

## FIELD EXPERIMENT HISTORY

**Title:** Plant Density and Hybrid Influence on Corn Grain and Silage Performance  
**Experiment:** 02PD **Trial ID** 1314 **Year:** 1998  
**Personnel:** J.G. Lauer, K.D. Kohn, P.J. Flannery and H.M. Darby  
**Location:** Arlington, WI **County:** Columbia  
**Supported By:** Hatch

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### Site Information

**Field:** 407 East **Previous Crop:** Alfalfa **Soil Type:** Plano  
**Soil Test:** **Date:** 10/1 /98 **pH** 6.2 **OM (%)** 3 **P (ppm)** 50 **K (ppm)** 190

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### Plot Management

**Tillage Operations:** Fall Chisel Plow Field Cultivator 1 Cultivation 6/17/98  
**Analysis:** **Rate lbs/A:** **Date:**  
**Fertilizer:** **Preplant :** 46-0-0 325 4 /22/98  
**Starter :** 6-24-24 150 5 /12/98  
**Post plant :** N/A N/A N/A  
**Manure:** None  
**Herbicide:** Lasso @ 2 qts/A; Bladex **Insecticide:** Lorsban @ 7 lbs/A  
90DF @ 2.2 lb/A; **Hybrid:**  
**Irrigation:** None  
**Planting Date:** 5/12/98 **Planting Depth:** 1.5" **Row Width:** 30"  
**Target Plant Density:** See Factors **Planting Method:** Kinze Plot Planter  
**Harvest Date:** G:10/19/98 **Harvest Method:** G:Kincaid Plot Combine  
S: 9/25/98 S: NH 707 Chopper  
**Notes:** N/A

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### Experimental Design

**Design:** RCB **Replications:** 3  
**Plot Size Seeded:** 25' x 5' **Experiment Size:** 22' x 5'  
**Harvest Plot Size:** 22' x 5' **Harvest Plant Density:** N/A plants per acre

### Factors/Treatments:

Hybrid: Density:  
Dekalb 493, Dekalb 493BT, 15000, 20000, 25000,  
Mycogen TMF 106 and 30000, 35000, 40000, and  
Mycogen TMF 108 45000 plants/A

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**Results: Tables E-19.**

**Table E-19. Plant Density and Hybrid Influence on Corn Grain and Silage Performance.**  
**Arlington, WI - 1998.**

| Density               | Hybrid         | Silage        |            |                   |            |                        |                           |                   |                     |                |                 |            |                        |                    |          |          |                       |             |              |                |
|-----------------------|----------------|---------------|------------|-------------------|------------|------------------------|---------------------------|-------------------|---------------------|----------------|-----------------|------------|------------------------|--------------------|----------|----------|-----------------------|-------------|--------------|----------------|
|                       |                | Grain         |            |                   |            | Plant height<br>inches | Seeds planted<br>plants/A | Stand             |                     | Harvest ears/A | Dry Matter      |            | Kernel milk stage<br>% | Crude protein<br>% | In Vitro |          | Cell Wall Digest<br>% | Milk per    |              |                |
|                       |                | Yield<br>bu/A | Moist<br>% | Test Wt<br>lbs/bu | Lodge<br>% |                        |                           | Emerg<br>plants/A | Harvest<br>plants/A |                | yield<br>tons/A | Moist<br>% |                        |                    | ADF<br>% | NDF<br>% |                       | Digest<br>% | Ton<br>lbs/T | Acres<br>lbs/A |
| 15000                 |                | 187           | 23.5       | 52                | 3.6        | 117                    | 17425                     | 16778             | 17186               | 21859          | 9.7             | 62.7       | 16.3                   | 7.4                | 21.3     | 40.3     | 79.1                  | 48.1        | 2329         | 22710          |
| 20000                 |                | 203           | 23.7       | 53                | 6.0        | 117                    | 22728                     | 21450             | 22176               | 24288          | 10.3            | 63.6       | 15.0                   | 7.4                | 21.8     | 41.2     | 78.6                  | 48.0        | 2261         | 23406          |
| 25000                 |                | 207           | 23.5       | 53                | 6.7        | 115                    | 28789                     | 27510             | 26120               | 27225          | 10.9            | 63.2       | 14.2                   | 7.2                | 21.8     | 41.0     | 78.1                  | 46.7        | 2242         | 24869          |
| 30000                 |                | 209           | 23.1       | 53                | 9.9        | 117                    | 34092                     | 31638             | 29057               | 29898          | 10.5            | 64.0       | 9.6                    | 7.1                | 23.3     | 42.9     | 76.7                  | 45.7        | 2081         | 21890          |
| 35000                 |                | 215           | 23.1       | 53                | 8.0        | 116                    | 40153                     | 37012             | 33000               | 33875          | 11.4            | 62.2       | 6.3                    | 7.0                | 22.4     | 41.6     | 77.2                  | 45.2        | 2164         | 24789          |
| 40000                 |                | 203           | 23.8       | 53                | 12.9       | 116                    | 46214                     | 41936             | 35772               | 36020          | 11.4            | 63.4       | 9.2                    | 6.9                | 23.8     | 43.4     | 76.0                  | 44.7        | 2017         | 23092          |
| 45000                 |                | 198           | 23.6       | 53                | 15.3       | 119                    | 52274                     | 47279             | 39369               | 39600          | 11.6            | 63.0       | 8.3                    | 7.1                | 23.1     | 42.4     | 76.4                  | 44.3        | 2081         | 24513          |
|                       | Dekalb DK493   | 218           | 20.5       | 54                | 7.9        | 112                    | 34525                     | 31932             | 31793               | 33349          | 10.4            | 64.1       | 8.8                    | 6.9                | 22.0     | 41.1     | 78.0                  | 46.3        | 2228         | 23272          |
|                       | Dekalb DK493BT | 224           | 19.7       | 55                | 9.1        | 113                    | 34525                     | 32369             | 31416               | 33330          | 11.0            | 63.0       | 10.2                   | 6.9                | 21.1     | 39.7     | 78.6                  | 46.2        | 2329         | 25583          |
|                       | Mycogen TMF106 | 171           | 25.9       | 50                | 17.1       | 123                    | 34525                     | 30868             | 25495               | 26815          | 10.9            | 62.7       | 11.2                   | 7.5                | 23.8     | 43.6     | 76.4                  | 45.8        | 2029         | 22420          |
|                       | Mycogen TMF108 | 201           | 27.6       | 52                | 1.5        | 120                    | 34525                     | 32604             | 28012               | 29002          | 11.0            | 62.7       | 14.8                   | 7.2                | 23.1     | 42.9     | 76.8                  | 46.0        | 2086         | 22953          |
| 15000                 | Dekalb DK493   | 202           | 21.0       | 54                | 2.3        | 111                    | 17425                     | 16415             | 17094               | 21648          | 10.1            | 61.9       | 8.3                    | 7.3                | 19.9     | 38.5     | 80.0                  | 47.8        | 2461         | 24658          |
| 20000                 | Dekalb DK493   | 204           | 20.3       | 54                | 1.5        | 111                    | 22728                     | 21434             | 26070               | 28182          | 10.3            | 64.5       | 18.3                   | 7.3                | 21.7     | 40.3     | 79.0                  | 47.9        | 2318         | 24010          |
| 25000                 | Dekalb DK493   | 218           | 20.6       | 54                | 5.9        | 111                    | 28789                     | 27053             | 28710               | 29898          | 10.5            | 63.0       | 8.3                    | 7.1                | 21.2     | 40.3     | 78.5                  | 46.5        | 2293         | 24232          |
| 30000                 | Dekalb DK493   | 235           | 20.3       | 55                | 5.5        | 113                    | 34092                     | 31535             | 31350               | 31878          | 9.7             | 67.0       | 13.3                   | 6.9                | 23.0     | 42.8     | 77.2                  | 46.7        | 2112         | 20399          |
| 35000                 | Dekalb DK493   | 234           | 19.9       | 55                | 6.5        | 110                    | 40153                     | 36838             | 34584               | 35244          | 10.5            | 64.3       | 5.0                    | 6.7                | 21.9     | 41.2     | 77.5                  | 45.5        | 2199         | 23256          |
| 40000                 | Dekalb DK493   | 218           | 20.8       | 55                | 14.0       | 112                    | 46214                     | 41005             | 36498               | 37092          | 11.3            | 62.8       | 5.0                    | 6.5                | 22.4     | 41.7     | 77.5                  | 46.0        | 2174         | 24590          |
| 45000                 | Dekalb DK493   | 215           | 20.6       | 54                | 19.3       | 115                    | 52274                     | 49244             | 41910               | 42372          | 10.6            | 64.9       | 3.3                    | 6.7                | 23.6     | 42.8     | 76.0                  | 43.9        | 2038         | 21759          |
| 15000                 | Dekalb DK493BT | 196           | 20.3       | 53                | 4.9        | 111                    | 17425                     | 16983             | 18084               | 25146          | 10.6            | 62.4       | 20.0                   | 7.1                | 20.0     | 37.2     | 80.5                  | 47.7        | 2544         | 26967          |
| 20000                 | Dekalb DK493BT | 228           | 20.6       | 54                | 3.7        | 110                    | 22728                     | 21402             | 25146               | 27258          | 10.6            | 63.6       | 15.0                   | 7.3                | 20.4     | 39.2     | 79.9                  | 48.8        | 2422         | 25762          |
| 25000                 | Dekalb DK493BT | 228           | 19.7       | 55                | 1.8        | 112                    | 28789                     | 28031             | 28182               | 30162          | 10.7            | 64.2       | 8.3                    | 6.9                | 20.2     | 38.5     | 79.6                  | 47.0        | 2434         | 26060          |
| 30000                 | Dekalb DK493BT | 232           | 19.4       | 55                | 8.5        | 112                    | 34092                     | 32230             | 30888               | 32274          | 10.6            | 64.3       | 6.7                    | 6.9                | 21.6     | 40.6     | 78.4                  | 46.8        | 2277         | 23982          |
| 35000                 | Dekalb DK493BT | 236           | 18.7       | 55                | 10.3       | 114                    | 40153                     | 37343             | 35112               | 36366          | 11.3            | 62.2       | 6.7                    | 7.0                | 20.6     | 39.1     | 78.6                  | 45.3        | 2352         | 26862          |
| 40000                 | Dekalb DK493BT | 221           | 19.9       | 55                | 11.9       | 112                    | 46214                     | 42615             | 37752               | 37884          | 11.3            | 61.8       | 13.3                   | 6.6                | 22.6     | 42.2     | 76.6                  | 44.6        | 2104         | 23751          |
| 45000                 | Dekalb DK493BT | 226           | 19.6       | 55                | 22.3       | 118                    | 52274                     | 47981             | 40788               | 41052          | 11.8            | 62.7       | 1.7                    | 6.7                | 22.0     | 41.0     | 76.8                  | 43.5        | 2170         | 25695          |
| 15000                 | Mycogen TMF106 | 165           | 25.2       | 50                | 4.5        | 123                    | 17425                     | 16036             | 14652               | 17886          | 8.9             | 63.6       | 8.3                    | 7.7                | 22.8     | 42.8     | 77.8                  | 48.2        | 2144         | 19081          |
| 20000                 | Mycogen TMF106 | 186           | 25.7       | 50                | 18.8       | 123                    | 22728                     | 20960             | 18282               | 20262          | 10.1            | 63.2       | 10.0                   | 7.6                | 23.3     | 43.1     | 77.5                  | 47.8        | 2114         | 21371          |
| 25000                 | Mycogen TMF106 | 175           | 26.3       | 50                | 18.9       | 119                    | 28789                     | 27242             | 22968               | 23958          | 11.4            | 64.0       | 20.0                   | 7.6                | 24.4     | 44.7     | 75.8                  | 45.8        | 1944         | 22590          |
| 30000                 | Mycogen TMF106 | 166           | 25.2       | 50                | 24.0       | 124                    | 34092                     | 30304             | 26268               | 27126          | 11.3            | 60.2       | 10.0                   | 7.6                | 23.5     | 42.9     | 76.1                  | 44.4        | 2043         | 23087          |
| 35000                 | Mycogen TMF106 | 172           | 26.4       | 50                | 13.5       | 124                    | 40153                     | 35355             | 29238               | 30030          | 11.6            | 60.4       | 6.7                    | 7.4                | 24.0     | 43.7     | 76.0                  | 45.0        | 2000         | 23502          |
| 40000                 | Mycogen TMF106 | 168           | 25.6       | 50                | 21.3       | 123                    | 46214                     | 41384             | 32406               | 32802          | 11.4            | 64.8       | 11.7                   | 7.3                | 25.4     | 45.3     | 75.0                  | 44.8        | 1873         | 21264          |
| 45000                 | Mycogen TMF106 | 163           | 26.8       | 50                | 18.9       | 123                    | 52274                     | 44793             | 34650               | 35640          | 12.2            | 63.0       | 11.7                   | 7.6                | 23.2     | 42.5     | 76.5                  | 44.7        | 2085         | 25717          |
| 15000                 | Mycogen TMF108 | 185           | 27.4       | 52                | 2.6        | 124                    | 17425                     | 17677             | 14916               | 18876          | 9.1             | 62.9       | 28.3                   | 7.4                | 22.4     | 42.7     | 78.1                  | 48.6        | 2167         | 18845          |
| 20000                 | Mycogen TMF108 | 196           | 28.3       | 52                | 0.0        | 124                    | 22728                     | 22002             | 19206               | 21450          | 10.2            | 63.0       | 16.7                   | 7.4                | 21.8     | 42.0     | 78.0                  | 47.6        | 2191         | 22481          |
| 25000                 | Mycogen TMF108 | 206           | 27.3       | 52                | 0.0        | 117                    | 28789                     | 27716             | 24618               | 24882          | 11.2            | 61.5       | 20.0                   | 7.2                | 21.3     | 40.6     | 78.7                  | 47.5        | 2296         | 25833          |
| 30000                 | Mycogen TMF108 | 205           | 27.5       | 52                | 1.5        | 121                    | 34092                     | 32482             | 27720               | 28314          | 10.6            | 64.4       | 8.3                    | 7.2                | 25.0     | 45.2     | 75.2                  | 45.1        | 1892         | 20092          |
| 35000                 | Mycogen TMF108 | 217           | 27.4       | 52                | 1.6        | 116                    | 40153                     | 38511             | 33066               | 33858          | 12.1            | 61.7       | 6.7                    | 6.8                | 23.0     | 42.3     | 76.7                  | 44.8        | 2106         | 25537          |
| 40000                 | Mycogen TMF108 | 208           | 27.8       | 52                | 4.3        | 119                    | 46214                     | 42741             | 36432               | 36300          | 11.6            | 64.1       | 6.7                    | 7.1                | 24.6     | 44.2     | 74.9                  | 43.3        | 1919         | 22155          |
| 45000                 | Mycogen TMF108 | 187           | 27.3       | 52                | 0.6        | 119                    | 52274                     | 47097             | 40128               | 39336          | 12.0            | 61.2       | 16.7                   | 7.2                | 23.7     | 43.3     | 76.2                  | 45.0        | 2030         | 25065          |
|                       | Mean           | 203           | 23.5       | 53                | 8.9        | 117                    | 34525                     | 31943             | 29179               | 30624          | 10.8            | 63.1       | 11.3                   | 7.1                | 22.5     | 41.8     | 77.5                  | 46.1        | 2168         | 23601          |
| <b>Probability(%)</b> |                |               |            |                   |            |                        |                           |                   |                     |                |                 |            |                        |                    |          |          |                       |             |              |                |
| Plant Density (D)     |                | 0.2           | 15.7       | 7.0               | 0.0        | 55.8                   | .                         | 0.0               | 0.0                 | 0.0            | 0.0             | 56.3       | 4.8                    | 0.1                | 2.7      | 12.5     | 0.0                   | 0.0         | 0.5          | 32.8           |
| Hybrid (H)            |                | 0.0           | 0.0        | 0.0               | 0.0        | 0.1                    | .                         | 0.3               | 0.0                 | 0.0            | 20.2            | 38.7       | 58.7                   | 0.2                | 2.9      | 1.0      | 3.2                   | 71.4        | 1.7          | 15.6           |
| D x H                 |                | 48.2          | 2.7        | 5.8               | 0.1        | 77.5                   | .                         | 3.8               | 2.0                 | 0.6            | 25.6            | 18.0       | 29.5                   | 83.4               | 96.2     | 96.4     | 82.6                  | 89.8        | 92.3         | 73.7           |
| <b>LSD (0.10)</b>     |                |               |            |                   |            |                        |                           |                   |                     |                |                 |            |                        |                    |          |          |                       |             |              |                |
| Plant Density (D)     |                | 4.7           | NS         | 0.2               | 3.2        | NS                     | .                         | 673               | 1133                | 1171           | 0.4             | NS         | 6.0                    | 0.2                | 1.4      | NS       | 1.1                   | 1.2         | 143          | NS             |
| Hybrid (H)            |                | 7.8           | 0.3        | 0.0               | 2.4        | 2.5                    | .                         | 508               | 857                 | 886            | NS              | NS         | NS                     | 0.2                | 1.0      | 1.5      | 0.8                   | NS          | 108          | NS             |
| D x H                 |                | NS            | 0.9        | 0.8               | 6.3        | NS                     | .                         | 1341              | 2258                | 2335           | NS              | NS         | NS                     | NS                 | NS       | NS       | NS                    | NS          | NS           | NS             |
| <b>CV(%)</b>          |                |               |            |                   |            |                        |                           |                   |                     |                |                 |            |                        |                    |          |          |                       |             |              |                |
|                       |                | 7             | 3          | 1                 | 52         | 4                      | .                         | 3                 | 6                   | 6              | 8               | 4          | 77                     | 4                  | 9        | 7        | 2                     | 4           | 10           | 16             |