Title: Off-Station winter wheat variety evaluations in the Western Triangle Area.

Year: 1996

Location: Western Triangle Research Center, Conrad, MT.

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Off-station winter wheat variety trials were grown near Chester, the Knees area east of Brady, and at Dutton. The Chester trial was lost to severe hail. In addition to the standard 24-entry variety trial, the Dutton location included a sawfly-resistance selection trial involving over 5000 experimental lines of winter wheat. The sawfly-resistance study is reported elsewhere by Phil Bruckner.

Results: Abundant soil moisture contributed to good yield levels in spite of low rainfall during the summer. The Knees and Dutton trials were both severely damaged by sawfly, which had a substantial impact on grain yield and on how the varieties ranked for yield. The non-resistant varieties were heavily cut by sawfly and lodged flat on the ground. The two resistant varieties, Vanguard and Rampart, were about 20% lodged.

The sawfly infestation at these two locations provided an important opportunity to measure the effectiveness of the solid-stem sawfly resistance of Vanguard and Rampart, and to compare the yield of these two varieties with susceptible varieties under sawfly pressure. In the absence of sawfly, Vanguard and Rampart yield approximately 10 and 5% less than Rocky, respectively. But under the heavy sawfly conditions at the Knees, Vanguard and Rampart were the top yielders (Table 1). At Dutton, Vanguard and Rampart ranked fairly high, although less than Rocky (Table 2).

Harvest of Vanguard and Rampart was easily accomplished with the combine cutter-bar off the ground. For Rocky and the other susceptible varieties, the cutter bar had to be placed on the ground and risking rock-damage to the combine.

Summary: The importance of off-station variety testing was realized in that the trials were placed in areas of known sawfly infestations in order to evaluate sawfly resistant lines. The resistant varieties Vanguard and Rampart showed advantages in yield and harvestability under these conditions.

Future Plans: Off-station winter wheat variety trials will be grown again at the Knees and Dutton to further evaluate sawfly resistant varieties.

Table 1 **Winter Wheat** variety trial grown under heavy sawfly infestation near the **Knees**, 1996. Mont. Agr. Expt. Sta., Western Triangle Ag. Res. Center, Conrad, MT.

Variety	Yield bu/ac	Test wt. lbs/bu.	Plant hgt. inches	Spring survival class 1/	% protein
VANGUARD (2238) **	44.7	62.3	31	1.5	14.6
RAMPART (92042)**	43.7	62.6	31	1.5	14.7
ROCKY	43.5	62.9	30	2	13.8
AGASSIZ	40.6	62.4	36	4	14.4
MT 91192	38.9	61.0	29		14.3
TIBER	38.0	63.0	29	3	13.8
WESTON	37.8	63.1	34	2	13.8
MT 9222	36.5	61.8	31		14.1
KESTREL	36.3	61.3	34	5	13.3
CENTURK	34.4	62.6	29	2	13.8
YUMA	34.0	62.6	27	2	12.5
ERHARDT (8719)	33.6	62.5	29	4	15.3
NUWEST *	33.3	62.4	30	3	13.8
REDWIN	32.9	62.5	31	3	14.8
MCGUIRE (88046)	32.7	62.6	29	3	15.2
NORSTAR	32.7	62.4	37	5	13.8
NEELEY	31.0	61.7	30	3	13.7
BIGHORN	30.9	62.6	26		14.1
AC READYMADE	30.1	61.9	30	3	14.7
QUANTUM 542	26.5	61.9	32	3	14.0
JUDITH	23.0	61.5	32	3	14.1
HAWK	21.6	62.7	27	2-3	14.2
MANNING	20.9	62.8	30	2	13.7
PROMONTORY	18.5	63.9	31	2	13.4

Cooperator: Dan Picard.
Location: Thirty miles east of Brady, Chouteau County.
Fertilizer: 100# 11-51-0 with the seed, + 60# N AA-N.
Previous crop: Fallow.
Date seeded: Sept. 12, 1995. Date harvested: Sept. 6, 1996.
1/ = Spring survival class: 5=best; 1=very low; based on several location-years of observation.
* = Hard white wheat, (MT 7811).
** = Sawfly resistant variety. (Vanguard & Rampart had 20 to 30% sawfly cutting; Rocky & Centurk had 50%; McGuire 60%; All other varieties had 70 to 100% cutting and were lodged flat.)
Yield experimental mean: 33.17
Error degrees of freedom: 46
F test for var. = 5.86, C.V. 2 = 8.9, LSD (0.05) = 8.4

Table 2 **Winter Wheat** trial grown under heavy sawfly infestation near **Dutton**, 1996. Mont. Agr. Expt. Sta., Western Tri. Ag. Res. Center, Conrad, MT.

Variety	Yield bu/ac	Test wt. lbs/bu.	Plant hgt. inches	Spring survival class 1/	% protein
YUMA	65.2	59.8	34	2	12.5
ROCKY	60.0	61.2	41	2	13.3
CENTURK	58.0	61.0	36	2	13.2
MT 9222	57.2	58.8	35		14.0
TIBER	49.2	61.2	41	3	14.2
RAMPART (92042) **	49.2	59.3	37	1.5	14.1
AC READYMADE	46.8	60.7	37	3	14.3
VANGUARD (2238) **	46.4	59.3	37	1.5	14.3
WESTON	44.8	60.8	37	2	13.8
ERHARDT (8719)	44.6	61.7	36	4	13.8
MCGUIRE (88046)	44.6	60.0	34	3	14.6
MT 91192	43.8	58.6	35		13.4
KESTREL	43.4	59.2	37	5	13.2
REDWIN	42.8	61.4	37	3	13.8
NORSTAR	42.4	61.7	45	5	14.4
BIGHORN	40.7	60.7	33		14.4
PROMONTORY	40.1	60.0	33	2	13.9
QUANTUM 542	39.5	59.6	36	3	13.7
MANNING	39.3	58.8	35	2	13.6
NEELEY	38.0	60.7	35	3	13.2
JUDITH	35.2	58.5	39	3	13.7
AGASSIZ	34.1	60.5	39	4	14.3
NUWEST *	32.2	60.1	37	3	14.1
HAWK	29.8	60.0	37	2-3	13.3

Cooperator: Lanny Christman.
Location: Four miles northwest of Dutton, Teton County.
Fertilizer: 100# 11-51-0 with the seed, + 50# N AA-N.
Previous crop: Fallow.
Date seeded: Sept. 28,1995. Date harvested: Aug. 8, 1996.
Rainfall: From May 22 to harvest was 3.8 inches.
1/ = Spring survival class: 5=best; 1=very low; based on several location-years of observation.
* = Hard white wheat, (MT 7811).
** = Sawfly resistant variety. (Rampart & Vanguard had 20% sawfly cutting; Rocky, Centurk & McGuire had 35%; all other varieties were 90 to 100% cut and lodged flat).
Yield experimental mean: 44.46
F test for var. = 4.63, C.V. 2 = 9.15, LSD (0.05) = 11.58