Project Title: Spring Wheat Seed Size Effects on Agronomic Performance

Project Leader: Bob Stougaard

Project Personnel: Brooke Bohannon

Objective: Evaluate spring wheat varieties of differing seed size

Results:

Initial seed size differences, as measured by thousand kernel weight (Table 2, TKWa) varied from 30.6 g for Thatcher to 54 g for JC73. Although agronomic traits differed significantly among each of the sixteen spring wheat cultivars, there was little association with seed size. However, there was a relationship between initial seed size (TKWa) and final seed size (TKWb). Thatcher, Explorer, and Choteau consistently had the smallest seed sizes, while the largest seeded varieties were WB926, Fortuna, Ideal A, Agawam, 1372, and JC73.

Outlook had the highest yield at 78.7 bu/A, and Scholar had the lowest yield at 36.8 bu/A. Scholar had the highest stripe rust infection at 41.7 percent. Ideal A showed complete resistance, while all others showed some susceptibility to stripe rust. Test weights ranged from 61.1 lb/bu for Agwam to 55.7 lb/bu for JC73. Percent protein ranged from 14.7% for JC73 to 12.3% for 1372. Heading dates differed by 9 days, with Ideal A being the latest. Height ranged from 34.1 inches for Agwam to 55.2 inches for JC73. Most varieties were susceptible to lodging except Trenton. Ideal A experienced the most lodging at 88.3 percent.

Summary: There did not appear to be any relationship between initial seed size and agronomic performance.

Funding Summary: Budget information to be provided by OSP. No other grant support for this project.

MWBC FY 2013 Grant Submission Plans: Resubmittal is not planned.

Table 1. Materials and Methods -Da blow up (mwbc) - 2013

Seeding Date:	5/6/13	Fertilizer:	150-40-110-20
Julian Date:	126	Herbicide:	5/31/13
Seeding Rate:	80 lb/A		Affinity TankMix 0.6 OZ/A, MCPE
Previous Crop:	Barley		0.5 PT/A, Axial 16.4 FL OZ/A
Tillage:	Conventional	Insecticide:	7/2/13
Irrigation:	None		Lorsban 1 PT/A
Soil Type:	Creston Sil	Harvest Date:	9/13/13
Soil Test:	162-14-142	Julian Date:	256

Table 2. Spring wheat seed size effects on agronomic performance – 2013

Cultivar	SR %	HD Julian	HT in	LOD %	YLD bu/A	PRO %	TWT lb/bu	TKWa g	TKWb g
Outlook	2.3	184	39.0	1.7	78.7	14.0	58.6	39.2	37.1
Reeder	1.3	181	39.8	5.0	69.9	13.0	58.7	40.0	36.8
1372	15.0	183	39.2	43.3	69.7	12.3	57.4	53.4	49.7
Trenton	16.7	183	50.3	0.0	65.3	12.9	60.8	39.4	37.9
Agwam	13.3	180	34.1	6.7	60.7	13.7	61.1	51.4	47.8
WB926	6.7	180	34.8	3.3	59.5	13.7	58.0	46.6	40.2
Ernest	4.0	183	48.8	46.7	57.9	13.9	59.5	39.6	36.1
Choteau	4.7	182	36.2	10.0	57.3	13.9	59.1	39.0	34.5
Ideal A	0.0	189	53.0	88.3	56.1	14.4	58.7	47.4	47.8
MTHW020	5.0	180	36.2	8.3	52.1	12.9	59.6	42.2	36.3
Fortuna	3.3	182	48.4	51.7	52.0	14.3	60.1	46.6	41.2
Explorer	15.0	182	35.7	35.0	50.3	14.1	57.3	35.6	30.4
JC73	4.0	186	55.2	68.3	48.8	14.7	55.7	54.0	47.2
Amidon	4.3	183	48.4	73.3	47.7	13.8	59.2	39.0	36.2
Thatcher	35.0	186	51.4	15.0	39.1	14.4	58.6	30.6	32.5
Scholar	41.7	184	46.1	61.7	36.8	14.6	59.5	41.2	35.2
Mean	10.8	182.9	43.5	32.4	56.4	13.8	58.9	42.8	39.2
CV	98.0	0.3	4.5	63.3	23.6	4.5	1.6	-	4.2
LSD	17.6	1.0	3.3	34.2	22.2	1.0	1.6	-	2.7
Pr>F	0.0007	0.0001	0.0001	0.0001	0.0408	0.0011	0.0001	-	0.0001

Footnotes: SR: stripe rust, HD: heading, HT: height, LOD: lodging, YLD: Yield, PRO: protein, TWT: test weight, TKWa: planted thousand kernel weight, TKWb: harvested thousand kernel weight