Betting The Farm On Racehorse Hybrids

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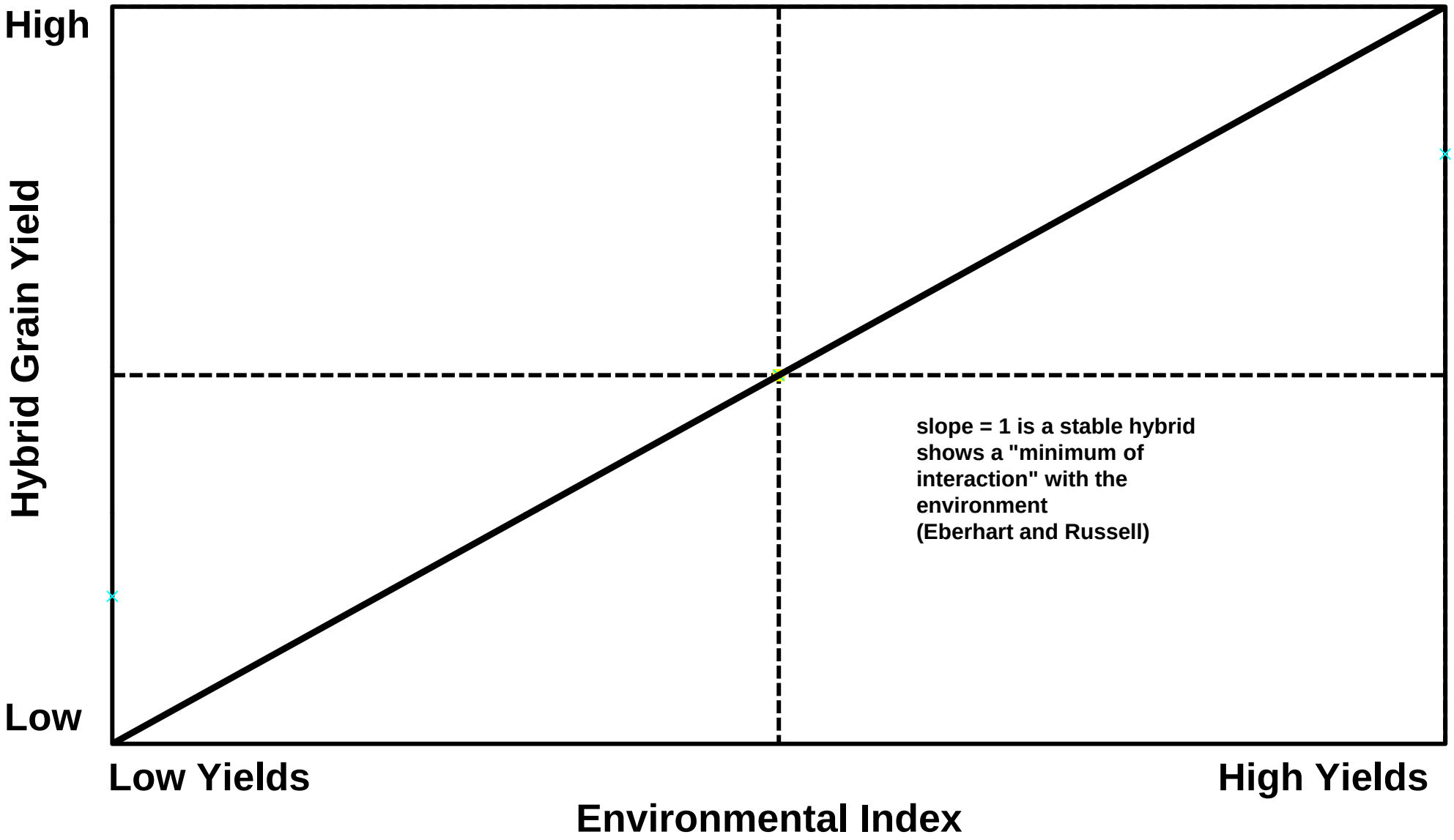
Hybrid Stability

- **What is it?**
- **Matching Hybrids to Conditions?**
  - ✓ “Fix / Flex”
  - ✓ “Offensive / Defensive”
  - ✓ “Racehorse / Workhorse”

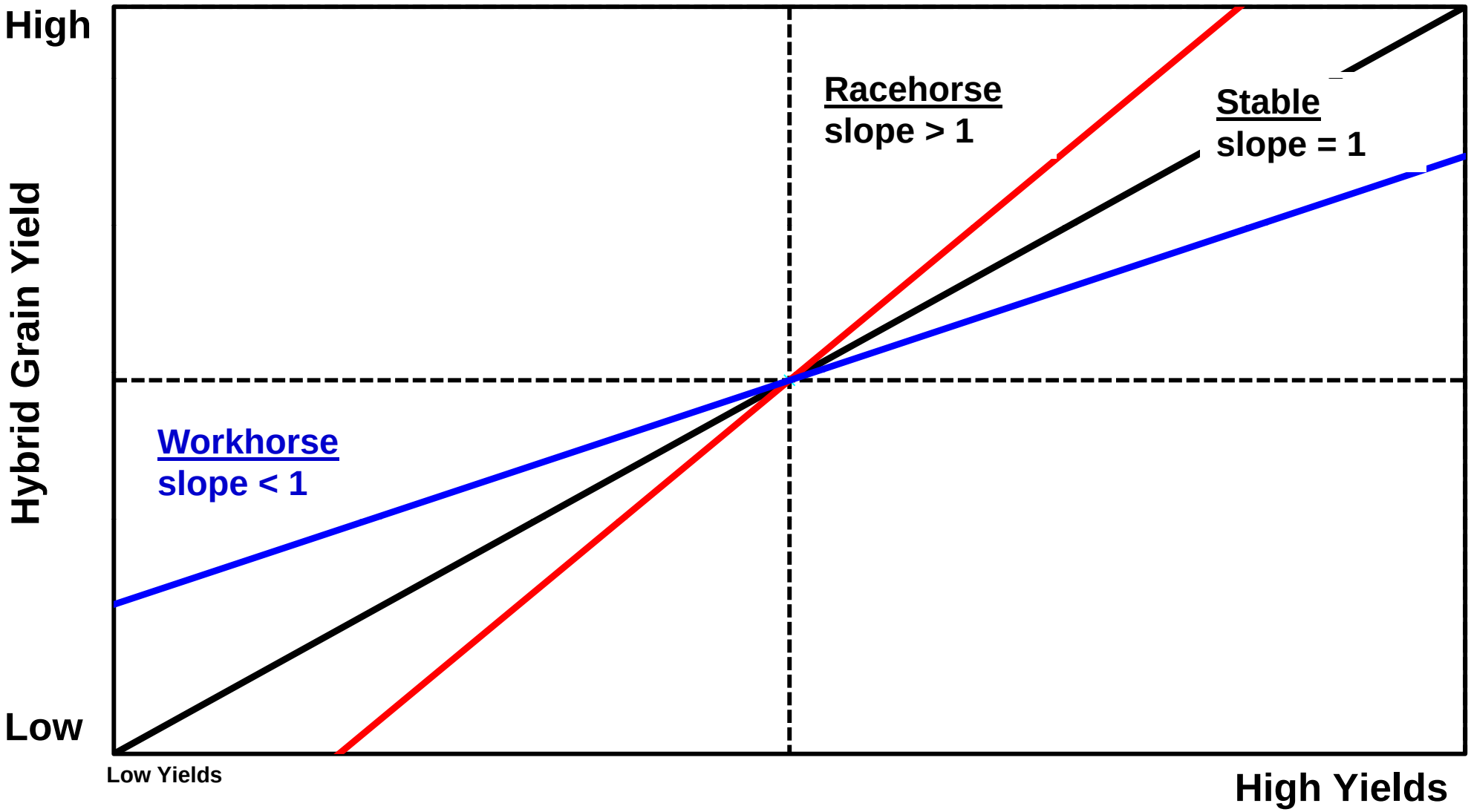
Objectives

- Do racehorse hybrids exist?
- How risky are they?
- Should farmers buy them?

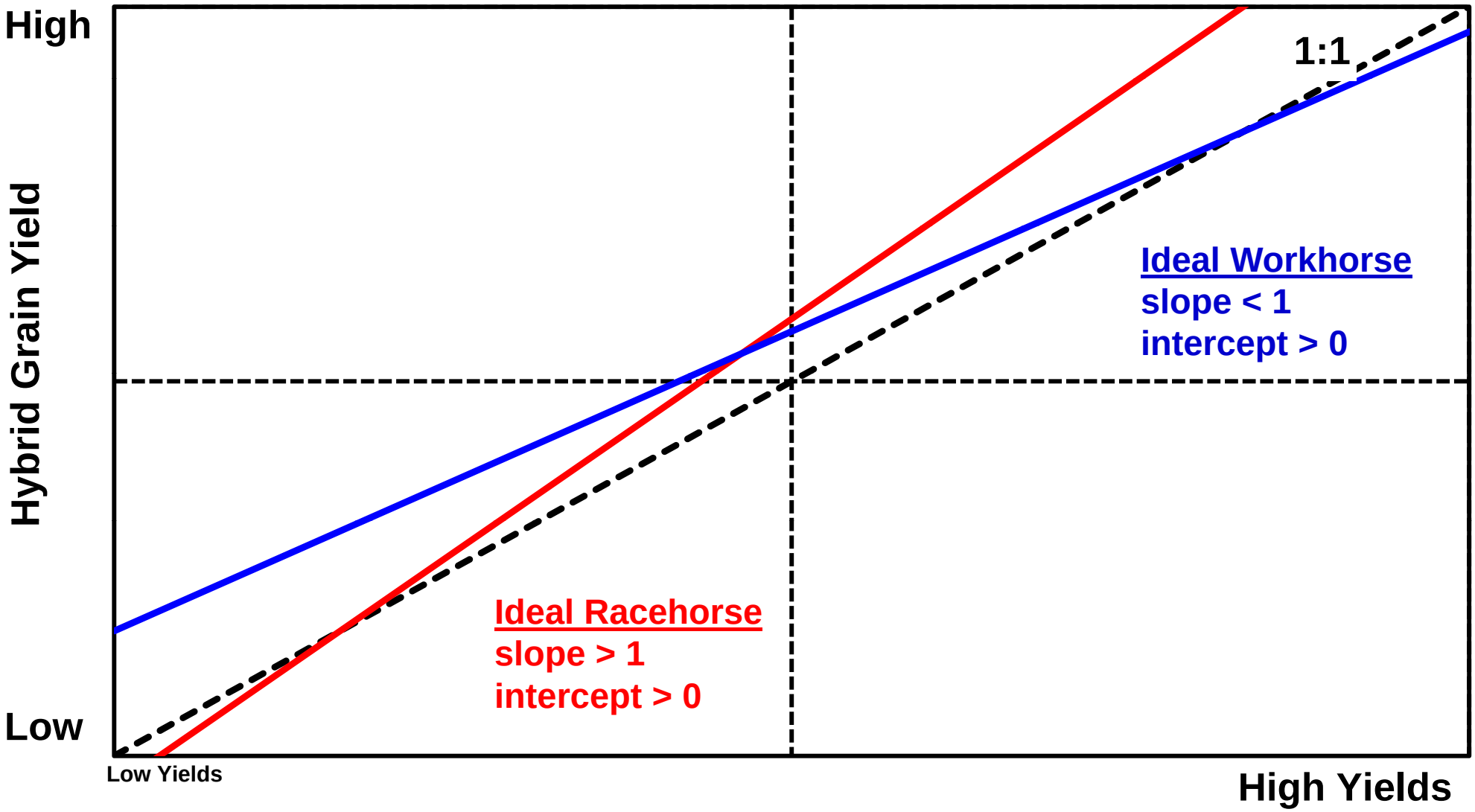
Hybrid stability – Corn Breeders Definition



What is a racehorse hybrid?



Ideally, we want above average hybrids ...
(Can we always operate above the line?)



Data Sets For Stability Analysis

- **Minnesota Corn Grower Hybrid Strip Tests**
  - ✓ 2002 and 2003
  - ✓ 1 to 6 locations per county
  - ✓ 200 hybrids tested
  - ✓ Non-replicated at a location
  - ✓ Chose the high, average, and low yielding hybrids grown at 7 or more locations
- **Missouri 2003 Central Tests**
  - ✓ Top 10, average 10, and lowest 10 hybrids
  - ✓ 5 locations
- **Wide Area Tests (WI, IL, MI, NE, KS, IA, & PA)**
  - ✓ Highest 12 and Lowest 11 Hybrids
  - ✓ 30 to 380 Environments; 1997 - 2001

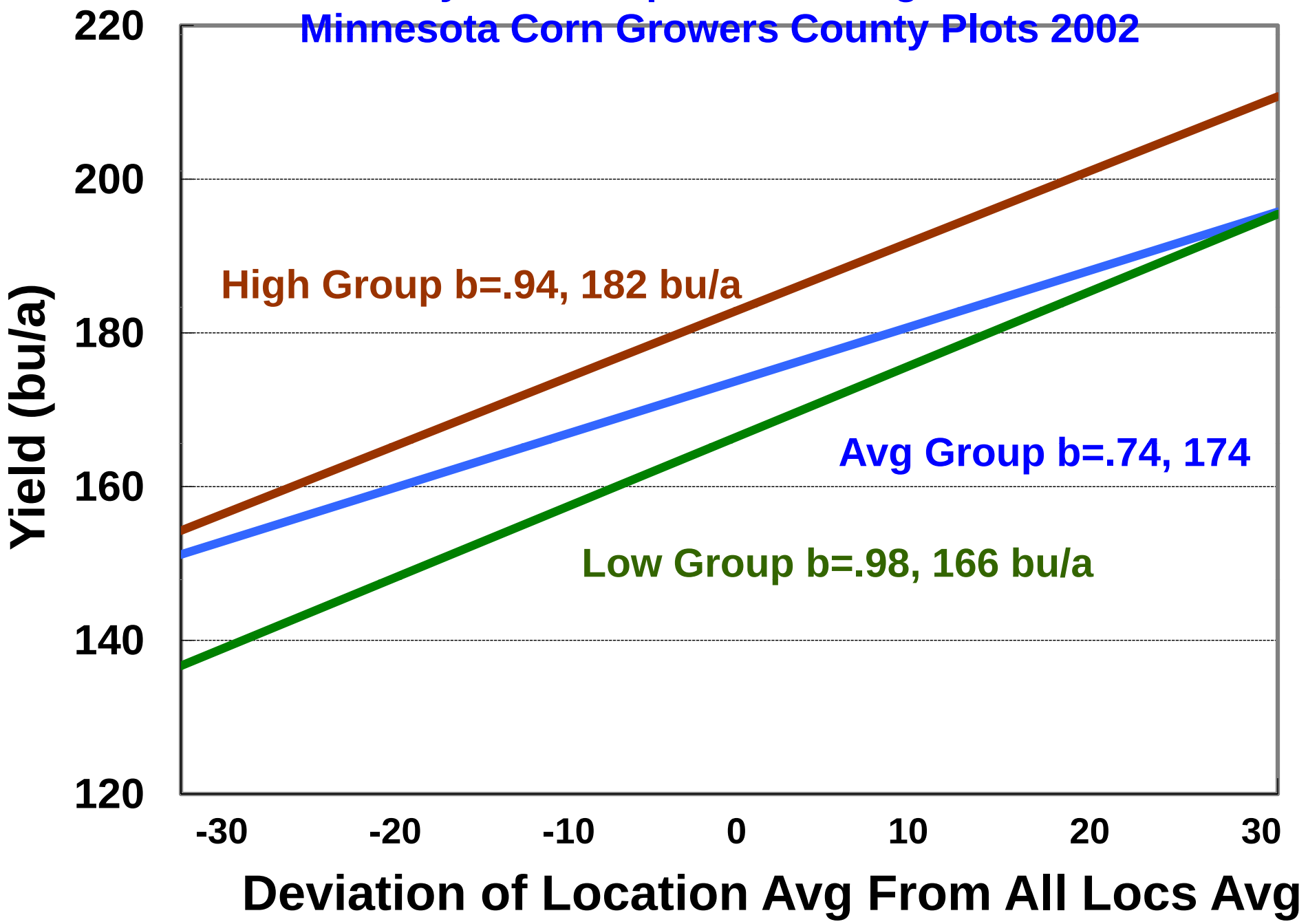
Materials and Methods

- **Used SELECT data base which is comprised of University corn hybrid trial data.**
  - ✓ Total hybrids = 17,890
  - ✓ Total replicate means = 147,648
  - ✓ Total plots = ~500,000 (442,944 to 590,592)
- **Chose hybrids grown in 7 or more environments**
  - ✓ Hybrids = 2563
  - ✓ Total replicate means = 51,397
    - ❑ Used 76% of original data set

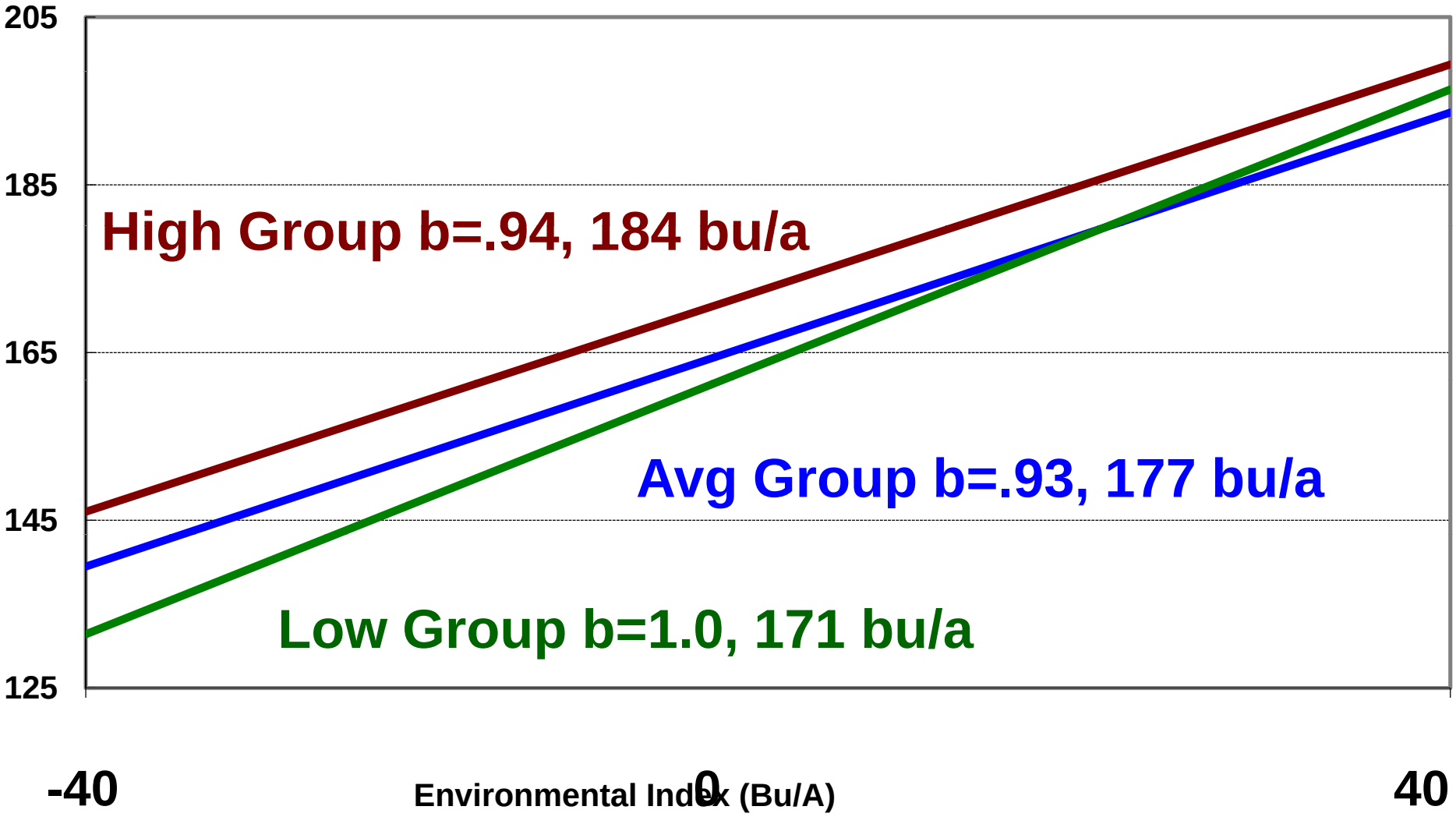
Data set matrix (1996-2003)
All data derived from University trials

State	First Year	Last Year	N
IA	1996	2001	21004
IL	1999	2001	5619
KS	1996	2001	4913
MI	1997	2001	5361
MN	2001	2001	903
NE	1997	2001	5578
PA	1997	2001	3423
WI	1996	2003	15729
WY	1998	2001	88

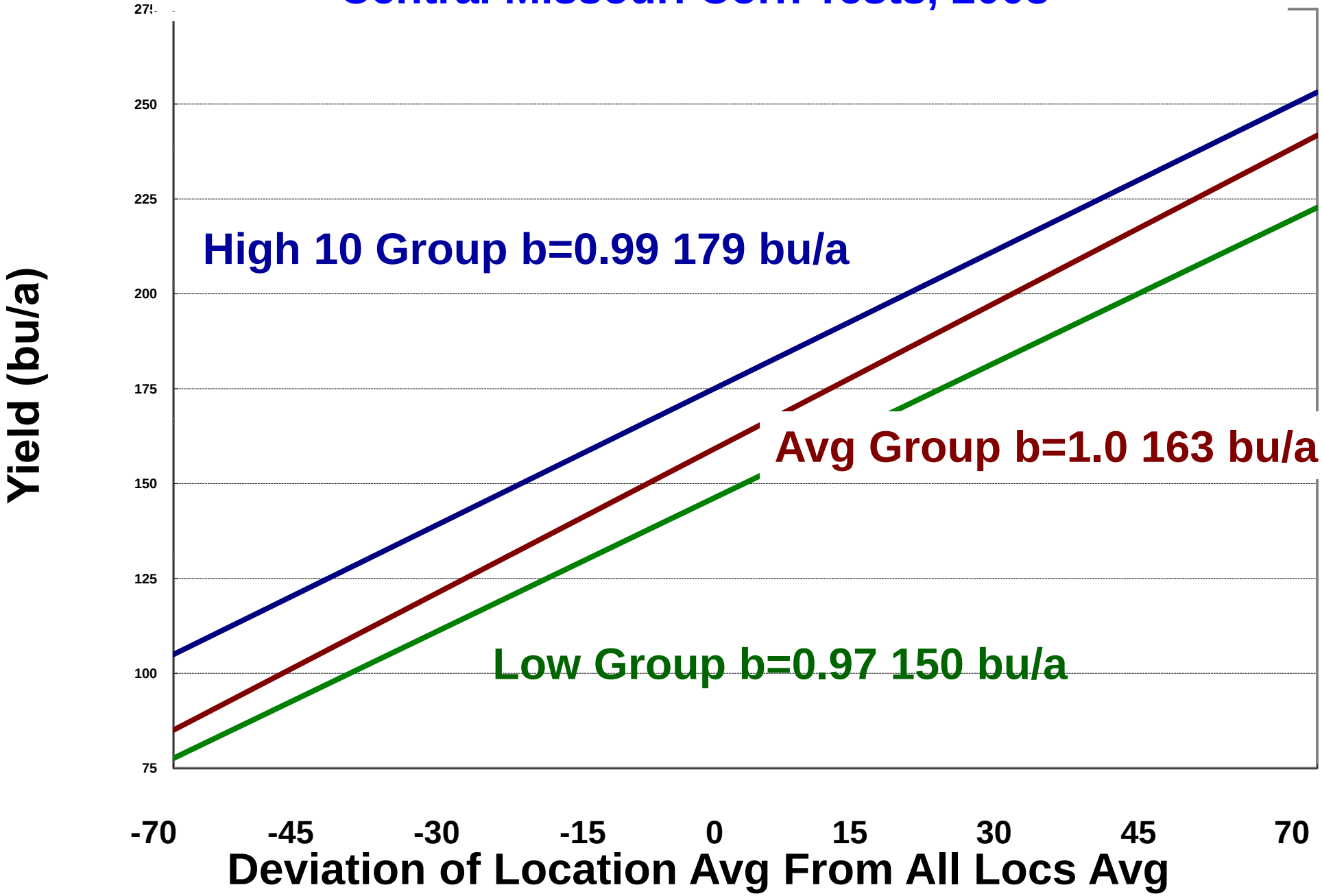
Yields of Hybrid Groups For A Range of Yield Levels
Minnesota Corn Growers County Plots 2002



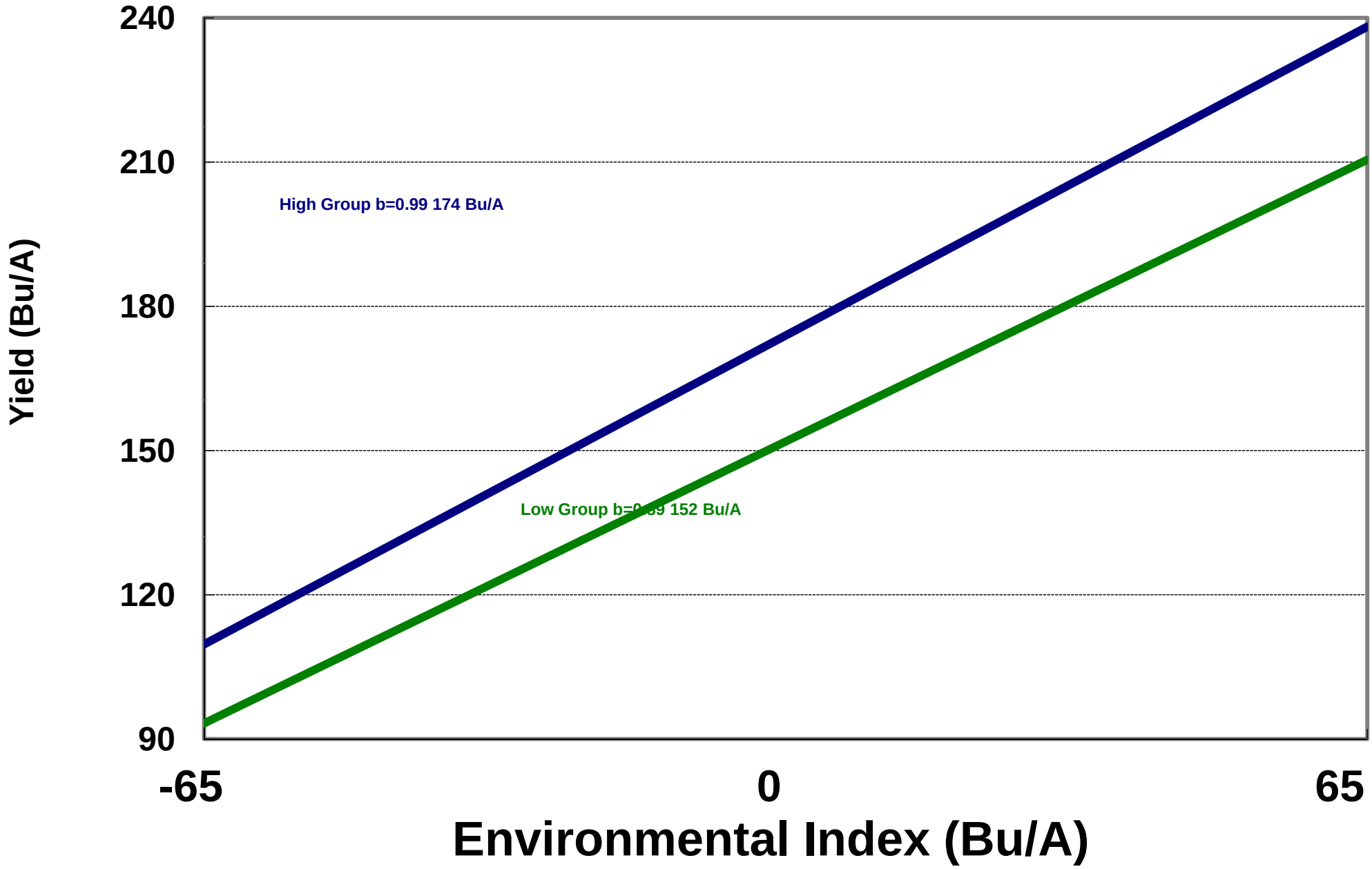
Minnesota Corn Growers County Plots 2003



Yields of Hybrid Groups For A Range of Yield Levels
Central Missouri Corn Tests, 2003



Seven States Four Years 30 - 380 Locations



Should a farmer grow a racehorse hybrid?

				Predicted grain yield in EI			
Hybrid class	N	%	Slope	Low	Average	High	Range
			Bu/EI	Bu/A	Bu/A	Bu/A	Bu/A
Racehorse	141	5.5	1.28	91	167	230	139
Ideal Racehorse	4	0.2	1.30	131	168	234	103
Stable	2198	85.8 ←	1.00	112	164	207	95
Workhorse	187	7.3	0.74	115	159	198	83
Ideal Workhorse	12	0.5	0.71	105	154	184	79
No relationship	21	0.8	---	164	164	164	---
Total	2563	100	---	---	---	---	---

Conclusions

- **Racehorse, Stable and Workhorse hybrids exist.**
  - ✓ Racehorse hybrids = 6% of hybrids tested
  - ✓ Stable hybrids = 86% of hybrids tested
  - ✓ Workhorse hybrids = 8% of hybrids tested
- **Racehorse hybrids are riskier than Stable or Workhorse hybrids.**
  - ✓ Racehorse range = 138 bu/A
  - ✓ Stable range = 95 bu/A
  - ✓ Workhorse range = 82 bu/A
  - ✓ In an “average” environment Racehorse and Stable hybrids are 8 and 5 bu/A better than Workhorse hybrids.
- **“Ideal” racehorse and workhorse hybrids rarely exist.**

Recommendations

- **"A Good Yielding Hybrid is a Good Yielding Hybrid - Regardless of Environment. Choose Good Ones."**
- **Use multi-environment average data**
  - ✓ Begin with trials in zone(s) nearest you
  - ✓ Compare hybrids with similar maturities
  - ✓ Use many years and locations
- **Evaluate consistency of performance**
  - ✓ Check performance in other zones and locations
  - ✓ Check other reliable unbiased trials
  - ✓ Be wary of inconsistent performance.

You are taking a tremendous gamble if basing your hybrid selection decisions on 1 or 2 local test plots

The End of the Row – Questions?
Thanks for your attention!