

PROJECT TITLE: Evaluation of spring durum variety performance in trials near Moccasin, Denton, Fort Benton, and Winifred

PROJECT LEADER: D. M. Wichman, Agronomist, Moccasin, MT

PROJECT PERSONNEL: L. E. Talbert, Spring Wheat Breeder, Bozeman, MT
S. P. Lanning, Spring Wheat Research Assoc., Bozeman, MT
G. L. Sharp, Research Associate, Moccasin, MT
J. Vavrovsky, Research Specialist, Moccasin, MT
Dave Philips, Fergus Cty. Ext. Agent, Lewistown, MT
Judee Wargo, Chouteau Cty. Ext. Agent, Fort Benton, MT

OBJECTIVES:

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

RESULTS:

2002 Statewide durum trials seeded on fallow and no-till recrop at the CARC were hailed out about 4 days prior to full ripening. Heading date and plant height data is presented in Table 32. The off-station trials have been reduced to a select six entries. The small durum acreage in the area does not merit a larger effort in terms of constricted cereal crops research dollars.

Yield – Utopia produced the high mean grain yield across three off station locations with a mean yield of 27.6 bu/a compared to the six-variety mean of 25.2 bu/a. 2002 multi-location yields are presented in Table 33. Multi-year comparisons for grain yield at each location are presented in (Tables 36-39).

Sawfly -Sawfly cutting was moderate at Fort Benton locations. The three Utopia durum plots at Fort Benton had no stem cutting while Maier had about 10% stem cutting (see Table 33).

Heading Date — The durum variety heading dates and plant heights were generally similar to what is expected for hard red spring wheat (Table 32).

Test weight – Lebsock had the high grain test weight at 59.5 lbs/bu and Utopia had the lowest average test weight with a 57.0 lbs/bu grain test weight (Table 34).

Protein – Maier had the high three location mean protein content at 18.6 % and Utopia had the lowest protein content at 17.2% (Table 35).

Plant Height – GM90015 was the shortest and Kyle was the tallest of the entries evaluated (Table 32).

SUMMARY:

In central Montana, for most agronomic characters, durum varieties are generally inferior to McNeal spring wheat. This statement is based on other recent experience. McNeal was not included in the data presented here.

FUTURE PLANS:

Spring durum variety evaluations will continue at Moccasin, Denton, Fort Benton, and Winifred. The Uniform Statewide trial with 20 entries will be planted at Moccasin. The off-station trials at Denton, Fort Benton, and Winifred will consist of six entries.

Table 32
Exp. 9800

2002 Durum heading date and plant height on Moccasin sites
Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	--- Heading Date ---		----- Plant Height -----		
		Mocc Fallow 9807	Mocc Recrop 9870	Mocc Fallow 9807	Mocc Recrop 9870	Average Plant Height
		Julian	Julian	in	in	in
ACAVONLE	AC AVONLEA	187	185	27	25	25.8
D87130	BEN	187	185	26	25	25.2
GM90005	GM90005	188	186	24	25	24.6
GM90015	GM90015	186	185	21	23	21.7
CANKYLE	KYLE	190	187	29	28	28.7
WPBLAKER	LAKER	189	187	24	24	24.0
D901442	LEBSOCK	187	185	26	26	26.1
D89135	MAIER	188	187	25	25	24.6
PI574642	MCNEAL	187	187	25	25	24.6
DT 433	MEDORA	187	186	28	25	26.6
PI478289	MONROE	184	182	27	25	26.1
D901313	MOUNTRAIL	188	187	24	25	24.7
NDMUNICH	Munich	187	184	23	24	23.8
D91080	PLAZA	188	187	23	23	22.9
PI510696	RENVILLE	187	186	26	26	25.9
DT 380	SCEPTRE	188	187	24	26	24.9
97DU2	UTOPIA	185	183	21	22	21.8
CI 17789	VIC	188	186	26	27	26.4
CI 15892	WARD	186	185	26	28	27.3
YU894-75	WPB YU 894-75	185	184	23	24	23.9
OVERALL MEAN		187.09	185.58	24.91	25.05	24.98
F-RATIO df= 38		6.16	11.48	9.01	2.07	
P-VALUE TRTS		0.00	0.00	0.00	0.03	
CV (S/MEAN) %		0.51	0.38	4.87	7.56	
LSD(0.05 by t)		1.56	1.16	2.01	3.13	

Table 33 2002 Spring durum multi-location yield performance and sawfly stem cutting %
Exp. 9800 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	-----Yield-----					Average Grain Yield	Fort Benton Sawfly Stem Cutting %
		Mocc Fallow 9807	Mocc Recrop 9870	Denton Recrop 9871	Fort Benton Recrop 9872**	Winifred Fallow 9873		
97DU2	UTOPIA	bu/a	bu/a	21.7	17.6	43.5	27.6	0
D89135	MAIER			17.2	13.9	42.9	24.6	10
ACAVONLE	AC AVONLEA	Hailed	Hailed	20.9	19.1	42.2	27.4	2
D901313	MOUNTRAIL			17.6	15.6	40.5	24.5	8
CANKYLE	KYLE			19.0	14.8	35.8	23.2	5
D901442	LEBSOCK			20.1	15.2	35.7	23.6	8
Overall Mean				19.39	16.03	40.08	25.17	5.50
CV (S/MEAN) %				9.32		8.46		
LSD (0.05 by t)				3.29		6.17		

**Samples were combined at the test site.

Planting Date:	4/26/02	4/26/02	4/19/02	4/22/02	4/19/02
Harvest Date:	Hailed	Hailed	8/19/02	8/20/02	8/19/02
Previous Crop:	Fallow	Peas	Lentils	Winter Wheat	Fallow
Fertilizer:	50 lbs 20-20-20-10 w/seed; 60 lbs N top dressed in March 2002				
Pest Control (on Moccasin sites):	Warrior applied early May, Bronate early June, Sevin early July				
Growing Season Precip. (April-July):	7.49"	7.49"	8.42"	8.02"	9.20"
Soil Moisture:	16"	14-18"	9-12"	6"	20"
Soil Temperature:	39 F	46.4 F		42.8 F	39.2
Producer/Cooperator:	CARC	CARC	Barber	Birkeland	Udelhoven

Table 34 2002 Durum multi-location test weight performance
Exp. 9800 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Mocc	Mocc	Denton	Fort Benton	Winifred	Average
		Fallow	Recrop	Recrop	Recrop	Fallow	Test
		9807	9870	9871	9872	9873	Weight
		lbs/bu	lbs/bu	lbs/bu	lbs/bu	lbs/bu	lbs/bu
CANKYLE	KYLE			60.1	57.3	60.4	59.3
D901313	MOUNTRAIL			59.0	57.3	59.8	58.7
ACAVONLE	AC AVONLEA	Hailed	Hailed	59.3	57.5	59.3	58.7
D901442	LEB SOCK			60.2	58.9	59.3	59.5
D89135	MAIER			58.9	56.4	58.5	57.9
97DU2	UTOPIA			58.5	55.3	57.3	57.0
Average				59.33	57.12	59.10	58.52

Table 35 2002 Durum multi-location grain protein performance
Exp. 9800 Central Agricultural Research Center, Moccasin, MT

ID	Pedigree	Mocc	Mocc	Denton	Fort Benton	Winifred	Average
		Fallow	Recrop	Recrop	Recrop	Fallow	Grain
		9807	9870	9871	9872	9873	Protein
		%	%	%	%	%	%
CANKYLE	KYLE			18.1	17.8	15.9	17.3
ACAVONLE	AC AVONLEA			18.2	18.3	17.2	17.9
D901442	LEB SOCK	Hailed	Hailed	17.9	17.3	16.6	17.3
D901313	MOUNTRAIL			18.2	17.9	16.7	17.6
D89135	MAIER			19.1	19.0	17.8	18.6
97DU2	UTOPIA			17.2	17.8	16.6	17.2
Average				18.12	18.02	16.80	17.65

Table 36
Exp. 9870

Moccasin recrop spring durum multi-year yield summary of selected varieties
Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1996	1997	1998	1999	2000	2001	2002**	Average
	----- bu/a -----							
McNeal ^{1/}	24	65	32	41	31	34	*	37.8
Monroe	23	56	33	31	27	28	*	33.0
Laker	23	50	34	34	28	28	*	32.8
Medora	23	51	29	31	24	27	*	30.8
Ben	23	53	33	32	27	29	*	32.8
Renville	22	59	29	34	24	27	*	32.5
Ward	22	50	27	32	27	26	*	30.7
Kyle	21	56	31	32	29	30	*	33.2
Vic	21	58	35	31	31	30	*	34.3
Plenty	20	56	32	34	27	--	*	33.8
Munich	20	57	33	34	31	26	*	33.5
Sceptre			33	33	28	27	*	30.3
Nursery Mean	21.8	55	31.4	34	28.8	28	**	33.0

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

**Moccasin recrop spring durum trial was hailed in 2002.

Table 37
Exp. 9871

Denton recrop spring durum multi-year yield summary of selected varieties, 1997-2002
Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1997	1998	1999	2000	2001	2002	Average
	----- bu/a -----						
McNeal ^{1/}	43	34	21	31	24		30.6
Kyle	28	33	17	23	22	19	23.7
Maier			14	23	24	17	19.5
Mountrail			16	26	26	18	21.4
Lebsock				26	24	20	23.4
Plaza				24	25	--	24.5
Nursery Mean	26.8	28.3	14.5	25.0	24.1	19.4	23.8

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

Table 38 Fort Benton recrop spring durum multi-year yield summary of selected varieties, 1998-2002
Exp. 9872 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1998	1999	2000	2001	2002	Average
	----- bu/a -----					
McNeal ¹⁷	19	33	18	12		20.5
Kyle	16	25	11	11	15	15.6
Maier		26	14	11	14	16.2
Mountrail		26	15	9	16	16.4
Lebsock			14	9	15	12.8
Plaza			12	8	--	10.0
Nursery Mean	17.6	26.8	13.9	9.9	16.0	15.2

¹⁷ McNeal is used as a hard red spring wheat check.

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Table 39 Winifred fallow spring durum multi-year yield summary of selected varieties, 1998-2002
Exp. 9873 Central Agricultural Research Center, Moccasin, MT

Selected Varieties	1998	1999	2000	2001	2002	Average
	----- bu/a -----					
McNeal ¹⁷	47	44	33	25		37.3
Kyle	39	33	34	23	36	33.0
Maier		36	35	23	43	34.2
Mountrail		34	36	26	40	34.1
Lebsock			30	24	36	29.9
Plaza			31	23	--	27.0
Nursery Mean	38.7	34.3	31.7	24.0	40.1	

¹⁷ McNeal is used as a hard red spring wheat check.