PROJECT TITLE: Evaluation of semi-dwarf oats under irrigated management, SARC, Huntley MT 1990.

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PROJECT LOCATION: MSU - Southern Agricultural Research Center, Huntley, MT 59037

OBJECTIVES: To evaluate semi-dwarf oat selections for yield and quality when grown under intensive irrigation management.

RESULTS: Yield and test weight results are described in tables 1 and 2. In 1990 we had extremely high cereal crop yields on both irrigated and dryland cropping. Irrigated oat yields ranged from 249 to 187 bu/A at the Research Center with an average test weight of 38.4 lbs/bu.

Contrary to previous years, the oat yields at Bridger were lower than the Huntley yields. Oat yields ranged from 177 to 128 bu/A with an average test weight of 35.6 lbs/bu (Table 2). Yields of several semi-dwarf selections significantly out yielded the standard height check varieties which were Monida, Border and Otana. The test weights of the higher yielding semi-dwarf selections were comparable to the check varieties.

SUMMARY: Nineteen ninety concludes our studies on semi-swarf oats. We will summarize the past three years data in cooperation with the USDA group at Aberdeen, Idaho. The data generated in Montana and Idaho indicates that we now have promising oat selections which can be grown under sprinkler irrigation and which will not lodge as do the tall standard varieties. The height of the semi-dwarf selections are approximately 4 to 7 inches shorter than the standard varieties.

FUTURE PLANS: The project will be summarized and analyzed statistically in 1991 as a final report.

TABLE 1 . **1990 IRRIGATED SEMI DWARF OAT VARIETY TRIAL, SARC. HUNTLEY, MT.**

| VARIETY | YIELD BU/AC | TEST WT LBS/BU | PLANTHT INCHES | HEAD DATE |
|---|---|---|---|---|
| 83AB3250 | 249.17 | 39.60 | 37.67 | 176.00 |
| 86AB388 | 235.51 | 37.83 | 34.67 | 171.67 |
| 83AB3119 | 233.48 | 38.30 | 36.33 | 176.00 |
| 84AB838 | 232.72 | 39.07 | 38.33 | 173.00 |
| 81AB5792 | 229.63 | 39.07 | 38.33 | 171.33 |
| 82AB248 | 226.90 | 38.90 | 37.00 | 176.00 |
| MONIDA | 225.94 | 39.80 | 44.67 | 175.33 |
| OTANA | 222.79 | 40.40 | 47.33 | 174.33 |
| 83AB3725 | 215.60 | 37.87 | 34.67 | 172.67 |
| 82AB1178 | 215.19 | 37.73 | 34.00 | 171.33 |
| 82AB1142 | 213.47 | 37.97 | 31.33 | 173.67 |
| CAYUSE | 213.01 | 38.53 | 41.33 | 173.33 |
| BORDER | 210.11 | 40.23 | 42.67 | 175.33 |
| 82AB1359 | 207.84 | 37.30 | 33.67 | 176.00 |
| OGLE | 205.98 | 37.03 | 39.33 | 166.00 |
| MINIMAX | 196.20 | 34.03 | 28.33 | 174.67 |
| DAL | 187.23 | 39.60 | 44.67 | 173.67 |

******* STATISTICAL TABLE *******

| | | | | |
|---|---|---|---|---|
| EXPERIMENTAL MEANS | 218.87 | 38.43 | 37.90 | 173.55 |
| TOTAL OBSERVATIONS | 51.00 | 51.00 | 51.00 | 51.00 |
| NO. OF REPLICATIONS | 3.00 | 3.00 | 3.00 | 3.00 |
| NO. OF VARIETIES | 17.00 | 17.00 | 17.00 | 17.00 |
| REP. MEAN SQUARE | 229.03 | .63 | 2.96 | 2.73 |
| VAR. MEAN SQUARE | 714.91 | 6.89 | 76.78 | 19.46 |
| ERROR MEAN SQUARE | 153.60 | .58 | 3.38 | .25 |
| ERROR DEGREES OF FREEDOM | 32.00 | 32.00 | 32.00 | 32.00 |
| F TEST FOR REPS. | 1.49 | 1.10 | .88 | 11.06 |
| F TEST FOR VAR. | 4.65 | 11.93 | 22.73 | 78.98 |
| STANDARD ERROR | 12.39 | .76 | 1.84 | .50 |
| STANDARD ERROR OF THE MEAN | 7.16 | .44 | 1.06 | .29 |
| C.V. 1: (S/MEAN)*100 | 5.66 | 1.98 | 4.85 | .29 |
| C.V. 2: (S OF MEAN/MEAN)*100 | 3.27 | 1.14 | 2.80 | .17 |
| LSD (0.05) | 20.61 | 1.26 | 3.06 | .83 |

FBSEMI90.OAD
SEMI90.STT

TABLE 2 . **1990 OFF STATION IRRIGATED SEMIDWARF OAT TRIAL, BRIDGER, MT.**

| VARIETY | YIELD BU/AC | TESTWT LBS/BU | PLANTHT INCHES |
|---|---|---|---|
| 82AB248 | 177.08 | 36.13 | 28.67 |
| 84AB838 | 166.60 | 35.60 | 30.33 |
| 82AB1142 | 164.26 | 35.47 | 28.33 |
| 82AB1359 | 162.37 | 34.70 | 26.33 |
| 83AB3119 | 157.35 | 36.03 | 25.00 |
| 83AB3250 | 156.18 | 36.40 | 28.00 |
| MONIDA | 155.84 | 35.97 | 31.67 |
| 86AB388 | 155.83 | 35.77 | 28.33 |
| BORDER | 154.21 | 36.17 | 29.67 |
| 83AB3725 | 150.46 | 33.57 | 25.67 |
| CAYUSE | 147.05 | 34.67 | 31.33 |
| 82AB1178 | 144.71 | 35.33 | 27.00 |
| 81AB5792 | 144.55 | 36.43 | 31.67 |
| OTANA | 142.08 | 38.30 | 35.33 |
| OGLE | 141.16 | 35.67 | 31.00 |
| DAL | 129.56 | 36.73 | 35.67 |
| MINIMAX | 127.92 | 31.67 | 22.67 |
| ******* STATISTICAL TABLE ******* | | | |
| EXPERIMENTAL MEANS | 151.60 | 35.56 | 29.22 |
| TOTAL OBSERVATIONS | 51.00 | 51.00 | 51.00 |
| NO. OF REPLICATIONS | 3.00 | 3.00 | 3.00 |
| NO. OF VARIETIES | 17.00 | 17.00 | 17.00 |
| REP. MEAN SQUARE | 80.67 | 9.11 | 8.37 |
| VAR. MEAN SQUARE | 489.89 | 6.04 | 35.62 |
| ERROR MEAN SQUARE | 273.57 | .93 | 6.44 |
| ERROR DEGREES OF FREEDOM | 32.00 | 32.00 | 32.00 |
| F TEST FOR REPS. | .29 | 9.74 | 1.30 |
| F TEST FOR VAR. | 1.79 | 6.46 | 5.54 |
| STANDARD ERROR | 16.54 | .97 | 2.54 |
| STANDARD ERROR OF THE MEAN | 9.55 | .56 | 1.46 |
| C.V. 1: (S/MEAN)*100 | 10.91 | 2.72 | 8.68 |
| C.V. 2: (S OF MEAN/MEAN)*100 | 6.30 | 1.57 | 5.01 |
| LSD (0.05) | 27.51 | 1.61 | 4.22 |

OFFOAT90.OAD
OFFOAT.STT