



Agronomics and Economics of Using GMO Corn

Joe Lauer

University of Wisconsin



Specialty Corns

Marketing Corns

- Amylomaize (high amylose)
- Waxy corn
- High-protein (lysine) corn
- High-oil corn
- White & Yellow Food corn
- HAP corn (high available P)
- Silage corn
- Sweet corn and Popcorn

Management Corns

- “IMI” - Imidazolinone resistant or tolerant
- “SR” - Sethoxydim resistant
- “Liberty Link” - Glufosinate resistant
- “Bt”
- “Round-up Ready” - Glyphosate resistant
- “Gene stacking”
 - ✓ Bt-LL, Bt-IMI, Bt-RR

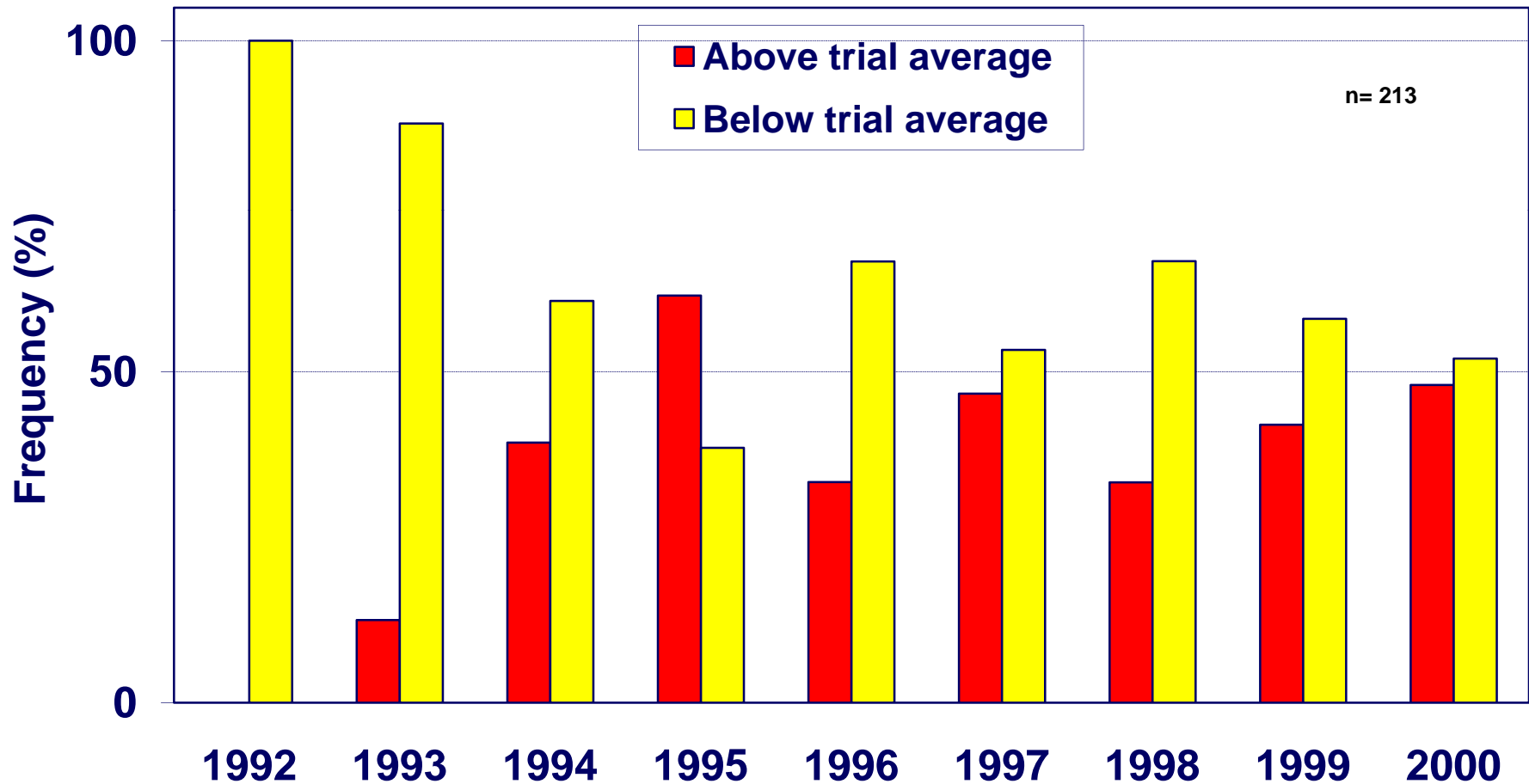


Farmer Concerns About Specialty Corns

- Yield lag and drag
- Do the specialty traits work?
- Fair price for the technology fee
 - ✓ Seed companies need to recoup research costs
 - ✓ How well are companies able to incorporate trait into elite hybrids?
 - ✓ In times of low prices, should the fees be adjusted?
- Where and when should specialty hybrids be used?
- Market and consumer acceptance

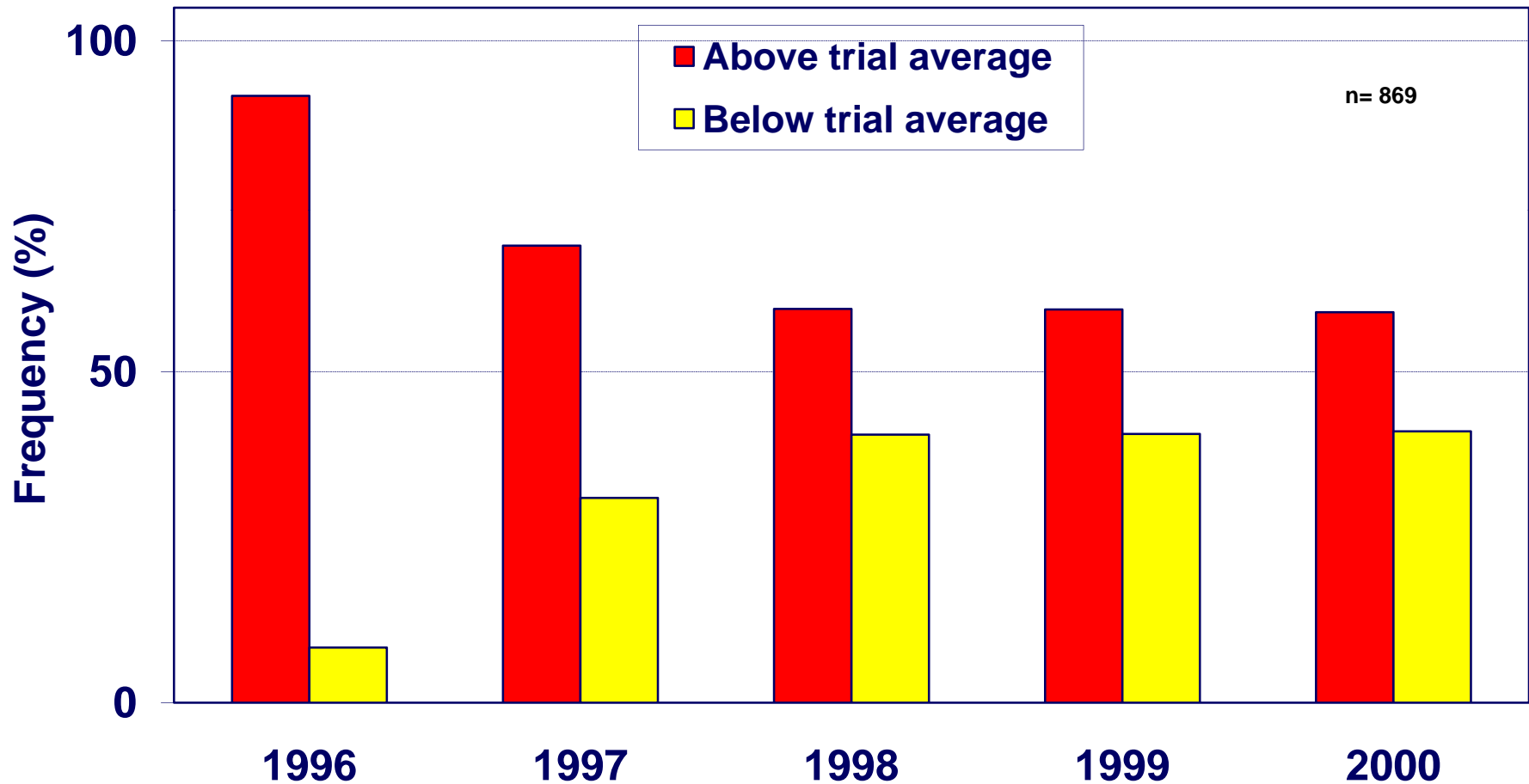


Yield of “IMI” Hybrids in Relation to the Trial Average in the WI Corn Trials



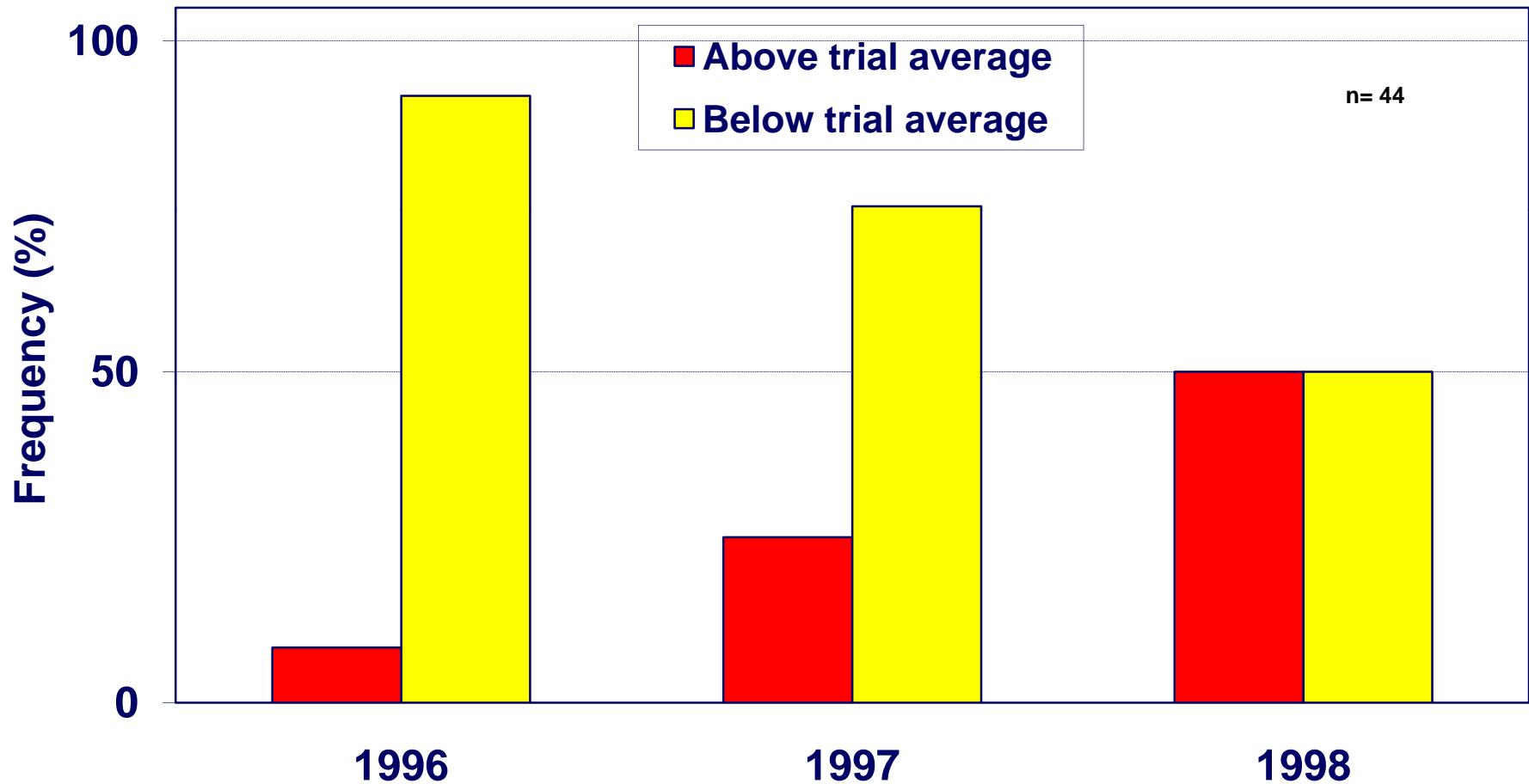


Yield of “Bt” Hybrids in Relation to the Trial Average in the WI Corn Trials



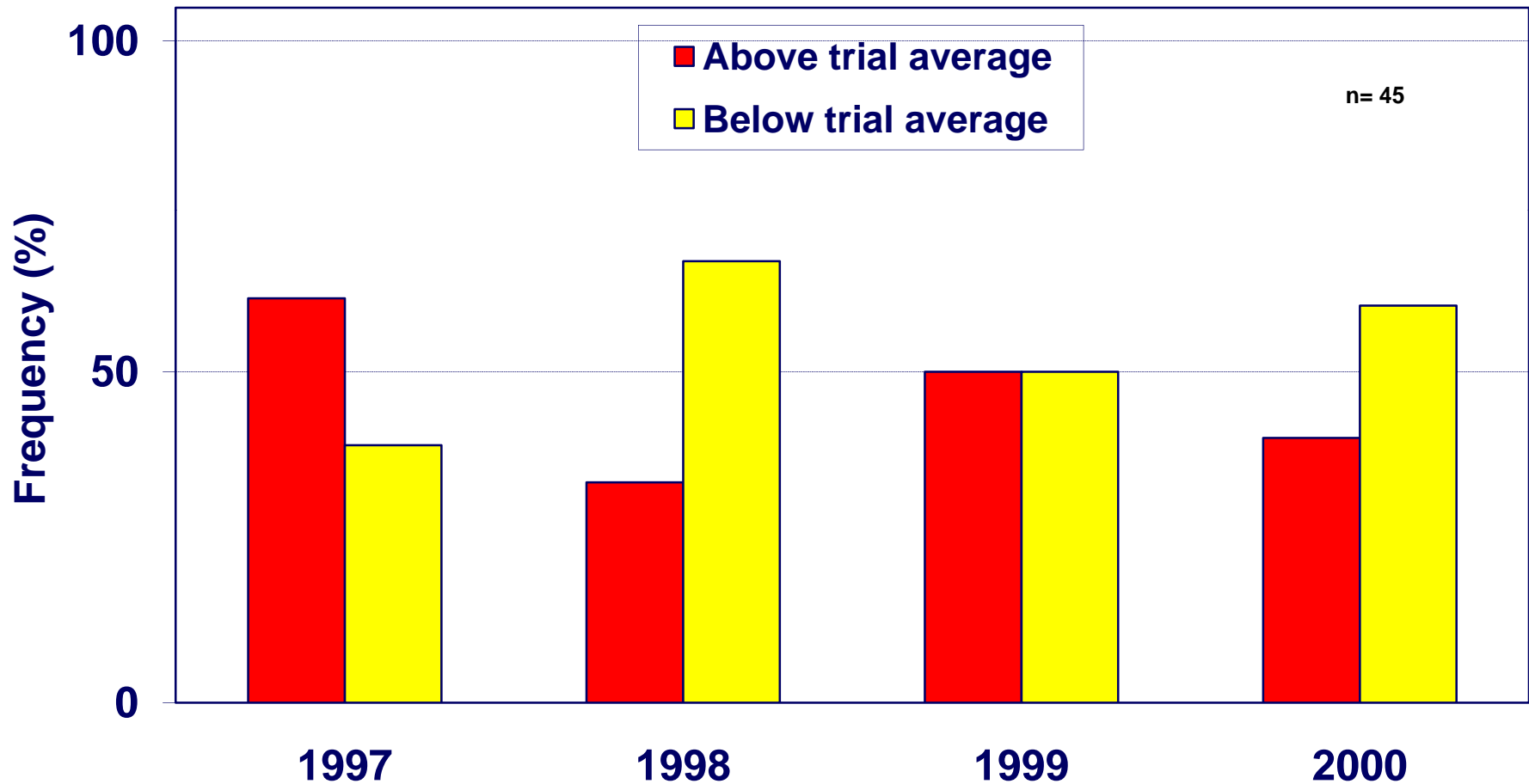


Yield of “SR” Hybrids in Relation to the Trial Average in the WI Corn Trials



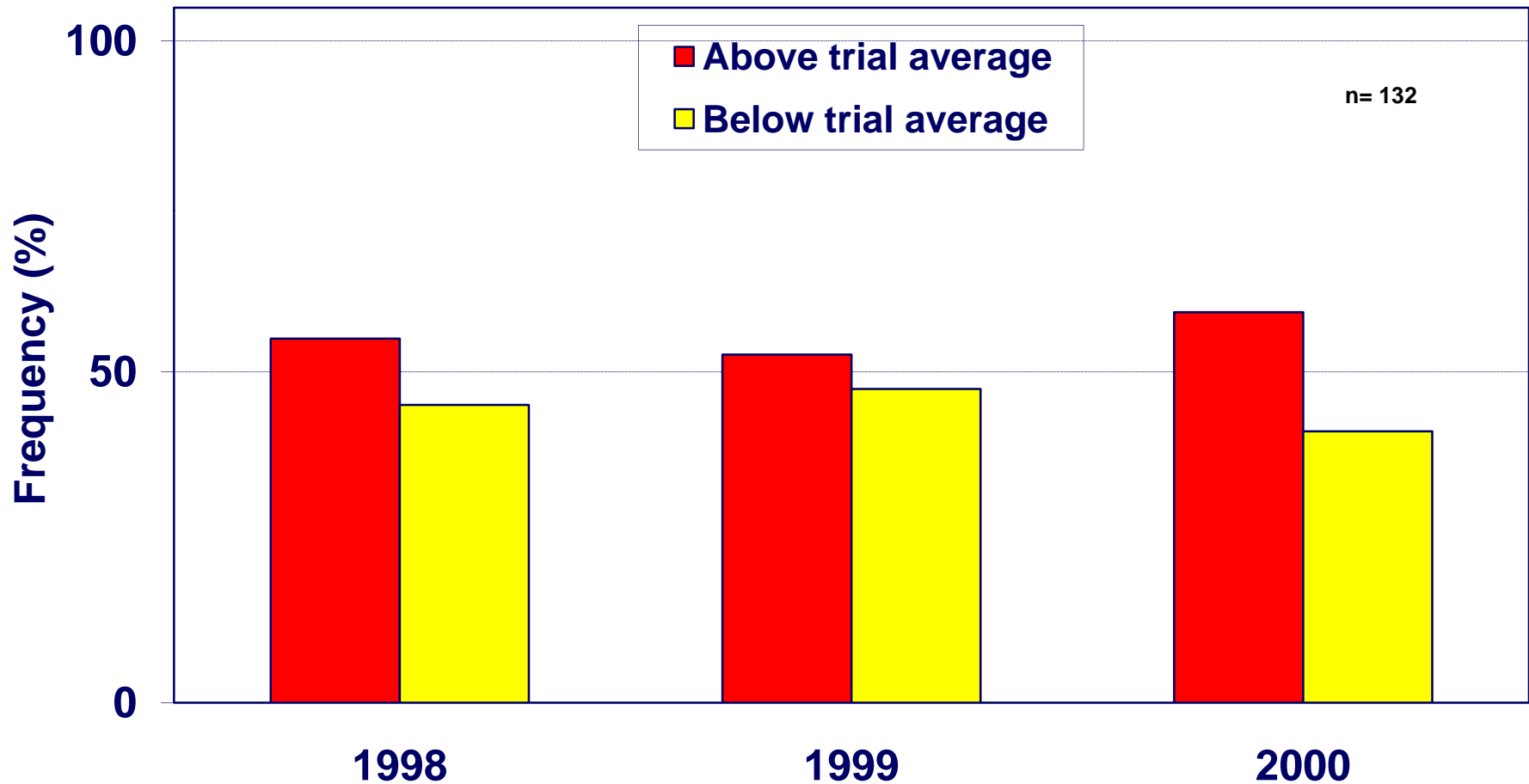


Yield of “Liberty Link” Hybrids in Relation to the Trial Average in the WI Corn Trials



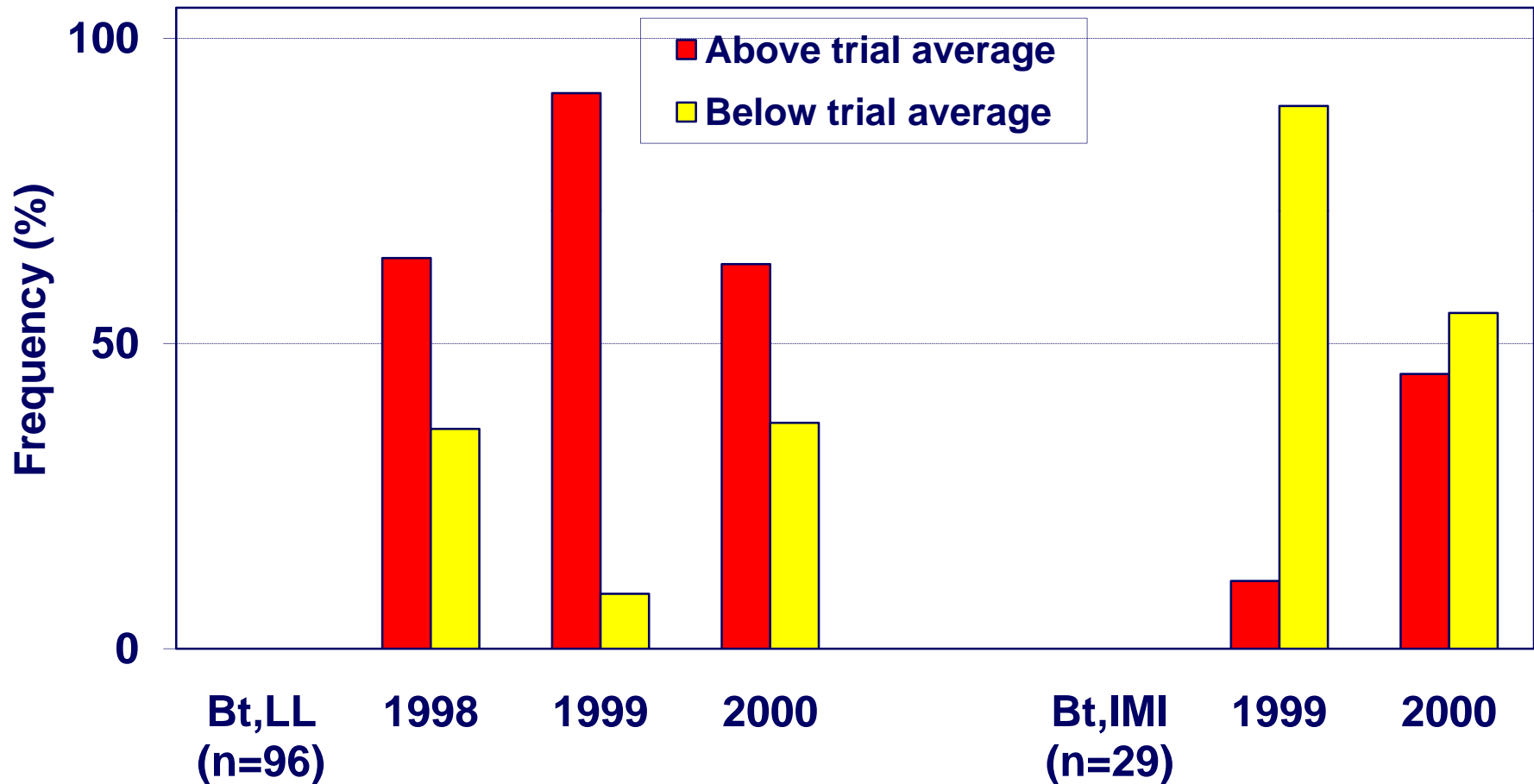


Yield of “Roundup Ready” Hybrids in Relation to the Trial Average in the WI Corn Trials



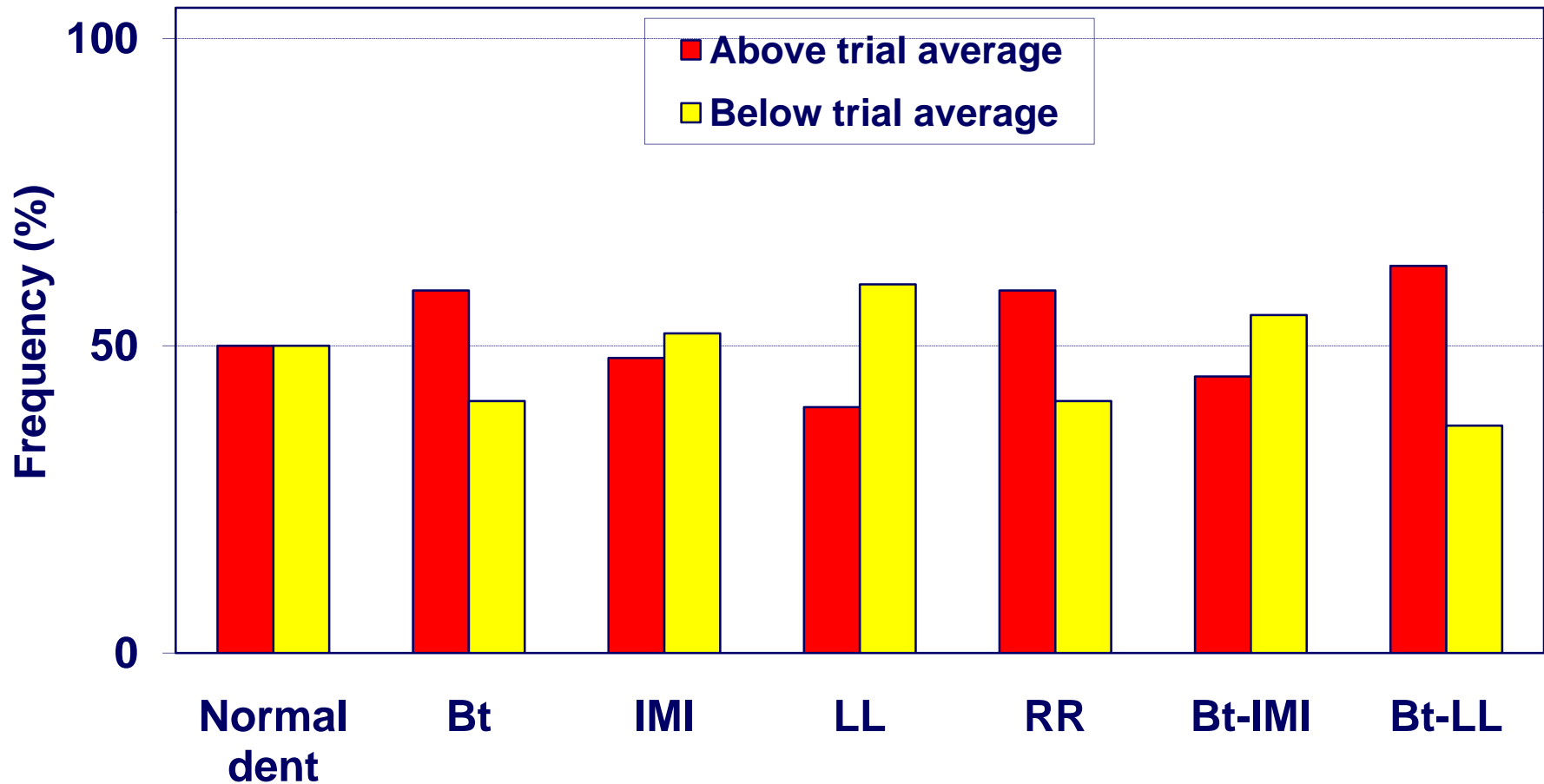


Yield of “Gene Stack” Hybrids in Relation to the Trial Average in the WI Corn Trials





Yield of Specialty Hybrids in Relation to the Trial Average in the 2000 WI Hybrid Trials





Relative Performance of Specialty Hybrids in Relation to Dent Corn

Specialty Trait	N	Grain yield Bu/A	Grain moisture %	Lodging %	Grower return \$/A
IMI	213	-3	0.1	0	-7.37
Bt	869	4	0.6	0	7.25
SR	44	-7	-1.7	0	-10.99
LL	45	2	1.1	-1	1.93
RR	132	0	-0.1	-1	1.08
Bt-LL	96	9	-0.1	0	22.13
Bt-IMI	29	-4	-0.5	0	-9.49

Grower return = (Yield x corn price) – (drying + handling + hauling)

Drying = \$0.015 per point bu, Handling = \$0.017 per bu; Hauling = \$0.04 per bu



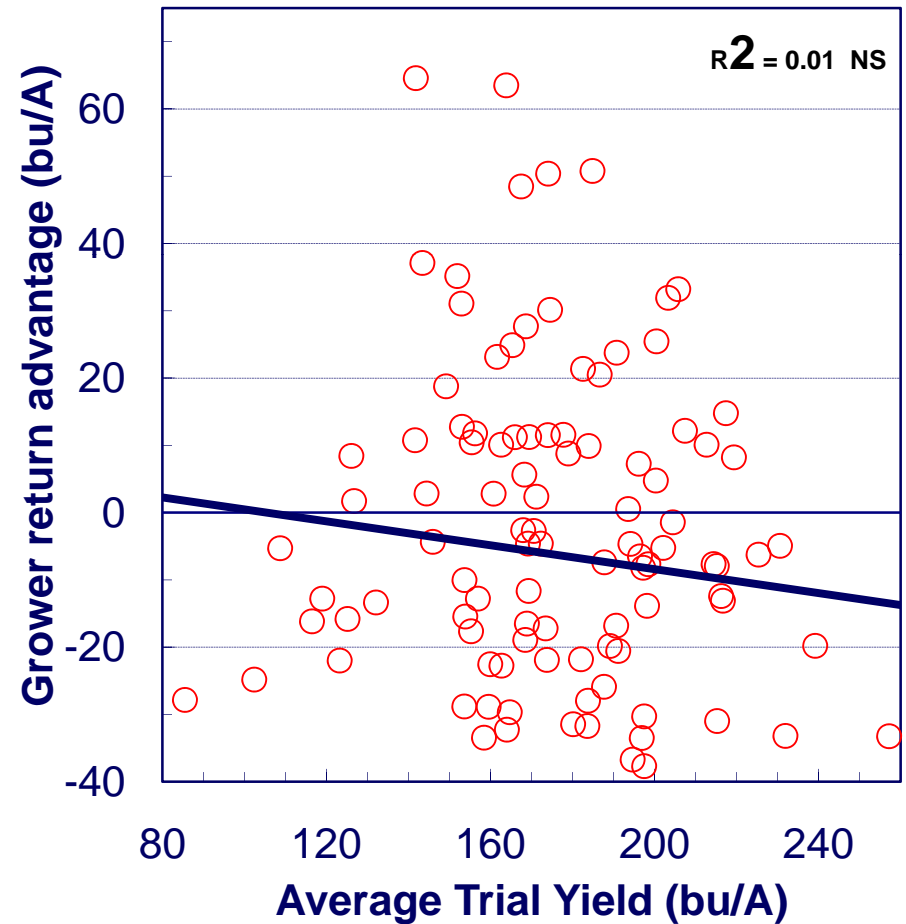
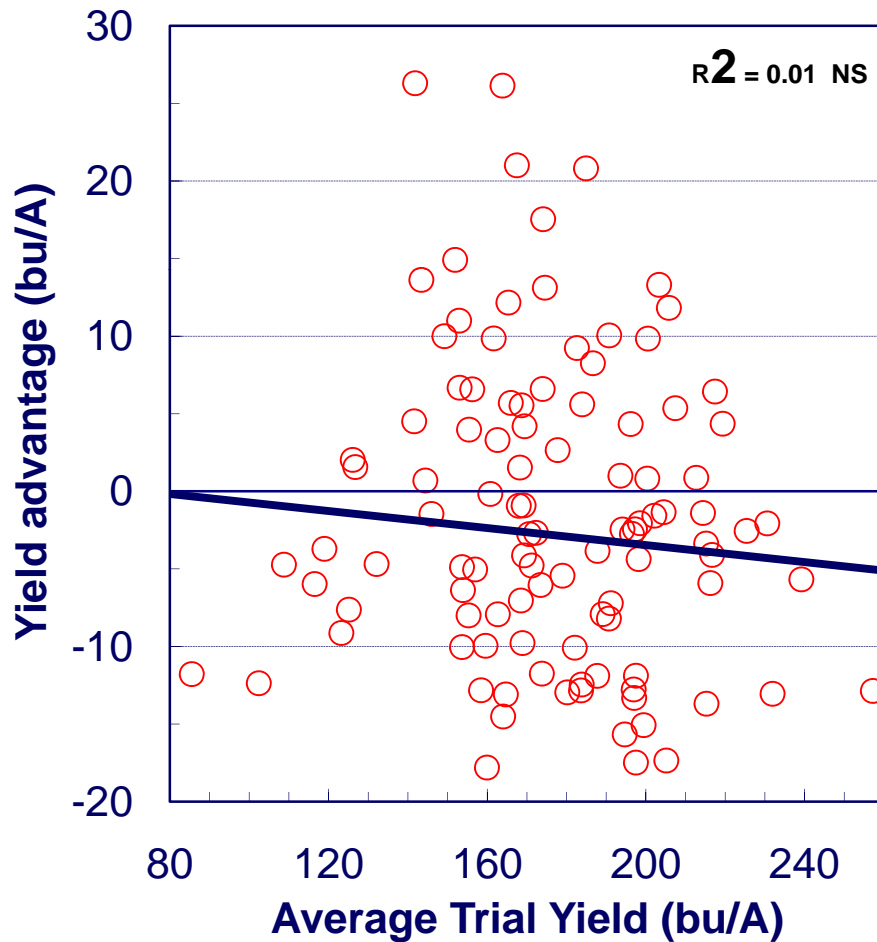
Breakeven Matrix for Corn Hybrid Seed Sold at Various Technology Fees

Yield increase (Bu/A)	Technology fee= \$10 / bag			Technology fee= \$20 / bag			Technology fee= \$30 / bag		
	Corn price (\$/Bu)			Corn price (\$/Bu)			Corn price (\$/Bu)		
	2.00	2.50	3.00	2.00	2.50	3.00	2.00	2.50	3.00
0	4.13	4.13	4.13	8.25	8.25	8.25	12.38	12.38	12.38
2	0.13	0.87	1.87	4.25	3.25	2.25	8.38	7.38	6.38
4	3.87	5.87	7.87	0.25	1.75	3.75	4.38	2.38	0.38
6	7.87	10.87	13.87	3.75	6.75	9.75	0.38	2.63	5.62
8	11.87	15.87	19.87	7.75	11.75	15.75	3.62	7.62	11.62
10	15.87	20.87	25.87	11.75	16.75	21.75	7.62	12.62	17.62

Assume: 80,000 seeds/bag planted at 33,000 seeds/A for final population of 30,000 plants/A

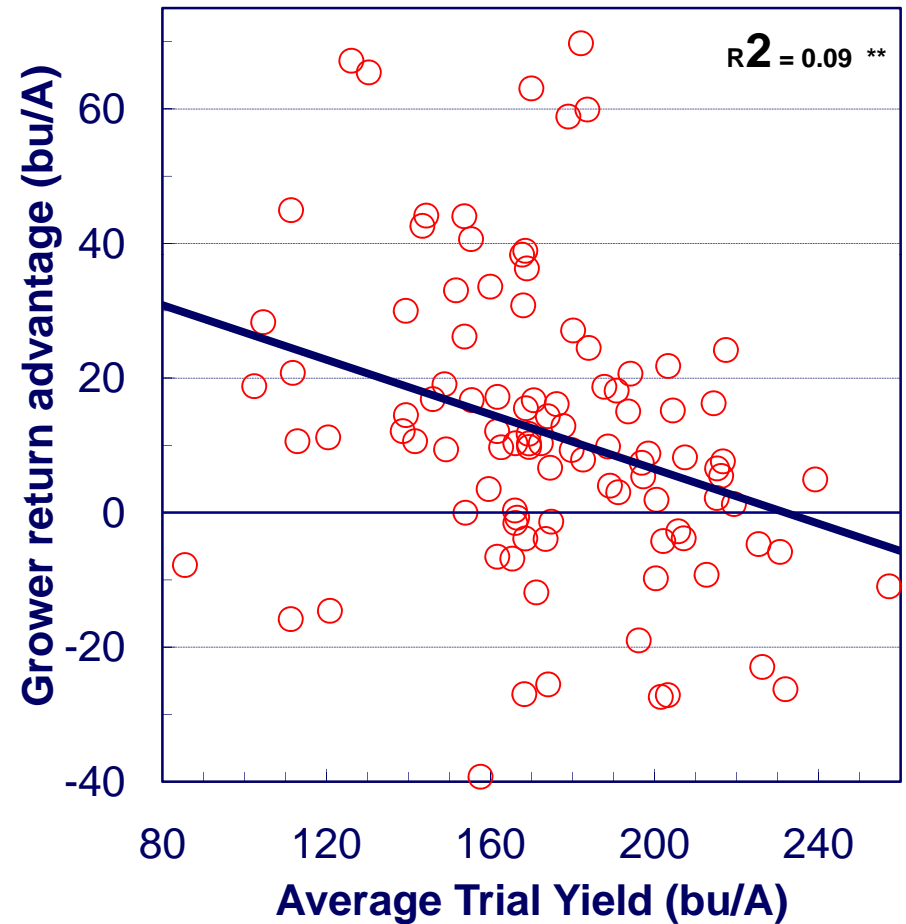
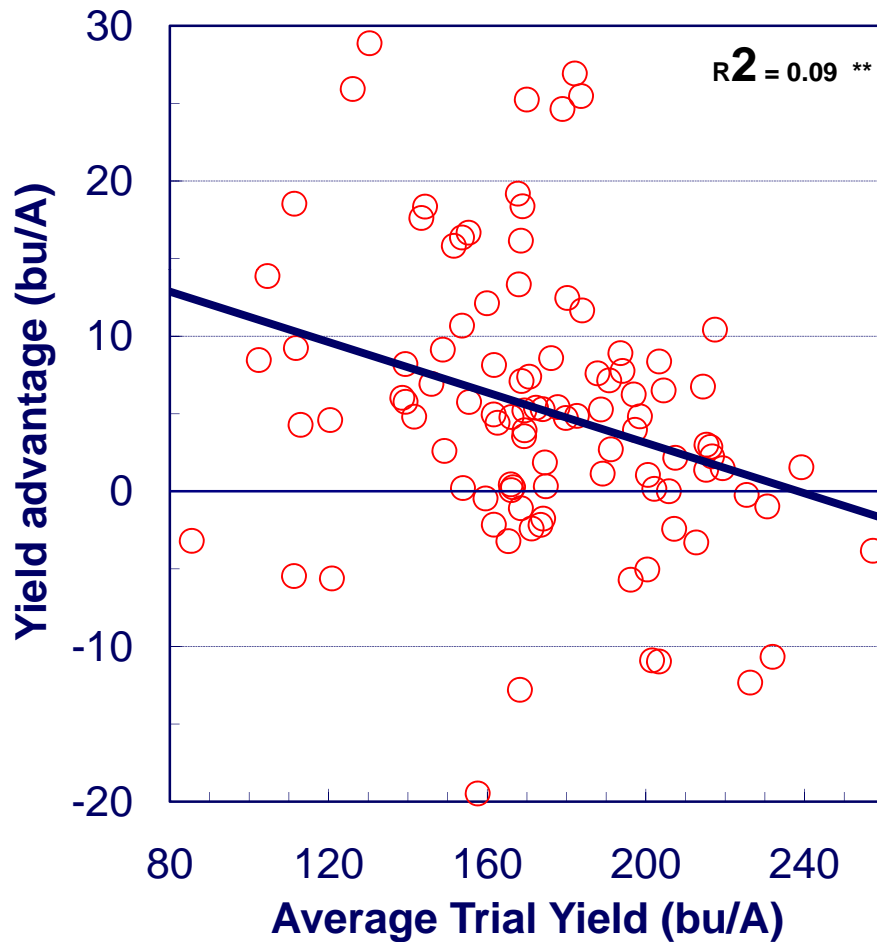


Yield and Grower Return Advantage of “IMI” Hybrids in Relation to the Average Trial Yield (n= 111 trials)



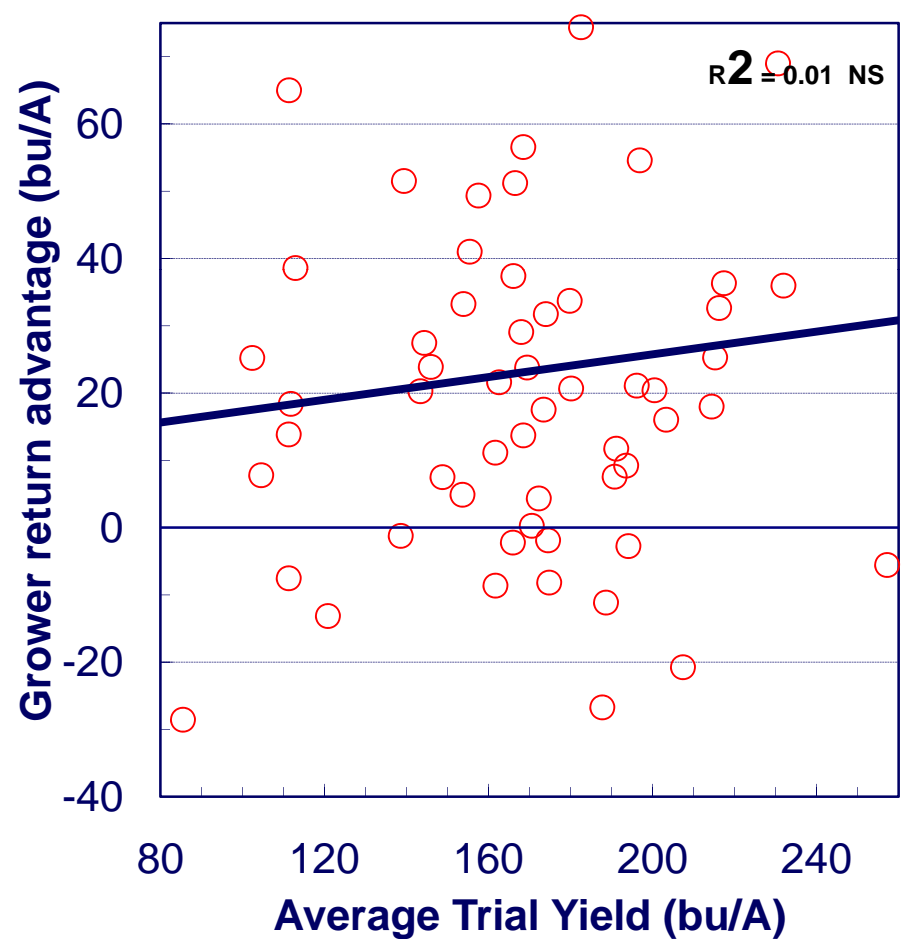
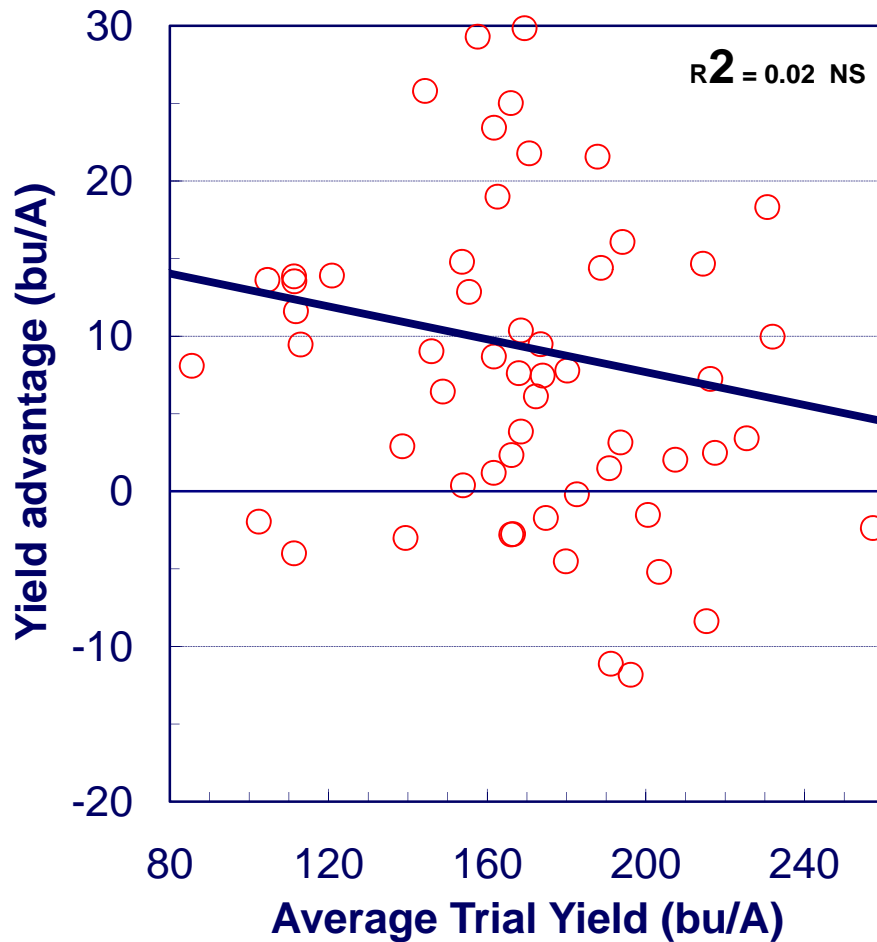


Yield and Grower Return Advantage of “Bt” Hybrids in Relation to the Average Trial Yield (n= 101 trials)





Yield and Grower Return Advantage of “Bt-LL” Stacked Hybrids in Relation to the Average Trial Yield (n= 59 trials)





Summary

- Bt and Bt-LL corn hybrids yield and return more than average dent corn.
 - ✓ At this time IMI, SR, LL, RR, Bt-IMI traits do not add to yield or grower return.
- IMI, SR, LL, RR, and Bt-IMI corn hybrids should only be recommended for problem fields or difficult management situations.
- ***“Variation for grain yield exists among commercial GMO hybrids sold in Wisconsin.”***
 - ✓ Care must be taken in selecting individual hybrids.