

PROJECT TITLE: Statewide Spring Wheat Variety Performance - 1998

PROJECT LEADER:

L. Talbert, Spring Wheat breeder, Bozeman

PROJECT PERSONNEL:

D.M. Wichman, CARC, Moccasin

J.L.A. Eckhoff, EARC, Sidney

G.R. Carlson, NARC, Havre

R.N. Stougaard, NWARC Kalispell

K. Kephart, SARC, Huntley

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OBJECTIVE: To evaluate new and existing varieties and experimental lines of spring wheat under various growing conditions and environments in Montana.

RESULTS: The 1998 Advanced Spring Wheat yield trial was grown at two irrigated and seven rainfed sites across Montana. Irrigated sites were at Sidney and Bozeman. Replicated multiple-row plots were established at all locations using standard research techniques.

Heading date, plant height at maturity, yield, test weight, and grain protein contents are summarized in Tables 1, 2, 3, 4, and 5.

Soil moisture at **Sidney** was excellent at planting, but weather was very dry until mid-June, when showers occurred in a timely fashion. Dryland yields were above average, but irrigated yields were very low because of uneven germination, bird and gopher damage. **Havre** had very cold, dry weather early in the season, so germination was slow but uniform. Heavy rain fell in late June and early July, resulting in average yields and normal test weights. **Kalispell** experienced dry conditions early in the growing season, but above average precipitation and growing degree days later in the season resulted in ideal conditions for spring wheat production. Moderate to severe tan spot infection was observed. **Bozeman** was dry until mid June, when heavy rains fell. Weather was dry and warm for the rest of the season. **Conrad** experienced above average precipitation in June and July, but very hot and dry weather prevailed at the end of the season, reducing kernel size and test weights. No disease or sawfly pressure was observed. **Moccasin** had very dry weather prior to the growing season, resulting in little stored soil moisture. Precipitation was above normal in June, and severe heat stress in late July resulted in low test weights. Plots at **Huntley** were destroyed by hail.

SUMMARY: Highest yielding lines on a statewide basis were BR2306, MT9675, and MT9712. Highest yielding varieties at individual sites were McNeal at **Havre**, MT9748 at **Sidney dryland**, MT9712 at **Sidney irrigated**, Hi-Line at **Moccasin**, McNeal at **Conrad**, MT9675 at **Kalispell**, Amidon at **Bozeman dryland**, and BR2306 at **Bozeman irrigated**.

FUTURE PLANS: New and existing varieties and experimental lines will continue to be evaluated at Bozeman and the Research Centers in Montana, so that breeders can release improved varieties and producers can have information on varieties best adapted to conditions in their areas.

TABLE 1. 1998 HEADING DATE SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA.

ID	VARIETY or PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman		AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
BR 2306	NW CONSORTIUM	173.1	168.0	176.6	181.9	175.0	168.4	182.0	182.0	175.9	1.07	0.98	7
BZ987331	MSFRS SELECTION	170.8	166.3	173.4	179.2	174.0	165.7	180.0	180.0	173.7	1.06	0.97	2
BZ991408	WPB HARD WHITE	170.3	165.1	172.6	179.0	173.0	163.8	180.0	179.0	172.8	1.14	0.97	1
CI 10003	THATCHER	175.0	173.6	181.7	185.0	181.0	174.0	186.0	183.0	179.9	0.91	0.96	48
CI 13596	FORTUNA	173.3	171.3	177.7	182.6	177.0	170.3	182.0	182.0	177.0	0.91	0.99	19
CI 17429	LEW	175.0	173.3	180.7	185.3	180.0	173.7	186.0	185.0	179.9	0.98	0.99	49
CI 17430	NEWANA	174.5	172.7	181.5	185.6	180.0	172.7	185.0	185.0	179.6	1.03	0.99	47
CI 17790	LEN	173.6	171.3	179.1	183.0	177.0	170.5	184.0	183.0	177.7	1.00	0.99	27
MT 9433	MT8808/MARBERG	174.3	172.0	179.2	183.4	181.0	172.0	184.0	183.0	178.6	0.93	0.97	37
MT 9539	LEW/PONDERA//PONDERA	172.4	168.7	177.7	182.0	176.0	169.4	184.0	183.0	176.7	1.11	0.99	16
MT 9558	PONDERA/LEW//PONDERA	173.2	171.9	179.7	184.3	180.0	172.0	184.0	184.0	178.6	1.01	0.99	38
MT 9609	FORTUNA/AMIDON	171.4	168.9	179.4	181.3	177.0	170.1	182.0	183.0	176.6	1.04	0.97	13
MT 9627	GRANDIN/LEW	173.2	170.4	177.9	183.3	177.0	170.5	183.0	183.0	177.3	1.02	1.00	22
MT 9631	LEN/LEW	174.3	171.0	177.7	182.7	178.0	171.6	184.0	183.0	177.8	0.94	0.98	29
MT 9653	LEW/AMIDON	173.5	173.0	176.9	185.1	180.0	172.4	184.0	185.0	178.7	0.98	0.93	42
MT 9675	WINRIDGE/NEWANA	173.9	173.4	180.6	184.6	180.0	172.3	184.0	183.0	179.0	0.92	0.97	44
MT 9704	NEWANA//MT8603/NEWANA	174.9	173.3	178.2	186.1	180.0	172.0	184.0	184.0	179.1	0.96	0.95	46
MT 9706	PONDERA/MT8849	173.9	171.4	179.7	182.9	177.0	170.9	183.0	183.0	177.7	0.95	0.99	28
MT 9709	PONDERA//MTRWA141	172.8	171.6	179.3	184.0	181.0	172.2	184.0	184.0	178.6	1.01	0.97	39
MT 9712	PONDERA//MT8603/PONDERA	172.4	168.7	178.7	182.1	176.0	170.5	184.0	182.0	176.8	1.06	0.98	17
MT 9715	FORTUNA/MT8849	173.7	170.3	179.0	181.9	176.0	170.2	182.0	183.0	177.0	0.96	0.98	20
MT 9716	FORTUNA/MT8849	175.0	172.3	180.5	184.0	179.0	171.3	184.0	183.0	178.6	0.95	0.99	40
MT 9719	LEW/MT8849	172.6	169.6	177.3	181.7	176.0	170.5	183.0	182.0	176.6	0.98	0.99	14
MT 9720	LEW/MT8849	174.2	171.7	180.9	183.7	177.0	170.8	184.0	184.0	178.3	1.02	0.98	35
MT 9721	LEN/MT8849	174.9	172.3	181.1	184.0	177.0	172.2	184.0	184.0	178.7	0.95	0.97	43
MT 9727	MARBERG//MT8603/MARBERG	173.7	171.4	181.7	182.8	180.0	170.3	184.0	184.0	178.5	1.04	0.96	36
MT 9728	MARBERG//MT8603/MARBERG	172.5	169.3	179.5	180.4	176.0	168.2	182.0	182.0	176.2	1.02	0.97	10
MT 9735	MARBERG//MT8603/MARBERG	174.6	172.7	179.5	182.7	181.0	170.8	184.0	184.0	178.6	0.95	0.96	41
MT 9736	MARBERG/MT8623/MARBERG	172.7	171.7	179.0	182.0	175.0	169.6	182.0	183.0	176.9	0.95	0.95	18
MT 9738	AMIDON/MT8849	173.0	169.7	176.0	183.6	180.0	171.1	183.0	182.0	177.3	0.99	0.93	23
MT 9739	AMIDON//GLENMAN/AMIDON	171.3	168.6	178.4	181.7	177.0	170.9	182.0	182.0	176.5	1.01	0.98	12

TABLE 1. 1998 HEADING DATE SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA.

ID	VARIETY or PEDIGREE	Havre	Sidney dry	Sidney irr	Moccasin	Conrad	Kalispell	Bozeman dry	Bozeman irr	AVG	BYX	RSQ	RANK
MT 9742	AMIDON//GLENMAN/AMIDON	173.0	171.3	178.3	184.0	176.0	171.5	184.0	184.0	177.8	1.03	0.97	30
MT 9748	MT8849/PONDERA	173.6	171.0	177.3	181.9	176.0	171.3	183.0	183.0	177.1	0.92	0.98	21
MT 9750	MT8849/MTRWA116	173.1	169.7	177.5	181.6	175.0	168.5	182.0	181.0	176.0	0.97	0.97	9
MT 9754	FORTUNA/PONDERA//MTRWA1	172.7	169.4	176.3	182.3	177.0	170.5	183.0	182.0	176.6	1.00	0.99	15
MT 9755	MTRWA141/PONDERA	172.0	168.4	177.5	180.0	174.0	165.9	181.0	180.0	174.8	1.03	0.96	4
MT 9756	MT8603/AMIDON//AMIDON	172.4	170.2	180.2	182.3	180.0	170.5	182.0	182.0	177.5	0.97	0.95	25
MT 9757	MT8603/AMIDON//AMIDON	173.0	171.3	177.4	182.7	180.0	172.1	184.0	184.0	178.1	0.97	0.95	33
MT 9758	MT8603/AMIDON//AMIDON	173.1	170.7	181.6	184.4	180.0	172.9	185.0	184.0	179.0	1.06	0.97	45
MT 9759	MT8603/NEWANA//NEWANA	174.2	171.3	181.2	183.4	177.0	171.0	184.0	183.0	178.1	1.00	0.97	34
MT 9770	GLENMAN/AMIDON//AMIDON	170.3	168.3	178.2	180.4	176.0	169.2	182.0	181.0	175.7	1.03	0.98	6
MT 9771	GLENMAN/AMIDON//AMIDON	173.0	171.3	177.4	183.0	179.0	170.9	184.0	184.0	177.8	1.02	0.98	31
MT 9772	GLENMAN/AMIDON//AMIDON	172.8	170.4	177.1	182.7	179.0	171.3	182.0	184.0	177.4	0.98	0.97	24
PI527682	AMIDON	173.0	169.1	178.7	183.3	179.0	171.7	183.0	182.0	177.5	1.00	0.97	26
PI531005	GRANDIN	173.1	168.1	176.9	182.0	175.0	168.5	182.0	182.0	175.9	1.07	0.98	8
PI549275	HI-LINE	172.5	167.7	178.3	181.4	175.0	168.0	181.0	181.0	175.6	1.04	0.97	5
PI574642	MCNEAL	174.2	172.4	177.9	184.0	177.0	171.7	184.0	183.0	178.0	0.93	0.97	32
PI592761	ERNEST	171.1	169.0	176.3	181.4	177.0	170.4	184.0	182.0	176.4	1.05	0.97	11
WB 926	WESTBRED 926	171.0	166.0	176.3	179.1	174.0	166.7	181.0	180.0	174.3	1.08	0.98	3
*****	SITE MEAN *****	173.1	170.4	178.5	182.7	177.6	170.5	183.1	182.7	177.3	1.00	1.00	

TABLE 2. 1998 PLANT HEIGHT (inches) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY OR PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
BR 2306	NW CONSORTIUM	28.12	34.13	30.77	37.36	39.00	37.32	33.79	37.17	34.7	1.09	0.94	23
BZ987331	MSFRS SELECTION	26.47	33.57	27.18	35.14	35.33	35.24	33.90	35.10	32.7	1.08	0.94	35
BZ991408	WPB HARD WHITE	25.69	32.50	27.71	34.16	34.67	35.10	35.27	35.73	32.6	1.07	0.88	36
CI 10003	THATCHER	34.56	42.29	38.25	45.79	48.33	45.58	43.54	42.78	42.6	1.30	0.97	1
CI 13596	FORTUNA	30.97	38.07	35.08	42.64	42.67	41.19	41.36	40.83	39.1	1.23	0.97	5
CI 17429	LEW	29.20	40.07	36.48	43.56	44.00	41.81	40.48	39.92	39.4	1.38	0.94	3
CI 17430	NEWANA	27.51	32.71	28.82	33.63	34.67	34.04	33.33	33.88	32.3	0.78	0.96	37
CI 17790	LEN	26.85	33.71	30.85	36.04	36.33	35.47	35.67	33.95	33.6	0.95	0.95	29
MT 9433	MT8808/MARBERG	28.69	35.51	34.21	41.04	41.67	36.74	37.69	37.48	36.6	1.16	0.89	19
MT 9539	LEW/PONDERA//PONDERA	27.84	32.89	28.40	35.83	36.67	34.75	34.68	35.89	33.4	1.00	0.94	31
MT 9558	PONDERA/LEW//PONDERA	28.60	33.83	32.03	35.56	35.00	33.99	34.36	34.49	33.5	0.64	0.91	30
MT 9609	FORTUNA/AMIDON	27.60	35.99	33.05	42.96	44.00	40.91	38.66	40.53	38.0	1.63	0.97	13
MT 9627	GRANDIN/LEW	26.96	32.20	28.91	34.35	34.33	32.73	34.31	33.58	32.2	0.80	0.93	39
MT 9631	LEN/LEW	31.26	38.69	37.18	42.58	42.33	40.95	40.11	39.68	39.1	1.05	0.93	6
MT 9653	LEW/AMIDON	32.66	39.95	34.69	41.33	44.67	41.17	40.76	41.55	39.6	1.15	0.95	2
MT 9675	WINRIDGE/NEWANA	29.67	33.75	30.58	37.44	37.33	36.87	34.81	34.99	34.4	0.87	0.96	24
MT 9704	NEWANA//MT8603/NEWANA	28.64	33.09	30.64	34.19	35.33	34.54	32.01	34.12	32.8	0.65	0.92	34
MT 9706	PONDERA/MT8849	31.06	35.81	32.60	39.64	40.67	40.41	37.11	37.20	36.8	1.03	0.94	18
MT 9709	PONDERA//MTRWA141	30.19	38.61	33.88	42.20	42.00	39.60	38.81	38.50	38.0	1.20	0.97	14
MT 9712	PONDERA//MT8603/PONDERA	29.55	35.99	32.58	36.35	38.00	39.13	37.89	36.72	35.8	0.89	0.87	21
MT 9715	FORTUNA/MT8849	28.44	33.55	30.65	35.94	35.33	34.01	35.44	33.97	33.4	0.75	0.93	32
MT 9716	FORTUNA/MT8849	29.70	36.10	34.57	38.73	40.33	37.86	37.71	36.90	36.5	0.94	0.94	20
MT 9719	LEW/MT8849	26.87	32.66	27.30	33.90	35.00	33.71	33.50	33.19	32.0	0.91	0.95	40
MT 9720	LEW/MT8849	27.18	32.21	27.86	33.72	34.33	32.42	31.93	32.20	31.5	0.76	0.96	44
MT 9721	LEN/MT8849	28.18	33.90	29.75	36.47	36.33	37.63	33.97	33.81	33.8	0.95	0.92	28
MT 9727	MARBERG//MT8603/MARBERG	27.64	30.96	29.13	33.94	33.67	33.03	33.43	33.39	31.9	0.69	0.93	41
MT 9728	MARBERG//MT8603/MARBERG	27.24	30.99	27.12	34.23	33.33	32.32	32.04	31.80	31.1	0.76	0.93	47
MT 9735	MARBERG//MT8603/MARBERG	30.63	33.04	31.47	33.90	35.67	32.45	33.52	32.86	32.9	0.40	0.76	33
MT 9736	MARBERG/MT8623/MARBERG	26.52	31.75	29.83	33.30	33.67	32.77	32.13	32.88	31.6	0.70	0.96	43
MT 9738	AMIDON/MT8849	31.54	38.38	35.39	43.73	44.33	42.08	40.15	38.99	39.3	1.26	0.95	4
MT 9739	AMIDON//GLENMAN/AMIDON	29.91	37.42	33.32	41.98	43.00	40.02	38.75	37.51	37.7	1.28	0.96	17

TABLE 2. 1998 PLANT HEIGHT (inches) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY OR PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
MT 9742	AMIDON//GLENMAN/AMIDON	28.20	34.75	30.31	35.98	37.00	34.82	34.76	35.52	33.9	0.89	0.96	27
MT 9748	MT8849/PONDERA	28.54	35.95	30.74	36.60	37.33	38.96	28.20	35.86	34.0	0.91	0.52	26
MT 9750	MT8849/MTRWA116	27.27	33.76	28.43	34.10	34.00	35.22	32.75	32.59	32.3	0.81	0.89	38
MT 9754	FORTUNA/PONDERA//MTRWA116	27.47	30.95	27.54	31.44	32.33	32.15	31.75	30.05	30.5	0.55	0.87	49
MT 9755	MTRWA141/PONDERA	24.82	31.12	26.45	33.96	34.00	33.89	31.25	33.16	31.1	1.05	0.96	48
MT 9756	MT8603/AMIDON//AMIDON	29.75	37.00	32.59	43.06	43.00	40.62	39.30	39.92	38.2	1.43	0.99	12
MT 9757	MT8603/AMIDON//AMIDON	29.73	36.65	33.29	41.90	44.00	40.75	38.54	39.51	38.0	1.39	0.98	15
MT 9758	MT8603/AMIDON//AMIDON	30.83	36.76	34.01	42.90	44.33	39.61	39.61	38.75	38.4	1.29	0.94	10
MT 9759	MT8603/NEWANA//NEWANA	26.40	31.16	26.78	32.34	34.67	34.19	32.42	32.93	31.4	0.90	0.91	45
MT 9770	GLENMAN/AMIDON//AMIDON	30.84	37.97	34.05	41.62	42.33	40.34	38.86	38.09	38.0	1.15	0.98	16
MT 9771	GLENMAN/AMIDON//AMIDON	30.99	38.67	35.51	42.43	44.00	39.70	40.11	40.23	39.0	1.20	0.96	7
MT 9772	GLENMAN/AMIDON//AMIDON	30.33	38.96	34.44	42.39	43.33	40.10	40.74	41.15	38.9	1.30	0.98	8
PI527682	AMIDON	32.85	37.90	33.77	43.47	40.33	39.73	39.91	39.24	38.4	0.99	0.88	11
PI531005	GRANDIN	29.86	35.15	30.59	36.68	38.00	36.71	36.09	36.03	34.9	0.88	0.97	22
PI549275	HI-LINE	26.97	32.36	28.45	33.96	33.67	33.89	32.48	33.41	31.9	0.79	0.96	42
PI574642	MCNEAL	29.03	34.35	28.87	36.99	37.67	35.54	34.55	35.76	34.1	0.98	0.94	25
PI592761	ERNEST	30.64	37.77	35.35	41.85	42.33	40.48	39.98	39.45	38.5	1.15	0.98	9
WB 926	WESTBRED 926	25.61	32.04	25.97	33.74	33.67	33.52	33.01	32.84	31.3	1.00	0.94	46
*****	SITE MEAN *****	28.90	35.05	31.38	37.90	38.53	37.06	36.03	36.25	35.1	1.00	1.00	

TABLE 3. 1998 YIELD (bu/ac) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY OR PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
BR 2306	NW CONSORTIUM	41.9	66.5	47.2	59.4	72.4	106.5	88.6	111.7	74.3	1.14	0.96	1
BZ987331	MSFRS SELECTION	38.7	63.9	41.1	53.2	70.4	111.0	81.6	92.3	69.0	1.11	0.96	13
BZ991408	WPB HARD WHITE	31.0	50.1	38.4	45.3	70.4	109.0	86.8	104.5	66.9	1.35	0.98	30
CI 10003	THATCHER	36.5	53.4	38.9	39.2	54.9	83.5	73.2	75.1	56.8	0.82	0.98	49
CI 13596	FORTUNA	36.0	59.2	44.0	45.5	61.8	88.1	82.8	79.7	62.1	0.87	0.97	46
CI 17429	LEW	37.7	64.9	37.3	42.2	60.7	91.7	80.1	78.6	61.7	0.92	0.95	48
CI 17430	NEWANA	39.5	59.1	40.4	48.8	70.5	103.3	77.3	100.9	67.5	1.11	0.96	21
CI 17790	LEN	39.0	60.9	51.0	46.6	66.9	97.3	86.5	90.4	67.3	0.98	0.99	25
MT 9433	MT8808/MARBERG	42.4	64.6	45.3	47.6	68.7	101.0	85.6	94.3	68.7	1.03	1.00	14
MT 9539	LEW/PONDERA//PONDERA	41.5	61.5	38.3	52.6	67.9	98.8	83.9	94.2	67.3	1.03	0.98	24
MT 9558	PONDERA/LEW//PONDERA	41.2	55.2	41.1	41.8	64.7	84.2	85.2	81.8	61.9	0.87	0.95	47
MT 9609	FORTUNA/AMIDON	37.2	59.7	47.1	48.6	66.0	97.3	85.5	96.8	67.3	1.05	0.99	23
MT 9627	GRANDIN/LEW	38.6	61.8	39.2	45.0	67.5	99.1	88.3	88.7	66.0	1.07	0.98	37
MT 9631	LEN/LEW	41.5	63.0	48.1	45.0	56.4	99.8	85.1	89.4	66.0	0.98	0.95	38
MT 9653	LEW/AMIDON	40.8	63.1	48.6	40.7	65.7	103.8	83.7	86.9	66.7	1.02	0.96	31
MT 9675	WINRIDGE/NEWANA	42.9	63.6	45.7	59.7	73.3	113.1	88.2	103.3	73.7	1.15	0.98	2
MT 9704	NEWANA//MT8603/NEWANA	41.7	64.0	51.4	46.2	69.9	99.1	85.8	103.2	70.2	1.05	0.97	8
MT 9706	PONDERA/MT8849	41.2	65.0	49.3	53.3	71.0	100.0	78.7	91.1	68.7	0.92	0.98	15
MT 9709	PONDERA//MTRWA141	42.7	60.6	45.3	48.6	69.0	102.9	90.5	98.5	69.8	1.10	0.99	9
MT 9712	PONDERA//MT8603/PONDERA	39.8	65.2	57.8	56.6	71.6	102.5	92.1	96.7	72.8	0.99	0.98	3
MT 9715	FORTUNA/MT8849	39.2	68.3	46.3	59.4	74.0	100.3	85.8	91.7	70.6	0.96	0.97	7
MT 9716	FORTUNA/MT8849	37.6	59.8	47.0	53.7	64.3	89.9	84.2	84.9	65.2	0.86	0.98	41
MT 9719	LEW/MT8849	42.2	61.7	41.6	53.6	68.4	95.1	84.6	91.3	67.3	0.95	0.99	26
MT 9720	LEW/MT8849	43.7	59.6	43.2	52.9	69.4	95.6	80.3	91.5	67.0	0.92	0.99	29
MT 9721	LEN/MT8849	43.4	61.7	41.5	52.0	65.3	101.4	79.8	97.5	67.8	1.02	0.97	18
MT 9727	MARBERG//MT8603/MARBERG	41.0	53.7	36.5	44.6	67.6	91.2	74.3	92.0	62.6	0.97	0.96	45
MT 9728	MARBERG//MT8603/MARBERG	41.6	61.1	34.2	48.0	70.7	88.4	84.7	91.7	65.1	0.97	0.94	42
MT 9735	MARBERG//MT8603/MARBERG	41.3	58.4	46.5	45.2	72.1	95.8	86.3	91.0	67.1	0.99	0.99	27
MT 9736	MARBERG/MT8623/MARBERG	35.8	55.1	42.5	41.3	68.2	92.4	78.2	93.4	63.3	1.03	0.98	44
MT 9738	AMIDON/MT8849	42.4	62.0	56.0	48.6	67.7	110.6	88.8	94.2	71.3	1.06	0.96	5
MT 9739	AMIDON//GLENMAN/AMIDON	39.4	59.1	52.6	47.9	70.5	99.0	89.0	91.4	68.6	0.99	0.98	16

TABLE 3. 1998 YIELD (bu/ac) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY OR PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
		dry	dry	irr				dry	irr				
MT 9742	AMIDON//GLENMAN/AMIDON	41.4	61.7	48.7	48.6	72.0	88.9	83.4	84.8	66.2	0.83	0.98	35
MT 9748	MT8849/PONDERA	42.5	67.5	44.8	52.2	73.0	96.1	82.9	96.9	69.5	0.96	0.97	12
MT 9750	MT8849/MTRWA116	40.2	56.7	45.0	53.5	69.3	96.6	75.9	85.8	65.4	0.88	0.97	39
MT 9754	FORTUNA/PONDERA//MTRWA11	41.0	67.0	48.7	50.3	69.7	97.7	79.3	79.5	66.6	0.83	0.94	32
MT 9755	MTRWA141/PONDERA	37.4	59.3	44.9	48.8	73.0	99.8	82.1	97.6	67.9	1.07	0.99	17
MT 9756	MT8603/AMIDON//AMIDON	42.0	65.2	48.7	46.0	68.1	99.7	84.0	86.8	67.6	0.95	0.99	20
MT 9757	MT8603/AMIDON//AMIDON	40.0	61.0	50.5	46.3	64.5	94.0	87.7	87.5	66.4	0.93	0.98	34
MT 9758	MT8603/AMIDON//AMIDON	40.4	60.0	43.1	43.3	68.1	102.5	87.8	94.3	67.4	1.11	0.99	22
MT 9759	MT8603/NEWANA//NEWANA	37.1	52.9	33.8	38.9	69.2	96.9	88.1	91.9	63.6	1.17	0.98	43
MT 9770	GLENMAN/AMIDON//AMIDON	38.9	60.0	43.4	54.0	65.2	99.7	84.2	86.5	66.5	0.97	0.98	33
MT 9771	GLENMAN/AMIDON//AMIDON	40.5	64.5	51.0	48.1	68.2	98.3	90.8	96.6	69.7	1.02	0.98	10
MT 9772	GLENMAN/AMIDON//AMIDON	40.6	60.8	56.7	39.6	66.4	102.7	82.4	92.4	67.7	1.01	0.94	19
PI527682	AMIDON	42.3	63.2	48.6	51.0	65.5	110.8	93.1	90.9	70.7	1.09	0.96	6
PI531005	GRANDIN	41.8	63.1	44.6	46.2	65.2	95.3	82.5	83.0	65.2	0.90	0.98	40
PI549275	HI-LINE	40.0	64.1	48.1	61.1	72.7	86.8	86.6	97.1	69.6	0.86	0.92	11
PI574642	MCNEAL	44.1	65.7	50.5	56.1	75.9	106.0	81.0	101.5	72.6	1.01	0.97	4
PI592761	ERNEST	36.6	58.1	51.2	47.9	66.3	97.3	86.9	92.1	67.0	1.01	0.99	28
WB 926	WESTBRED 926	32.8	63.0	42.5	48.3	68.2	98.0	83.4	92.8	66.1	1.07	0.99	36
*****	SITE MEAN *****	40.0	61.2	45.5	48.8	68.1	98.3	84.2	92.0	67.3	1.00	1.00	

TABLE 4. 1998 TEST WEIGHT (lb/bu) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY or PEDIGREE	Havre	Sidney dry	Sidney irr	Moccasin	Conrad	Kalispell	Bozeman dry	Bozeman irr	AVG	BYX	RSQ	RANK
BR 2306	NW CONSORTIUM	60.31	59.77	60.17	54.41	60.50	60.90	57.70	61.10	59.4	1.13	0.88	41
BZ987331	MSFRS SELECTION	58.30	57.76	58.67	56.52	61.20	61.70	58.50	60.40	59.1	0.86	0.81	42
BZ991408	WPB HARD WHITE	62.82	61.43	62.60	57.37	63.30	62.60	60.50	63.50	61.8	1.03	0.90	3
CI 10003	THATCHER	57.51	56.95	58.30	53.84	59.60	61.30	58.90	61.40	58.5	1.21	0.84	46
CI 13596	FORTUNA	62.04	60.76	59.67	57.88	63.30	63.50	60.20	61.90	61.2	0.90	0.78	9
CI 17429	LEW	60.97	60.78	61.00	57.20	63.10	63.30	61.20	63.40	61.4	1.04	0.92	7
CI 17430	NEWANA	60.59	58.48	60.50	55.29	60.70	62.50	58.60	62.10	59.8	1.22	0.97	33
CI 17790	LEN	60.58	58.24	60.17	55.22	61.30	61.00	57.50	61.70	59.5	1.18	0.95	38
MT 9433	MT8808/MARBERG	62.05	60.60	62.17	55.81	62.40	62.30	59.20	62.60	60.9	1.20	0.91	14
MT 9539	LEW/PONDERA//PONDERA	61.91	60.79	60.93	58.28	62.00	63.60	60.50	63.30	61.4	0.87	0.92	8
MT 9558	PONDERA/LEW//PONDERA	61.26	59.03	59.83	55.66	61.40	61.20	58.90	60.50	59.7	0.96	0.89	35
MT 9609	FORTUNA/AMIDON	60.78	59.64	61.00	56.68	61.10	63.00	59.70	62.80	60.6	1.04	0.95	18
MT 9627	GRANDIN/LEW	60.41	59.79	61.37	56.07	61.90	63.00	60.00	61.80	60.5	1.09	0.95	21
MT 9631	LEN/LEW	61.42	60.61	61.50	57.70	61.70	63.30	60.00	62.50	61.1	0.89	0.96	10
MT 9653	LEW/AMIDON	60.25	61.09	61.83	57.03	62.50	63.70	59.00	63.00	61.1	1.12	0.90	11
MT 9675	WINRIDGE/NEWANA	58.02	55.21	58.67	55.11	59.70	61.40	56.90	61.00	58.3	1.17	0.83	48
MT 9704	NEWANA//MT8603/NEWANA	59.59	57.65	60.00	53.70	62.10	63.40	59.10	61.90	59.7	1.59	0.96	34
MT 9706	PONDERA/MT8849	60.57	60.68	61.50	58.51	62.80	62.70	59.40	62.40	61.1	0.79	0.89	12
MT 9709	PONDERA//MTRWA141	61.87	60.13	61.00	58.17	62.70	62.10	58.30	62.20	60.8	0.86	0.82	17
MT 9712	PONDERA//MT8603/PONDERA	62.32	60.93	62.50	58.93	63.30	62.90	59.20	63.20	61.7	0.87	0.85	4
MT 9715	FORTUNA/MT8849	59.56	58.71	58.50	57.91	62.00	62.40	59.60	61.60	60.0	0.77	0.69	28
MT 9716	FORTUNA/MT8849	60.18	58.68	58.67	58.32	61.70	61.80	59.90	61.20	60.1	0.61	0.66	26
MT 9719	LEW/MT8849	62.67	62.33	63.33	59.74	64.20	64.40	60.20	63.50	62.5	0.86	0.86	1
MT 9720	LEW/MT8849	62.28	62.17	62.67	58.64	62.80	63.50	60.60	63.60	62.0	0.85	0.92	2
MT 9721	LEN/MT8849	58.82	57.27	60.77	56.45	59.80	61.70	59.80	61.50	59.5	0.87	0.73	40
MT 9727	MARBERG//MT8603/MARBERG	60.81	59.88	60.27	57.73	62.50	62.20	58.20	61.80	60.4	0.88	0.87	23
MT 9728	MARBERG//MT8603/MARBERG	61.95	60.77	61.53	60.21	63.60	62.00	58.70	63.30	61.5	0.64	0.55	6
MT 9735	MARBERG//MT8603/MARBERG	59.12	59.17	59.67	56.18	61.20	62.10	57.50	62.00	59.6	1.07	0.91	37
MT 9736	MARBERG/MT8623/MARBERG	57.68	56.11	58.67	53.60	60.70	60.40	57.60	60.60	58.2	1.28	0.93	49
MT 9738	AMIDON/MT8849	60.32	59.25	61.17	55.84	60.40	62.10	58.90	61.10	59.9	0.99	0.92	30
MT 9739	AMIDON//GLENMAN/AMIDON	61.09	59.28	61.67	57.28	62.50	62.30	59.00	61.50	60.6	0.95	0.93	19

TABLE 4. 1998 TEST WEIGHT (lb/bu) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	VARIETY or PEDIGREE	Havre	Sidney dry	Sidney irr	Moccasin	Conrad	Kalispell	Bozeman dry	Bozeman irr	AVG	BYX	RSQ	RANK
MT 9742	AMIDON//GLENMAN/AMIDON	61.72	59.56	61.00	57.16	62.50	62.70	59.60	60.50	60.6	0.89	0.84	20
MT 9748	MT8849/PONDERA	60.40	59.28	60.67	58.04	62.70	63.00	61.20	62.90	61.0	0.87	0.82	13
MT 9750	MT8849/MTRWA116	58.53	57.08	59.00	54.30	59.00	60.20	58.50	60.70	58.4	1.00	0.89	47
MT 9754	FORTUNA/PONDERA//MTRWA116	60.66	58.54	58.67	55.65	60.50	60.10	57.30	59.10	58.8	0.79	0.76	45
MT 9755	MTRWA141/PONDERA	61.08	58.52	60.37	56.21	62.10	61.50	59.90	61.90	60.2	1.02	0.92	25
MT 9756	MT8603/AMIDON//AMIDON	60.36	58.94	60.83	55.96	61.20	62.80	59.10	60.90	60.0	1.06	0.95	27
MT 9757	MT8603/AMIDON//AMIDON	60.30	58.63	60.83	55.36	60.80	61.20	58.00	61.30	59.6	1.08	0.95	36
MT 9758	MT8603/AMIDON//AMIDON	59.22	58.19	60.50	53.44	60.30	60.60	57.40	61.30	58.9	1.32	0.94	43
MT 9759	MT8603/NEWANA//NEWANA	58.74	56.76	60.23	53.37	60.50	60.80	58.40	61.50	58.8	1.37	0.93	44
MT 9770	GLENMAN/AMIDON//AMIDON	62.54	60.58	61.50	59.78	62.80	62.60	60.40	62.20	61.5	0.57	0.84	5
MT 9771	GLENMAN/AMIDON//AMIDON	59.53	57.95	60.33	57.18	60.90	62.30	59.30	62.10	59.9	0.91	0.87	32
MT 9772	GLENMAN/AMIDON//AMIDON	60.78	59.06	61.00	56.74	61.40	62.60	59.60	62.40	60.4	1.02	0.98	22
PI527682	AMIDON	60.43	59.15	60.33	56.43	60.70	61.60	59.00	61.20	59.9	0.87	0.98	29
PI531005	GRANDIN	60.44	59.81	61.23	54.58	61.70	61.60	57.40	62.30	59.9	1.34	0.91	31
PI549275	HI-LINE	61.78	60.44	61.00	56.14	62.50	61.10	61.10	62.90	60.9	0.98	0.78	16
PI574642	MCNEAL	58.91	59.40	61.00	57.31	61.70	62.60	59.80	62.20	60.4	0.89	0.84	24
PI592761	ERNEST	62.01	60.01	61.00	56.19	62.80	63.40	60.40	61.60	60.9	1.13	0.91	15
WB 926	WESTBRED 926	60.68	59.84	60.50	54.45	60.70	61.00	58.00	61.00	59.5	1.13	0.87	39
*****	SITE MEAN *****	60.53	59.30	60.62	56.52	61.69	62.16	59.14	61.89	60.2	1.00	1.00	

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TABLE 5. 1998 GRAIN PROTEIN (%) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
BR 2306	NW CONSORTIUM	14.60	13.80	13.30	15.20	11.20	13.00	13.30	13.70	13.5	1.09	0.98	44
BZ987331	MSFRS SELECTION	15.90	15.50	14.90	14.30	11.50	13.50	13.00	14.00	14.1	1.09	0.68	33
BZ991408	WPB HARD WHITE	16.10	15.70	14.50	15.20	12.10	13.70	13.90	14.60	14.5	1.09	0.86	19
CI 10003	THATCHER	16.10	15.50	14.40	16.80	13.10	13.80	14.60	14.00	14.8	1.03	0.79	5
CI 13596	FORTUNA	14.30	15.50	14.30	15.40	12.00	13.80	14.40	14.30	14.2	0.90	0.81	29
CI 17429	LEW	14.80	15.00	14.30	17.10	12.10	13.60	14.30	14.00	14.4	1.17	0.80	23
CI 17430	NEWANA	14.50	13.70	13.10	14.40	11.50	12.80	13.10	13.00	13.3	0.87	0.95	47
CI 17790	LEN	15.60	15.20	15.30	16.20	12.70	14.50	14.70	14.40	14.8	0.92	0.90	6
MT 9433	MT8808/MARBERG	15.70	15.30	14.30	16.80	12.40	14.10	15.10	14.80	14.8	1.16	0.94	7
MT 9539	LEW/PONDERA//PONDERA	14.90	14.80	14.00	16.10	12.10	13.90	14.00	13.30	14.1	1.01	0.84	34
MT 9558	PONDERA/LEW//PONDERA	15.00	14.70	13.60	15.70	11.60	14.60	13.50	13.80	14.1	1.07	0.86	35
MT 9609	FORTUNA/AMIDON	15.50	14.90	14.60	15.50	12.70	13.90	14.50	14.70	14.5	0.83	0.97	20
MT 9627	GRANDIN/LEW	14.90	14.20	14.20	15.10	11.40	13.20	13.60	14.30	13.9	1.06	0.95	38
MT 9631	LEN/LEW	15.00	14.60	13.90	16.10	12.80	13.80	14.50	15.00	14.5	0.83	0.83	21
MT 9653	LEW/AMIDON	15.50	15.30	14.30	16.10	12.50	13.90	14.50	14.60	14.6	1.01	0.97	15
MT 9675	WINRIDGE/NEWANA	13.60	13.90	12.50	12.90	10.60	12.70	12.80	12.50	12.7	0.80	0.77	49
MT 9704	NEWANA//MT8603/NEWANA	14.90	14.90	13.70	15.80	10.90	13.20	14.00	13.50	13.9	1.34	0.96	39
MT 9706	PONDERA/MT8849	16.20	15.00	14.60	15.40	12.00	14.80	15.20	15.30	14.8	1.07	0.87	8
MT 9709	PONDERA//MTRWA141	15.60	14.10	14.10	15.40	11.70	13.90	14.50	14.90	14.3	1.07	0.90	26
MT 9712	PONDERA//MT8603/PONDERA	16.60	15.40	14.40	16.20	12.30	14.70	14.60	14.20	14.8	1.18	0.91	9
MT 9715	FORTUNA/MT8849	15.00	13.90	13.70	14.30	11.00	12.90	14.10	13.90	13.6	1.06	0.90	42
MT 9716	FORTUNA/MT8849	14.20	14.90	15.10	14.70	12.20	13.40	14.30	14.40	14.2	0.70	0.64	30
MT 9719	LEW/MT8849	15.40	15.10	14.30	14.90	12.50	13.50	14.40	14.60	14.3	0.82	0.88	27
MT 9720	LEW/MT8849	15.00	15.10	14.20	15.20	13.10	13.80	14.30	14.30	14.4	0.63	0.90	24
MT 9721	LEN/MT8849	15.20	15.70	14.80	15.20	12.70	14.60	15.50	15.30	14.9	0.76	0.75	3
MT 9727	MARBERG//MT8603/MARBERG	13.70	14.30	13.30	14.30	11.20	13.90	13.40	12.60	13.3	0.81	0.72	48
MT 9728	MARBERG//MT8603/MARBERG	14.80	12.60	13.70	14.40	11.20	14.10	13.20	13.40	13.4	0.85	0.65	46
MT 9735	MARBERG//MT8603/MARBERG	15.00	13.40	13.10	15.20	11.60	13.60	12.80	13.00	13.5	0.97	0.79	45
MT 9736	MARBERG/MT8623/MARBERG	16.00	15.20	13.20	15.10	11.30	13.90	12.80	13.80	13.9	1.27	0.82	40
MT 9738	AMIDON/MT8849	15.50	14.70	13.90	15.70	12.20	13.60	14.10	14.10	14.2	1.01	0.96	31
MT 9739	AMIDON//GLENMAN/AMIDON	15.90	15.10	14.50	15.30	12.30	14.40	14.70	15.00	14.7	0.96	0.94	14

TABLE 5. 1998 GRAIN PROTEIN (%) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ID	PEDIGREE	Havre	Sidney	Sidney	Moccasin	Conrad	Kalispell	Bozeman	Bozeman	AVG	BYX	RSQ	RANK
			dry	irr				dry	irr				
MT 9742	AMIDON//GLENMAN/AMIDON	16.00	15.00	14.40	15.70	12.50	14.60	14.30	14.60	14.6	0.96	0.95	16
MT 9748	MT8849/PONDERA	15.10	14.60	14.40	16.00	12.00	14.10	14.00	14.80	14.4	1.03	0.93	25
MT 9750	MT8849/MTRWA116	14.50	14.60	14.70	16.20	12.80	14.70	13.80	14.40	14.5	0.73	0.68	22
MT 9754	FORTUNA/PONDERA//MTRWA116	15.20	14.10	14.30	15.30	11.80	14.00	14.20	13.80	14.1	0.96	0.92	36
MT 9755	MTRWA141/PONDERA	15.20	14.00	13.00	15.30	11.20	13.00	13.50	13.50	13.6	1.19	0.95	43
MT 9756	MT8603/AMIDON//AMIDON	15.90	15.00	13.90	16.60	12.50	14.00	14.50	16.10	14.8	1.13	0.80	10
MT 9757	MT8603/AMIDON//AMIDON	15.60	14.70	13.90	17.20	12.40	14.00	15.20	15.80	14.8	1.19	0.78	11
MT 9758	MT8603/AMIDON//AMIDON	16.10	15.30	14.60	16.10	11.90	14.10	14.80	15.50	14.8	1.24	0.96	12
MT 9759	MT8603/NEWANA//NEWANA	15.40	14.30	13.10	15.70	11.10	13.90	13.80	12.80	13.8	1.27	0.86	41
MT 9770	GLENMAN/AMIDON//AMIDON	16.10	15.60	14.80	15.50	12.40	14.70	15.70	16.10	15.1	1.00	0.79	2
MT 9771	GLENMAN/AMIDON//AMIDON	14.60	15.00	14.70	15.30	12.30	14.20	15.00	15.70	14.6	0.80	0.69	17
MT 9772	GLENMAN/AMIDON//AMIDON	15.00	14.30	13.90	16.30	12.70	14.80	15.10	16.20	14.8	0.84	0.58	13
PI527682	AMIDON	14.70	14.90	14.00	15.40	12.20	13.80	14.40	14.60	14.2	0.87	0.94	32
PI531005	GRANDIN	16.20	15.50	15.10	16.10	12.30	14.60	15.00	14.50	14.9	1.11	0.95	4
PI549275	HI-LINE	16.00	14.80	13.90	15.00	11.50	14.00	13.90	13.80	14.1	1.15	0.91	37
PI574642	MCNEAL	15.00	14.60	14.30	14.80	12.30	13.90	14.70	14.60	14.3	0.76	0.90	28
PI592761	ERNEST	16.70	16.10	14.90	16.70	12.50	13.60	15.00	16.00	15.2	1.32	0.89	1
WB 926	WESTBRED 926	16.10	15.20	14.70	15.40	12.30	13.90	14.90	14.20	14.6	1.01	0.90	18
*****	SITE MEAN *****	15.31	14.79	14.14	15.52	12.02	13.90	14.23	14.37	14.3	1.00	1.00	

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