

Title: Evaluation of Winter Wheat Lines for Stripe Rust Resistance and Agronomic Performance.

Objective: To evaluate experimental winter wheat lines for stripe rust resistance and agronomic performance.

Results:

Significant differences were observed in all response variables. Initial stripe rust rating averaged 15.6% on June 12, ranging from 0.0% for MT1564 to 78.7% for CDC Falcon. By June 26 stripe rust infection increased to an average of 27.7% ranging from 7.3 % for MT1564 to 81.3% for Decade. Heading date averaged 152 days (June 1), and spanned a 6 day period from 148 days for MT1564 to 154 days for MT1563. Plant height averaged 34.9 inches and ranged from 23.7 inches for MT 1599 to 39.7 inches for MT1561. Yield averaged 99.4 bu/A, ranging from 69.1 bu/A for Decade to 129.1 bu/A for MT1563. Protein averaged 10.8% and ranged from 9.6% for MT1561 to 12.1% for MT1566. Test weight averaged 62.7 lb/bu, ranging from 59.9 lb/bu for Decade to 64.9 lb/bu for Promontory.

Summary:

MT1561 and MT1563 were the two highest yielding experimental varieties. Yellowstone was the highest yielding commercial variety. MT1564 and MT1569 showed the greatest resistance to stripe rust. However, nine other varieties produced statistically similar results. In conclusion winter wheat breeding efforts are producing varieties that have high levels of stripe rust resistance, are high yielding and suitable for growing in the northwest region of Montana.

Table 1. Materials and Methods - Winter Wheat Stripe Rust Screening - 2015

Seeding Date:	9/29/2014	Harvest Date:	7/28/2015
Julian Date:	272	Julian Date:	209
Seeding Rate:	100 lb/A	Soil Type:	Creston SiL
Previous Crop:	Canola	Soil Test:	29-10-158
Tillage:	Conventional	Fertilizer:	9-40-70, 130-0-0 TD
Irrigation:	None	Herbicide:	Huskie 11 oz/A

Table 2. Agronomic data from the winter wheat stripe rust nursery, Kalispell 2015

Cultivar	6/12		6/26		YLD <sup>1</sup> bu/A	PRO <sup>2</sup> %	TWT <sup>1</sup> lb/bu
	HD Julian	SR %	SR %	HT in			
MT1563	154	9.3	27.7	38.3	129.1	10.1	63.1
MT1561	153	7.7	15.7	39.7	120.2	9.6	62.4
Yellowstone	152	3.3	36.0	38.3	105.3	10.4	62.6
MT1564	148	0.0	7.3	36.0	104.7	11.4	63.7
MT1565	151	6.3	11.7	34.3	103.0	11.1	62.2
Promontory	152	3.0	14.0	36.0	101.4	10.6	64.9
MT1568	152	3.0	32.7	35.7	100.9	11.0	62.9
MT1567	151	5.0	31.0	34.0	98.4	11.2	62.6
MT1569	152	3.0	9.3	35.3	97.3	11.7	63.1
MT1562	151	7.3	20.0	34.7	96.9	11.0	63.0
MT1566	151	5.0	25.0	35.0	95.0	12.1	63.3
MT1599	152	10.0	20.3	23.7	91.7	10.2	61.3
CDC Falcon	153	78.7	73.0	32.7	78.6	10.3	62.2
Decade	152	77.3	81.3	35.3	69.1	10.2	59.9
Mean	152	15.6	28.9	34.9	99.4	10.8	62.7
CV	0.6	38.4	51.4	4.8	8.1	4.0	0.5
LSD	1.6	10.1	25.0	2.8	13.5	0.7	0.6
Pr>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

HD: heading, SR: stripe rust, HT: height, YLD: yield, PRO: protein, TWT: test weight

<sup>1</sup> adjusted to 13% moisture, <sup>2</sup> adjusted to 12% moisture