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Nitrogen and Fungicides Oat Yield and Quality



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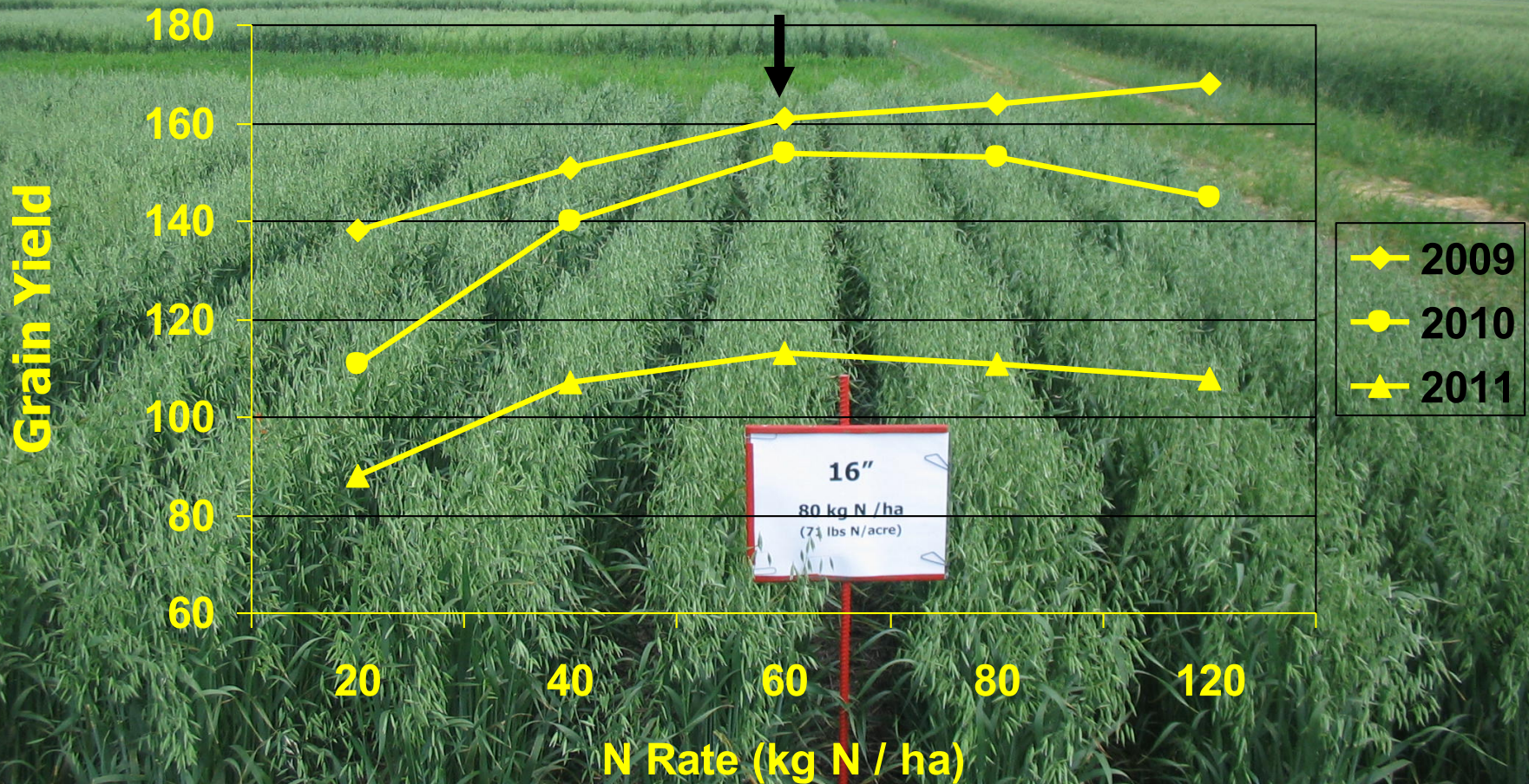
Background

- 1) Oat growers in western Canada are searching for ways to increase oat yields
- 2) Increased nitrogen rates can increase yield but usually result in a lower test weight.
- 3) Growers wonder if fungicides can be used to do more than protect yield. Can fungicides help to increase yield (increased plant health or stress tolerance)



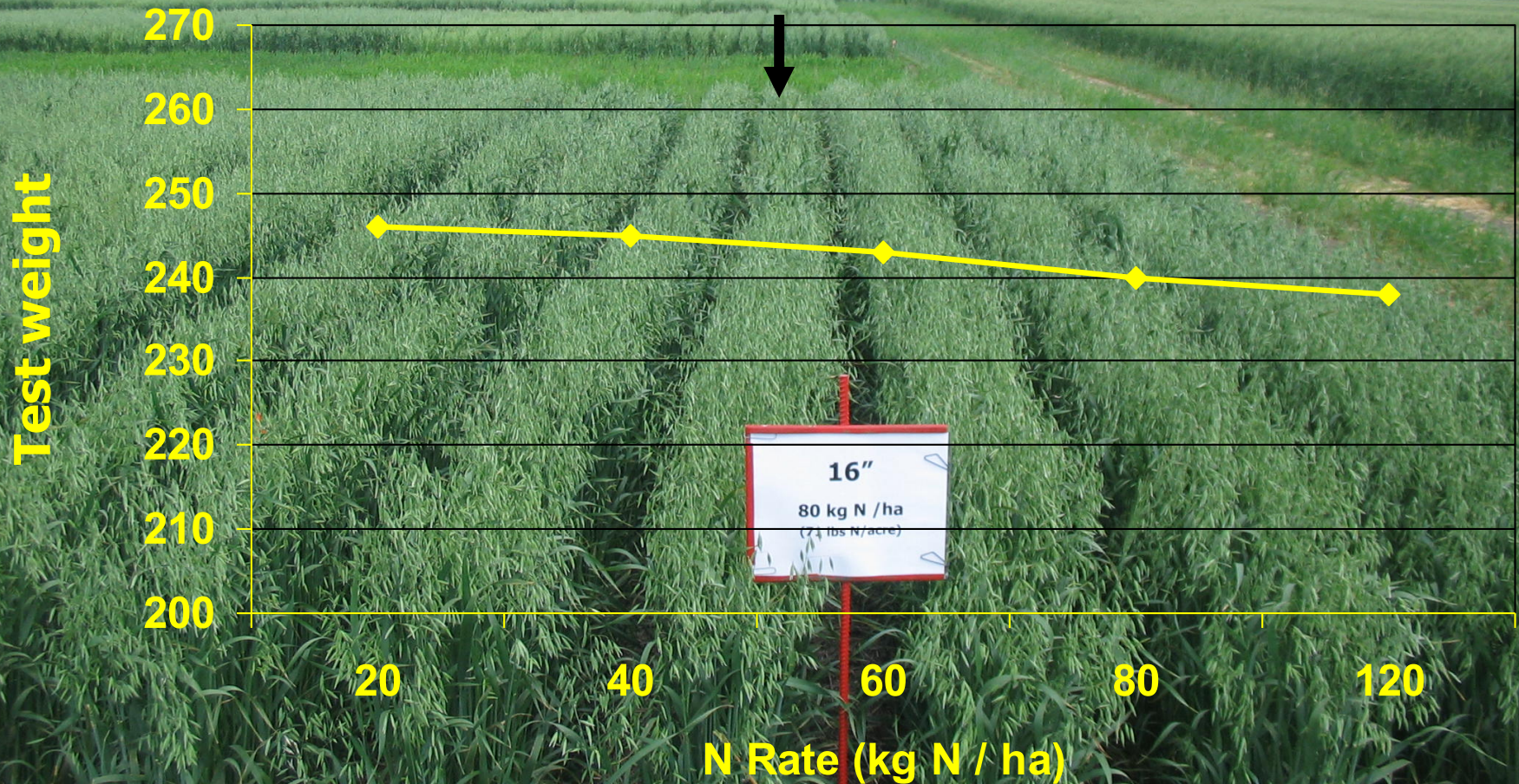
Grain Yield (bus/acre)

~Optimum N Rate @ 60 kg N/ha



Test weight (g/0.5 L)

~Optimum N Rate @ 60 kg N/ha



Fungicides

- 1) At sites with high crown rust severity, fungicide application improved yield and quality in susceptible cultivars. The poorer the cultivar resistance to crown rust, the larger the response to a fungicide.
- 2) When crown rust infection was low AC Morgan a cultivar very susceptible to leaf disease responded to a fungicide



Objective

To determine if a combination of nitrogen fertilizer and fungicides could be used to increase the yield and quality of oat

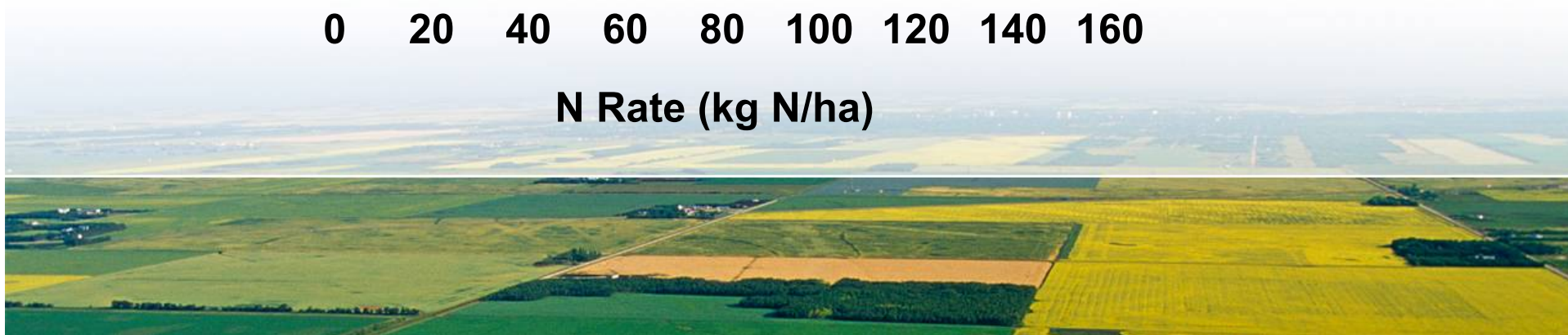
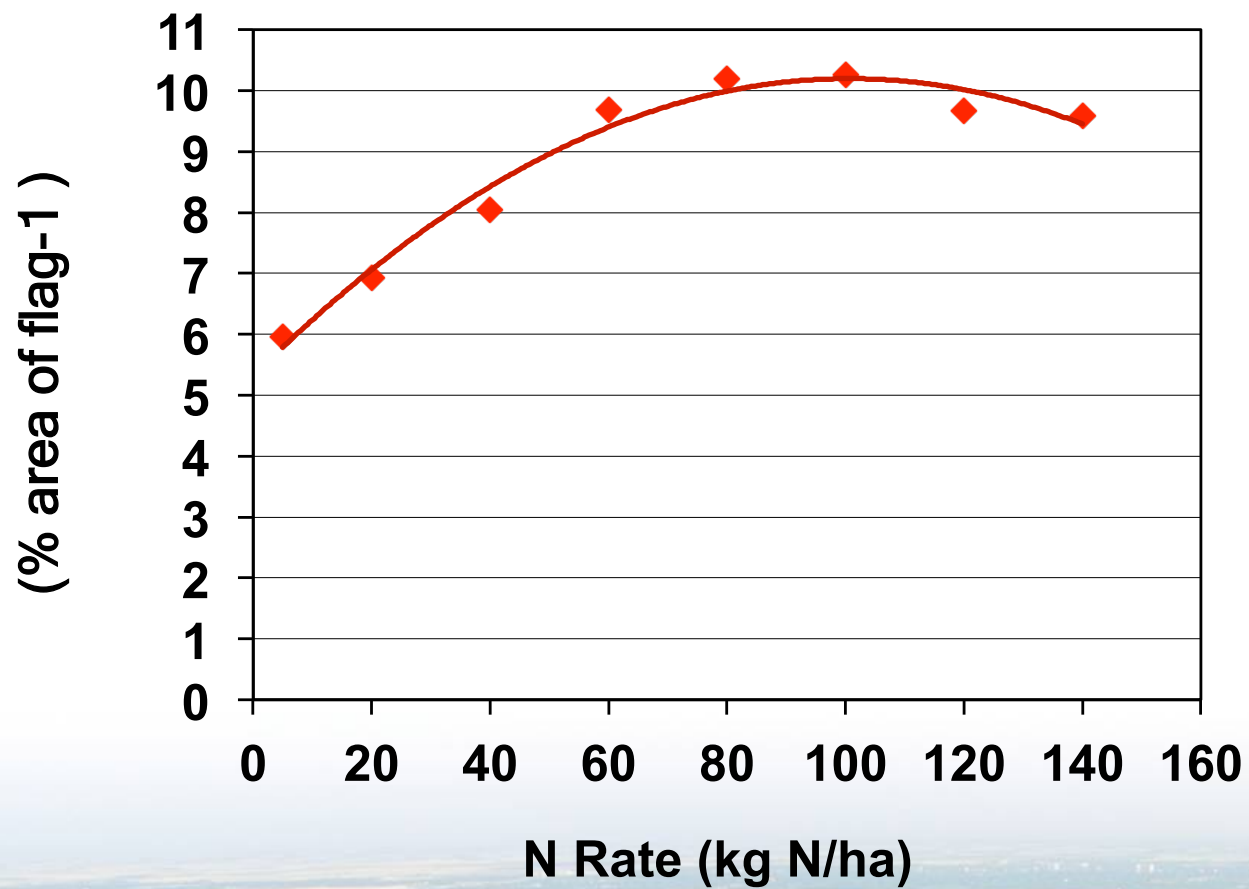


Materials and Methods

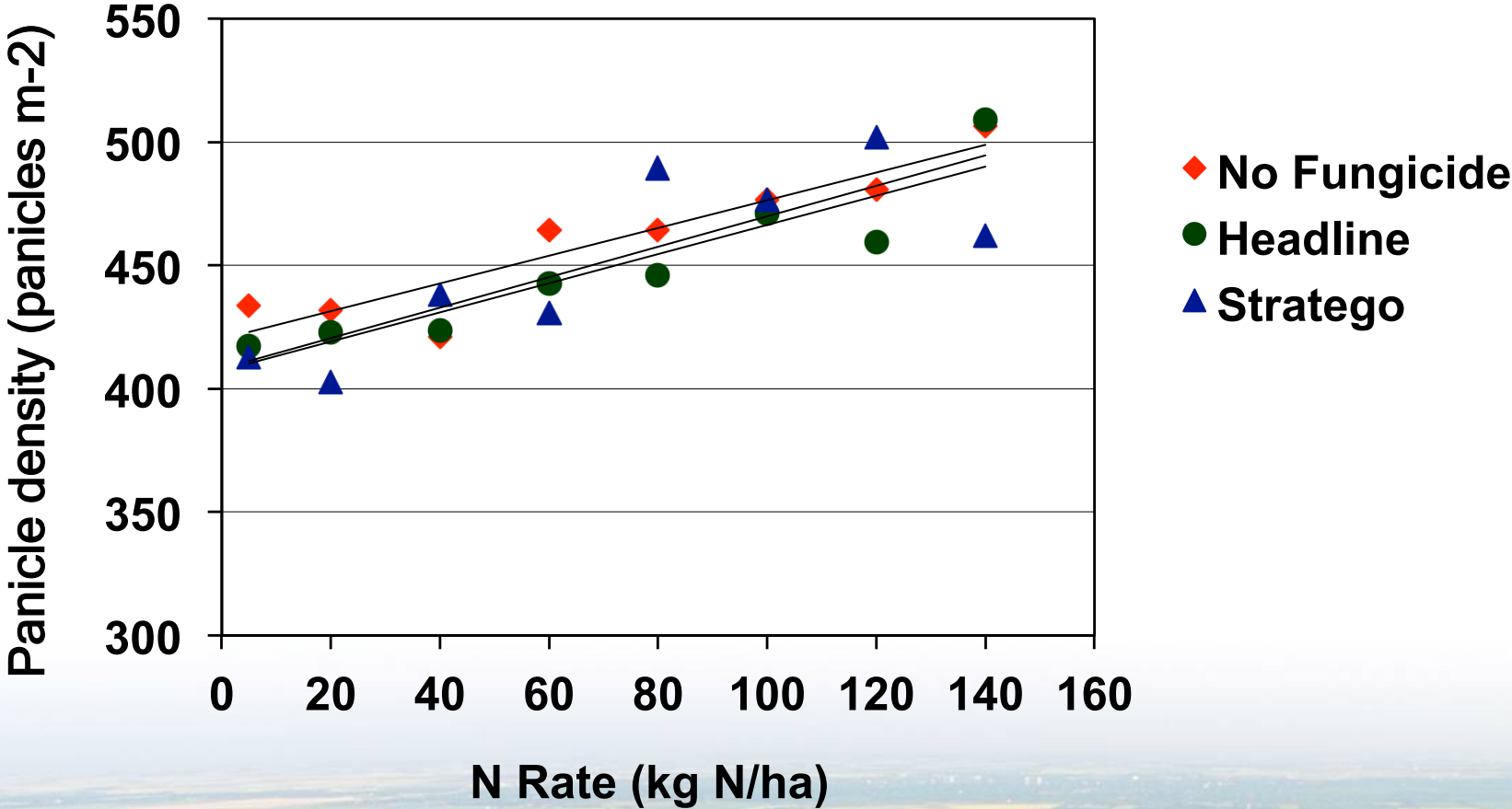
- 1) Cultivar – Triactor
- 2) Nitrogen Rates – 5, 20, 40, 60, 80, 100, 120, 140
- 3) Fungicides - None, Headline, Stratego
- 4) Locations – Indian Head and Melfort
- 5) Years – 2012 and 2013



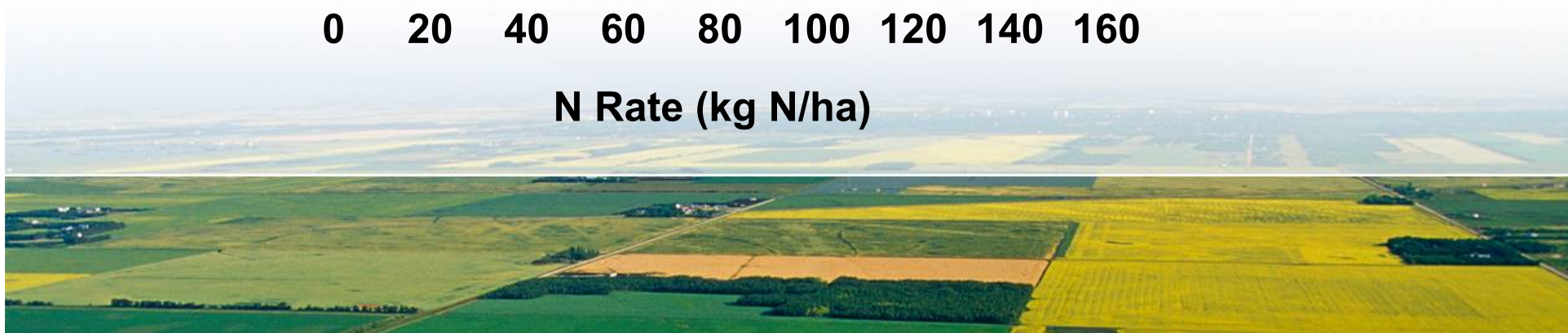
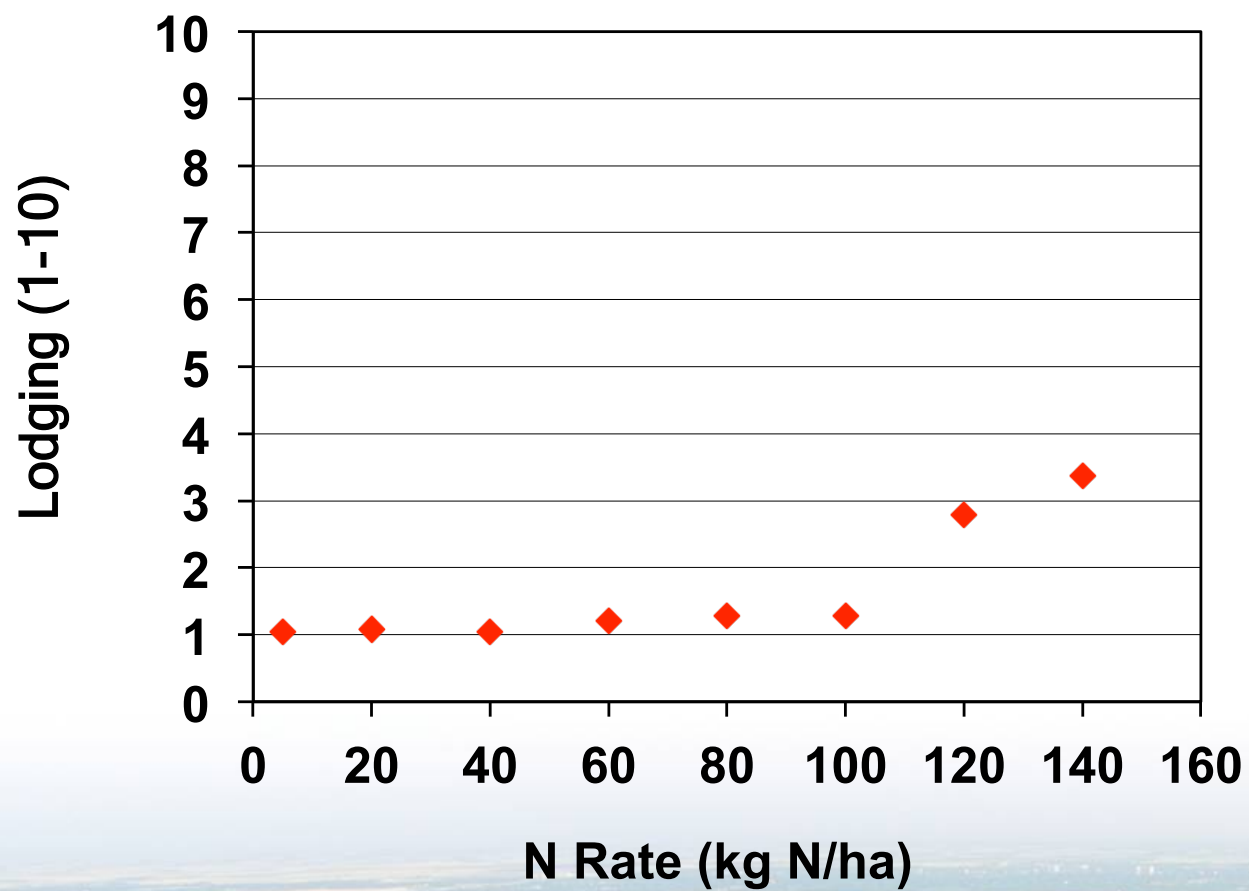
Leaf Disease



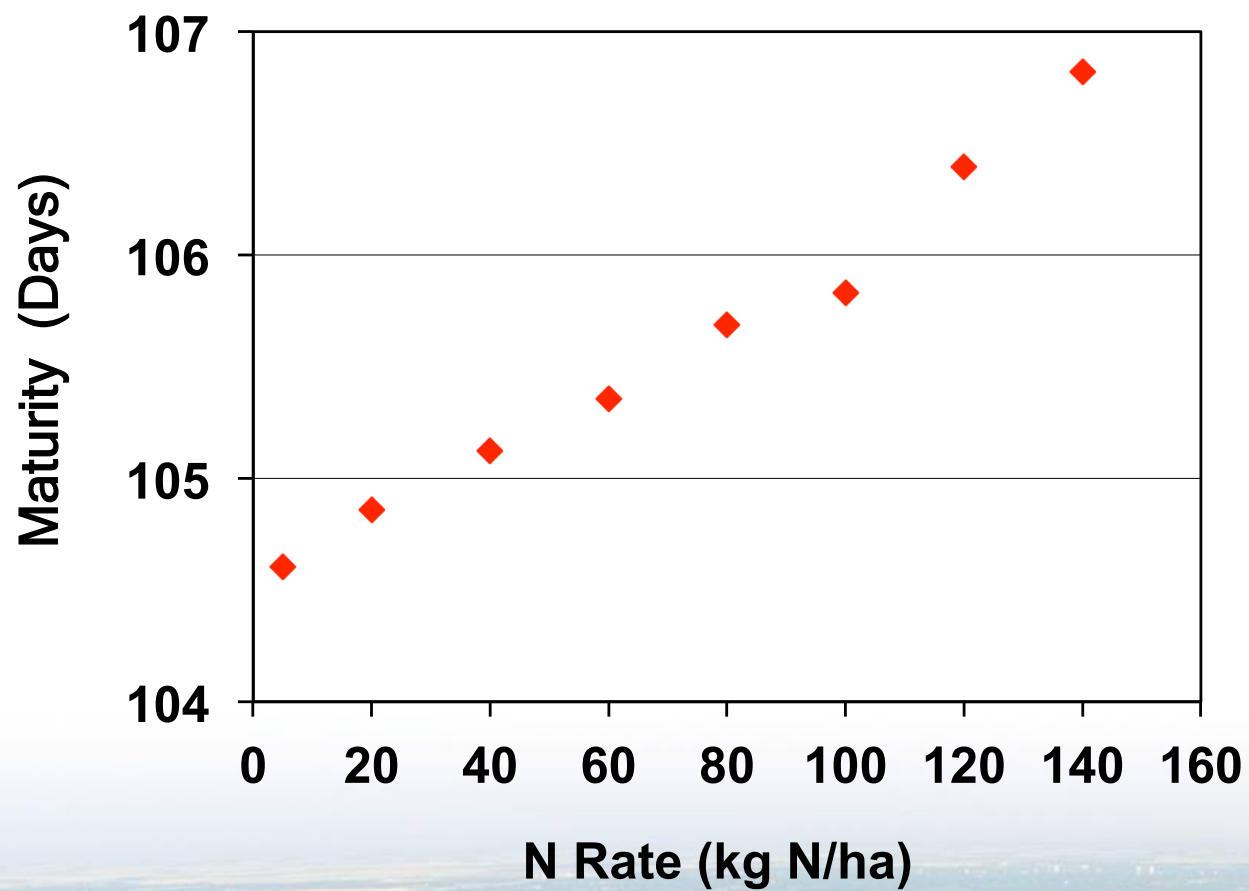
Panicle Density



Lodging

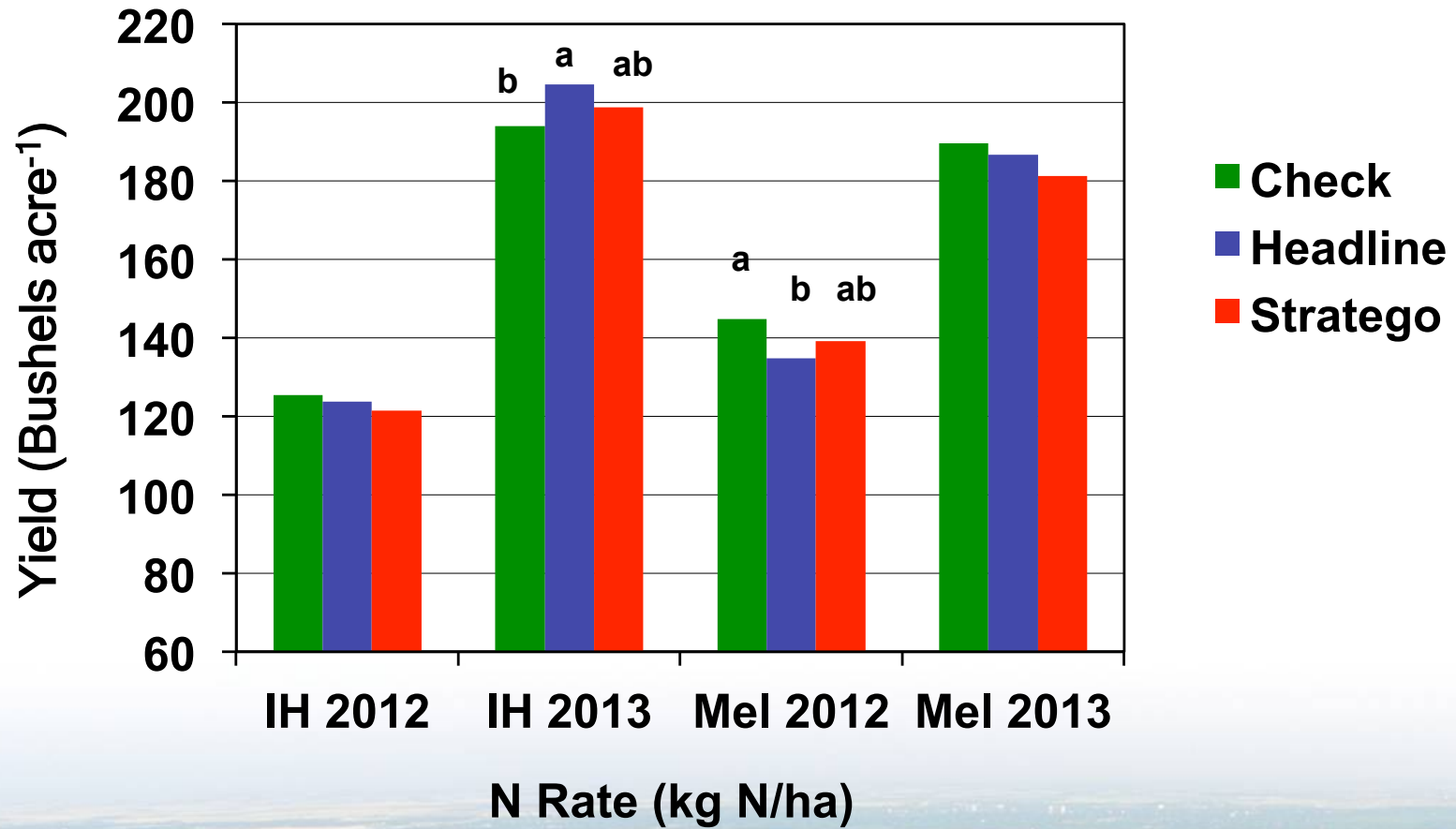


Maturity

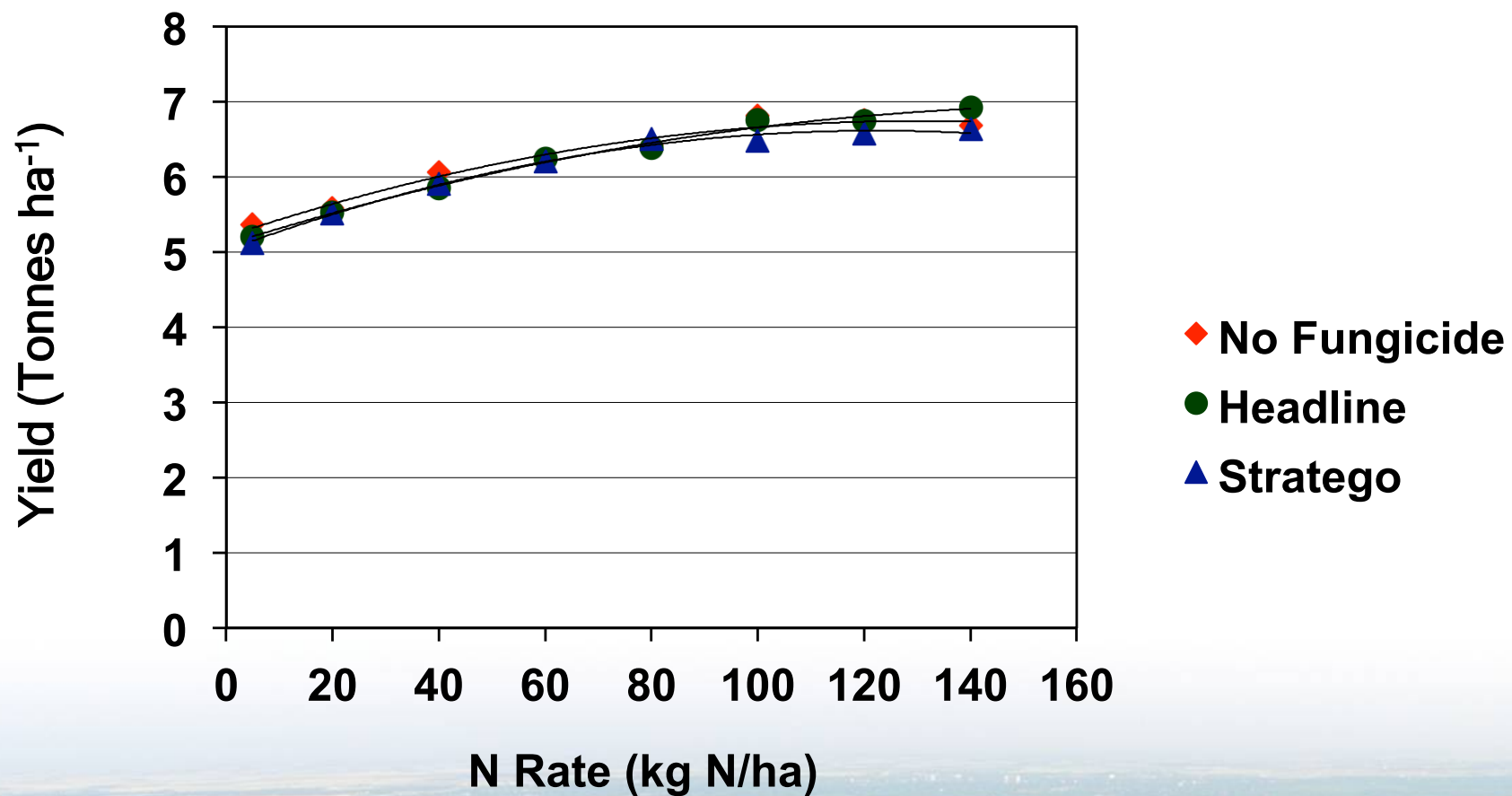


Grain Yield

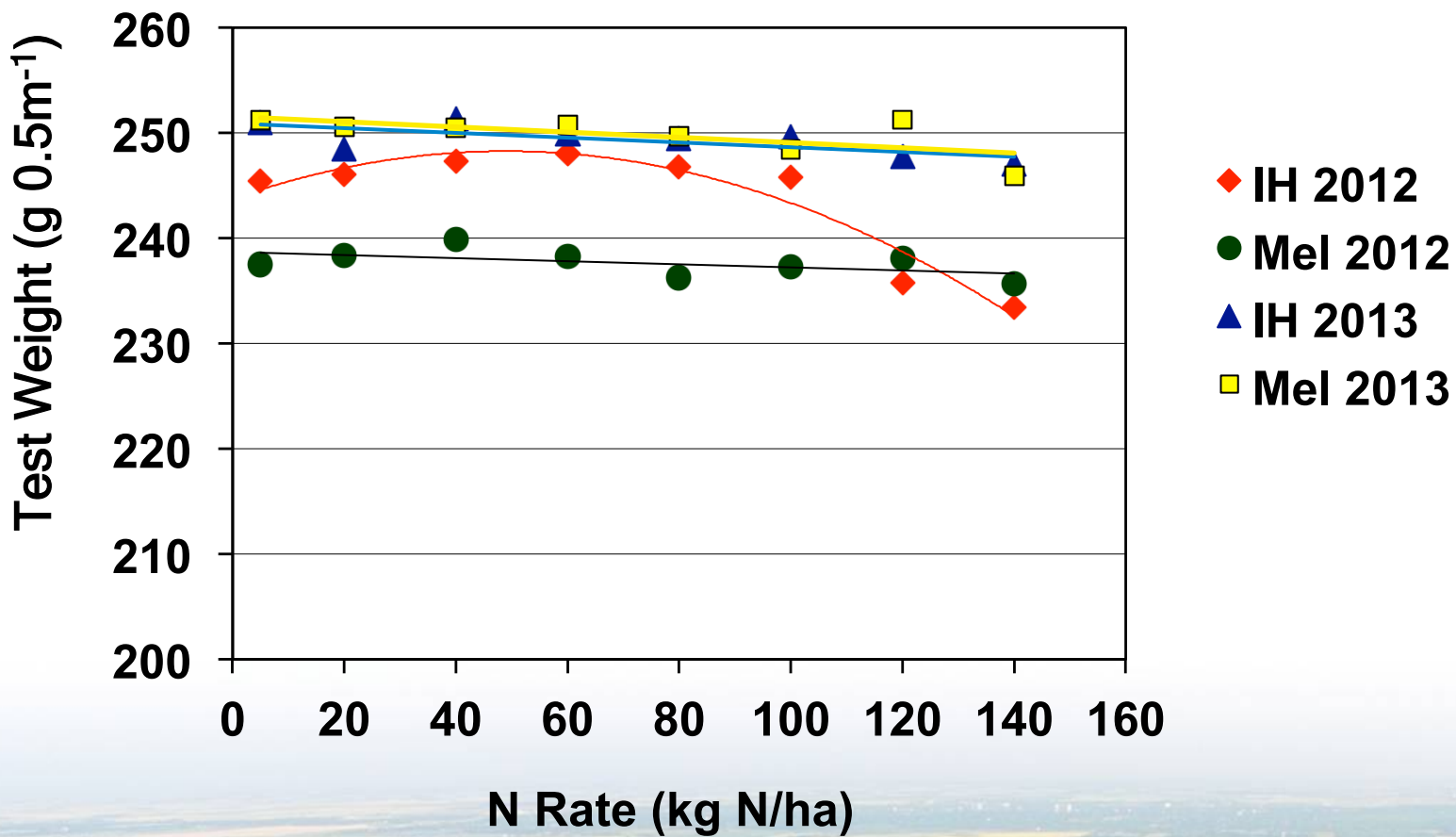
Fungicides



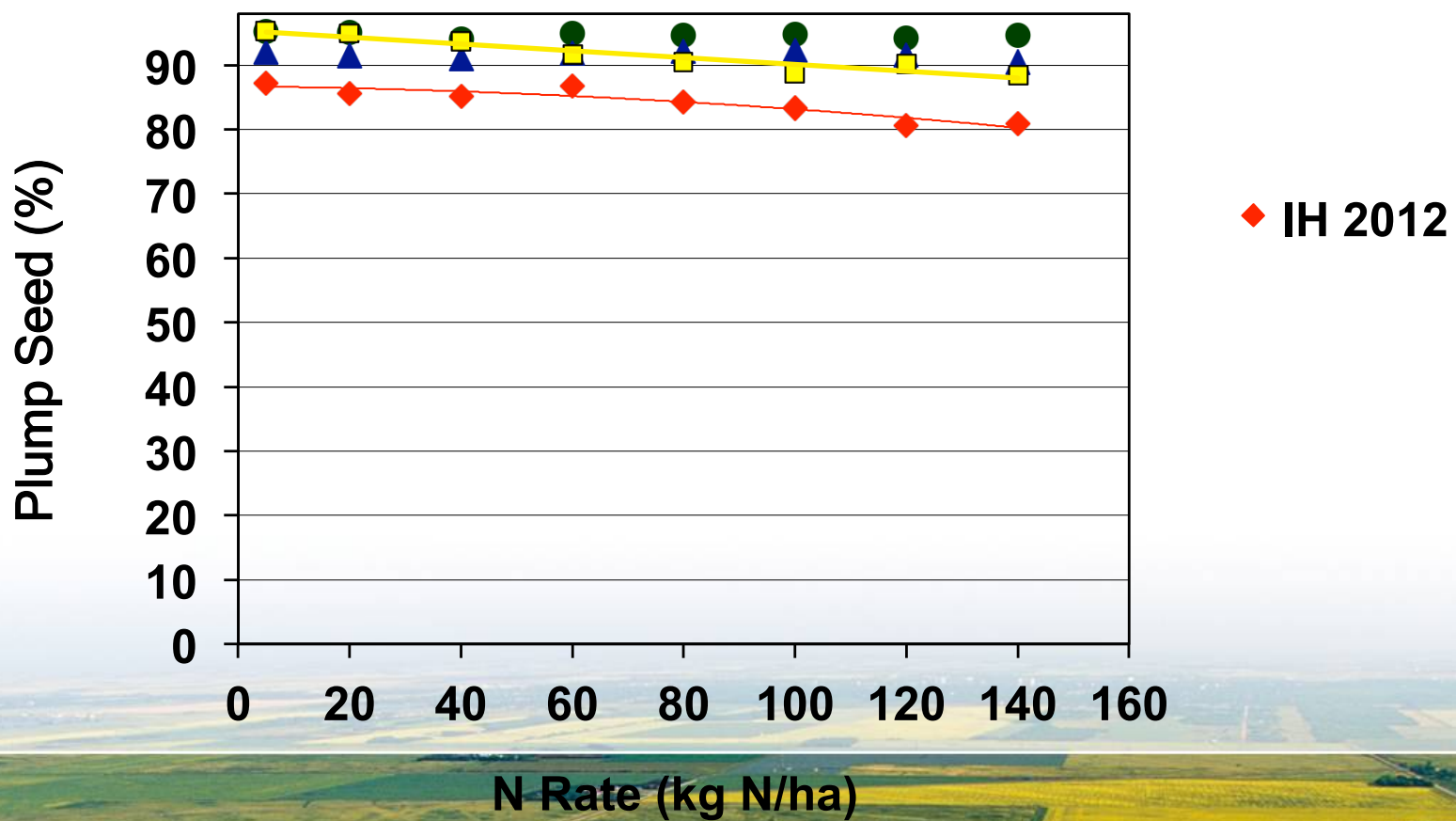
Grain Yield



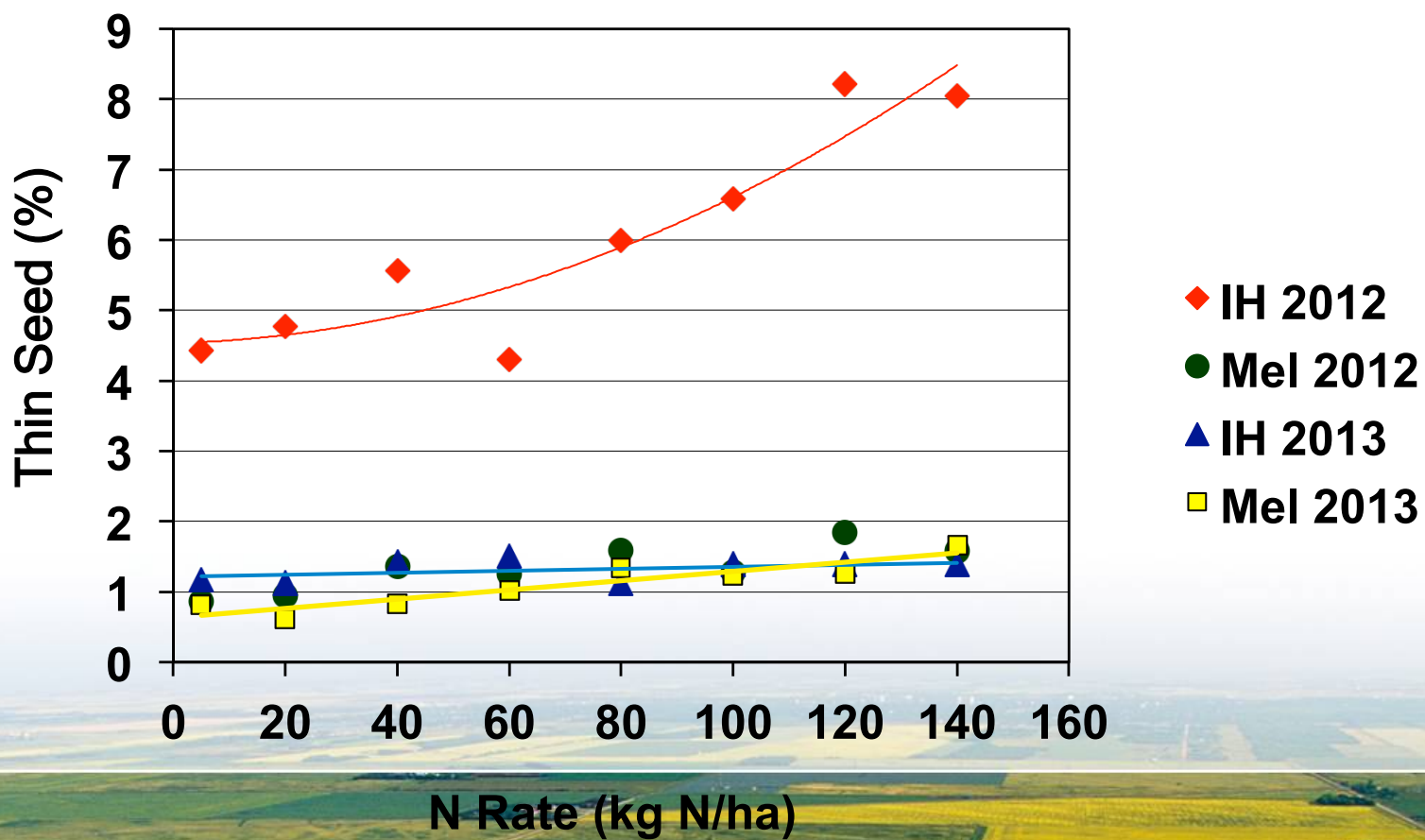
Test Weight



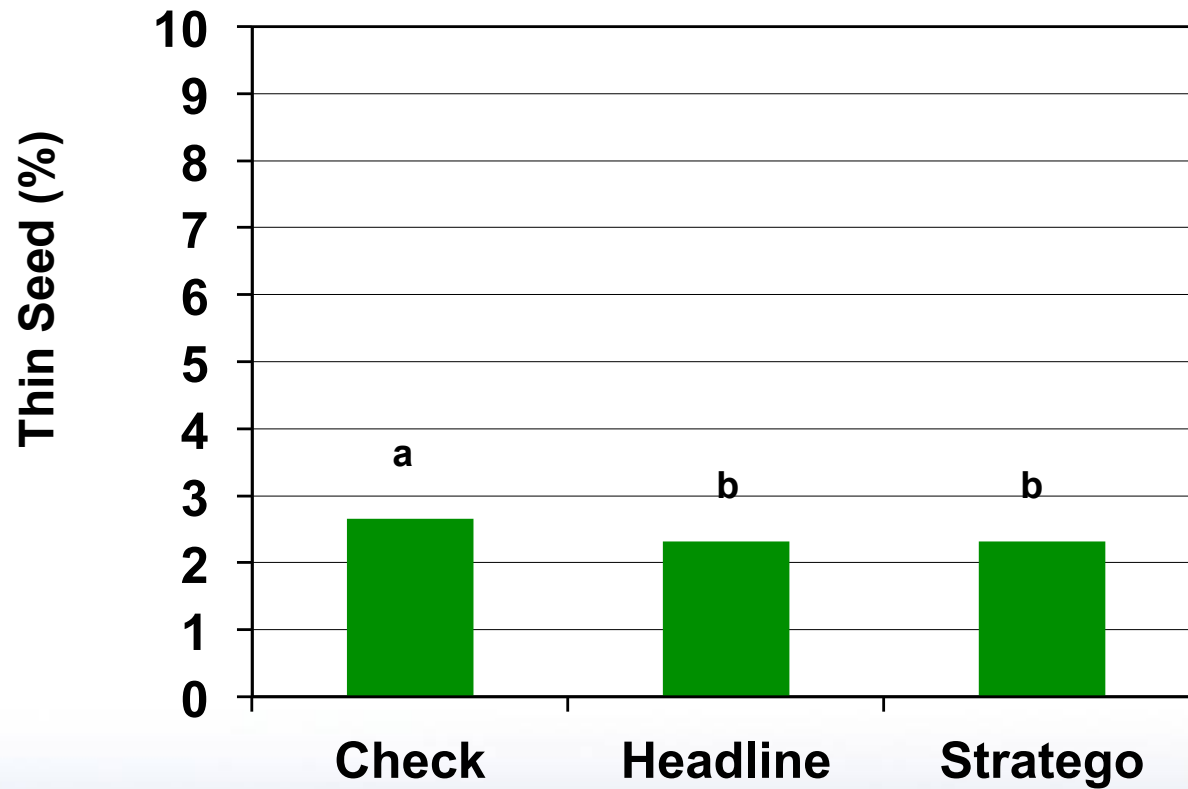
Plump Seed



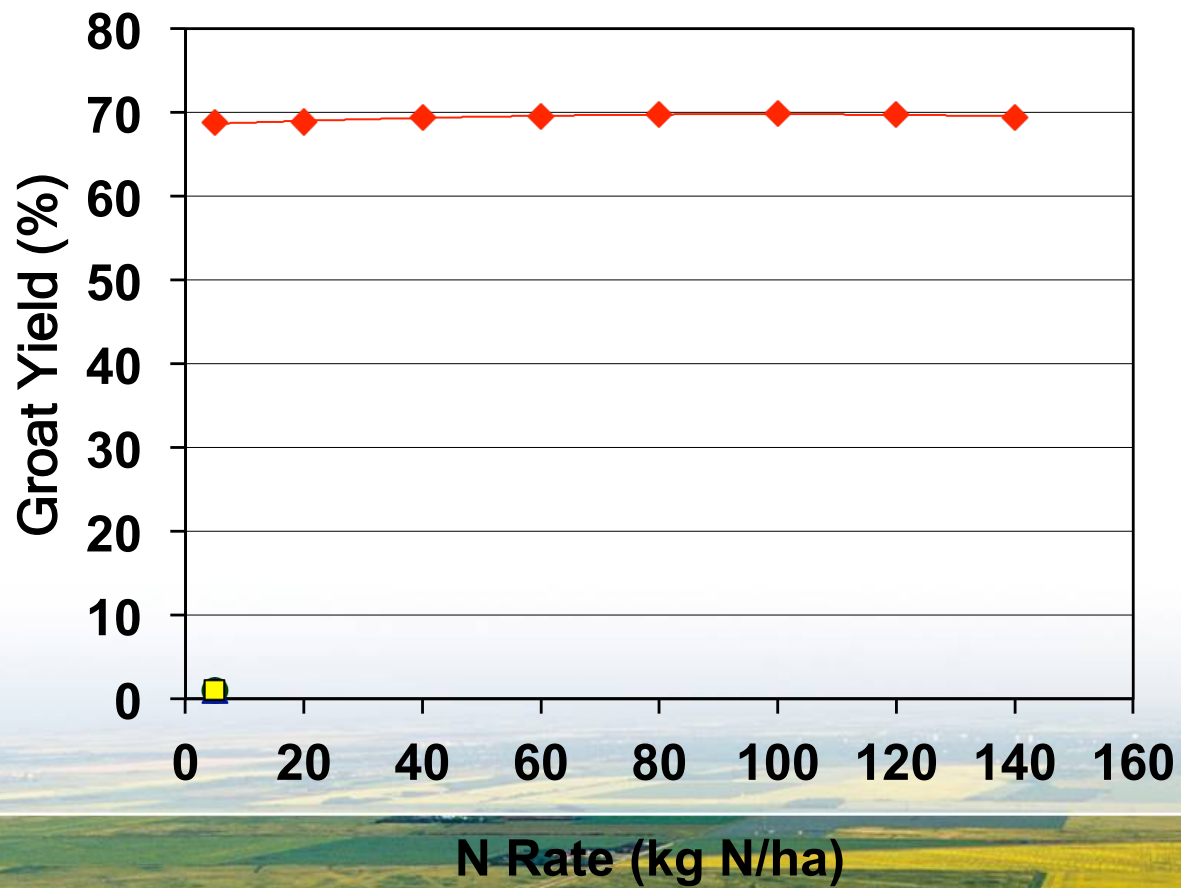
Thin Seed



Thin Seed Fungicides



Groat Yield



B-Glucan Content

Cultivar	Mid-May	Early June					
	(%)					(%)	
AC Morgan	4.18	3.94		Fungicide			
CDC Boyer	4.66	4.22		Yes		4.33	
CDC Orrin	4.58	4.16		No		4.43	
Leggett	4.89	4.45		LSD		0.08	
LSD	0.32						



Conclusions

Nitrogen and Fungicide did not interact

Fungicides did not have a major impact on yield or quality (disease levels were low)

Triactor responded to Nitrogen rates up to 100 kg ha^{-1} with only a limited impact on oat quality

Test weight was affected by lodging at the milk stage



Conclusions

Further research is required to determine if any cultivars have a more stable test weight as the nitrogen rate is increased



Nitrogen Rate and Cultivars

