

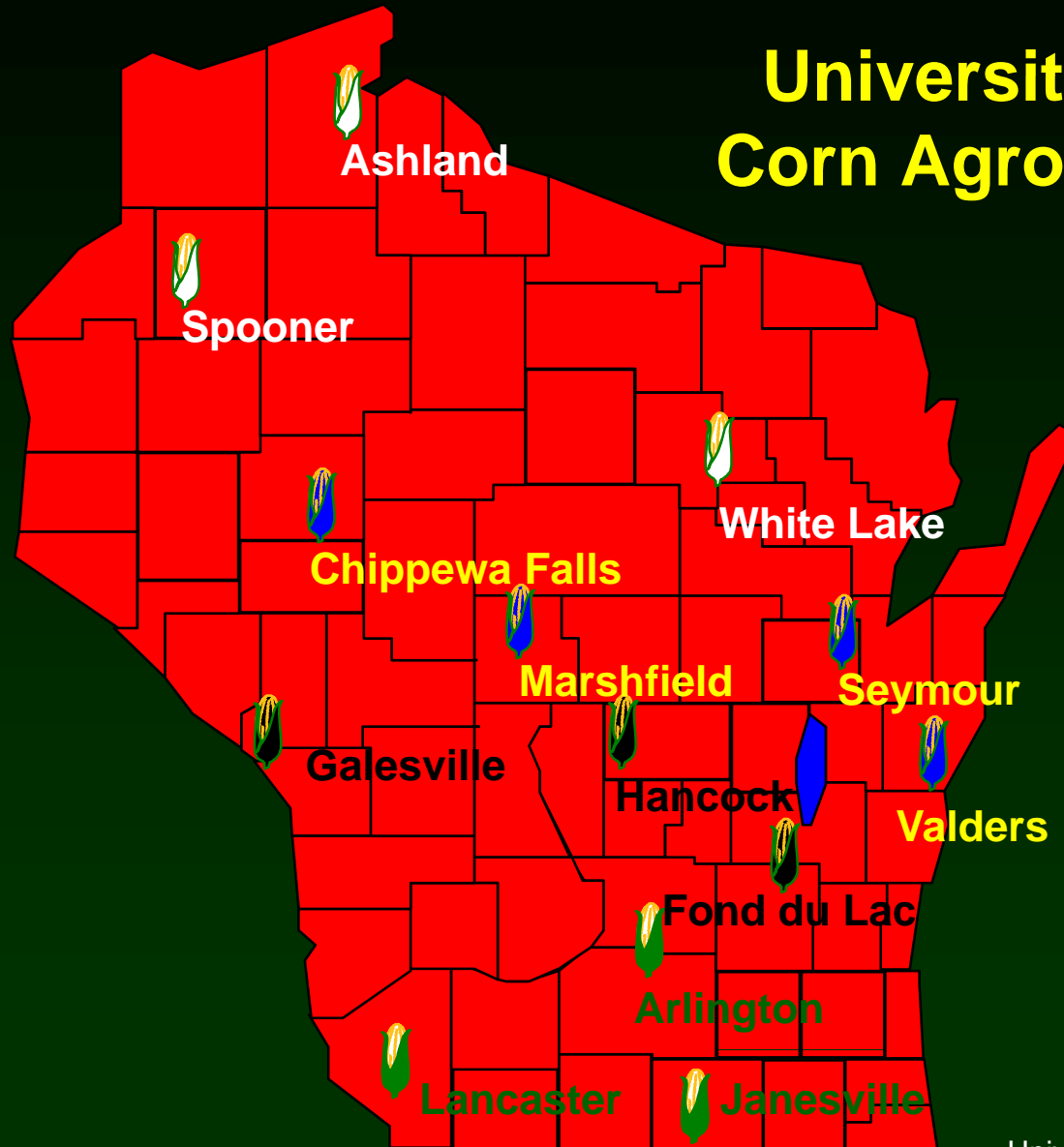
1999 Seed Dealer Update Meetings

Grain Hybrid Trials
Specialty Hybrid Performance
Silage Hybrid Trials
Silage Management
New Wisconsin CRM Method

Joe Lauer, *Corn Agronomist*



University of Wisconsin Corn Agronomy Program



Wisconsin Corn Performance Trials - Grain Summary

| Location | 1988-1997 | | 1998 | | Percent Change |
|----------------|-----------|-------|------|-------|----------------|
| | N | Yield | N | Yield | |
| Arlington | 1724 | 175 | 169 | 248 | +42 |
| Janesville | 1724 | 171 | 169 | 208 | +22 |
| Lancaster | 1724 | 155 | 169 | 224 | +46 |
| Fond du Lac | 1532 | 151 | 145 | 195 | +29 |
| Galesville | 1532 | 153 | 145 | 199 | +30 |
| Hancock | 1532 | 176 | 144 | 221 | +26 |
| Chippewa Falls | 1117 | 154 | 159 | 94 | -39 |
| Marshfield | 957 | 129 | 159 | 159 | +23 |
| Seymour | 889 | 144 | 159 | 157 | +9 |
| Valders | 1241 | 138 | 159 | 192 | +39 |
| Ashland | 110 | 127 | 19 | 139 | +9 |
| Spooner | 1807 | 118 | 210 | 145 | +23 |
| White Lake | 570 | 83 | 70 | 113 | +36 |

Note: Seymour average includes New London 1988-1992.

Lauer

University of Wisconsin - Madison



Specialty Corns

Specialty Marketing Corns

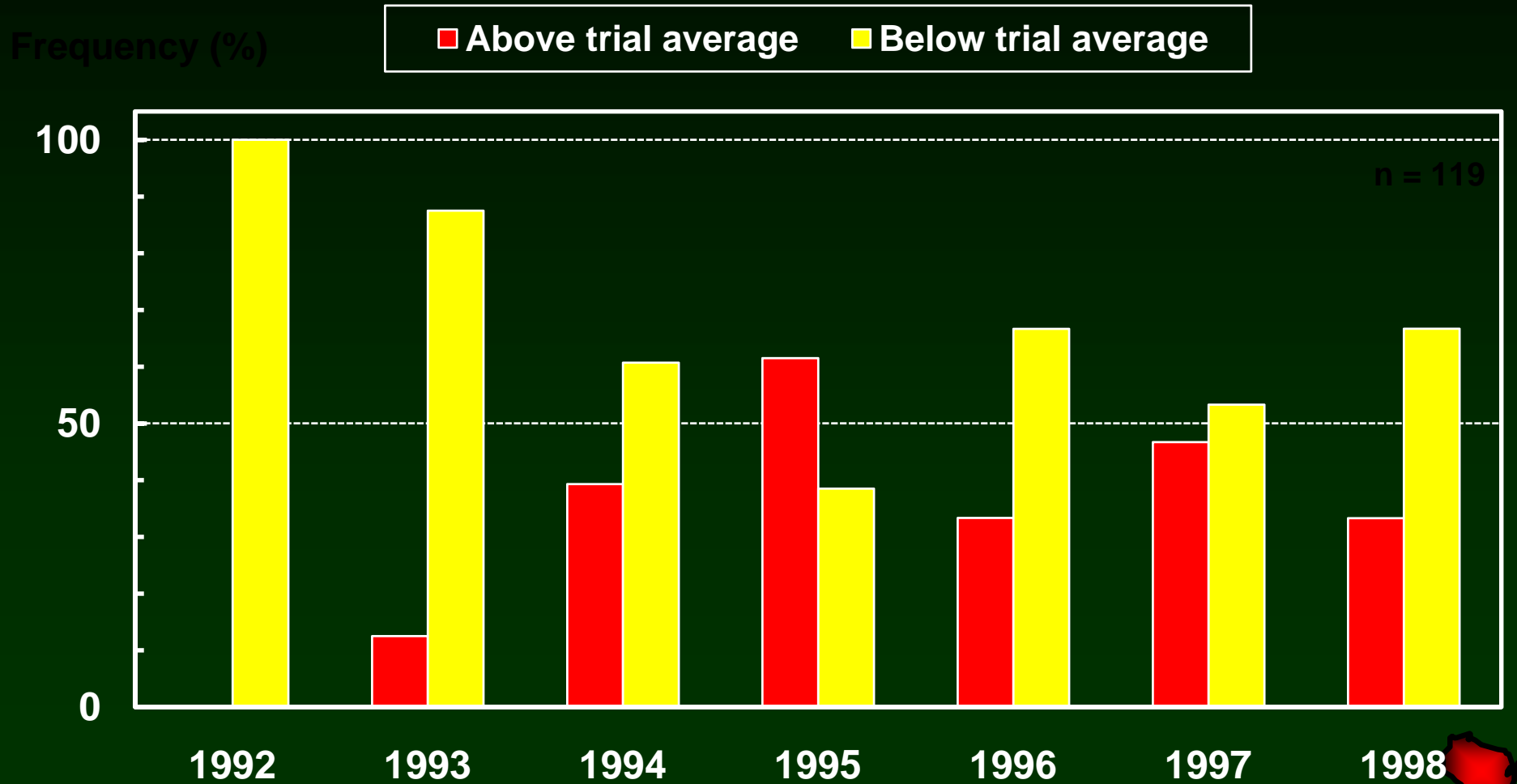
- Amylomaize (high amylose)
- Waxy corn
- High-protein (lysine) corn
- High-oil corn
- White & Yellow Food corn
- HAP corn (high available P)
- Silage corn
- Sweet corn and Popcorn

Specialty Management Corns

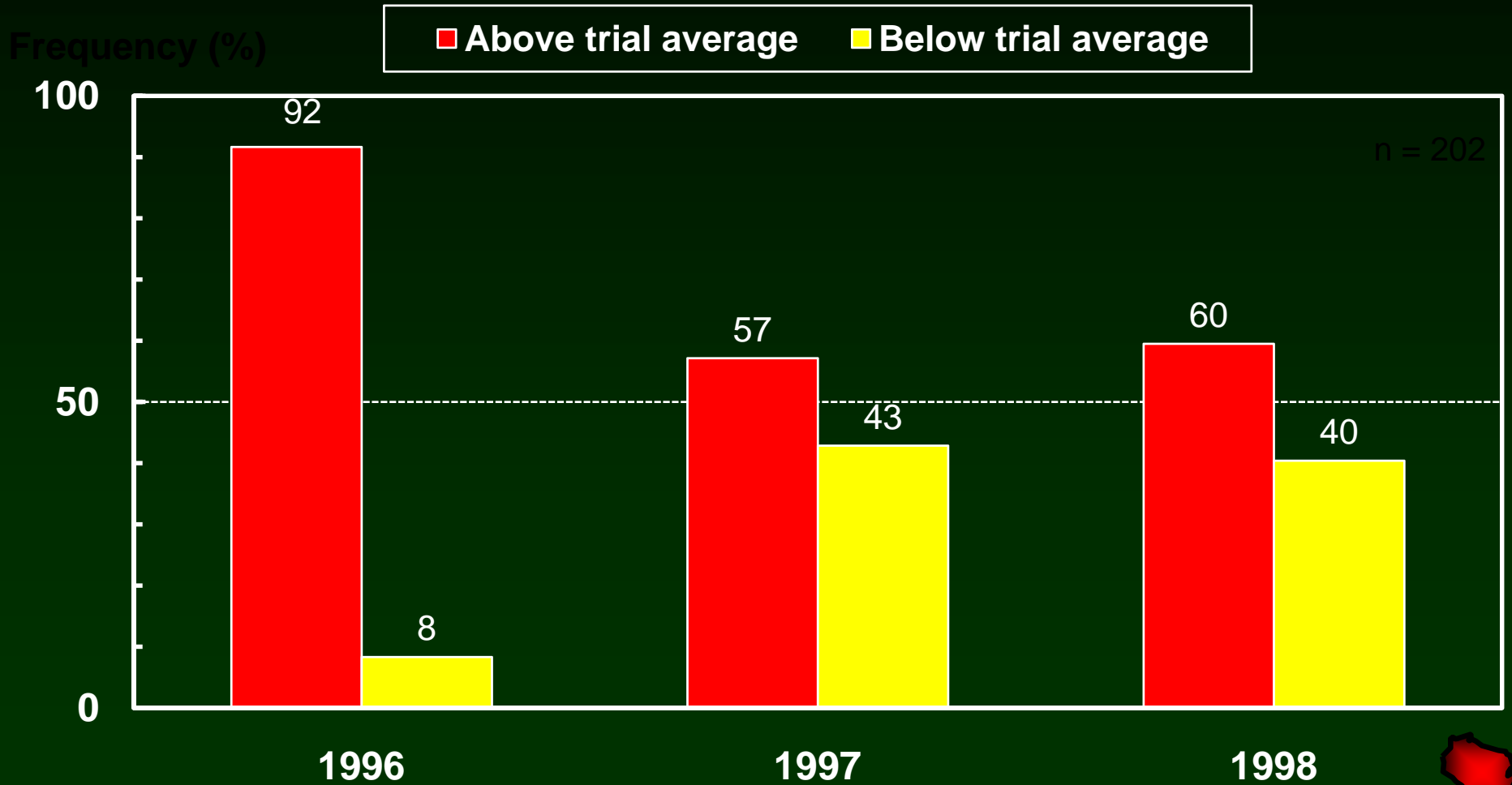
- “IMI” - Imidazolinone resistant or tolerant
- “SR” - Sethoxydim resistant
- “Liberty Link” - Glufosinate resistant
- “Bt”
- “Round-up Ready” - Glyphosate resistant
- “Gene stacking”
 - *Bt,LL*



Yield of "IMI" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



Yield of "BT" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



Bt corn registrations as of December, 1998

| Company | Event | Protein | Brand | 1 st ECB | 2 nd ECB | Refugia |
|------------|--------|----------|-------------------------|---------------------|---------------------|-----------------------|
| Novartis | 176 | CryIA(b) | Knockout / Maximizer | Yes | No | Suggested |
| Mycogen | 176 | CryIA(b) | NatureGard | Yes | No | Suggested |
| Monsanto | Bt11 | CryIA(b) | YieldGard | Yes | Yes | Suggested |
| Monsanto | MON810 | CryIA(b) | YieldGard * | Yes | Yes | Agreement 5% acres |
| DeKalb | DBT418 | CryIA(c) | Bt-Xtra | Yes | Limited | 5% acres |
| PGS/AgrEvo | CBH351 | Cry9(c) | StarLink | Yes | Yes | 5% acres |

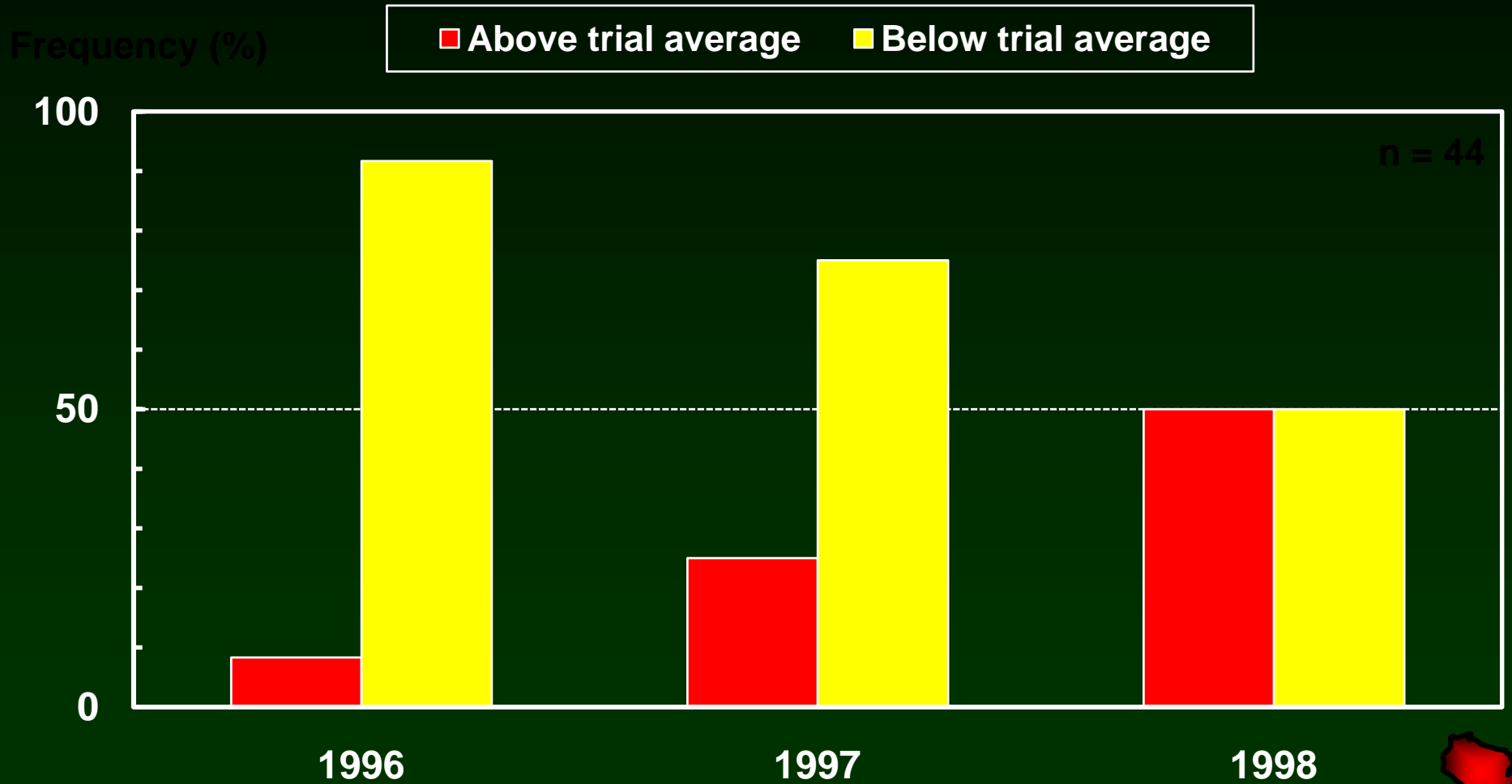
* Supplemental distributors: Cargill, DeKalb, Golden Harvest, ICI/Garst, Pioneer

Lauer

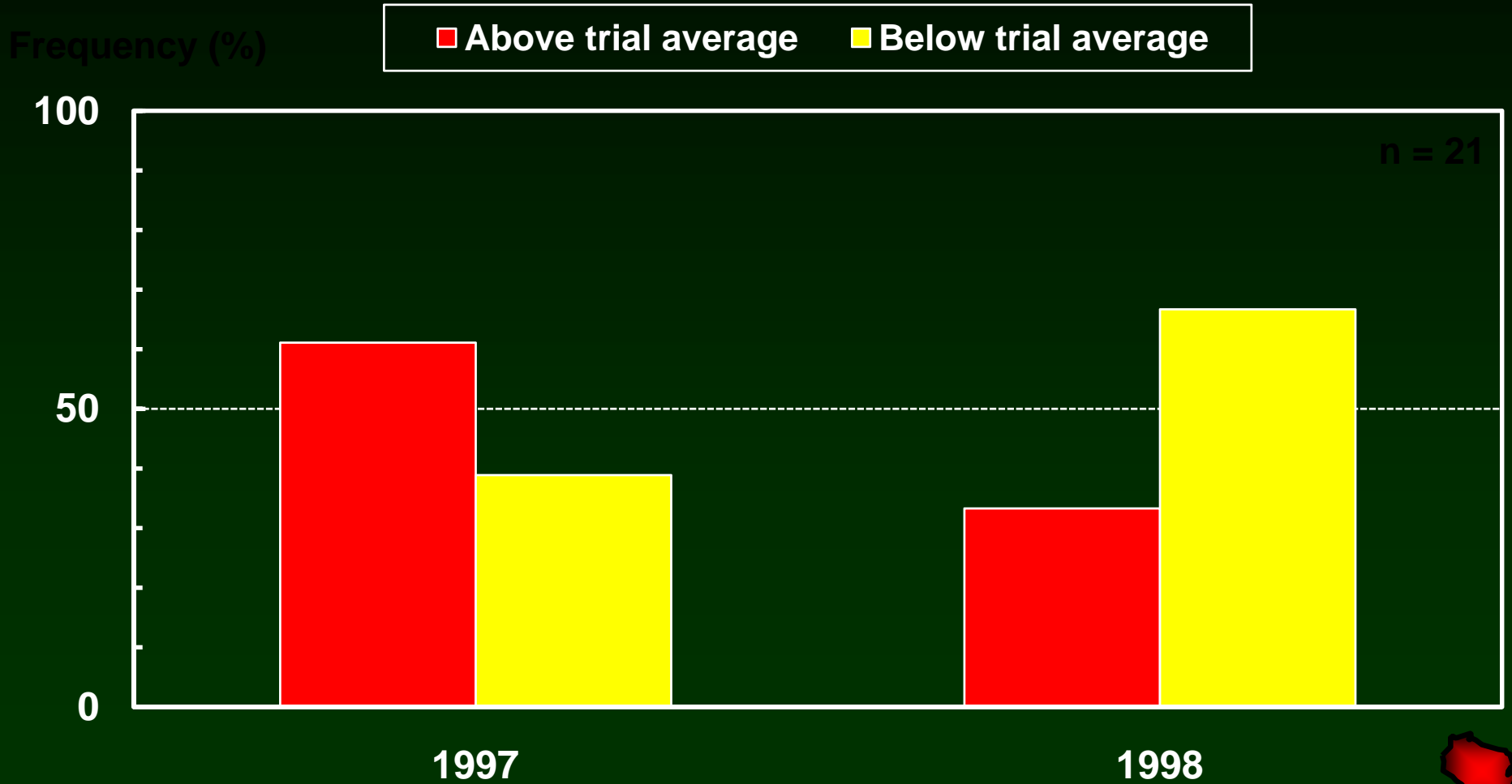
University of Wisconsin - Madison



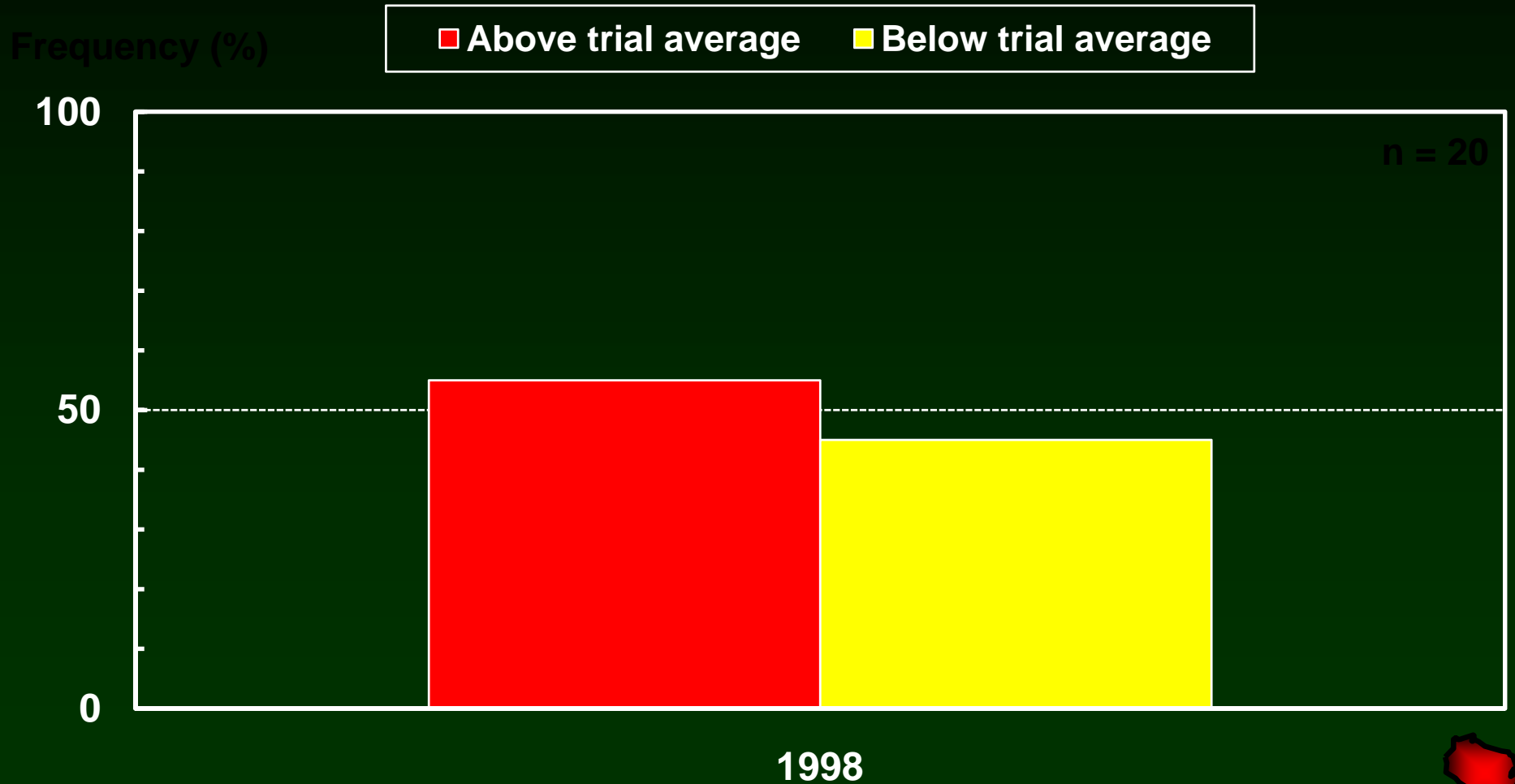
Yield of "SR" Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



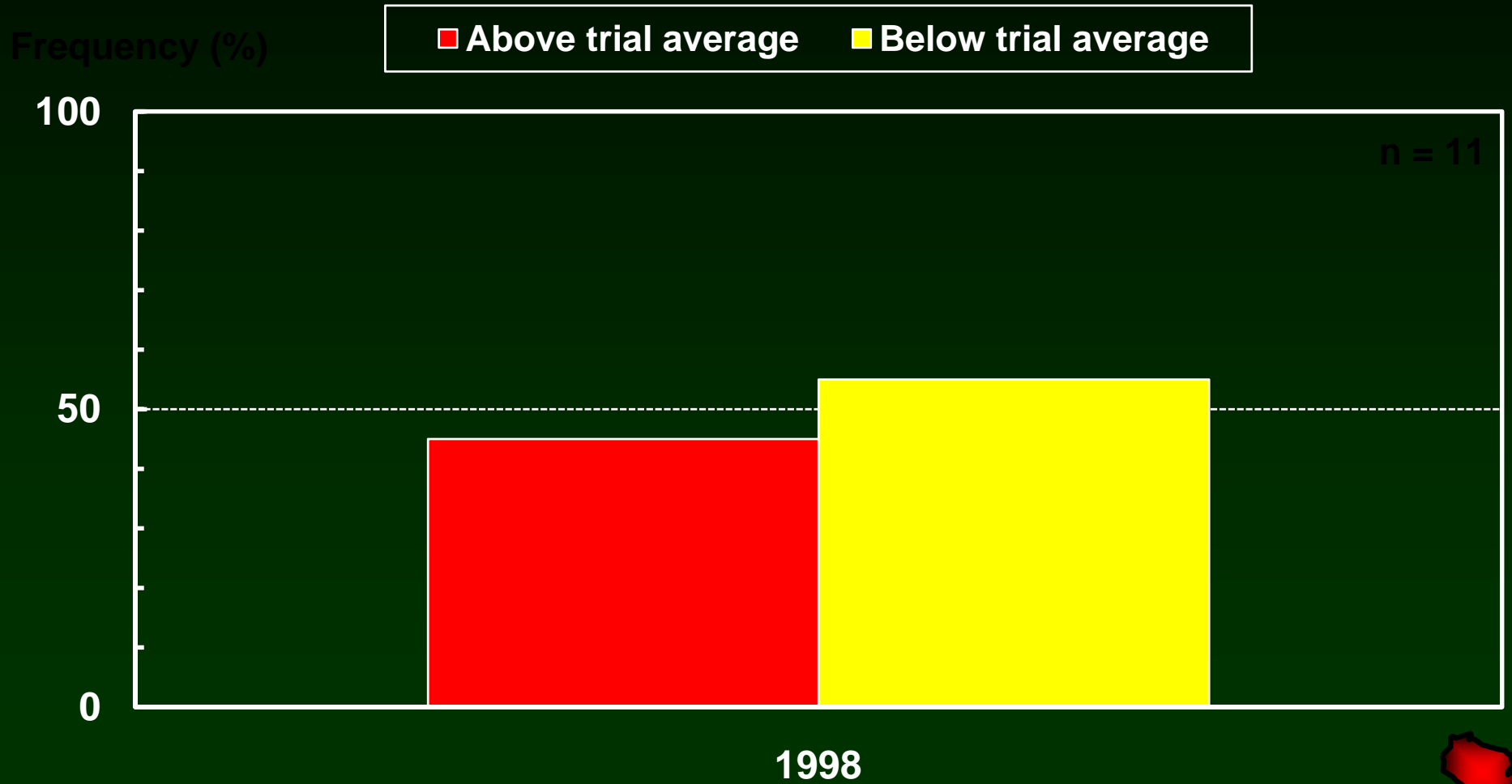
Yield of “Liberty Link” Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



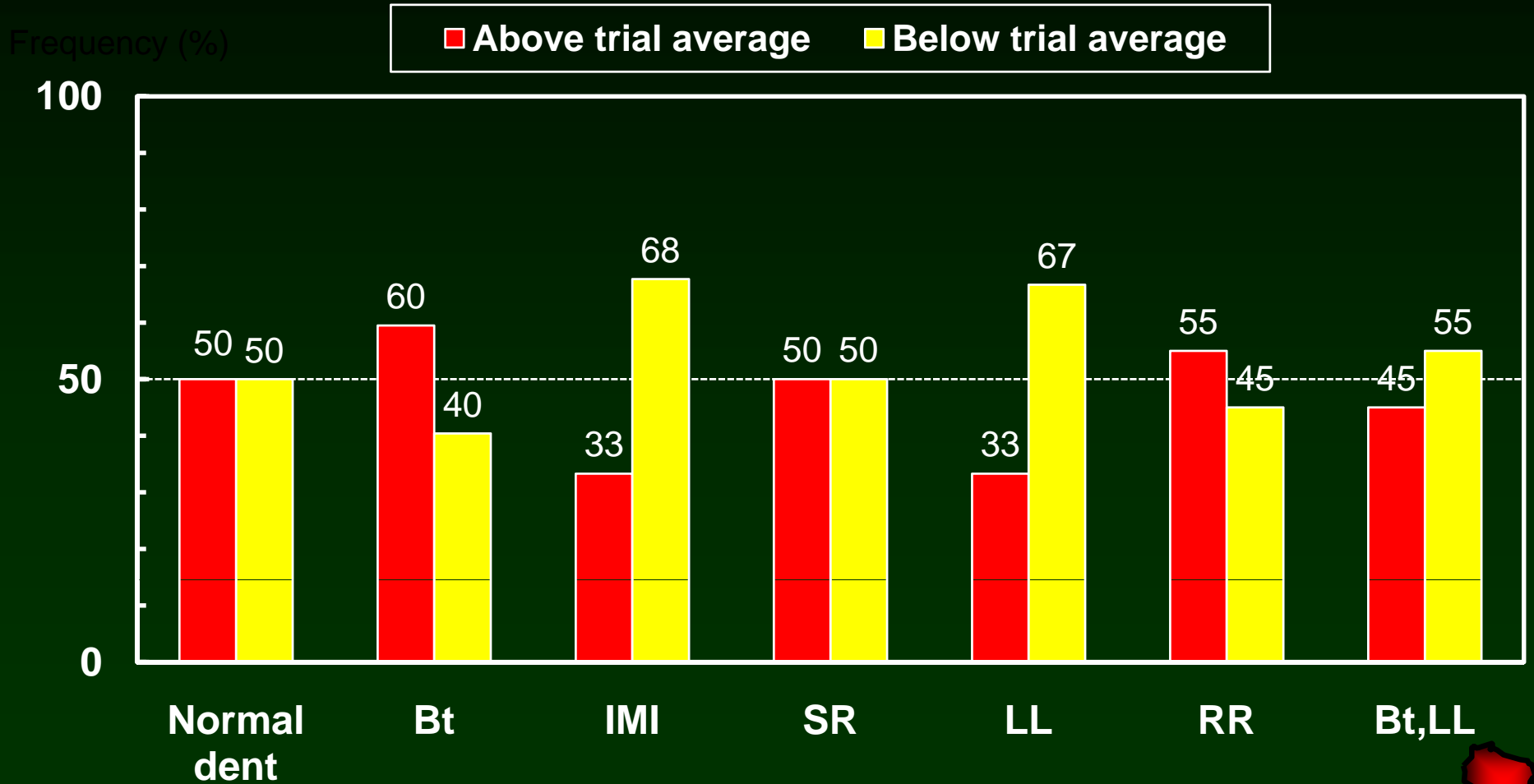
Yield of “Round-up Ready” Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



Yield of “Gene Stacked” - (Bt,LL) Hybrids in Relation to the Average of All Hybrids in a Wisconsin Trial



Yield of Specialty Hybrids in Relation to the Average of All Hybrids in the 1998 Wisconsin Hybrid Trials



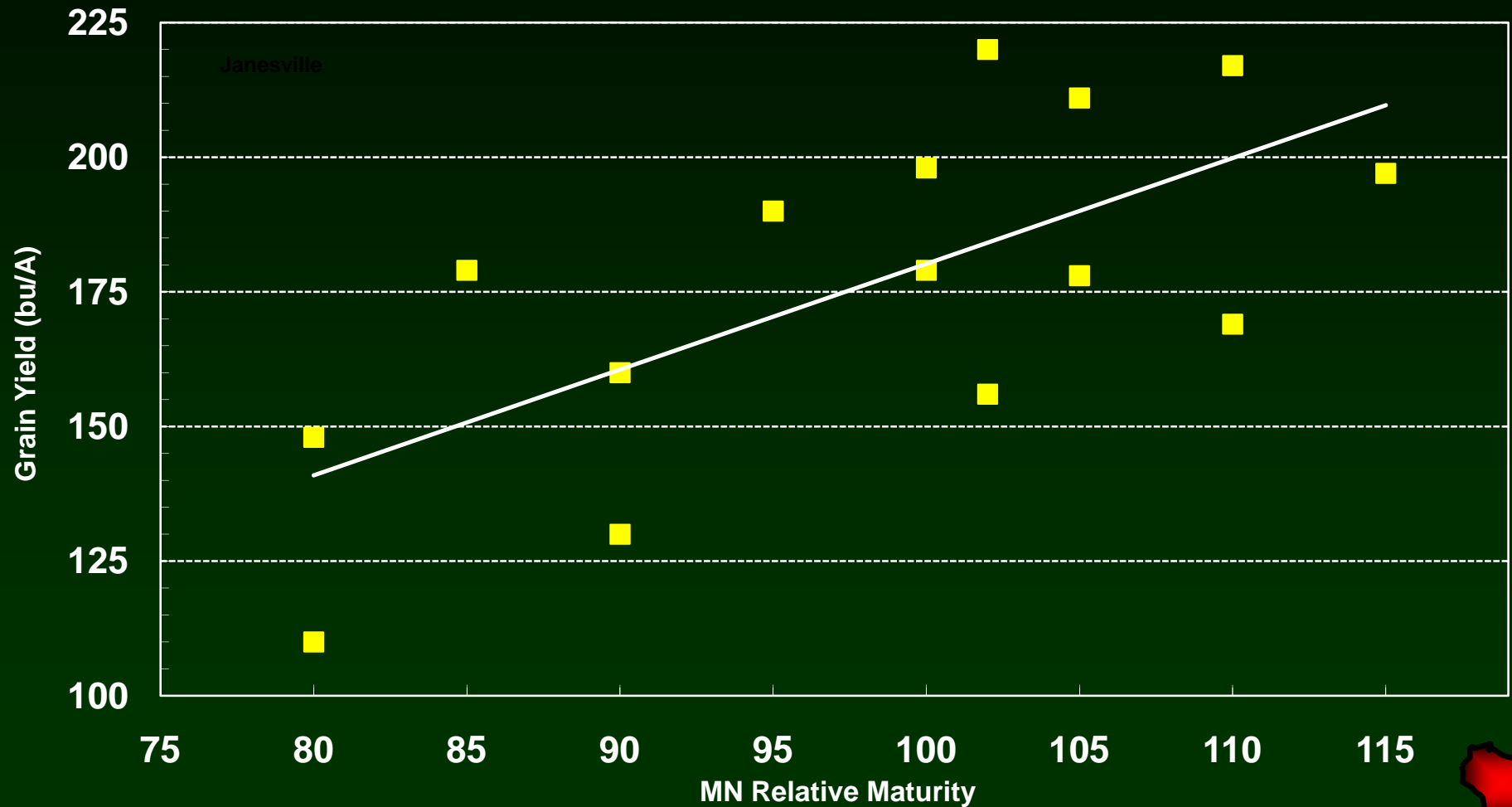
SELECT 98

A program for
choosing crop varieties

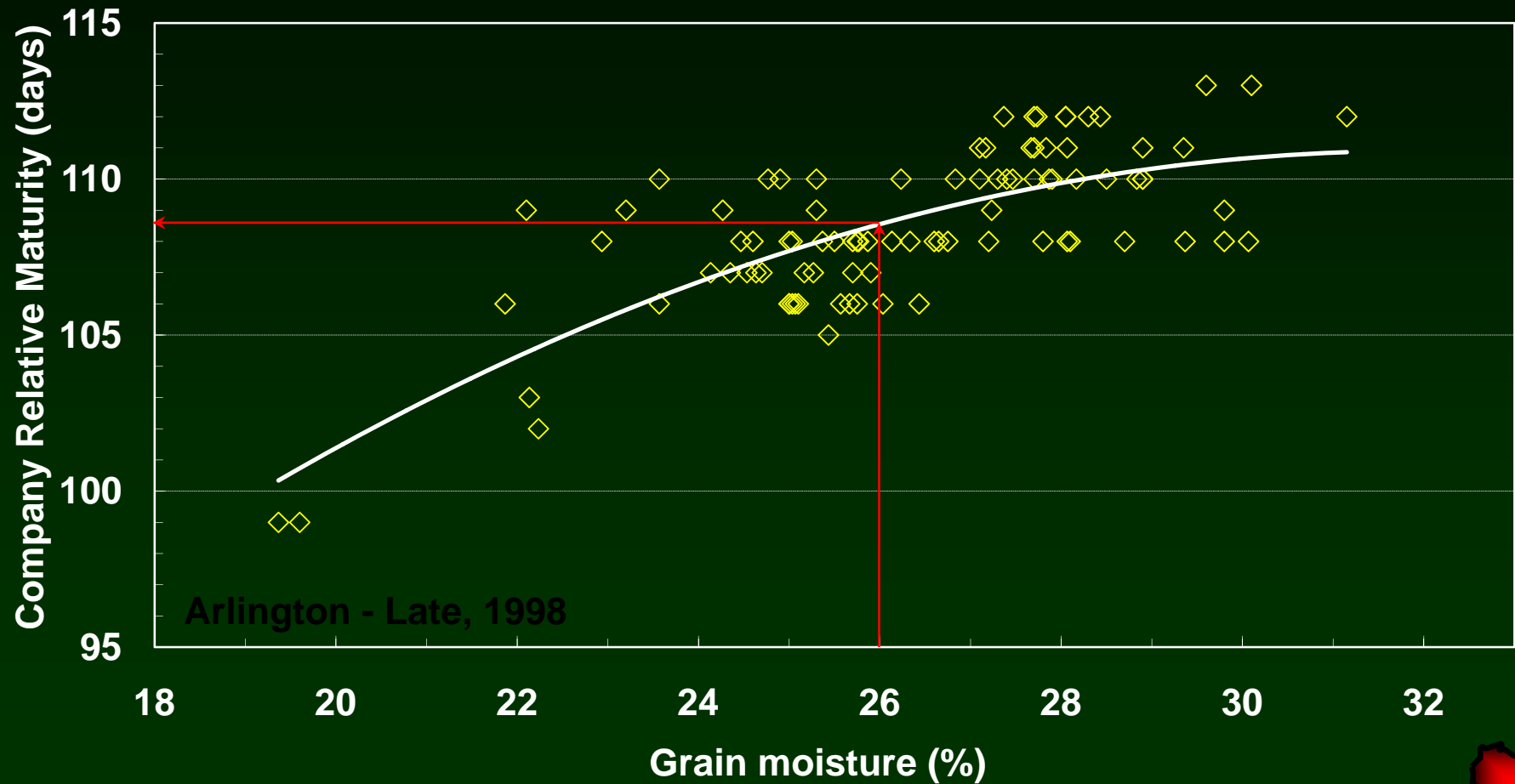
<http://corn.agronomy.wisc.edu>
updated on 31 December 1998



Relationship Between Corn Grain Yield and Minnesota Relative Maturity Rating (1995-1997)



Method for determining Wisconsin comparative relative maturity - WI CRM (n=92)



Examples of hybrid CRM ratings (based on MN RM) using WI Corn Hybrid Performance Trial data

| Year | Pioneer 3751 | Nk Brand N4242 | Jung 2496 | Golden Harvest H2441 | Dekalb DK493 |
|------|-----------------|-------------------|--------------|----------------------------|-----------------|
| 1989 | 97 | | 98 | | |
| 1990 | 97 | | 101 | | |
| 1991 | 99 | 99 | 100 | | |
| 1992 | 100 | 101 | 101 | 104 | |
| 1993 | 99 | 99 | 100 | 105 | 99 |
| 1994 | | 99 | 99 | 105 | 99 |
| 1995 | | 101 | 100 | 107 | 100 |
| 1996 | | 99 | | 105 | 101 |
| 1997 | | 99 | | 105 | 101 |
| 1998 | 97 | | | | 98 |



Using Wisconsin Corn Hybrid Performance Trial Results

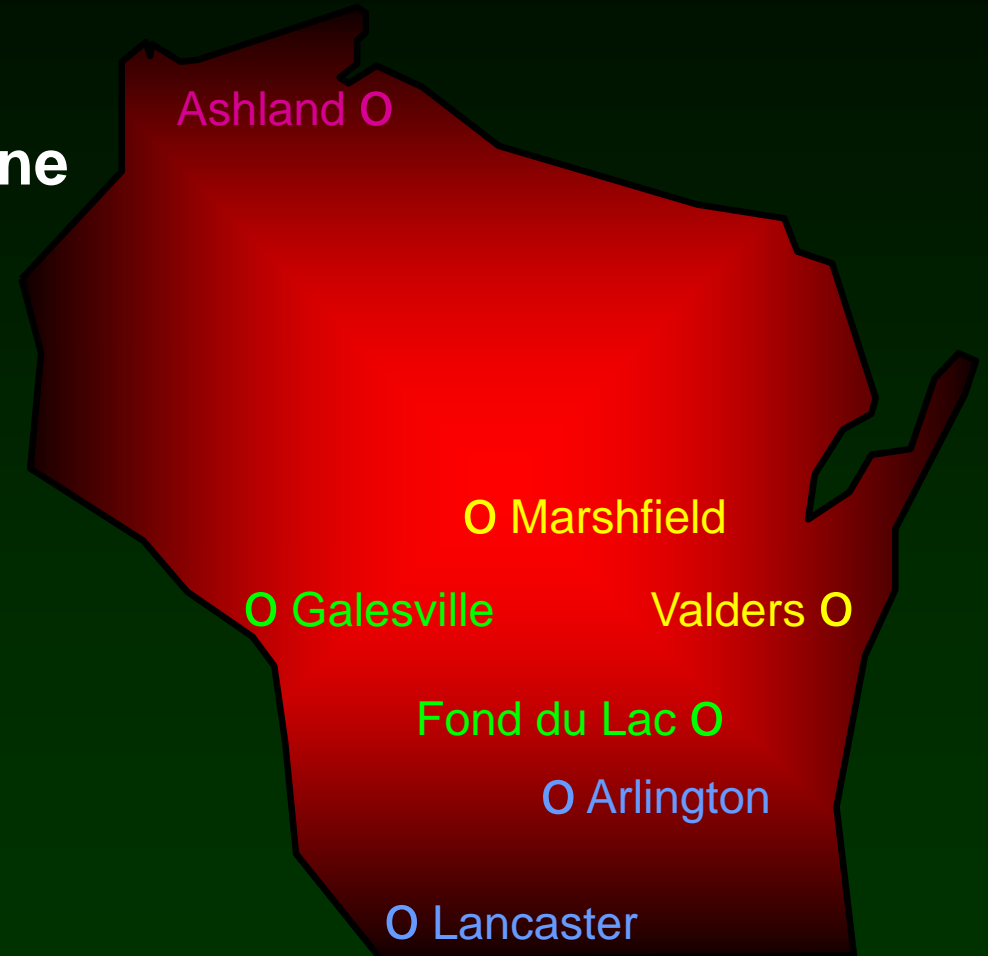
- Use multi-environment average data
 - *Begin with trials in zone(s) nearest you*
 - *Compare hybrids with similar maturities*
 - *Use many years and locations*
- Evaluate consistency of performance
 - *Check performance in other zones and locations*
 - *Check other reliable unbiased trials*
 - *Be wary of inconsistent performance.*
- SELECT at <http://corn.agronomy.wisc.edu>

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



Wisconsin Corn Hybrid Silage Performance Trials

- Each hybrid is tested at 2 locations in a production zone
- Seed companies are encouraged to enter silage hybrids in at least one grain trial



Wisconsin Corn Performance Trials- Silage Summary

| Location | 1988-1997 | | 1998 | | Percent change |
|-------------|-----------|-------|------|-------|----------------|
| | N | Yield | N | Yield | |
| Arlington | 210 | 8.5 | 46 | 11.7 | 37 |
| Lancaster | 133 | 6.9 | 46 | 8.6 | 26 |
| Fond du Lac | 87 | 7.3 | 53 | 9.8 | 33 |
| Galesville | 87 | 7.2 | 53 | 9.3 | 29 |
| Marshfield | 233 | 6.2 | 53 | 7.5 | 22 |
| Valders | 160 | 6.1 | 53 | 8.5 | 39 |
| Ashland | 58 | 6.9 | 19 | 6.3 | -8 |



Desirable Forage Characteristics

- What makes a good forage?
 - *High yield*
 - *High energy (high digestibility)*
 - *High intake potential (low fiber)*
 - *High protein*
 - *Proper moisture at harvest for storage*
- Ultimate test is animal performance



Wisconsin Corn Hybrid Silage Performance Trial Measurements

- **Agronomic**
 - *Yield: Tons Dry matter / A*
 - *Moisture: %*
 - *Kernel milk stage: %*
- **Quality (NIR)**
 - *Crude protein : %*
 - *Acid detergent fiber: %*
 - *Neutral detergent fiber: %*
 - *In vitro true digestibility: %*
 - *Cell wall digestibility of stover: %*
- **Performance index**
 - *Milk per ton: The amount of milk production from one ton of silage using the quality measures. (Estimate is based on a standard cow body weight of 1350 pounds and milk production level of 90 pounds milk per day at 3.8 percent fat.)*
 - *Milk per acre = Milk per ton X Dry matter yield per acre*

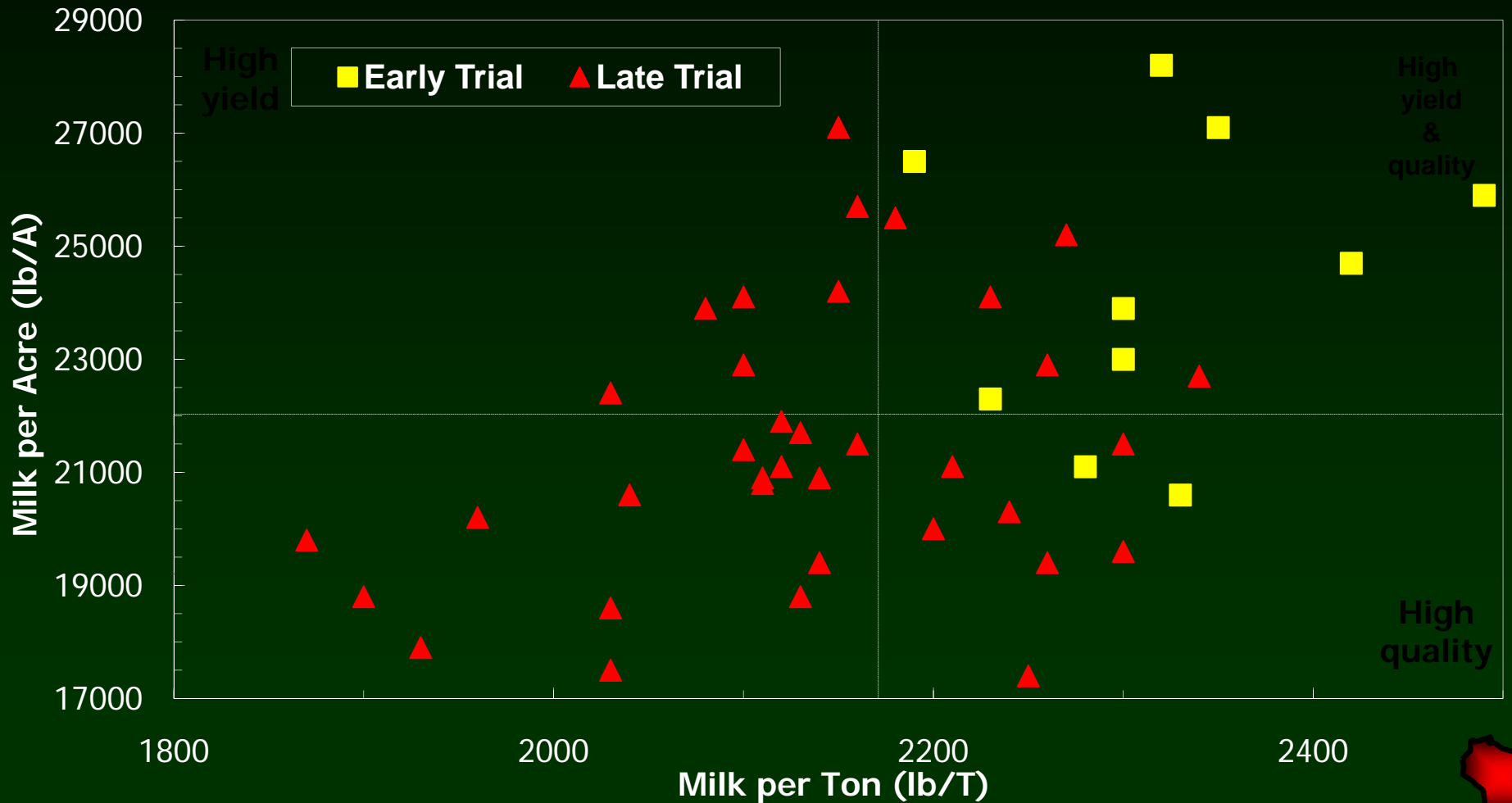


Table 11. Southern Zone - Early Maturity Silage Trial

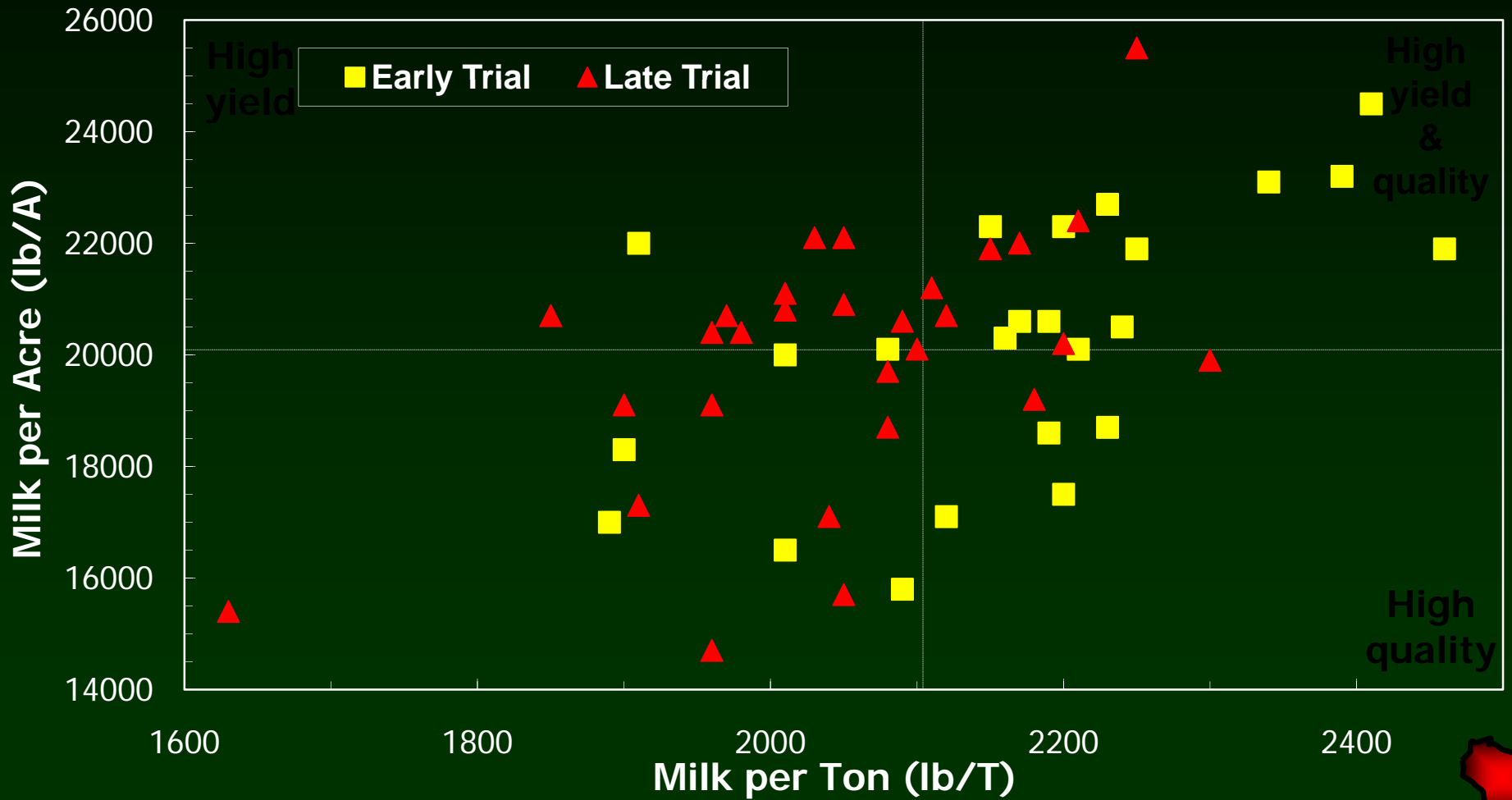
105 DAY RELATIVE MATURITY OR EARLIER, BASED ON COMPANY RATING

| | | 1998 | | | | | | | | | | | | | |
|---------------------------------|--------------|---------|-------|------|-----|-----|-----|-----|-----|----------|---------|--------|--------|--|--|
| | | AVERAGE | | | | | | | | | | ARL | LAN | | |
| | | Kernel | | | | | | | | MILK PER | | Yield | Yield | | |
| BRAND | HYBRID | Yield | Moist | Milk | CP | ADF | NDF | IVD | CWD | TON | ACRE | T/A | T/A | | |
| | | T/A | % | % | % | % | % | % | % | | | | | | |
| Dairyland | Stealth 1406 | 12.0 * | 53.7 | 10 | 6.6 | 20 | 40 | 79 | 49 | 2350 * | 27100 * | 12.0 | 12.0 * | | |
| Brunner | S-5474 | 12.0 * | 54.7 | 10 | 6.7 | 20 | 41 | 79 | 49 | 2320 | 28200 * | 13.0 * | 11.0 * | | |
| Carharts Blue Top | CX105A | 10.0 | 58.8 | 20 | 7.0 | 19 | 38 | 80 | 49 | 2490 * | 25900 * | 11.0 | 9.6 * | | |
| Kaltenberg | K5109 | 10.0 | 61.3 | 30 | 6.8 | 19 | 40 | 80 | 50 | 2420 * | 24700 * | 12.0 * | 8.2 * | | |
| Cargill | 4111 | 9.9 | 61.7 | 20 | 6.9 | 21 | 41 | 78 | 48 | 2230 | 22300 | 11.0 | 8.5 * | | |
| Dekalb | DK591 | 12.0 * | 61.8 | 30 | 7.3 | 22 | 43 | 79 | 50 | 2190 | 26500 * | 13.0 * | 11.0 * | | |
| 105-DAY HYBRID TRIAL AVERAGE ## | | | 61.9 | | | | | | | | | | | | |
| Garst | 8640 | 10.0 | 62.4 | 10 | 6.8 | 21 | 41 | 79 | 48 | 2300 | 23900 | 12.0 * | 8.5 * | | |
| Top Farm | TFs x2103 | 9.9 | 64.7 | 20 | 7.0 | 20 | 41 | 79 | 48 | 2300 | 23000 | 11.0 | 8.5 * | | |
| Cargill | F657 | 8.8 | 65.2 | 40 | 7.1 | 21 | 43 | 81 | 56 | 2330 | 20600 | 9.3 | 8.3 * | | |
| Trelay | 7004 | 9.2 | 69.5 | 30 | 7.5 | 21 | 42 | 79 | 50 | 2280 | 21100 | 11.0 | 7.5 | | |
| MEAN | | 10.0 | 61.4 | 20 | 7.0 | 20 | 41 | 79 | 50 | 2320 | 24300 | 12.0 | 9.3 | | |
| LSD(0.10)** | | 1.6 | 8.0 | 10 | 0.4 | 2 | 2 | 1 | 2 | 150 | 4100 | 1.7 | 3.5 | | |

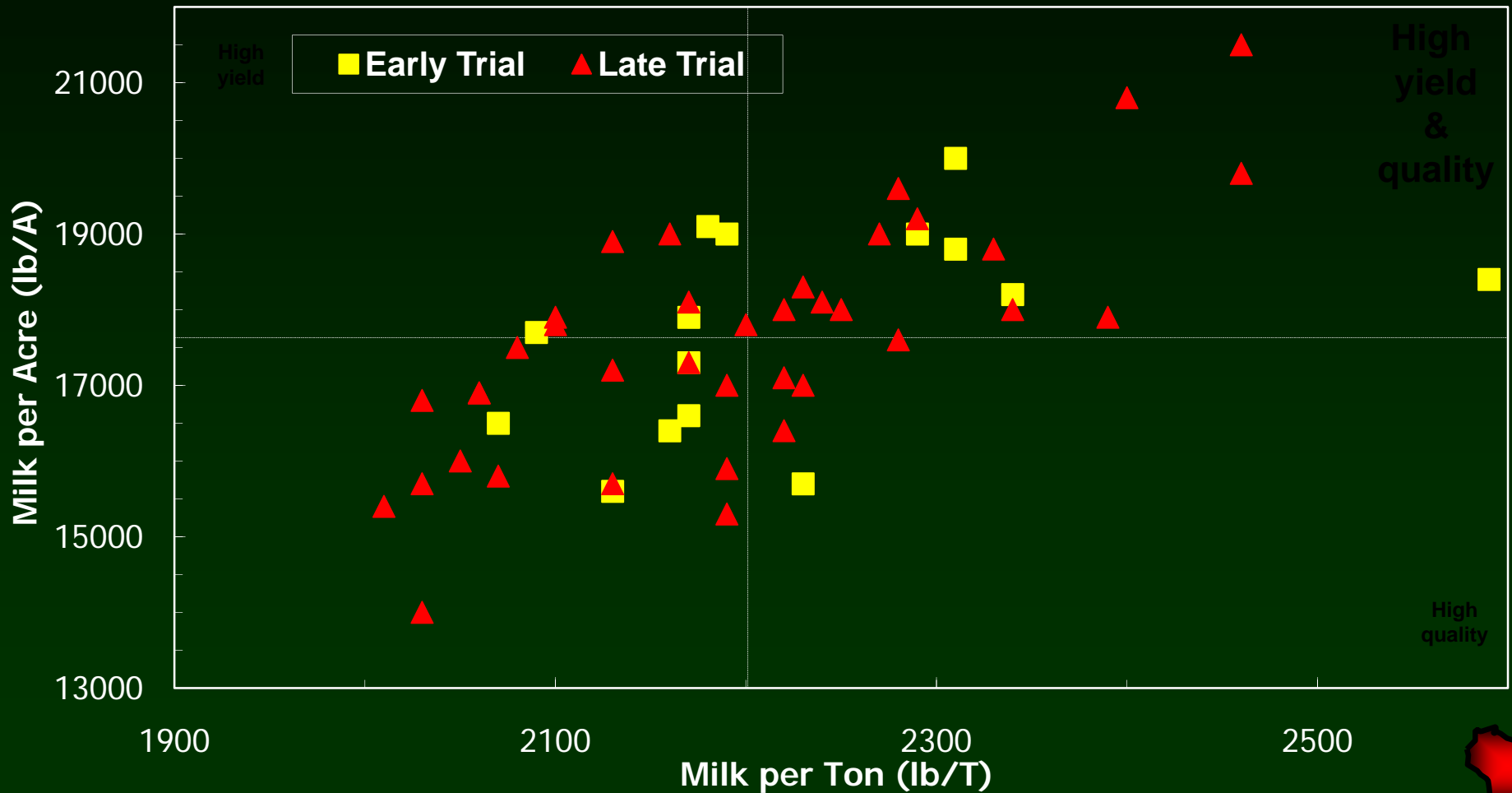
Corn Hybrid Silage Performance in the Southern Production Zone of Wisconsin During 1998



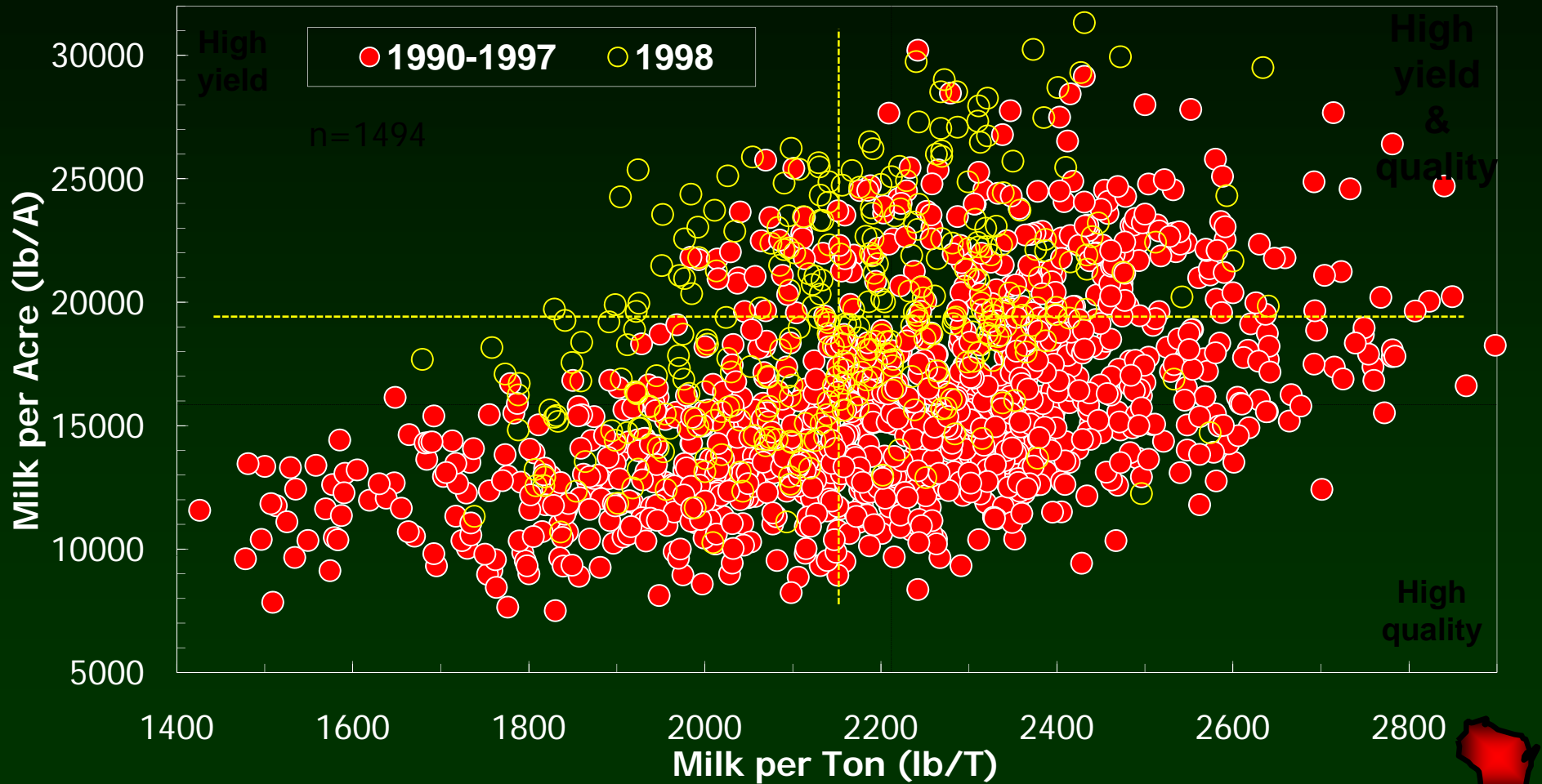
Corn Hybrid Silage Performance in the South Central Production Zone of Wisconsin During 1998



Corn Hybrid Silage Performance in the North Central Production Zone of Wisconsin During 1998



Corn Hybrid Silage Yield and Quality During 1998 Compared to 1990-1997 in Wisconsin

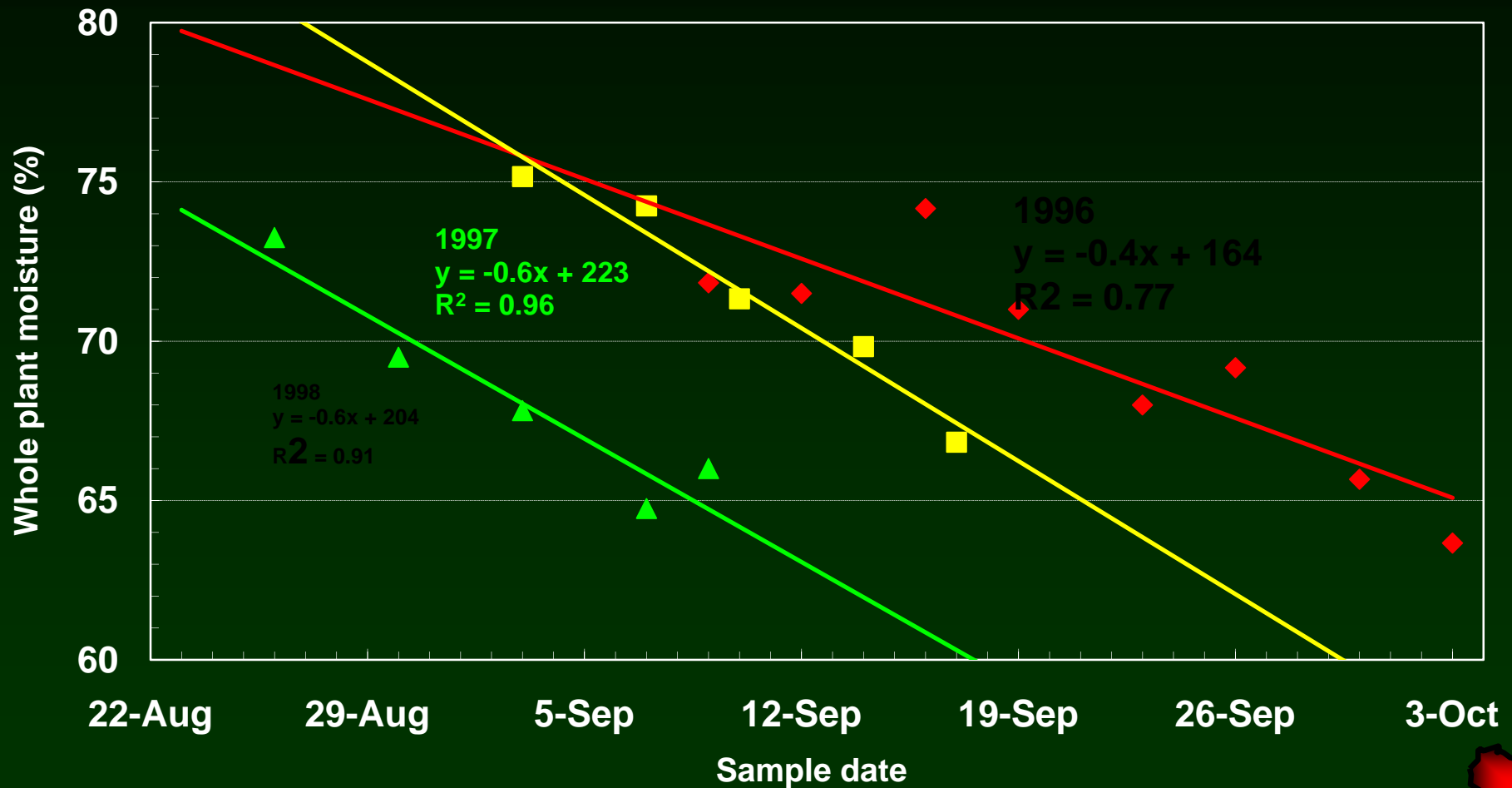


More Mileage From Corn Silage

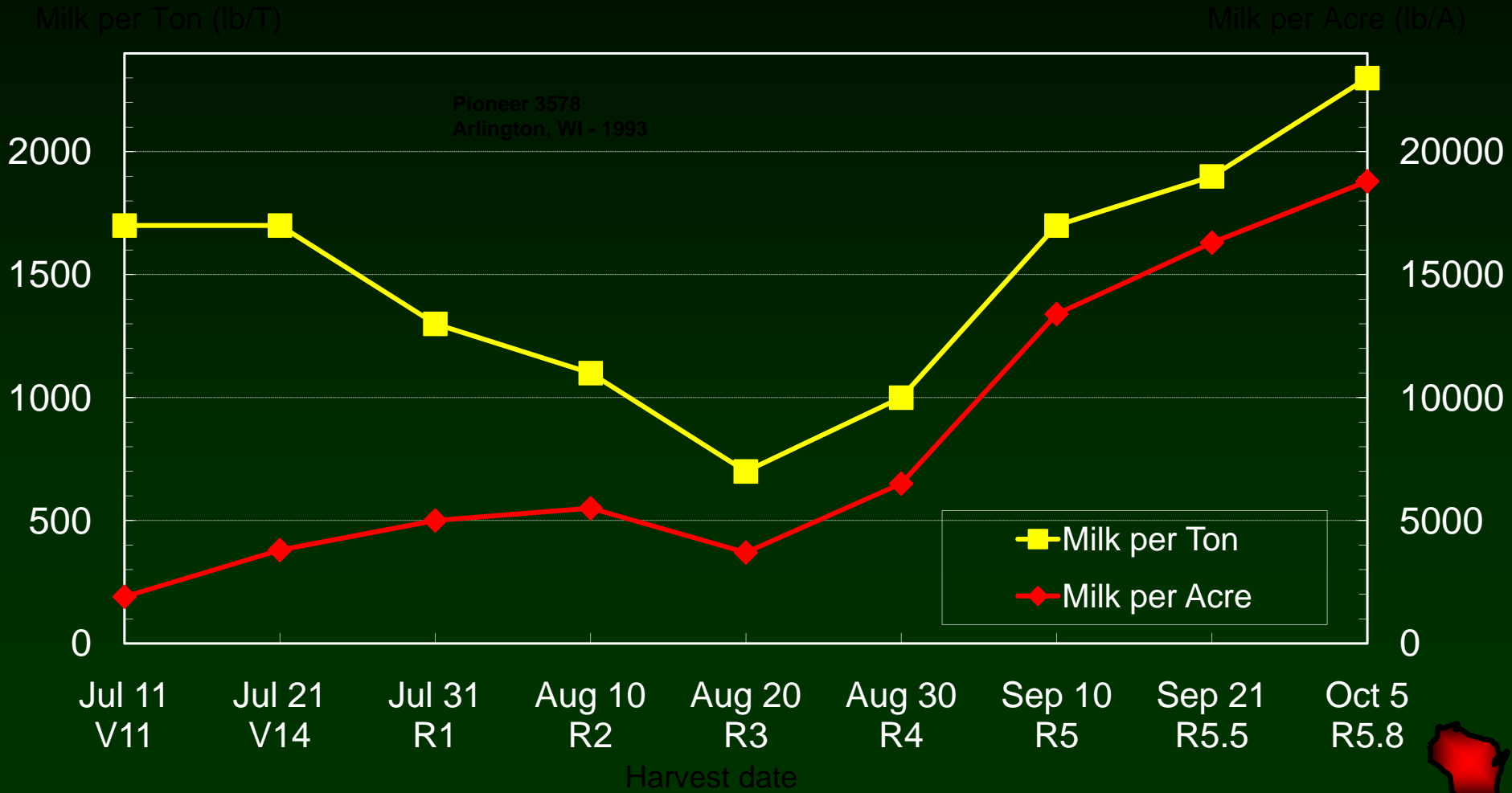
- Hybrid selection
- Management for yield AND quality
 - *Population*
 - *Planting date*
 - *Row spacing*
 - *Soil fertility*
 - *Weed control*
 - *Irrigation*
- Harvest
 - *Timing*
 - *Cutting height*
 - *Special situations*
 - ◆ *Frost*
 - ◆ *Drought stress*
 - ◆ *Stalklage*
- Ensiling



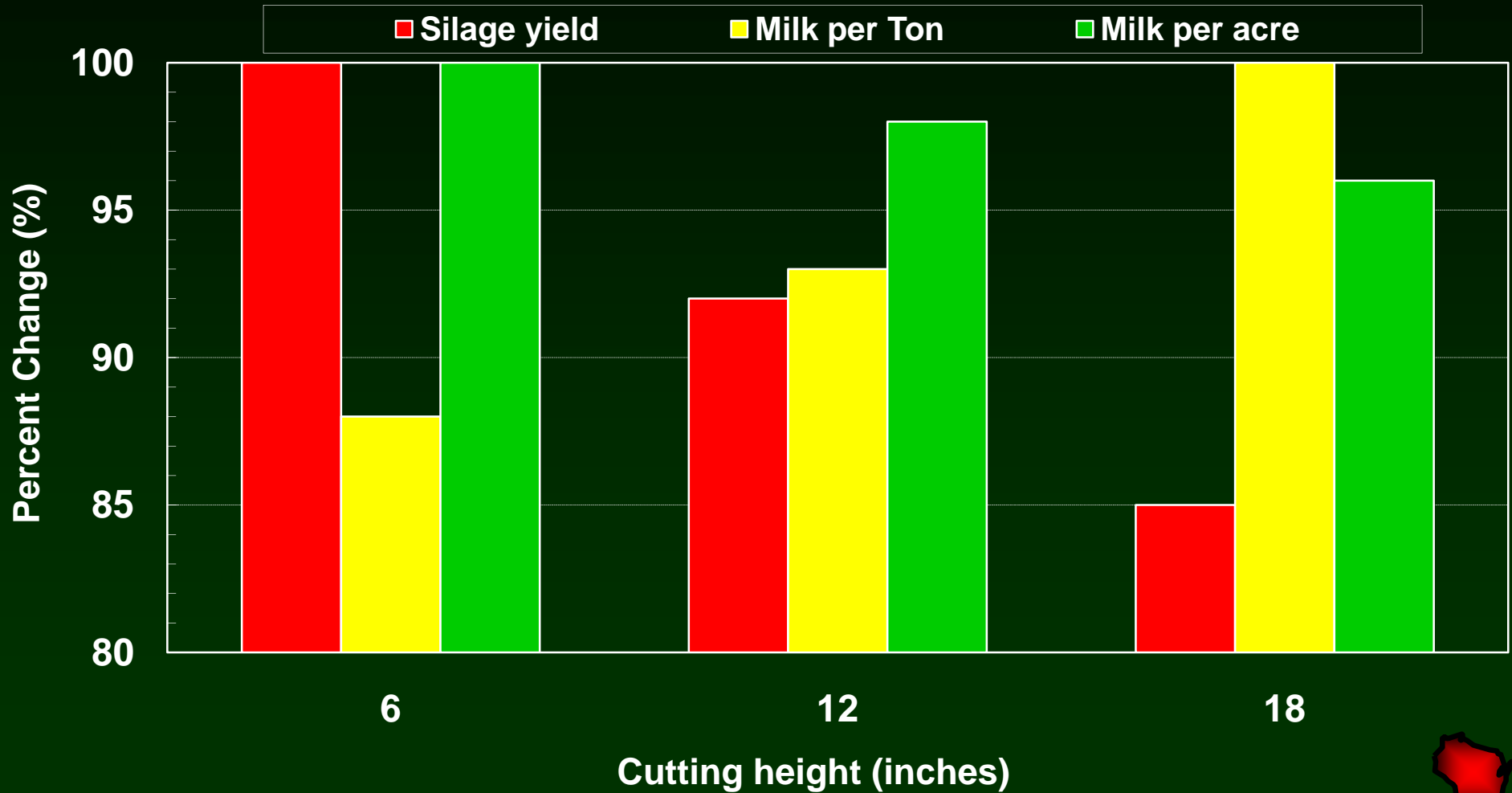
Silage drydown in Manitowoc County, WI.



Corn Silage Yield and Quality Changes During Development



Relative change in silage yield and quality at different cutting heights during 1996



Corn Silage Yield (T/A) Response to Row Spacing in Wisconsin

