2004 Spring Wheat Motions

submitted by Dr. Luther Talbert and Susan P. Lanning

(motions are supported by data in tables 1-6)

A Motion to remove Medora durum wheat from the durum wheat variety recommendation list, effective February 2004.

Medora durum wheat was grown on ~ 1% of the durum acreage in Montana in 2003 and continues to decline. There is no certified seed being grown currently in Montana. We did not include it in our 2003 statewide nurseries, but T-Paired results from the previous two years indicate that it yielded less than the old standard durum check variety, Vic, and that newer durums are significantly better.

A Motion to remove Renville durum wheat from the durum wheat variety recommendation list, effective February 2004.

Renville durum wheat was grown on ~ 2% of the durum acreage in Montana in 2003. There is no certified seed being grown currenetly in Montana. T-Paired results from combined data from 2001-2003 show yields similar to Vic but less than the newer durums. Quality of Renville is only average when compared to some of the newer varieties i.e., AC Avonlea, Ben and Maier.

A Motion to remove Ward durum wheat from the durum wheat variety recommendation list, effective February 2004.

Although Ward was grown on 2% of the acreage in 2003, it is an older variety released in 1972 and should be replaced with improved cultivars. There is no certified seed being grown currently in Montana. We dropped Ward from testing in 2003 and across locations it has been one of the lowest yielding varieties since 1998 (data not shown).

A Motion to remove WestBred Laker durum wheat from the durum wheat variety recommendation list, effective February 2004.

Although WestBred Laker yields competitively, there is no longer much of a demand for it and conferring with Dr. Dale Clark of West Bred, LLC. they are no longer growing seed of WestBred Laker.

A Motion to recommend Ben durum wheat be grown on dryland in districts 2 and 4 and on both dryland and irrigated in district 6, effective 2004.

Ben was developed from the cross of D8024/Monroe by the North Dakota Agricultural Experiment Station. Ben is a high-yielding, high-test weight, stiffed-strawed variety. It is a day length-sensitive durum. Ben has long erect spikes, is awned, mid-dense and oblong. Ben is a medium tall, medium maturing variety. It has three per 10,000 plants which are taller than the average height of the crop. Depending on the environment Ben may have one per 1000 bronze-colored chaffed plants in a field. Ben is resistant to stem rust, leaf rust and tan spot. It is moderately resistant to Fusarium head blight. Ben is protected under the Plant Variety Protection Act of 1994 and can only be sold or advertised by variety name as a class of certified seed.

Ben yields well across locations, but better comparatively at Bozeman, Moccasin, Conrad and Sidney. It deserves recommendation as Ben has a high test weight and it's overall durum quality shows good to excellent traits and is rated as excellent in North Dakota .

A Motion to recommend Mountrail durum wheat be grown on dryland in districts 2 and 4 and on both dryland and irrigated in districts 5 and 6, effective 2004.

Mountrail was developed from the cross D8479/Renville made by the North Dakota Agricultural Experiment Station which was released in 1999. Mountrail is a medium height, late maturing, stiff-strawed , day-length sensitive durum wheat. It is resistant to both leaf and stem rusts, but only moderately resistant to Tan spot and Fusarium head blight. Mountrail has a high semolina extract with strong gluten. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

Mountrail has yielded the highest, 6 bushels more than Vic across locations. It was also the highest yielder specifically at Sidney on dryland and irrigated nurseries and at Moccasin. Mountrail has shown average durum quality.

A Motion to recommend Maier durum wheat be grown on dryland in districts 2 and 4 and on both dryland and irrigated in districts 5 and 6, effective 2004.

The North Dakota Agricultural Experiment Station released Maier durum wheat in 1999. Maier is a late maturing, stiff-strawed, day length sensitive durum with a medium height. Maier has a good semolina extraction with strong gluten. Maier is resistant to stem and leaf rust diseases. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

Maier has yielded ~ 4 bushels greater than Vic across Montana and similar to high yielding Mountrail. Like Ben, Maier also has high test weight and exhibits excellent durum quality traits from nurseries in Montana and North Dakota.

A Motion to recommend AC Avonlea durum wheat be grown on dryland in districts 2, 3 and 4 and on both dryland and irrigated in districts 5 and 6, effective 2004.

AC Avonlea was realeased by Ag Canada in 1997. AC Avonlea has medium maturity, straw strength and height. It has good resistance to stem and leaf rusts. It has a good overall durum milling and processing quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

AC Avonlea showed yields averaging 4 bushels more than Vic from 2001-2003 and also yields similar to Mountrail, the highest yielder the last three years. AC Avonlea also has one of the higher test weights of the durums tested and exhibits good durum quality traits.

TABLE 1. PAIRED T-TEST RESULTS

GRAIN YIELD (BU/AC)

REFERENCE MEAN: VIC 41.6 (N= 23)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
WPBLAKER	LAKER	46.3	23	4.7	2.9	.008
DT 433	MEDORA	39.8	15	-.6	-.4	.660
PI478289	MONROE	40.9	23	-.7	-.9	.389
PI510696	RENVILLE	43.0	23	1.5	1.7	.094
CANKYLE	KYLE	41.7	23	.1	.1	.956
NDMUNICH	Munich	45.9	23	4.4	3.7	.001
D87130	BEN	43.5	23	1.9	2.7	.012
D901313	MOUNTRAIL	47.9	23	6.4	4.9	.000
D89135	MAIER	46.1	23	4.5	4.1	.000
D91080	PLAZA	45.0	23	3.4	2.3	.030
D901442	LEBSOCK	44.1	23	2.5	2.8	.009
97DU2	UTOPIA	44.9	23	3.3	1.9	.070
ACAVONLE	AC AVONLEA	45.6	23	4.1	3.2	.004
PI574642	MCNEAL	47.5	23	5.9	5.6	.000

TEST WEIGHT (LB/BU)

REFERENCE MEAN: VIC 60.5 (N= 23)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
WPBLAKER	LAKER	60.4	23	-.0	-.2	.857
DT 433	MEDORA	60.5	15	-.1	-.4	.717
PI478289	MONROE	59.7	23	-.7	-2.2	.035
PI510696	RENVILLE	60.0	23	-.4	-2.1	.045
CANKYLE	KYLE	60.3	23	-.2	-.7	.512
NDMUNICH	Munich	59.5	23	-.9	-3.9	.001
D87130	BEN	61.0	23	.5	1.9	.064
D901313	MOUNTRAIL	59.9	23	-.6	-3.0	.007
D89135	MAIER	60.6	23	.2	.6	.581
D91080	PLAZA	59.7	23	-.7	-3.0	.007
D901442	LEBSOCK	61.0	23	.6	2.8	.010
97DU2	UTOPIA	58.8	23	-1.6	-3.9	.001
ACAVONLE	AC AVONLEA	60.4	23	-.1	-.3	.805
PI574642	MCNEAL	58.8	23	-1.6	-5.7	.000

HEADING DATE (JULIAN DAYS;178=June 27)

REFERENCE MEAN: VIC 178.7 (N= 24)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
WPBLAKER	LAKER	179.9	24	1.2	5.1	.000
DT 433	MEDORA	178.4	16	-.8	-3.3	.005
PI478289	MONROE	176.0	24	-2.7	-12.6	.000
PI510696	RENVILLE	178.9	24	.2	1.0	.333
CANKYLE	KYLE	181.0	24	2.3	7.5	.000
NDMUNICH	Munich	178.3	24	-.4	-2.2	.037
D87130	BEN	178.7	24	.0	.1	.933
D901313	MOUNTRAIL	179.6	24	.9	5.2	.000
D89135	MAIER	178.9	24	.2	1.0	.321
D91080	PLAZA	180.0	24	1.3	5.6	.000
D901442	LEBSOCK	178.5	24	-.2	-1.0	.316
97DU2	UTOPIA	176.6	24	-2.1	-9.3	.000
ACAVONLE	AC AVONLEA	178.3	24	-.4	-1.9	.075
PI574642	MCNEAL	179.4	24	.7	3.1	.005

PLANT HEIGHT (INCHES)

REFERENCE MEAN: VIC 32.2 (N= 24)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
WPBLAKER	LAKER	26.8	24	-5.3	-7.0	.000
DT 433	MEDORA	30.9	16	.4	1.1	.273
PI478289	MONROE	30.5	24	-1.7	-3.5	.002
PI510696	RENVILLE	31.9	24	-.2	-.7	.468
CANKYLE	KYLE	34.1	24	1.9	4.0	.000
NDMUNICH	Munich	27.6	24	-4.6	-12.6	.000
D87130	BEN	30.8	24	-1.4	-4.2	.000
D901313	MOUNTRAIL	29.4	24	-2.8	-10.7	.000
D89135	MAIER	28.9	24	-3.3	-7.6	.000
D91080	PLAZA	25.8	24	-6.4	-8.1	.000
D901442	LEBSOCK	29.2	24	-2.9	-7.6	.000
97DU2	UTOPIA	23.0	24	-9.2	-12.5	.000
ACAVONLE	AC AVONLEA	30.4	24	-1.8	-4.2	.000
PI574642	MCNEAL	28.2	24	-3.9	-6.4	.000

GRAIN PROTEIN (%)

REFERENCE MEAN: VIC 15.2 (N= 17)

ID	NAME	ACTUAL MEAN	NO. OBS	MEAN DIFF	T-PAIRED VALUE	P-VALUE
WPBLAKER	LAKER	14.2	17	-1.0	-4.3	.001
DT 433	MEDORA	15.0	11	.5	2.4	.036
PI478289	MONROE	15.5	17	.2	1.3	.210
PI510696	RENVILLE	15.4	17	.1	.6	.573
CANKYLE	KYLE	15.2	17	-.0	-.1	.904
NDMUNICH	Munich	15.3	17	.0	.2	.854
D87130	BEN	15.2	17	-.1	-.5	.601
D901313	MOUNTRAIL	14.9	17	-.3	-1.3	.223
D89135	MAIER	15.5	17	.3	1.3	.204
D91080	PLAZA	14.9	17	-.3	-1.5	.164
D901442	LEBSOCK	14.8	17	-.4	-2.1	.052
97DU2	UTOPIA	15.0	17	-.3	-1.5	.149
ACAVONLE	AC AVONLEA	15.7	17	.5	1.7	.112
PI574642	MCNEAL	14.8	17	-.4	-2.9	.011

TABLE 3. 2001-2003 YIELD (BU/AC) SUMMARY FOR SELECTED VARIETIES GROWN IN THE MONTANA STATEWIDE DURUM NURSERY

VARIETY	HAVRE				AVE	SIDNEY DRY				AVE	SIDNEY IRR				AVE	MOCCASIN DRY			AVE
	2001	2002	2003	YRS		2001	2002	2003	YRS		2001	2002	2003	YRS		2001	2003	YRS	
VIC	19.1	35.3	10.9	3	21.8*	41.8	35.5	50.4	3	42.6	49.8	66.6	109.3	3	75.2*	29.5	12.5	2	21.0*
LAKER	22.2	39.9	12.7	3	24.9	46.4	38.7	55.3	3	46.8*	41.1	70.4	113.9	3	75.1*	32.6	10.9	2	21.7*
MONROE	16.9	33.7	7.1	3	19.2	35.8	34.6	49.3	3	39.9	54.8	66.0	100.0	3	73.6*	29.2	15.0	2	22.1*
RENVILLE	21.5	37.8	11.6	3	23.6*	51.0	38.8	55.7	3	48.5*	36.8	69.2	105.5	3	70.5	29.6	12.7	2	21.1*
KYLE	20.5	36.7	12.5	3	23.2*	53.8	37.8	51.0	3	47.5*	29.0	65.7	89.3	3	61.3	30.7	15.1	2	22.9*
Munich	17.0	38.7	10.6	3	22.1*	49.1	34.7	49.8	3	44.5*	54.0	67.8	123.0	3	81.6*	30.5	12.3	2	21.4*
BEN	15.8	35.9	8.4	3	20.0	48.0	35.4	52.3	3	45.2*	58.4	66.2	112.3	3	79.0*	28.7	13.9	2	21.3*
MOUNTRAIL	18.9	39.5	11.6	3	23.3*	58.2	36.9	53.9	3	49.7	56.3	70.5	125.3	3	84.0	32.3	18.8	2	25.6
MAIER	15.7	39.0	10.0	3	21.5	45.6	37.3	55.2	3	46.0*	56.3	72.1	117.6	3	82.0*	29.8	12.8	2	21.3*
PLAZA	19.1	38.0	12.4	3	23.2*	50.8	36.8	51.4	3	46.4*	57.7	64.4	118.4	3	80.2*	29.5	11.6	2	20.6
LEBSOCK	16.3	35.2	10.5	3	20.6	50.5	38.2	53.3	3	47.3*	53.2	62.1	112.5	3	75.9*	29.6	12.1	2	20.9*
UTOPIA	12.1	37.6	11.1	3	20.3	31.6	38.6	55.4	3	41.9	42.1	61.6	109.4	3	71.0	30.1	13.6	2	21.9*
AC AVONLEA	21.4	40.3	8.1	3	23.3*	50.4	34.5	53.8	3	46.2*	48.2	60.8	106.0	3	71.7	33.9	14.8	2	24.3*
MCNEAL	18.9	39.1	15.6	3	24.5*	51.7	38.8	56.3	3	49.0*	57.2	67.4	106.2	3	76.9*	35.8	10.7	2	23.3*
AVERAGE	18.2	37.6	10.9		22.30	47.5	36.9	53.1		45.8	49.6	66.5	110.6		75.6	30.8	13.3		22.1
C.V. (S/MEAN %)					8.61					9.03					8.21				9.67
LSD (.05)					3.21					6.95					10.42				4.62

VARIETY	HUNTLEY DRY				AVE	CONRAD DRY				AVE	CONRAD IRR				AVE	BOZEMAN DRY				AVE	OVERALL
	2001	2002	2003	YRS		2001	2002	2003	YRS		2001	2002	2003	YRS		2001	2002	2003	YRS		AVERAGE
VIC	31.9	8.5	28.9	3	23.1	12.8	37.7	30.6	3	27.0	37.8	71.5	64.5	3	57.9	76.3	52.2	42.5	3	57.0	40.7
LAKER	33.0	8.2	33.0	3	24.7	14.7	46.4	34.8	3	32.0*	50.2	105.1	75.2	3	76.8	84.2	58.1	37.8	3	60.0*	45.3*
MONROE	31.1	14.7	31.8	3	25.9*	12.3	37.6	34.5	3	28.1	40.6	65.1	63.2	3	56.3	71.9	52.6	42.5	3	55.7	40.0
RENVILLE	36.2	8.4	31.0	3	25.2*	12.3	39.4	31.3	3	27.7	39.3	75.3	70.2	3	61.6	79.1	54.5	42.8	3	58.8*	42.1
KYLE	34.5	4.9	34.7	3	24.7	14.4	51.0	33.1	3	32.9*	45.2	79.1	57.0	3	60.4	74.4	47.9	39.6	3	54.0	40.9
Munich	34.3	10.5	32.6	3	25.8*	11.5	44.4	38.3	3	31.4*	50.1	92.6	73.8	3	72.2*	79.3	60.1	41.8	3	60.4*	44.9*
BEN	29.4	11.0	28.7	3	23.0	12.1	40.6	35.6	3	29.4	43.6	72.8	73.3	3	63.2	79.9	56.2	41.8	3	59.3*	42.6
MOUNTRAIL	33.6	6.6	30.3	3	23.5	15.0	49.5	39.2	3	34.6*	47.4	88.9	83.8	3	73.4*	83.8	60.4	41.9	3	62.0*	47.0
MAIER	29.9	11.2	30.2	3	23.8	12.7	43.6	46.0	3	34.1*	45.3	85.4	79.2	3	69.9*	81.2	62.7	41.5	3	61.8*	45.1*
PLAZA	32.2	8.2	30.4	3	23.6	13.8	43.4	39.1	3	32.1*	44.1	100.5	65.8	3	70.1*	73.6	58.9	34.1	3	55.5	43.9*
LEBSOCK	29.0	9.3	35.0	3	24.4	13.1	42.6	33.6	3	29.8	42.3	83.3	72.8	3	66.1*	76.6	61.7	41.2	3	59.8*	43.1
UTOPIA	36.5	13.9	37.3	3	29.2	11.4	40.8	41.4	3	31.2*	44.7	98.1	85.7	3	76.2*	75.8	61.3	42.7	3	59.9*	43.9*
AC AVONLEA	34.8	10.6	32.2	3	25.9*	16.1	47.8	42.5	3	35.5	48.1	91.5	76.5	3	72.0*	76.4	59.7	40.6	3	58.9*	44.7*
MCNEAL	38.8	11.8	34.2	3	28.2*	14.5	46.7	44.0	3	35.1*	49.9	87.2	77.2	3	71.4*	81.6	64.5	44.3	3	63.5	46.5*
AVERAGE	33.2	9.8	32.2		25.1	13.3	43.7	37.4		31.5	44.9	85.5	72.7		67.7	78.2	57.9	41.1		59.0	43.6
C.V. (S/MEAN %)					9.49					9.99					9.47					5.43	7.48
LSD (.05)					3.99					5.28					10.8					5.38	3.24

Means followed by an asterisk are not significantly different (.05 level) from the highest yielding wheat which is underlined

TABLE 3. 2001-2003 TEST WEIGHT (lb/bu) SUMMARY FOR SELECTED VARIETIES GROWN IN THE MONTANA STATEWIDE DURUM NURSERY

VARIETY	HAVRE AVE	SIDNEY DRY AVE	SIDNEY IRR AVE	MOCCASIN AVE	HUNTLEY DRY AVE	CONRAD DRY AVE	CONRAD IRR AVE	BOZEMAN DRY AVE	OVERALL AVE
VIC	60.2	61.7*	61.8*	60.1*	56.4	59.7	62.8*	61.0*	60.4*
LAKER	61.0	61.0*	60.3	60.2*	56.8	60.2	63.1*	60.6*	60.4*
MONROE	59.0	60.0	61.2*	58.3	57.6	59.0	62.8*	59.7	59.7
RENVILLE	59.8	60.9*	61.3*	59.6*	57.6	58.8	62.3*	59.9	60.0
KYLE	60.8*	61.4*	61.0*	60.6*	57.4	59.6	61.9	59.7	60.3
Munich	58.5	60.1	60.9	58.3	57.2	58.8	62.2*	59.8	59.5
BEN	60.2	61.7*	62.7*	60.2*	58.2	60.2	63.4*	61.0	60.9*
MOUNTRAIL	59.5	60.2	61.9*	59.4*	56.5	59.1	62.3*	59.8	59.8
MAIER	59.8	61.3*	62.1*	59.9*	58.1	60.2	63.4	59.9	60.6*
PLAZA	60.2*	59.9	61.6*	59.2*	56.3	59.0	62.4*	59.1	59.7
LEBSOCK	60.6*	61.8	62.7	61.1*	58.1	60.2	63.0*	60.8*	61.0
UTOPIA	59.9	58.9	57.9	58.6	57.7	57.5	61.5	58.3	58.8
AC AVONLEA	60.3*	60.8*	61.1*	61.3	57.8	59.4	62.8*	60.0	60.4*
MCNEAL	58.1	59.5	61.1*	57.4	56.2	58.4	61.4	58.1	58.8
AVERAGE	59.83	60.66	61.25	59.57	57.27	59.29	62.50	59.83	60.03
C.V. (S/MEAN %)	0.80	1.30	1.68	1.64	2.22	1.48	1.42	0.89	1.01
LSD (.05)	0.80	1.32	1.73	2.12	2.13ns	1.48ns	1.49	0.89	0.60

Means followed by an asterisk are not significantly different (.05 level) from the highest test weight wheat which is underlined

TABLE 4. HEADING DATE (JULIAN DAYS; 181 = JUNE 30) SUMMARY FOR SELECTED VARIETIES GROWN IN THE MONTANA STATEWIDE DURUM NURSERY

VARIETY	HAVRE AVE	SIDNEY DRY AVE	SIDNEY IRR AVE	MOCCASIN AVE	HUNTLEY DRY AVE	CONRAD DRY AVE	CONRAD IRR AVE	BOZEMAN DRY AVE	OVERALL AVE
VIC	182.0	174.7	180.1	182.4	167.0	180.7	181.7	181.0	178.7
LAKER	182.7	176.0	182.1	184.1	167.8	181.7	181.3	183.3	179.9
MONROE	179.0	172.1	177.8	179.1	163.4	178.3	179.0	179.3	176.0
RENVILLE	182.0	174.8	180.9	182.6	167.0	181.3	181.0	181.3	178.9
KYLE	183.1	176.9	183.8	185.8	168.9	183.7	183.7	182.3	181.0
Munich	181.8	174.2	179.9	182.0	166.9	180.3	180.3*	180.7	178.3
BEN	181.7	174.9	181.0	182.2	166.9	181.0	181.3	180.7	178.7
MOUNTRAIL	182.3	175.4	181.7	183.6	168.1	181.7	181.7	182.0	179.6
MAIER	182.4	175.1	181.1	183.0	166.6	181.7	180*	181.7	178.9
PLAZA	182.7	176.1	182.4	183.7	167.8	182.0	182.0	183.3	180.0
LEBSOCK	182.0	174.9	180.4	182.0	166.9	180.7	181.0	180.3*	178.5
UTOPIA	179.7*	172.3*	177.7*	180.8	164.8	178.3*	180*	179.3*	176.6
AC AVONLEA	181.7	174.9	180.4	181.2	166.6	180.3	180*	181.3	178.3
MCNEAL	181.4	176.1	181.7	182.7	167.6	181.7	181.7	182.3	179.4
AVERAGE	181.7	174.9	180.8	182.5	166.9	181.0	181.0	181.4	178.8
C.V. (S/MEAN %)	0.48	0.26	0.38	0.41	0.39	0.41	0.53	0.43	0.28
LSD (.05)	1.45	0.75	1.14	1.27	1.09	1.24	1.62	1.30	0.49

Means followed by an asterisk are not significantly different (.05 level) from the earliest heading weight wheat which is underlined

TABLE 5. PLANT HEIGHT (INCHES) SUMMARY FOR SELECTED VARIETIES GROWN IN THE MONTANA STATEWIDE DURUM NURSERY

VARIETY	HAVRE AVE	SIDNEY DRY AVE	SIDNEY IRR AVE	MOCCASIN AVE	HUNTLEY DRY AVE	CONRAD DRY AVE	CONRAD IRR AVE	BOZEMAN DRY AVE	OVERALL AVE
VIC	21.3	31.8	40.9*	27.6*	28.4*	30.7	37.7*	39.1*	32.2
LAKER	20.1	27.4	32.5	23.1	24.1	27.7	30.3	29.6	26.8
MONROE	20.6	29.8	37.5	27.7*	28.9*	30.0	33.7	36.1	30.5
RENVILLE	21.5	32.6	41.2*	26.8*	27.7*	31.0*	36.0	38.5*	31.9
KYLE	24.1	34.8	42.3	28.2	29.9	33.7	39.0	40.9	34.1
Munich	19.0	26.5	34.1	23.8	25.0	26.3	32.3	33.6	27.6
BEN	21.4	29.4	39.0	26.3	27.5*	30.7	34.7	37.2	30.8
MOUNTRAIL	20.0	28.7	37.3	25.0	25.3	29.0	34.7	35.3	29.4
MAIER	20.5	28.9	36.8	24.7	25.6	28.3	31.7	34.6	28.9
PLAZA	20.7	25.3	31.8	22.2	22.9	25.7	30.0	27.8	25.8
LEBSOCK	19.9	28.5	36.7	25.5	25.6	29.0	34.0	34.6	29.2
UTOPIA	15.8	22.4	27.5	20.5	21.2	24.0	27.0	25.7	23.0
AC AVONLEA	20.9	29.7	36.4	27.0*	27.8*	30.0	34.7	37.0	30.4
MCNEAL	20.5	29.6	33.5	24.3	25.3	28.7	32.3	31.8	28.2
AVERAGE	20.4	29.0	36.2	25.2	26.1	28.9	33.4	34.4	29.2
C.V. (S/MEAN %)	5.61	4.22	4.70	4.07	6.86	5.71	5.07	4.68	4.21
LSD (.05)	1.93	2.05	2.85	1.72	3.00	2.77	2.84	2.70	1.22

Means followed by an asterisk are not significantly different (.05 level) from the tallest wheat which is underlined

TABLE 6. 2001-2003 DURUM QUALITY SUMMARY (11 LOCATION YEARS)

Variety	Test Weight (lb/bu)	1000kw	% large seed	Wheat Protein (%)	Semolina Extract(%)	Semolina color - L	Semolina color-b	Mixogram pattern	OVERALL quality SCORE	RANK
ACAvonlea	60.18	34.82	45.27*	15.10*	61.62	82.17	28.30	3.45	70.90	6
Ben	60.81*	37.23*	45.91*	15.15*	62.15	82.77*	24.79	4.18	83.98	4
Kyle	60.55	34.86	30.64	14.88*	61.06	82.49	25.85	3.18	39.87	12
Laker	60.75*	36.34*	47.72*	14.15	60.91	81.93	23.29	5.00*	86.60	3
Lebsock	61.21	35.66	41.63*	14.44	62.12	82.35	25.86	2.82	48.92	8
Maier	60.15	33.78	36.46	15.31	62.64*	82.00	29.28	5.36*	91.42	1
McNeal	57.91	28.77	34.09	15.07*	62.90*	83.35	12.75	5.64	32.26	14
Monroe	59.44	37.83	46.90*	15.00*	62.15	82.50	26.97	4.09	89.48	2
Mountrail	59.57	33.34	30.36	14.59	62.15	82.20	25.37	3.82	43.55	9
Munich	59.15	32.20	31.18	15.11*	61.95	82.16	27.88	3.00	38.21	13
Plaza	59.60	32.76	30.27	14.85*	60.69	81.75	27.61	3.36	40.44	11
Renville	60.06	32.84	29.18	14.74	63.55	82.44	26.09	3.55	41.10	10
Utopia	59.01	36.45*	47.73	14.68	60.65	81.37	26.05	3.55	68.69	7
Vic	60.61*	37.76*	43.00*	15.11*	62.70*	82.51	27.02	3.82	79.36	5
MEAN	59.92	34.62	38.59	14.87	61.95	82.29	25.51	3.92		
C.V. (S/MEAN %)	1.25	5.71	19.71	3.99	2.31	0.86	2.88	21.55		
LSD (.05)	0.63	1.67	6.42	0.50	1.20	0.60	0.62	0.71		

Means followed by an asterisk are not significantly different from the highest wheat for each trait which is underlined