

PROJECT TITLE: Winter Wheat Variety Performance

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OBJECTIVE: To evaluate new and existing lines of winter wheat as affected by the various environments in Montana.

SUMMARY:

Seven locations of intrastate winter wheat nursery were planted in fall of 1988 at the Research Centers located at Sidney, Havre, Moccasin, Conrad, Huntley, Kalispel and Bozeman. The nurseries at Sidney and Kalispel were lost due to winter kill. Average yields were about 15 bu/ac greater than last year and were about average for the reporting locations. Patches of winter kill and heat stress conditions during grain filling were the environmental conditions responsible for the highly variable data this year.

RESULTS:

Grain yield, test weight, plant height, and heading date data are reported in tables one through four, respectively. The mean yield of all the nurseries was about 15 bu/ac greater than last year. The Kalispel and Sidney nurseries were lost due to winter kill. Sawflies severely affected the nursery at Conrad. The drastic temperature and wind velocity changes without snow cover that occurred during the winter of 1989 probably affected this year's data. Patches of winter kill occurred at most locations, and heat stress conditions (high temperatures and strong winds) about July 1 during grain filling combined to provide highly variable data, therefore, these data should be interpreted with caution.

TABLE 1. STATEWIDE SUMMARY FOR GRAIN YIELD (bu/ac).
Intrastate Dryland Winter Wheat Nursery, 1989.

CULTIVAR OR LINE	MEAN	BOZ	HAV	MOC	HUN	CON	BYX	RSQ
NA 362-5 ABILENE	60.2	85.06	43.71	50.96	61.40	59.63	1.11	0.74
NA 0001 THUNDERBIRD	58.0	78.21	43.04	47.80	54.86	66.17	1.15	0.96
QT 542 HYBRITECH	57.8	72.18	46.62	53.10	55.08	61.91	0.77	0.93
MT 88002 POLO/TURG//WRR	57.6	89.69	35.97	44.66	44.66	73.08	1.83	0.95
MT 85203 FRD/WNK//MT 6928/TR	57.4	81.87	46.47	44.94	53.74	59.79	1.09	0.78
MT 88003 POLO/TURG//WRR	56.9	91.25	38.69	40.92	44.85	68.69	1.77	0.90
MT 85200 FRD/WNK//MT 6928/TR	56.8	72.39	39.74	48.35	60.44	63.17	1.00	0.89
QT 546 HYBRITECH	56.0	70.30	39.79	48.29	63.05	58.39	0.84	0.72
ND 8002 SEWARD	53.9	71.11	37.78	50.49	52.78	57.28	0.92	0.86
MT 8508 CST//FRD1268/OLESEN	53.8	60.57	35.41	54.45	51.76	66.85	0.85	0.76
MT 8709 MSC/CTK A+//IUL	53.7	72.94	39.62	44.94	48.89	61.89	1.10	0.97
MT 7811 FRD/WNK/MT 6928/TR	53.6	67.60	36.04	45.68	51.76	66.82	1.11	0.98
MT 8726 CST/VT1230//ID745101	53.5	73.19	38.25	41.43	47.16	67.32	1.29	0.98
MT 8719 RRI/MT 6928	53.4	72.33	40.12	43.73	48.14	62.51	1.10	0.97
PI491533 NORWIN	53.3	72.74	43.33	45.00	45.16	60.08	0.99	0.88
CI 17879 ROCKY	53.3	61.69	42.29	48.10	53.53	60.75	0.67	0.96
MT 8713 MSC/CTK A+//IUL	53.2	69.30	41.08	51.26	39.38	64.75	1.00	0.80
MT 88065 CST/VT 1230//ID74510	53.1	74.19	36.34	50.01	45.66	59.53	1.12	0.89
MT 8039 JUDITH	52.9	69.52	35.77	50.06	46.18	63.07	1.08	0.94
CI 17860 NEELEY	52.3	69.84	34.85	49.99	43.61	63.37	1.13	0.92
MT 8502 ID745101/LCO	52.1	78.26	35.13	44.30	39.60	63.33	1.43	0.91
MT 85202 FRD/WNK/MT 6928/TR	52.0	57.75	40.25	48.12	52.24	61.39	0.64	0.88
MT 8003 TIBER	51.2	51.41	36.47	48.11	52.96	67.28	0.67	0.54
CI 17902 WINRIDGE	51.1	55.91	35.17	47.05	49.13	68.44	0.87	0.75
CI 15075 CENTURK	50.5	63.82	39.50	43.51	44.90	60.86	0.90	0.98
MT 79125 UT755079/CST56//TX65	50.3	70.67	34.65	33.91	55.03	57.48	1.19	0.83
CI 13670 WINALTA	50.2	64.39	37.55	44.26	42.08	62.60	1.00	0.95
MT 88001 SMT/TD//YGSS	49.8	75.49	32.81	38.30	36.73	65.43	1.54	0.93
PI491532 CREE	49.7	60.55	35.64	46.18	45.89	60.03	0.86	0.97
CI 8885 CHEYENNE	49.7	54.80	35.68	47.14	52.05	58.69	0.64	0.77
CI 17439 ROUGHRIDER	49.1	58.22	34.52	41.70	49.78	61.50	0.89	0.92
ID 279 BLIZZARD	48.9	53.09	38.98	40.76	46.06	65.71	0.76	0.72
MT 88062 CST/VT 1230//ID74510	48.8	56.92	34.52	39.88	44.08	68.78	1.04	0.82
MT 8599 CST//FRD1650/OLESEN	48.7	52.32	36.18	46.23	50.00	59.00	0.60	0.74
PI478771 AGASSIZ	48.5	56.83	35.10	46.10	44.35	59.96	0.79	0.91
CI 17844 REDWIN	48.0	65.93	33.33	40.13	45.83	54.92	1.03	0.96
MT 88064 CST/VT 1230//ID74510	47.7	61.39	32.29	44.62	46.61	53.61	0.86	0.92
CI 17727 WESTON	47.6	64.34	33.23	25.47	48.48	66.23	1.37	0.83
MT 88005 WSC/YOGO//RSC/3/TD25	46.6	48.71	32.72	41.12	45.33	65.32	0.80	0.65
CI 17735 NORSTAR	45.4	45.57	33.26	45.64	41.41	61.07	0.60	0.51
MT 88008 WSC/YOGO//RSC/3/WRR1	44.4	48.73	35.20	36.87	40.43	60.57	0.73	0.72
MT 88006 WSC/YOGO//RSC/3/TD25	42.3	47.32	34.38	39.86	35.32	54.47	0.60	0.73
MT 7863 FRD/WNK//CTK	41.3	49.08	32.00	39.80	37.36	48.29	0.58	0.93
MT 8706 MSC/CTK A+//IUL	37.1	73.77	24.05	1.90	44.78	40.77	1.69	0.59

TABLE 2. STATEWIDE SUMMARY FOR TEST WEIGHT (lb/bu).
Intrastate Dryland Winter Wheat Nursery, 1989.

CULTIVAR OR LINE	MEAN	BOZ	HAV	MOC	HUN	CON	BYX	RSQ
CI 8885 CHEYENNE	60.6	60.60	60.15	60.40	57.78	64.20	0.94	0.95
CI 13670 WINALTA	60.6	63.30	60.18	61.10	53.30	64.98	1.53	0.67
CI 15075 CENTURK	59.7	59.60	58.50	59.30	57.30	63.78	1.01	0.97
CI 17439 ROUGHRIDER	61.0	61.40	59.50	60.50	60.30	63.14	0.51	0.77
CI 17727 WESTON	57.5	51.30	59.60	60.20	56.95	59.61	0.41	0.07
CI 17735 NORSTAR	55.2	31.40	58.73	62.00	59.15	64.84	1.38	0.06
CI 17844 REDWIN	60.4	62.30	59.85	60.80	56.55	62.44	0.78	0.60
CI 17860 NEELEY	59.2	59.70	56.70	59.90	56.27	63.42	1.17	0.94
CI 17879 ROCKY	60.5	60.10	59.38	60.20	58.68	63.92	0.84	0.97
CI 17902 WINRIDGE	58.5	57.50	57.35	59.80	55.98	62.01	0.96	0.93
ID 279 BLIZZARD	59.9	60.40	59.13	61.00	55.65	63.28	1.09	0.86
MT 7811 FRD/WNK/MT 6928/TR	59.9	59.50	58.75	59.30	58.78	63.21	0.74	0.89
MT 7863 FRD/WNK//CTK	58.7	60.40	57.35	59.00	53.58	63.35	1.40	0.85
MT 8003 TIBER	61.6	60.10	59.60	61.10	59.30	67.94	1.44	0.91
MT 8039 JUDITH	58.2	58.60	56.40	57.80	55.10	62.93	1.22	0.96
MT 8502 ID745101/LCO	57.8	59.60	57.93	59.00	51.10	61.45	1.34	0.65
MT 8508 CST//FRD1268/OLESEN(	59.5	58.80	57.80	60.40	57.75	62.93	0.88	0.94
MT 8599 CST//FRD1650/OLESEN(	58.2	56.90	56.85	58.30	57.33	61.59	0.76	0.83
MT 8706 MSC/CTK A+//IUL	58.0	59.60	56.40	0.00	55.13	60.88	0.00	0.00
MT 8709 MSC/CTK A+//IUL	58.5	59.90	56.33	57.80	55.90	62.44	1.04	0.84
MT 8713 MSC/CTK A+//IUL	59.8	61.20	58.63	61.10	53.45	64.41	1.54	0.82
MT 8719 RRI/MT 6928	61.4	62.00	59.20	61.30	60.35	64.34	0.72	0.80
MT 8726 CST/VT1230//ID745101	57.7	57.00	54.60	58.00	56.63	62.30	1.07	0.81
MT 79125 UT755079/CST56//TX65	58.2	57.20	57.05	57.10	58.15	61.73	0.66	0.62
MT 85200 FRD/WNK//MT 6928/TR	58.5	56.60	57.98	57.80	57.83	62.23	0.74	0.67
MT 85202 FRD/WNK/MT 6928/TR	59.8	59.90	58.45	59.50	58.13	63.07	0.80	0.95
MT 85203 FRD/WNK//MT 6928/TR	59.8	60.60	59.05	59.90	55.15	64.06	1.26	0.89
MT 88001 SMT/TD//YGSS	58.2	60.40	55.38	58.70	53.95	62.58	1.34	0.82
MT 88002 POLQ/TURG//WRR	55.7	56.70	52.60	55.90	52.65	60.53	1.31	0.91
MT 88003 POLQ/TURG//WRR	57.3	58.00	54.27	58.10	54.38	61.73	1.24	0.91
MT 88005 WSC/YOGO//RSC/3/TD25	59.4	59.80	57.73	58.70	57.35	63.21	0.94	0.92
MT 88006 WSC/YOGO//RSC/3/TD25	57.8	59.20	57.57	58.70	51.95	61.66	1.30	0.75
MT 88008 WSC/YOGO//RSC/3/WRR1	60.6	61.20	60.52	60.40	56.43	64.62	1.13	0.86
MT 88062 CST/VT 1230//ID74510	58.4	59.60	55.20	59.00	56.73	61.45	0.87	0.72
MT 88064 CST/VT 1230//ID74510	56.2	56.80	54.27	56.40	53.25	60.32	1.12	0.96
MT 88065 CST/VT 1230//ID74510	59.5	60.80	56.48	60.70	56.62	62.79	1.04	0.79
NA 0001 THUNDERBIRD	61.8	61.90	60.93	60.80	60.55	64.62	0.64	0.83
NA 362-5 ABILENE	62.1	62.00	61.68	61.10	61.65	64.13	0.40	0.66
ND 8002 SEWARD	59.7	60.10	57.20	58.50	59.25	63.57	0.81	0.66
PI478771 AGASSIZ	60.0	61.20	58.35	62.30	54.08	63.99	1.43	0.78
PI491532 CREE	60.9	61.30	60.18	60.70	57.63	64.69	1.03	0.94
PI491533 NORWIN	60.0	60.90	58.35	59.60	56.43	64.62	1.24	0.93
QT 542 HYBRITECH	60.3	59.80	59.03	60.40	59.80	62.65	0.53	0.84
QT 546 HYBRITECH	59.7	58.20	58.13	58.80	60.48	62.86	0.54	0.41

TABLE 3. STATEWIDE SUMMARY FOR PLANT HEIGHT (inches).
Intrastate Dryland Winter Wheat Nursery, 1989.

CULTIVAR OR LINE	MEAN	BOZ	HAV	MOC	HUN	CON	BYX	RSQ
CI 8885 CHEYENNE	37.7	48.62	28.47	36.36	39.00	36.00	1.22	0.99
CI 13670 WINALTA	39.2	51.38	30.58	36.27	41.00	37.00	1.30	0.99
CI 15075 CENTURK	35.0	44.98	28.31	33.33	36.50	32.00	1.05	0.97
CI 17439 ROUGHRIDER	37.3	48.72	28.30	36.07	38.25	35.00	1.24	0.98
CI 17727 WESTON	37.5	50.39	29.48	30.20	40.25	37.00	1.39	0.93
CI 17735 NORSTAR	39.7	51.67	28.53	37.15	39.00	42.00	1.35	0.91
CI 17844 REDWIN	35.9	47.05	28.17	32.45	36.75	35.00	1.18	0.99
CI 17860 NEELEY	35.3	44.68	27.72	33.14	37.00	34.00	1.05	1.00
CI 17879 ROCKY	35.5	45.37	28.71	34.21	36.25	33.00	1.03	0.98
CI 17902 WINRIDGE	35.6	47.15	26.95	33.82	36.00	34.00	1.23	0.99
ID 279 BLIZZARD	36.3	46.46	27.02	32.84	39.00	36.00	1.21	0.98
MT 7811 FRD/WNK/MT 6928/TR	34.7	43.50	25.85	32.45	36.75	35.00	1.07	0.97
MT 7863 FRD/WNK//CTK	40.2	53.15	31.51	36.46	41.00	39.00	1.35	0.99
MT 8003 TIBER	35.9	47.05	28.64	32.75	37.25	34.00	1.17	0.99
MT 8039 JUDITH	33.2	41.34	28.36	33.14	34.00	29.00	0.81	0.85
MT 8502 ID745101/LCO	32.2	41.83	26.41	28.74	32.00	32.00	0.97	0.95
MT 8508 CST//FRD1268/OLESEN (	38.3	46.95	29.68	36.66	40.25	38.00	1.04	0.97
MT 8599 CST//FRD1650/OLESEN (	34.3	43.70	27.05	32.36	37.50	31.00	1.06	0.95
MT 8706 MSC/CTK A+//IUL	29.7	38.29	26.13	24.41	33.50	26.00	0.89	0.78
MT 8709 MSC/CTK A+//IUL	28.4	36.02	23.57	27.27	28.25	27.00	0.76	0.96
MT 8713 MSC/CTK A+//IUL	29.7	37.30	23.40	30.01	30.00	28.00	0.82	0.94
MT 8719 RRI/MT 6928	32.4	41.93	25.70	30.69	34.75	29.00	1.03	0.96
MT 8726 CST/VT1230//ID745101	31.6	38.39	26.27	30.20	33.25	30.00	0.76	0.99
MT 79125 UT755079/CST56//TX65	31.4	38.88	25.10	29.52	33.25	30.00	0.86	0.99
MT 85200 FRD/WNK//MT 6928/TR	30.3	38.39	24.42	28.54	31.25	29.00	0.87	1.00
MT 85202 FRD/WNK/MT 6928/TR	37.0	46.06	28.80	34.99	38.25	37.00	1.04	0.98
MT 85203 FRD/WNK//MT 6928/TR	24.5	29.63	20.88	23.26	24.75	24.00	0.54	0.99
MT 88001 SMT/TD//YGSS	25.0	30.31	19.20	23.66	26.00	26.00	0.66	0.93
MT 88002 POLO/TURG//WRR	26.4	31.69	21.86	26.29	25.00	27.00	0.55	0.84
MT 88003 POLO/TURG//WRR	28.1	33.46	23.03	25.22	31.00	28.00	0.68	0.91
MT 88005 WSC/YOGO//RSC/3/TD25	38.4	47.24	28.24	38.51	39.25	39.00	1.08	0.90
MT 88006 WSC/YOGO//RSC/3/TD25	38.9	44.29	31.37	37.24	39.75	42.00	0.74	0.77
MT 88008 WSC/YOGO//RSC/3/WRR1	37.7	46.36	31.57	33.53	38.00	39.00	0.93	0.92
MT 88062 CST/VT 1230//ID74510	35.0	45.47	28.17	30.50	37.75	33.00	1.14	0.97
MT 88064 CST/VT 1230//ID74510	34.2	42.81	27.38	30.89	36.00	34.00	0.97	0.98
MT 88065 CST/VT 1230//ID74510	33.6	41.83	26.76	31.87	35.75	32.00	0.94	0.99
NA 0001 THUNDERBIRD	33.4	42.81	27.25	30.60	35.25	31.00	1.00	0.98
NA 362-5 ABILENE	28.6	36.22	23.22	26.29	32.25	25.00	0.87	0.89
ND 8002 SEWARD	37.2	48.82	31.02	34.41	38.00	34.00	1.14	0.95
PI478771 AGASSIZ	38.3	47.34	28.81	33.72	41.50	40.00	1.15	0.90
PI491532 CREE	38.8	50.10	29.38	37.73	37.00	40.00	1.19	0.90
PI491533 NORWIN	26.9	33.76	21.34	25.12	27.25	27.00	0.75	0.98
QT 542 HYBRITECH	36.3	44.68	29.12	33.82	39.75	34.00	1.00	0.96
QT 546 HYBRITECH	33.6	42.42	27.93	32.16	35.25	30.00	0.92	0.93

TABLE 4. STATEWIDE SUMMARY FOR HEADING DATE (Julian Date).
Intrastate Dryland Winter Wheat Nursery, 1989.

CULTIVAR OR LINE	MEAN	BOZ	MOC	HUN	CON	BYX	RSQ
CI 8885 CHEYENNE	172.9	176.00	178.75	161.00	176.00	1.08	0.98
CI 13670 WINALTA	171.7	176.00	176.75	163.00	171.00	0.80	0.88
CI 15075 CENTURK	168.1	169.00	175.25	159.00	169.00	0.89	0.97
CI 17439 ROUGHRIDER	169.7	171.00	176.25	160.50	171.00	0.89	0.99
CI 17727 WESTON	171.2	173.00	181.00	160.00	171.00	1.13	0.93
CI 17735 NORSTAR	175.8	177.00	180.25	166.00	180.00	0.88	0.95
CI 17844 REDWIN	171.5	174.00	179.00	160.00	173.00	1.09	0.99
CI 17860 NEELEY	174.4	176.00	181.00	162.50	178.00	1.10	0.99
CI 17879 ROCKY	168.3	170.00	174.75	158.50	170.00	0.93	0.99
CI 17902 WINRIDGE	174.5	178.00	181.00	165.00	174.00	0.90	0.92
ID 279 BLIZZARD	175.2	176.00	180.75	164.00	180.00	1.02	0.95
MT 7811 FRD/WNK/MT 6928/TR	170.4	171.00	178.75	160.00	172.00	1.03	0.97
MT 7863 FRD/WNK//CTK	171.2	171.00	177.75	159.00	177.00	1.13	0.93
MT 8003 TIBER	172.4	175.00	178.75	161.00	175.00	1.06	1.00
MT 8039 JUDITH	169.0	170.00	174.50	159.50	172.00	0.89	0.99
MT 8502 ID745101/LCO	172.2	171.00	179.00	162.00	177.00	0.98	0.91
MT 8508 CST//FRD1268/OLESEN (	169.4	170.00	177.25	159.50	171.00	0.98	0.97
MT 8599 CST//FRD1650/OLESEN (	168.4	169.00	175.75	159.00	170.00	0.93	0.98
MT 8706 MSC/CTK A+//IUL	170.6	171.00	179.00	158.50	174.00	1.17	0.98
MT 8709 MSC/CTK A+//IUL	172.6	174.00	178.25	161.00	177.00	1.05	0.97
MT 8713 MSC/CTK A+//IUL	169.9	172.00	175.50	159.00	173.00	1.00	1.00
MT 8719 RRI/MT 6928	172.1	174.00	177.25	160.00	177.00	1.08	0.96
MT 8726 CST/VT1230//ID745101	173.6	177.00	180.50	160.00	177.00	1.24	0.99
MT 79125 UT755079/CST56//TX65	170.5	172.00	178.00	159.00	173.00	1.09	0.99
MT 85200 FRD/WNK//MT 6928/TR	167.9	171.00	174.75	158.00	168.00	0.95	0.96
MT 85202 FRD/WNK/MT 6928/TR	170.4	174.00	177.00	159.50	171.00	1.01	0.96
MT 85203 FRD/WNK//MT 6928/TR	174.2	177.00	178.75	163.00	178.00	0.99	0.96
MT 88001 SMT/TD//YGSS	175.1	177.00	181.25	163.00	179.00	1.10	0.98
MT 88002 POLO/TURG//WRR	175.4	177.00	181.25	164.50	179.00	1.01	0.99
MT 88003 POLO/TURG//WRR	174.6	177.00	182.00	162.50	177.00	1.14	1.00
MT 88005 WSC/YOGO//RSC/3/TD25	171.8	174.00	177.50	162.50	173.00	0.87	0.99
MT 88006 WSC/YOGO//RSC/3/TD25	172.4	174.00	178.25	164.50	173.00	0.77	0.98
MT 88008 WSC/YOGO//RSC/3/WRR1	173.7	176.00	180.25	164.50	174.00	0.88	0.96
MT 88062 CST/VT 1230//ID74510	175.5	177.00	182.00	164.00	179.00	1.07	0.99
MT 88064 CST/VT 1230//ID74510	174.8	177.00	180.75	162.50	179.00	1.12	0.98
MT 88065 CST/VT 1230//ID74510	174.2	177.00	181.00	161.00	178.00	1.21	0.99
NA 0001 THUNDERBIRD	165.0	166.00	172.00	155.00	167.00	0.96	0.99
NA 362-5 ABILENE	166.1	167.00	172.50	156.00	169.00	0.96	0.99
ND 8002 SEWARD	171.8	172.00	179.25	163.00	173.00	0.88	0.95
PI478771 AGASSIZ	172.7	176.00	179.25	163.50	172.00	0.88	0.92
PI491532 CREE	173.7	176.00	179.25	161.50	178.00	1.10	0.98
PI491533 NORWIN	172.6	177.00	178.50	162.00	173.00	0.97	0.93
QT 542 HYBRITECH	168.2	170.00	175.00	159.00	169.00	0.90	0.98
QT 546 HYBRITECH	166.6	168.00	171.50	157.00	170.00	0.88	0.98