



BLACK CREEK RESEARCH - 2017 and 2018 and 2019 and 2020 C&M Seeds Hard Red Winter Wheat Fertilizer Program

well managed cash crop rotation, medium base fertility, 3.5 to 4.0 OM						2017 (JDC 78 planted Sept 25)			2018 (Gallus planted OCT 20)			2019 (Adrianus planted OCT 11)			2020 (Adrianus planted OCT 9)						
Trt #	Desc	Treatment	Rate	Timing	Appl Code	Protein % Sample	Test Weight g/0.5 L	Yield Bu/Ac Adjusted to 14.5%	Protein % Sample	Test Weight g/0.5 L	Yield Bu/Ac Adjusted to 14.5%	Protein % Sample	Test Weight g/0.5 L	Yield Bu/Ac Adjusted to 14.5%	Protein % Sample	Test Weight g/0.5 L	Yield Bu/Ac Adjusted to 14.5%				
1	"Bare Bones"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	8.2	c 368	b 96	b	11.5	b 396.7	a 86	a	10.3	c 389.4	cd 82.7	b	9.7	d 397.4	ab 79.5	b
		ATS	combined	Green Up (BBCH 13-22)	A																
		Caramba	0.4047 L/ac	Early Flowering (BBCH 61)	D																
2	"All up front Early"	28% UAN	160 lbs N & 19 lbs S/ac	Green Up (BBCH 13-22)	A	9	bc 373.5	b 97	b	13.8	a 393.2	a 84.2	a	12.4	b 396.6	ab 98.9	a	11.5	c 400.2	ab 95.1	a
		ATS	combined	Green Up (BBCH 13-22)	A																
		Caramba	0.4047 L/ac	Early Flowering (BBCH 61)	D																
3	"Split App, liquid, only N in 2nd Pass"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	9.53	b 371.5	b 97.5	b	13.6	a 395.9	a 89.6	a	11.7	b 390.3	cd 93.3	a	11.9	c 400.4	ab 95.1	a
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N/ac	Early stem elongation (BBCH 31-32)	B																
4	"Split App, liquid, N + S in 2nd Pass"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	9.23	bc 371.3	b 96.5	b	13.6	a 400.2	a 95.3	a	12.2	b 389.4	cd 94.8	a	11.5	c 395.9	b 89.7	ab
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N & 11 lbs S/ac	Early stem elongation (BBCH 31-32)	B																
5	"Split App, liquid, N + more S in 2nd Pass"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	only tried in 2018				13.6	a 397.5	a 87.3	a	12	b 387.6	d 97.4	a	11.5	c 398.7	ab 93	a
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N & 21 lbs S/ac	Early stem elongation (BBCH 31-32)	B																
6	"Split App, liquid, N + S in 2nd Pass, plus T3 booster"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	9.23	bc 372.3	b 98.8	ab	13.7	a 401.2	a 96.5	a	12.1	b 389.4	cd 97.1	a	11.5	c 400.0	ab 93	a
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N & 11 lbs S/ac	Early stem elongation (BBCH 31-32)	B																
7	"Split App, liquid, N + S in 2nd Pass at flag leaf"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	only tried in 2018				14	a 393.8	a 81.6	a	12.4	b 393.8	bcd 88.7	ab	13.8	ab 402.0	ab 86.6	ab
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N & 11 lbs S/ac	Flag leaf emergence (BBCH 41)	C																
8	"Split App, liquid, N + S in 2nd Pass at flag leaf"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	only tried in 2018				13.8	a 400.8	a 84.4	a	12.4	b 392.8	bcd 84.2	b	12.9	b 404.4	a 86.7	ab
		ATS	combined	Green Up (BBCH 13-22)	A																
		28% UAN	80 lbs N & 21 lbs S/ac	Flag leaf emergence (BBCH 41)	C																
9	"Split App, granular, N + S in 2nd Pass at flag leaf"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	10.73	a 387	a 103.5	ab	14	a 398	a 93.5	a	14.2	a 394.6	abc 94.7	a	14.4	a 401.7	ab 80.3	b
		ATS	combined	Green Up (BBCH 13-22)	A																
		Amidas	80 lbs N & 11 lbs S/ac	Flag leaf emergence (BBCH 41)	C																
10	"Split App, granular, N + S in 2nd Pass at flag leaf, plus T3 booster"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	10.88	a 386	a 115.1	a	14.2	a 393.6	a 86.2	a	14.1	a 397	ab 98.1	a	13.9	a 402.8	ab 85.2	ab
		ATS	combined	Green Up (BBCH 13-22)	A																
		Amidas	80 lbs N & 11 lbs S/ac	Flag leaf emergence (BBCH 41)	C																
11	"Split App, granular, N + S in 2nd Pass at flag leaf, plus T3 booster"	28% UAN	80 lbs N & 8 lbs S/ac	Green Up (BBCH 13-22)	A	10.57	a 384	a 114.4	a	13.8	a 400.6	a 90.4	a	13.9	a 400.5	a 97.1	a	14.3	a 402.7	ab 84.7	ab
		ATS	combined	Green Up (BBCH 13-22)	A																
		Amidas	80 lbs N & 11 lbs S/ac	Flag leaf emergence (BBCH 41)	C																

HSD/LS	0.91	15.33	21.83	1.29	6.37	9	0.87	1.62	10.6
Standard Deviation	0.37	6.23	8.88	0.52	2.59	3.65	0.35	0.659	7.34
CV	2.73	1.57	10.02	4.19	0.66	3.9	2.84	0.82	8.33
Levene's F	0.923	2.811	0.82	0.698	0.644	2.261	0.513	0.806	0.481
Levene's Prob(F)	0.524	0.012*	0.612	0.719	0.766	0.039*	0.868	0.625	0.891
Skewness	-2.0671*	-1.0182*	0.0772	-0.0873	0.1525	-0.858*	-0.1444	-1.6754*	-1.0298*
Kurtosis	4.5071*	0.265	-1.3027	-0.6055	-0.2628	0.6992	-0.725	4.0065*	2.2513*
Mean Sep. Test	Tuk.05	Tuk.05	Tuk.05	Tuk.05	Tuk.05	Tuk.05	Tuk.05	Tuk.05	LSD.05

Means followed by same letter or symbol do not significantly differ
 Mean c Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

2020 Application Information:									
Date / Time	Wheat Timing (BBCH)	Appl. Code	Height (cm)	Leaves	Tillers	Air Temp - C	Humidity	Soil Temp - C	Soil Condition
20-Apr / 1:00 pm	Green Up (BBCH 22-23)	A	8-10	2-3	2-3	12	38	8	slightly dry
23-May / 3:00 pm	Early stem elongation (BBCH 32)	B	35	4-5	4-5	24	51	18	dry
5-Jun / 7:30 am	Late Flag leaf emergence (BBCH 41-43)	C	60-70	4-5	4-5	24	86	15	dry
15-Jun / 7:15 am	Mid Flowering (BBCH 63-65)	D	80-90			13	65	12	dry