

PROJECT TITLE:

Intrastate Dryland Winter Wheat Variety Performance

PRINCIPLE INVESTIGATORS:

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OBJECTIVE: To evaluate new and existing lines of winter wheat under the various Montana growing conditions.

RESULTS: Data for the 1991 growing seasons are summarized in tables: #1 grain yield, #2 test weight, #3 heading date, and #4 plant height. Bozeman and Havre locations had above average yields, Kalispell yields were near average. At Sidney winter hardy varieties had higher yield levels than varieties with intermediate levels of winter hardiness. Conrad and Moccasin locations were not harvested due to weather damage to nurseries.

SUMMARY: Several varieties and lines performed well at all five reporting locations. 'Judith', 'QT 542', and 'QT-2' all averaged above 75 bu/a across the five locations. Eight of the thirty-nine varieties and lines tested had average yields less than 60 bu/a across the five locations.

Table 1 Summary for Grain Yield, Intrastate Dryland Winter Wheat, 1991.

ID	PEDIGREE	BOZ	HAVRE	SDNY	KALIS	HUNT	AVE.	BYX	RSQ
CI 8885	CHEYENNE	86.23	54.40	49.68	66.83	47.57	60.9	0.55	0.58
CI 13670	WINALTA	71.14	54.93	51.26	70.08	43.49	58.2	0.48	0.78
CI 15075	CENTURK	87.20	60.75	23.99	86.61	59.27	63.6	1.08	0.85
CI 17439	ROUGH RIDER	65.70	50.35	54.29	72.03	48.60	58.2	0.41	0.79
CI 17735	NORSTAR	66.81	46.95	65.46	74.53	46.06	60.0	0.34	0.35
CI 17844	REDWIN	74.04	56.65	37.31	96.99	54.73	63.9	1.00	0.97
CI 17860	NEELEY	96.68	56.62	22.34	102.06	44.49	64.4	1.52	0.97
CI 17879	ROCKY	92.03	65.20	33.01	91.39	55.73	67.5	1.08	0.92
CI 17902	WINRIDGE	80.22	49.00	38.50	89.45	54.31	62.3	0.95	0.95
ID 279	BLIZZARD	81.31	55.10	27.16	104.01	46.86	62.9	1.35	0.99
MT 7811	FRD/WNK//MT 6928/TR	84.15	67.50	44.31	106.95	55.19	71.6	1.10	0.98
MT 8039	JUDITH	87.80	67.70	34.70	127.59	67.55	77.1	1.48	0.93
MT 8502	ID745101/LCO	89.28	70.48	28.99	105.85	60.67	71.1	1.28	0.94
MT 8709	MSC/CTK A+//IUL	75.24	62.10	56.46	102.25	49.55	69.1	0.87	0.86
MT 8713	MSC/CTK A+//IUL	70.04	60.28	47.98	96.18	56.72	66.2	0.80	0.92
MT 8719	RRI/MT 6928	73.40	61.48	51.35	101.60	58.48	69.3	0.85	0.91
MT 8909	MT 8001/MT 7673	89.93	65.23	24.78	119.35	61.09	72.1	1.55	0.95
MT 8910	MT 8001/MT 7673	93.65	59.75	38.76	101.18	36.73	66.0	1.32	0.94
MT 8918	MT 7673/MT 7115	90.50	68.80	48.48	109.16	49.51	73.3	1.17	0.97
MT 8920	TBR/MT 7673	86.25	58.70	29.65	105.07	52.71	66.5	1.33	0.99
MT 8935	MT 7811/WRG	70.71	50.18	30.05	91.55	44.87	57.5	1.08	0.99
MT 8936	MT 7811/WRG	72.27	51.97	35.00	93.43	46.94	59.9	1.03	0.98
MT 8943	MT 7811/NRS	83.19	57.80	41.00	88.55	41.56	62.4	0.99	0.95
MT 8948	RDW/FRD//RRI/(TT/BUR	81.52	57.25	34.00	100.24	47.07	64.0	1.20	1.00
MT 8949	RDW/FRD//RRI/(TT/BUR	75.92	62.85	63.24	103.49	57.14	72.5	0.75	0.80
MT 8957	RDW/FRD//RRI/(TT/BUR	74.34	57.63	35.53	115.66	42.12	65.1	1.39	0.93
MT 85200	FRD/WNK//MT 6928/TR	89.08	65.75	28.25	102.66	59.95	69.1	1.26	0.95
MT 85202	FRD/WNK//MT 6928/TR	71.95	61.90	51.09	91.00	58.31	66.8	0.68	0.95
MT 88001	SMT/TD//YGSS	67.38	52.23	33.96	87.93	54.19	59.1	0.87	0.93
MT 88005	WSC/YOGO//RSC/3/TD25	61.63	48.58	43.04	64.76	44.86	52.6	0.44	0.96
ND 8002	SEWARD	84.22	61.75	50.88	85.14	55.40	67.5	0.71	0.95
PI478771	AGASSIZ	73.60	52.97	44.39	62.94	43.91	55.6	0.48	0.71
PI491532	CREE	72.54	57.23	45.80	67.44	48.21	58.2	0.48	0.83
PI491533	NORWIN	68.10	61.88	51.66	94.29	46.11	64.4	0.78	0.84
PI517194	TIBER	87.08	58.45	29.76	109.46	51.07	67.2	1.41	1.00
QT 542	HYBRITECH 542	110.93	68.25	44.31	101.79	58.73	76.8	1.21	0.89
QT-1	HYBRITECH	97.53	67.68	32.46	106.83	62.10	73.3	1.31	0.95
QT-2	HYBRITECH	105.05	68.20	37.83	107.46	62.93	76.3	1.30	0.95
RH78W296	BIGHORN	77.85	59.20	45.46	110.81	55.77	69.8	1.12	0.93
*****	SITE MEAN *****	81.19	59.33	40.67	95.25	52.07	65.7	1.00	1.00

Table 2. Summary for Test Weight (lbs/bu.), Intrastate Dryland Winter Wheat Nursery, 1991

ID	PEDIGREE	BOZ	HAVRE	HUNT	KALIS	SDNY	AVG.	BYX	RSQ
CI 8885	CHEYENNE	62.60	61.20	62.10	59.20	59.63	60.9	1.64	0.53
CI 13670	WINALTA	63.00	62.23	62.50	61.00	60.50	61.8	1.27	0.63
CI 15075	CENTURK	61.90	60.55	63.10	60.65	60.98	61.4	0.81	0.25
CI 17439	ROUGH RIDER	62.40	61.65	61.60	60.55	60.50	61.3	0.97	0.62
CI 17735	NORSTAR	61.10	62.08	59.60	60.63	60.13	60.7	0.13	0.01
CI 17844	REDWIN	62.20	61.52	60.60	61.23	60.90	61.3	0.59	0.40
CI 17860	NEELEY	62.10	59.28	60.90	60.65	58.63	60.3	2.01	0.94
CI 17879	ROCKY	62.90	61.25	62.70	61.70	61.93	62.1	0.76	0.53
CI 17902	WINRIDGE	59.60	59.20	60.20	59.98	58.05	59.4	0.81	0.40
ID 279	BLIZZARD	62.50	61.15	59.60	61.75	57.25	60.5	2.36	0.56
MT 7811	FRD/WNK//MT 6928/TR	61.40	59.15	60.50	60.65	60.75	60.5	0.66	0.28
MT 8039	JUDITH	60.50	58.98	60.40	60.57	58.33	59.8	1.24	0.63
MT 8502	ID745101/LCO	60.50	59.83	60.30	60.75	57.85	59.8	1.28	0.53
MT 8709	MSC/CTK A+//IUL	60.90	58.70	58.60	59.45	59.00	59.3	1.10	0.60
MT 8713	MSC/CTK A+//IUL	62.10	61.00	62.30	61.58	61.08	61.6	0.70	0.62
MT 8719	RRI//MT 6928	62.90	61.13	62.30	60.85	60.98	61.6	1.20	0.75
MT 8909	MT 8001//MT 7673	61.70	61.38	60.70	61.50	59.93	61.0	0.77	0.49
MT 8910	MT 8001//MT 7673	61.40	60.85	60.00	61.45	61.28	61.0	0.03	0.00
MT 8918	MT 7673//MT 7115	62.50	59.83	61.20	60.13	60.63	60.9	1.29	0.65
MT 8920	TBR//MT 7673	62.60	60.10	60.00	61.63	61.08	61.1	0.95	0.33
MT 8935	MT 7811//WRG	60.90	60.55	59.40	59.75	61.18	60.4	-0.16	0.02
MT 8936	MT 7811//WRG	60.80	60.28	60.30	59.65	60.87	60.4	0.06	0.01
MT 8943	MT 7811//NRS	62.70	60.92	62.30	61.63	60.33	61.6	1.39	0.89
MT 8948	RDW//FRD//RRI//TT//BUR	61.90	60.60	62.10	61.78	61.25	61.5	0.56	0.37
MT 8949	RDW//FRD//RRI//TT//BUR	61.10	60.18	61.50	60.78	61.00	60.9	0.26	0.13
MT 8957	RDW//FRD//RRI//TT//BUR	61.00	60.18	59.80	61.52	59.78	60.5	0.58	0.24
MT 85200	FRD/WNK//MT 6928/TR	60.40	58.30	60.40	59.65	59.43	59.6	0.85	0.42
MT 85202	FRD/WNK//MT 6928/TR	61.70	60.72	61.00	60.80	60.13	60.9	0.85	0.98
MT 88001	SMT//TD//YGSS	60.20	58.73	59.10	61.30	56.15	59.1	1.95	0.45
MT 88005	WSC//YOGO//RSC/3//TD25	61.00	59.75	59.50	58.73	59.13	59.6	1.00	0.59
ND 8002	SEWARD	61.60	60.40	61.00	61.25	58.98	60.6	1.35	0.75
PI478771	AGASSIZ	62.10	60.90	60.20	59.53	60.18	60.6	0.99	0.45
PI491532	CREE	62.60	61.40	62.10	59.55	60.38	61.2	1.26	0.45
PI491533	NORWIN	62.60	61.52	60.20	59.65	59.50	60.7	1.45	0.52
PI517194	TIBER	62.30	61.45	61.00	62.03	60.43	61.4	0.89	0.60
QT 542	HYBRITECH 542	62.80	60.05	61.80	61.05	60.28	61.2	1.60	0.88
QT-1	HYBRITECH	62.20	59.55	62.40	60.78	60.25	61.0	1.43	0.58
QT-2	HYBRITECH	63.10	60.43	62.10	62.23	61.40	61.9	1.20	0.63
RH78W296	BIGHORN	61.70	60.45	61.00	60.92	60.05	60.8	0.93	0.98
*****	SITE MEAN *****	61.78	60.45	60.93	60.73	60.00	60.8	1.00	1.00

Table 3. Summary for Heading Date, Intrastate Dryland Winter Wheat Nursery, 1991.

ID	PEDIGREE	BOZ	HAVRE	KALIS	HUNT	AVG.	BYX	RSQ
CI 8885	CHEYENNE	175.00	165.75	165.50	157.50	165.9	1.00	0.99
CI 13670	WINALTA	174.25	165.00	164.25	157.00	165.1	0.99	0.99
CI 15075	CENTURK	172.00	161.25	161.75	154.00	162.2	1.04	1.00
CI 17439	ROUGH RIDER	173.75	167.50	163.50	158.00	165.7	0.91	0.96
CI 17735	NORSTAR	180.25	171.00	170.50	162.00	170.9	1.04	0.99
CI 17844	REDWIN	175.00	166.00	164.25	158.50	165.9	0.96	1.00
CI 17860	NEELEY	177.25	167.50	165.50	158.00	167.1	1.11	0.99
CI 17879	ROCKY	173.50	161.50	161.25	155.00	162.8	1.08	0.99
CI 17902	WINRIDGE	178.75	171.00	168.00	158.00	168.9	1.18	0.96
ID 279	BLIZZARD	176.25	171.25	166.00	159.00	168.1	0.99	0.91
MT 7811	FRD/WNK//MT6928/TR	174.50	165.25	163.50	158.00	165.3	0.96	0.99
MT 8039	JUDITH	174.50	162.25	161.50	155.00	163.3	1.14	0.99
MT 8502	ID745101/LCO	174.00	163.75	162.00	156.00	163.9	1.05	1.00
MT 8709	MSC/CTK A+//IUL	173.75	164.25	165.75	159.00	165.7	0.85	0.98
MT 8713	MSC/CTK A+//IUL	172.50	164.00	161.75	163.50	165.4	0.57	0.71
MT 8719	RRI/MT6928	173.75	163.25	164.50	159.00	165.1	0.86	0.97
MT 8909	MT8001/MT7673	176.75	167.50	167.75	159.00	167.8	1.01	0.98
MT 8910	MT8001/MT7673	177.00	167.00	166.25	160.00	167.6	0.99	1.00
MT 8918	MT7673/MT7115	174.50	164.25	166.25	158.50	165.9	0.91	0.96
MT 8920	TBR/MT7673	174.00	163.25	163.00	158.50	164.7	0.91	0.97
MT 8935	MT7811/WRG	178.00	168.25	165.75	159.00	167.8	1.10	0.99
MT 8936	MT7811/WRG	177.00	169.25	167.00	158.50	167.9	1.06	0.98
MT 8943	MT7811/NRS	176.25	165.50	163.00	157.00	165.4	1.13	1.00
MT 8948	RDW/FRD//RRI/(TT/BUR	177.75	165.00	165.75	158.00	166.6	1.14	0.98
MT 8949	RDW/FRD//RRI/(TT/BUR	176.50	165.25	164.75	158.50	166.2	1.05	0.99
MT 8957	RDW/FRD//RRI/(TT/BUR	177.25	166.75	164.25	158.00	166.6	1.12	0.99
MT 85200	FRD/WNK//MT 6928/TR	171.50	162.50	161.00	154.00	162.2	1.01	1.00
MT 85202	FRD/WNK//MT 6928/TR	173.75	164.25	163.75	157.00	164.7	0.97	1.00
MT 88001	SMT/TD//YGSS	177.00	170.25	166.75	158.50	168.1	1.06	0.96
MT 88005	WSC/YOGO//RSC/3/TD25	174.25	164.75	164.00	157.50	165.1	0.97	1.00
ND 8002	SEWARD	174.25	164.50	165.00	158.50	165.6	0.91	0.99
PI478771	AGASSIZ	176.50	167.75	167.00	159.00	167.6	1.00	0.99
PI491532	CREE	175.75	164.75	164.75	158.50	165.9	1.00	0.99
PI491533	NORWIN	176.25	168.50	166.75	158.50	167.5	1.01	0.98
PI517194	TIBER	176.00	164.50	164.00	158.00	165.6	1.05	0.99
QT 542	HYBRITECH 542	170.50	162.75	160.00	154.50	161.9	0.93	0.99
QT-1	HYBRITECH	170.00	162.25	159.75	154.00	161.5	0.93	0.99
QT-2	HYBRITECH	173.00	162.25	160.25	155.00	162.6	1.06	0.99
RH78W296	BIGHORN	174.00	164.25	163.50	158.00	164.9	0.93	0.99
*****	SITE MEAN *****	175.04	165.53	164.35	157.78	165.7	1.00	1.00

Table 4. Summary for Plant Height (inches), Intrastate Dryland Winter Wheat, 1991

ID	PEDIGREE	BOZ	HAVRE	SDNY	KALIS	HUNT	AVE.	BYX	RSQ
CI 8885	CHEYENNE	44.29	42.46	34.18	48.23	42.00	42.2	0.93	0.96
CI 13670	WINALTA	45.08	41.23	33.59	49.70	42.00	42.3	1.05	0.92
CI 15075	CENTURK	37.30	41.52	30.44	44.78	38.50	38.5	0.96	0.93
CI 17439	ROUGH RIDER	43.70	43.32	32.60	48.23	42.50	42.1	1.04	0.95
CI 17735	NORSTAR	55.12	47.68	37.63	50.69	44.50	47.1	0.93	0.58
CI 17844	REDWIN	38.78	40.38	30.93	48.72	36.50	39.1	1.18	0.97
CI 17860	NEELEY	35.53	39.37	29.06	44.78	37.00	37.1	1.03	0.95
CI 17879	ROCKY	36.71	40.58	29.55	46.75	38.50	38.4	1.13	0.95
CI 17902	WINRIDGE	41.24	41.97	32.21	48.72	37.50	40.3	1.11	0.97
ID 279	BLIZZARD	39.07	43.23	30.63	47.24	39.50	39.9	1.12	0.96
MT 7811	FRD/WNK//MT6928/TR	38.19	40.52	31.62	43.80	33.50	37.5	0.86	0.86
MT 8039	JUDITH	36.91	37.40	27.97	44.78	34.50	36.3	1.11	0.99
MT 8502	ID745101/LCO	34.55	34.86	28.57	42.32	33.00	34.7	0.90	0.96
MT 8709	MSC/CTK A+//IUL	32.38	34.06	24.13	38.88	30.50	32.0	0.99	0.99
MT 8713	MSC/CTK A+//IUL	30.91	32.99	24.43	37.89	30.00	31.2	0.90	0.99
MT 8719	RRI/MT6928	37.70	37.19	27.38	43.31	34.00	35.9	1.07	0.98
MT 8909	MT8001/MT7673	34.15	36.29	27.28	42.32	33.50	34.7	1.00	0.99
MT 8910	MT8001/MT7673	40.06	41.65	31.72	48.72	38.50	40.1	1.13	0.99
MT 8918	MT7673/MT7115	36.32	37.11	28.37	44.78	34.00	36.1	1.09	0.98
MT 8920	TBR/MT7673	36.71	38.68	29.16	47.74	36.50	37.8	1.21	0.96
MT 8935	MT7811/WRG	36.22	37.91	30.04	42.81	34.50	36.3	0.86	0.98
MT 8936	MT7811/WRG	36.61	40.00	32.11	43.31	34.50	37.3	0.77	0.88
MT 8943	MT7811/NRS	35.73	39.34	28.17	44.29	32.00	35.9	1.11	0.91
MT 8948	RDW/FRD//RRI/(TT/BUR	35.53	36.61	28.76	44.78	34.50	36.0	1.05	0.97
MT 8949	RDW/FRD//RRI/(TT/BUR	41.44	42.77	34.67	47.24	40.00	41.2	0.84	0.99
MT 8957	RDW/FRD//RRI/(TT/BUR	35.73	38.94	29.55	44.78	34.50	36.7	1.02	0.95
MT 85200	FRD/WNK//MT6928/TR	33.66	33.36	23.94	39.37	34.00	32.9	1.00	0.94
MT 85202	FRD/WNK//MT6928/TR	43.21	40.85	32.01	48.23	41.50	41.2	1.06	0.95
MT 88001	SMT/TD//YGSS	28.54	27.26	21.57	31.00	27.00	27.1	0.62	0.94
MT 88005	WSC/YOGO//RSC/3/TD25	44.39	41.41	33.00	46.75	43.00	41.7	0.90	0.86
ND 8002	SEWARD	42.03	42.69	33.39	51.67	41.50	42.3	1.19	0.98
PI478771	AGASSIZ	47.05	45.02	33.59	49.21	44.50	43.9	1.05	0.88
PI491532	CREE	44.00	42.44	33.39	45.28	41.00	41.2	0.81	0.88
PI491533	NORWIN	30.31	28.44	23.44	33.46	27.50	28.6	0.66	0.94
PI517194	TIBER	39.07	41.96	30.04	50.20	39.50	40.2	1.32	0.98
QT 542	HYBRITECH 542	38.39	41.23	29.16	46.26	37.50	38.5	1.15	0.99
QT-1	HYBRITECH	37.30	35.97	26.99	42.81	34.00	35.4	1.05	0.98
QT-2	HYBRITECH	37.40	40.66	28.57	46.75	40.50	38.8	1.18	0.92
RH78W296	BIGHORN	32.68	33.66	27.88	37.89	34.00	33.2	0.64	0.93
*****	SITE MEAN *****	38.31	39.05	29.79	44.83	36.72	37.7	1.00	1.00

THREE-YEAR SUMMARY OF YIELD (BU/A)

ID	BOZEMAN				HAVRE				SIDNEY			KALISPELL		
	1989	1990	1991	AVE	1989	1990	1991	AVE	1990	1991	AVE	1990	1991	AVE
Neeley	70	66	97	78	35	37	57	43	45	22	33	104	102	103
Redwin	66	63	74	68	33	38	57	43	41	37	39	86	97	91
Rocky	62	62	92	72	42	39	65	49	39	33	36	90	91	91
Tiber	51	65	87	68	36	44	58	46	42	30	36	94	109	101
Winalta	64	59	71	65	38	38	55	43	33	51	42	77	70	74
Norstar	46	46	67	53	33	36	47	39	35	65	50	76	75	76
Cree	61	58	73	64	36	39	57	44	42	46	44	78	67	73
Centurk	64	63	87	71	40	44	61	48	38	24	31	94	87	91
CI 17439	58	55	66	60	35	37	50	41	35	54	44	74	72	73
CI 8885	55	58	86	66	36	42	54	44	37	50	43	74	67	70
PI478771	57	49	74	60	35	34	53	41	38	44	41	68	63	66
PI491533	73	70	68	70	43	35	62	47	36	52	44	86	94	90
MT 8039	70	70	88	76	36	40	68	48	41	35	38	107	128	118
ID 279	53	55	81	63	39	40	55	45	39	27	33	96	104	100
RH78W296	--	72	78	75	--	37	59	48	37	45	41	101	111	106
CI 17902	56	57	80	64	35	35	49	40	42	39	40	99	89	94
ND 8002	71	63	84	73	38	38	62	46	42	51	46	80	85	83
MT 7811	68	60	84	71	36	40	68	48	38	44	41	101	107	104
MT 88001	75	65	67	69	33	30	52	39	38	34	36	79	88	84
MT 88005	49	44	62	51	33	35	49	39	35	43	39	70	65	67
QT 542	72	83	111	89	47	47	68	54	55	44	50	95	102	98
MT 85200	72	69	89	77	40	39	66	48	39	28	34	93	103	98
MT 85202	58	55	72	62	40	37	62	46	37	51	44	88	91	89
MT 8709	73	70	75	73	40	35	62	45	38	56	47	91	102	97
MT 8713	69	64	70	68	41	37	60	46	46	48	47	92	96	94
MT 8719	72	71	73	72	40	37	61	46	36	51	44	96	102	99
MT 8502	78	75	89	81	35	40	70	48	39	29	34	95	106	100
AVERAGE	64	62	79	69	37	38	59	45	39	42	41	88	92	90

THREE-YEAR SUMMARY OF YIELD, cont.

ID	MOCCASIN			HUNTLEY				CONRAD			ADJMEAN	RANK
	1989	1990	AVE	1989	1990	1991	AVE	1989	1990	AVE		
Neeley	50	43	47	44	53	44	47	63	86	75	60	7
Redwin	40	35	38	46	64	55	55	55	73	64	56	17
Rocky	48	38	43	54	58	56	56	61	83	72	60	8
Tiber	48	40	44	53	56	51	53	67	74	71	59	11
Winalta	44	36	40	42	54	43	47	63	67	65	53	22
Norstar	46	33	40	41	49	46	45	61	64	62	51	25
Cree	46	33	40	46	49	48	48	60	67	64	53	23
Centurk	44	43	43	45	61	59	55	61	75	68	58	14
CI 17439	42	32	37	50	55	49	51	62	59	60	52	24
CI 8885	47	39	43	52	57	48	52	59	71	65	55	20
PI478771	46	33	40	44	47	44	45	60	68	64	50	26
PI491533	45	44	44	45	45	46	46	60	73	66	57	15
MT 8039	50	41	45	46	57	68	57	63	81	72	64	2
ID 279	41	35	38	46	43	47	45	66	73	69	55	19
RH78W296	-	36	36	-	59	56	57	-	73	73	60	6
CI 17902	47	38	43	49	51	54	51	68	69	69	56	18
ND 8002	50	41	46	53	59	55	56	57	72	65	59	12
MT 7811	46	44	45	52	50	55	52	67	83	75	61	5
MT 88001	38	35	37	37	50	54	47	65	69	67	54	21
MT 88005	41	26	34	45	50	45	47	65	64	65	48	27
QT 542	53	42	48	55	67	59	60	62	89	75	68	1
MT 85200	48	46	47	60	55	60	59	63	83	73	62	3
MT 85202	48	36	42	52	53	58	54	61	67	64	57	16
MT 8709	45	43	44	49	49	50	49	62	72	67	60	9
MT 8713	51	39	45	39	56	57	51	65	67	66	59	13
MT 8719	44	36	40	48	51	58	53	63	71	67	59	10
MT 8502	44	45	45	40	62	61	54	63	84	74	62	4
AVERAGE	46	38	42	47	54	53	51	62	73	68	57	0