WINTER WHEAT SEED TREATMENTS for WISCONSIN

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Management Practices

- **Cultivar: Hopewell**
- **Row Spacing: 7.5”**
- **Planting:**
  - ✓ **Date: Sept. 24, 2002**
  - ✓ **Rate: 1.5 million seeds/acre**
  - ✓ **Depth: 1”**
- **Fertilizer: 60 lb N/a spring applied**
- **Herbicides: None**
- **Harvesting date: July 31, 2003**

Products Tested

- **Insecticides:**
  - ✓Gaucho 480
  - ✓Gaucho XT (Insect/fung)
  - ✓Cruiser
- **Fungicides:**
  - ✓Raxil-Thiram
  - ✓Raxil MD
  - ✓Raxil MD Extra
  - ✓Vitavax 200
  - ✓Dividend Extreme
  - ✓Dividend XL

Popular Seed Applied Fungicides in WI

Raxil/Thiram

- ✓ Tebuconazole and thiram
- ✓ popular
- ✓ broad spectrum, low cost
- ✓ 3.5 to 4.6 oz/cwt
- ✓ Raxil-systemic, Thiram surface action
  - Strengths:
    - Excellent on seed borne bunt and smuts
    - Protection against *Fusarium spp*. – scabby seed

Raxil MD

- ✓ Tebuconazole and metalaxyl
- ✓ Systemic
- ✓ 5.0-6.5 oz/100 lbs
  - Strengths:
    - Excellent on seed borne bunt and smuts, Pythium root rot, Septoria

Popular Seed Applied Fungicides in WI

Raxil MD Extra

- ✓ Tebuconazole, metalaxyl, and Imazalil
- ✓ Systemic
- ✓ 5.0oz/100 lbs
  - Strengths:
    - – Excellent on seed borne bunt and smuts, Pythium root rot, Septoria, adds stripe rust

Vitavax 200

- ✓ Systemic activity of carboxin with the contact activity of thiram
  - Strengths:
    - – Good on seed borne bunt and smuts, Pythium root rot

Popular Seed Applied Fungicides in WI

- **DividendExtreme**
  - ✓ **Difenoconazole (0.77 lb/gal) and Apron XL (0.19 lb/gal)**
  - ✓ **2.0 to 4.0 fl. oz/cwt**
    - **Strengths:**
      - **Excellent on seed borne bunt and smuts**
- **DividendXL**
  - ✓ **Difenoconazole (1.54 lb/gal) and Apron XL (0.13 lb/gal)**
  - ✓ **1.0 to 2.0 fl. oz/cwt**
    - **Strengths:**
      - **Excellent on seed borne bunt and smuts**

Seed Applied Insecticides

- **Gaucho 480**
  - ✓ Imidacloprid
  - ✓ Systemic
  - ✓ 1 to 3 fl oz/cwt
    - Controls aphids which can transmit barley yellow dwarf

- **Gaucho XT**
  - ✓ Combination insecticide and fungicide
  - ✓ Imidacloprid, metalaxyl and tebuconazole
  - ✓ 3.4 fl oz/cwt

Economic Cost of Several Seed Treatments

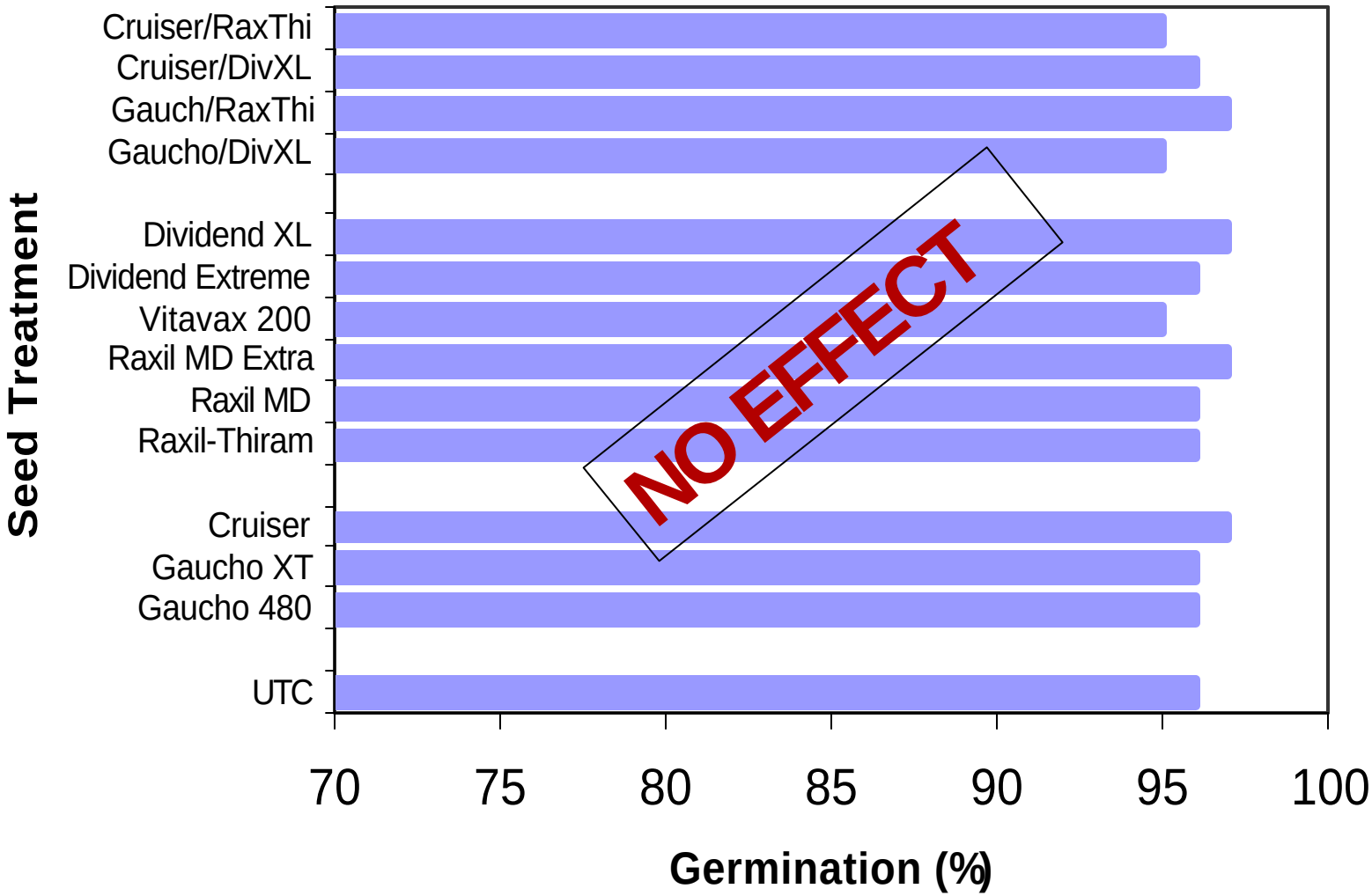
DividendXL RTA

- 10 oz/cwt
- 150 lb/a seed rate
- $55/gallon
- $6.50/acre
- $2.58/60 lbs

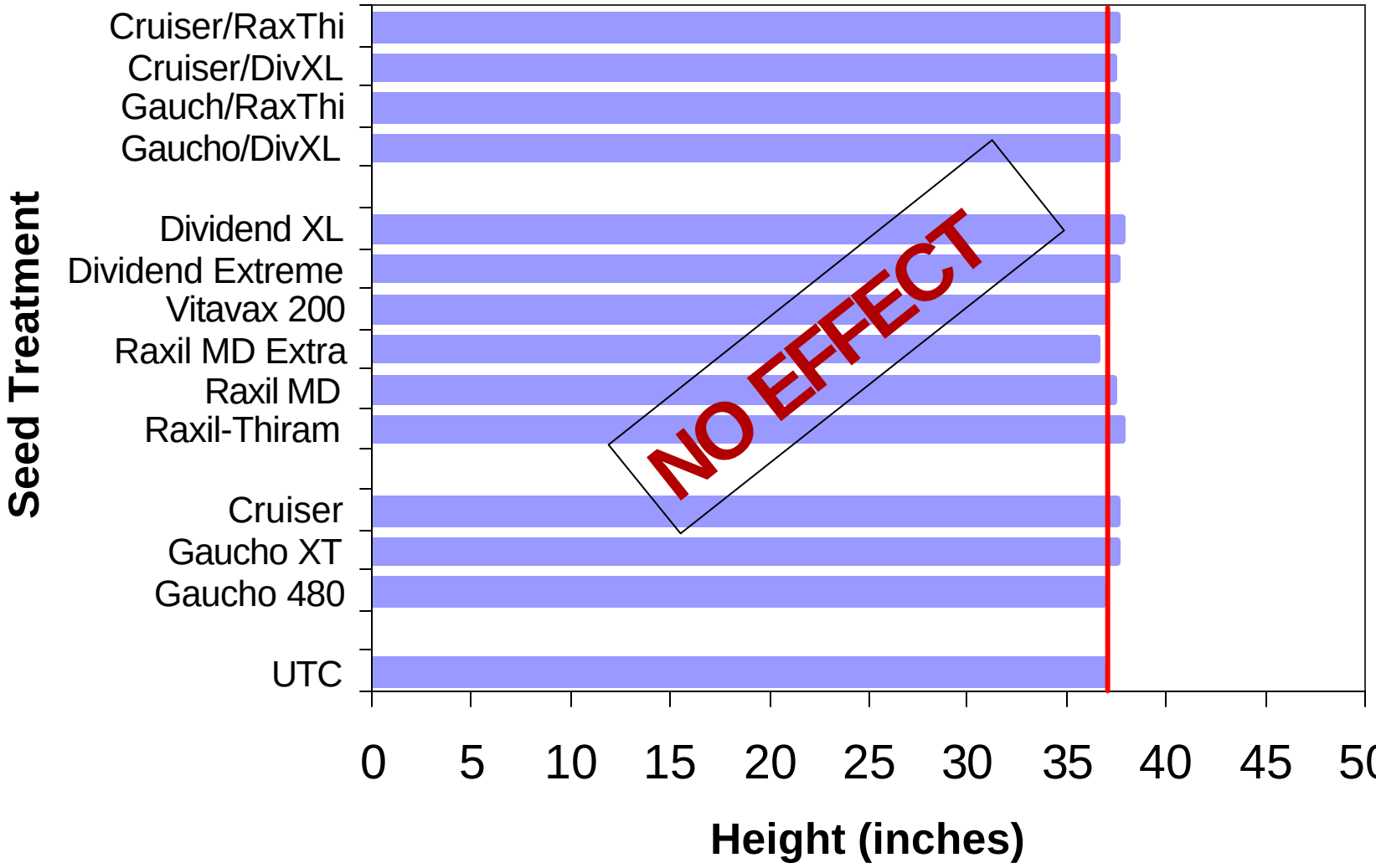
Gaucho 480 insecticide

- 1 to 3 oz/cwt
- 150 lb/a seed rate
- $1100/gallon
- $13 to $26/acre
- $5.16/60 lbs

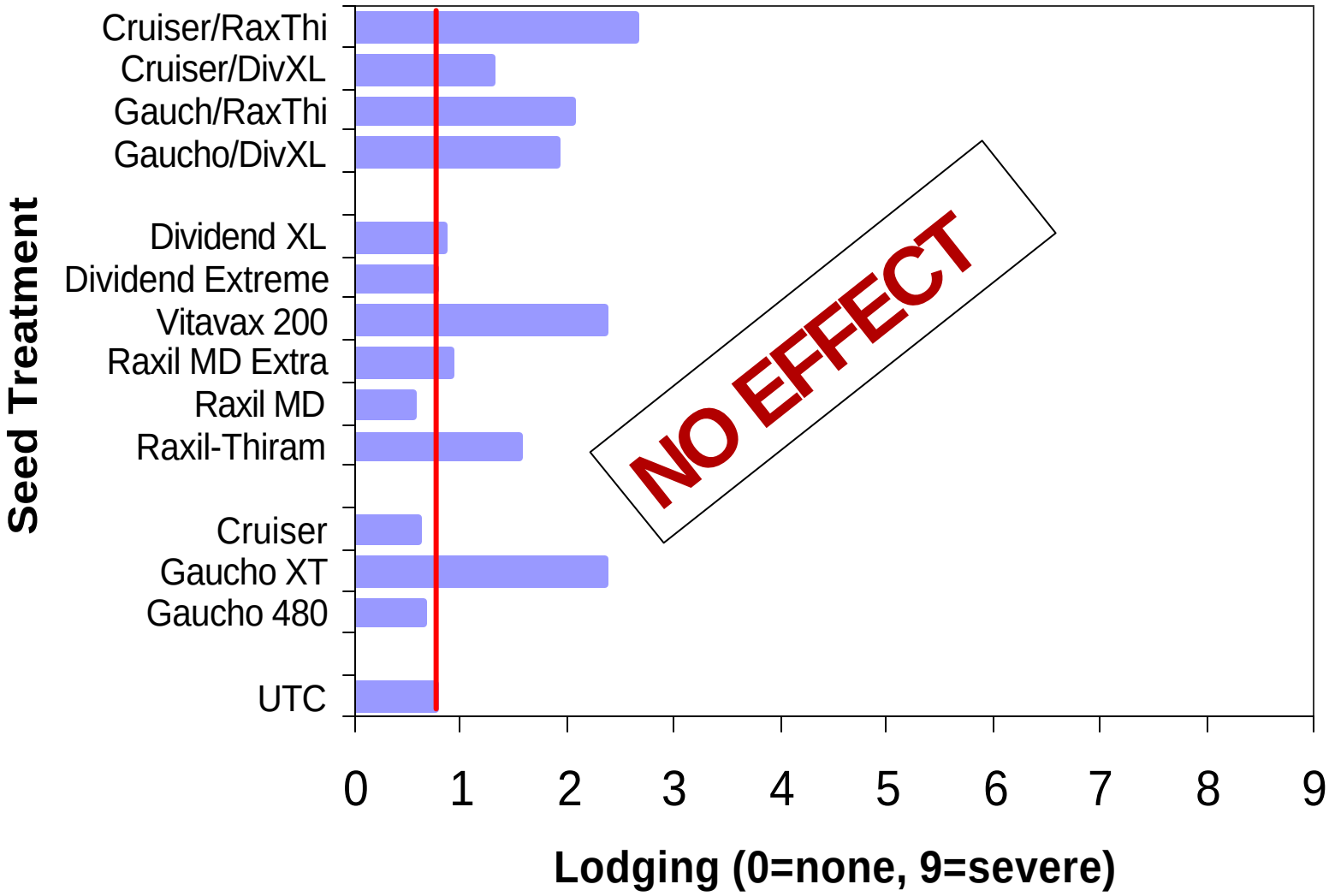
Germination Rate



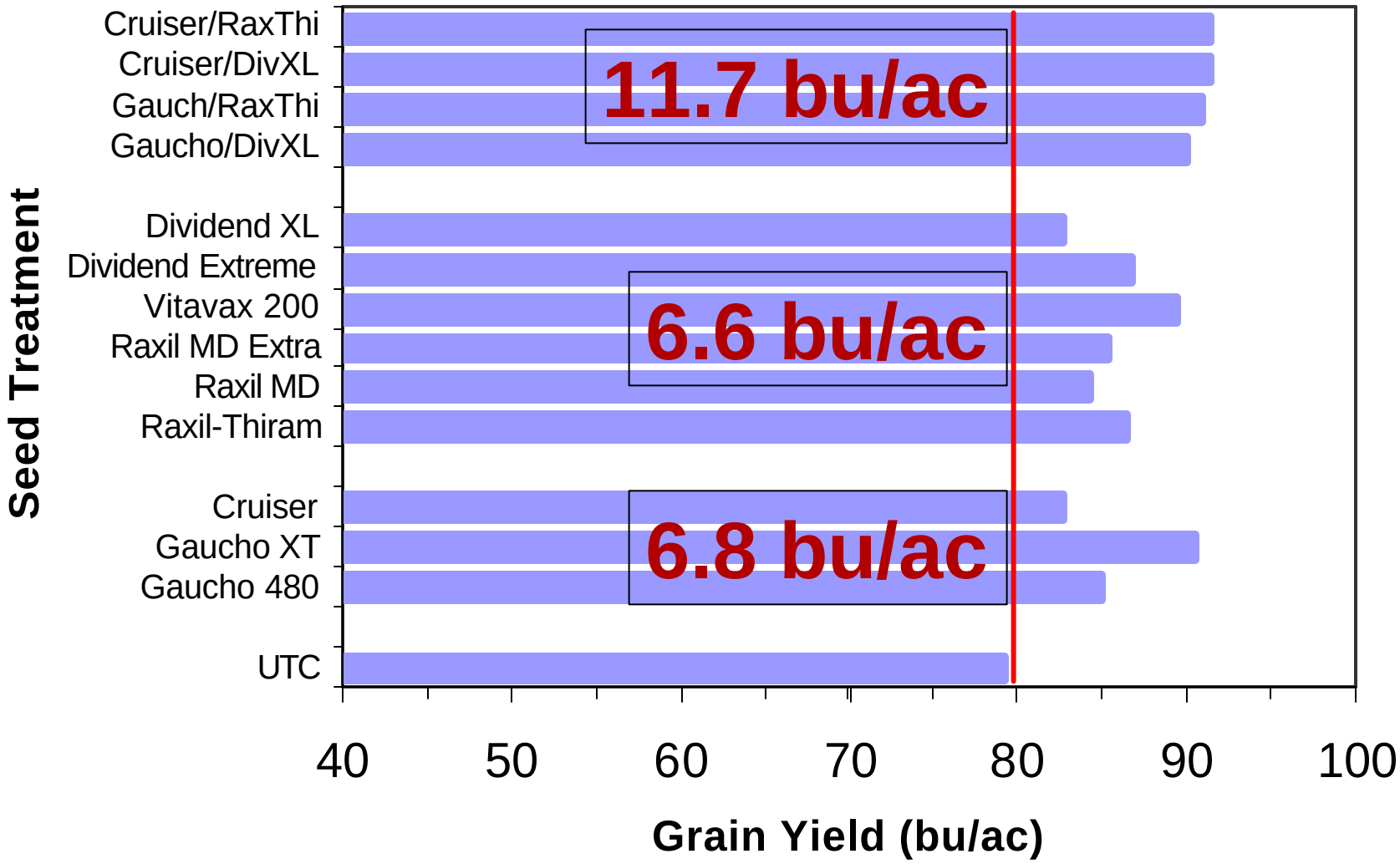
Height at Maturity



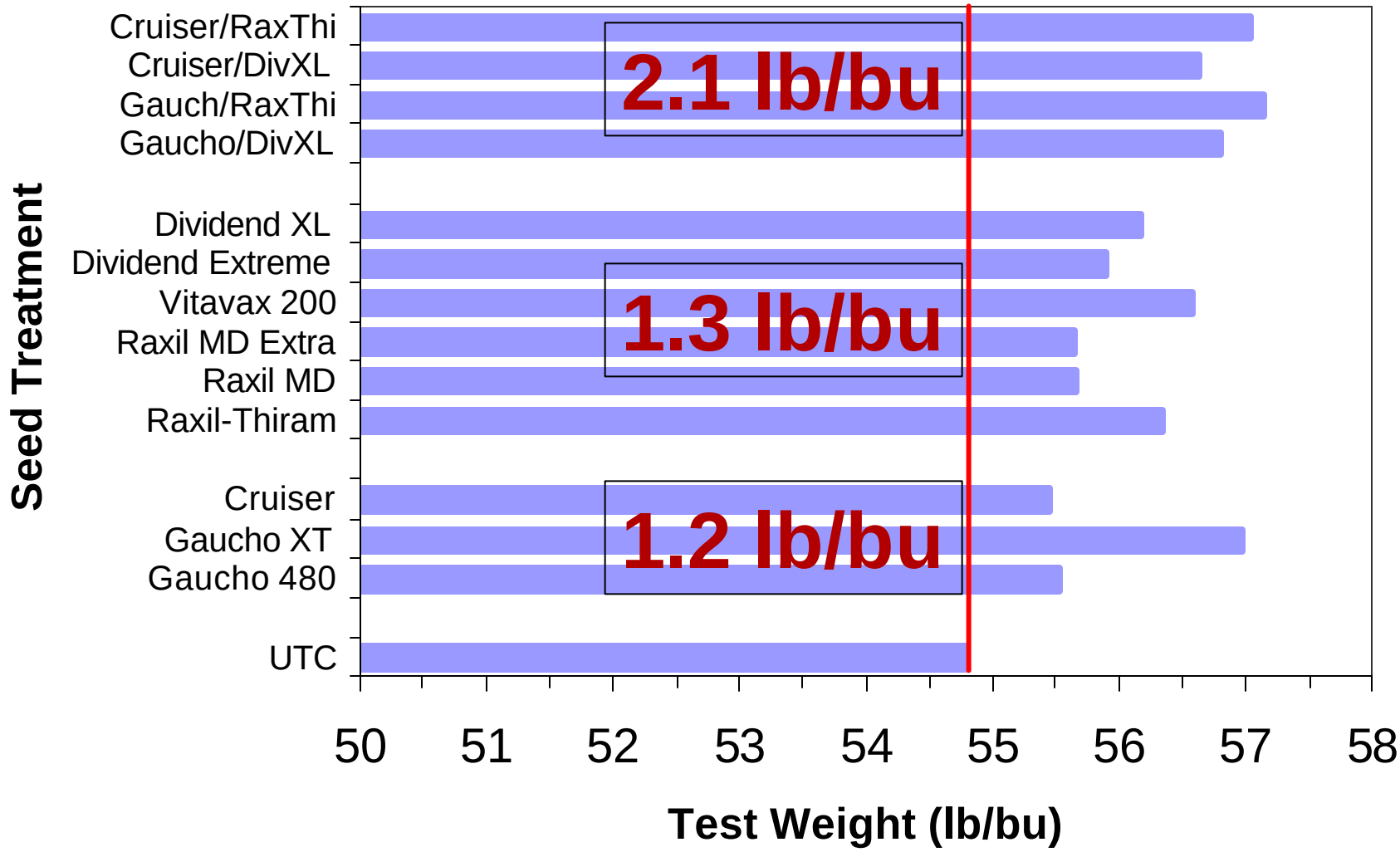
Lodging (Belgium System 0-9)



Grain Yield



Test Weight



Summary of Wisconsin Winter Wheat Seed Treatment Data

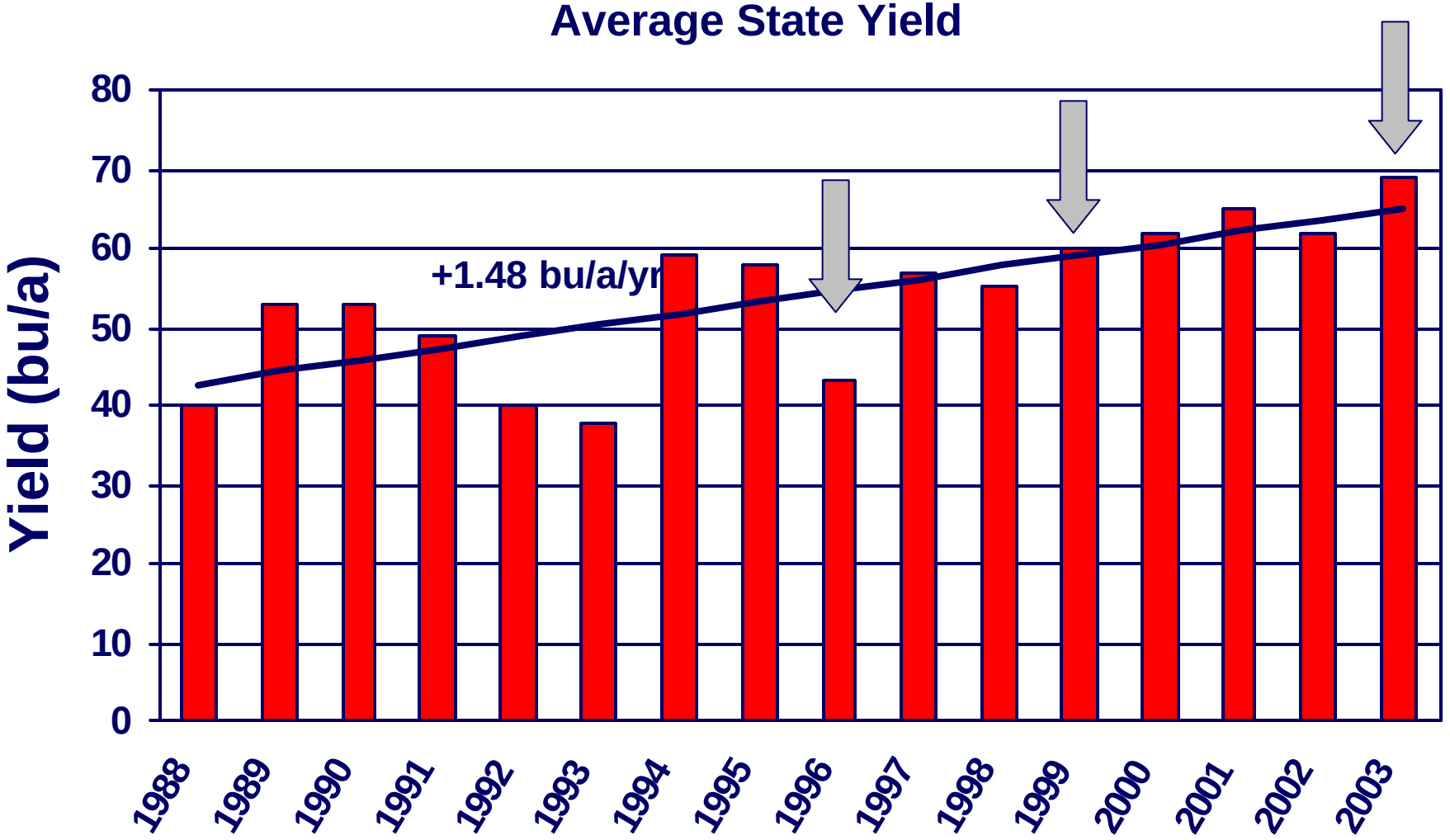
1988 to 2003

Year	1988	1989	1990	1991	1993	1996	1997	1998	1999	2000	2003
Variables	1 env 2 var 3 trts	2 env 2 var 4 trts	1 env 2 var 2 trts	1 env 2 var 9 trts	2 env 26 var 3 trts	2 env 2 var 3 trts	4 env 2 var 3 trts	4 env 2 var 3 trts	4 env 3 var 4 trts	2 env 3 var 3 trts	1 loc 1 var 14 trts
	bu/ac										
Check	48.0	62.3	43.2	59.0	51.2	57.4	67.2	49.0	85.0	67.6	79.2
Fungicides	2.3	0.7	-0.4	2.3	-0.6	3.3	0.8	0.5	2.0	1.2	6.6
Insecticides											6.8
Fung+Insect									2.6	6.2	11.7

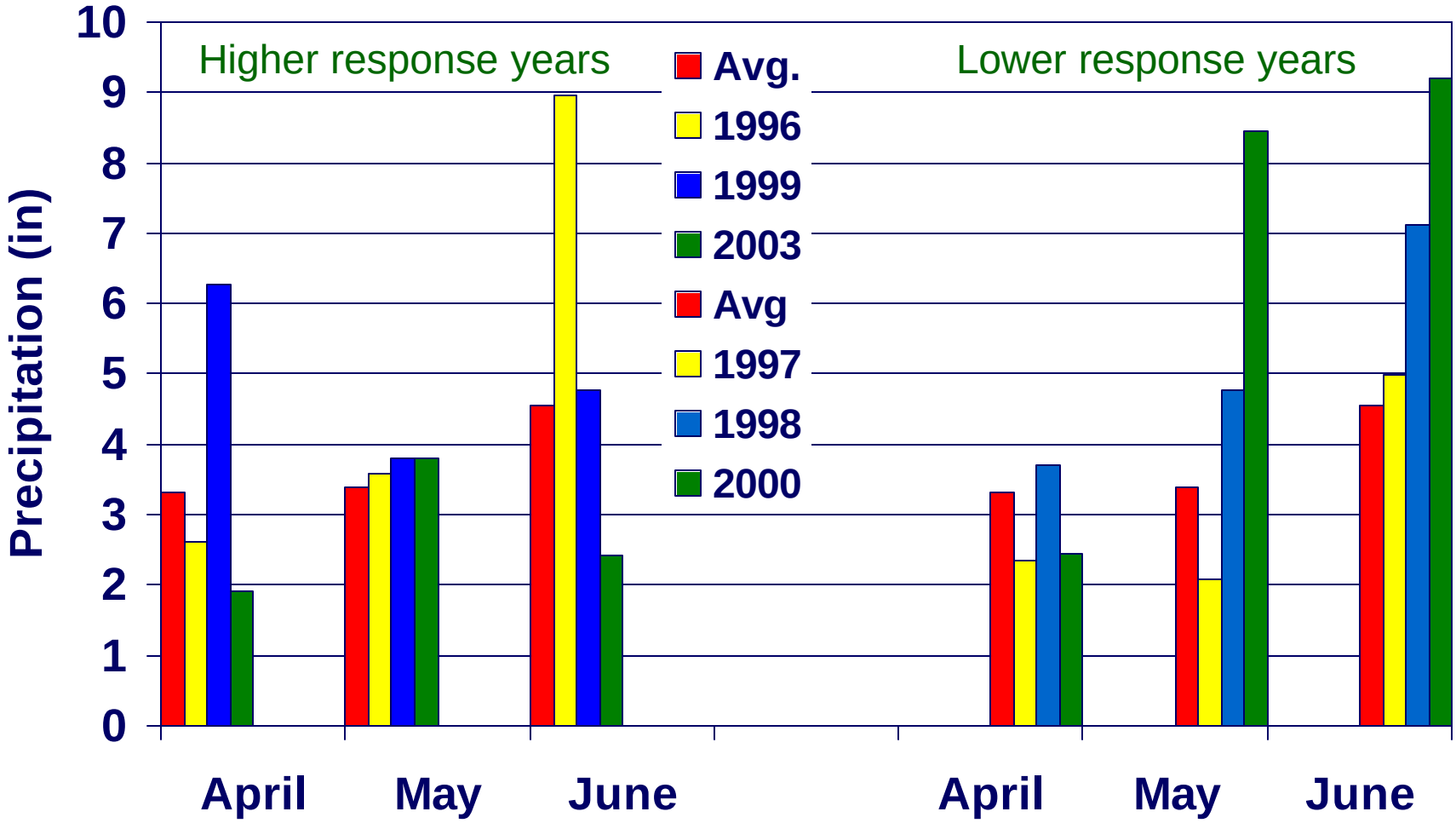
Average over 11 experiments = gain 1.7 bu/ac

3-exp avg gain 6.8 bu/ac

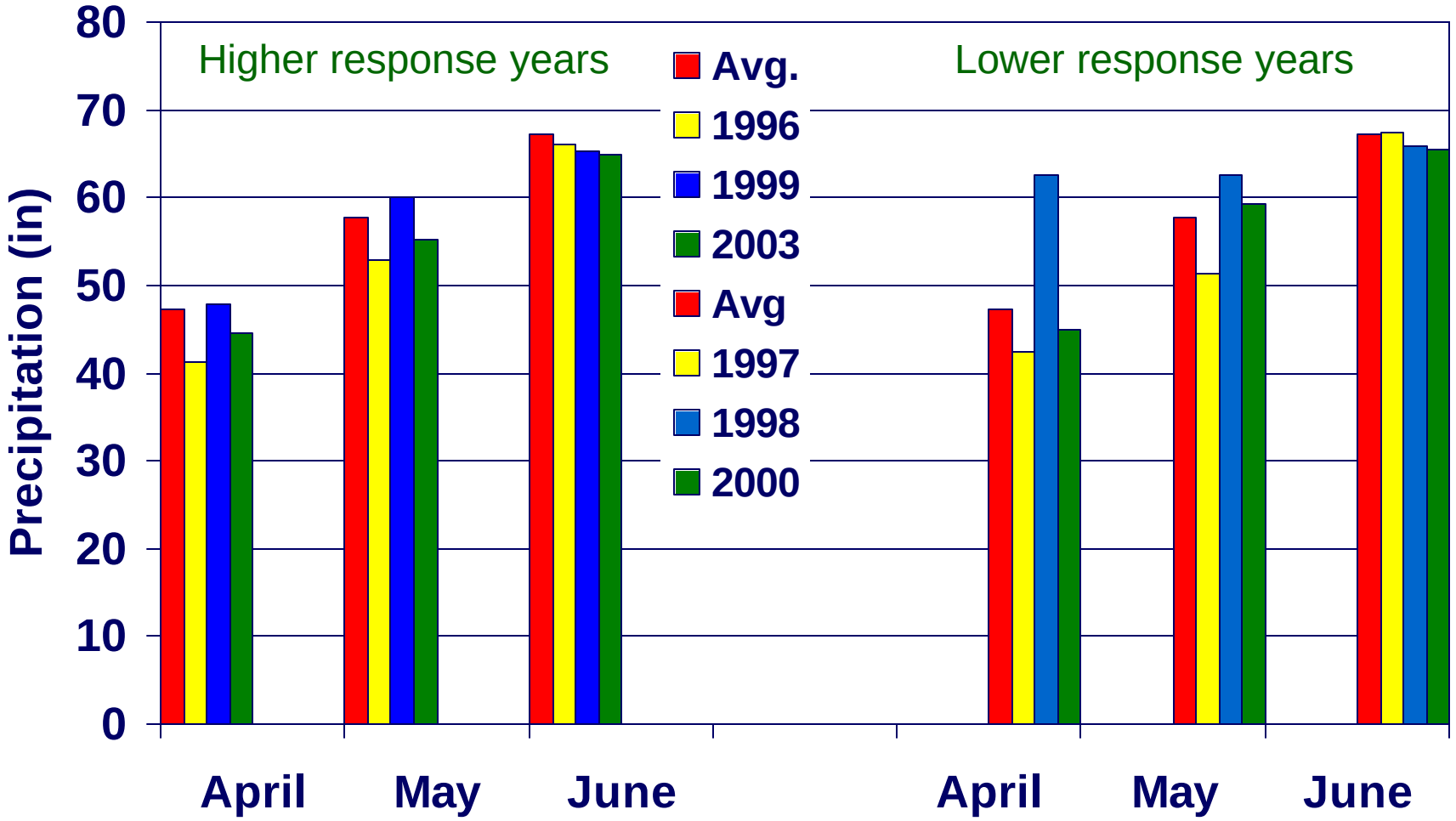
Historic Winter Wheat Yields in WI



Monthly Precipitation
Arlington, WI



Monthly Average Temperatures Arlington, WI



Hypothesis of Seed Treatment Effects

Fall Stand Establishment/ Weather	Seed Treatment	Yield Potential into Spring	Spring Weather	Final Yield
Poor	Treated	Higher	Poor	Avg
			Good	Full
	Untreated	Lower	Poor	Poor
			Good	Avg
Good	Treated	High	Poor	
			Good	
	Untreated	High	Poor	
			Good	

Summary of Use of Seed Treatments on Wheat

- **Advantages**
  - ✓ Control of early season seedling diseases
  - ✓ Useful when seed and seedling are placed under stress
  - ✓ Protect/increase seed viability

- **Disadvantages**
  - ✓ Higher seed cost
  - ✓ Hard to dispose of unneeded seed
  - ✓ Time/cost of treating
  - ✓ One seed treatment will not control all pathogens
  - ✓ Variable yield response

Future Steps Needed

- **Further test the insecticide seed treatment effect on Wisconsin grown winter wheat.**
  - ✓ **2 locations x 2 varieties x 16 treatments**
  - ✓ **4 insecticides, 7 fungicides, and 4 ins+fung**

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- **Continuously monitor diseases and insect pest incidence in Wisconsin**

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  - ✓ 4 insecticides, 7 fungicides, and 4 ins+fung
- Summarize individual product performance
- Continuously monitor diseases and insect pest incidence in Wisconsin
- **More integration among the public and private individuals/institutions interested in promoting the Wisconsin wheat industry.**