

PROJECT TITLE: Winter Wheat Variety Evaluations

YEAR/PROJECT: 1988/756 Small Grain Production

PERSONNEL: Leader - Vern R. Stewart, Todd K. Keener - Research Specialist
Northwestern Agricultural Research Center, Kalispell, MT.

OBJECTIVES:

To determine the adaptability of new and introduced winter wheat varieties for western Montana.

SUMMARY:

The Western Regional Winter Wheat nurseries are grown at the Kalispell and Stillwater locations. The outstanding varieties from these nurseries are tested in western Montana in off-station nursery evaluations. These data are used in making recommendations to the Montana producer.

Continuous snow cover began on December 15, 1987 and continued until February 13, 1988 (60 days) which was 34 days less than last year and 45 days shorter than the 1985/86 season. Dwarf smut infection levels were low at the Stillwater and Kalispell locations sites this year. Although disease occurrence was light in most experiments there was a severe incidence of stripe rust in susceptible varieties in the Intrastate winter wheat nursery. Although fall, winter and early spring precipitation amounts were 60-70% of normal the rainfall recieved in April and May greatly aided the sustaining of winter wheat through to harvest. Yields were very good considering the lack of moisture experienced State-wide.

RESULTS:

Western Regional Hard Red Winter Wheat - Kalispell

The Kalispell site had a mean yield of 81.57 bu/A. The highest yielding entry was UT 157140 at 97.75 bu/A. UT 156751, UT 156516, ID 326, and DRDR 8608 all had yields greater than 90 bu/A. No variety had a test weight of 60 lbs/bu and only five entries had test weights of 59.0 lbs/bu. Winter survival of all varieties were good, averaging 95.82%. TCK smut was generally light with seven lines being smut free. Table 1.

Western Regional Hard Red Winter Wheat - Stillwater

The Stillwater trial had a mean yield of 85.97 bu/A. Nine lines had yields in excess of 90/bu/A. All lines but two had test weights above the 60 lb/bu. Winter survival for all entries averaged 97%. TCK smut levels were very low in the test. Table 2.

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Western Regional Soft White Winter Wheat - Kalispell

The Kalispell nursery had a mean yield of 94.74 bu/A. OR 855 was the highest yielding entry at 112.93 bu/A. Test weights were low and averaging 55.56 lbs/bu. TCK smut levels were low, with only WA 7621 and WA 7527 smut free. Table 3.

Western Regional Soft White Winter Wheat - Stillwater

The mean yield for the Stillwater site was 86.51 bu/A. ORF 75336 had the high yield (103.94 bu/A). No other varieties had yields above 100 bu/A but eight entries had yields of 90 bu/A or greater. Yield data was found nonsignificant when analyzed statistically. Test weights were average (59.44 lbs/bu). TCK smut was light with fourteen entries having a range of .5 to 8 percent. Table 4.

Intrastate Winter Wheat - Kalispell

The Kalispell location had a mean yield of 91.51 bu/A. The high yielding entry was Winridge at 121.57 bu/A. Ten lines were equal to Winridge, and above 100 bushel per acre. Test weights were good with an average of 61.38 lbs/bu. Fourteen entries had test weights above 62 lbs/bu. TCK smut was light yet was observed in all but eight entries. Stripe rust was prevalent throughout the trial and severe in twelve varieties. MT 86009 and MT 86029 were the only two varieties showing good resistance to strip rust. Table 5.

Offstation Winter Wheat Trials

The offstation winter wheat trials were grown in Ravalli County (McIntyre farm, Stevensville, MT), Lake County (Haake farm, Polson, MT.) and in Flathead County (Stillwater location, Oscar Buller farm Kalispell, MT.). The mean yields were 35.94 bu/A for Ravalli Co., 28.65 bu/A for Lake Co., and 79.86 bu/A for Flathead Co. Heights, test weights, % TCK smut and % survival observations are given in tables 7-9.

Table 3. Agronomic data from the Western Regional Soft White Winter Wheat nursery grown on the Northwestern Agricultural Research Center, Kalispell, MT.

Date planted: Sept. 17, 1987

Harvested: August 28, 1988

VARIETY	YIELD BU/A	TEST WT LB/BU	HEADING DATE	HEIGHT INCHES	%WINTER SURVIVL	% TCK SMUT
OR 855 PAHA//SEL.72-330/DAW	112.93a	58.18a	157.75a	40.26a	98.25	.12
ORCW8724 CORVALLIS SELECTION	103.19	56.18a	153.75	39.96a	98.75	.63
ORFW 301 DAWS/SM4//MDM/SM11,F	102.16	54.50	154.00	36.12	99.00	.12
ORCW8632 CORVALLIS SELECTION	101.38	54.93	155.00a	36.81	98.00	.25
WA 7625 WA 7163 SIB	100.50	55.88	157.25a	38.09a	98.75	.50
ID 0330 NEELY/SPN//SPN (A79	99.63	54.73	154.25	38.39a	96.25	.63
WA 7624 VPM/MS951/PECK/SPN/D	99.63	53.08b	160.00a	32.48b	98.75	.37
ID 0329 NEELY/SPN/SPN (A7911	99.54	54.62	154.00	36.81	98.00	.37
ORCW8416 NORTENO/YAMHILL//672	98.90	56.80a	159.00a	38.19a	96.75	.37
ORCW8517 TJB801-12795/STEPHEN	98.81	57.08a	153.75	42.81a	96.25	.50
ORCW8635 CORVALLIS SELECTION	98.51	57.98a	156.25a	44.78a	98.00	.63
ORCW8637 CORVALLIS SELECTION	98.31	56.43a	157.75a	38.98a	98.25	.37
WA 7163 MADSEN	97.99	56.20a	157.00a	36.91	96.75	.25
ORCW8521 TJB259-83/3/CD/P101/	97.94	57.88a	155.75a	45.28a	99.75	.63
ORCW8633 CORVALLIS SELECTION	97.74	56.50a	159.25a	36.81	98.50	1.50
CI 17596 STEPHENS 1/	97.64	54.53	153.50	35.14	97.50	.25
CI 13968 NUGAINES	97.08	57.90a	157.00a	34.94	94.00b	2.50a
OR 845 HYSLOP/YAYLA//63-112	96.93	58.45a	155.75a	37.40	99.75	.88
WA 7621 VPM/MS421//VH66354/W	95.40	54.75	158.25a	37.20	95.00	.00
WA 7623 STEPHENS/ROAZON/SEL.	94.65	54.62	156.50a	34.94	98.50	.25
CI 17917 TRES (WA 6698)	94.40	55.92	158.50a	41.93a	99.00	.63
WA 7622 TYEE/ROAZON/TRES	93.66	54.40	159.75a	36.81	95.25	.12
OR 843 HYSLOP/CERCO, H-308	92.88	55.92	157.25a	40.06a	96.75	.75
WA 7529 LUKE/VH67375//VPM/MO	92.85	54.58	157.50a	35.93	99.00	.37
ORF75336 YMH/MCD/2/T.SPELTA/3	92.75	54.80	155.50a	37.20	98.25	.37
WA 7527 TRES MULTILINE 86	92.54	55.90	157.00a	40.85a	97.25	.00
WA 7627 WA096910, MARIS HUNT	91.76	55.18	157.00a	40.94a	99.25	2.37a
OR 842 HYSLOP/CERCO, B-307	91.61	55.50	157.25a	39.96a	98.00	2.25a
WA 7526 TRES COMPOSITE CROSS	91.56	56.50	159.00a	40.35a	98.50	.50
WA 7628 VD086150,WA6814/WA65	91.31	52.33b	159.75a	36.42	97.75	.12
ORFW205B FW73830-002/3/MLD/2/	90.39	52.73b	160.25a	34.55	99.25	.37
WA 7166 HYAK	89.75	52.70b	157.25a	39.57a	98.25	.12
OR830801 CORVALLIS SELECTION	84.45b	51.15b	154.75	32.97	97.50	1.00
CI 13740 MORO	81.65b	54.23	156.75a	45.47a	99.00	1.37
CI 11755 ELGIN	76.02b	57.75a	158.50a	50.30a	98.00	.63
CI 1442 KHARKOF	74.19b	59.28a	155.75a	54.13a	99.00	4.63a
EXPERIMENTAL MEANS	94.74	55.56	156.88	39.16	97.91	.74
F TEST FOR VAR. 2/	5.73**	13.85**	16.53**	24.85**	1.41	2.89**
C.V. 2: (S OF MEAN/MEAN)*100	3.22	.90	.30	2.31	1.14	72.46
LSD (0.05)	8.55	1.40	1.33	2.54	3.12	1.51

- 1/ Check variety
- 2/ F value for variety comparison
- ** Indicates statistical significance at the .01 level
- a/ Values significantly greater than the check at the .01 level
- b/ Values significantly less than the check at the .01 level

Year	Check	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1951	12.5	13.2	13.8	14.5	15.1	15.8	16.5	17.2	17.9	18.6	19.3	20.0	20.7	21.4	22.1	22.8	23.5	24.2	24.9	25.6	26.3	27.0	27.7	28.4	29.1	29.8	30.5	31.2	31.9	32.6	33.3	34.0	34.7	35.4	36.1	36.8	37.5	38.2	38.9	39.6	40.3	41.0	41.7	42.4	43.1	43.8	44.5	45.2	45.9	46.6	47.3	48.0	48.7	49.4	50.1	50.8	51.5	52.2	52.9	53.6	54.3	55.0	55.7	56.4	57.1	57.8	58.5	59.2	59.9	60.6	61.3	62.0	62.7	63.4	64.1	64.8	65.5	66.2	66.9	67.6	68.3	69.0	69.7	70.4	71.1	71.8	72.5	73.2	73.9	74.6	75.3	76.0	76.7	77.4	78.1	78.8	79.5	80.2	80.9	81.6	82.3	83.0	83.7	84.4	85.1	85.8	86.5	87.2	87.9	88.6	89.3	90.0	90.7	91.4	92.1	92.8	93.5	94.2	94.9	95.6	96.3	97.0	97.7	98.4	99.1	99.8	100.5	101.2	101.9	102.6	103.3	104.0	104.7	105.4	106.1	106.8	107.5	108.2	108.9	109.6	110.3	111.0	111.7	112.4	113.1	113.8	114.5	115.2	115.9	116.6	117.3	118.0	118.7	119.4	120.1	120.8	121.5	122.2	122.9	123.6	124.3	125.0	125.7	126.4	127.1	127.8	128.5	129.2	129.9	130.6	131.3	132.0	132.7	133.4	134.1	134.8	135.5	136.2	136.9	137.6	138.3	139.0	139.7	140.4	141.1	141.8	142.5	143.2	143.9	144.6	145.3	146.0	146.7	147.4	148.1	148.8	149.5	150.2	150.9	151.6	152.3	153.0	153.7	154.4	155.1	155.8	156.5	157.2	157.9	158.6	159.3	160.0	160.7	161.4	162.1	162.8	163.5	164.2	164.9	165.6	166.3	167.0	167.7	168.4	169.1	169.8	170.5	171.2	171.9	172.6	173.3	174.0	174.7	175.4	176.1	176.8	177.5	178.2	178.9	179.6	180.3	181.0	181.7	182.4	183.1	183.8	184.5	185.2	185.9	186.6	187.3	188.0	188.7	189.4	190.1	190.8	191.5	192.2	192.9	193.6	194.3	195.0	195.7	196.4	197.1	197.8	198.5	199.2	199.9	200.6	201.3	202.0	202.7	203.4	204.1	204.8	205.5	206.2	206.9	207.6	208.3	209.0	209.7	210.4	211.1	211.8	212.5	213.2	213.9	214.6	215.3	216.0	216.7	217.4	218.1	218.8	219.5	220.2	220.9	221.6	222.3	223.0	223.7	224.4	225.1	225.8	226.5	227.2	227.9	228.6	229.3	230.0	230.7	231.4	232.1	232.8	233.5	234.2	234.9	235.6	236.3	237.0	237.7	238.4	239.1	239.8	240.5	241.2	241.9	242.6	243.3	244.0	244.7	245.4	246.1	246.8	247.5	248.2	248.9	249.6	250.3	251.0	251.7	252.4	253.1	253.8	254.5	255.2	255.9	256.6	257.3	258.0	258.7	259.4	260.1	260.8	261.5	262.2	262.9	263.6	264.3	265.0	265.7	266.4	267.1	267.8	268.5	269.2	269.9	270.6	271.3	272.0	272.7	273.4	274.1	274.8	275.5	276.2	276.9	277.6	278.3	279.0	279.7	280.4	281.1	281.8	282.5	283.2	283.9	284.6	285.3	286.0	286.7	287.4	288.1	288.8	289.5	290.2	290.9	291.6	292.3	293.0	293.7	294.4	295.1	295.8	296.5	297.2	297.9	298.6	299.3	300.0	300.7	301.4	302.1	302.8	303.5	304.2	304.9	305.6	306.3	307.0	307.7	308.4	309.1	309.8	310.5	311.2	311.9	312.6	313.3	314.0	314.7	315.4	316.1	316.8	317.5	318.2	318.9	319.6	320.3	321.0	321.7	322.4	323.1	323.8	324.5	325.2	325.9	326.6	327.3	328.0	328.7	329.4	330.1	330.8	331.5	332.2	332.9	333.6	334.3	335.0	335.7	336.4	337.1	337.8	338.5	339.2	339.9	340.6	341.3	342.0	342.7	343.4	344.1	344.8	345.5	346.2	346.9	347.6	348.3	349.0	349.7	350.4	351.1	351.8	352.5	353.2	353.9	354.6	355.3	356.0	356.7	357.4	358.1	358.8	359.5	360.2	360.9	361.6	362.3	363.0	363.7	364.4	365.1	365.8	366.5	367.2	367.9	368.6	369.3	370.0	370.7	371.4	372.1	372.8	373.5	374.2	374.9	375.6	376.3	377.0	377.7	378.4	379.1	379.8	380.5	381.2	381.9	382.6	383.3	384.0	384.7	385.4	386.1	386.8	387.5	388.2	388.9	389.6	390.3	391.0	391.7	392.4	393.1	393.8	394.5	395.2	395.9	396.6	397.3	398.0	398.7	399.4	400.1	400.8	401.5	402.2	402.9	403.6	404.3	405.0	405.7	406.4	407.1	407.8	408.5	409.2	409.9	410.6	411.3	412.0	412.7	413.4	414.1	414.8	415.5	416.2	416.9	417.6	418.3	419.0	419.7	420.4	421.1	421.8	422.5	423.2	423.9	424.6	425.3	426.0	426.7	427.4	428.1	428.8	429.5	430.2	430.9	431.6	432.3	433.0	433.7	434.4	435.1	435.8	436.5	437.2	437.9	438.6	439.3	440.0	440.7	441.4	442.1	442.8	443.5	444.2	444.9	445.6	446.3	447.0	447.7	448.4	449.1	449.8	450.5	451.2	451.9	452.6	453.3	454.0	454.7	455.4	456.1	456.8	457.5	458.2	458.9	459.6	460.3	461.0	461.7	462.4	463.1	463.8	464.5	465.2	465.9	466.6	467.3	468.0	468.7	469.4	470.1	470.8	471.5	472.2	472.9	473.6	474.3	475.0	475.7	476.4	477.1	477.8	478.5	479.2	479.9	480.6	481.3	482.0	482.7	483.4	484.1	484.8	485.5	486.2	486.9	487.6	488.3	489.0	489.7	490.4	491.1	491.8	492.5	493.2	493.9	494.6	495.3	496.0	496.7	497.4	498.1	498.8	499.5	500.2	500.9	501.6	502.3	503.0	503.7	504.4	505.1	505.8	506.5	507.2	507.9	508.6	509.3	510.0	510.7	511.4	512.1	512.8	513.5	514.2	514.9	515.6	516.3	517.0	517.7	518.4	519.1	519.8	520.5	521.2	521.9	522.6	523.3	524.0	524.7	525.4	526.1	526.8	527.5	528.2	528.9	529.6	530.3	531.0	531.7	532.4	533.1	533.8	534.5	535.2	535.9	536.6	537.3	538.0	538.7	539.4	540.1	540.8	541.5	542.2	542.9	543.6	544.3	545.0	545.7	546.4	547.1	547.8	548.5	549.2	549.9	550.6	551.3	552.0	552.7	553.4	554.1	554.8	555.5	556.2	556.9	557.6	558.3	559.0	559.7	560.4	561.1	561.8	562.5	563.2	563.9	564.6	565.3	566.0	566.7	567.4	568.1	568.8	569.5	570.2	570.9	571.6	572.3	573.0	573.7	574.4	575.1	575.8	576.5	577.2	577.9	578.6	579.3	580.0	580.7	581.4	582.1	582.8	583.5	584.2	584.9	585.6	586.3	587.0	587.7	588.4	589.1	589.8	590.5	591.2	591.9	592.6	593.3	594.0	594.7	595.4	596.1	596.8	597.5	598.2	598.9	599.6	600.3	601.0	601.7	602.4	603.1	603.8	604.5	605.2	605.9	606.6	607.3	608.0	608.7	609.4	610.1	610.8	611.5	612.2	612.9	613.6	614.3	615.0	615.7	616.4	617.1	617.8	618.5	619.2	619.9	620.6	621.3	622.0	622.7	623.4	624.1	624.8	625.5	626.2	626.9	627.6	628.3	629.0	629.7	630.4	631.1	631.8	632.5	633.2	633.9	634.6	635.3	636.0	636.7	637.4	638.1	638.8	639.5	640.2	640.9	641.6	642.3	643.0	643.7	644.4	645.1	645.8	646.5	647.2	647.9	648.6	649.3	650.0	650.7	651.4	652.1	652.8	653.5	654.2	654.9	655.6	656.3	657.0	657.7	658.4	659.1	659.8	660.5	661.2	661.9	662.6	663.3	664.0	664.7	665.4	666.1	666.8	667.5	668.2	668.9	669.6	670.3	671.0	671.7	672.4	673.1	673.8	674.5	675.2	675.9	676.6	677.3	678.0	678.7	679.4	680.1	680.8	681.5	682.2	682.9	683.6	684.3	685.0	685.7	686.4	687.1	687.8	688.5	689.2	689.9	690.6	691.3	692.0	692.7	693.4	694.1	694.8	695.5	696.2	696.9	697.6	698.3	699.0	699.7	700.4	701.1	701.8	702.5	703.2	703.9	704.6	705.3	706.0	706.7	707.4	708.1	708.8	709.5	710.2	710.9	711.6	712.3	713.0	713.7	714.4	715.1	715.8	716.5	717.2	717.9	718.6	719.3	720.0	720.7	721.4	722.1	722.8	723.5	724.2	724.9	725.6	726.3	727.0	727.7	728.4	729.1	729.8	730.5	731.2	731.9	732.6	733.3	734.0	734.7	735.4	736.1	736.8	737.5	738.2	738.9	739.6	740.3	741.0	741.7	742.4	743.1	743.8	744.5	745.2	745.9	746.6	747.3	748.0	748.7	749.4	750.1	750.8	751.5	752.2	752.9	753.6	754.3	755.0	755.7	756.4	757.1	757.8	758.5	759.2	759.9	760.6	761.3	762.0	762.7	763.4	764.1	764.8	765.5	766.2	766.9	767.6	768.3	769.0	769.7	770.4	771.1	771.8	772.5	773.2	773.9	774.6	775.3	776.0	776.7	777.4	778.1	778.8	779.5	780.2	780.9	781.6	782.3	783.0	783.7	784.4	785.1	785.8	786.5	787.2	787.9	788.6	789.3	790.0	790.7	791.4	792.1	792.8	793.5	794.2	794.9	795.6	796.3	797.0	797.7	798.4	799.1	799.8	800.5	801.2	801.9	802.6	803.3	804.0	804.7	805.4	806.1	806.8	807.5	808.2	808.9	809.6	810.3	811.0	811.7	812.4	813.1	813.8	814.5	815.2	815.9	

Table 4. Agronomic data from the Western Regional Soft White Winter nursery grown on the Oscar Buller farm, Kalispell, MT in 1988.

Date seeded: Sept. 22, 1987

Date Harvested: August 3, 1988

VARIETY	YIELD BU/A	TEST WT LB/BU	HEIGHT INCHES	WINTER SURVIVAL	% TCK 1/ SMUT
DRF75336 YMH/MCD/2/T.SPELTA/3	103.94	59.73	30.91	98	0
ORCW8635 CORVALLIS SELECTION	99.31	60.30	34.74a	97	0
CI 17596 STEPHENS 2/	96.41	59.48	29.92	95	.5
ORCW8521 TJB259-83/3/CD/P101/	94.90	60.52	36.12a	97	2
WA 7526 TRES COMPOSITE CROSS	94.36	59.50	32.18a	98	1
WA 7529 LUKE/VH67375//VPM/MD	94.00	58.57	29.63	95	0
OR 845 HYSLOP/YAYLA//63-112	93.13	60.95a	31.00	95	1
ID 0330 NEELY/SPN//SPN (A79	91.09	59.38	32.38a	98	0
WA 7627 WA096910, MARIS HUNT	90.20	58.93	30.31	97	.5
WA 7166 HYAK	88.85	59.00	31.20	99	.5
CI 17917 TRES (WA 6698)	88.14	61.05a	29.92	98	0
ORCW8724 CORVALLIS SELECTION	88.11	59.63	31.99a	95	5
ID 0329 NEELY/SPN/SPN (A7911	87.91	59.18	31.69a	100	0
CI 11755 ELGIN	87.55	61.75a	38.98a	98	0
WA 7527 TRES MULTILINE 86	87.30	60.73	32.68a	95	.5
OR 855 PAHA//SEL.72-330/DAW	86.95	61.10a	30.41	100	.5
WA 7623 STEPHENS/ROAZON/SEL.	86.08	59.63	30.02	100	1
WA 7624 VPM/MS951/PECK/SPN/D	86.08	54.50b	26.77b	95	0
DRFW 301 DAWS/SM4//MDM/SM11,F	86.08	57.73b	30.02	98	0
CI 13968 NUGAINES	85.89	61.93a	27.46b	93	0
WA 7621 VPM/MS421//VH66354/W	85.49	59.50	27.85b	100	0
ORCW8416 NORTEND/YAMHILL//672	83.83	59.55	28.94	100	0
OR830801 CORVALLIS SELECTION	83.55	56.78b	27.95b	95	0
CI 13740 MORO	83.29	58.70	38.09a	95	0
WA 7625 WA 7163 SIB	83.24	59.13	29.63	98	0
WA 7628 VD086150,WA6814/WA65	82.43	58.25	27.95b	100	0
ORCW8632 CORVALLIS SELECTION	82.28	58.73	30.12	98	0
ORCW8637 CORVALLIS SELECTION	81.97	59.50	29.23	95	0
WA 7163 MADSEN	80.91	59.10	29.53	98	0
DRFW205B FW73830-002/3/MLD/2/	80.84	56.92b	25.98b	98	0
ORCW8517 TJB801-12795/STEPHEN	80.51	60.43	34.65a	95	4
ORCW8633 CORVALLIS SELECTION	80.06	61.00a	28.44	98	8
OR 843 HYSLOP/CERCO, H-308	79.76	59.28	32.28a	98	0
WA 7622 TYEE/ROAZON/TRES	79.71	58.95	29.53	100	0
OR 842 HYSLOP/CERCO, B-307	79.35	58.28	31.50	97	3
CI 1442 KHARKOF	71.04	62.08a	43.01a	98	3
EXPERIMENTAL MEANS	86.51	59.44	31.20	97.3	.85
F TEST FOR VAR. 3/	1.09	10.93**	36.47**		
C.V. 2: (S OF MEAN/MEAN)*100	7.18	.77	1.86		
LSD (0.05)	17.41	1.28	1.63		

