

PROJECT TITLE: Evaluation of durum variety performance in off-station trials at Moccasin, 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:

Moccasin re-crop yields ranged from 27 to 35 bu/a with Vic and 933 from Northwest Consortium producing the top yield. Vic also has the top yield in the multi-year summary (three years of data to date) at 35 bu/a. The average yield was 31 bu/a and the average test weight was 60 lbs/bu. The nursery was planted in dry conditions and then received no rainfall for 16 days post-planting. These unfavorable conditions contributed to uneven germination and thus lower yields. The current year's data and multi-year summary are presented in Tables 1 and 2.

Denton yields ranged from 23 to 34 bu/a with the average equal to 28 bu/a. Kyle was the top yielding durum wheat at 33 bu/a. The average test weight was 55 lbs/bu, which is below average. The current year's data is presented in Table 3.

Fort Benton yields ranged from 16 to 20 bu/a. The average yield was equal to 18 bu/a, and the average test weight equaled 55 lbs/bu. There were no significant differences among varieties for yield or test weight. The lack of rainfall this summer created a very stressful environment for the plants, which is reflected in the lower than average performance. The current year's data is presented in Table 4.

Winifred yields ranged from 32 to 47 bu/a with the average equal to 39 bu/a. Laker was the top yielding durum variety at 42 bu/a followed closely by Vic at 41 bu/a. In addition, Vic had the best test weight of the nursery at 55lbs/bu. However, test weights were below normal, averaging 51.5 lbs/bu. The current year's data is presented in Table 5.

SUMMARY:

The durum yields were generally below average. There was sporadic germination at the four locations due to a shortage of rainfall after planting. Adequate moisture during the growing season in Winifred resulted in the best durum yields for all 4 locations at 39 bu/a followed by Moccasin, Denton and Fort Benton at 31, 28 and 18 bu/a respectively. Test weights were generally below average. Moccasin had the best at 60 lb/bu followed by Denton, Fort Benton and Winifred at 55, 55 and 52 lbs/bu respectively.

FUTURE PLANS:

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

Table 1. 1998 Moccasin Re-crop Durum Variety Trial – Exp. 9876. Central Agricultural Research Center. Moccasin, MT.

Id	Variety/Line	Grain Yield (bu/a)	Test Weight (lbs/bu)	Heading Date (Julian^{1/})	Plant Height (in.)	Stand (%)	Protein Content (%)
CI 17789	VIC	35.2	60.2	188	38	86.7	15.7
97DU2	933 (NWC ^{2/})	35.2	60.9	186	27	76.7	15.1
WPBLaker	LAKER	34.2	60.8	190	28	80.0	13.9
DT 380	SCEPTRE	33.4	58.8	187	35	78.3	15.6
PI478289	MONROE	32.9	60.1	185	34	80.0	15.4
NDMunich	MUNICH	32.8	59.8	187	30	80.0	16.0
D87130	BEN	32.6	60.8	189	35	81.7	16.0
PI476211	LLOYD	32.1	59.8	191	26	78.3	13.4
PI574642	MCNEAL	32.1	58.4	187	30	71.7	15.3
CANPlenty	PLENTY	31.7	60.7	189	37	80.0	15.7
NDBelzer	BELZER	31.0	60.0	189	35	76.7	14.6
CANKyle	KYLE	30.9	59.1	189	40	81.7	16.2
NPB87	NPB871104E	30.8	57.8	190	27	70.0	15.9
CI 17282	CROSBY	29.7	59.3	186	37	71.7	16.9
PH894401	Laker/Westbred881	29.4	60.9	185	25	78.3	14.9
DT 433	MEDORA	29.4	60.1	187	36	78.3	16.2
PI510696	RENVILLE	29.0	58.7	189	36	75.0	15.4
CI 15892	WARD	27.2	59.9	187	35	80.0	16.1
97DU1	DURFORT (NWC ^{2/})	27.1	58.9	188	24	71.7	15.4
Experimental Means		31.4	59.7	187.8	32.5	77.7	15.5
F Test for Var. (df=18)		2.9**	5.9**	9.1**	45.6**	1.0ns	-
C.V. 1: (S/Mean) *100		7.7	1.1	0.5	4.0	9.6	-
LSD (0.05)		4.0	1.1	1.6	2.1	12.3	-

* Note: This year's nursery experienced uneven germination and hot, dry conditions during heading, all which may have contributed to lower yields and test weights.

1/ Number of days from Jan. 1 (180 = June 29).

2/ NWC = NW Consortium

** Denotes Statistical Significance at $P \leq 0.01$

ns Denotes NO Statistical Significance at $P \leq 0.05$

Planted: 4/27/1998 no-till into Lewis barley stubble.

Harvested: 8/19/1998

Fertilizer: 90# N post-plant broadcast, 35# N broadcast pre-heading (7/3/98)

Growing Season Precipitation (April – July): 9.35" – 90 year avg.: 8.69"

<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>
0.59"	1.89"	4.79"	2.08"

Table 2. Moccasin Re-crop Durum Multi-Year Yield Summary of Selected Varieties, 1996-1998. Central Agricultural Research Center. Moccasin, MT.

Selected Varieties	1996	1997	1998	Average
	-----bu/a-----			
Lloyd	24	54	32	36.7
Monroe	23	56	33	37.3
Laker	23	50	34	35.7
Medora	23	51	29	34.3
Ben	23	53	33	36.3
Renville	22	59	29	36.7
Ward	22	50	27	33.0
Kyle	21	56	31	36.0
Vic	21	58	35	38.0
Voss	21	59		40.0
Plenty	20	56	32	36.0
Munich	20	57	33	36.7
Crosby	20	57	30	35.7
Sceptre			33	33.0
McNeal	24	65	32	40.3
Nursery Mean	21.8	55.0	31.4	
Growing Season Precip. (in.)	5.7	11.3	9.4	
April Precip. (in.)	1.0	1.4	0.6	
May Precip. (in.)	3.1	2.0	1.9	
June Precip. (in.)	1.3	4.1	4.8	
July Precip. (in.)	0.3	3.7	2.1	

Table 3. 1998 Denton Off-Station Durum Variety Trial – Exp. 9871. Central Agricultural Research Center. Moccasin, MT.

Id	Variety/Line	Grain Yield (bu/a)	Test Weight (lbs/bu)	Plant Height (in.)	Protein Content (%)
PI574642	MCNEAL	33.7	55.5	33	14.6
CANKYLE	KYLE	32.7	55.9	34	16.1
WPBLAKER	LAKER	31.7	56.4	26	19.7
NDBELZER	BELZER	30.6	54.8	34	17.3
PI478289	MONROE	29.9	55.8	32	19.2
NDMUNICH	MUNICH	29.0	54.0	29	20.4
DT 380	SCEPTRE	28.5	53.7	31	20.6
D87130	BEN	28.1	55.8	34	18.5
PI510696	RENVILLE	27.6	54.3	32	19.8
PI476211	LLOYD	27.3	51.6	23	22.3
CI 17789	VIC	27.0	55.7	31	21.8
CI 15892	WARD	26.0	55.4	34	22.9
CANPLENT	PLENTY	25.7	55.0	35	17.4
DT 433	MEDORA	23.3	56.2	30	21.9
CI 17282	CROSBY	22.5	53.6	34	23.2
Experimental Means		28.3	54.9	31.5	19.7
F Test for Var. (df=14)		3.2**	1.0ns	-	-
C.V. 1: (S/Mean)*100		11.0	4.0	-	-
LSD (0.05)		5.2	3.6	-	-

** Denotes Statistical Significance at $P \leq 0.01$

ns Denotes NO Statistical Significance at $P \leq 0.05$

Planted: 4/23/98

Harvested: 8/10/98

Fertilizer: 60# N

Growing Season Precipitation (May – July): 8.35"

Producer/Cooperator: Richard Barber, Denton

Table 4. 1998 Fort Benton Off-Station Durum Variety Trial – Exp. 9872. Central Agricultural Research Center, Moccasin, MT.

Id	Variety/Line	Grain Yield (bu/a)	Test Weight (lbs/bu)	Plant Height (in.)	Protein Content (%)
WPBLAKER	LAKER	20.2	56.4	26	12.5
PI574642	MCNEAL	19.4	54.6	28	14.3
DT 433	MEDORA	19.3	57.7	29	13.2
NDBELZER	BELZER	19.3	54.7	31	14.8
CI 17789	VIC	18.1	55.7	28	14.3
NDMUNICH	MUNICH	17.5	54.1	26	15.9
PI476211	LLOYD	17.3	53.4	24	13.6
CI 15892	WARD	17.2	54.7	30	14.2
DT 380	SCEPTRE	17.2	55.1	30	13.9
CANPLENT	PLENTY	17.0	55.1	31	16.7
D87130	BEN	17.0	56.3	30	15.4
PI478289	MONROE	16.8	52.0	31	16.9
CI 17282	CROSBY	16.6	54.6	28	15.3
PI510696	RENVILLE	16.2	54.1	28	18.5
CANKYLE	KYLE	15.6	51.0	33	16.3
Experimental Means		17.6	54.6	28.8	15.0
F Test for Var. (df=14)		0.7ns	1.5ns	-	-
C.V. 1: (S/Mean)*100		15.3	4.4	-	-
LSD (0.05)		4.5	4.0	-	-

ns Denotes NO Statistical Significance at P<= 0.05

Planted: 4/23/98

Harvested: 8/14/98

Fertilizer: 50# N topdressed.

Previous crop: Barley

Growing Season Precipitation (May – July): 5.50"

Producer/Cooperator: Steve Birkeland, Fort Benton

Table 5. 1998 Winifred Off-Station Durum Variety Trial – Exp. 9873. Central Agricultural Research Center. Moccasin, MT.

Id	Variety/Line	Grain Yield (bu/a)	Test Weight (lbs/bu)	Plant Height (in.)	Protein Content (%)
PI574642	MCNEAL	47.3	49.8	39	18.1
WPBLAKER	LAKER	41.7	51.2	34	18.5
CI 17789	VIC	41.4	55.1	43	20.0
NDMUNICH	MUNICH	40.8	51.0	37	21.9
D87130	BEN	40.5	54.0	40	21.2
NDBELZER	BELZER	39.6	51.4	42	20.9
CANKYLE	KYLE	39.1	51.4	42	21.9
PI476211	LLOYD	38.9	47.5	32	21.4
DT 380	SCEPTRE	38.7	50.6	42	21.5
PI478289	MONROE	38.7	52.2	42	19.8
PI510696	RENVILLE	36.5	51.5	43	21.2
DT 433	MEDORA	36.2	53.0	44	21.7
CANPLENT	PLENTY	36.0	50.4	43	21.2
CI 17282	CROSBY	32.8	50.8	41	21.8
CI 15892	WARD	32.4	53.2	44	21.2
Experimental Means		38.7	51.5	40.5	20.8
F Test for Var. (df=14)		5.2**	8.6**	-	-
C.V. 1: (S/Mean)*100		7.2	2.1	-	-
LSD (0.05)		4.7	1.8	-	-

** Denotes Statistical Significance at $P \leq 0.01$

Planted: 4/24/98 on fallow ground.

Harvested: 8/11/98

Fertilizer: 60# N

Growing Season Precipitation (April – July): 10.8"

April May June July
0.59" 2.64" 4.46" 3.07"

Producer/Cooperator: Bruce Udelhoven, Winifred