2016 Collaborative On-Farm Tests (COFT)

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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 2016, five varieties were included: Byrd (popular HRW), Denali (HRW), Sunshine (high quality HWW), Avery (newly released HRW) and WB-Grainfield (HRW from WestBred). Varieties in the COFT program are tested under farm field-scale conditions with farmer equipment. Colorado State University Extension Agents oversee all aspects of the program. The COFT program is in its 20th year and the majority of Colorado's winter wheat acreage is planted to varieties that have been tested in the 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 2015, over thirty eastern Colorado wheat producers received seed of the five varieties and planted them in side-by-side strips under the same conditions as the wheat in the rest of the field. Twenty viable harvest results were obtained. Failed tests were due to drought conditions and hail. In 2016, there were extremes in yield across Colorado. The highest yielding strip was over 105 bu/acre while the lowest recorded yield this year was 21 bu/acre. Yields were affected by stripe rust, winter drought, viruses, and hail.

The varieties tested in COFT this year fit different farmer needs. Farmers wanting to grow white wheat with high quality should be growing Sunshine, the top yielding variety in this year's COFT. Denali is a great HRW option that is medium-late maturing and has very good test weight. Avery is a new HRW option that is medium-maturing and has above-average test weight. WB-Grainfield is an early-maturing HRW variety that has excellent test weight and good stripe rust resistance. Byrd is a medium-maturing HRW variety that has done well in the COFT, especially during drought years. Don't select a variety to plant based upon the results from a single on-farm test. It is very important to use results from multiple locations.

We should not be lulled into complacency by the good precipitation received in 2015 and 2016. It should not be forgotten that drought is the major yield-determining factor in eastern Colorado. You can't spray for drought!

2016 Collaborative On-Farm Test (COFT) Variety Performance Results																			
	2016 Varieties (ranked left to right by highest yield)																		
	Sunshine			Denali			Avery			WB-Grainfield			Byrd			COFT Average		
County/Nearest Town	Yield[a]	Test Weight	Protein[a]	Yield[a]	Test Weight	Protein[a]	Yield[a]	Test Weight	Protein[a]	Yield[a]	Test Weight	Protein[a]	Yield[a]	Test Weight	Protein[a]	Yield[a]	Test Weight	Protein[a]
	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent	bu/ac	lb/bu	percent
Adams/Prospect Valley	52.0	62.4	8.5	42.6	62.1	8.6	37.5	61.6	9.0	47.4	63.7	9.4	35.3	60.2	9.1	*43.0*	*62.0*	*8.9*
Baca/Pritchett	67.0	58.3	8.5	64.7	59.0	9.9	64.3	57.4	8.4	63.5	58.3	9.5	63.9	57.4	9.1	*64.7*	*58.1*	*9.1*
Baca/Two Buttes	53.3	54.4	9.9	47.7	54.7	9.5	51.1	55.7	8.1	52.2	56.0	9.2	50.5	54.9	9.1	*51.0*	*55.1*	*9.2*
Baca/Vilas	78.8	56.4	11.0	80.0	56.0	13.1	83.7	55.3	11.6	68.5	56.4	12.5	79.7	56.2	12.4	*78.2*	*56.1*	*12.1*
Cheyenne/Cheyenne Wells	62.0	59.3	12.9	71.4	59.7	12.5	58.1	57.6	13.5	60.5	58.1	13.0	60.0	58.2	12.9	*62.4*	*58.6*	*13.0*
Kiowa/Haswell	26.1	-	-	23.6	-	-	32.7	-	-	20.6	-	-	24.8	-	-	*25.6*	-	-
Kit Carson/Bethune	63.5	53.0	13.7	70.7	53.8	13.6	66.2	53.3	13.7	56.5	57.7	14.1	61.6	53.5	13.8	*63.7*	*54.3*	*13.8*
Kit Carson/Burlington N	108.1	57.1	9.7	100.9	58.4	10.2	104.3	56.8	10.1	94.7	58.5	10.4	96.3	58.1	9.4	*100.8*	*57.8*	*9.9*
Lincoln/Arriba	84.8	56.2	10.9	78.9	54.9	10.4	74.4	55.1	11.1	78.1	55.9	12.3	72.5	55.0	11.7	*77.7*	*55.4*	*11.3*
Logan/Leroy	83.3	60.4	8.7	74.4	60.8	9.3	70.7	60.6	9.0	79.9	62.3	9.7	60.6	60.5	9.3	*73.8*	*60.9*	*9.2*
Phillips/Haxtun	80.5	55.5	11.1	69.8	55.2	11.5	71.3	53.2	11.5	77.0	55.5	12.7	73.4	54.9	11.5	*74.4*	*54.9*	*11.6*
Prowers/Lamar	54.9	56.3	10.8	51.2	57.1	10.8	51.3	55.9	9.8	52.7	57.3	11.9	59.4	56.0	11.7	*53.9*	*56.5*	*11.0*
Prowers/Lamar S	80.7	57.2	9.9	75.4	57.0	10.4	84.4	57.3	9.5	74.8	57.8	10.6	81.4	57.3	10.2	*79.3*	*57.3*	*10.1*
Washington/Akron	67.1	62.1	9.1	72.8	61.5	8.1	63.3	60.3	9.4	62.4	61.6	9.5	67.3	61.1	8.3	*66.6*	*61.3*	*8.9*
Washington/Akron S	72.0	61.5	11.1	72.3	61.0	11.9	72.5	61.3	10.4	72.5	61.1	12.1	78.8	60.2	12.1	*73.6*	*61.0*	*11.5*
Washington/Central	79.6	59.6	7.8	78.1	60.1	7.8	80.1	59.2	9.3	74.5	59.3	8.2	71.5	59.3	8.8	*76.8*	*59.5*	*8.4*
Weld/Keenesburg	91.9	65.0	9.0	66.0	62.0	9.3	62.7	60.7	9.3	82.1	64.6	9.9	61.2	60.2	9.3	*72.8*	*62.5*	*9.4*
Weld/New Raymer SE	36.8	59.9	10.8	38.3	60.9	10.4	36.5	59.4	11.8	36.7	59.4	11.5	34.3	61.7	11.1	*36.5*	*60.3*	*11.1*
Weld/New Raymer SW	72.4	59.2	10.5	73.3	59.6	10.4	-	-	-	78.3	59.1	10.7	71.7	58.6	10.9	*73.9*	*59.1*	*10.6*
Weld/Roggen	64.4	63.1	8.4	73.3	62.4	8.8	68.2	62.1	9.3	61.8	63.0	8.7	66.9	61.8	9.3	*66.9*	*62.5*	*8.9*
Average	**69.0**	**58.8**	**10.1**	**66.3**	**58.7**	**10.3**	**64.9**	**57.9**	**10.3**	**64.7**	**59.2**	**10.8**	**63.6**	**58.2**	**10.5**	***65.8***	***58.6***	***10.4***
Yield Significance[b]	A			B			B			B,C			C					
Test Weight Significance[b]		B			B			C			A			C				
LSD $_{(P<0.30)}$ for yield = 1.7 bu/ac																		
LSD $_{(P<0.30)}$ for test weight = 0.3 lb/bu																		
LSD $_{(P<0.30)}$ for protein = 0.2 percent																		
[a]All yield and protein data are corrected to 12% moisture.																		
[b]Yield and test weight significance: varieties with different letters have yield or test weight that are significantly different from one another.																		

Summary of 2016 COFT Variety Results (20 tests included)

Variety	Yield[a]	Test Weight	Protein
	bu/ac	lb/bu	percent
Sunshine	69.0	58.8	10.1
Denali	66.3	58.7	10.3
Avery	64.9	57.9	10.3
WB-Grainfield	64.7	59.2	10.8
Byrd	63.6	58.2	10.5
Average	**65.8**	**58.6**	**10.4**
$LSD_{(0.30)}$	1.7	0.3	0.2

[a]Yield corrected to 12% moisture.