2015 Collaborative On-Farm Test (COFT) Variety Performance Results

The objective of our on-farm testing program is to compare the performance of wheat varieties that are of most interest to Colorado farmers. In 2015, six varieties were included: Byrd (popular HRW), Brawl CL Plus (herbicide tolerant HRW), Denali (HRW), Snowmass (extremely high quality HWW), Sunshine (newly-released very high quality HWW) and WB-Grainfield (new HRW from Monsanto –WestBred). The COFT program provides unbiased information on varieties that are tested under farm field-scale conditions with farmer equipment. Colorado State University Extension Specialists oversee all aspects of the program. The COFT program is in its 18th year and the majority of Colorado's 2015 winter wheat acreage is planted to varieties that have been tested in the COFT program. On-farm testing leads to more rapid replacement of older inferior varieties and wider and faster adoption of improved varieties.

In the fall of 2014, over thirty eastern Colorado wheat producers received seed of the six varieties and planted them in side-by-side strips under the same conditions as the wheat in the rest of the field. Twenty-four viable harvest results were obtained from the seed that was distributed. Failed tests were due to drought conditions and hail.

In 2015 there was excellent precipitation in many parts of the state from mid-April through June. There were extremes in yield this year across Colorado. The highest yielding strip was over 100 bu/acre while the lowest recorded yield this year was 15 bu/acre. Yields were affected strongly by winterkill, spring freeze, and stripe rust infections although other factors reduced yields as well – winter drought, viruses, Russian wheat aphid infestations, cutworm infestations, and losses to brown wheat mite. Often, more than one of these factors was at play in a single field.

The varieties tested in COFT this year fit different farmer needs. It's important to plant more than one variety. For those looking for control of winter annual grasses, Brawl CL Plus is the obvious choice even though its yield this year was lower than the past few years. Farmers wanting to grow white wheat with exceptional quality and qualify for a premium should be growing Snowmass or Sunshine. The statistically different yield this year among the three remaining varieties (Byrd, Denali, and WB-Grainfield) can be seen in the COFT table. In past years under more typical conditions (drought), Byrd and Denali have been substantially higher yielding than WB-Grainfield in the variety performance trials. Byrd and Denali are moderately susceptible to stripe rust while WB-Grainfield is more resistant. WB-Grainfield is early maturing, Byrd is medium maturing, and Denali is later maturing. WB-Grainfield has shown similar test weight compared to Byrd but lower test weight compared to Denali. One variety not included in this year's test, Antero, would be the choice to make for a farmer who wants an extremely high-yielding and stripe rust resistant white wheat. The superior yield more than compensates for the lack of a premium. Don't select a variety to plant based upon the results from a single on-farm test. Combined, the 2015 COFT results are a powerful tool for selecting varieties to be planted this fall.

We should not be lulled into complacency by the very good precipitation received in 2015. It should not be forgotten that drought stress is the major yield-determining factor in eastern Colorado. You can't spray for drought. It is very important to use results from multiple years and

multiple locations. Producers should be using the powerful online tool at ramwheatdb.com to make variety comparisons.

Colorado extension wheat educators who conducted the COFT program:
Jerry Johnson – Extension Specialist, Fort Collins
Bruce Bosley – Extension Agronomist, Logan County (retired spring 2015)
Wilma Trujillo – Extension Agronomist, Prowers County, Lamar
Dennis Kaan – Extension Director -Golden Plains, Akron
Ron Meyer – Extension Agronomist, Kit Carson County, Burlington
Sally Sauer – Research Associate, Fort Collins

A tribute to Bruce
Bruce Bosley retired this spring. He was the heart of the collaborative on-farm testing program in northeastern Colorado for 20 years. He recruited progressive farmers to do on-farm tests from multiple counties in northeast Colorado. Every year he worked with approximately 15 farmers doing on-farm tests. Bruce distributed the seed to them, he was there to ride the drills and help plant, and he was there with a weigh wagon at harvest. Ever the Extension agent, after the harvest of a location Bruce would have the yield and test weight calculated so he could discuss the results with the farmer. His podium was the hood of a pickup truck but that did not stop him from having a meaningful exchange with the farmer. Twenty years ago Bruce and I met together with who would become our very first participating farmer. Little did we know that collaborative on-farm testing would actually work! It seems like yesterday that we were in that farmer's kitchen and now Bruce is retired. No words can express the debt of gratitude we have for what Bruce did to make this collaboration so fruitful. Thank you, Bruce. Friend. Colleague.

2015 Collaborative On-Farm Test (COFT) Variety Performance Results

	2015 Varieties[a]													
	Denali		WB-Grainfield		Byrd		Sunshine		Snowmass		Brawl CL Plus		COFT Average	
County/Nearest Town	Yield[b]	Test Weight	Yield[b]	Test Weight	Yield[b]	Test Weight	Yield[b]	Test Weight	Yield[b]	Test Weight	Yield[b]	Test Weight	Yield[b]	Test Weight
	bu/ac	lb/bu	bu/ac	lb/bu	bu/ac	lb/bu	bu/ac	lb/bu	bu/ac	lb/bu	bu/ac	lb/bu	bu/ac	lb/bu
Adams/Bennett N	47.7	62.3	48.2	62.5	46.2	61.2	47.8	61.0	40.4	61.5	35.2	64.5	*44.2*	*62.2*
Adams/Prospect Valley	47.4	59.6	49.5	59.5	49.4	57.4	59.1	57.6	50.7	59.2	36.8	56.2	*48.8*	*58.3*
Arapahoe/Deer Trail	16.6	53.4	14.6	53.5	21.9	53.5	17.1	54.5	18.6	52.5	18.7	54.0	*17.9*	*53.6*
Baca/Pritchett	59.3	64.4	54.2	63.7	65.2	62.6	61.5	62.6	53.5	62.6	54.3	63.2	*58.0*	*63.2*
Baca/Vilas	57.1	60.9	43.4	58.3	48.4	60.5	52.3	59.4	51.3	60.5	49.1	60.3	*50.3*	*60.0*
Bent/Lamar	31.2	60.2	25.3	60.8	27.5	59.0	29.5	60.1	31.7	58.3	22.2	60.0	*27.9*	*59.7*
Cheyenne/Cheyenne Wells	21.1	58.1	19.5	57.1	24.8	58.2	20.8	57.2	25.8	57.4	16.2	55.9	*21.3*	*57.3*
Crowley/Olney Springs	35.9	58.6	24.4	57.8	27.2	59.0	32.6	58.3	39.8	58.7	27.1	58.4	*31.2*	*58.5*
Kit Carson/Bethune	43.4	52.6	41.2	60.5	41.4	57.8	40.6	56.6	32.2	63.0	44.8	56.1	*40.6*	*57.8*
Kit Carson/Bethune N	68.7	58.3	56.8	59.3	64.2	58.5	58.0	56.2	67.2	61.1	58.6	57.8	*62.3*	*58.5*
Kit Carson/Burlington N	85.4	61.4	100.6	63.0	88.6	61.0	89.3	62.8	75.8	62.4	83.9	59.0	*87.3*	*61.6*
Lincoln/Arriba	64.4	60.9	60.8	59.4	47.5	54.8	49.3	57.5	42.7	51.9	28.9	54.9	*48.9*	*56.6*
Morgan/Orchard	78.3	59.6	69.1	59.6	77.1	59.4	62.6	59.7	72.2	59.4	59.5	59.0	*69.8*	*59.5*
Otero/Manzanola	46.0	57.1	42.8	55.9	58.3	58.1	57.8	58.2	56.4	57.2	51.3	57.4	*52.1*	*57.3*
Phillips/Haxtun	87.8	60.0	79.1	61.0	85.0	61.0	89.0	60.5	64.9	60.0	72.9	60.0	*79.8*	*60.4*
Prowers/Lamar S	29.5	57.1	26.7	57.8	32.6	58.2	26.8	58.2	31.7	58.2	27.9	57.4	*29.2*	*57.8*
Washington/Akron	48.1	55.0	45.7	57.0	32.1	53.0	35.3	56.0	26.0	51.0	21.6	53.0	*34.8*	*54.2*
Washington/Akron S	58.2	55.0	77.3	59.0	58.9	57.0	55.9	57.0	57.9	55.0	46.3	58.0	*59.1*	*56.8*
Washington/Central	65.2	-	67.0	-	61.1	-	68.6	-	50.7	-	46.5	-	*59.9*	-
Weld/Keenesburg	75.3	58.3	89.6	59.7	68.0	58.7	72.2	59.5	66.0	56.5	55.0	60.3	*71.0*	*58.8*
Weld/New Raymer SE	60.0	58.7	57.2	58.5	69.0	59.5	58.0	58.8	57.5	58.8	68.7	57.6	*61.7*	*58.7*
Weld/New Raymer SW	106.5	60.5	98.3	61.0	104.8	60.5	97.2	60.0	96.0	60.0	64.8	60.0	*94.6*	*60.3*
Weld/Roggen	83.4	60.0	78.1	58.8	73.2	59.4	65.3	58.3	69.5	57.7	52.6	57.5	*70.4*	*58.6*
Yuma/Yuma	55.6	61.8	57.6	60.9	49.9	59.3	48.5	60.4	41.9	60.8	46.5	61.9	*50.0*	*60.9*
Average	**57.2**	**58.9**	**55.3**	**59.3**	**55.1**	**58.6**	**54.0**	**58.7**	**50.9**	**58.4**	**45.4**	**58.4**	***53.0***	***58.7***
Yield Significance[c]	A		A,B		B		B		C		D			
Test Weight Significance[c]		B		A		B,C		B,C		B,C		C		

$LSD_{(P<0.30)}$ for yield = 2 bu/ac

$LSD_{(P<0.30)}$ for test weight = 0.4 lb/bu

[a]Varieties are ranked left to right by highest average yield.

[b]All yields are corrected to 12% moisture.

[c]Yield and test weight significance: varieties with different letters have yields or test weights that are significantly different from one another.

Summary of 2015 COFT Variety Results (24 tests included)

Variety	Yield[a]	Test Weight
	bu/ac	lb/bu
Denali	57.2	58.9
WB-Grainfield	55.3	59.3
Byrd	55.1	58.6
Sunshine	54.0	58.7
Snowmass	50.9	58.4
Brawl CL Plus	45.4	58.4
Average	**53.0**	**58.7**
$LSD_{(0.30)}$	2.0	0.4

[b]Yield corrected to 12% moisture.