

**Project Title:** Evaluation of spring wheat cultivar performance under continuous-crop and crop-crop-fallow systems in central Montana

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**Objective:**  
Evaluate relative performance spring wheat cultivars and development lines in central Montana crop environments.

**Results:**  
2014 On-Farm spring wheat performance trials were established at CARC-Moccasin, Denton and Geraldine. The CARC and Denton sites were on continuous crop and the Geraldine location was in C-C-F system following winter wheat. The Moccasin and Geraldine location experience below average spring precipitation while Denton was drier in the fall through early summer. Sawfly was not a major factor at any of the locations.

Moccasin and Geraldine had near average spring wheat yields while Denton was much below averaged (Tables 1-6). Lima Company Seeds (LCS) Powerplay produced the high yield at the CARC site at 39.5 bu/a followed by Vida and Meridian Seed (MS) Chevelle (Table 1). Volt had the high CARC test weight at 60.8 lbs/bu compared to the trial mean of 58.03 lbs/bu. Vida and MS Stingray top the Denton trial at 22.5 and 21.6 bu/a, respectively. Volt had the high Denton test weight at 61.9. SY Tyra and Vida were the high yielding named cultivars at Geraldine with 35.5 and 35.2 bu/a yield, respectively. SY Tyra and Brennan tied for the high test weight at Geraldine at 61.5 lbs/bu.

The CARC location had 16.25% protein compared to 13.5% for Denton and 12.5% for Geraldine. Agri-Pro's Brennan produced the CARC high protein content at 17.6% followed by Mott and WB Gunnison. Orange blossom midge resistant Egan produced 14.4% protein for the high at the Denton location followed by Pulse USA Redstone. PUSA Redstone produced the Geraldine high protein at 13.9% followed by Mott.

**Summary:**  
Vida continues to be a top spring wheat grain producer at the three central Montana On-Farm locations. However, it is not the standard bearer for test weight and protein content. Volt is a consistent high test weight producer. Mott and Redstone were generally had higher protein content. MSU-MAES Spring Wheat Breeder Luther Talbert and associate breeder Hwa-young Heo coordinated the selection of entries and the preparation of seed for the on-farm cultivar trials. An additional six entries were added at the request of plant breeding companies.

**Funding Summary:**  
Expenditure information to be provided by OSP. No other grant support was provided.

**MWBC FY2011 Grant Submission Plans:**  
It is planned to submit this project for funding consideration in the next fiscal year.

Table 1 2014 No-Till Recrop spring wheat cultivar performance evaluations after barley.  
Exp149970 Central Agricultural Research Center. Moccasin, Montana.

ID	Cultivar / Pedigree	Entry	Head Date	Plant Height	Grain Yield	Test Weight	Protein Content
			Julian	cm	bu/ac	lbs/bu	%
Limagrain CS	LCS Powerplay	21	183	70	39.5	57.9	14.0
PI642366	Vida	5	183	76	37.5	58.1	16.0
Meridian Seed	MS Chevelle	25	183	76	37.4	58.3	14.9
ACS52610	Volt	8	183	67	36.3	60.8	15.4
MT 1203	Choteau/MT0744	18	182	69	35.8	57.1	17.7
PI660981	Duclair	6	182	80	35.2	56.0	15.9
BZ996434	Corbin	7	183	75	34.9	58.3	15.6
BZ9M1044	Jedd	9	181	65	34.4	58.1	16.7
PulseUSA	Prestige	24	183	73	34.3	59.0	15.2
CAP400-1	Egan	20	184	78	34.2	57.7	16.5
Meridian Seed	MS Stringray	26	186	59	33.9	57.2	14.7
WB9879CL	Choteau*3/Choteau/IMI8134	11	183	82	32.7	58.3	16.5
BZ92413R	WB Gunnison	13	182	68	32.6	57.1	17.5
PulseUSA	Redstone	23	185	77	31.1	57.3	15.1
CI 13596	Fortuna	1	183	85	31.0	59.5	17.1
MT 1103	Choteau/MT0515	16	184	67	30.6	58.7	16.3
Limagrain CS	LCS Brakeaway	22	181	71	30.5	59.4	15.1
AGRIPR10	Brennan	14	182	61	30.0	59.0	17.6
ND 695	Reeder	3	183	71	29.6	58.4	17.3
BZ999592	Oneal	10	184	70	29.6	59.5	16.9
PI633974	Choteau	4	182	65	29.3	57.7	16.6
MT 1172	MT0245/IMI8209-1//MT0245	17	184	68	29.2	56.7	16.4
NDSW0449	Mott	12	184	68	29.1	58.5	17.5
PI574642	McNeal	2	183	78	27.9	57.3	17.2
MT 1236	Choteau/Reeder(07SR241)/Choteau/GLUPRO(06IFAFS48)	19	183	77	27.0	55.4	17.1
AGRIPR12	SY Tyra	15	183	65	25.2	58.1	15.8
Mean			183.1	71.58	32.26	58.03	16.25
P-value			0.00		0.79ns	0.04	
CV 1			0.5		22.3	2.0	
LSD(0.05 by t)			1.458		ns	2.371	

Seeded; 18-Apr-14 Soil: 2" temp 5°C Fertilizer: 10+15+10+5 w/seed + 90 lbs N top urea  
Harvest: 18-Aug-14 Recropped on CC barley

Table 2 2014 Denton spring wheat cultivar evaluations under NTCC after lentils.  
Exp149971 Central Agricultural Research Center. Moccasin, Montana.

ID	Cultivar / Pedigree	Entry	Head Date Julian	Plant Height cm	Grain Yield bu/ac	Test Weight lbs/bu	Protein Content %
PI642366	Vida	5		64	22.5	59.1	11.9
Meridian See	MS Stringray	26		59	21.6	58.8	11.6
MT 1172	MT0245/IMI8209-1//MT0245	17		59	21.1	58.8	12.0
BZ92413R	WB Gunnison	13		64	20.2	60.9	12.2
AGRIPR12	SY Tyra	15		61	20.2	59.5	11.9
MT 1103	Choteau/MT0515	16		55	19.9	60.1	12.9
ACS52610	Volt	8		56	19.5	61.9	12.5
Meridian See	MS Chevelle	25		60	19.4	59.8	11.8
CI 13596	Fortuna	1		69	19.4	58.7	13.7
ND 695	Reeder	3		59	19.2	59.4	13.5
NDSW0449	Mott	12		70	19.1	59.4	13.8
AGRIPR10	Brennan	14		60	19.1	61.0	14.0
PI633974	Choteau	4		56	18.9	59.2	13.7
CAP400-1	Egan	20		61	18.8	58.8	14.4
WB9879CL	Choteau*3/Choteau/IMI8134	11		58	18.7	59.8	13.8
MT 1203	Choteau/MT0744	18		61	18.5	57.9	13.7
PI574642	McNeal	2		62	18.5	59.1	13.6
BZ996434	Corbin	7		60	18.3	59.5	12.8
BZ999592	Oneal	10		60	18.3	61.0	13.4
PI660981	Duclair	6		60	18.1	58.7	12.5
PulseUSA	Prestige	24		60	17.7	58.6	12.7
BZ9M1044	Jedd	9		53	17.4	60.0	12.5
Limagrain CS	LCS Powerplay	21		59	16.6	58.4	12.5
PulseUSA	Redstone	23		53	16.4	59.4	14.1
Limagrain CS	LCS Brakeaway	22		56	16.3	58.2	13.5
MT 1236	Choteau/Reeder(07SR241)//Choteau/GLUP RO(06IFAFS48)	19		52	14.7	58.3	14.3
Mean				59.5	18.78	59.37	13.05
P-value					0.00	0.03	
CV 1					9.8	1.6	
LSD(0.05 by					3.025	1.955	

Seeded: 22-Apr-14 Soil: 2"temp: 10°C Moist.Probe Depth: 24"

Fertilizer: 10+15+10+5NPKS w/seed plus 60 N topdress as urea.

Harvest: 09-Aug-14

Table 3 2014 Geraldine spring wheat cultivar RC performance evaluation.  
 Exp149972 Central Agricultural Research Center. Moccasin, Montana.

ID	Cultivar / Pedigree	Entry	Plant	Grain	Test	Sawfly	Protein
			Height	Yield	Weight	Cut stem	Content
			cm	bu/ac	lbs/bu	#	%
WB9879CL	Choteau*3/Choteau/IMI8134	11	64	42.3	61.0	1.0	12.6
MT 1172	MT0245/IMI8209-1//MT0245	17	69	39.9	60.0	4.7	10.9
MT 1203	Choteau/MT0744	18	67	37.6	60.0	0.7	12.4
AGRIPR12	SY Tyra	15	60	35.5	61.5	1.7	10.8
PI642366	Vida	5	64	35.2	59.0	1.0	11.9
MT 1103	Choteau/MT0515	16	65	34.9	60.5	1.0	11.4
AGRIPR10	Brennan	14	70	34.6	61.5	3.0	12.1
PulseUSA	Prestige	24	67	33.7	59.5	2.7	13.2
Limagrain CS	LCS Powerplay	21	65	33.6	59.5	4.3	11.6
PI660981	Duclair	6	66	33.3	58.0	2.0	12.6
MT 1236	Choteau/Reeder(07SR241)//Choteau/GLUPRO (06IFAFS48)	19	64	33.1	58.5	1.0	13.3
Meridian Seed	MS Stringray	26	76	32.7	58.0	3.3	12.1
BZ996434	Corbin	7	65	32.6	59.0	3.7	13.1
BZ92413R	WB Gunnison	13	64	32.5	59.5	0.7	12.1
ND 695	Reeder	3	68	32.3	60.5	2.0	12.1
CAP400-1	Egan	20	69	31.6	58.5	1.3	13.9
PI633974	Choteau	4	63	31.4	60.0	0.3	12.8
NDSW0449	Mott	12	73	31.3	60.0	0.3	13.3
CI 13596	Fortuna	1	83	31.0	60.0	0.7	13.5
BZ9M1044	Jedd	9	60	29.4	60.0	2.0	12.4
PI574642	McNeal	2	70	28.8	58.0	3.7	12.7
BZ999592	Oneal	10	71	28.8	60.0	1.3	12.6
Limagrain CS	LCS Brakeaway	22	66	28.8	60.5	3.7	13
ACS52610	Volt	8	66	28.7	60.0	6.0	12.7
PulseUSA	Redstone	23	70	28.7	56.5	2.3	13.9
Meridian Seed	MS Chevelle	25	68	27.6	60.5	2.3	12.1
Mean			67.4	32.68	59.62	2.18	12.5
P-values				0.04	0.00	0.08	
CV 1				14.1	1.1	94.1	
LSD(0.05 by				7.578	1.318	3.365	

Seeded: 21-Apr-14 NTRC Tall thick winter wheat : **Soil:** 2" temp:11°C Moist Probe depth 20"  
 Harvest: 18-Aug-14 Fertilizer: 10-15-10-5 NPKS w/seed + 90 N top dress.

**Table 4 Three year Denton NTCC spring wheat performance summary.  
Exp3872Gd Central Agricultural Research Center. Moccasin, Montana.**

Cultivar	Grain Yield (bu/a)				Test Weight (lbs/bu)				Grain Protein (%)				Plant Height (inches)			
	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.
Choteau	29.3	31.2	21.4	27.3	57.7	57.8	55.4	57.0	16.6	16.4	17.3	16.8	26	n	23	24
Corbin	34.9	25.4	19.4	26.6	58.3	57.7	55.1	57.0	15.6	18.2	18.6	17.5	30	o	24	27
Duclair	35.2	26.5	21.2	27.6	56.0	56.8	54.3	55.7	15.9	17.5	17.4	16.9	32		23	28
Fortuna	31.0	29.2	22.9	27.7	59.5	60.6	54.6	58.2	17.1	16.1	18.2	17.1	34	h	25	29
Jedd	34.4	24.3	20.6	26.4	58.1	58.9	56.3	57.8	16.7	17.5	18.7	17.6	26	t	22	24
McNeal	27.9	27.1	22.8	25.9	57.3	57.7	53.7	56.2	17.2	16.0	18.2	17.1	31		24	28
Mott	29.1	26.1	19.7	25.0	58.5	59.1	54.5	57.3	17.5	18.3	19.3	18.4	27	d	21	24
Oneal	29.6	25.1	24.5	26.4	59.5	58.6	55.7	57.9	16.9	17.5	18.8	17.7	28	a	23	25
Reeder	29.6	34.0	20.1	27.9	58.4	59.1	56.6	58.0	17.3	16.4	17.5	17.1	28	t	21	25
SY Tyra	25.2	23.0	18.8	22.3	58.1	57.0	54.9	56.7	15.8	17.2	18.3	17.1	26	a	20	23
Vida	37.5	29.6	21.2	29.4	58.1	58.1	54.7	57.0	16.0	16.5	17.3	16.6	30		21	25
Volt	36.3	23.0	20.2	26.5	60.8	59.2	56.7	58.9	15.4	18.1	18.1	17.2	27		22	24
WB Gunnison	32.6	29.2	21.9	27.9	57.1	59.6	54.4	57.0	17.5	17.0	18.3	17.6	27		22	25
Trial ave.	32.26	27.83	21.1	27.1	58.03	58.15	55.0	57.0	16.25	17.03	18.1	17.1	29		22	25

**Table 5 Three year Denton NTCC spring wheat performance summary.  
Exp3872Gd Central Agricultural Research Center. Moccasin, Montana.**

Cultivar	Grain Yield (bu/a)				Test Weight (lbs/bu)				Grain Protein (%)				Plant Height (inches)			
	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.
Choteau	18.9	31.2	20.4	23.5	59.2	62.6	57.2	59.7	13.7	14.3	14.9	14.3	22	23	23	23
Corbin	18.3	26.3	22.7	22.4	59.5	62.8	54.6	58.9	12.8	13.6	16.1	14.2	24	25	23	24
Duclair	18.1	27.1	20.0	21.7	58.7	61.5	53.8	58.0	12.5	13.0	15.6	13.7	24	25	26	25
Fortuna	19.4	29.9	22.6	24.0	58.7	62.6	56.2	59.1	13.7	14.0	14.7	14.1	28	30	26	28
Jedd	17.4	25.1	22.6	21.7	60.0	63.1	56.5	59.9	12.5	12.2	15.8	13.5	21	21	23	22
McNeal	18.5	27.7	20.3	22.2	59.1	62.2	55.4	58.9	13.6	13.0	15.8	14.1	25	26	25	25
Mott	19.1	26.4	22.3	22.6	59.4	63.1	57.3	59.9	13.8	13.3	16.9	14.7	28	26	26	27
Oneal	18.3	26.5	25.9	23.6	61.0	62.7	57.3	60.3	13.4	12.6	15.5	13.8	24	23	25	24
Reeder	19.2	33.9	22.3	25.1	59.4	63.3	56.8	59.8	13.5	13.7	15.1	14.1	24	24	23	24
SY Tyra	20.2	23.6	22.9	22.2	59.5	63.9	57.0	60.1	11.9	11.9	15.1	13.0	24	23	23	24
Vida	22.5	29.5	26.9	26.3	59.1	62.7	56.0	59.2	11.9	12.4	15.2	13.2	26	24	25	25
Volt	19.5	23.8	21.2	21.5	61.9	64.2	57.5	61.2	12.5	12.2	16.0	13.6	22	22	24	23
WB Gunnison	20.2	30.8	25.6	25.5	60.9	63.0	57.0	60.3	12.2	13.2	15.5	13.6	26	23	24	24
Trial ave.	18.78	28.46	23.2	23.5	59.37	62.68	56.24	59.43	13.05	13.12	15.41	13.86	23.8	24.1	24.4	24.1

**Table 6 Three year Geraldine NT C-C-F spring wheat performance summary.  
Exp3872Gd Central Agricultural Research Center. Moccasin, Montana.**

Cultivar	Grain Yield (bu/a)				Test Weight (lbs/bu)				Grain Protein (%)				Plant Height (inches)			
	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.	2014	2013	2012	3y Ave.
<b>Choteau</b>	31.4	32.2	31.1	31.6	60.0	62.7	59.5	60.7	12.8	12.1	16.4	13.8	25	26	28	26
<b>Corbin</b>	32.6	33.3	29.0	31.6	59.0	62.5	57.8	59.8	13.1	10.8	16.5	13.5	26	26	28	27
<b>Duclair</b>	33.3	36.0	30.4	33.2	58.0	61.8	56.3	58.7	12.6	11.2	17.0	13.6	26	28	30	28
<b>Fortuna</b>	31.0	27.1	26.3	28.1	60.0	62.8	59.0	60.6	13.5	12.6	16.5	14.2	33	33	32	33
<b>Jedd</b>	29.4	34.3	31.5	31.7	60.0	63.4	58.7	60.7	12.4	10.7	16.9	13.3	24	24	24	24
<b>McNeal</b>	28.8	27.5	28.1	28.1	58.0	62.1	57.3	59.1	12.7	11.9	17.6	14.1	28	27	30	28
<b>Mott</b>	31.3	33.1	27.6	30.7	60.0	63.4	59.2	60.9	13.3	12.0	17.2	14.2	29	28	31	29
<b>Oneal</b>	28.8	33.8	30.6	31.1	60.0	63.0	58.7	60.6	12.6	10.9	16.7	13.4	28	28	29	28
<b>Reeder</b>	32.3	33.2	32.1	32.5	60.5	63.2	58.8	60.8	12.1	11.9	16.4	13.5	27	28	26	27
<b>SY Tyra</b>	35.5	32.1	28.6	32.1	61.5	64.0	57.8	61.1	10.8	11.2	16.7	12.9	24	24	26	25
<b>Vida</b>	35.2	40.0	32.6	35.9	59.0	62.9	58.1	60.0	11.9	10.8	16.2	13.0	26	29	28	28
<b>Volt</b>	28.7	35.9	29.7	31.4	60.0	64.5	60.3	61.6	12.7	10.7	17.5	13.6	26	26	26	26
<b>WB Gunnison</b>	32.5	29.4	30.5	30.8	59.5	62.9	58.5	60.3	12.1	12.3	16.7	13.7	26	25	26	26
<b>Trial ave.</b>	32.68	33.06	30.4	32.1	59.62	62.77	58.5	60.3	12.5	11.47	16.7	13.6	27.0	26.5	27.5	27.0