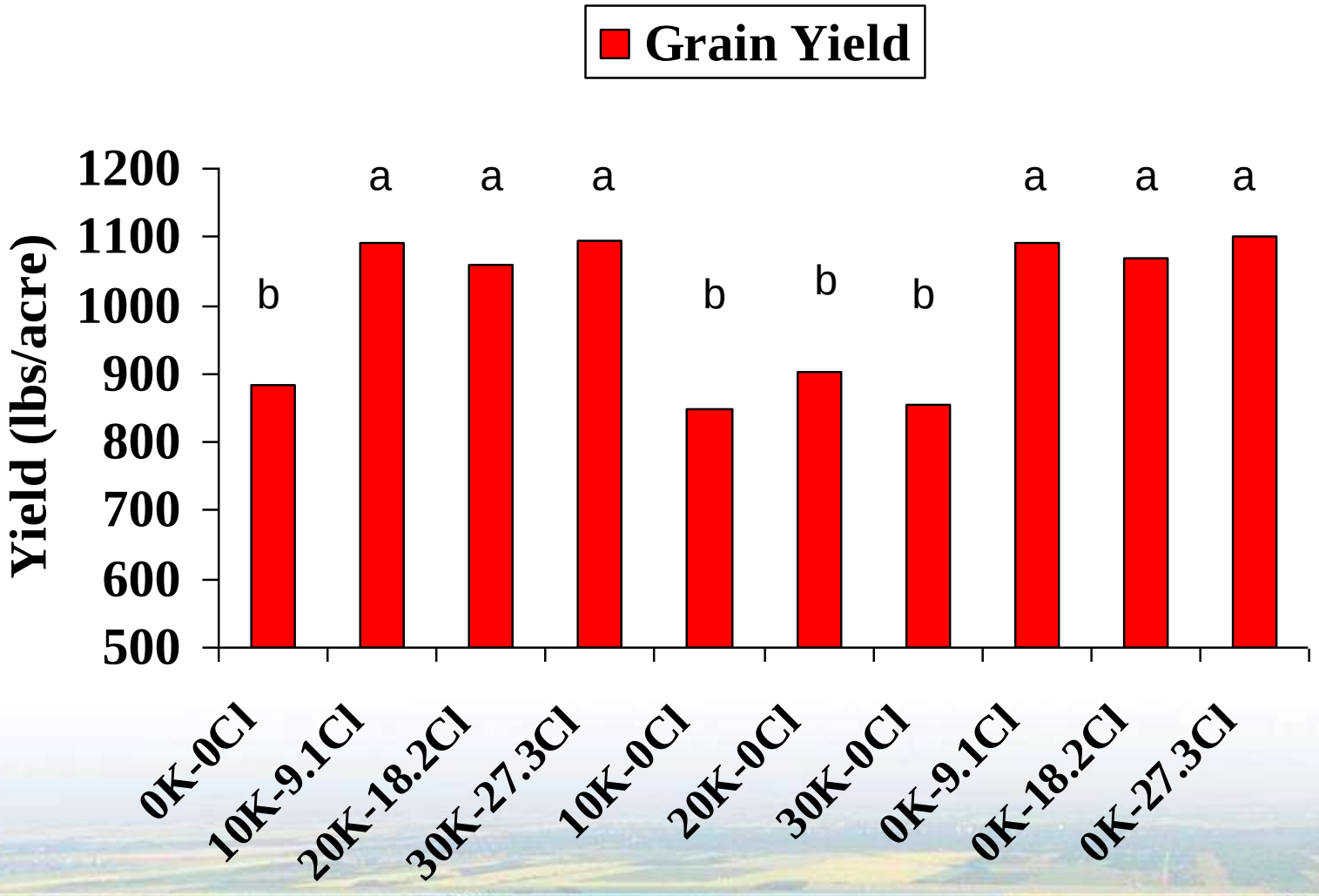
Canada

Canaryseed

- Macro and Micro nutrients
- Plot size and Septoria Leaf Mottle
- Cultivar testing
  - Pierre Hucl


No
Chloride
Chloride

Chloride and Grain yield Yield



- **Canaryseed is more responsive to Cl than other cereals**

- Does it respond differently than other cereals to macro and micro nutrients?

Macro and Micro Nutrient Trial

Nutrients	Treatments										
	1	2	3	4	5	6	7	8	9	10	11
N	0	15	30	30	30	60	60	60	60	60	90
P	0	0	0	30	30	30	30	30	30	30	30
CL		18	18	18	18	18	0	18	18	18	18
S					15	15	15	15	15	15	15
Cu								3			
Zinc									3		
Cu, Z, Mg, B										Yes	Yes

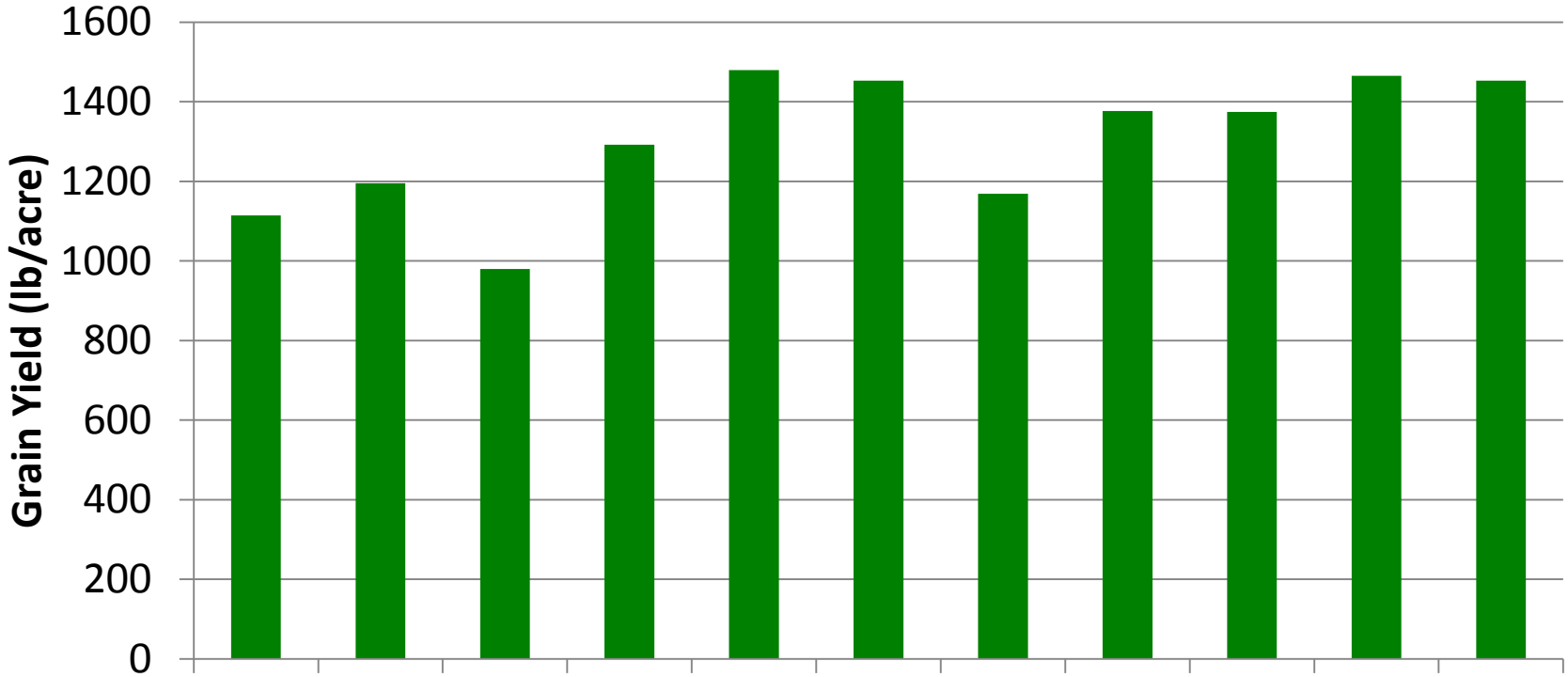
Locations

- Indian Head – **Indian Head Agricultural Research Foundation**
- Swift Current - **Wheatland Conservation Association**
  Redvers – **South East Research Farm**
- Yorkton – **East Central Research Foundation**
- Melfort - **North East Research Foundation**
- Scott – **Western Applied Research Corporation**

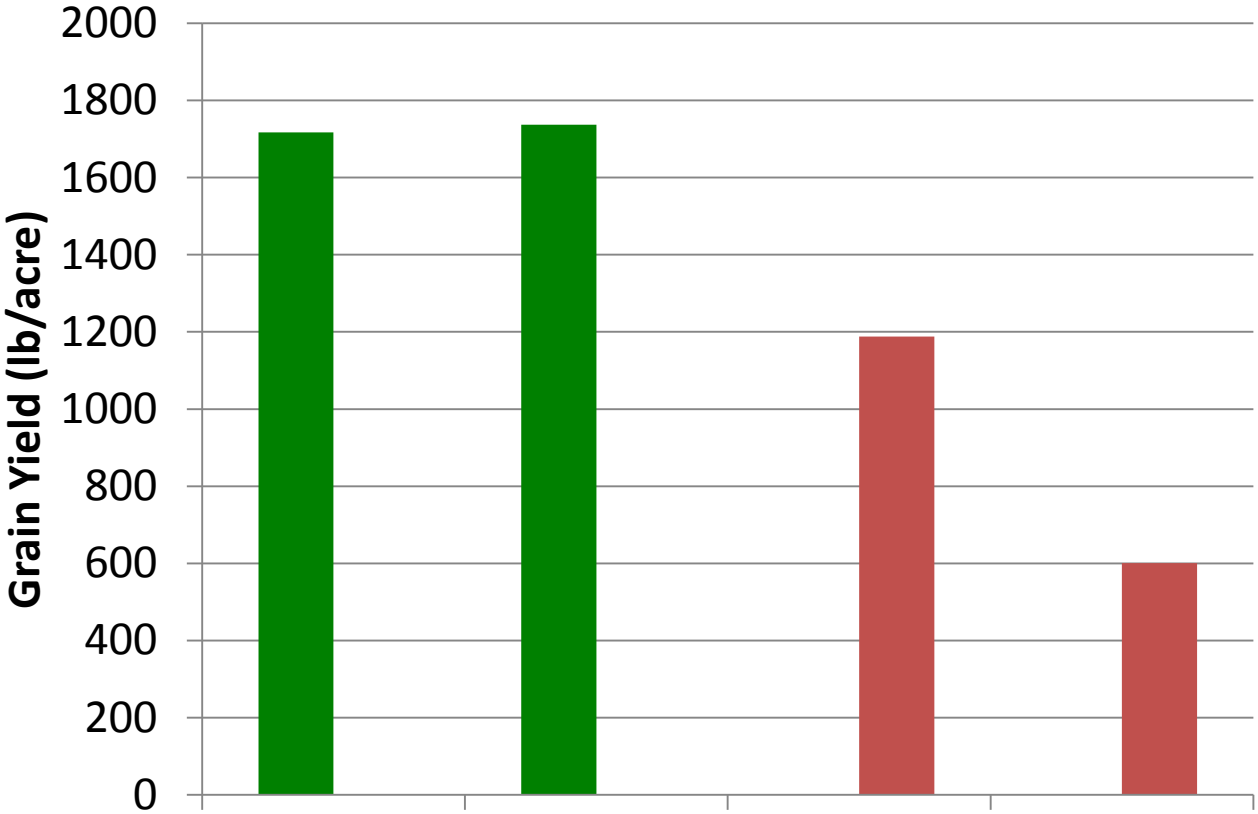
Funding

ADOPT – Saskatchewan Ministry of Agriculture

Indian Head



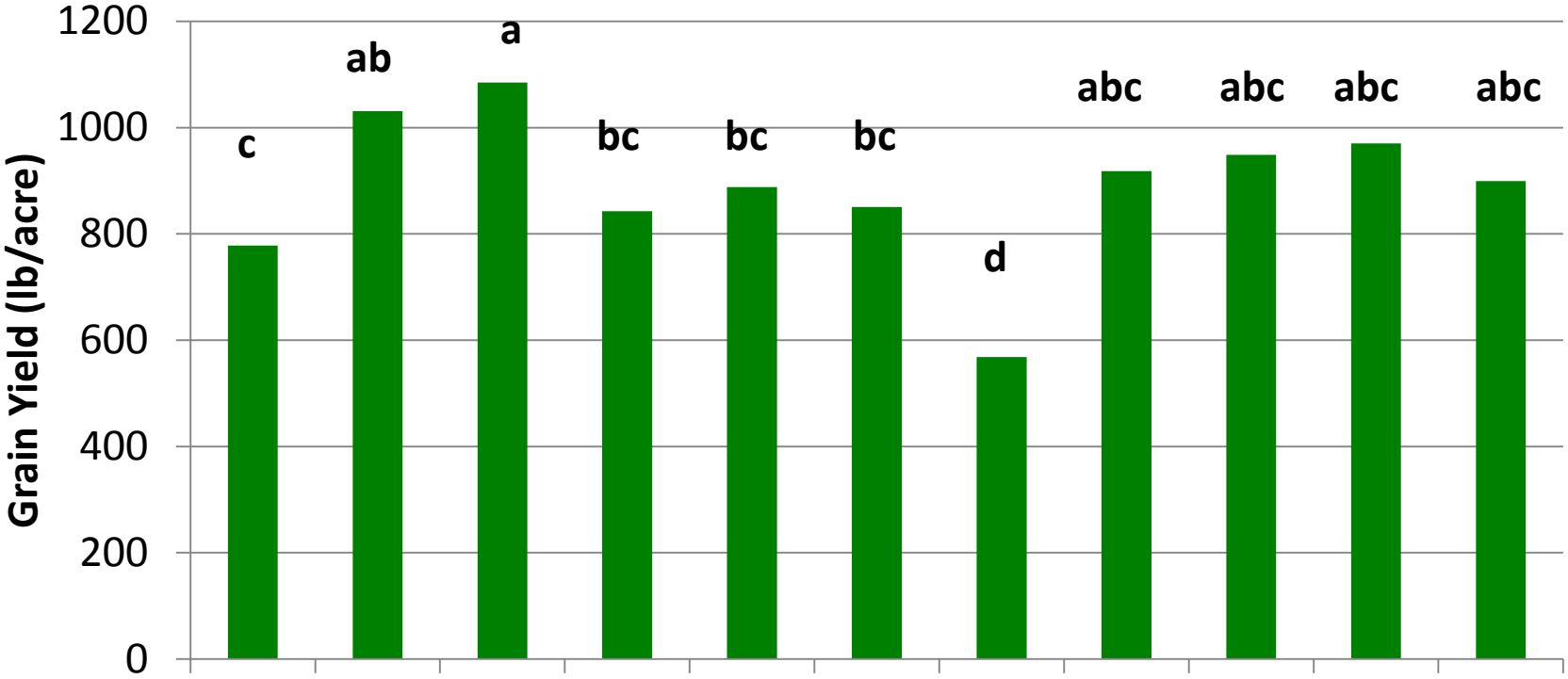
N	**0**	**15**	**30**	**30**	**30**	**60**	**60**	**60**	**60**	**60**	**90**
P	**0**	**0**	**0**	**30**	**30**	**30**	**30**	**30**	**30**	**30**	**30**
CL		**18**	**18**	**18**	**18**	**18**	**0**	**18**	**18**	**18**	**18**
S					**15**	**15**	**15**	**15**	**15**	**15**	**15**
Cu								**3**			
Zinc									**3**		
Cu, Z, Mg, B										**Yes**	**Yes**



N	**60**	**60**	**60**	**60**
P	**30**	**30**	**30**	**30**
CL	**18**	**0**	**18**	**0**
S	**15**	**15**	**15**	**15**

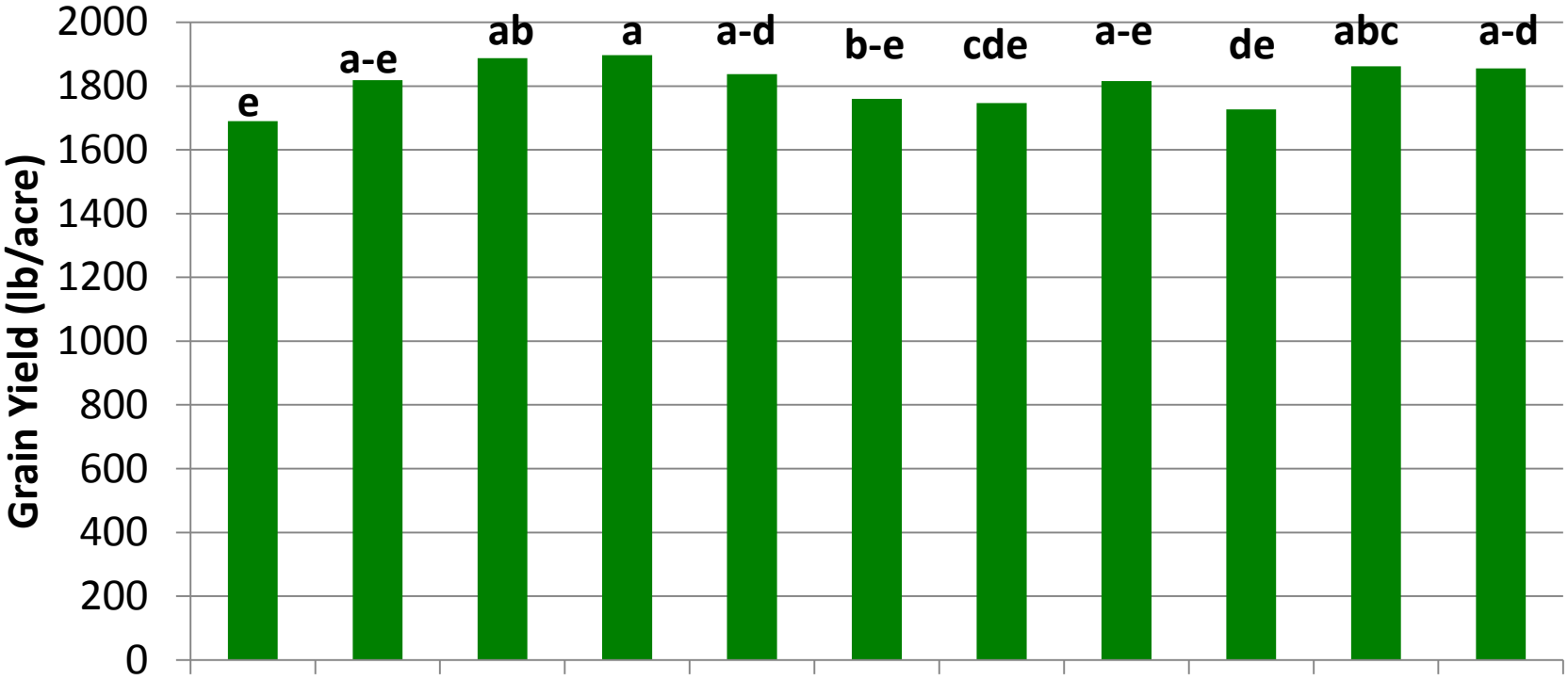

Nitrogen 0 kg/ha
Phosphorous 0 kg/ha
Chloride 0 kg/ha
Micro 0 kg/ha
Nitrogen 30 kg/ha
Phosphorous 30 kg/ha
Chloride 18 kg/ha
Micro 0 kg/ha
Nitrogen 90 kg/ha
Phosphorous 30 kg/ha
Chloride 18 kg/ha
Micro Combo

Swift Current

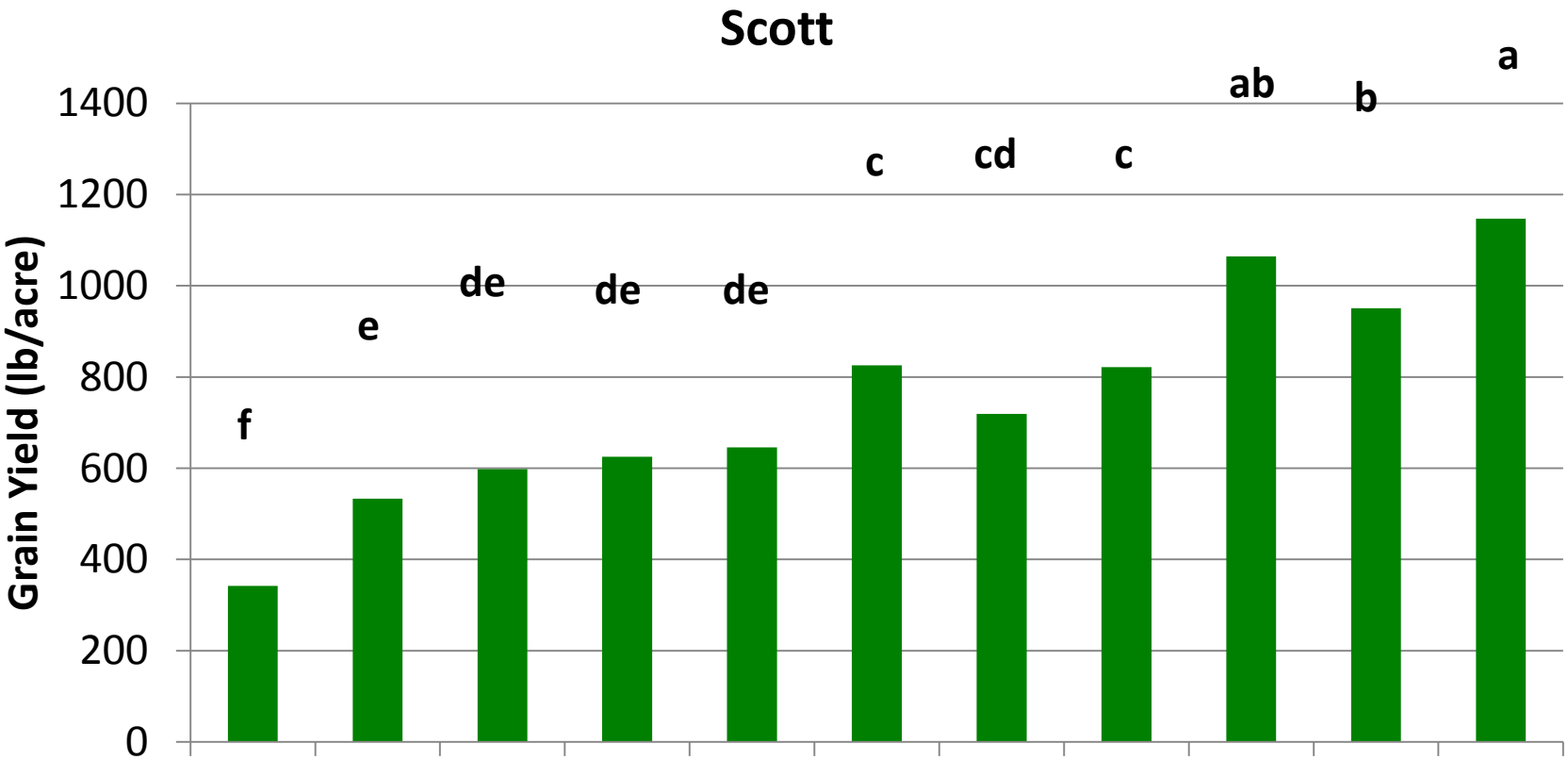


N	0	15	30	30	30	60	60	60	60	60	90
P	0	0	0	30	30	30	30	30	30	30	30
CL		18	18	18	18	18	0	18	18	18	18
S					15	15	15	15	15	15	15
Cu								3			
Zinc									3		
Cu, Z, Mg, B										Yes	Yes

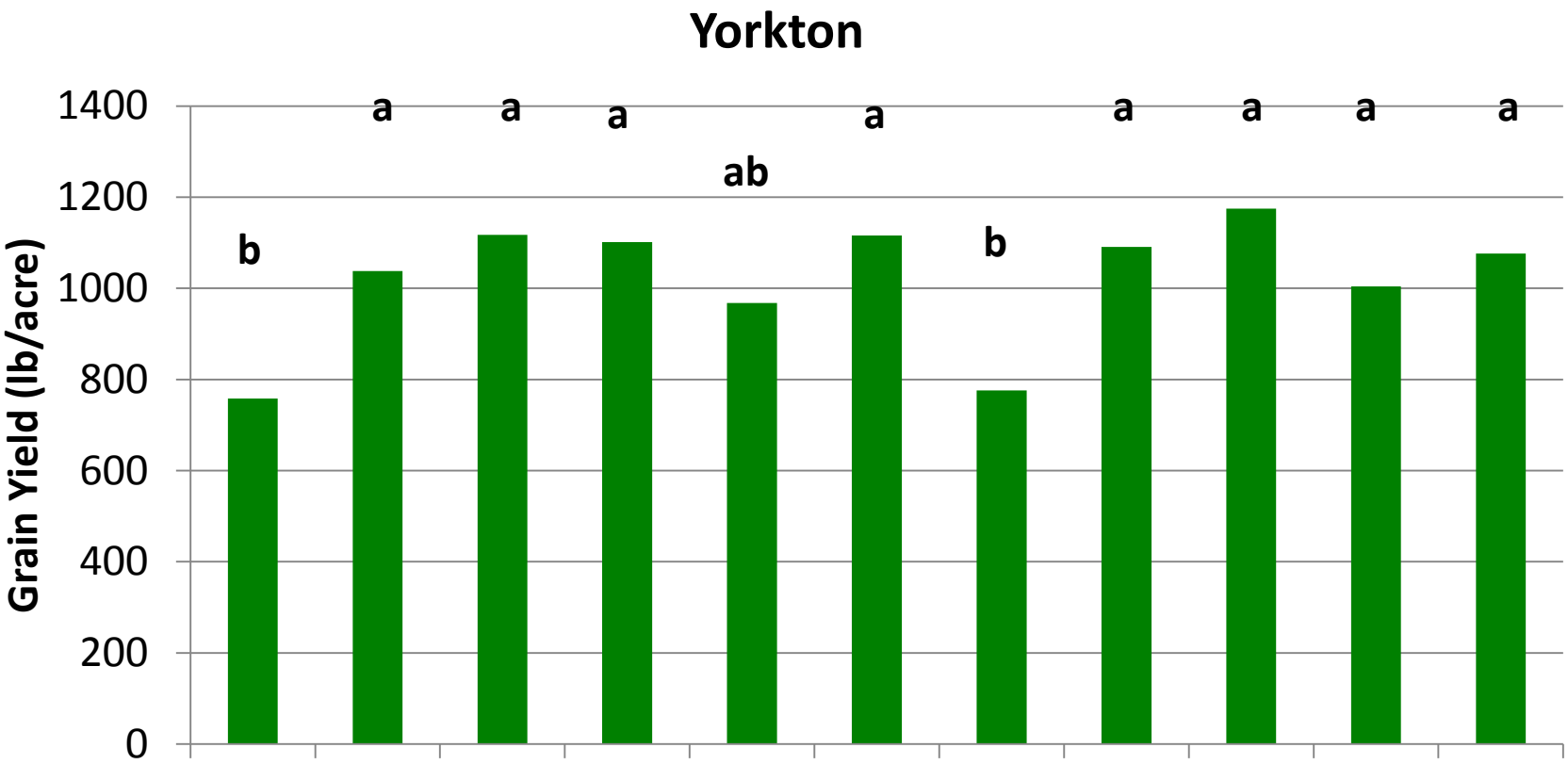
Melfort



N	0	15	30	30	30	60	60	60	60	60	90
P	0	0	0	30	30	30	30	30	30	30	30
CL		18	18	18	18	18	0	18	18	18	18
S					15	15	15	15	15	15	15
Cu								3			
Zinc									3		
Cu, Z, Mg, B										Yes	Yes



N	0	15	30	30	30	60	60	60	60	60	90
P	0	0	0	30	30	30	30	30	30	30	30
CL		18	18	18	18	18	0	18	18	18	18
S					15	15	15	15	15	15	15
Cu								3			
Zinc									3		
Cu, Z, Mg, B										Yes	Yes



N	0	15	30	30	30	60	60	60	60	60	90
P	0	0	0	30	30	30	30	30	30	30	30
CL		18	18	18	18	18	0	18	18	18	18
S					15	15	15	15	15	15	15
Cu								3			
Zinc									3		
Cu, Z, Mg, B										Yes	Yes

Overall Results

- N Fertilizer: response at all 6 locations
  - Optimum amount ranged from 15 to 90 kg/ha
- Chloride: response at 3 of 6 locations
- Phosphate: response at 1 of 6 locations
- Zinc: response at 1 out of 6 locations

- Still need to incorporate soil test results

Septoria Leaf Mottle

To spray or not to spray that is the question

W.E. May

Agriculture and Agri-food Canada

Septoria Leaf Mottle

Plot Size (ft)

- 13 x 35
- 26 x 35
- 39 x 35
- 13 x 70
- 26 x 70
- 39 x 70

Test is conducted in Two fields one with no canaryseed and the other with the rest of the field seeded to canaryseed

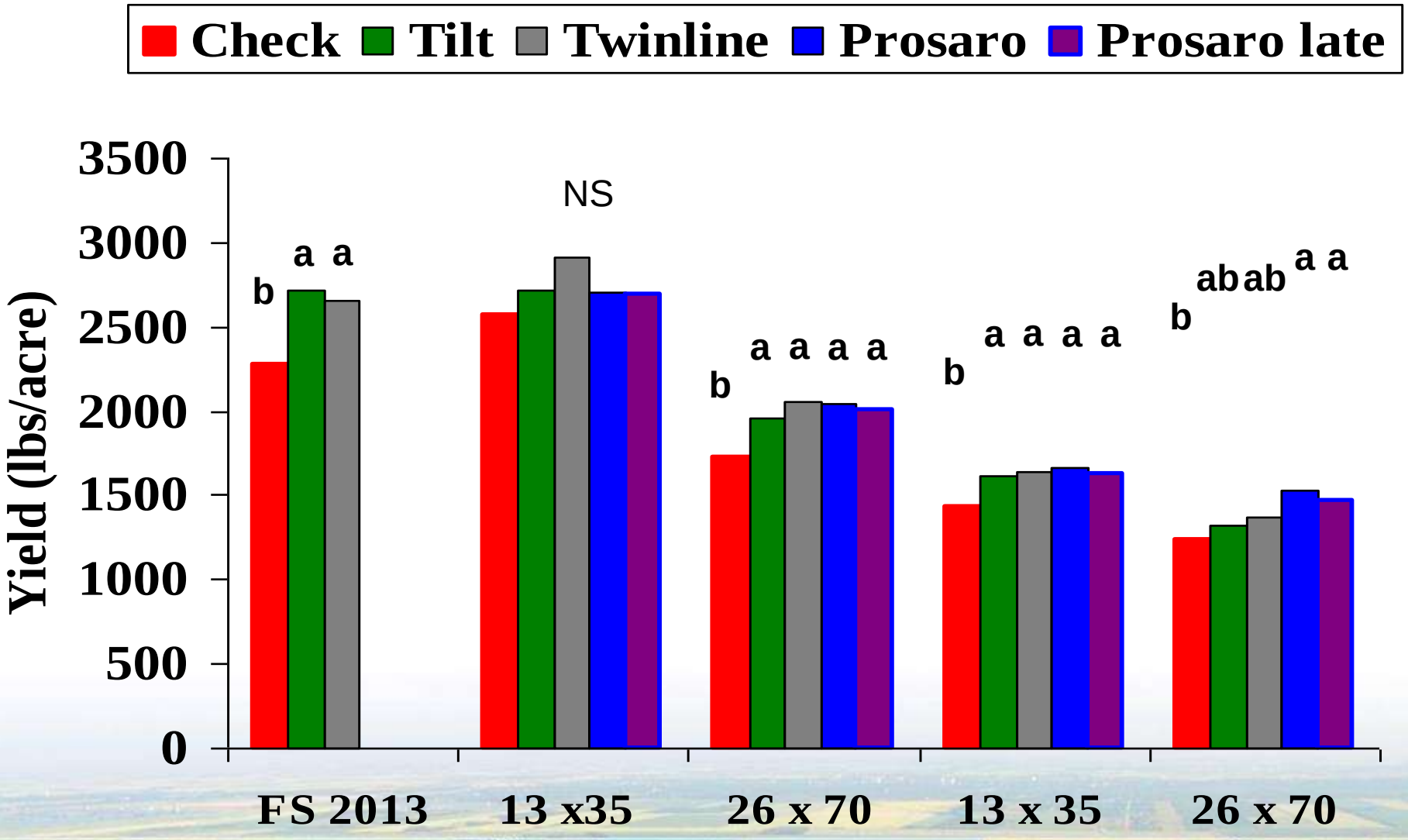
Fungicide Treatments

- Check
- Tilt
- Twinline
- Prosaro
- Prosaro late

Plot Size and Septoria Leaf Mottle

Plot Size	2013		2014	
	Field Type		Field Type	
	Non-Canaryseed	Canaryseed	Non-Canaryseed	Canaryseed
	Least Significant Difference (kg/ha)			
13 x 35	323	136	**166**	**99**
26 x 35	246	**104**	491	268
39 x 35	341	**84**	225	261
13 x 70	**219**	**109**	**101**	132
26 x 70	**178**	**114**	**179**	**170**
39 x 70	**239**	141	**123**	**164**

Septoria Leaf Mottle and Yield



Conclusions

After two years the 70 ft plot length is producing more consistent results than the 35 ft plots

Funding

ADF – Saskatchewan Ministry of Agriculture

Research For 2015 and Beyond

- Septoria plot size – ADF funding will continue
- Nutrient Research - reapplied for ADOPT funding
- Cropping Sequence Research –Start in spring of 2015
- Aphids – Apply this spring for research beginning in 2016

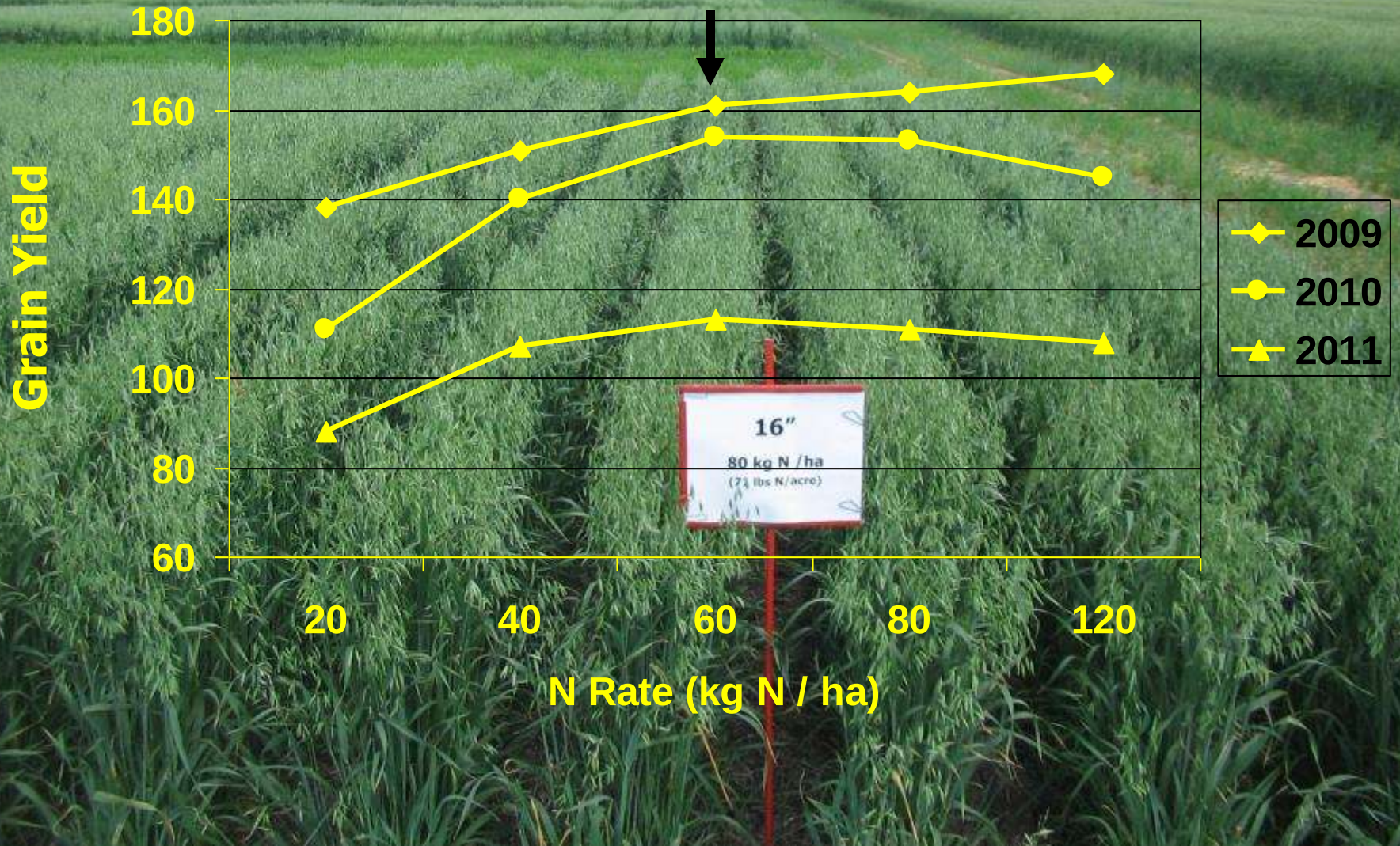
Oat

Screening Cultivars for test weight stability at high levels of N fertilizer

Row width x Rotation x seeding rate

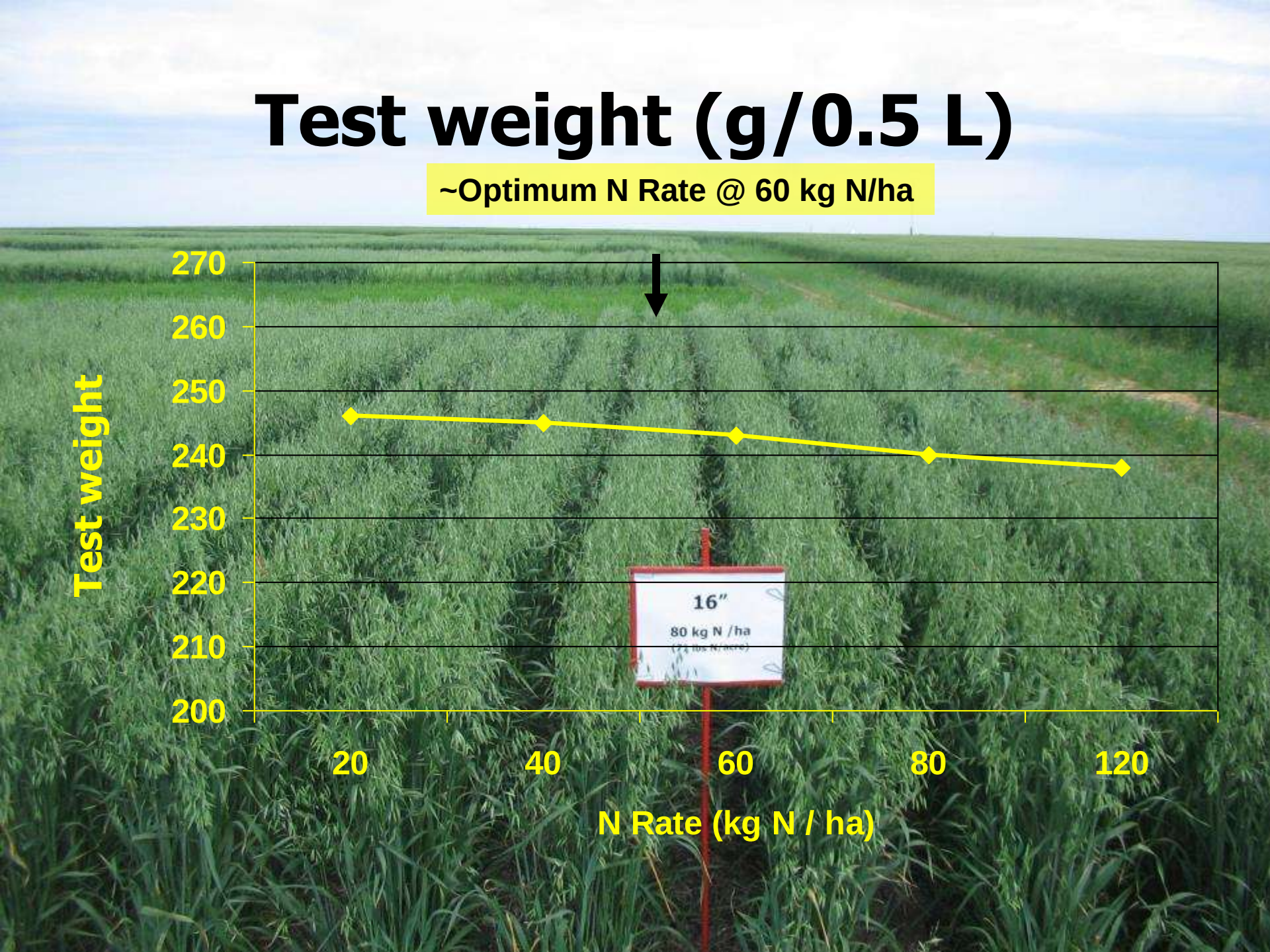
Grain Yield (bus/acre)

~Optimum N Rate @ 60 kg N/ha

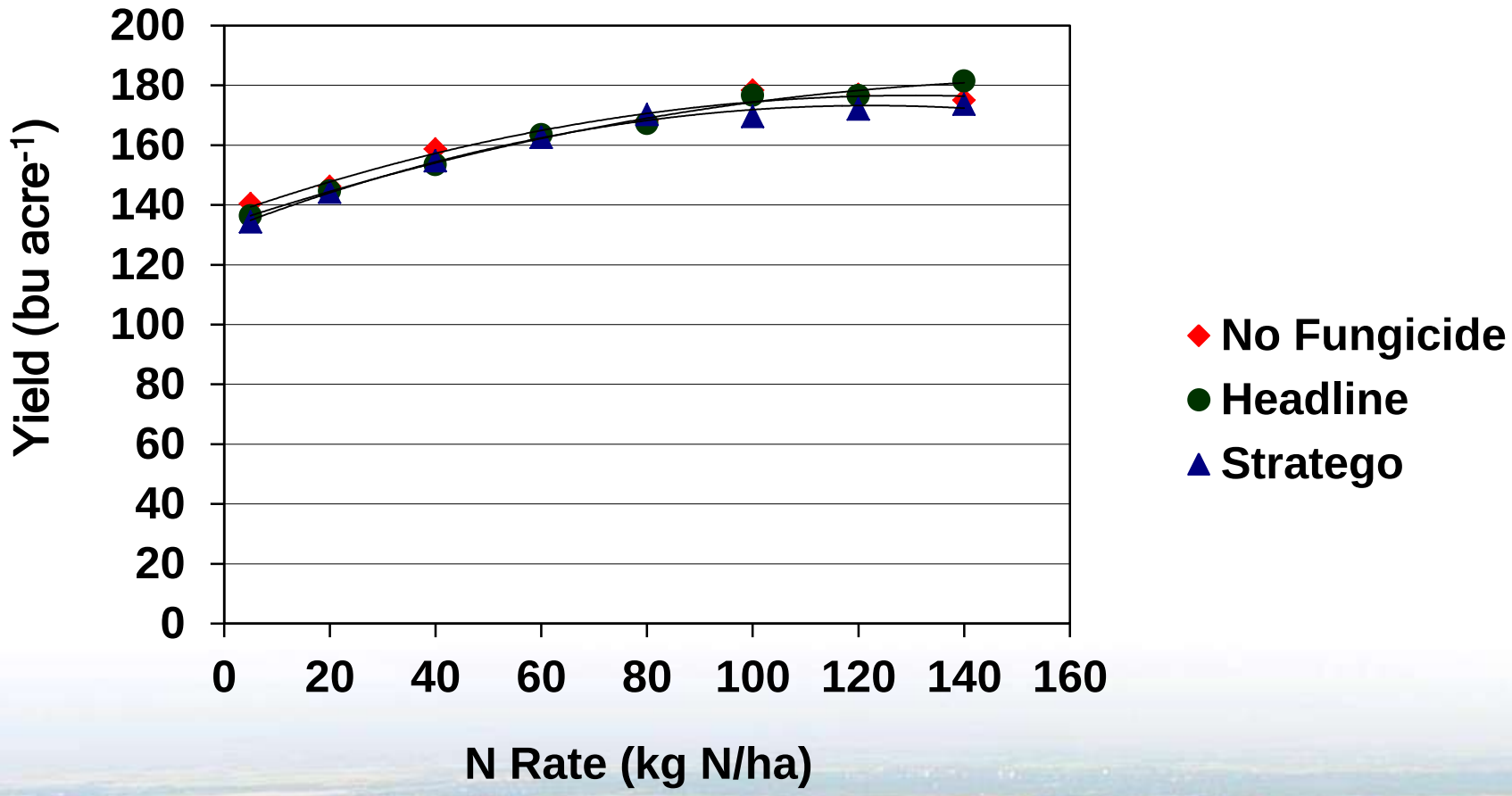


Test weight (g/0.5 L)

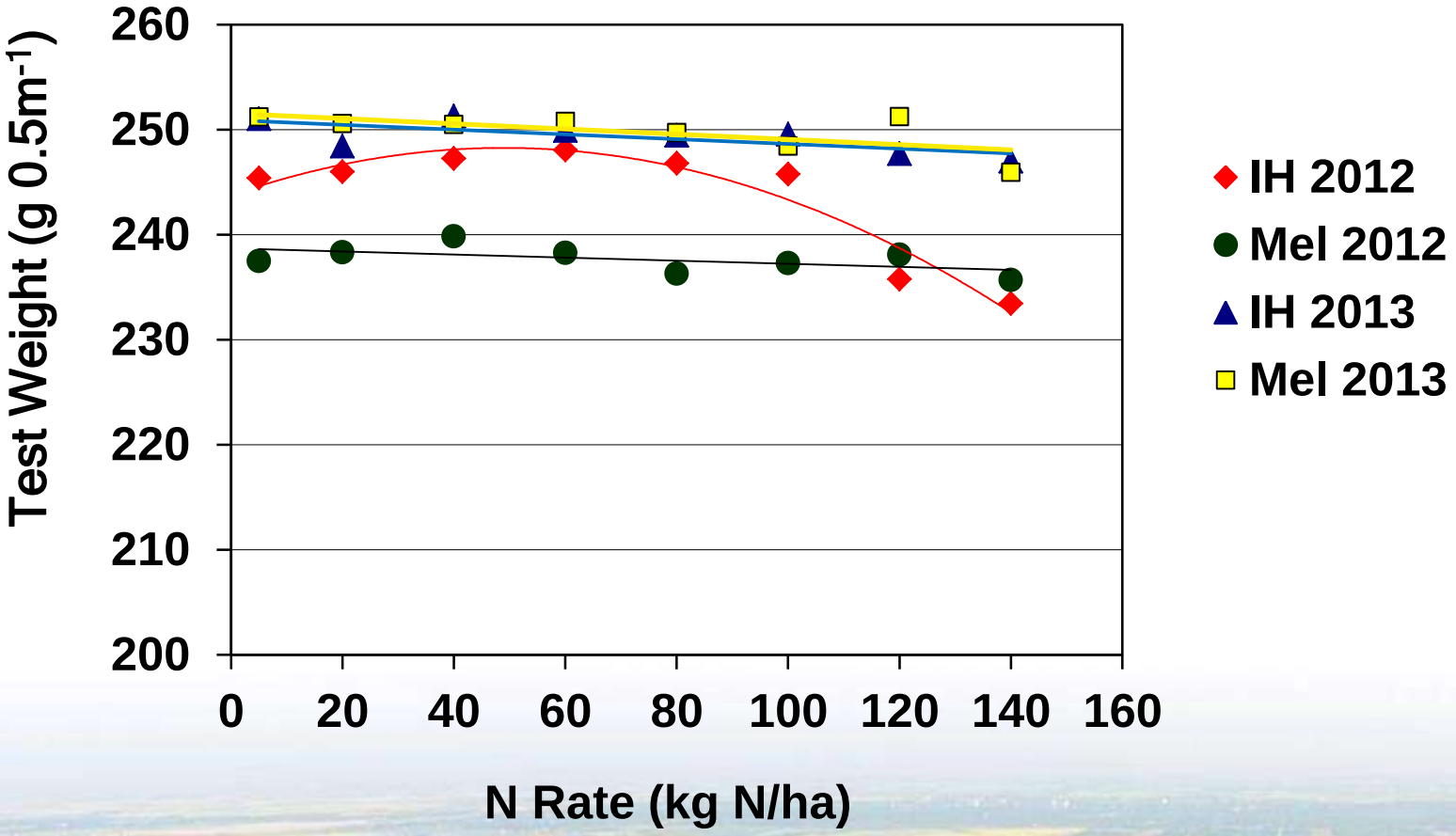
~Optimum N Rate @ 60 kg N/ha



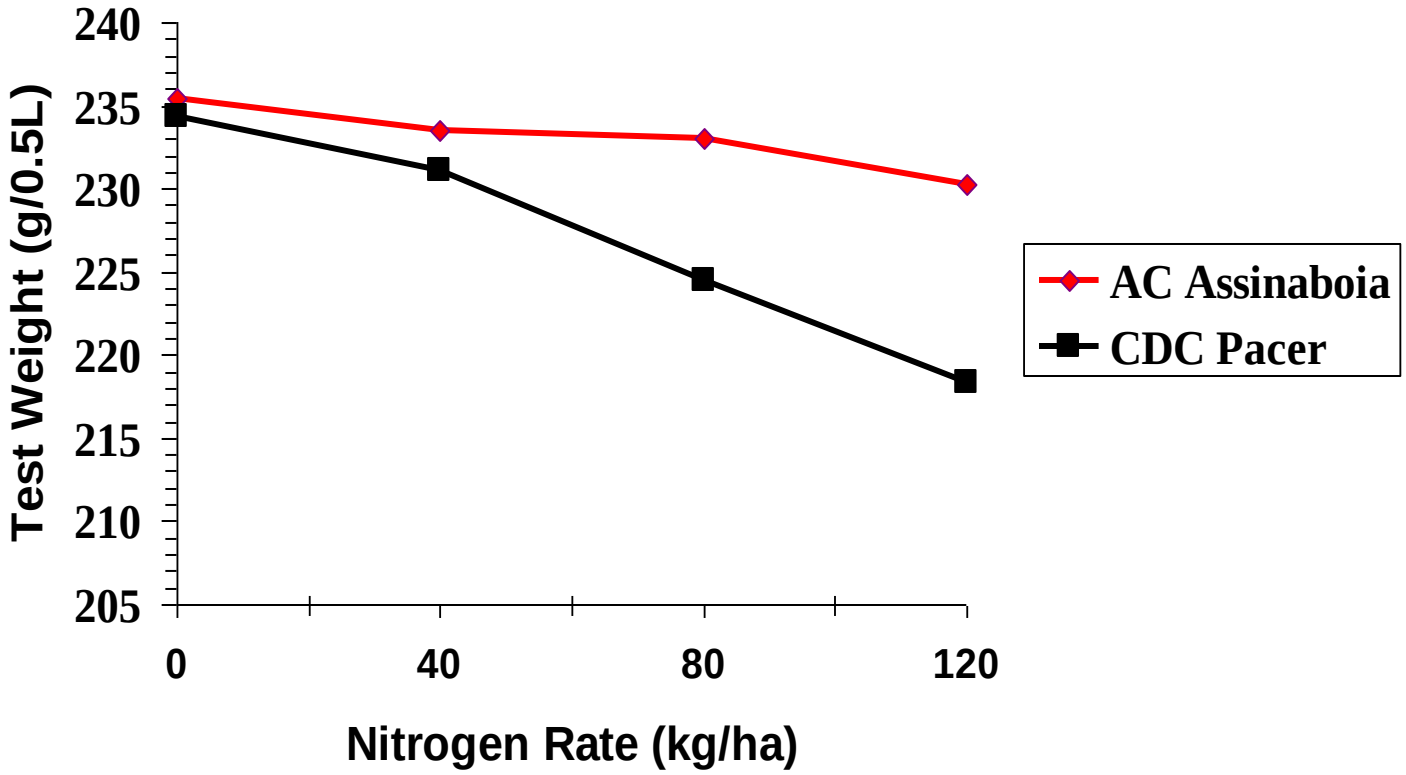
Grain Yield


Yield (bu acre-1)
200
180
160
140
120
100
80
60
40
20
0
0
20
40
60
80
100
120
140
160
N Rate (kg N/ha)
No Fungicide
Headline
Stratego

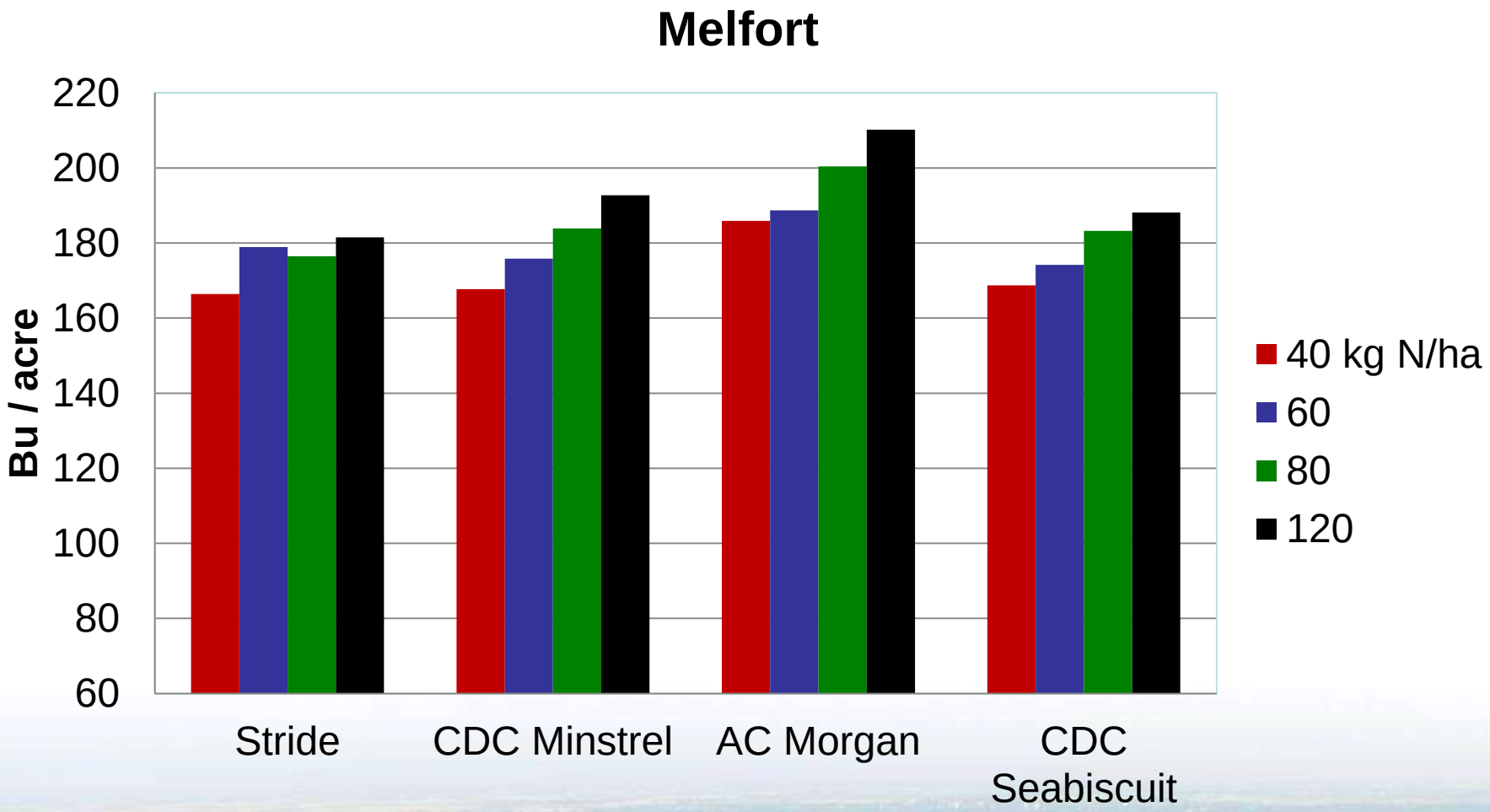
Test Weight


Test Weight (g 0.5m-1)
260
250
240
230
220
210
200
0
20
40
60
80
100
120
140
160
N Rate (kg N/ha)
IH 2012
Mel 2012
IH 2013
Mel 2013

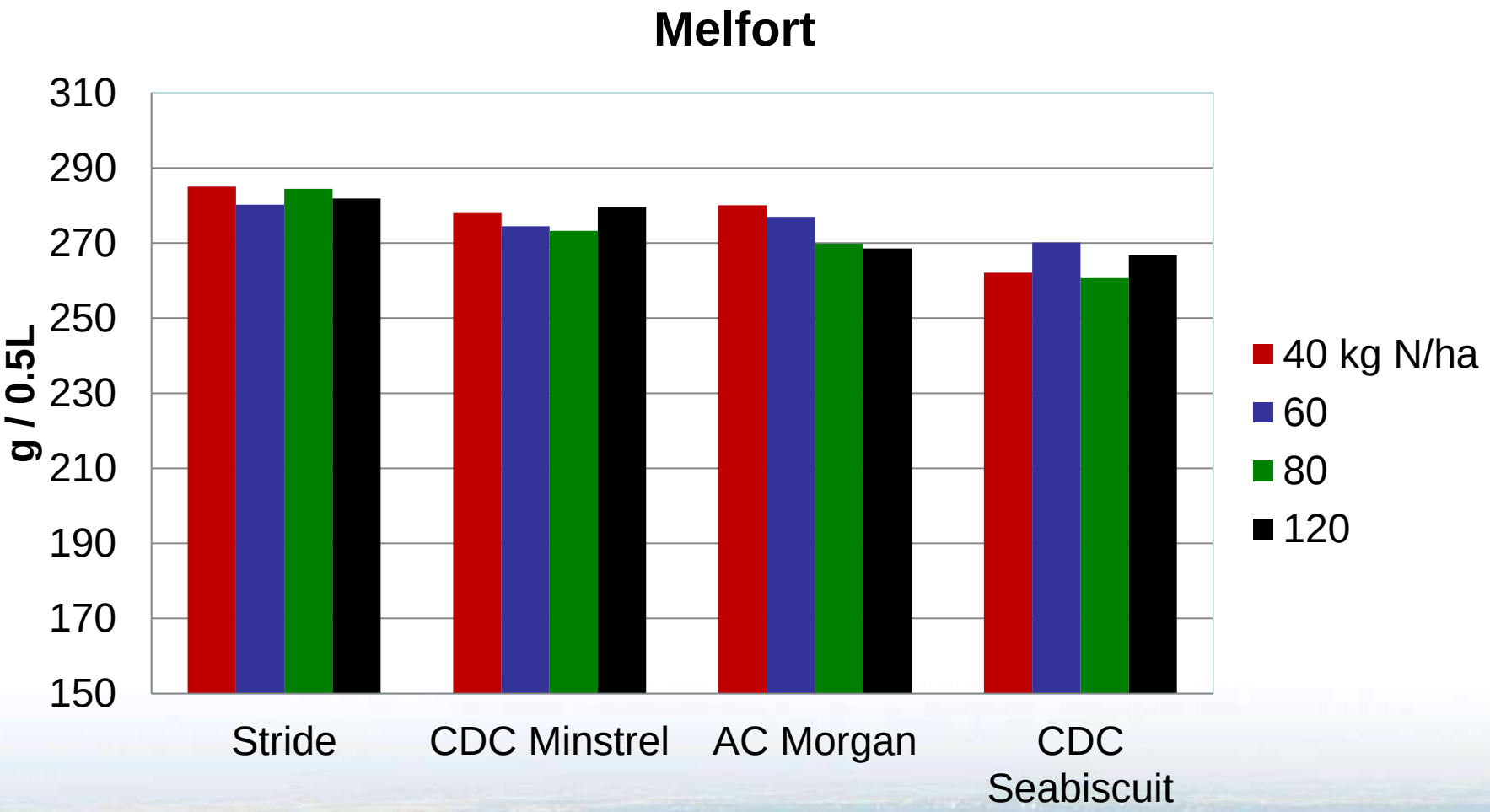
Nitrogen Rate and Cultivars



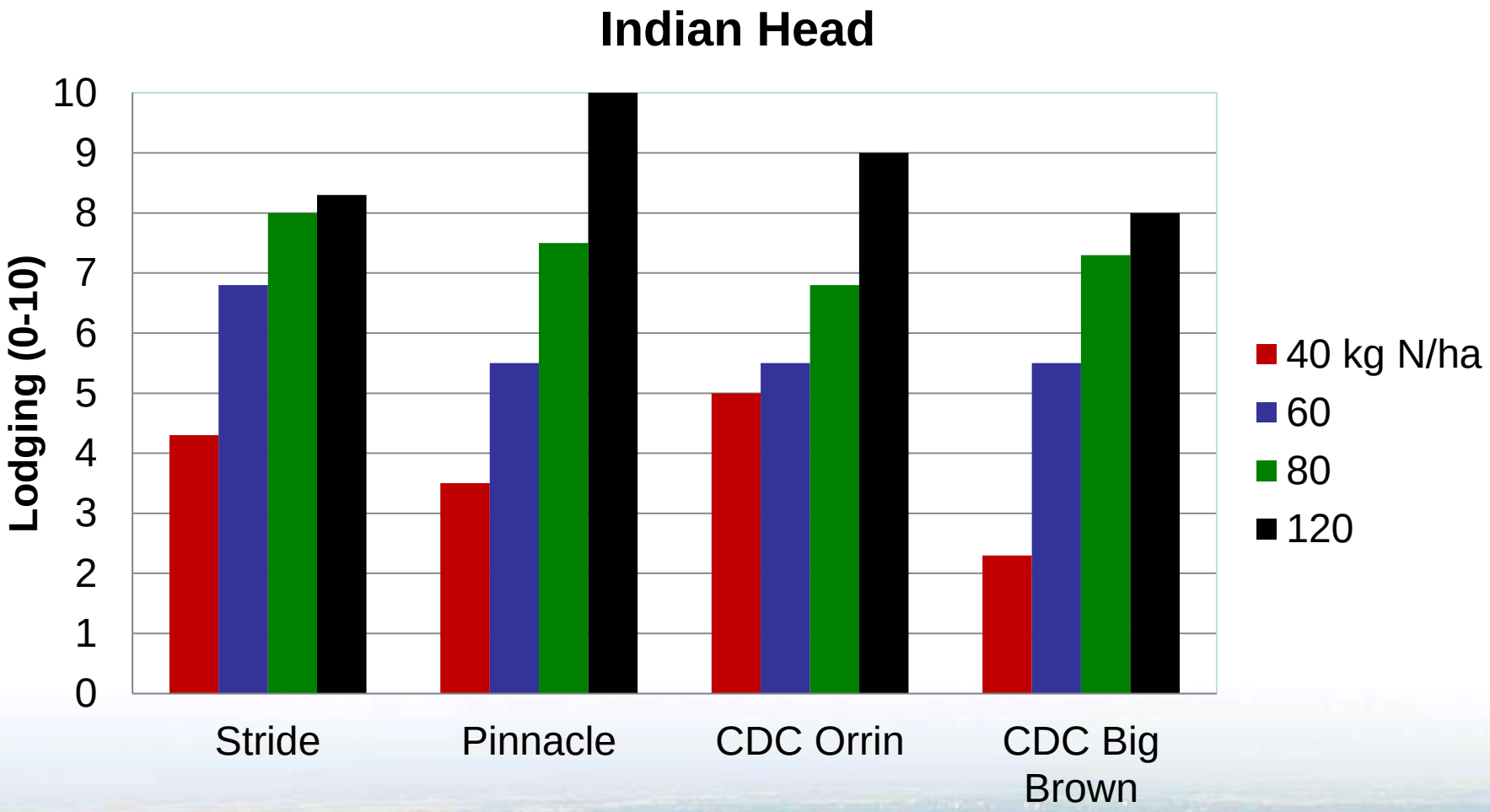
Yield - N x Cultivar



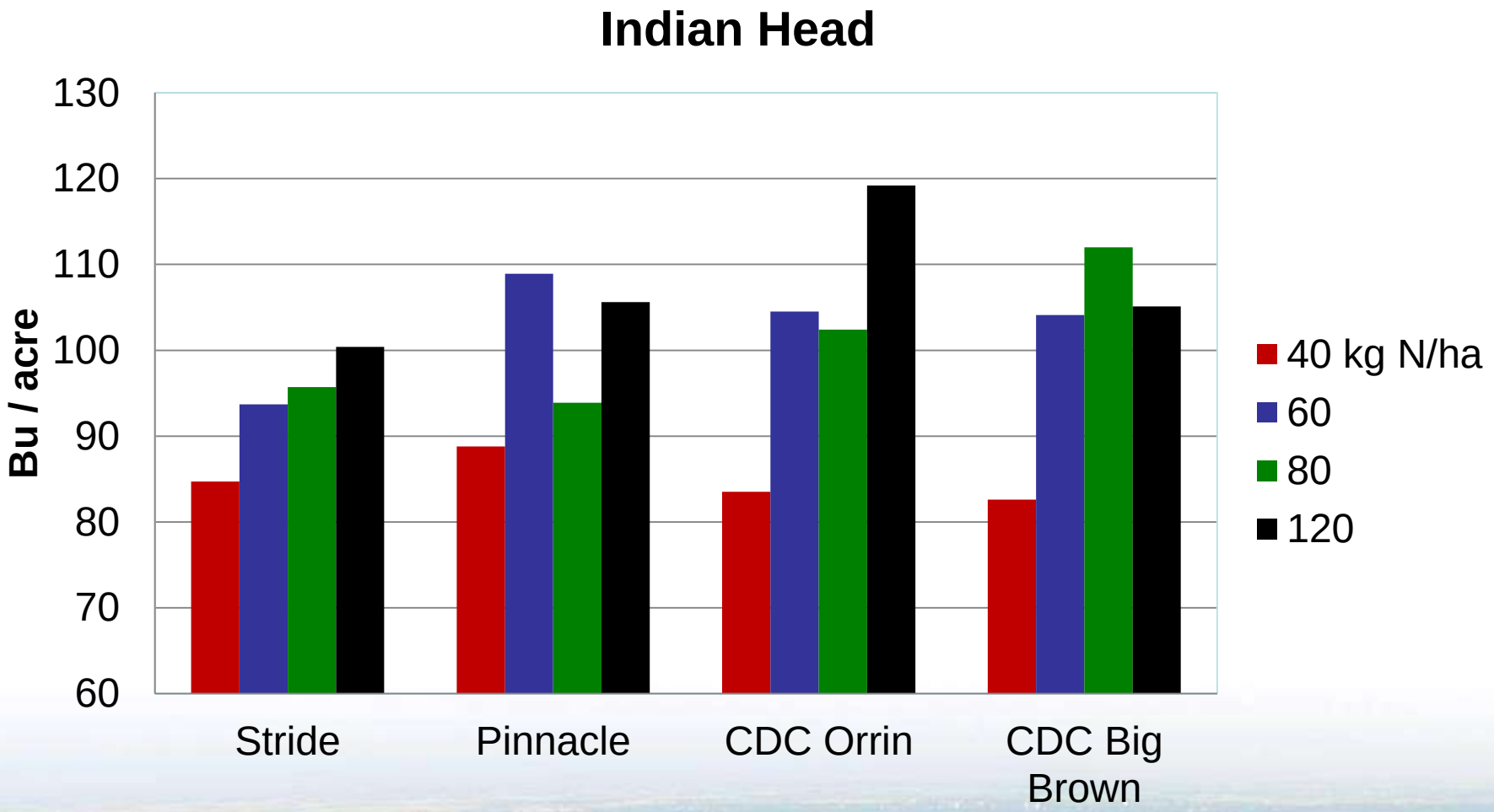
Test weight - N x Cultivar



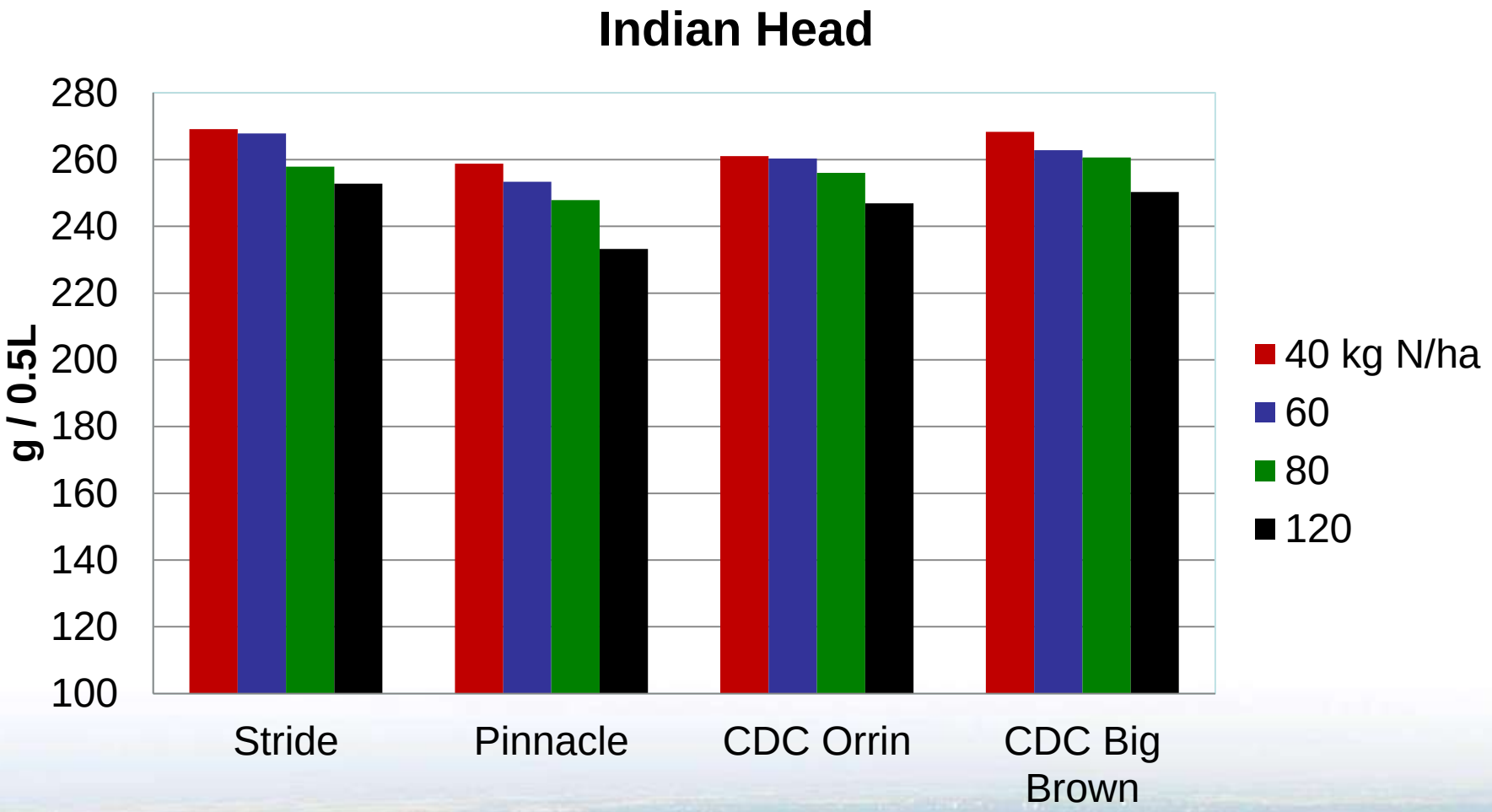
Lodging - N x Cultivar



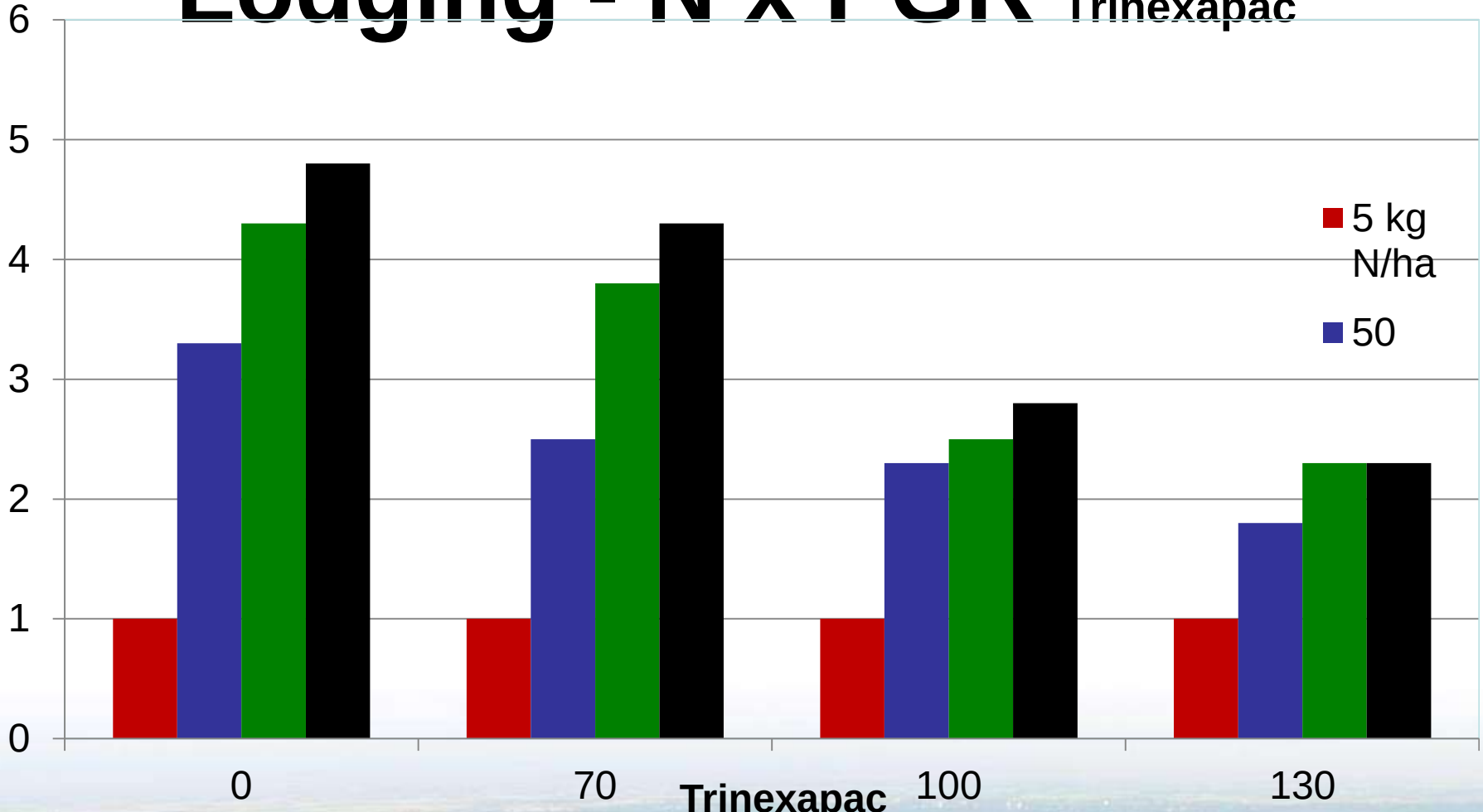
Yield - N x Cultivar



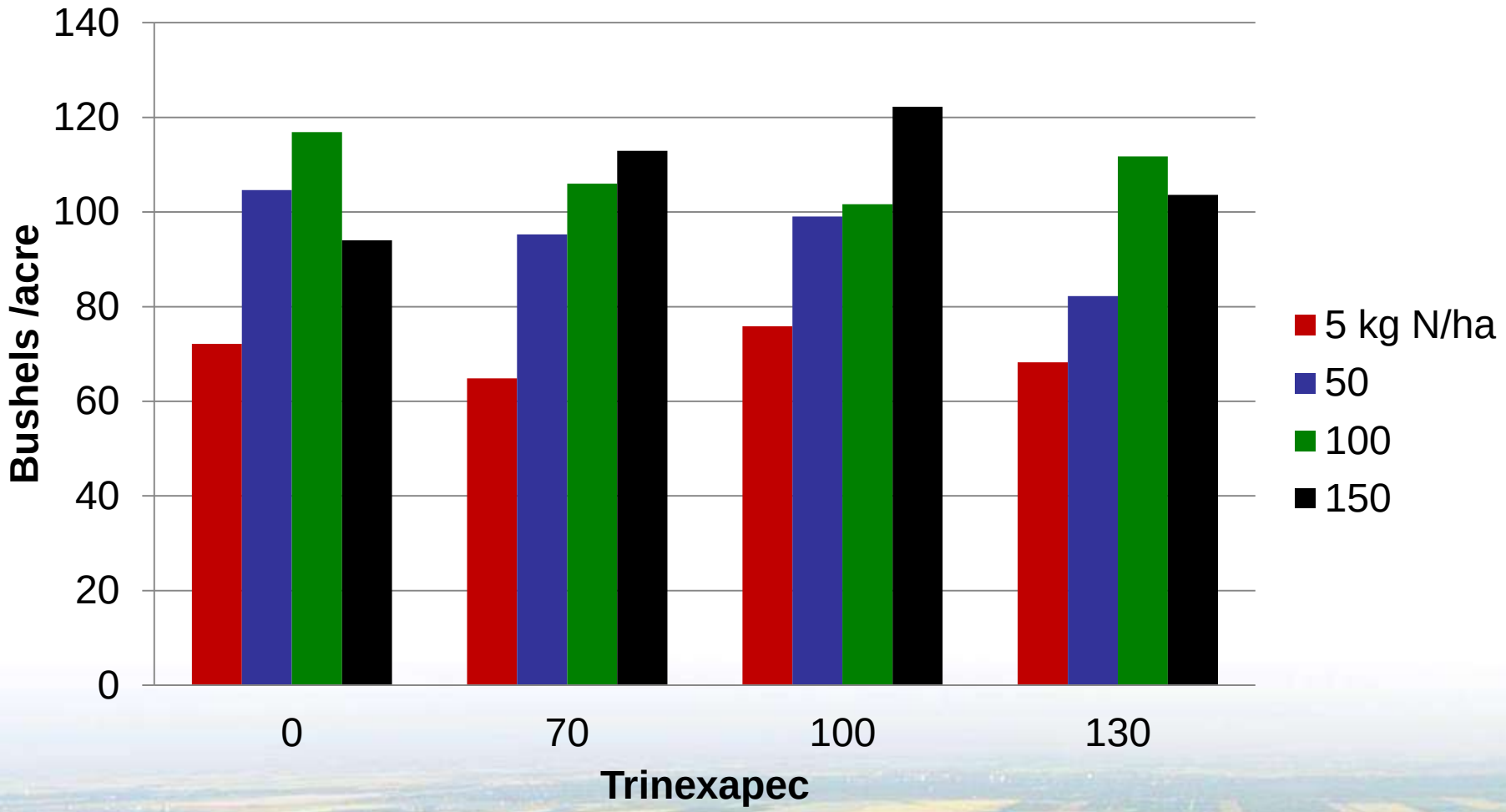
Test weight - N x Cultivar



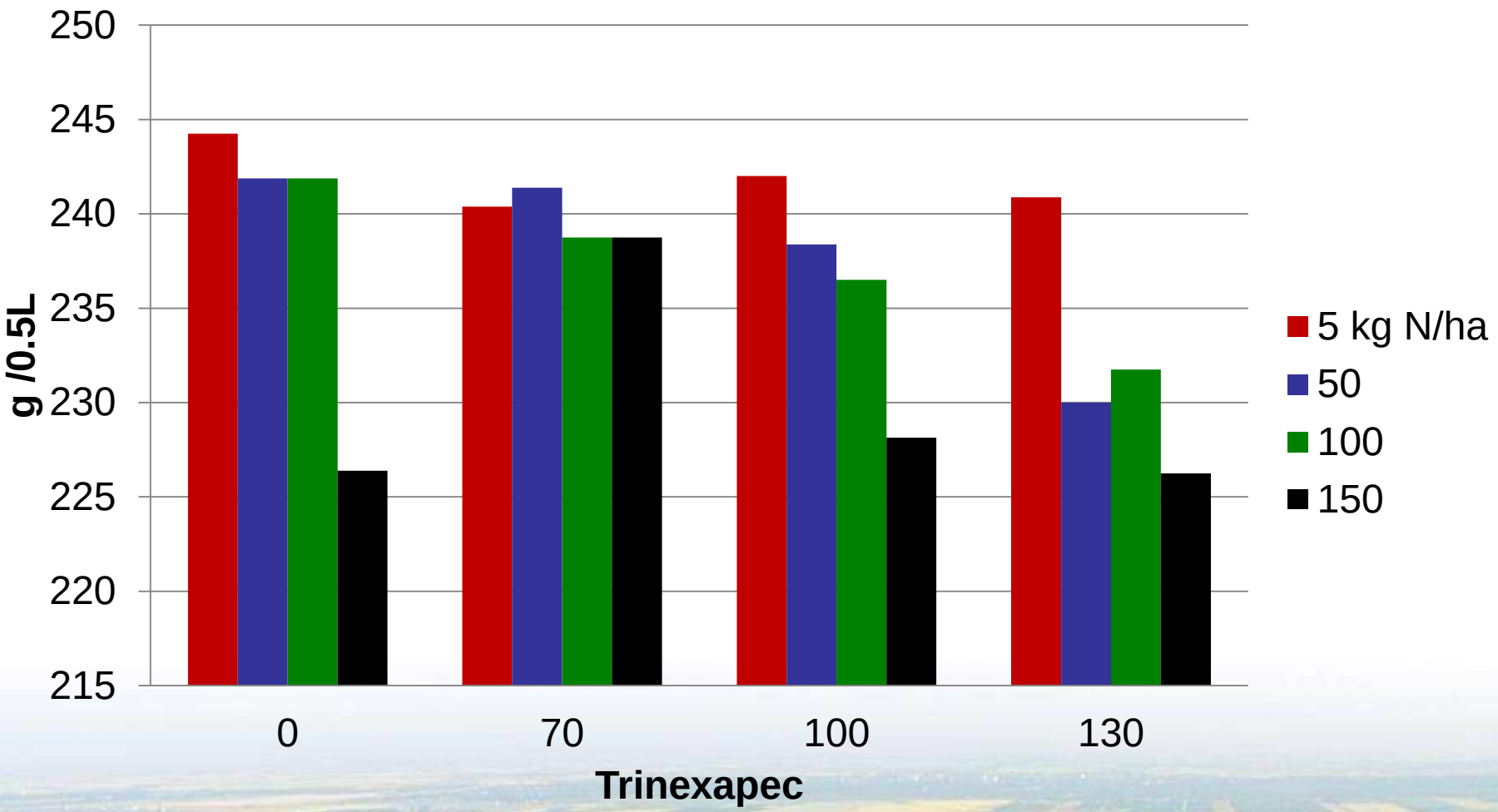
Lodging - N x PGR Trinexapac



Yield - N x PGR Trinexapac



Test Weight - N x PGR Trinexapac

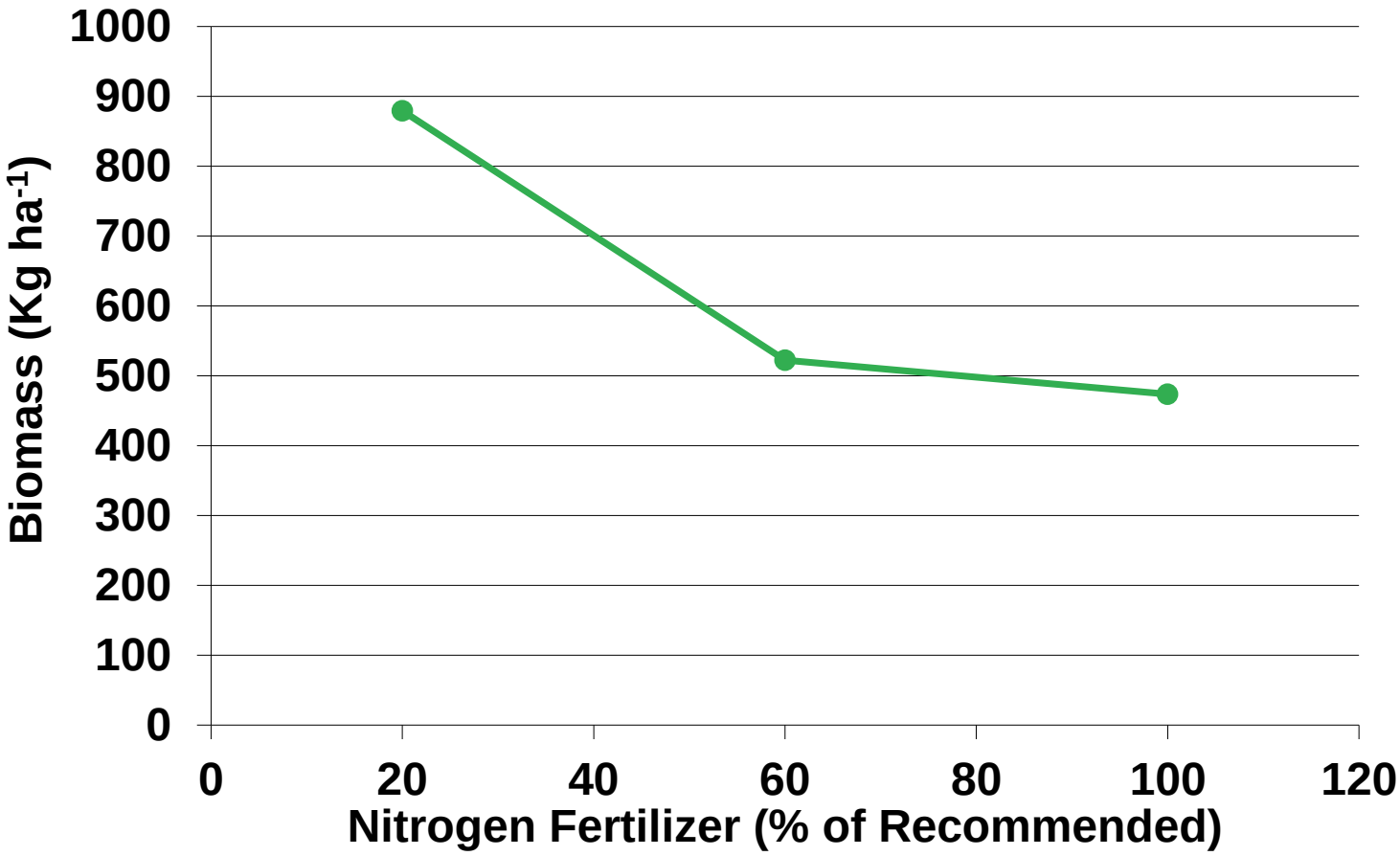


Black Medic as a Cover Crop?

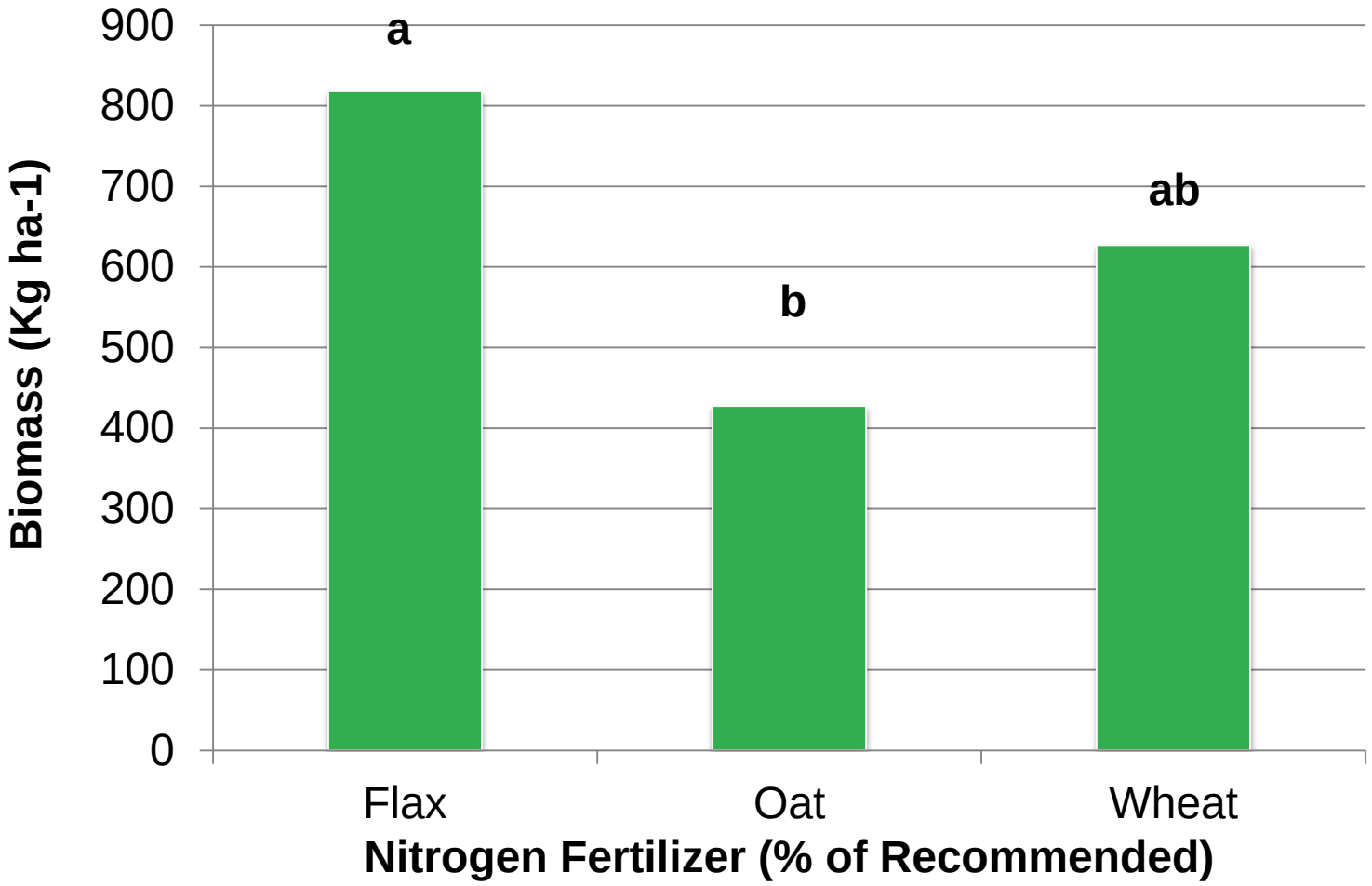
Experiment

- **Medic and non-Medic Blocks**
- **Flax - Wheat - Oat Rotation**
- **Three levels of N, 20, 60 and 100% of recommended N (applied + residual)**
  - **Flax 110 kg ha^{-1}**
  - **Oats 100 kg ha^{-1}**
  - **Wheat 135 kg ha^{-1}**

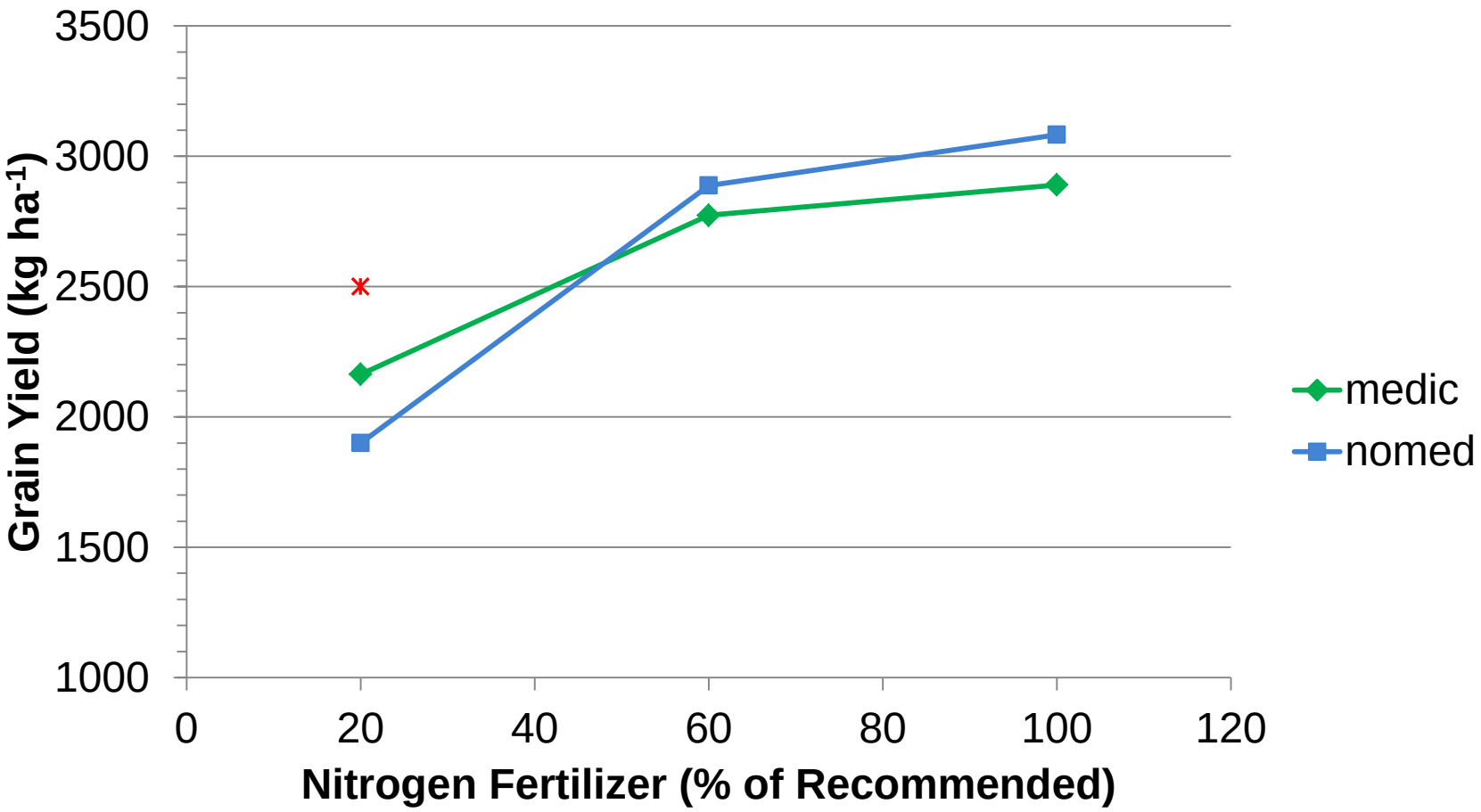
Black Medic Biomass



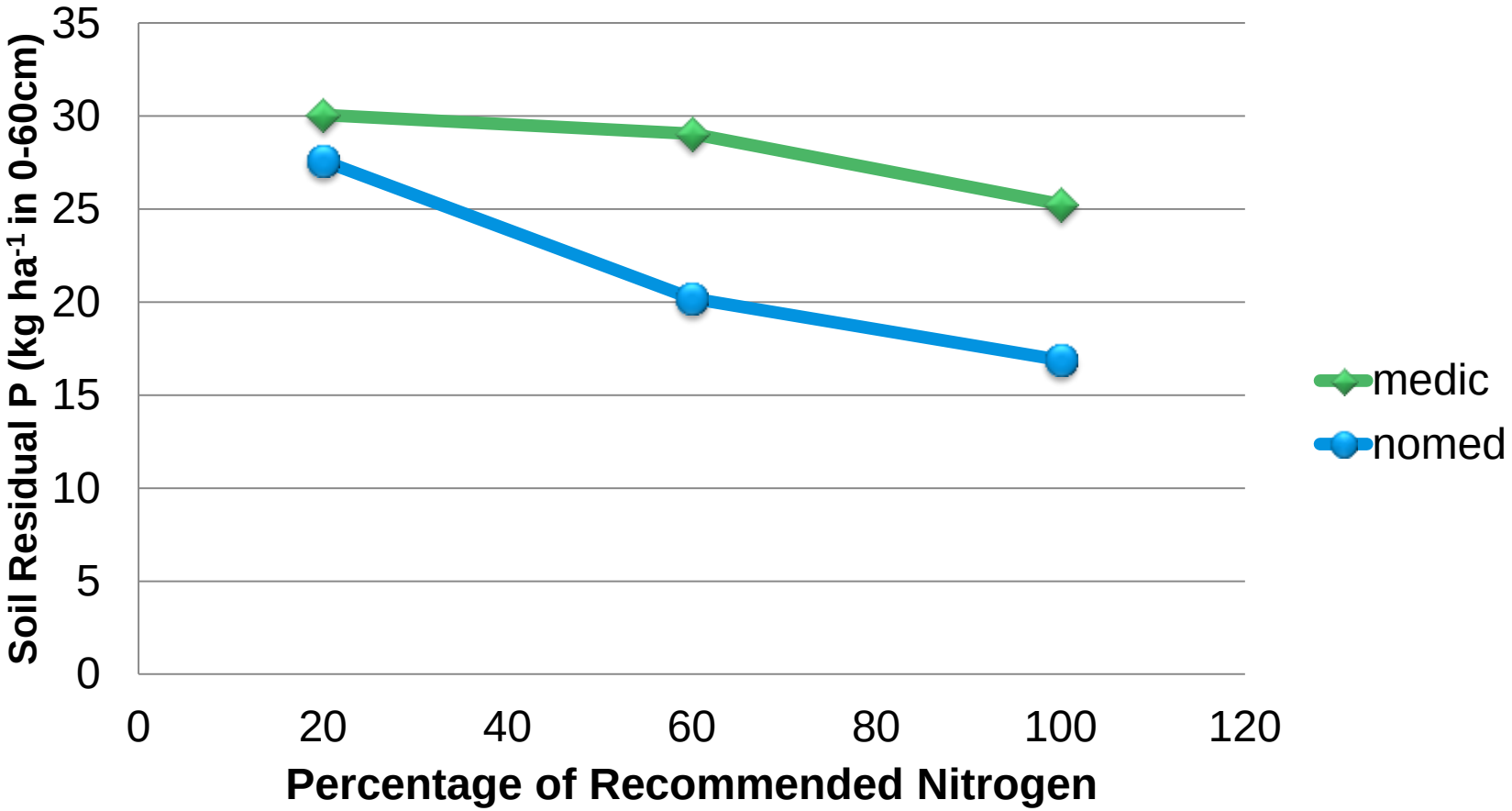
Black Medic Biomass



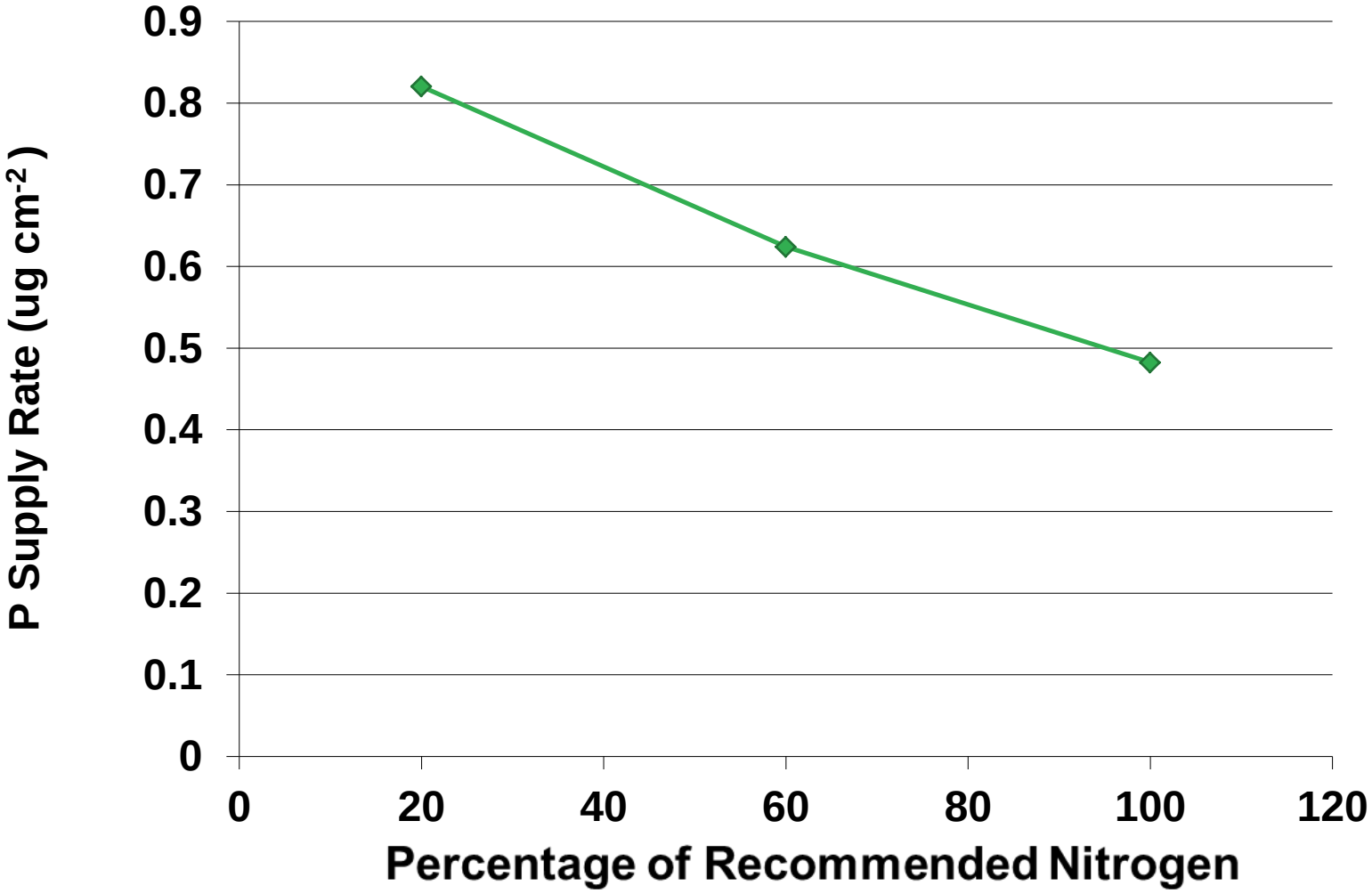
Grain Yield: Medic and N Fertilizer



Fall Residual Soil P (0-60cm)



Fall Residual Soil P



Sunflowers

Sunflower Research

- Development of early season hybrid and inbred lines for Saskatchewan
  - Brent Hulke, USDA
- Hybrid Testing
  - New oil profile, Nusun
- Seeding Rate Response
- Volunteer Canola Suppression
  - Authority + Assert

Development of early season hybrid and inbred lines

- Evaluated several crosses
- X713
  - 5 locations
  - Harvested kernel moisture below the check
  - Yield was 115% of the check
  - Nusun oil quality
  - One year

Volunteer Canola Suppression

Niger

- ***Guizotia abyssinica* - evolved in Africa**


The Customer


4408

- **No access to US market**
- **Currently niger is a crop for growers who want to vertically integrate**
  - **growing**
  - **cleaning**
  - **Marketing**
- **To access Europe more consistent yield is required**

Barley Research

- Beta-Glucan in Hull-less Barley
- Preharvest Glyphosate
- N rate x cultivar
- PGR + seed treatment +fung at flag + fung at anthesis
- PGR's
  - Chlormequat chloride
  - Ethephon (Ethrel)
  - Trinexapac-Ethyl (Palisade 2EC USA, Moddus UK, Primo Maxx -turfgrass)

Barley PGR 2013

	Plant Height		Lodging		Grain yield		Test Wt	
	cm		Belgian		Bu/ac		g/0.5 L	
none	87.88	a	0.81	a	89.02	a	335.8	a
Chlormequat	85.78	a	0.45	a	91.95	a	336.6	a
Ethephon	82.00	b	0.21	a	90.95	a	330.9	b

Barley PGR 2014

	Average Height		Lodging		Grain yield		Test Wt	
	HEIGHT		Belgian		Yield		test weight	
	cm		Scale		bu/ac		g/0.5 L	
none	87.71	a	1.19	a	61.27	a	303.53	a
Ethephon	73.96	c	0.20	b	58.40	b	301.52	a
Chlormequat	85.67	a	0.57	ab	61.75	a	302.21	a
Trinexapec	82.83	b	0.31	b	61.95	a	302.01	a

The People Who Do The Work

- Orla Willoughby
- Randy Shiplack
- Chris Omoth
- Kevin Willoughby
- Melanie Reid
- Stephanie Horner
- Jill Filmer

Aphid Populations in Canaryseed