

**PROJECT TITLE:** Evaluation of durum variety performance in off-station trials at Denton, Fort Benton and Winifred.

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**OBJECTIVES:**

To evaluate the performance of durum varieties in environments and cropping methods representative of the southern triangle and central Montana.

**RESULTS:**

Denton durum yields were extremely depressed due to low precipitation levels this summer. Yields ranged from 10 to 21 bu/a with the average equal to 15 bu/a. Kyle was the top yielding durum variety of the trial at 17 bu/a. Test weights were also extremely low averaging 50 lbs/bu, however protein levels averaged 16%. The current year's data and multi-year summary are presented in Tables 1 and 2.

Fort Benton durum yields averaged 27 bu/a and ranged from 22 to 33 bu/a. Plenty was the top yielding durum variety at 32 bu/a followed by Sceptre, Laker and Belzer at 29, 29 and 28 bu/a, respectively. Test weights were low, averaging 55 lbs/bu, and proteins averaged 15%. The current year's data and multi-year summary are presented in Tables 3 and 4.

Winifred durum yields averaged 34 bu/a and ranged from 28 to 44 bu/a. Monroe was the top yielding durum variety at 40 bu/a followed by Lloyd, Maier and Vic at 39, 36 and 36 bu/a, respectively. Yields were slightly lower than in 1998, but comparable. Test weights were low, averaging 56 lbs/bu, and proteins averaged 17%. The current year's data and multi-year summary are presented in Tables 5 and 6.

**SUMMARY:**

The trial at Fort Benton was planted no-till re-crop following barley. The Denton trial followed peas and the durum trial at Winifred was planted on fallow ground. Durum yield averages were average to below average at all locations and depended upon the amount of rainfall received at each location. Winifred was the highest yielding trial at 34 bu/a. There wasn't any particular durum variety that yielded consistently at the top across locations. Test weights were below normal at all locations and proteins were above average at all locations with all durum varieties averaging 15% or greater across locations (data not shown).

**FUTURE PLANS:**

Durum variety evaluations will continue at Moccasin, Denton, Fort Benton and Winifred.

Table 1. 1999 Denton Off-Station Durum Variety Trial - Exp. 9871. Central Agricultural Research Center. Moccasin, MT.

| Id                      | Variety/Pedigree     | Grain Yield (bu/a) | Test Weight (lbs/bu) | Plant Height <sup>1/</sup> (in.) | Protein Content (%) |
|-------------------------|----------------------|--------------------|----------------------|----------------------------------|---------------------|
| PI574642                | MCNEAL <sup>2/</sup> | 21.2               | 48.8                 | 26                               | 14.1                |
| CANKYLE                 | KYLE                 | 17.3               | 52.1                 | 28                               | 15.3                |
| WPBLAKER                | LAKER                | 16.4               | 50.3                 | 25                               | 14.5                |
| CI 17789                | VIC                  | 15.7               | 50.0                 | 27                               | 16.1                |
| PI510696                | RENVILLE             | 15.5               | 49.4                 | 26                               | 16.4                |
| D901313                 | MOUNTRAIL            | 15.5               | 48.9                 | 24                               | 15.2                |
| DT 380                  | SCEPTRE              | 15.2               | 48.5                 | 25                               | 15.5                |
| CI 15892                | WARD                 | 14.6               | 49.9                 | 24                               | 17.0                |
| CI 17282                | CROSBY               | 14.3               | 48.7                 | 25                               | 16.9                |
| NDBELZER                | BELZER               | 13.9               | 48.2                 | 26                               | 15.6                |
| D89135                  | MAIER                | 13.9               | 52.3                 | 23                               | 15.5                |
| DT 433                  | MEDORA               | 13.4               | 49.8                 | 24                               | 16.6                |
| PI476211                | LLOYD                | 13.4               | 47.2                 | 21                               | 16.4                |
| PI478289                | MONROE               | 12.5               | 49.1                 | 26                               | 16.5                |
| NDMUNICH                | MUNICH               | 12.2               | 51.4                 | 22                               | 16.4                |
| D87130                  | BEN                  | 11.5               | 49.7                 | 24                               | 16.9                |
| CANPLENT                | PLENTY               | 9.9                | 49.2                 | 25                               | 16.7                |
| Experimental Mean       |                      | 14.5               | 49.6                 | 24.5                             | 16.0                |
| CV1: (s/mean)*100       |                      | 16.7               | 4.3                  | 5.5                              | -                   |
| F-Test for Var. (df=16) |                      | 3.3                | 1.2                  | 3.5                              | -                   |
| P-Value                 |                      | 0.002              | 0.327                | 0.009                            | -                   |
| LSD (0.05)              |                      | 4.0                | 3.6                  | 2.9                              | -                   |

1/ Statistics based on two replications, where yield and test weight statistics are based on three replications.

2/ McNeal is used as a hard red winter wheat check.

Planted: 4/27/1999

Harvested: 8/17/1999

Fertilizer: 60 #N

Growing Season Precipitation (April - July): 5.29"

Producer/Cooperator: Richard Barber, Denton.

**Table 2. Denton Off-Station Durum Multi-Year Yield Summary of Selected Varieties, 1998-1999. Central Agricultural Research Center. Moccasin, MT.**

| Selected Varieties   | 1998        | 1999        | Avg. |
|----------------------|-------------|-------------|------|
|                      |             | bu/a        |      |
| Lloyd                | 27          | 13          | 20.4 |
| Monroe               | 30          | 13          | 21.2 |
| Laker                | 32          | 16          | 24.1 |
| Medora               | 23          | 13          | 18.4 |
| Ben                  | 28          | 12          | 19.8 |
| Renville             | 28          | 16          | 21.6 |
| Ward                 | 26          | 15          | 20.3 |
| Kyle                 | 33          | 17          | 25.0 |
| Vic                  | 27          | 16          | 21.4 |
| Plenty               | 26          | 10          | 17.8 |
| Munich               | 29          | 12          | 20.6 |
| Crosby               | 23          | 14          | 18.4 |
| Sceptre              | 29          | 15          | 21.9 |
| McNeal <sup>1/</sup> | 34          | 21          | 27.5 |
| <b>Nursery Mean</b>  | <b>28.3</b> | <b>14.5</b> |      |

<sup>1/</sup> McNeal is used as a hard red spring wheat check.

Table 3. 1999 Highwood/Fort Benton Off-Station Durum Variety Trial - Exp. 9872.  
Central Agricultural Research Center. Moccasin, MT.

| Id                      | Variety/Pedigree     | Grain Yield (bu/a) | Test Weight (lbs/bu) | Plant Height (in.) | Sawfly Rating (0-5) | Protein Content (%) |
|-------------------------|----------------------|--------------------|----------------------|--------------------|---------------------|---------------------|
| PI574642                | MCNEAL <sup>1/</sup> | 33.0               | 54.0                 | 30                 | 1.67                | 13.4                |
| CANPLENT                | PLENTY               | 32.2               | 57.4                 | 35                 | 1.00                | 14.3                |
| DT 380                  | SCEPTRE              | 29.0               | 54.9                 | 32                 | 1.33                | 14.6                |
| WPBLAKER                | LAKER                | 28.9               | 56.5                 | 29                 | 0.67                | 14.4                |
| NDBELZER                | BELZER               | 28.0               | 54.6                 | 32                 | 1.00                | 15.1                |
| NDMUNICH                | MUNICH               | 27.1               | 55.1                 | 29                 | 0.67                | 14.8                |
| CI 17282                | CROSBY               | 27.1               | 54.8                 | 33                 | 1.67                | 16.4                |
| D901313                 | MOUNTRAIL            | 26.2               | 54.7                 | 31                 | 1.00                | 14.5                |
| CI 15892                | WARD                 | 26.0               | 55.6                 | 33                 | 1.00                | 15.7                |
| D89135                  | MAIER                | 26.0               | 55.3                 | 29                 | 1.00                | 15.7                |
| PI478289                | MONROE               | 25.4               | 55.8                 | 33                 | 1.67                | 16.4                |
| PI510696                | RENVILLE             | 25.3               | 56.3                 | 33                 | 1.00                | 15.1                |
| D87130                  | BEN                  | 25.2               | 55.9                 | 32                 | 1.33                | 15.9                |
| DT 433                  | MEDORA               | 25.1               | 54.8                 | 33                 | 1.00                | 16.6                |
| CANKYLE                 | KYLE                 | 24.6               | 56.7                 | 34                 | 1.00                | 15.7                |
| PI476211                | LLOYD                | 24.6               | 54.5                 | 27                 | 0.33                | 15.0                |
| CI 17789                | VIC                  | 22.4               | 55.5                 | 34                 | 1.33                | 16.4                |
| Experimental Mean       |                      | 26.8               | 55.4                 | 31.7               | 1.1                 | 15.3                |
| CV1: (s/mean)*100       |                      | 8.7                | 2.4                  | 3.4                | 45.8                | -                   |
| F-Test for Var. (df=16) |                      | 4.1                | 1.4                  | 13.2               | 1.6                 | -                   |
| P-Value                 |                      | 0.000              | 0.199                | 0.000              | 0.122               | -                   |
| LSD (0.05)              |                      | 3.9                | 2.2                  | 1.8                | 0.8                 | -                   |

1/ McNeal is used as a hard red spring wheat check.

Planted: 4/16/1999

Harvested: 8/17/1999

Fertilizer: 50# N, topdressed.

Previous Crop: Barley

Growing Season Precipitation (April - July): 7.06"

Producer/Cooperator: Steve Birkeland, Fort Benton

Table 4. Highwood/Fort Benton Off-Station Durum Multi-Year Yield Summary of Selected Varieties, 1998-1999. Central Agricultural Research Center. Moccasin, MT.

| Selected Varieties   | 1998        | 1999        | Avg. |
|----------------------|-------------|-------------|------|
|                      |             | bu/a        |      |
| Lloyd                | 17          | 25          | 21.0 |
| Monroe               | 17          | 25          | 21.1 |
| Laker                | 20          | 29          | 24.6 |
| Medora               | 19          | 25          | 22.2 |
| Ben                  | 17          | 25          | 21.1 |
| Renville             | 16          | 25          | 20.8 |
| Ward                 | 17          | 26          | 21.6 |
| Kyle                 | 16          | 25          | 20.1 |
| Vic                  | 18          | 22          | 20.3 |
| Plenty               | 17          | 32          | 24.6 |
| Munich               | 18          | 27          | 22.3 |
| Crosby               | 17          | 27          | 21.9 |
| Sceptre              | 17          | 29          | 23.1 |
| McNeal <sup>1/</sup> | 19          | 33          | 26.2 |
| <b>Nursery Mean</b>  | <b>17.6</b> | <b>26.8</b> |      |

<sup>1/</sup> McNeal is used as a hard red spring wheat check.

Table 5. 1999 Winifred Off-Station Durum Variety Trial - Exp. 9873. Central Agricultural Research Center. Moccasin, MT.

| Id                      | Variety/Pedigree     | Grain Yield (bu/a) | Test Weight (lbs/bu) | Plant Height (in.) | Protein Content (%) |
|-------------------------|----------------------|--------------------|----------------------|--------------------|---------------------|
| PI574642                | MCNEAL <sup>1/</sup> | 44.2               | 55.2                 | 33                 | 15.9                |
| PI478289                | MONROE               | 39.5               | 57.2                 | 34                 | 16.1                |
| PI476211                | LLOYD                | 38.6               | 55.2                 | 28                 | 16.4                |
| D89135                  | MAIER                | 36.0               | 56.2                 | 29                 | 17.0                |
| CI 17789                | VIC                  | 35.7               | 57.9                 | 36                 | 16.5                |
| NDMUNICH                | MUNICH               | 35.3               | 55.8                 | 32                 | 16.9                |
| PI510696                | RENVILLE             | 34.8               | 55.8                 | 36                 | 17.2                |
| DT 433                  | MEDORA               | 34.2               | 57.0                 | 37                 | 17.1                |
| D901313                 | MOUNTRAIL            | 33.8               | 54.8                 | 33                 | 16.0                |
| DT 380                  | SCEPTRE              | 33.4               | 54.4                 | 32                 | 17.3                |
| NDBELZER                | BELZER               | 32.7               | 55.7                 | 35                 | 16.7                |
| D87130                  | BEN                  | 32.5               | 57.3                 | 34                 | 17.3                |
| CANKYLE                 | KYLE                 | 32.5               | 56.5                 | 39                 | 17.3                |
| WPBLAKER                | LAKER                | 32.4               | 55.9                 | 32                 | 16.2                |
| CANPLENTY               | PLENTY               | 31.3               | 55.0                 | 35                 | 16.7                |
| CI 15892                | WARD                 | 29.1               | 54.5                 | 35                 | 17.7                |
| CI 17282                | CROSBY               | 27.6               | 54.7                 | 35                 | 17.1                |
| Experimental Mean       |                      | 34.3               | 55.8                 | 33.8               | 16.8                |
| CV1: (s/mean)*100       |                      | 10.2               | 1.7                  | -                  | -                   |
| F-Test for Var. (df=16) |                      | 3.7                | 3.6                  | -                  | -                   |
| P-Value                 |                      | 0.001              | 0.001                | -                  | -                   |
| LSD (0.05)              |                      | 5.8                | 1.6                  | -                  | -                   |

1/ McNeal is used as a hard red spring wheat check.

Planted: 4/27/1999

Harvested: 8/18/1999

Fertilizer: 60# N

Growing Season Precipitation (April - July): 7.43"

Producer/Cooperator: Bruce Udelhoven, Winifred