



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada

Oat Agronomy



May, W.E. ¹, and Lafond, G.P

¹ Agriculture and Agri-food Canada
Indian Head, Saskatchewan, Canada

Canada 

Outline

- **Cultivar**
- **Seeding Date**
- **Seeding Rate**
- **Row Width**
- **Nitrogen**
- **Other nutrients**
- **Fungicides**

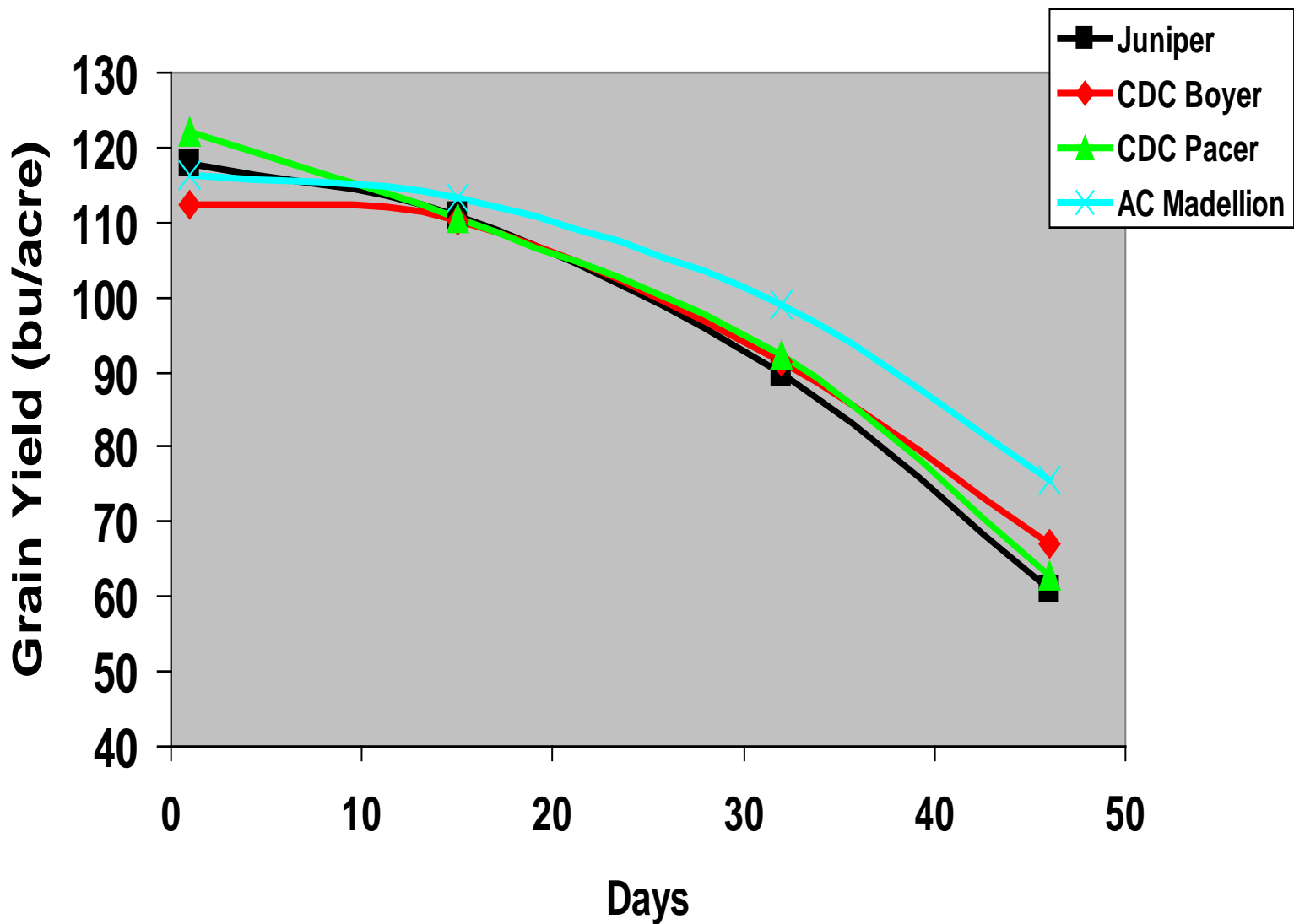
Cultivar

- **Select cultivar acceptable to market**
 - Talk to buyers about what cultivars they are buying
- **Select Adapted Cultivar**
 - Take advantage of improved genetics
 - Crown Rust Resistance
- **Not Silver Bullet**

Seeding Date

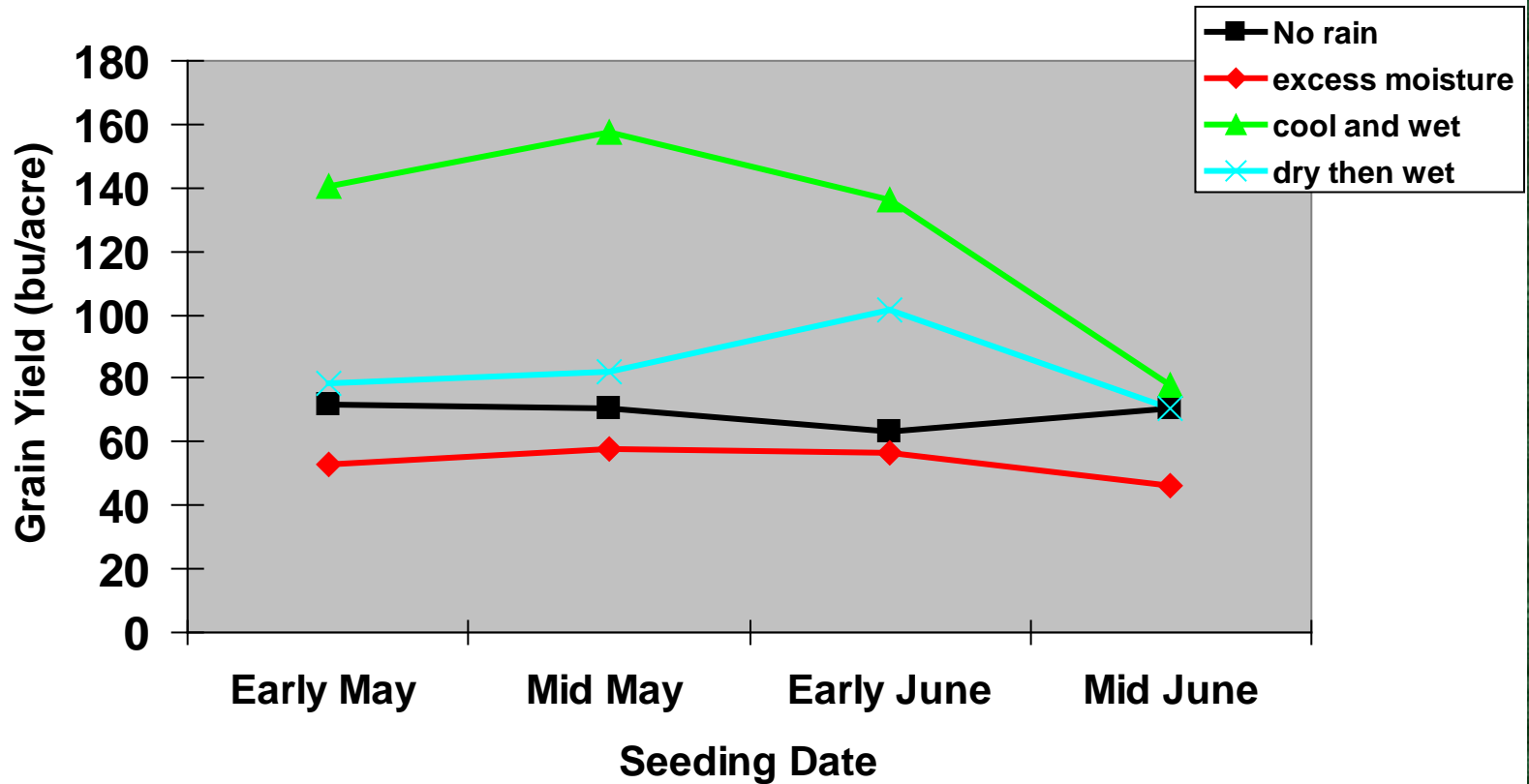
- **Seed Early for consistent yield and quality**

Seeding Date

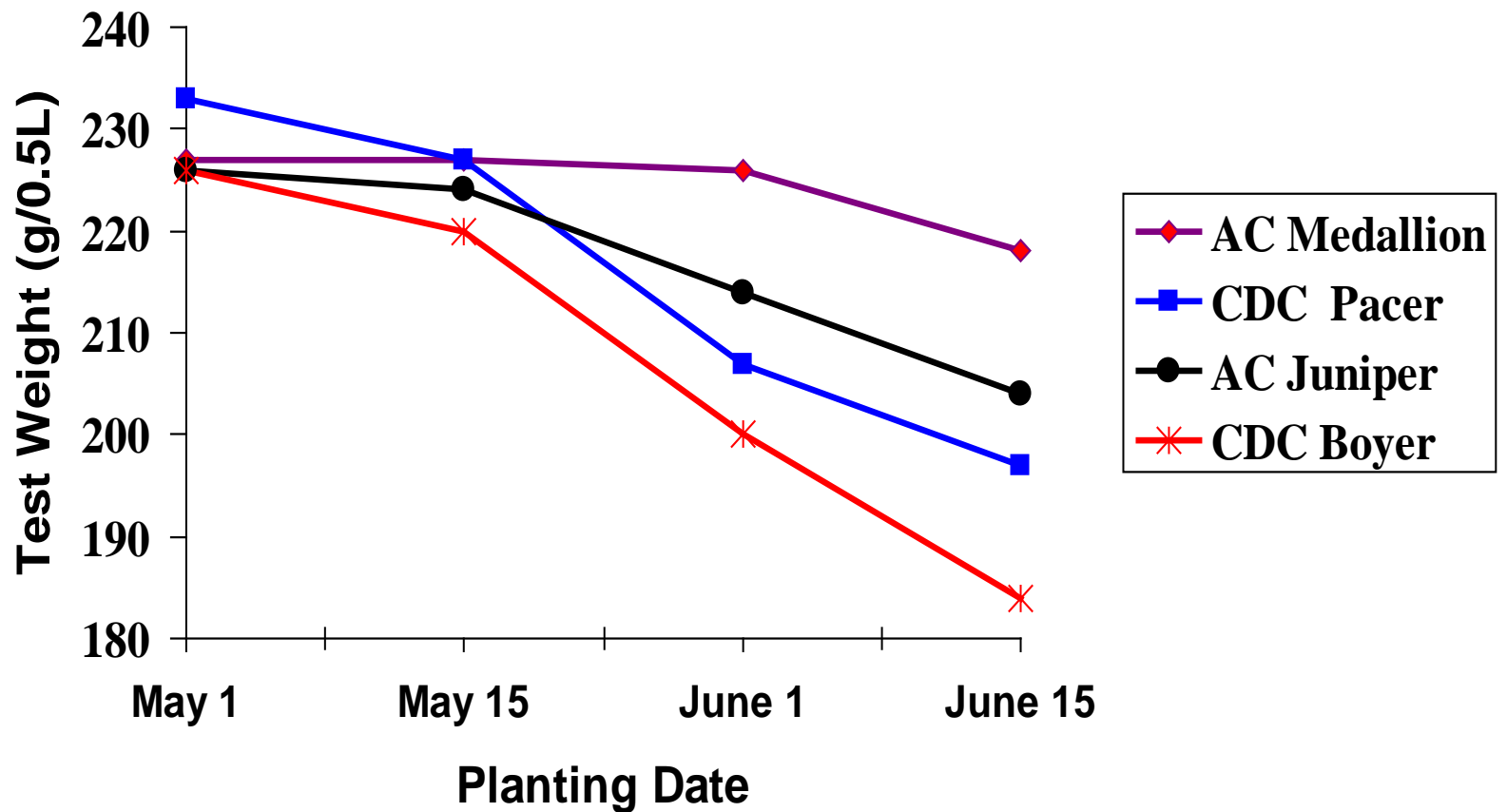


Seeding Date

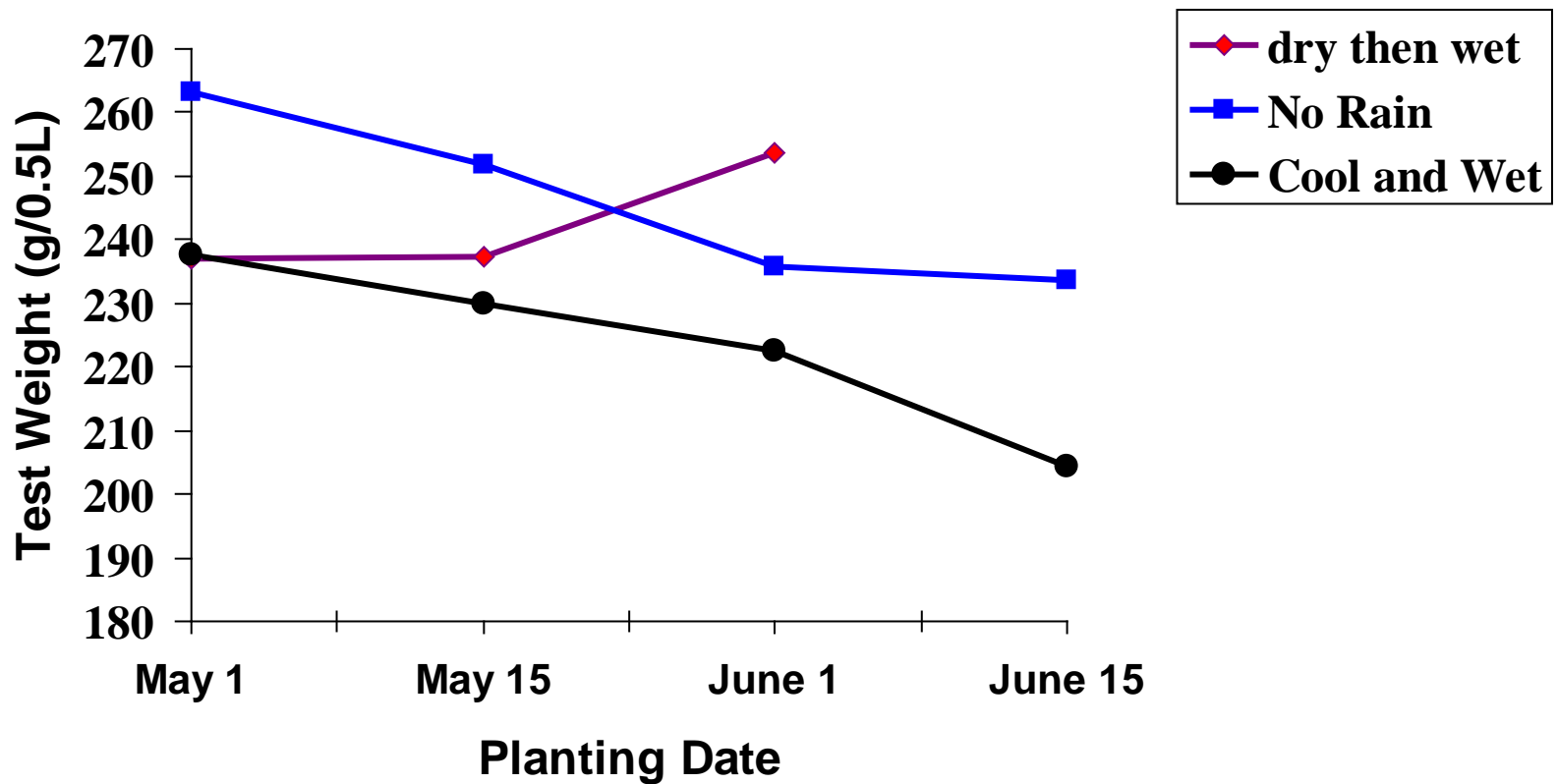
Rust Resistant cultivar



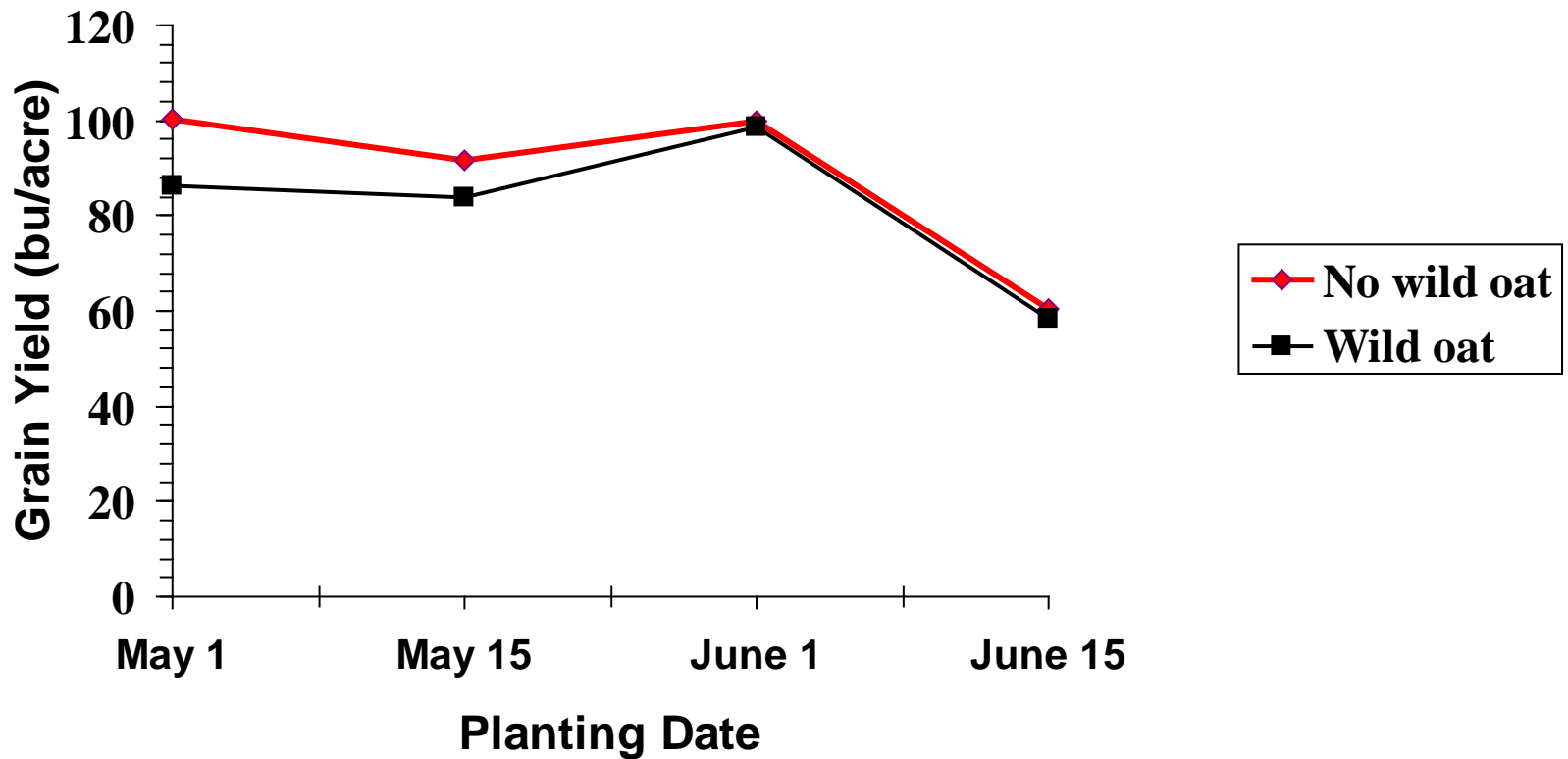
Seeding Date



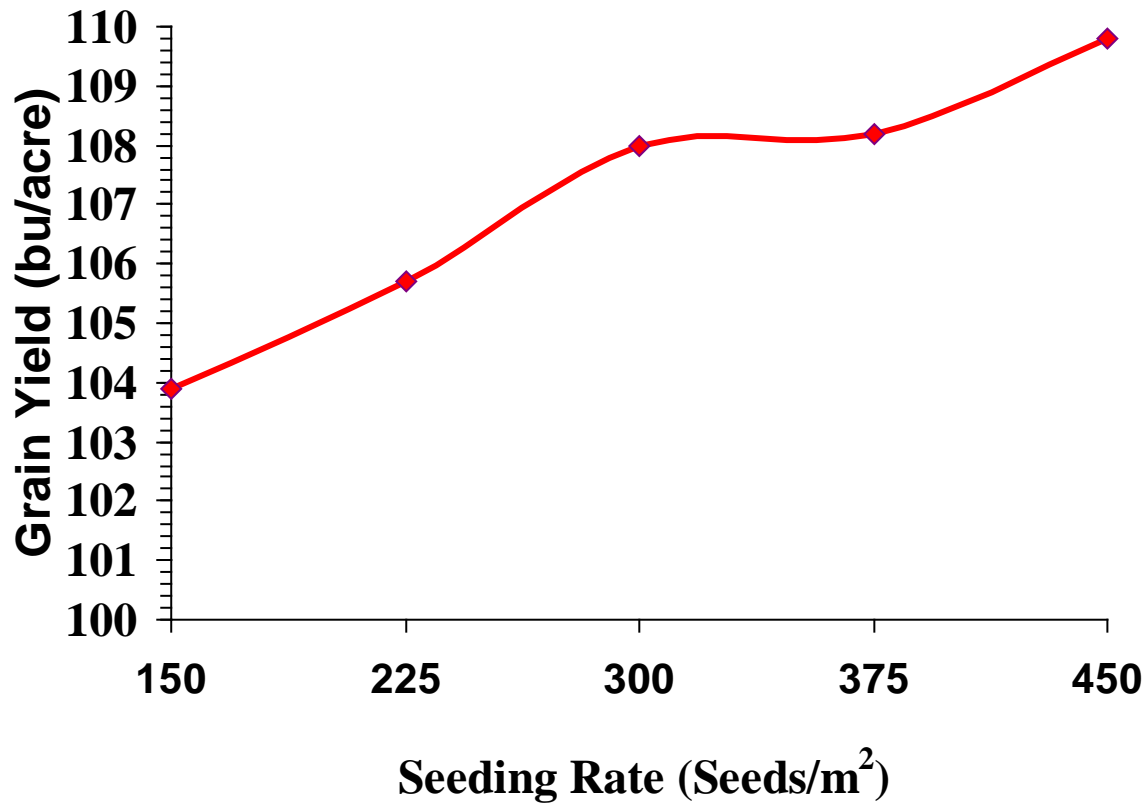
Seeding Date



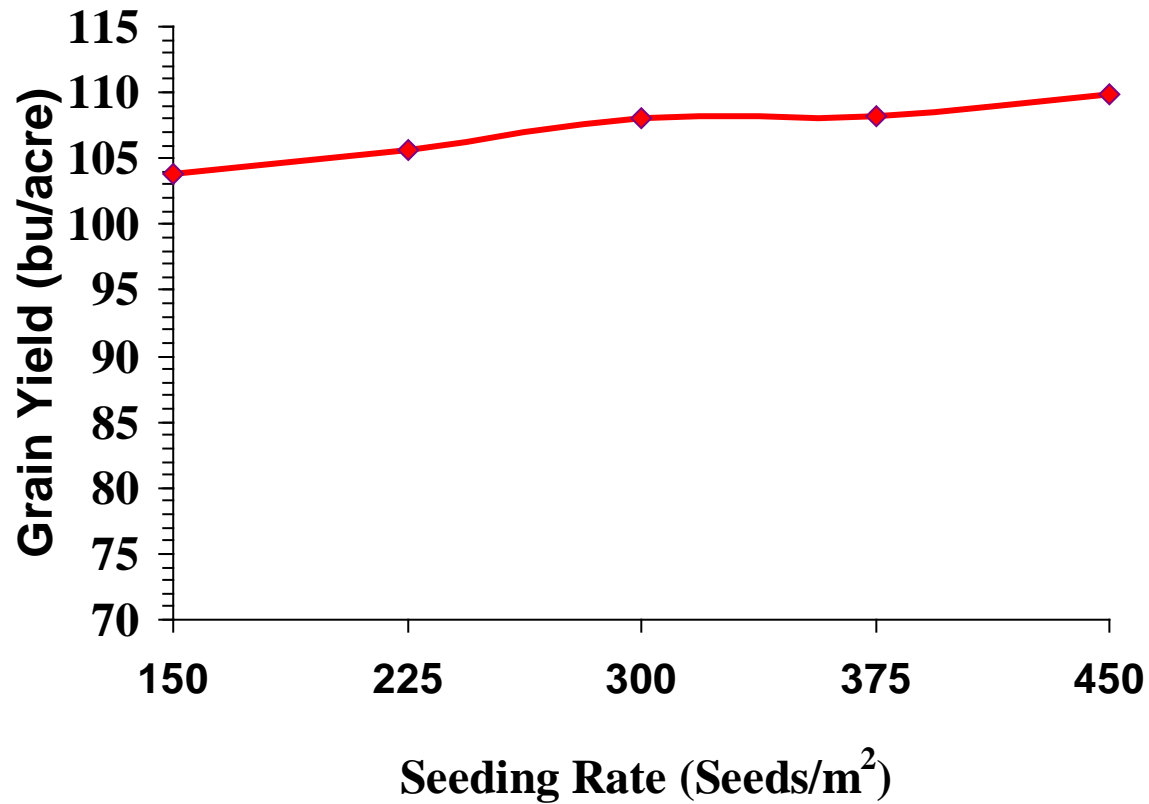
Seeding Date and Wild Oats



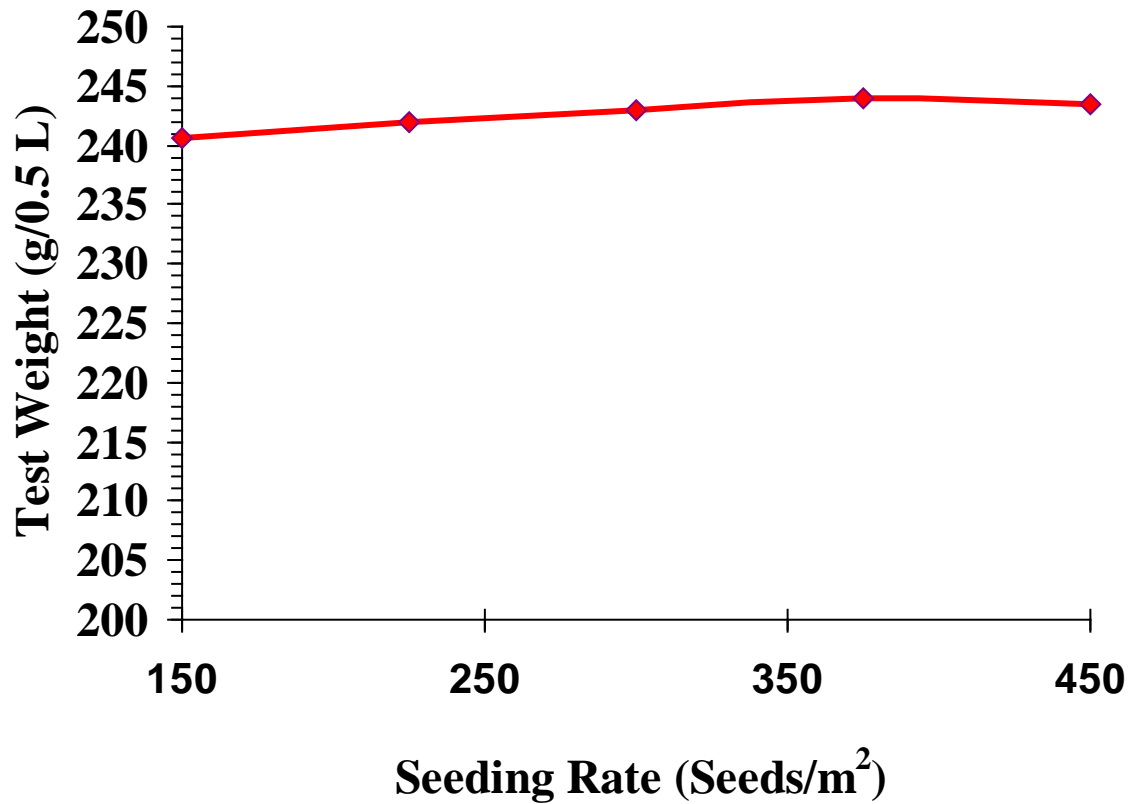
Seeding Rate with few wild oats



Seeding Rate with few wild oats



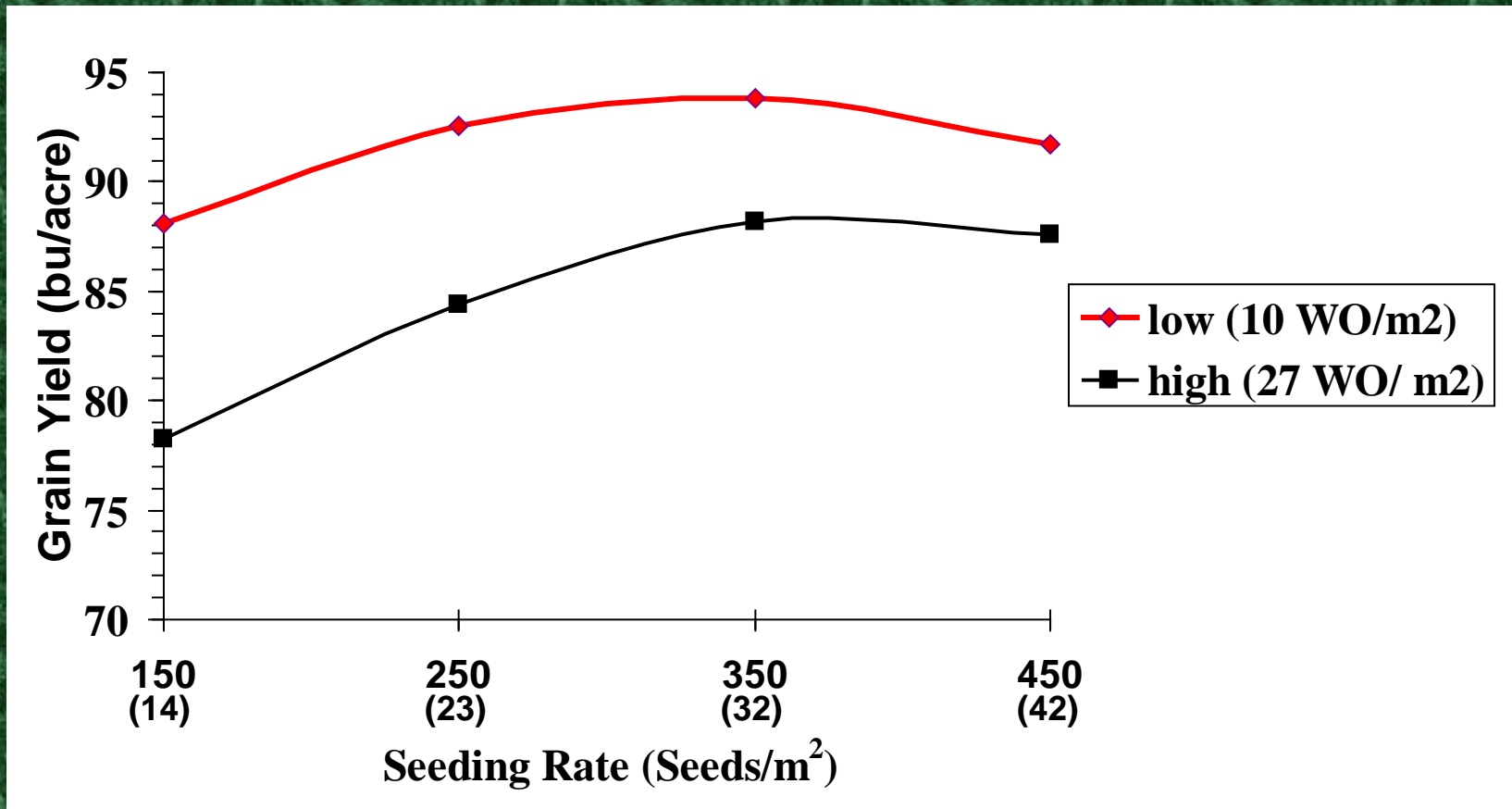
Seeding Rate with few wild oats



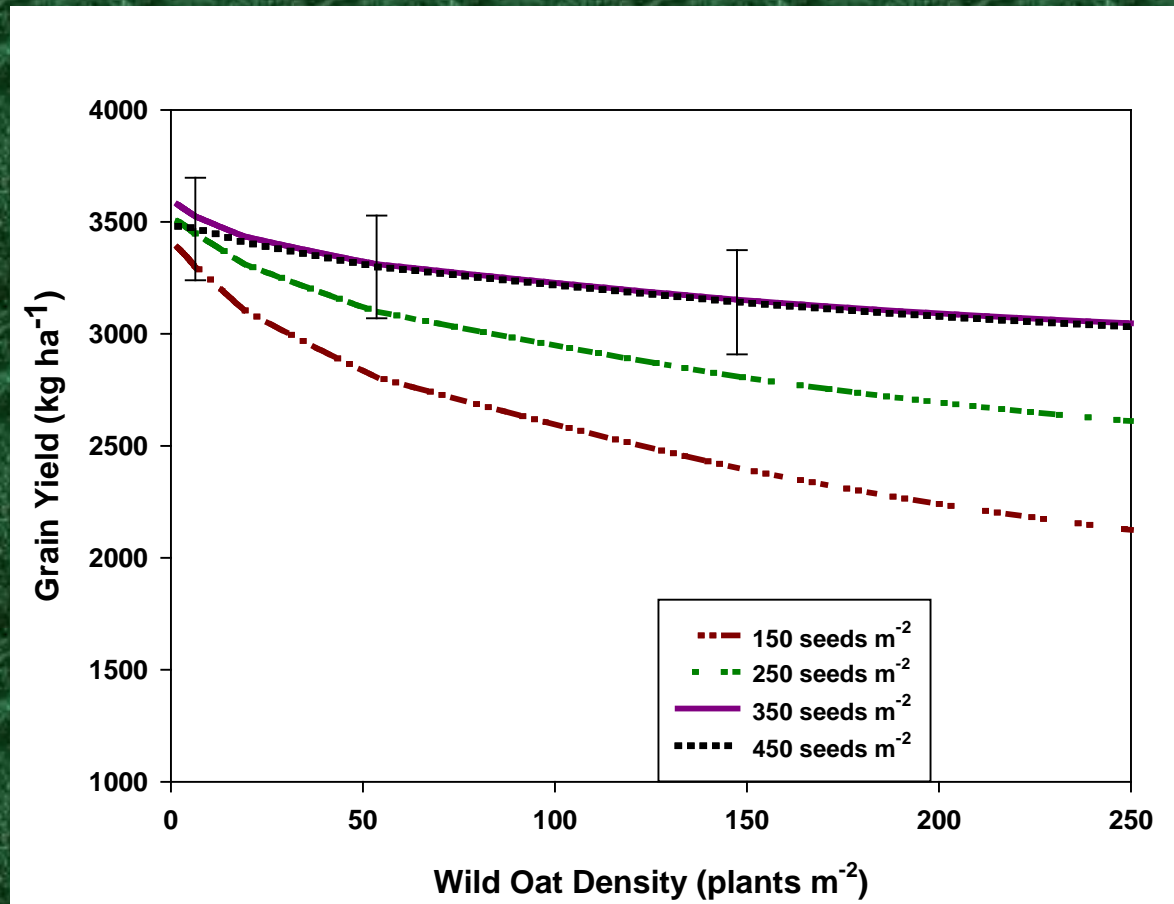
Seeding Rate and Wild oats

- Seeding Rate has a small impact on yield and quality
- Importance of this impact increases in the presence of wild oat

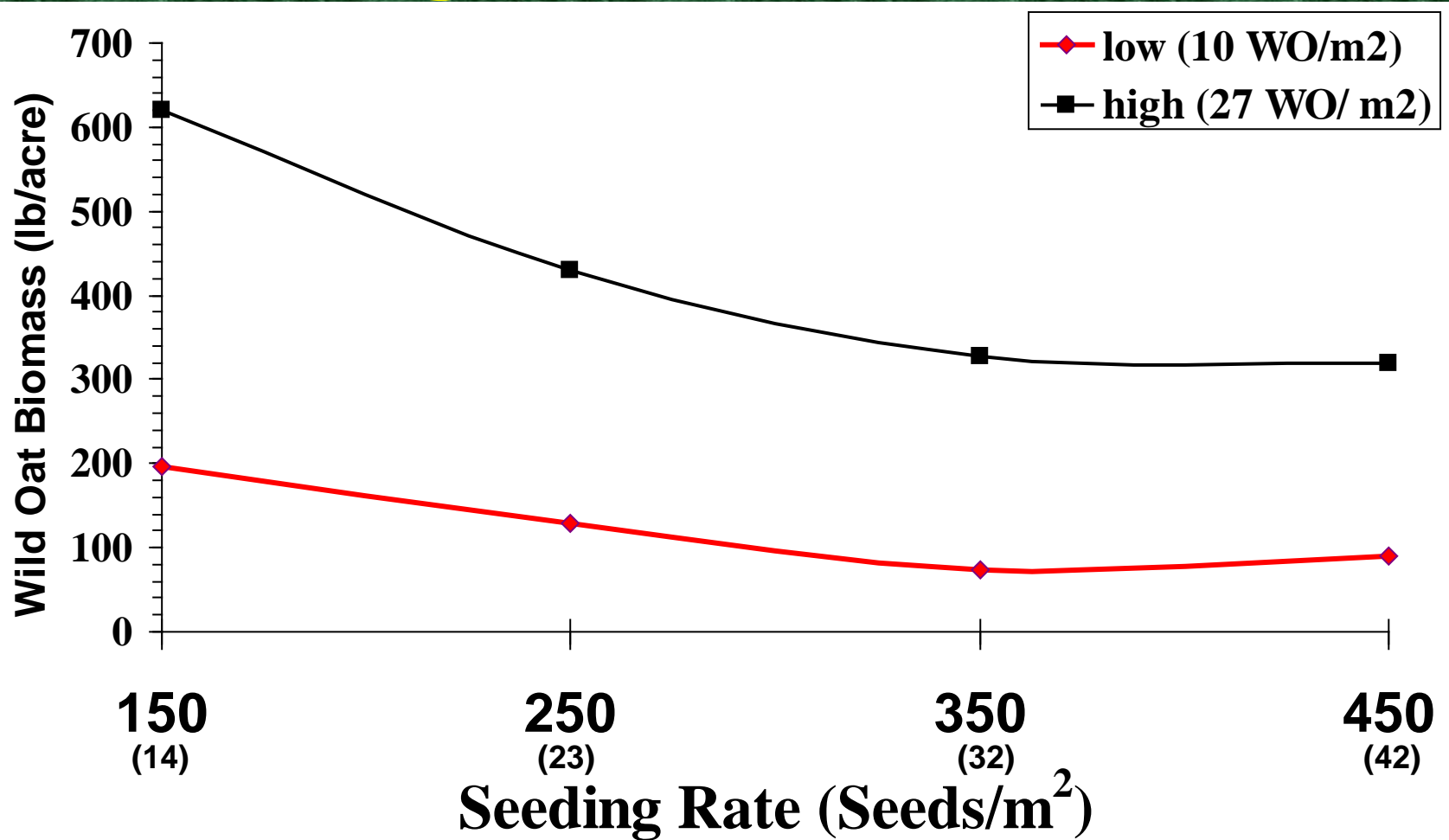
Seeding Rate and Wild Oats



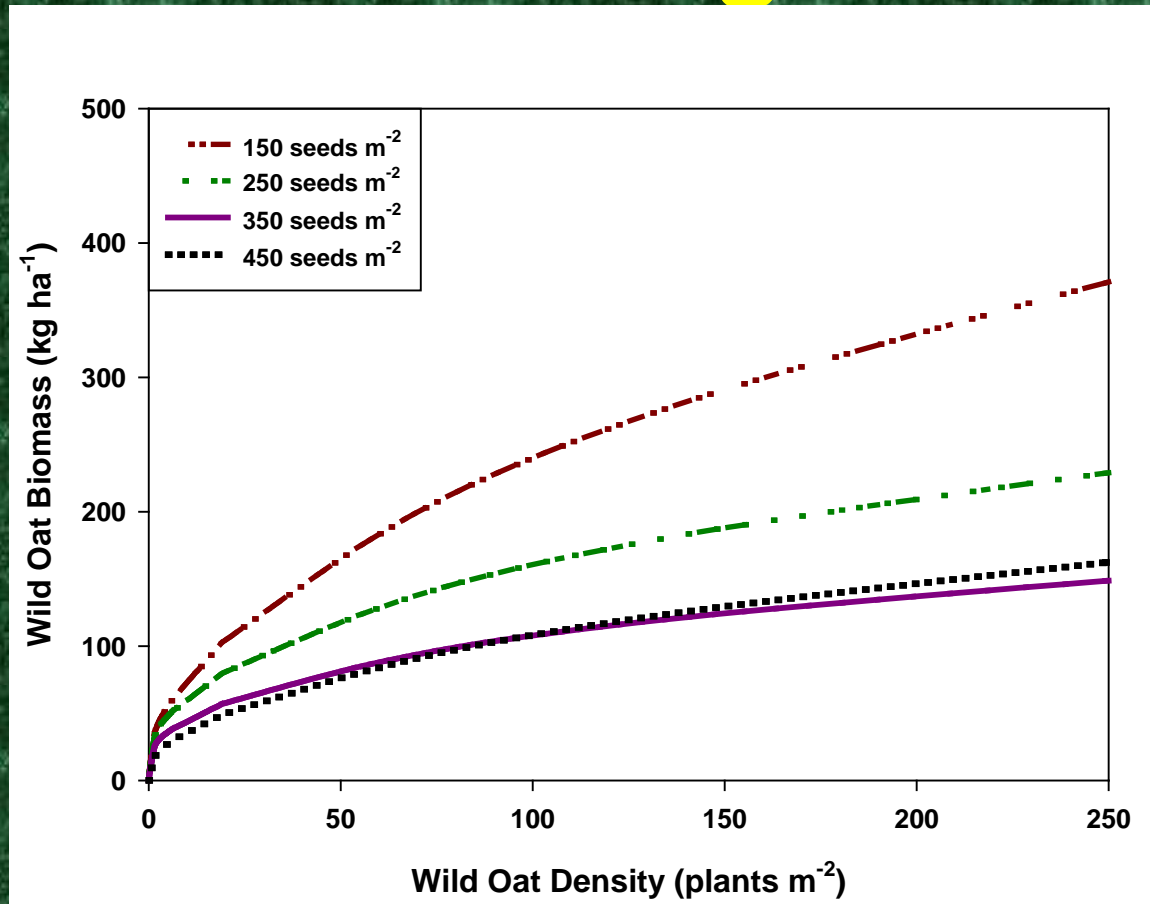
Grain Yield, Seeding Rate and Wild Oats



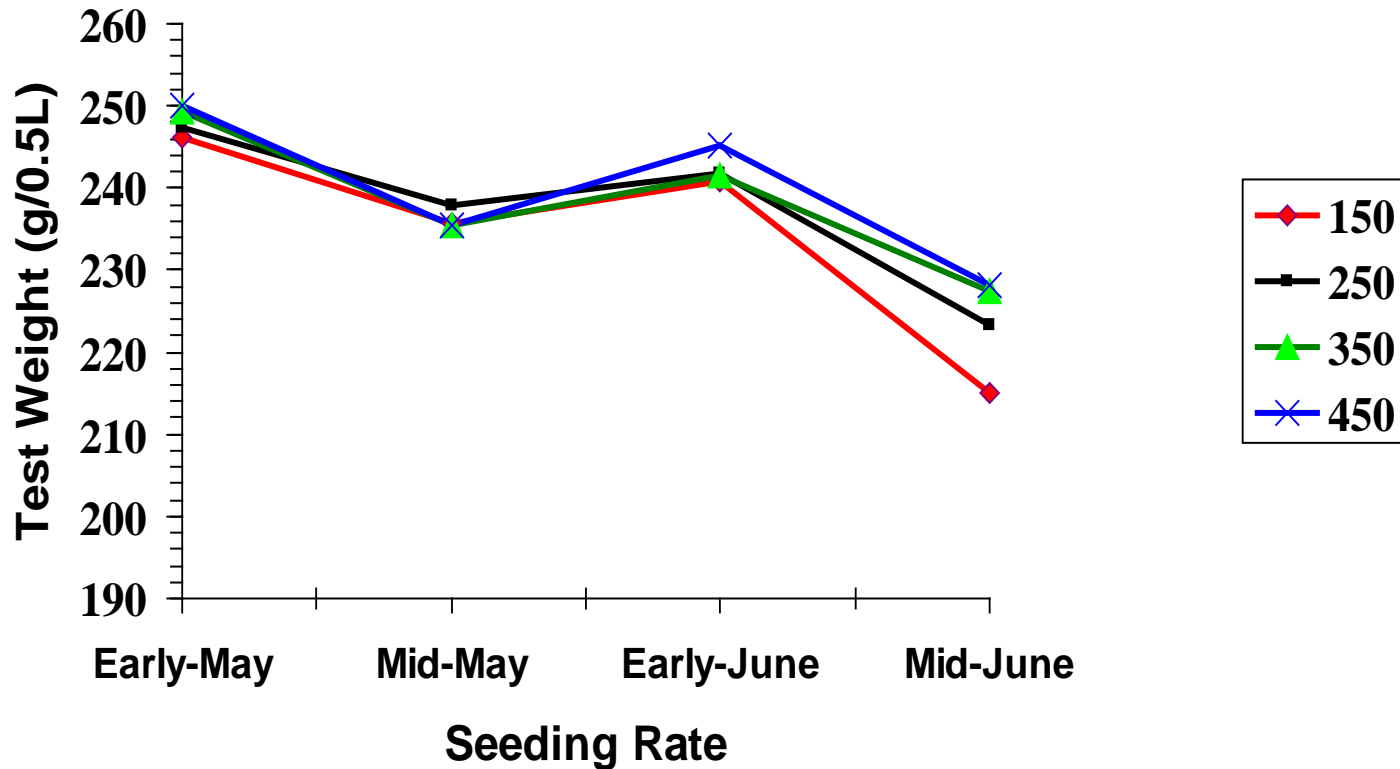
Seeding Rate and Wild Oats



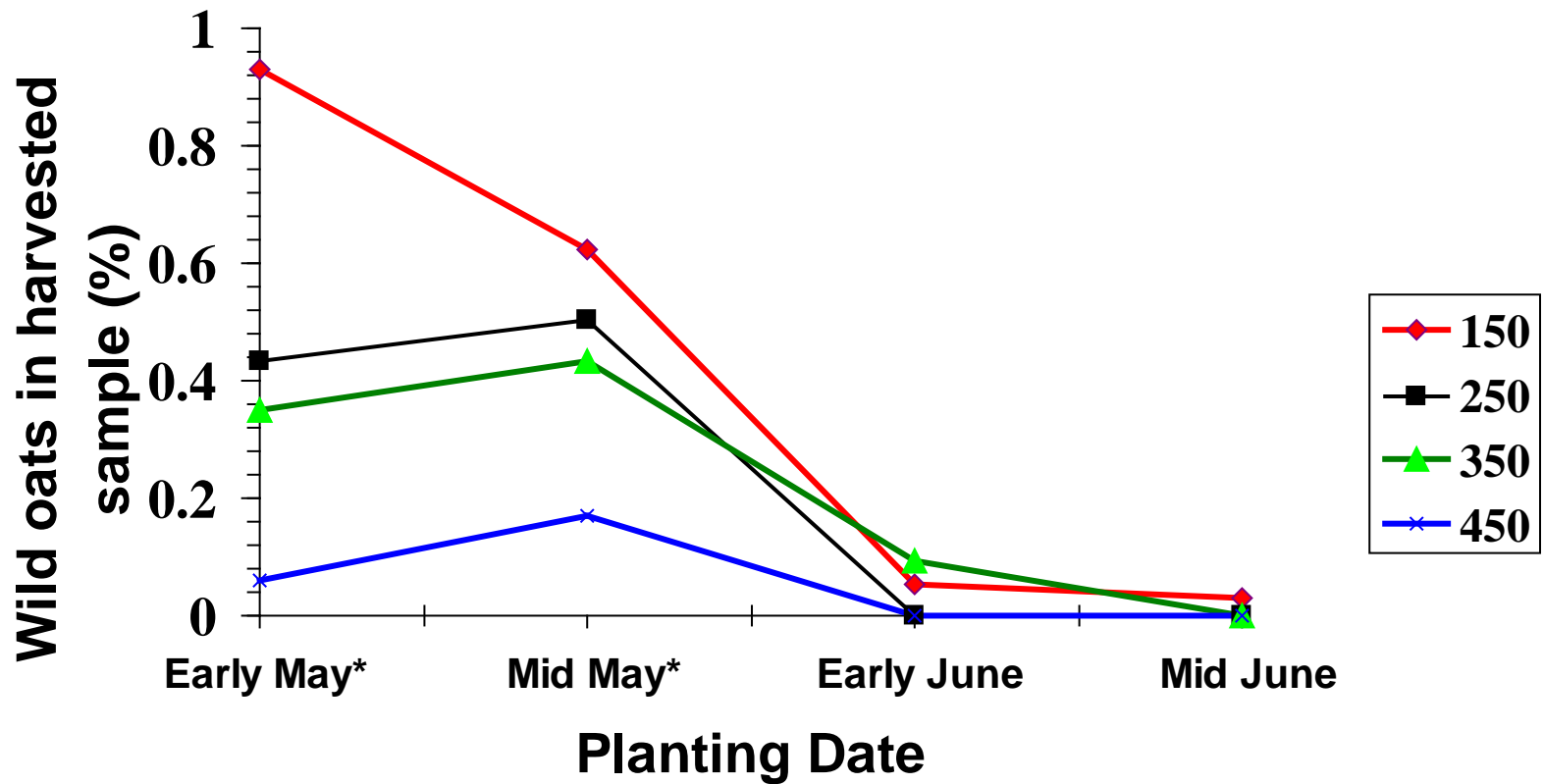
Wild Oat Biomass and Tame Oat Seeding Rate



Seeding Rate and Wild Oats



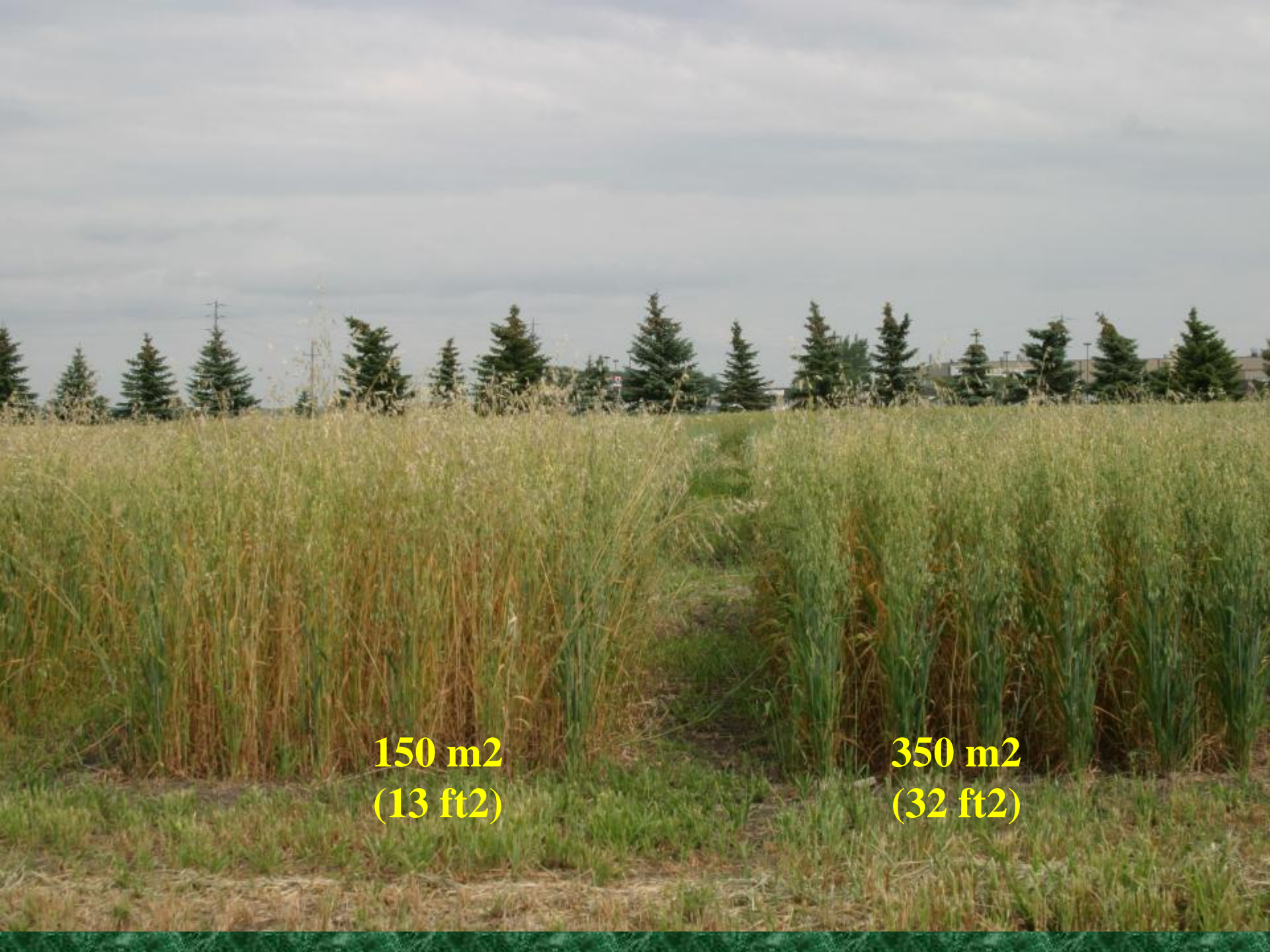
Seeding Rate and Wild Oats





150 m²
(13 ft²)

350 m²
(32 ft²)

A wide-angle photograph of a field of tall grasses under a cloudy sky. The field is divided into two main sections by a narrow path. The left section is labeled with yellow text as 150 m2 (13 ft2) and contains taller, more mature grasses with some golden-brown tips. The right section is labeled with yellow text as 350 m2 (32 ft2) and contains shorter, greener grasses. In the background, a line of evergreen trees and utility poles is visible against the overcast sky.

150 m²
(13 ft²)

350 m²
(32 ft²)

Seeding rate and bu/acre

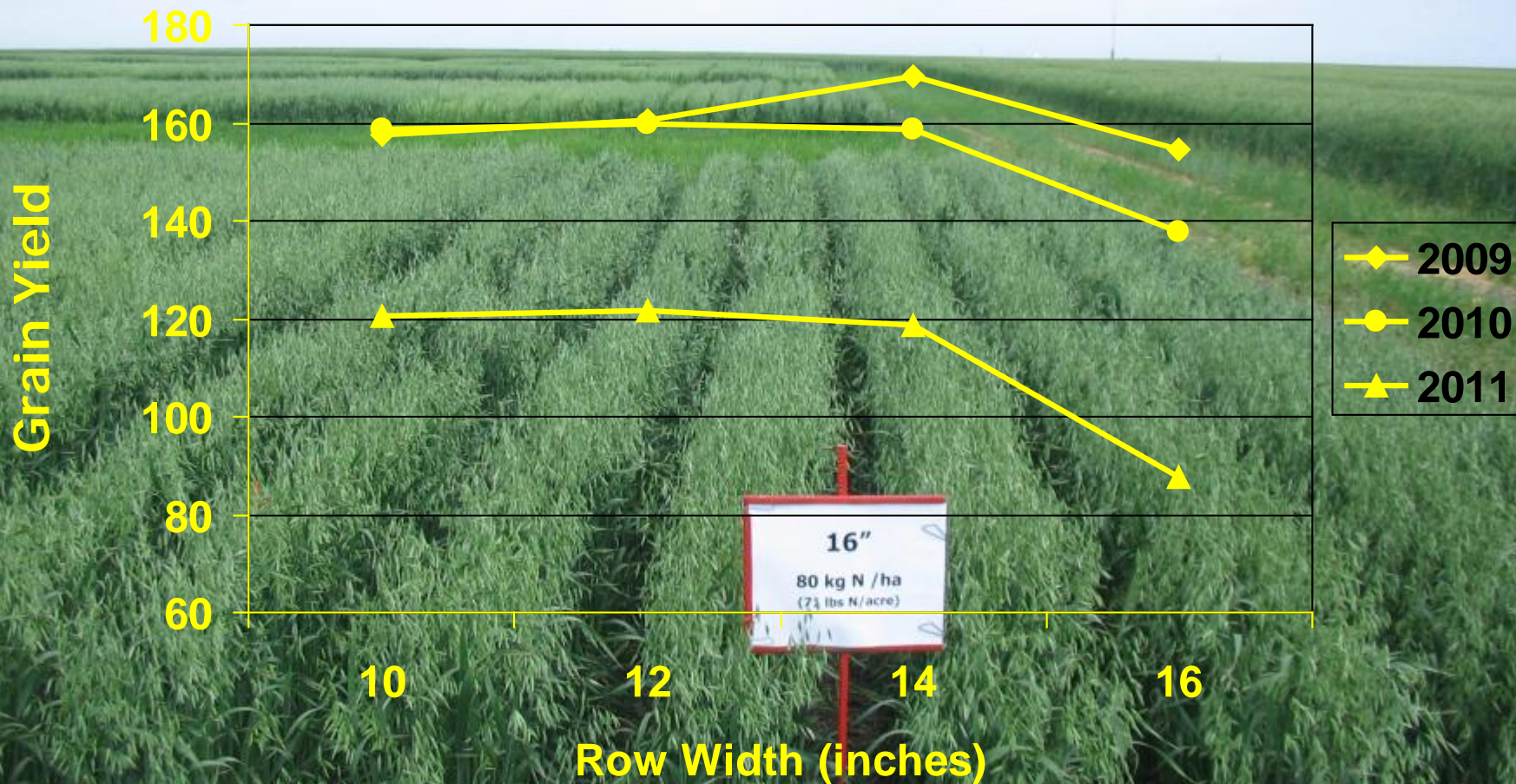
300 plants/m² (28 plants/ft²)

9-10 seed lots	Low	High
1998	2.9	3.6
1999	2.7	4.3
2000	2.8	4.1

Seeding Rate and Wild oats

- **Selling Oat Seed**
 - Helps sell your client buy the right amount of oats
 - This is a service to your clients!
- Many growers want to use high seeding rate order the seed then do the TKWT and realize they have to use a lower rate or go back and get more seed.

Row Width and Grain Yield (bus/acre)



Row Width and Test weight (g/0.5 L)

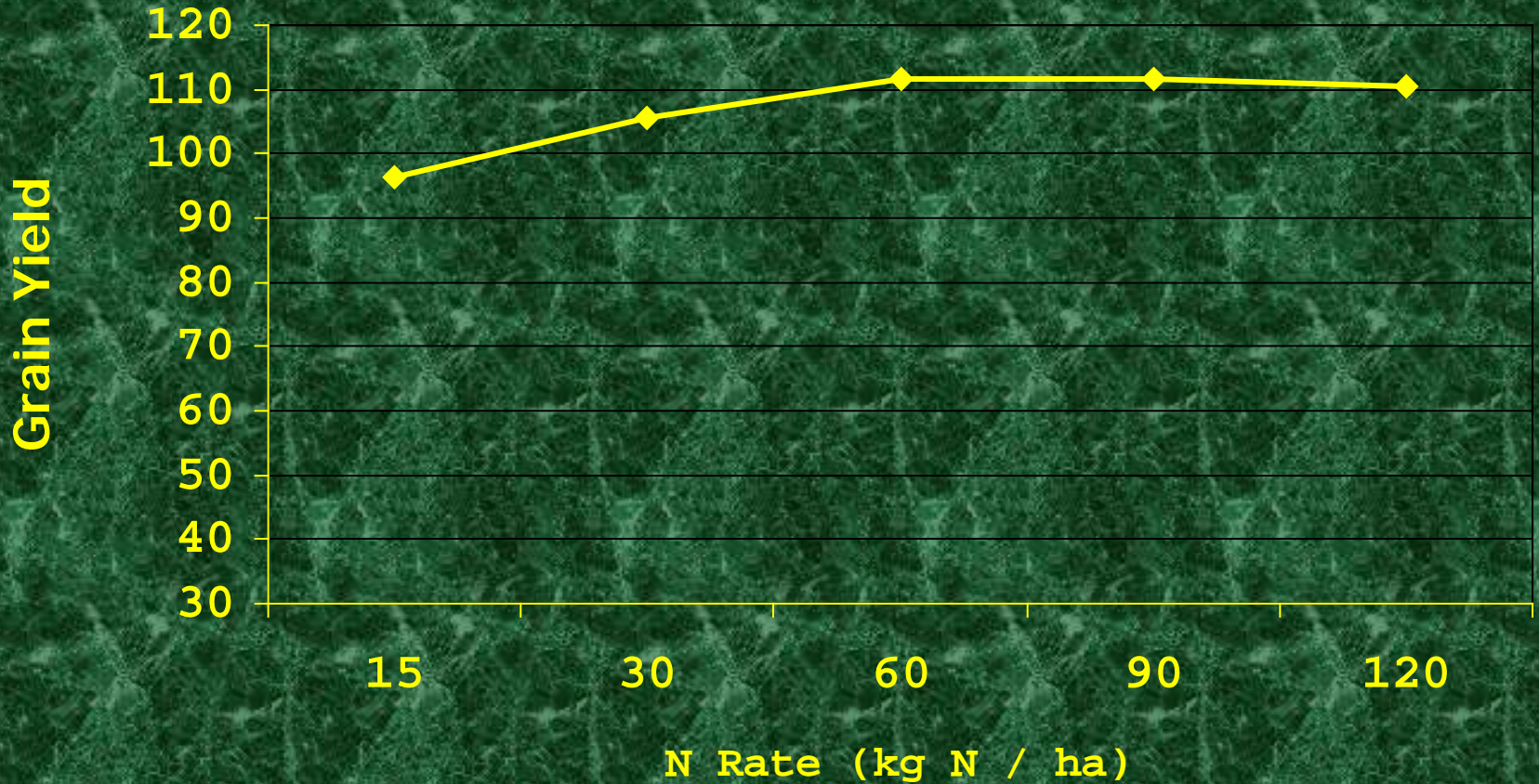


Fertility

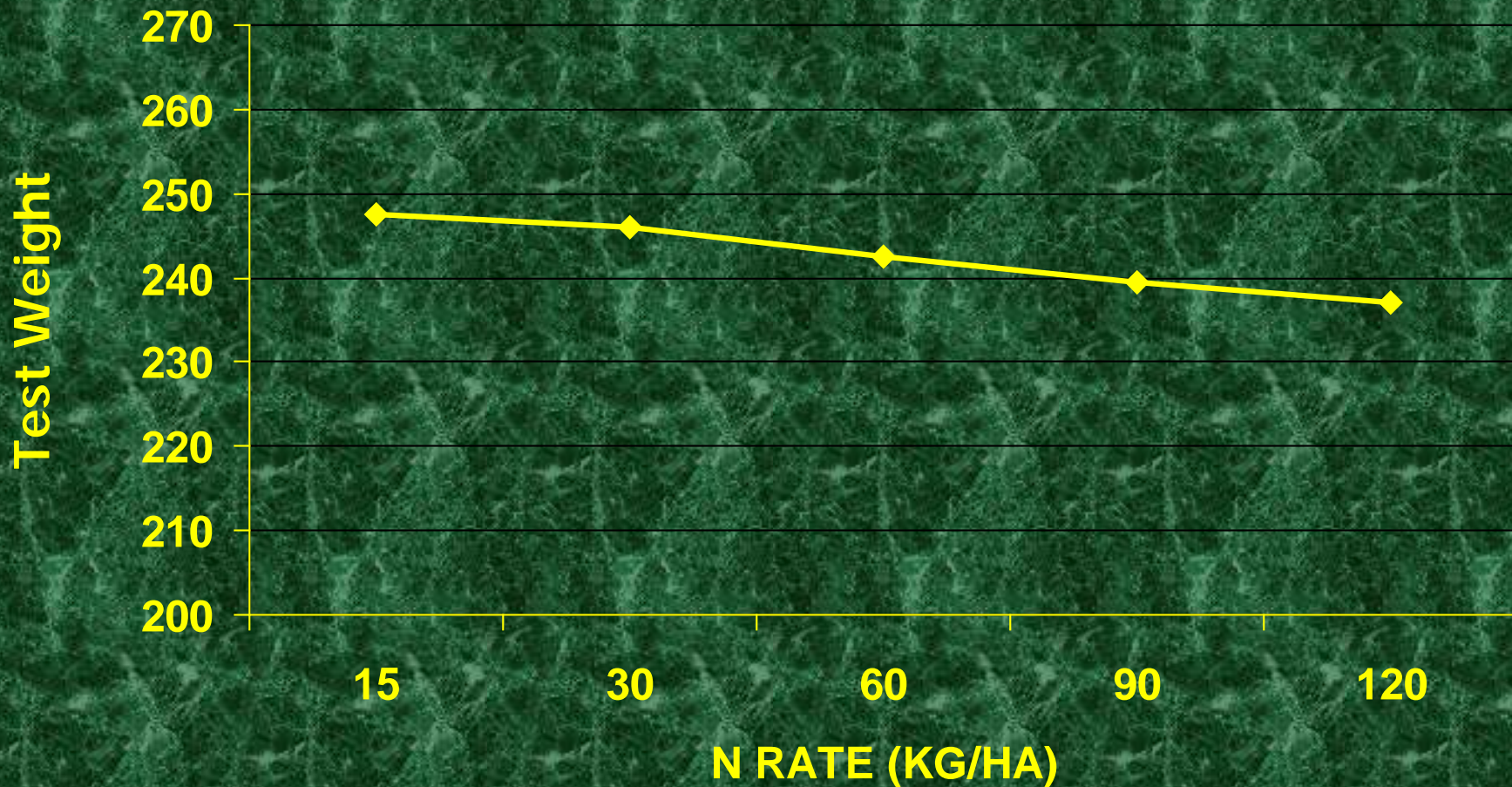
Nitrogen

- 54 lb/acre of applied N is enough
 - higher levels tend to decrease test weight with out increasing yield
 - Red River valley can be an exception

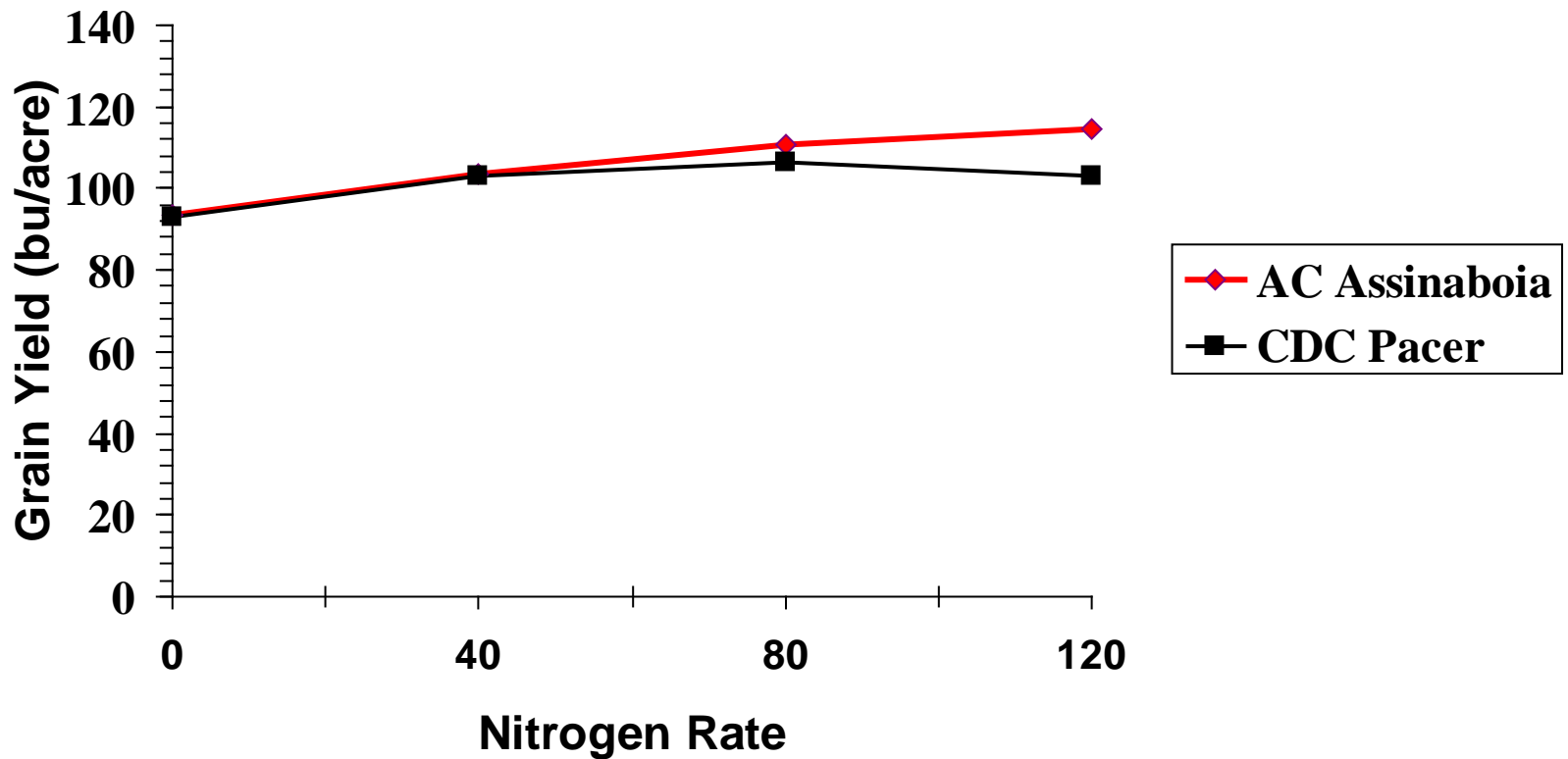
N rate and Grain Yield



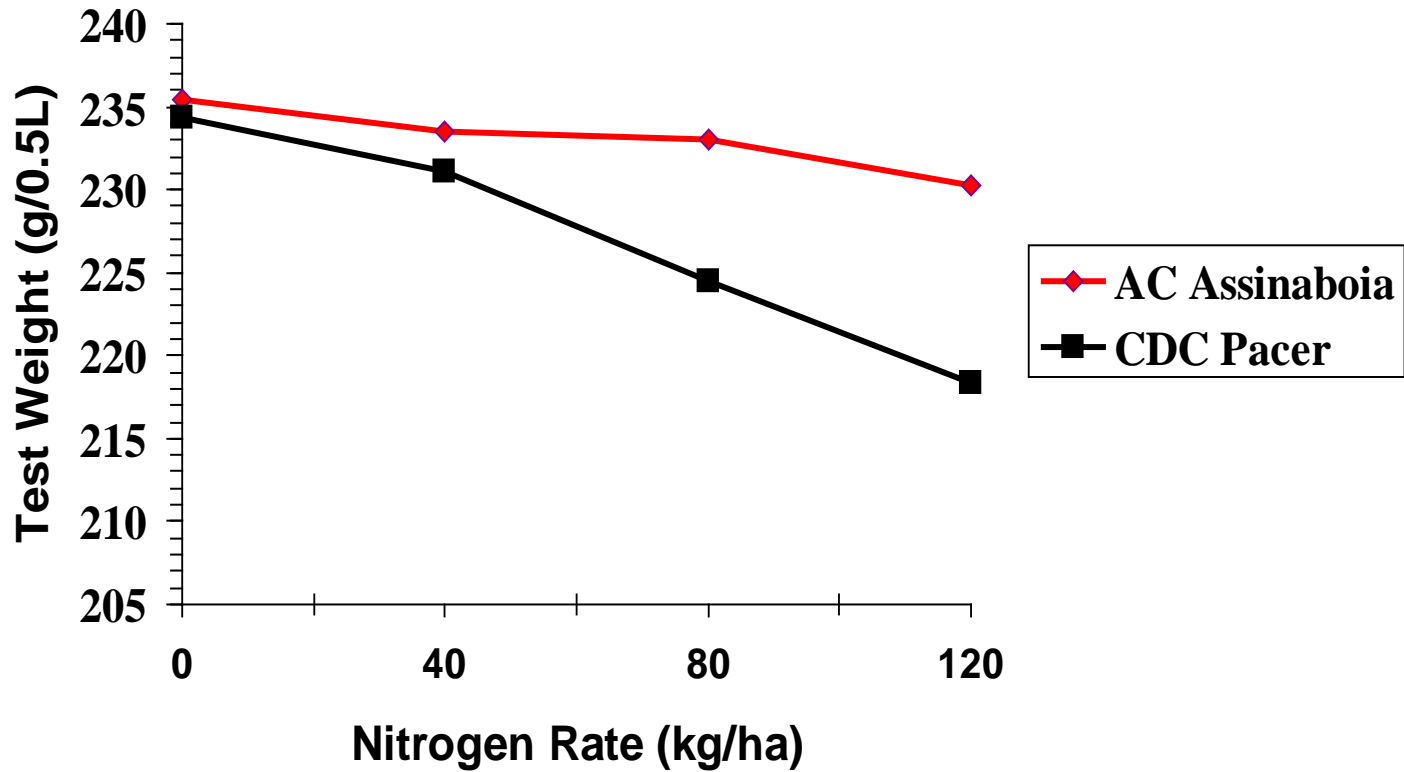
N rate and Test weight (g/0.5 L)



Fertility

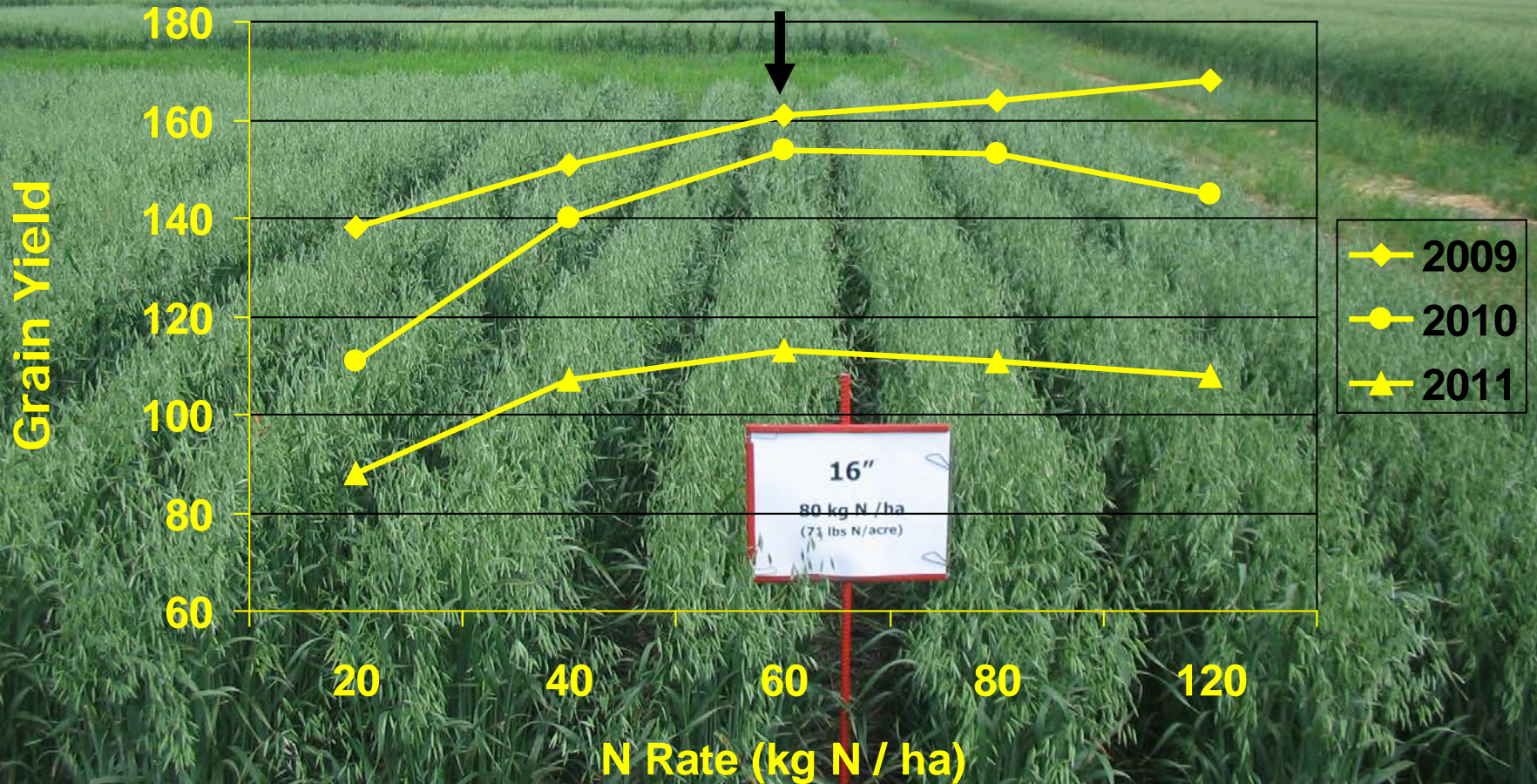


Seeding Rate and Wild Oats



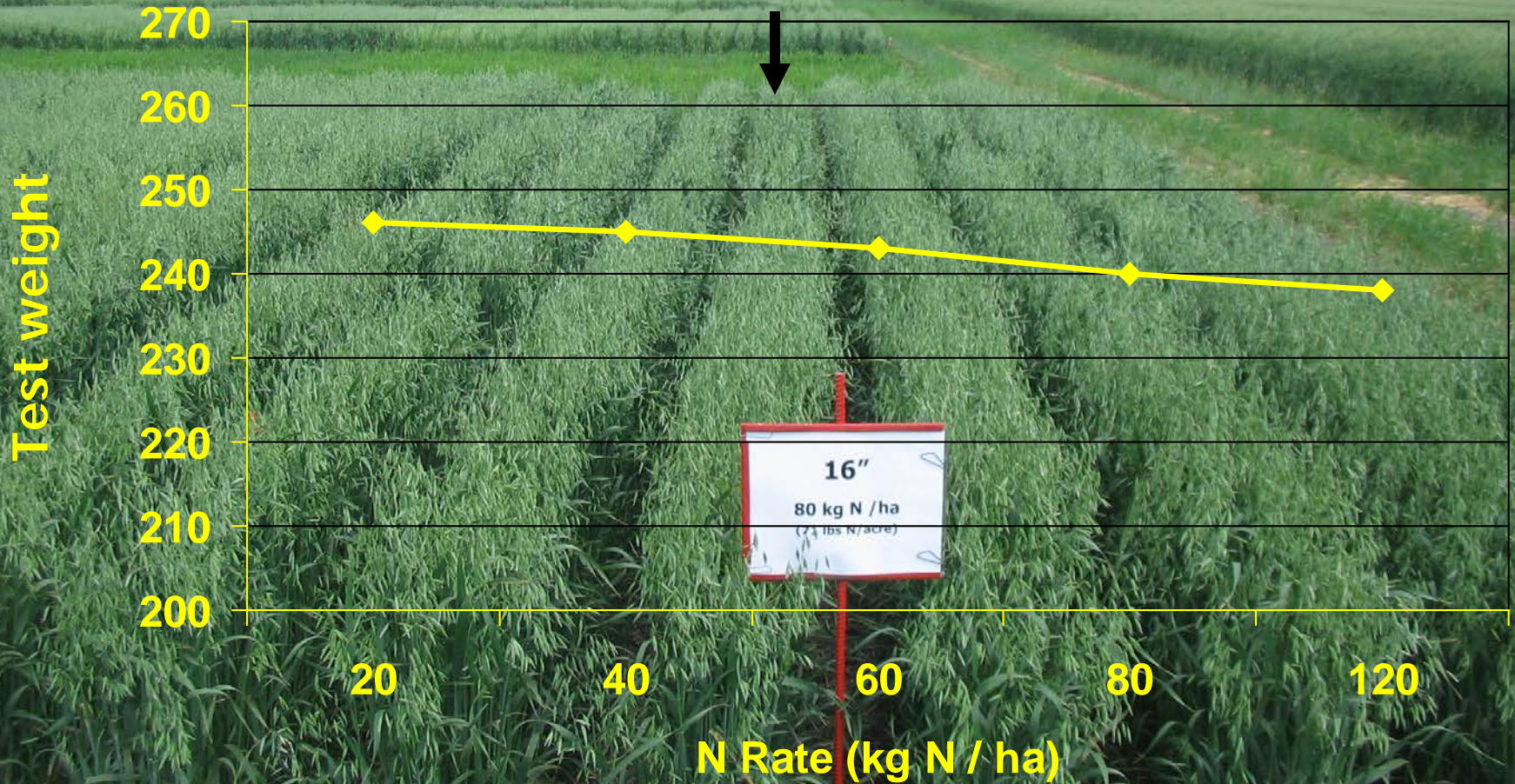
Grain Yield (bus/acre)

~Optimum N Rate @ 60 kg N/ha



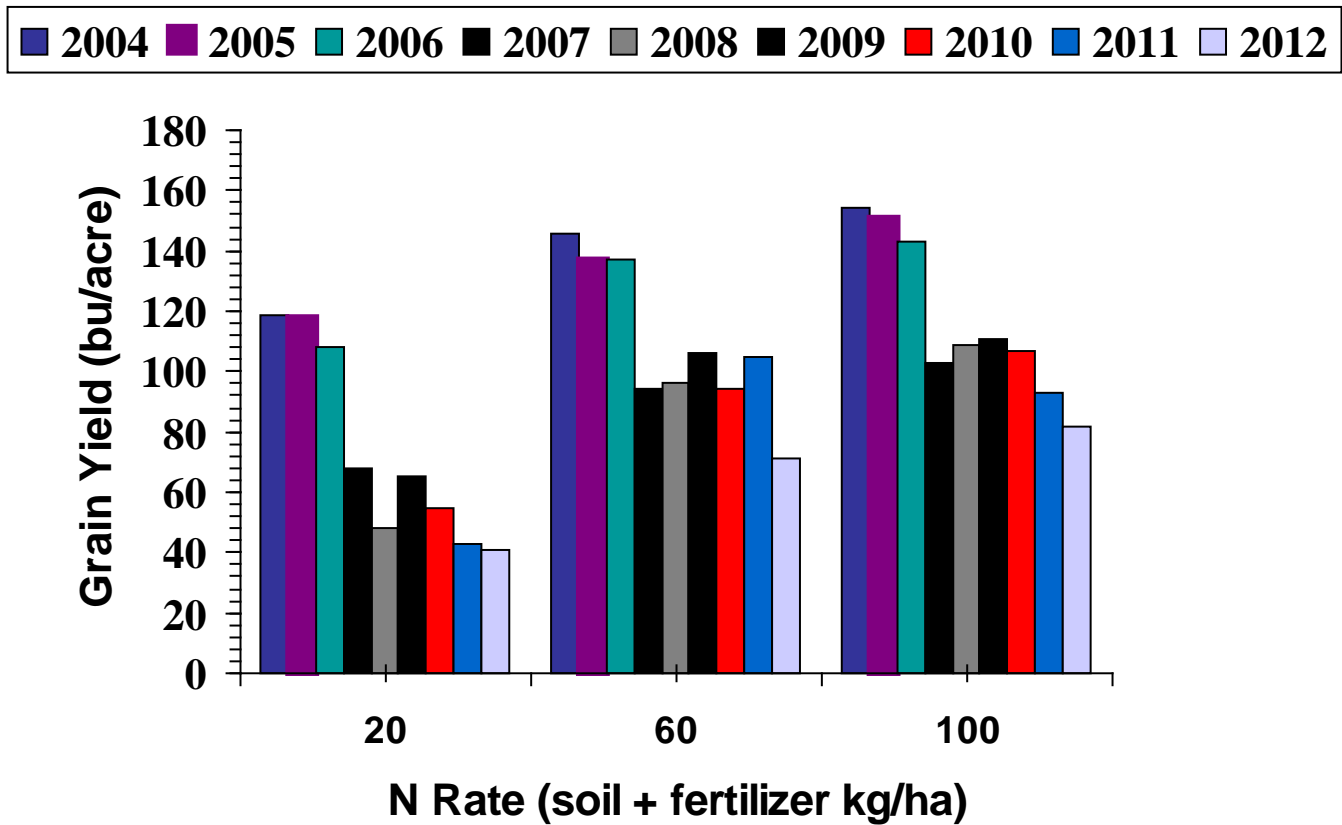
Test weight (g/0.5 L)

~Optimum N Rate @ 60 kg N/ha



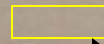
Fertility

Oat-Flax-Wheat

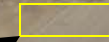




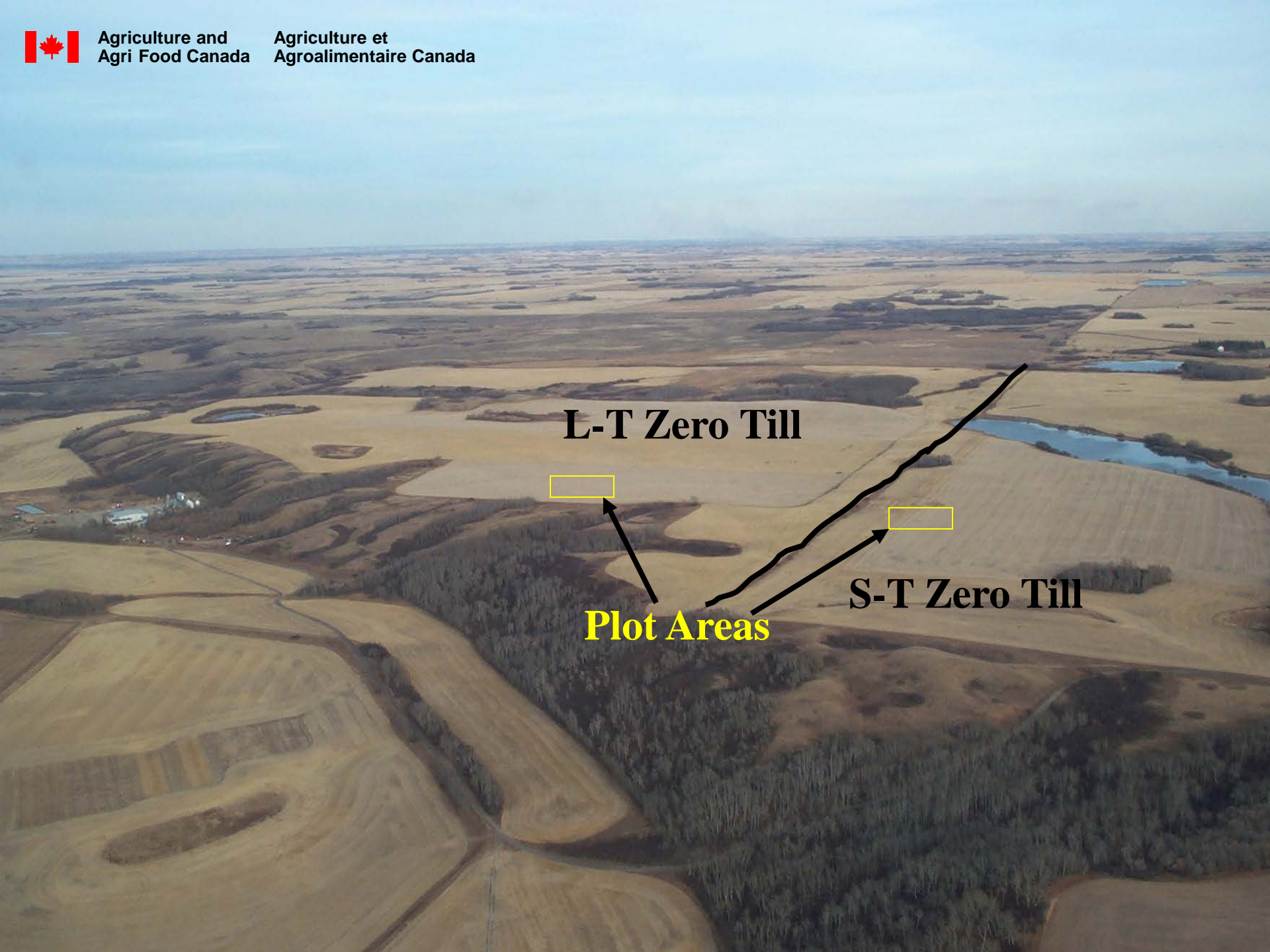
L-T Zero Till

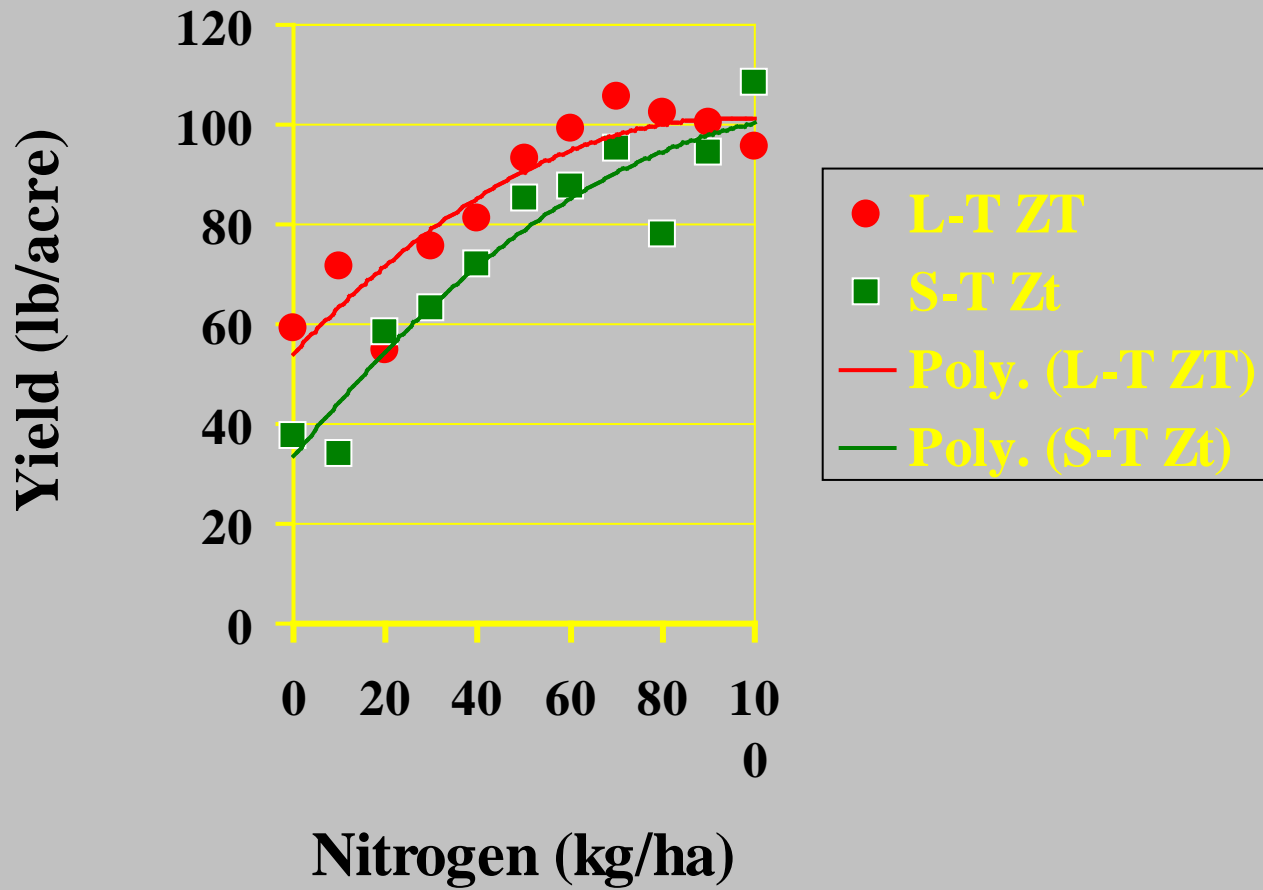


Plot Areas

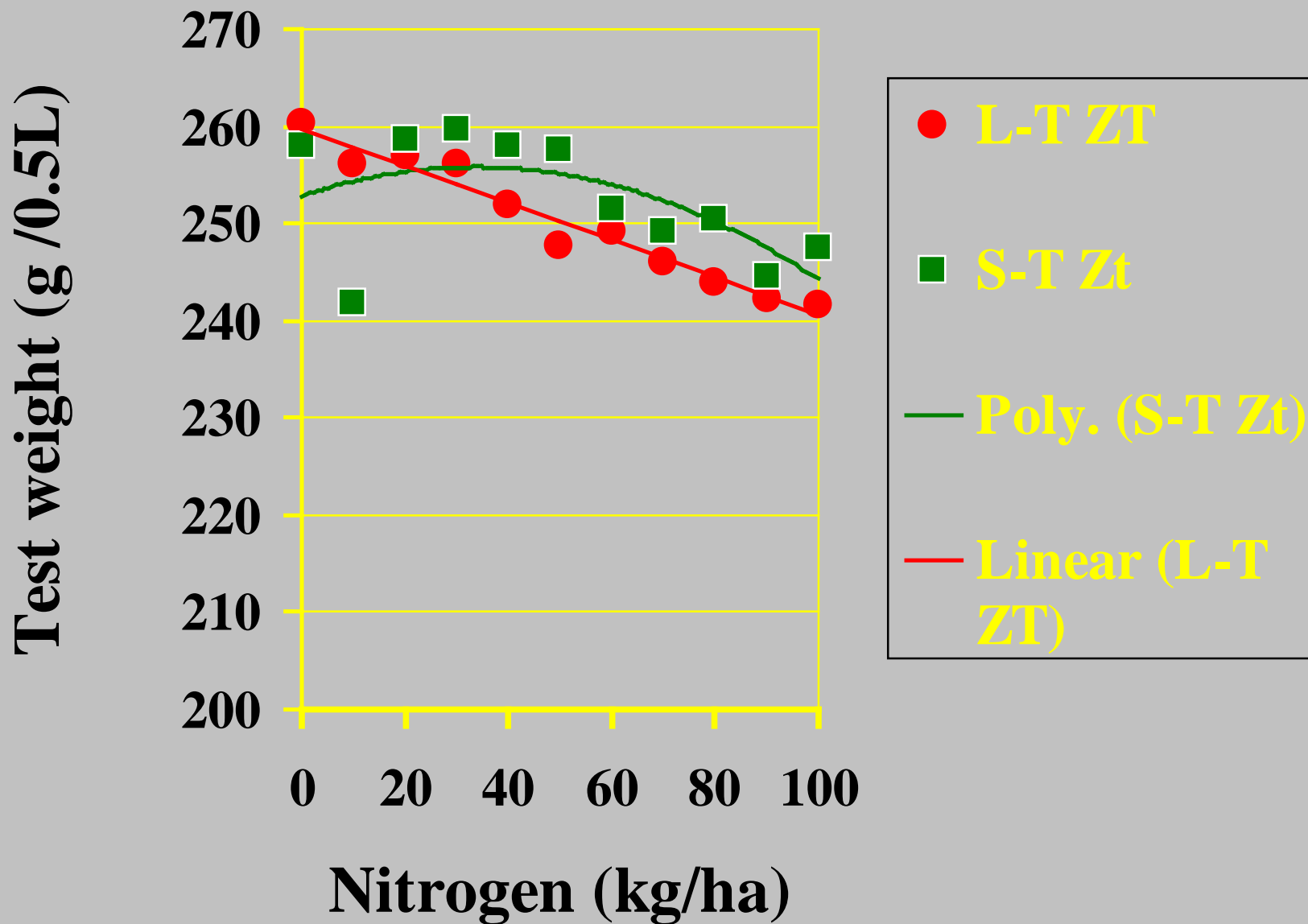


S-T Zero Till





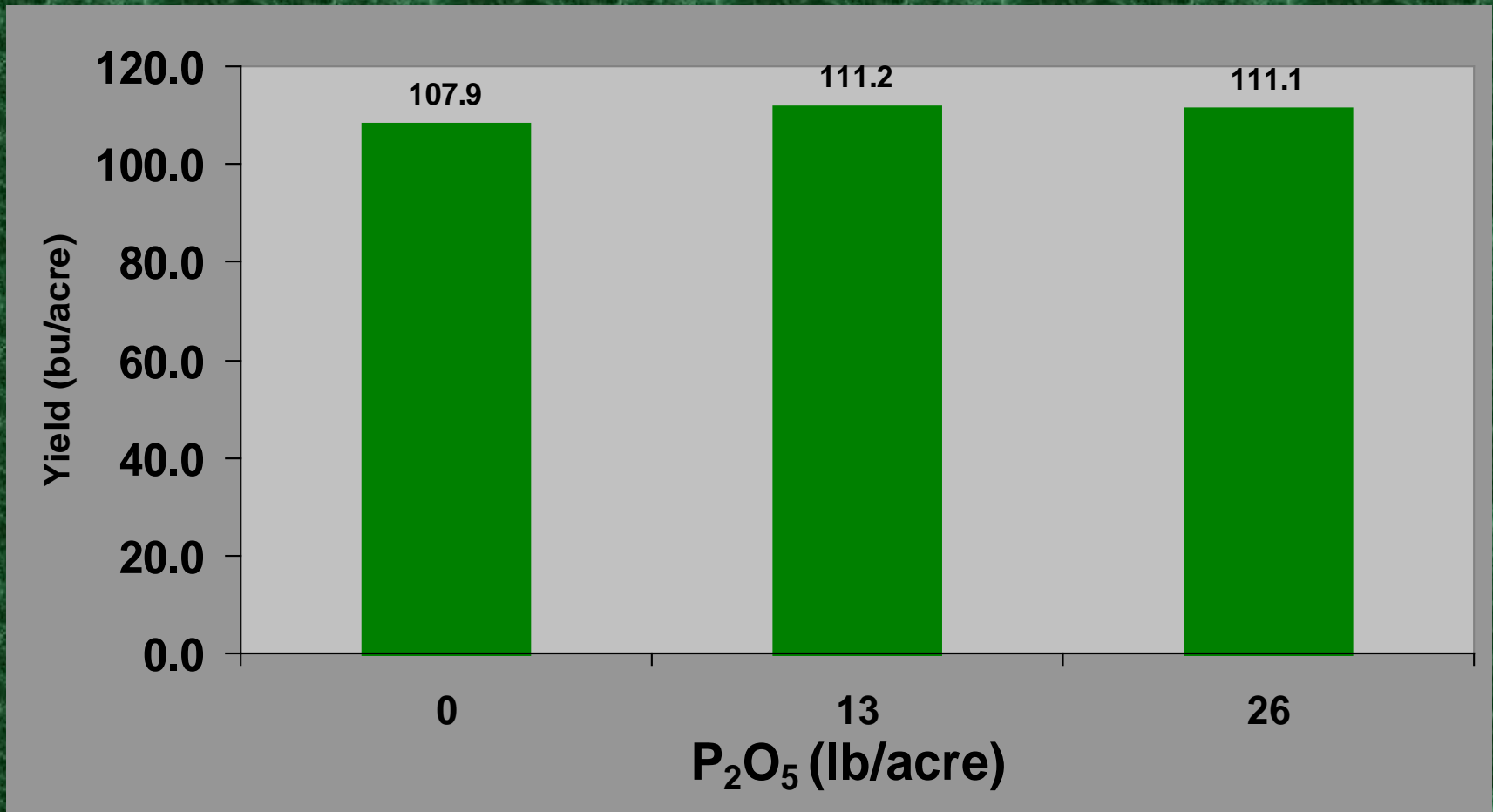
Oat Test Weight



Phosphorous

- **Can promote early season growth**
 - **Increased early season biomass 6 out of 6 years**
 - **Increased yield 2 out of 6 years**
 - **Mohr et al., 2004**
- **Will phosphorous make oats more competitive?**

Phosphate and Yield



***Significant linear response**

Phosphorous

- **Phosphorous did not make the oats more competitive with wild oats over three site years.**
- **Small increase when soils low in phosphorous**
- **No consistent effect on quality**

Fertility

Potassium

- No large effect on yield or quality when not recommended by soil test

Sulfur

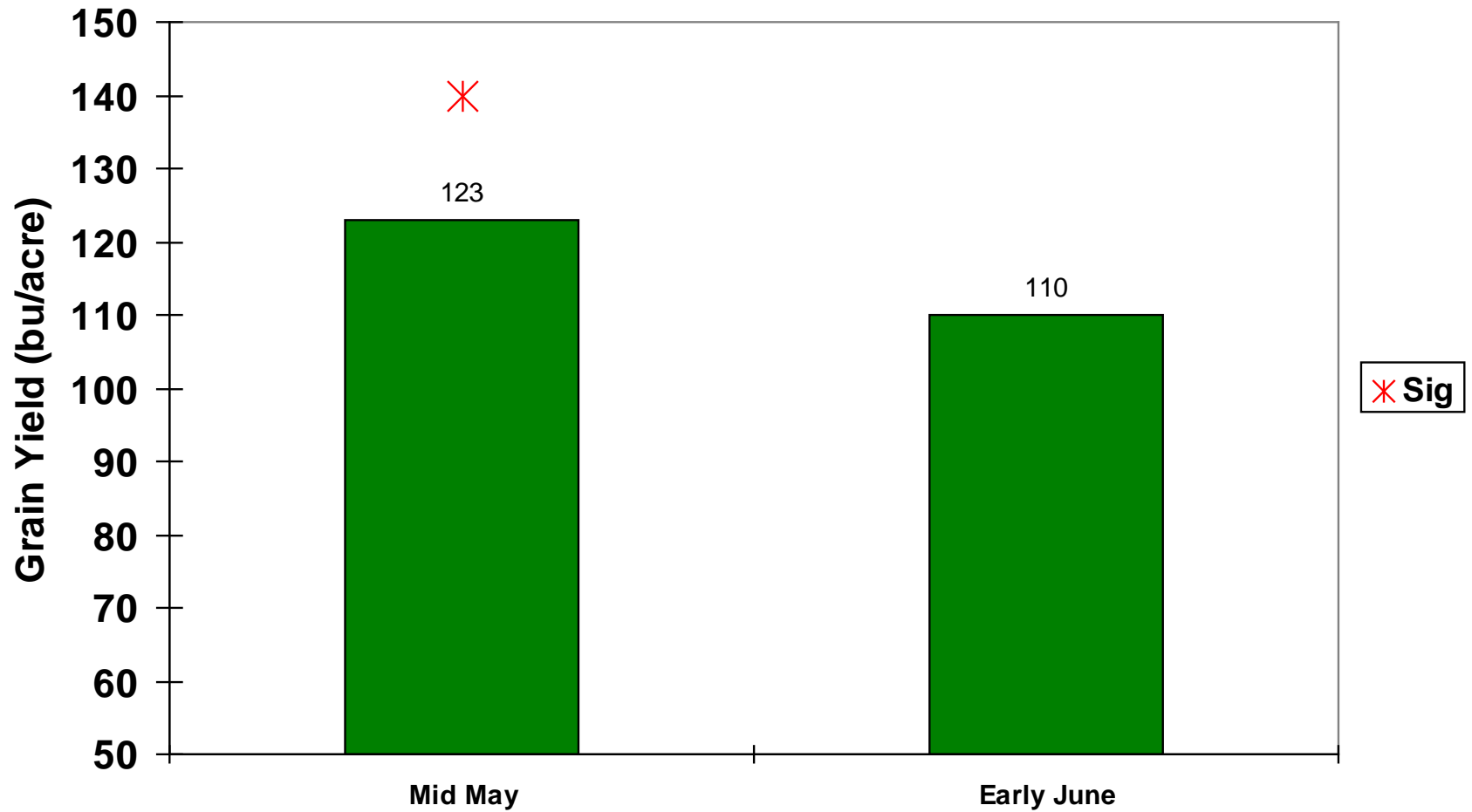
- No large effect on yield or quality when not recommended by soil test





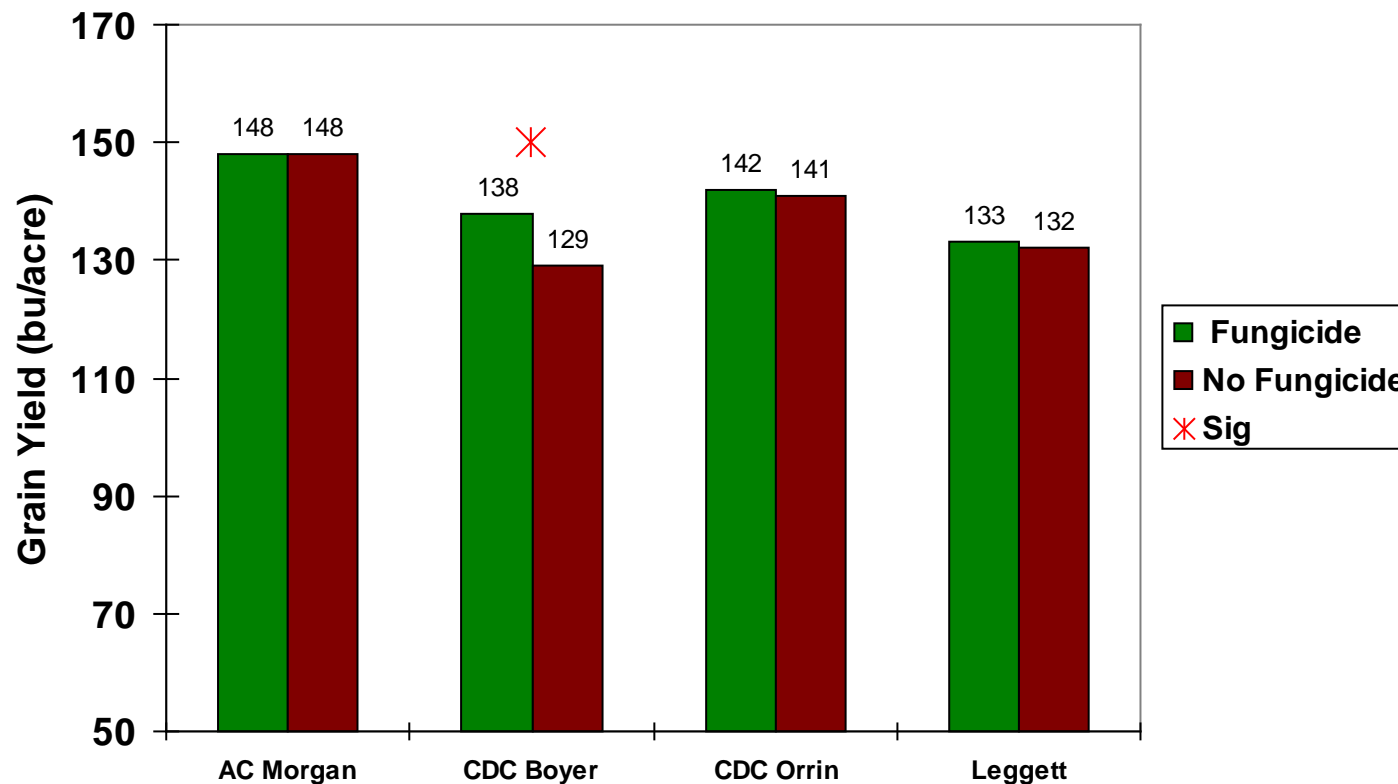


Seeding Date

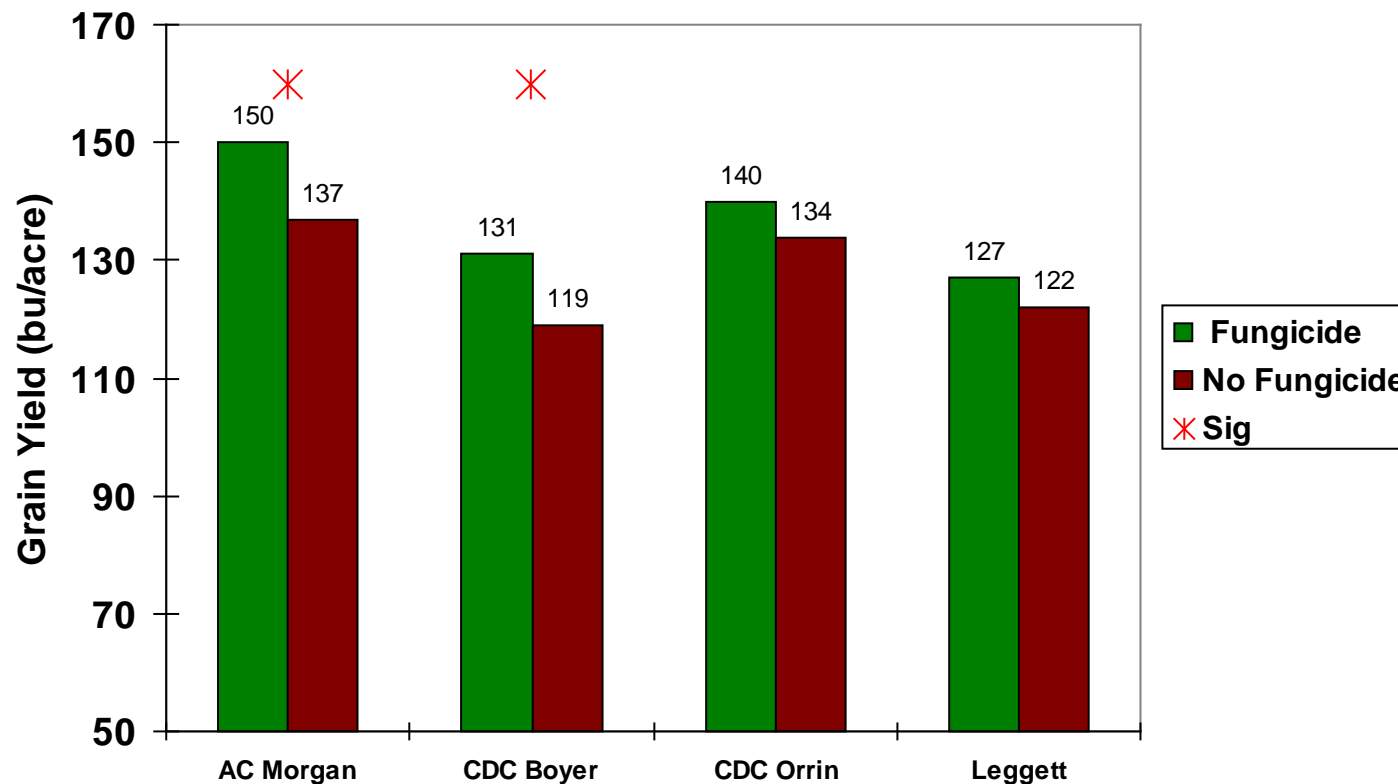


Sites with Low Crown Rust

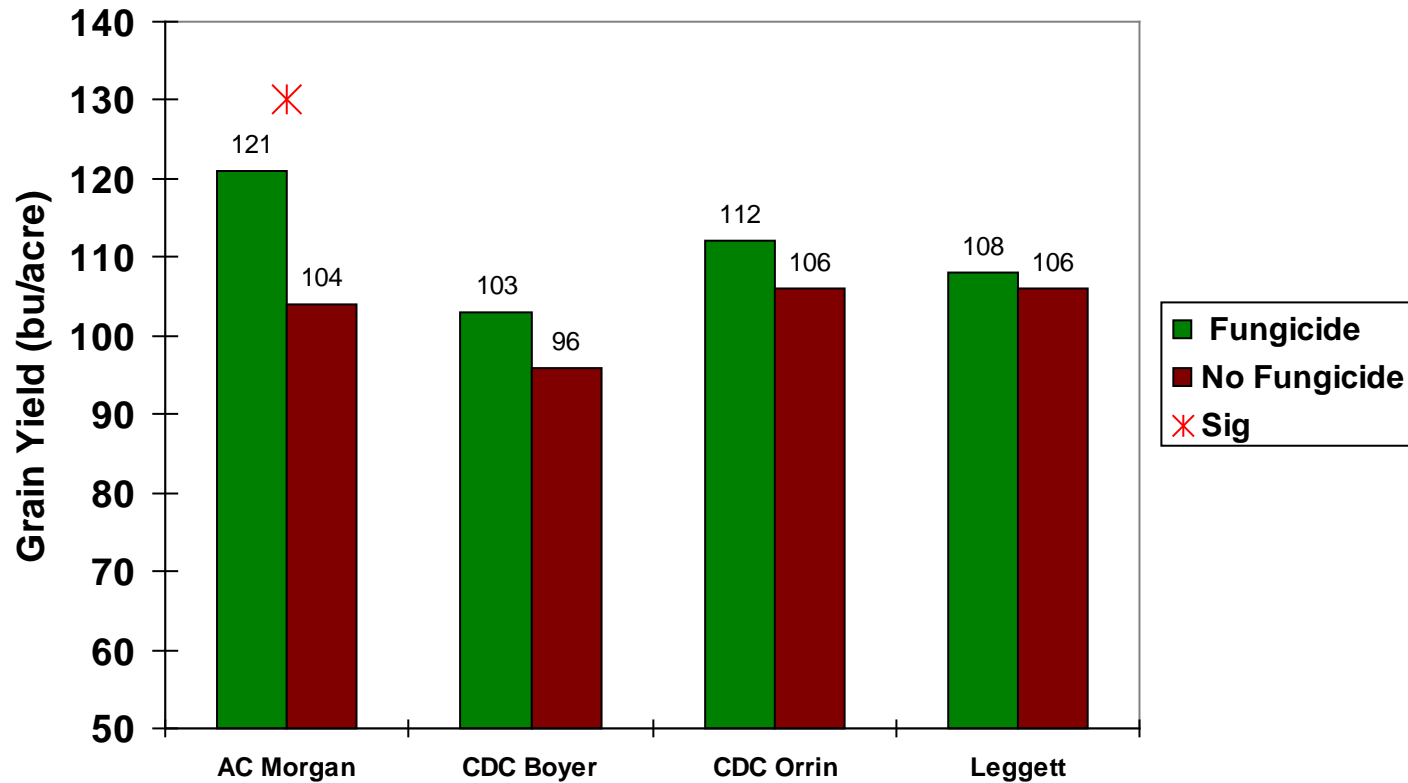
Mid May



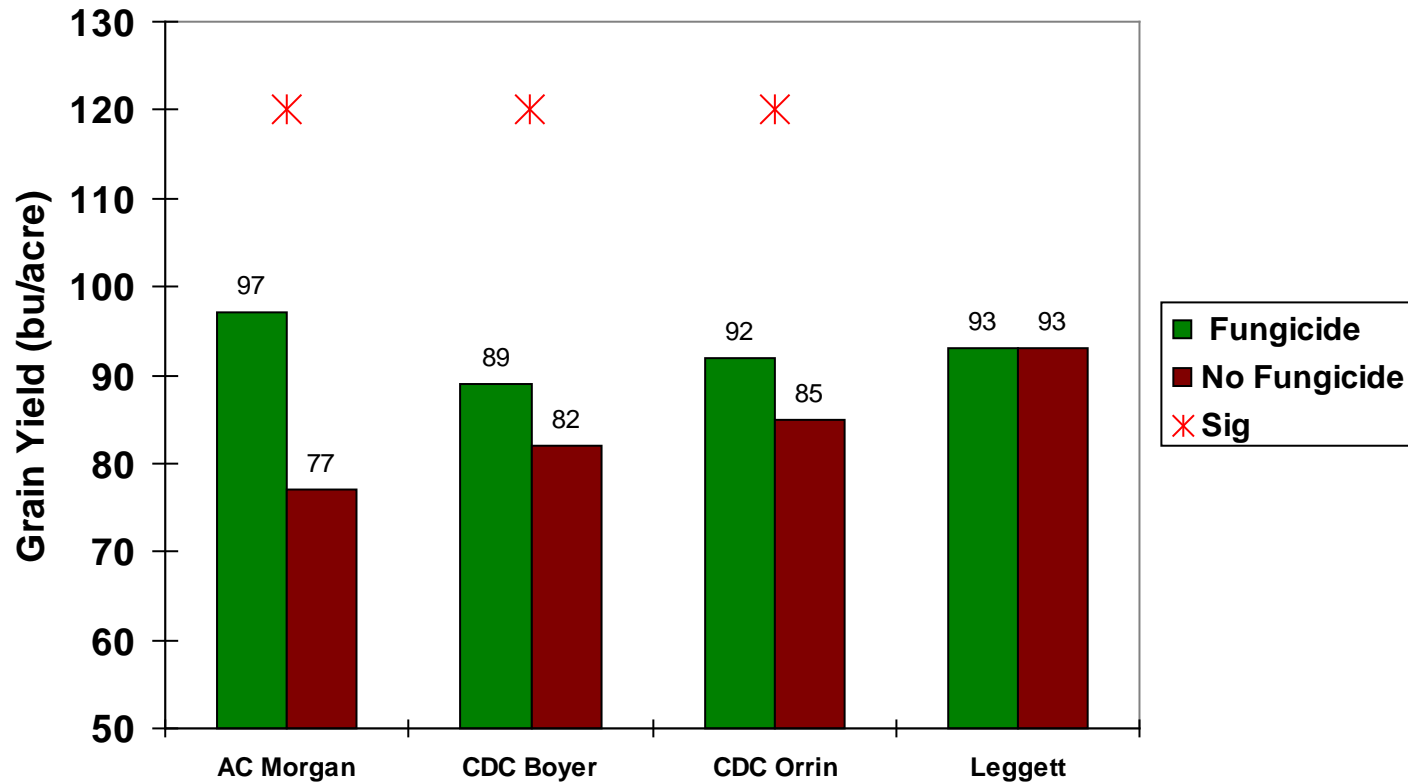
Sites with Low Crown Rust June



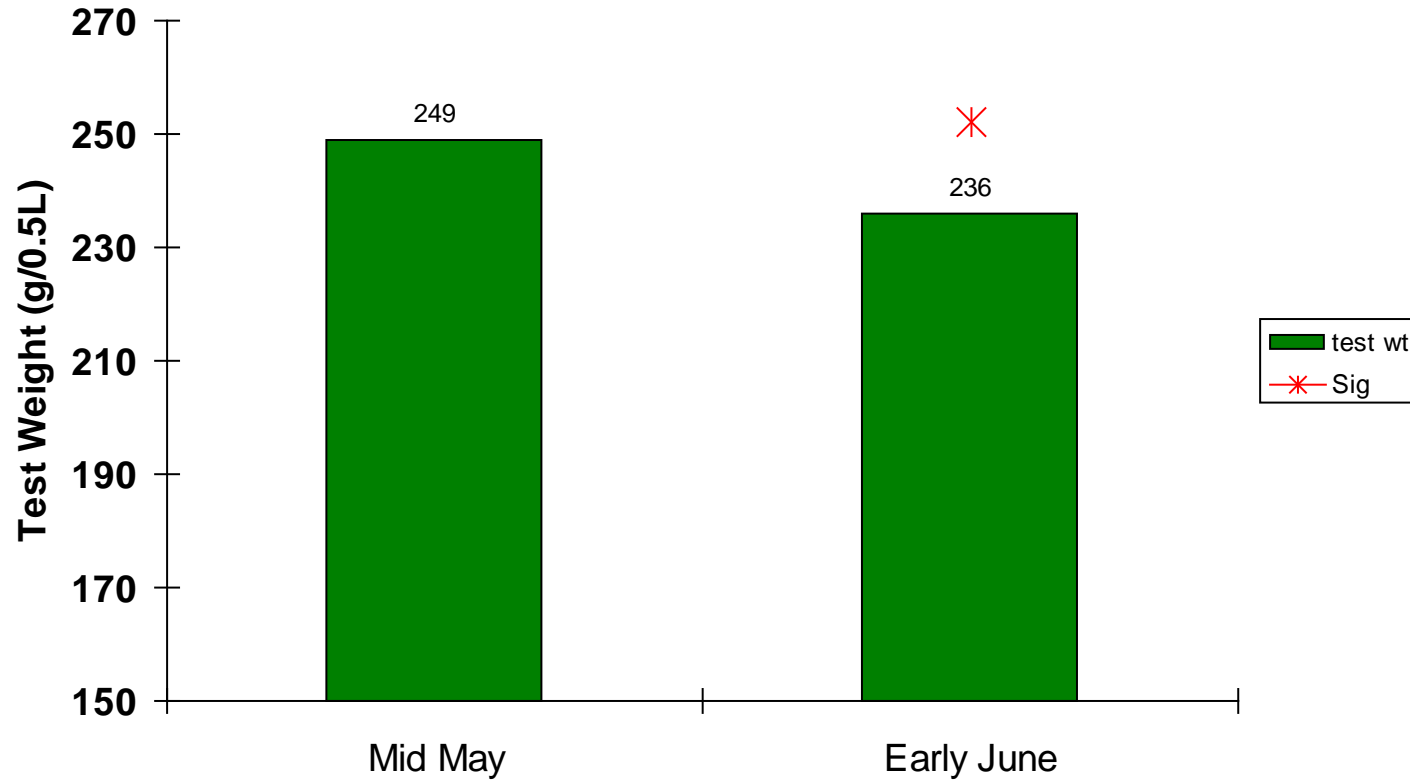
Sites with High Crown Rust Mid May



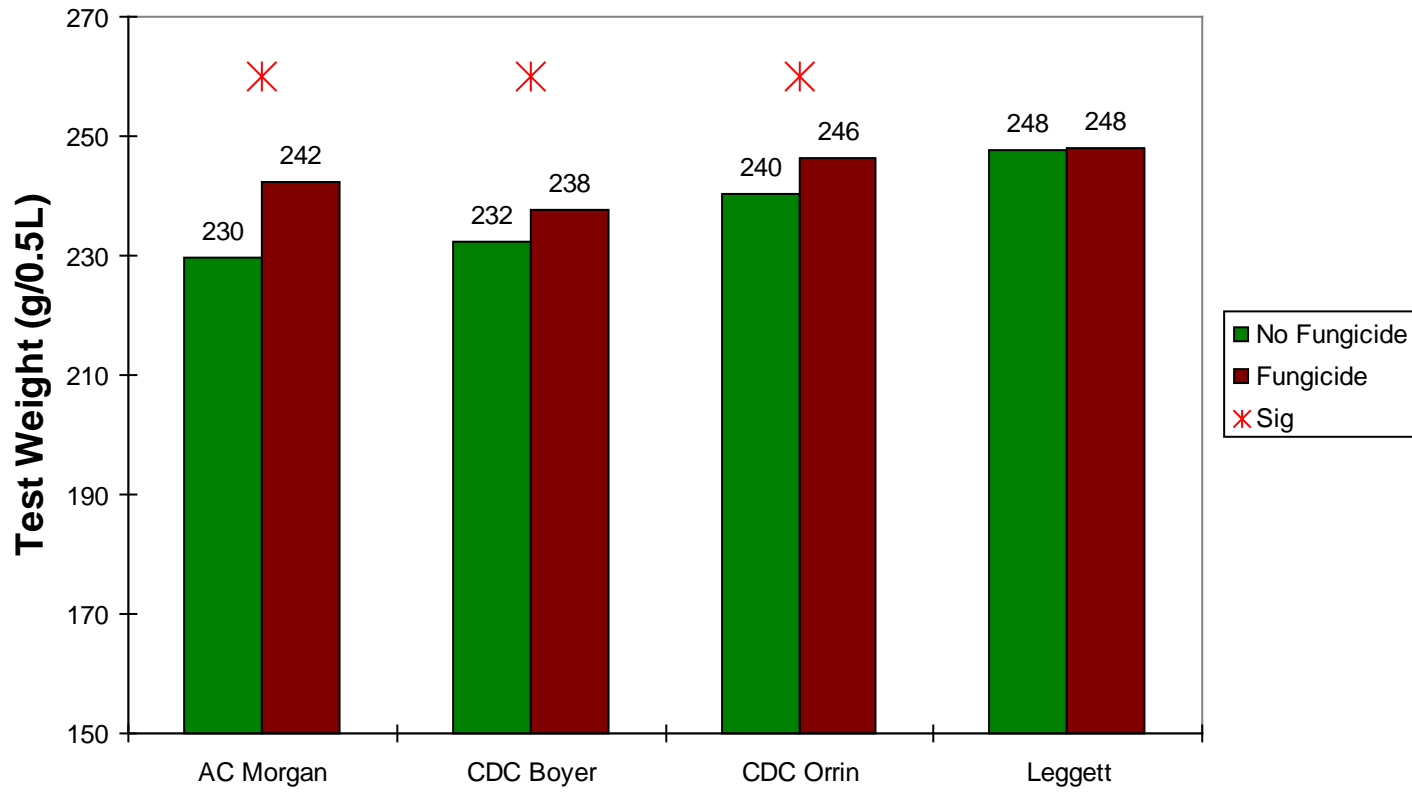
Sites with High Crown Rust June



Seeding Date

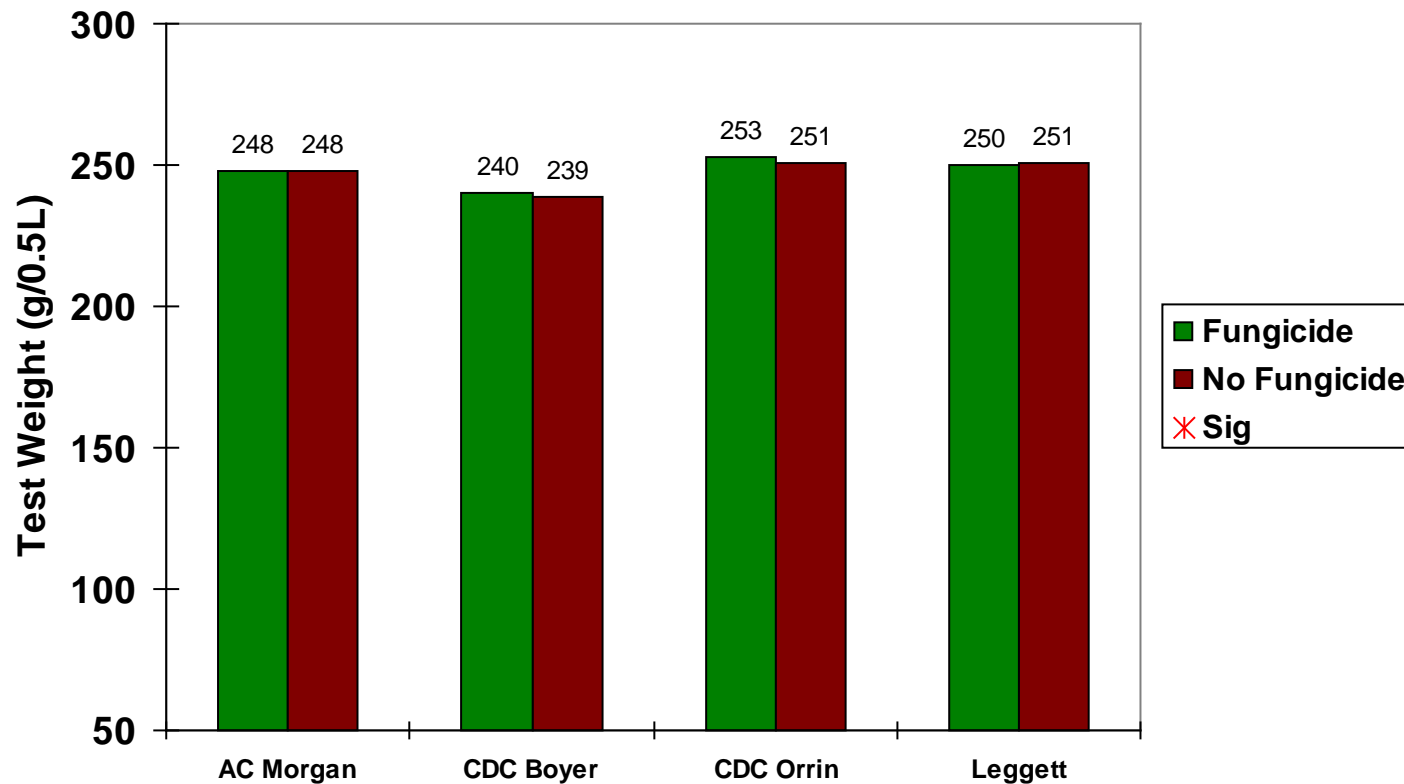


Cultivar

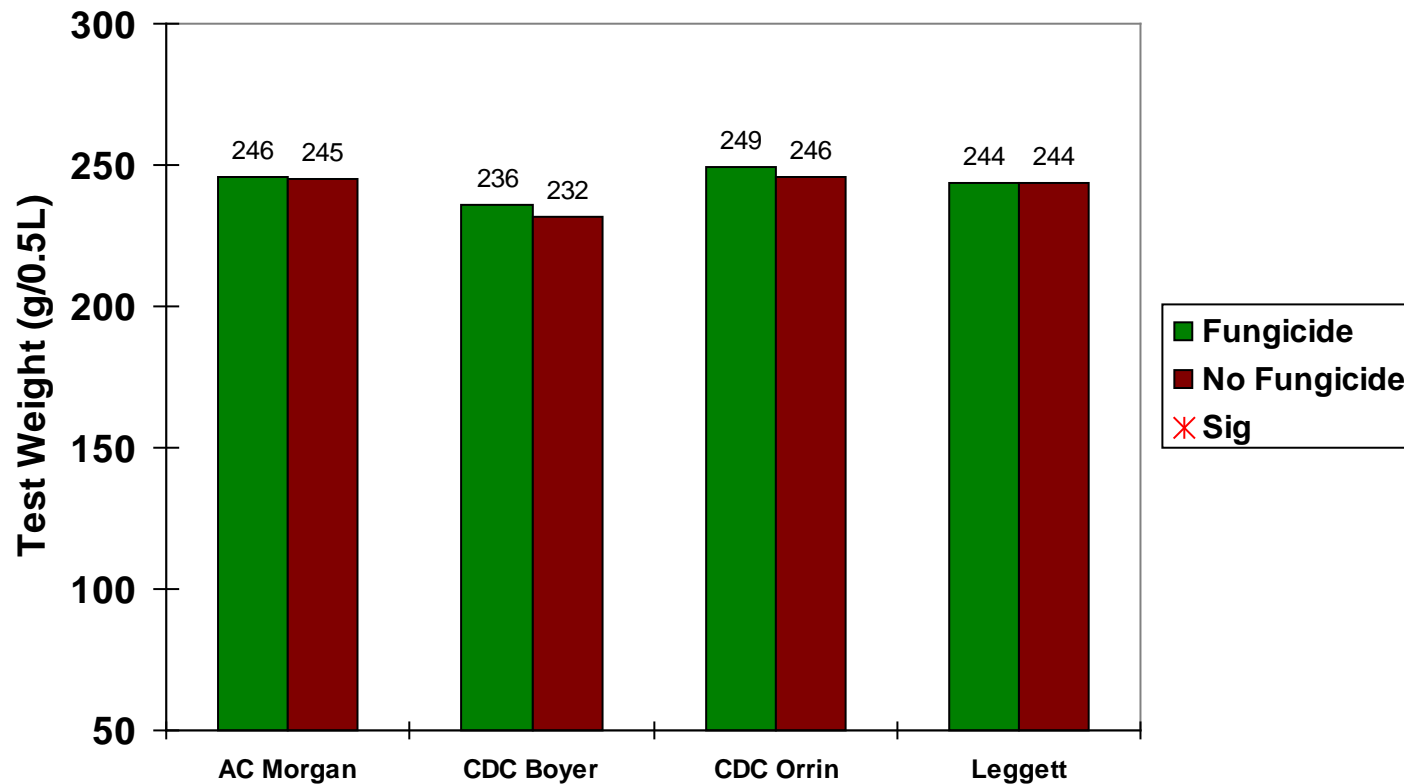


Sites with Low Crown Rust

Mid May

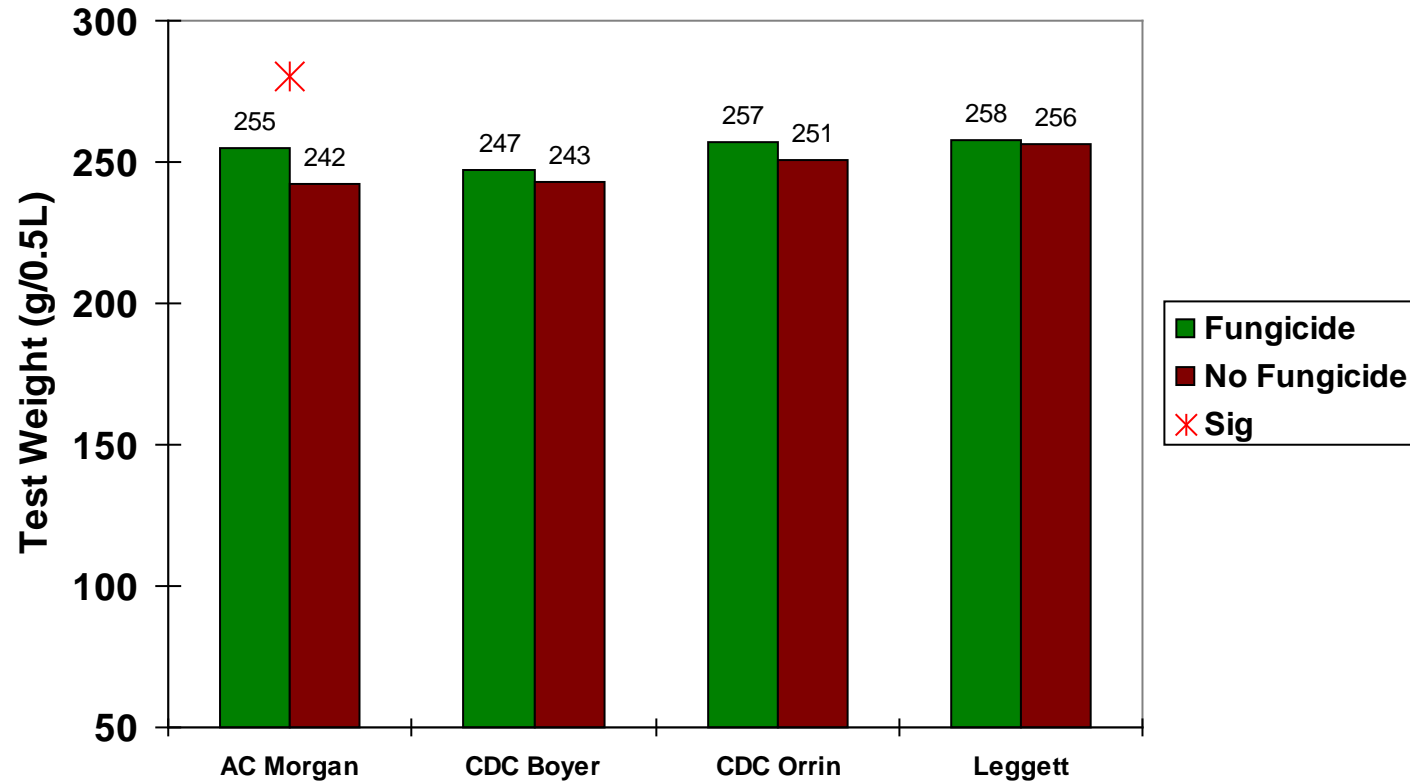


Sites with Low Crown Rust Early June

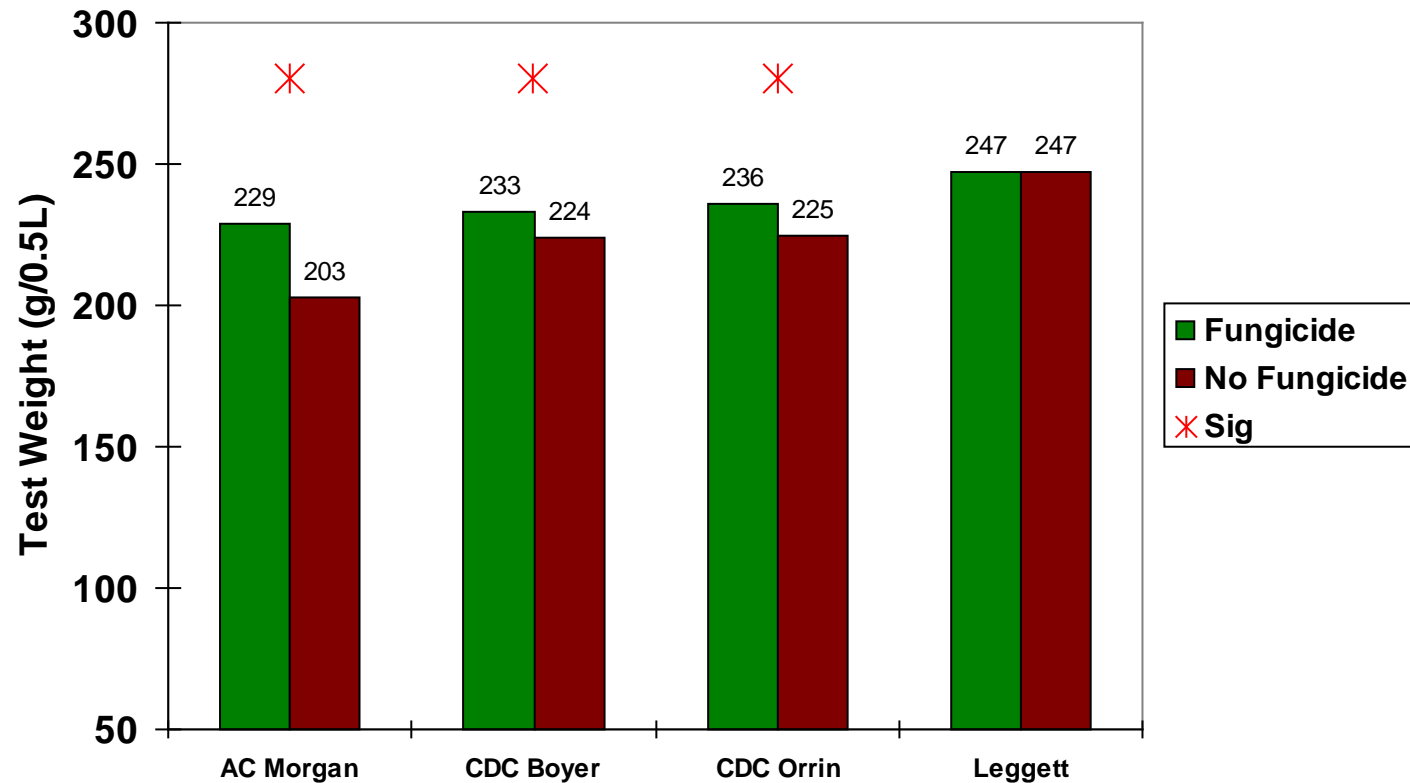


Sites with High Crown Rust

Mid May



Sites with High Crown Rust Early June



Conclusions

Seeding Date

Large effect on yield and test weight

-13 bu/acre

- 13 g/0.5L



Conclusions

Low Crown Rust Sites

- CDC Boyer – A Fungicide increased grain yield in May and June AC
- Morgan – A Fungicide increased grain yield in June
- Test weight was not changed by the application of a fungicide



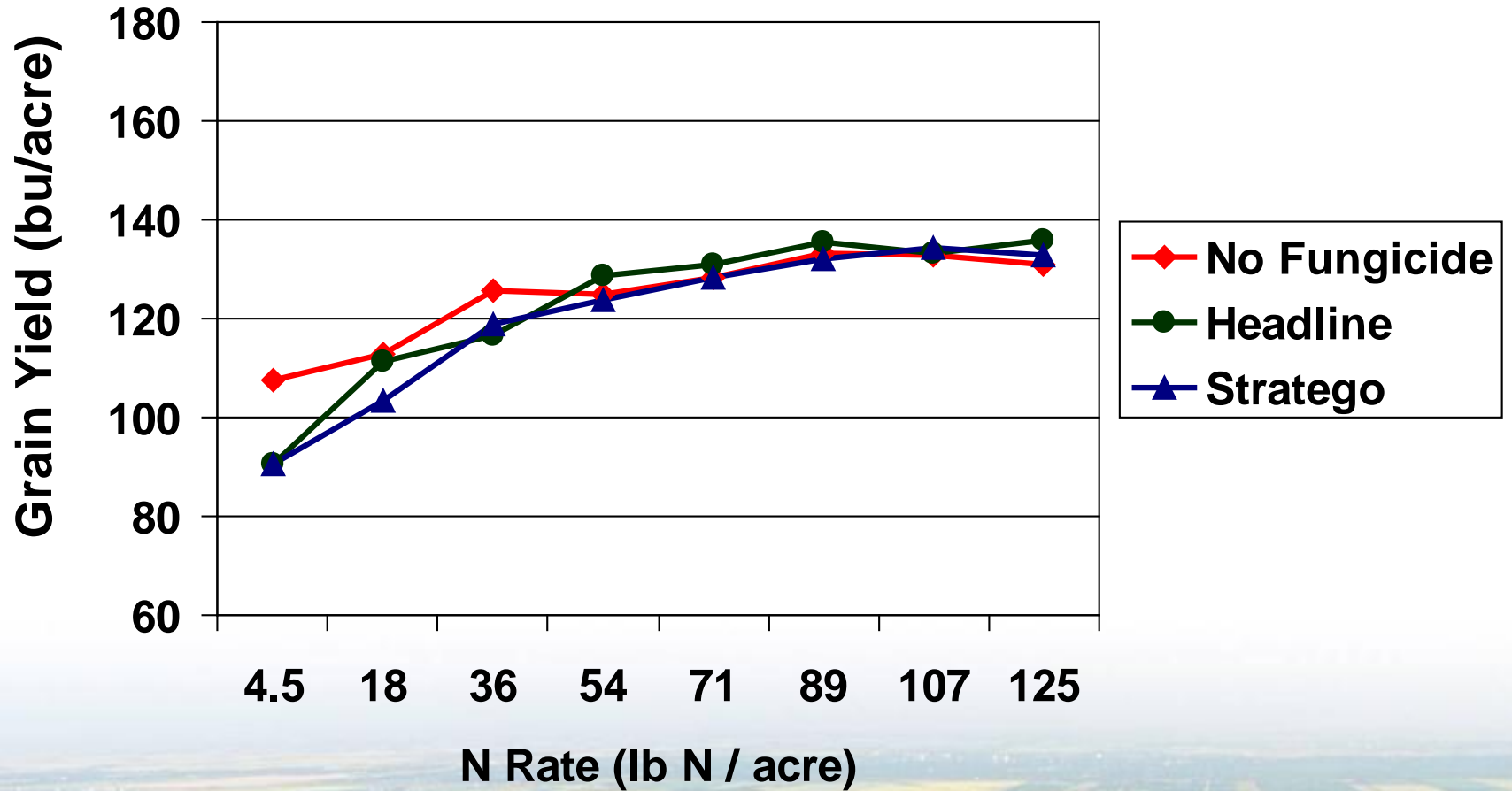
Conclusions

High Crown Rust Sites

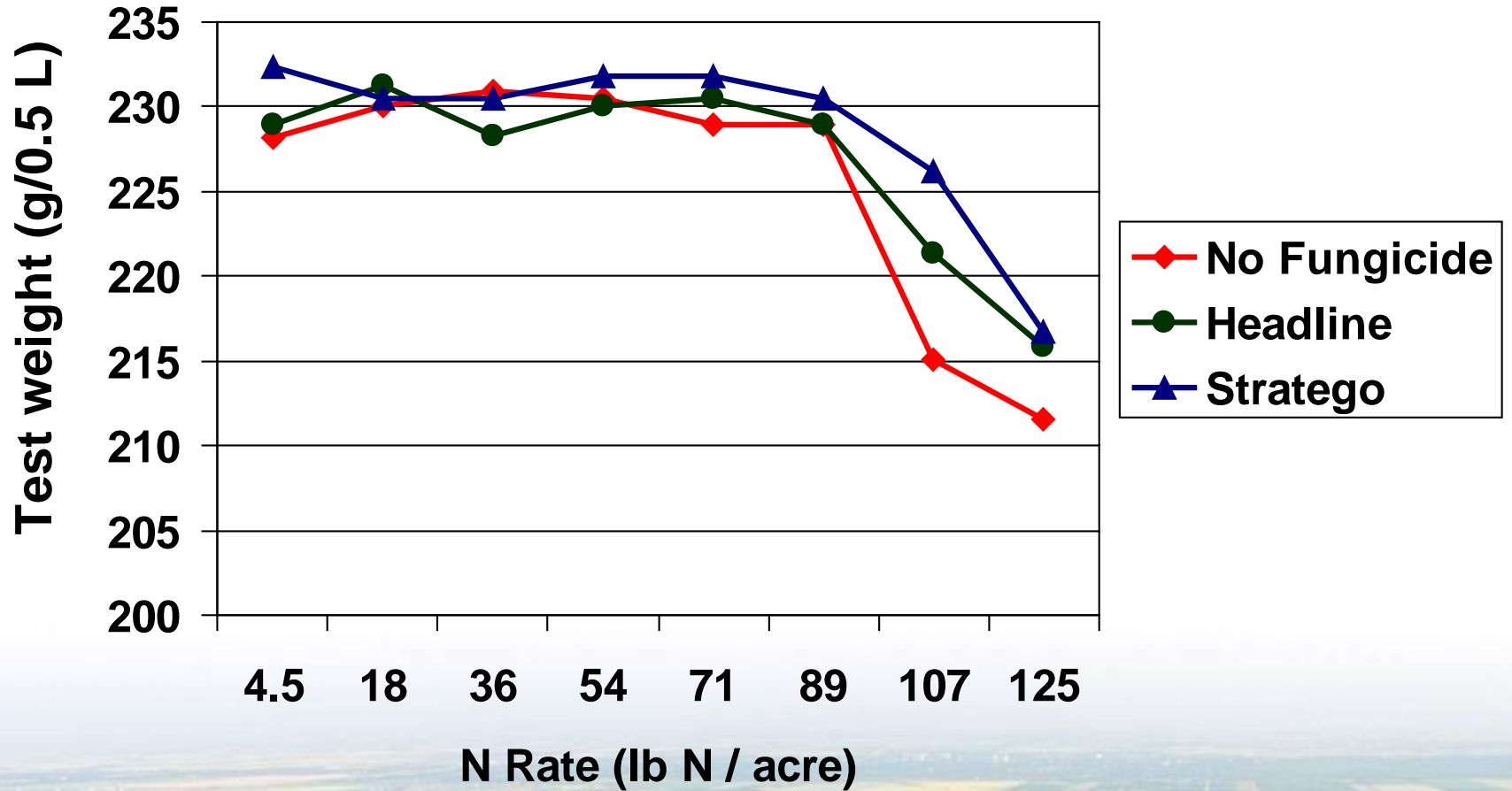
- **Leggett** – Grain yield and test weight not affected by a fungicide
- **AC Morgan** - Grain yield and test weight increased when a fungicide was applied at both seeding dates
- **CDC Orrin and CDC Boyer** - Grain yield and test weight increased when a fungicide was applied to the early June seeded oats



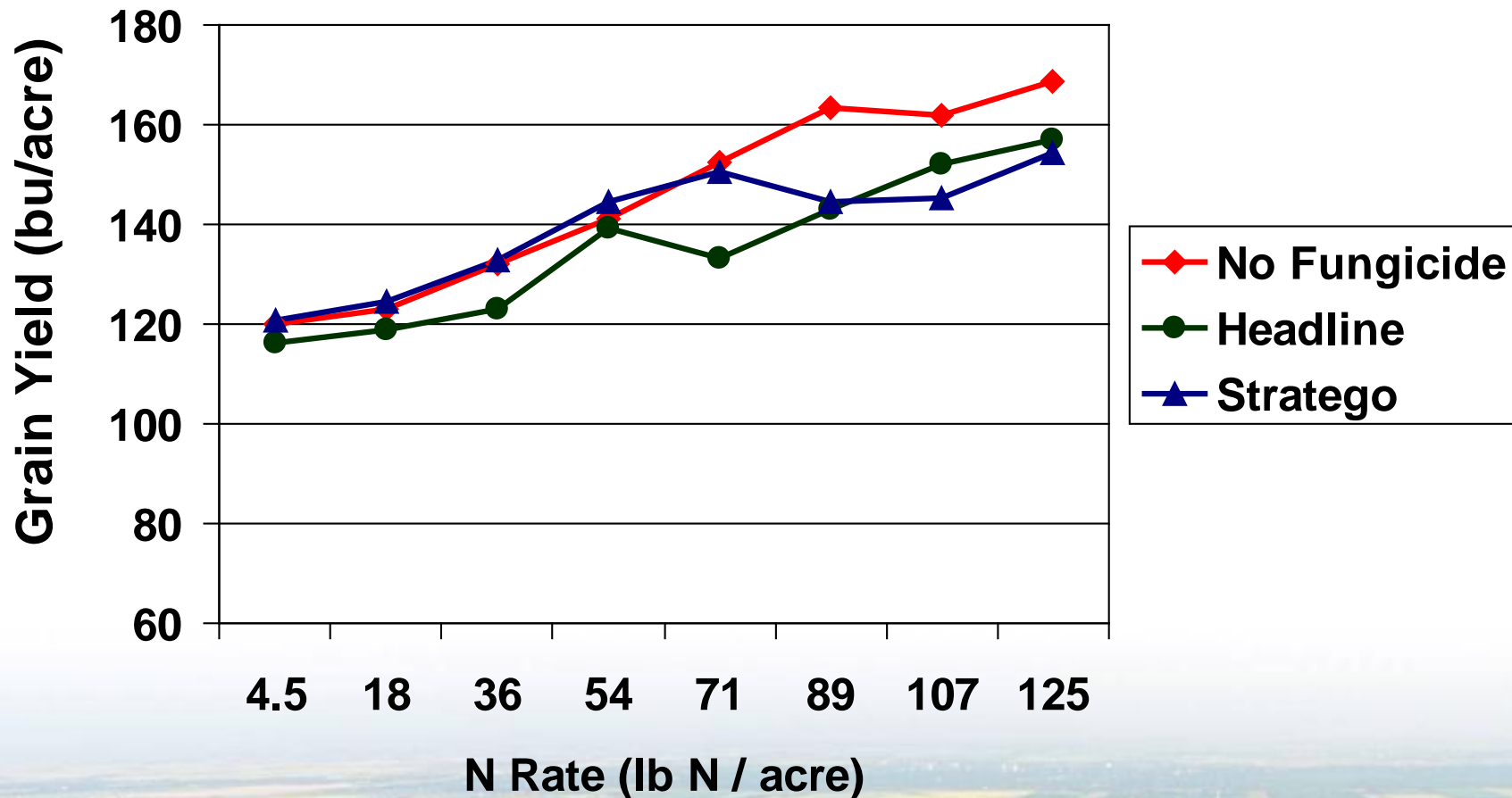
Nitrogen x Fungicide at Indian Head Triactor



Nitrogen x Fungicide at Indian Head Triactor



Nitrogen x Fungicide at Melfort Triactor



Nitrogen x Fungicide at Melfort Triactor

