

PROJECT TITLE: Spring wheat variety evaluations

YEAR/PROJECT: 1984/756

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#### INTRODUCTION:

In an effort to continually test new and improved spring wheat varieties in western Montana variety nurseries are evaluated annually at the Northwestern Agricultural Research Center. These nurseries, through year's of accumulated testing, are the proving ground for all Montana recommended spring wheat varieties.

Three nurseries were grown this year in Kalispell, two regional nurseries ( Advanced Yield and Western Regional ) and a Museum spring wheat nursery.

#### RESULTS: - Advanced Yield Nursery -

Yields this year were similar to the 1983 season with five varieties yielding above 100 Bu/A. None of these yields were significantly higher than the check variety ( Newana ) which yielded 98.5 Bu/A. Six varieties did yield significantly less than the check, with five of those also having the only significantly less test weights for this nursery. These six varieties, that were lower in yields, are more than likely the least drought tolerant and were effected by the hot, dry summer this season.

Heading dates were one week later than last year which may also be a reflection on the lack of moisture during that time of development. There were no varieties that headed later than Newana ( when analyzed for significance ), which is understood due to the fact that Newana is a late heading variety.

Stripe rust ( *Puccinia striiformis* ) and leaf rust ( *Puccinia recondita* ) were both present in this nursery yet only leaf rust was prevalent. There were 10 entries which had moderate to severe levels of leaf rust and were significantly higher than the infection recorded in Newana. Twelve varieties were observed to be susceptible to stripe rust at the disease level that occurred in this trial. Table 1.

#### - Western Regional Spring Wheat -

Yields were higher in the Western Regional nursery in comparison to the Advanced Yield nursery. Large differences occurring between the same varieties (such as McKay and Owens) in different nurseries can only be attributed to field location. The mean yield for this trial was 108.1 Bu/A with Owens ( the check variety ) yielding 119.9 Bu/A. No varieties were significantly higher in yield than Owens yet ten entries were found to be significantly less in yield.

Test weights were lower than average, yet in the study were slightly higher than in the Advanced Yield Nursery. Nine varieties had significantly higher test weights than Owens whereas eleven showed significantly lower test weights. Five of those eleven varieties with lower test weights also were the lower yielding entries which could have been the demonstrating of low drought stress resistance.

Loddsins was almost non-existent in the Regional Spring Wheat nursery this year.

Stripe rust was detected in some varieties yet was not more than a slight incidence in any of the plots observed. Leaf rust was prevalent through out the nursery and was moderate to heavy in the varieties ID 263; OR 8411; UT 1376; UT 1382; and ID 285. Five spring wheat varieties showed resistance to leaf rust. Table 4.

A spring wheat Museum nursery was grown on station this year mostly as a point of interest for field day. This nursery contained thirty entries dating from early certification days up to the present demonstrating the advances made in wheat breeding over the last fifty years. Table 5.

Table 1 . Agronomic data from the Advanced Yield Spring Wheat Nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT in 1984. Field Y-6.

Date planted: April 16, 1984

Date harvested: August 28, 1984

STATE or CI #	Variety	Yield Bu/A	Test Wt Lbs/Bu	Heading Date	Height ( In )	Stripe Rust In Typ	Rust 3/ Sever	Leaf Rust 4/ In Typ	Sever
MT8184	AU/MAYA 74'S'	108.00	58.60	181.00b	32.15	.00	.00	1.00b	2.50
C17903	MCKAY	107.25	56.57	186.00	35.43a	.00	.00	1.00b	5.00
C17911	WAVERLY	105.00	56.50	185.67	34.91a	.00	.00	6.00	22.50
MT8017	FB434/MT7149	101.15	58.73	186.33	34.91a	.00	.00	7.00	45.00a
MT808	JARAL/NORANA	100.40	55.30	184.67b	33.20	1.50	5.00	4.50b	10.00
MT8177	KALIF/S6921	99.93	59.90	185.00	33.33	2.00	7.50	.00b	.00
WRP8-1	CHALLENGER	99.30	59.70	180.67b	32.68	.00	.00	1.00b	5.00
MT7926	ND681/MT6830	99.05	60.70	186.00	44.23a	.00	.00	3.50b	7.50
C17420	NEWANA 1/	98.50	57.87	186.00	31.36	1.50	2.50	8.50	17.50
MT8306	PM23/MT7448	97.62	58.00	184.67	38.19a	.00	.00	4.00b	10.00
C17920	MARSHALL	97.58	56.07	186.00	33.73	.00	.00	1.50b	5.00
ND582	STDA	96.82	59.67	183.33b	42.91a	.00	.00	1.50b	5.00
MT8043	PK176//SI/MT714	96.75	56.13	184.33b	37.80a	.00	.00	8.00	72.50a
C17934	GUARD	95.95	59.77	181.00b	37.14a	.00	.00	1.00b	5.00
C15930	OLAF	95.82	57.73	183.00b	36.22a	1.50	7.50	.00b	.00
C17935	CENTA	93.73	60.47	180.33b	41.60a	.00	.00	.00b	.00
C17681	BUTTE	93.67	59.47	182.00b	43.70a	1.50	7.50	.00b	.00
MT8365	MT7448/MT7031	93.63	56.80	184.33b	34.78a	.00	.00	7.50	17.50
H78113	HS 78-1139 NAPB	93.52	56.33	185.33	31.36	.00	.00	.00b	.00
MT8277	PI345931/PONDER	92.75	54.30	182.67b	34.25a	.00	.00	.00b	.00
C17438	CANDD	92.68	56.17	185.33	30.71	.00	.00	2.50b	10.00
H7819	GLENMAN AYT SOR	92.35	57.53	185.00	35.17a	.00	.00	7.50	35.00
MT8330	MEXSEL2315/MT74	91.33	57.20	183.67b	34.51a	.00	.00	8.00	60.00a
MT8316	S1103/MT747	91.08	58.37	186.00	40.29a	.00	.00	8.00	75.00a
MT8218	C15838/MARBERG	90.68	56.33	181.33b	36.09a	.00	.00	8.00	47.50a
MT8336	PM23/MT7448	90.60	57.73	185.33	34.91a	.00	.00	7.50	20.00
MT8352	PX23/MT7448	89.87	53.73	186.33	35.17a	.00	.00	6.00	25.00
MT7819	GLENMAN BREEDER	89.52	57.83	185.67	35.30a	.00	.00	7.00	52.50a
MT8328	PM23/MT7448	89.32	57.20	182.67b	36.88a	.00	.00	5.50	15.00
C17828	PONDERA	89.25	58.00	182.33b	37.27a	1.50	5.00	8.00	35.00
C17910	ALEX	88.20	59.13	184.33b	44.23a	.00	.00	1.00b	2.50
AK4342	ERA/BUCK CIMARR	86.67	60.17	185.33	36.75a	3.50	7.50	.00b	.00
MT8320	PM23/MT7448	86.53	54.90	185.67	35.83a	.00	.00	3.00b	10.00
MT8374	OSLO	86.25	55.93	180.67b	30.97	4.50a	12.50a	.00b	.00

C17904	OWENS	85.07	53.27	186.00	35.17a	.00	.00	7.50	57.50a
C17429	LEW	84.05	59.27	186.67	46.06a	.00	.00	1.00b	7.50
C17790	LEN	83.98	56.30	180.00b	35.96a	.00	.00	8.00	80.00a
NK8002	ERA//TOB/CNO/3/	83.97	57.47	183.00b	32.81	.00	.00	.00b	.00
C13596	FORTUNA	80.38	59.10	184.67	43.83a	.00	.00	3.50b	5.00
C10003	THATCHER	79.72	58.73	183.00	46.19a	1.50	5.00	8.50	67.50a
MT8313	S1103/MT747	78.07	56.00	185.33	39.89a	.00	.00	8.00	92.50a
C15892	WARD	77.82	57.07	183.00b	45.41a	3.00	10.00a	2.00b	5.00
C17789	VIC	76.47	58.30	185.00	45.67a	.00	.00	2.50b	5.00
MT8321	PM23/MT7448	72.83b	52.23b	186.00	35.43a	.00	.00	3.50b	10.00
MT8282	PI345931/MT7440	72.73b	49.90b	183.00b	31.36	.00	.00	5.50	15.00
C17282	CROSBY	70.92b	55.17	184.67	44.49a	.00	.00	.00b	.00
P47621	LLOYD	68.53b	51.60b	185.67	29.92	2.50	2.50	5.50	12.50
MT8344	JUP//MD/COLTANA	68.15b	52.37b	186.00	33.86	2.00	2.50	7.50	25.00
MT8333	S1103/MT747	65.57b	52.53b	184.67	38.32a	.00	.00	3.50b	25.00

X	89.16	56.90	184.18	36.99	.54	1.53	3.97	20.92
F 2/	1.52*	2.06**	15.13**	17.79**	1.46*	1.47*	5.41**	6.83**
S.E.X.	8.35	1.73	.48	1.10	.88	2.55	1.36	9.59
C.V.%	9.37	3.04	.26	2.96	163.4	166.9	34.39	45.87
L.S.D.	23.45	4.85	1.34	3.08	2.51	7.26	3.88	27.28

- 1/ Check variety  
 2/ F value for variety comparison  
 3/ Stripe rust ( *Puccinia striiformis* ) rated 8-7-84

Sever = severity, % of leaf area infected

- 4/ Leaf rust ( *Puccinia recondita* )

Sever = severity, % of leaf area infected

In Typ = infection type

0 = no chlorosis or necrosis  
 5 = necrotic/chlorotic stripes  
 intermediate sporulation  
 9 = abundant sporulation, no  
 necrosis

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- a/ Values significantly greater than the check at the .05 level  
 b/ Values significantly less than the check at the .05 level  
 \* Indicates statistical significance at the .05 probability level  
 \*\* Indicates statistical significance at the .01 probability level