

A motion to recommend Egan for dryland production in District 1 and for irrigated production in District 5 where the orange wheat blossom midge is a problem as a public variety with PVP Title V protection.

Luther Talbert, Hwa-Young Heo, Nancy Blake

Note: This is the same document that we used in 2014 to recommend Egan (previously CAP400) for release, with the exception that the last pages contains summary data from Kalispell 2012-2015 (Table 8) and a state-wide yield summary for 2012-2105 (Table 9).

In addition, Appendix One contains data from on-station and off-station trials conducted by the Western Triangle Agricultural Research Center in 2014. Appendix Two contains data from the same trials in 2015. This is the data to consider in terms of whether Egan should be recommended for irrigated production in District 2. Data and comments from these trials were provided by John Miller and Julie Prewitt.

CAP400 was developed in response to identification of the orange wheat blossom midge (OWBM) as a serious yield and quality-reducing pest of spring wheat in the Flathead Valley. The source of resistance is a single gene, referred to as *Sm1*, which causes mortality of the young larvae feeding on developing seed.

CAP400 has the pedigree (McNeal*5/Glupro)*2//CAP19/Choteau. Glupro PI 592759 was developed by North Dakota State University, and contains a chromosome segment from the wheat relative *Triticum dicoccoides*. The segment contains a gene for high protein Gpc-B1 and a gene for stripe rust resistance Yr36. CAP19 (Reeder/BW-277) was developed by North Dakota University and contains the *Sm1* gene for OWBM resistance. CAP400 has Gpc-B1, Yr36, and *Sm1*.

The release of CAP400 is supported by two years of data from the Advanced Yield Trial (AYT) grown across the state, additional trials grown at the Northwestern Agricultural Experiment Station near Kalispell, and by data from the Cereal Quality Lab. Yield performance over locations for the 2012 AYT (Table 1) shows CAP400 to be at or below the mean nursery performance for most environments. However, CAP400 was the highest yielding line grown at Northwestern Agricultural Research Center near Kalispell. The 2012 nursery was not treated with insecticide to control OWBM. The agronomic summary for 2012 (Table 2) shows that CAP400 has moderate test weight and acceptable height and heading date. Grain protein for CAP400 was among the highest in the nursery. Grain yield over all sites in 2013 (Table 3) was typically average or below for CAP400, except at Kalispell where it was one of the highest-yielding lines. Other lines performed similarly to CAP400 in 2013, likely because the 2013 nursery was treated with Lorsban to control the OWBM. Agronomic data summarized across all sites in 2013 (Table 4) shows that CAP400 had acceptable test weight, heading date and height, and was higher than other lines for grain protein.

Data from additional nurseries grown at the Northwestern Agricultural Experiment Station are found in Tables 5 and 6. These experiments were split plots with both treated and untreated plots. Treated plots were sprayed with recommended rates of the insecticide Lorsban. All of the lines designated 'CAP' contain the *Sm1* gene for OWBM resistance. CAP400 had several positive characteristics for the Flathead Valley in 2012 (Table 5). Most importantly, the number of surviving OWBM was zero in both treated and untreated plots. Stripe rust resistance was superior to the other lines. CAP400 also had the highest grain yield of all varieties in both the treated and untreated plots. Results were similar in 2013, as CAP400 had zero surviving OWBM, the lowest incidence of stripe rust, the highest grain yield, and the highest grain protein. In 2013, CAP400 and the leading variety for the area, Solano, had similar yield potential even after insecticide treatment.

Data from the Montana Cereal Quality Lab for four sites in 2012 is shown in Table 7. CAP400 has significantly higher grain protein than the check varieties. This translates into very strong gluten and excellent end-use quality for all measured traits.

As a footnote, there is serious concern that the OWBM may overcome the resistance imparted by the *Sm1* gene. To slow down resistance development, this variety should only be planted in a blend, with 10% of the seed being from a non-resistant variety. This strategy is currently used in other regions of the world with varieties containing *Sm1*. The variety Duclair may serve as a potential susceptible blend component for CAP400 as its white chaff would contrast with the dark chaff of CAP400 to enable monitoring the blends.

Table 1. 2012 GRAIN YIELD (BU/AC) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

PEDIGREE	HAVRE	SIDNEY	SIDNEY	MOCCASIN	HUNTLEY	CONRAD	BOZEMAN	BOZEMAN
	RAINFED	RAINFED	IRR	RAINFED	RAINFED	RAINFED	RAINFED	IRR
Egan	31.5	34.9	48.2	25.4*	53.3	71.5	51.9	92.5*
THATCHER	27.1	26.7	53.3	16.6	42.5	57.9	46.6	71.6
FORTUNA	32.7	36.5	50.3	21.6	52.4	62.6	46.1	60.1
MT1172	35.3*	43.0*	71.6*	26.1*	62.6*	76.9	60.1	86.4
REEDER	31.4	41.3*	71.2*	24.4	61.5*	74.2	55.4	82.8
MCNEAL	33.2	35.8	67.8	23.9	55.2	74.5	54.4	89.8*
CHOTEAU	30.5	37.3	56.3	18.9	54.1	75.0	54.2	97.2*
VIDA	35.4*	40.0*	66.8	24.2	60.0*	79.9*	64.7*	91.9*
DUCLAIR	33.9	39.8*	60.7	21.8	61.7*	74.3	55.4	91.5*
SITE MEAN *****	32.6	36.6	60.9	22.6	57.2	75.4	55.7	91.1
C.V.	6.2	8.5	16.3	14.1	7.3	5.9	6.1	9.4
F-VALUE (ENTRY)	4.54**	4.03**	2.79**	2.45**	2.62**	3.06**	4.37**	2.38**
LSD (.05)	4.21	5.29	16.35	5.37	7.03	7.56	5.81	14.55
PEDIGREE	AVG ¹	KALISPELL RAINFED						
Egan	51.2	84.3*						
THATCHER	42.8	27.6						
FORTUNA	45.3	59.1						
MT1172	57.7*	77.2						
REEDER	55.3	63.7						
MCNEAL	54.3	56.4						
CHOTEAU	52.9	43.1						
VIDA	57.9*	53.4						
DUCLAIR	54.9	57.0						
SITE MEAN *****	54.0	51.1						
C.V.	9.2	9.8						
F-VALUE (ENTRY)	3.59**	22.36**						
LSD (.05)	4.86	8.43						

Table 2. Agronomic Summary Over All Locations 2012 Advanced Yield Trial

PEDIGREE	Yield (bu/ac)	Test wt (lb/bu)	Headdate	Pl. Ht. (ln)	Protein (%)
Egan	51.2	57.7	177.0	29.6	15.5
THATCHER	42.8	55.2	178.3	<u>37.5</u>	14.8
FORTUNA	45.3	59.2	175.9	34.9	14.7
MT1172	57.7*	57.7	177.0	29.2	14.4
REEDER	55.3	59.0	176.0	30.4	14.9
MCNEAL	54.3	57.6	176.5	30.6	14.8
CHOTEAU	52.9	58.2	175.8	28.7	14.8
VIDA	57.9*	58.2	176.3	29.9	14.3
DUCLAIR	54.9	57.4	174.4*	29.8	14.5
SITE MEAN *****	54.0	58.5	175.7	29.2	14.7
C.V.	9.2	1.6	0.5	4.4	3.99
F-VALUE (ENTRY)	3.59**	11.22**	16.16**	17.84**	5.96**
LSD (.05)	4.86	0.91	0.85	1.26	0.58

Table 3. 2013 GRAIN YIELD (BU/AC) SUMMARY FOR THE ADVANCED SPRING WHEAT NURSERY GROWN ACROSS MONTANA

ENTRY	ID	HAVRE	MOCCASIN	HUNTLY	CONRAD	BOZEMAN	KALISPELL	AVG	RANK
1	THATCHER	44.9	33.9	34.2	66.5	35.8	68.5	47.3	64
2	FORTUNA	49.3	39.2	43	74.5	48.6	88.3	57.1	61
3	MCNEAL	53	43.2	49.9	83.3	46.3	107.6	63.9	31
4	REEDER	62.7	41.1	45	77.1	49.5	102.6	63	39
5	CHOTEAU	53.9	43.4	48.7	74.4	45.8	106.7	62.2	46
6	VIDA	67.2	52.4	51.4	79.6	46.8	109.6	67.8	6
7	DUCLAIR	61.7	48.9	49.9	74.4	51.2	112.8	66.5	14
25	MT 1172	62.6	53	49.5	83.7	50.7	105.5	67.5	10
31	Egan	55.6	38.6	42.3	72.3	52.3	111.6	62.1	47
	MEAN	59.3	44.8	47.2	74.3	49.4	106.2	63.6	
	C.V.	7.7	12	6.9	13.6	14.6	5.2	9.2	
	F-								
	VALUE(ENTRY)	4.95***	1.62*	5.85***	1.35NS	1.56*	11.32***	2.51***	
	LSD(0.05)	7.4	8.7	5.2	16.4	11.6	8.9	6.7	

Table 4. Agronomic Summary Over All Locations 2013 Advanced Yield Trial

ID	YIELD (BU/AC)	TEST WEIGHT (LB/BU)	HEADING DATE (DAYS FROM JAN.1)	PLANT HEIGHT (IN.)	PROTEIN (%)
THATCHER	47.3	58.6	180.8	<u>40.7</u>	14.7
FORTUNA	57.1	60.9	178.6	38.3	14.4
MCNEAL	63.9	59.8	179.5	32.6	14.2
REEDER	63.0	60.7	178.6	32.5	14.4
CHOTEAU	62.2	59.8	179.1	31.0	14.2
VIDA	67.8	59.6	179.6	32.4	13.4
DUCLAIR	66.5	59.1	177.2	31.4	13.9
MT 1172	67.5	59.4	179.3	31.0	13.7
Egan	62.1	59.6	179.9	31.4	15.3
MEAN	63.6	60.1	178.7	31.3	14.1
C.V.	9.2	1.5	0.6	3.3	3.3
F- VALUE(ENTRY)	2.51***	8.30***	7.66***	17.76***	7.36***
LSD(0.05)	6.7	1.0	1.1	1.4	0.5

Table 5. Effect of genetic resistance and insecticide application on OWBM, 2012.

Cultivar	SR %	Height inch	Lodging %	Yield bu/A	Protein %	TWT lb/bu	TKW g	FN sec	OWBM no./spk
Treated									
CAP34-1	89	32	11	58	12.4	62	30	353	0
CAP84-1	62	32	0	59	14.0	61	32	335	0
CAP84-2	60	33	4	58	14.1	61	32	363	0
CAP108-3	53	32	14	67	14.0	61	33	362	0
CAP197-3	65	35	31	61	12.3	60	31	345	0
CAP201-2	64	33	2	61	13.4	62	33	330	0
CAP219-3	68	34	5	56	13.0	61	31	323	0
CAP400-1	11	35	0	75	16.3	59	33	380	0
MQTL 1075	40	35	57	51	16.1	58	37	183	34
MQTL 1076	33	36	61	47	16.6	59	34	219	41
MQTL 3042	59	36	5	54	14.8	60	38	253	17
MQTL 3043	72	36	2	50	15.2	60	35	226	26
REEDER	33	37	16	56	15.5	61	36	251	18
HANK	97	31	0	44	13.3	57	39	323	10
Nontreated									
CAP34-1	81	31	0	49	14.0	60	29	333	0
CAP84-1	68	32	0	41	15.5	59	29	320	1
CAP84-2	66	32	0	42	15.5	60	30	328	0
CAP108-3	49	31	0	51	15.1	59	31	338	0
CAP197-3	69	32	0	51	13.1	60	28	350	0
CAP201-2	72	32	0	46	14.1	60	29	303	0
CAP219-3	81	31	0	42	13.7	60	29	301	0
CAP400-1	18	33	0	52	17.8	56	27	326	0
MQTL 1075	38	34	0	20	17.6	55	33	86	54
MQTL 1076	37	35	22	25	17.8	56	30	174	51
MQTL 3042	77	35	0	27	16.4	58	37	176	34
MQTL 3043	81	34	0	20	17.4	57	33	119	65
REEDER	34	34	0	34	16.7	59	34	180	46
HANK	99	29	0	15	16.1	52	35	193	102
Mean	60	33	8	47	15.1	59	32	278	18
CV	15.31	3.83	208.39	14.69	2.30	1.26	4.04	11.70	91.88
LSD (P=.05)	15.0	2.1	28.0	11.2	0.57	1.2	2.1	53	27
Pr>F	0.0001	0.0001	0.0010	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

SR: stripe rust, TWT: test weight, TKW: thousand kernel weight,

FN: falling number, OWBM: orange wheat blossom midge.

Table 6. Effect of genetic resistance and insecticide application on OWBM control – 2013

Treatment	SR %	HD Julian	HT in	LOD %	OWBM no/spk	YLD bu/A	PRO %	TWT lb/bu	TKW g	FN sec
Treated										
CAP 34-1	36.7	182	33.7	0.0	0.0	88.4	13.4	61.4	32.9	324.8
CAP 84-1	35.0	181	37.0	0.0	0.0	80.4	14.6	60.9	33.2	353.0
CAP 84-2	31.7	180	34.5	0.0	0.0	82.3	14.3	61.0	34.4	347.3
CAP 108-3	20.0	182	34.1	0.0	0.0	94.8	14.4	61.4	35.9	349.3
CAP 151-3	18.3	180	31.6	0.0	0.0	87.3	15.0	62.2	32.5	380.0
CAP 197-3	25.0	183	38.3	3.3	0.0	88.7	13.6	60.1	31.6	333.7
CAP 201-2	26.7	181	36.6	0.0	0.0	84.6	14.6	61.2	33.1	317.1
CAP 219-3	40.0	181	35.3	0.0	0.3	82.9	13.8	61.3	33.1	337.3
CAP 400-1	5.0	182	37.5	0.0	0.0	99.2	17.0	61.4	34.6	420.5
MQTL 1075	21.7	182	36.5	15.0	4.0	86.4	16.0	60.1	39.4	332.0
MQTL 1076	16.7	183	37.7	55.0	4.3	88.2	16.1	59.8	36.4	365.5
MQTL 3042	28.3	181	38.1	0.3	3.0	94.2	14.3	61.6	38.5	353.9
MQTL 3043	30.0	181	37.3	0.0	4.7	89.9	15.2	61.7	37.9	355.0
REEDER	7.3	182	39.3	0.0	0.3	87.0	15.0	61.6	36.7	368.9
HANK	48.3	180	33.6	0.0	5.7	75.7	13.4	58.9	39.4	272.8
SOLANO	7.3	184	31.0	0.0	4.0	97.1	15.9	61.3	39.7	311.7
Nontreated										
CAP 34-1	40.0	182	33.0	0.0	0.0	81.7	13.5	60.5	32.4	335.9
CAP 84-1	40.0	181	36.2	0.0	0.0	73.3	14.8	60.1	32.2	347.9
CAP 84-2	30.0	181	36.1	0.0	0.3	71.4	14.8	60.5	32.5	347.6
CAP 108-3	25.0	182	35.0	0.0	0.0	86.4	14.9	60.6	34.0	357.2
CAP 151-3	23.3	180	32.3	0.0	0.0	77.4	15.4	61.5	31.2	362.2
CAP 197-3	20.0	184	38.1	4.3	0.0	87.8	13.7	60.0	30.6	328.7
CAP 201-2	26.7	182	36.9	0.0	0.0	83.3	14.9	60.4	31.9	321.5
CAP 219-3	35.0	181	35.6	0.0	0.0	76.7	14.0	60.3	31.7	318.8
CAP 400-1	4.3	184	37.3	0.0	0.0	90.8	16.9	60.8	33.8	408.0
MQTL 1075	21.0	183	35.3	1.7	13.0	66.7	16.6	58.9	39.1	294.5
MQTL 1076	16.0	184	38.9	50.0	7.7	78.5	16.3	59.2	34.9	365.5
MQTL 3042	33.3	181	37.5	0.0	11.0	74.3	15.3	60.5	38.9	347.7
MQTL 3043	26.7	181	37.4	0.0	9.7	69.9	16.3	60.5	38.4	317.8
REEDER	11.7	182	39.0	0.0	7.0	79.2	15.7	61.1	37.4	347.8
HANK	83.3	180	33.6	0.0	27.0	59.1	14.7	57.7	39.1	272.4
SOLANO	5.0	184	31.6	0.0	18.3	83.0	16.5	60.1	38.8	310.8
Mean	26.2	181.8	35.8	4.1	3.8	82.7	15.0	60.6	35.2	340.9
CV	33.2	0.4	3.9	140.1	74.4	5.7	1.4	0.6	1.9	3.6
LSD	14.2	1.1	2.3	9.3	4.6	7.7	0.3	0.6	1.1	20.0
Pr>F	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

SR: stripe rust, HD: heading HT: height, LOD: lodging, OWBM: orange wheat blossom midge, YLD: Yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, FN: falling number

Table 7. Cereal Quality data for 2012 for Four Advanced Yield Trial Locations

	Wheat Protein, % (12%<i>m.b.</i>)	Single Kernel Hardness	Flour Yield, %	Flour Protein, %	Flour Ash, %	Wheat Ash, %	Mixing Tolerance	Mixo Mixing Time, min
THATCHER	16.125	81.75	61.825	14.15	0.4025	1.7475	4.75	4.375
FORTUNA	15.825	75.25	59.25	14.25	0.435	1.6625	3.75	4.1
MCNEAL	16.225	95.5	56.1	14.725	0.44	1.7	6	7.425
REEDER	15.85	79.25	63.05	14.125	0.3775	1.595	3.5	3.975
CHOTEAU	16.125	77.5	63.25	14.45	0.39	1.66	4.75	4.425
VIDA	15.625	84.75	66.1	13.85	0.3875	1.54	3.25	4.15
DUCLAIR	15.875	73.25	62.025	14	0.3975	1.635	4.75	5.8
Egan	17.1	86.75	62.225	14.925	0.395	1.79	6.5	9.6
MT1172	15.2	77.75	64.6	13.425	0.385	1.595	3.25	3.35
LSD (0.05)	0.76	5.1	3.2	0.65	0.02	0.11	1.1	1.4

	Mixo Water Absorption, %	Bake Mixing Time, min	Bake Water Absorption, %	Loaf Volume	Crumb Grain Score
THATCHER	65.35	7.575	75.3	1217.5	8
FORTUNA	65.5	6.8	75.7333	1195	7.66667
MCNEAL	68.075	11.7	78.5667	1310	8
REEDER	65.325	5.775	74.65	1217.5	7.25
CHOTEAU	65.975	6.225	75.675	1216.25	6.5
VIDA	65.25	5.725	74.825	1170	6.75
DUCLAIR	65.275	8.425	75.1	1258.75	7.25
Egan	68.575	15.9	79.775	1258.75	7.5
MT1172	64.4	3.675	71.975	1101.25	6.75
LSD (0.05)	1.92	2.5	1.97	56	1.1

Table 8. Summary data from Kalispell.

2012-2015 ADVANCED SPRING WHEAT NURSERY, KALISPELL : District 1

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)	STRIPE RUST (%)	LODGING (%)
	2015	2014- 2015	2013- 2015	2012- 2015	2015	2014- 2015	2013- 2015	2012- 2015	2015	2014- 2015	2013- 2015	2012- 2015				
BRENNAN	102.4	98.2	95.5	87.0	62.6	61.2	61.8	61.6	15.9	15.3	15.2	14.8	32.2	174.0	30.4	0.0
SY TYRA	106.4	103.8	105.8	89.4	63.1	61.5	61.4	59.6	14.3	13.9	13.9	13.8	31.6	176.8	37.0	0.0
SY SOREN	112.3	111.5	105.4	92.1	63.1	61.9	62.2	61.4	16.1	15.4	15.5	15.1	33.6	177.0	32.4	0.0
WB GUNNISON	112.4	114.3	111.9	97.5	63.5	62.7	62.1	61.7	15.2	14.3	14.4	14.1	34.6	175.9	31.5	0.0
CORBIN	114.8	115.2	110.0	93.5	62.6	61.8	61.1	60.2	14.8	14.1	14.3	14.4	35.7	175.7	30.4	6.7
THATCHER	93.9	90.9	83.4	69.5	61.2	60.3	60.1	60.0	16.2	15.0	15.3	14.9	45.5	181.4	38.8	31.7
FORTUNA	95.4	96.5	93.7	85.1	61.6	61.5	61.6	61.6	16.0	15.3	15.4	14.8	42.6	177.7	28.0	15.4
REEDER	114.2	109.4	107.1	96.2	62.8	61.8	62.0	61.7	14.8	14.6	14.9	14.9	38.0	176.9	21.9	4.8
MCNEAL	99.7	110.8	109.7	96.4	61.7	61.1	61.2	60.6	15.1	14.2	14.9	14.6	36.2	179.4	33.5	0.0
CHOTEAU	111.7	109.9	108.8	92.4	61.8	60.9	60.9	60.0	15.5	14.5	14.8	14.7	34.6	177.3	29.0	0.8
VIDA	123.5	117.2	114.6	99.3	61.6	60.8	60.5	59.9	15.6	14.9	15.0	15.0	36.4	178.0	23.0	8.1
DUCLAIR	122.0	114.3	113.8	99.6	60.7	60.2	60.5	59.6	15.9	15.1	14.9	15.0	35.1	174.8	29.8	2.3
EGAN	115.9	112.6	112.2	105.2	61.4	60.9	61.2	61.0	17.0	16.2	16.4	16.3	36.8	179.3	8.3	0.4
WB9879CLP	113.2	107.9	109.0	94.0	61.7	60.9	61.1	60.3	15.8	14.8	14.9	14.7	34.5	176.5	26.7	0.0

* Data adjusted to 13% moisture

Table 9. Grain yield (Bu/Ac) for selected varieties in advanced spring wheat nursery across the Montana (8 environments), 2012-2015

VARIETY	Kalispell Dryland	Bozeman Dryland	Huntley Dryland	Moccasin Dryland	Conrad Dryland	Havre Dryland	Sidney Dryland	Sidney Irrigated	Overall 8 Environm
BRENNAN	87.0	53.4	48.7	35.3	71.7	45.6	<u>46.4</u>	75.0	57.9
SY TYRA	89.4	56.3	45.2	30.9	76.4	44.7	39.0	74.5	57.0
SY SOREN	92.1	54.6	46.6	31.9	75.8	43.0	42.3	68.2	56.8
WB	97.5	54.0	46.4	<u>36.0</u>	69.6	43.2	33.3	<u>79.4</u>	57.4
CORBIN	93.5	52.0	<u>52.6</u>	31.7	75.6	43.1	35.1	72.9	57.1
THATCHER	69.5	41.9	35.3	26.3	59.0	33.6	30.1	54.4	43.7
FORTUNA	85.1	51.2	45.8	32.1	66.7	38.4	39.6	59.6	52.3
REEDER	96.2	53.6	49.6	33.4	<u>77.8</u>	45.5	43.7	78.6	59.8
MCNEAL	96.4	51.6	48.2	34.6	77.2	42.8	39.3	76.3	58.3
CHOTEAU	92.4	52.2	47.5	31.4	68.2	41.0	38.3	72.5	55.4
VIDA	99.3	<u>59.5</u>	51.9	35.6	77.4	<u>49.1</u>	44.8	73.6	<u>61.4</u>
DUCLAIR	99.6	54.4	52.1	34.4	73.2	46.4	42.5	78.1	60.1
EGAN	<u>105.2</u>	49.8	46.9	32.6	69.5	41.0	34.3	67.2	55.8
WB9879CL	94.0	53.2	48.7	33.4	72.7	41.9	34.4	75.7	56.7
AVERAGE	92.7	52.7	47.5	32.8	72.2	42.8	38.8	71.9	56.4
N=LOC*YR	N=4	N=4	N=3	N=4	N=4	N=4	N=2	N=3	N=28

Appendix One. Data from 2014 trials conducted by the Western Triangle Agricultural Research Center. (John Miller)

The SM1 trial near Valier is in an irrigated field for all years it has been grown. The off station irrigated is also grown under irrigation. All other locations, including the AYT are grown under dryland conditions. In 2014 Egan did well under irrigation. It did not have a lodging problem even with pretty good yields under irrigation in 2014. Sawfly at both irrigated locations does not seem to be a problem at the present time.

Table 1 is the SM1 nursery. Tables 2 thru 5 are for the off station locations. Table 6 is for the off station irrigated trial. I included the AYT in Table 7 and Table 8 is for long term averages for the AYT. The AYT was included to show another dryland location. Egan yields average to below average for each of the off station, dryland locations for 2014.

For the irrigated off station trial in 2014 Egan did not yield near as well as Duclair, SY Tyra, Vida or WB Gunnison.

At both irrigated and dryland locations, Egan tends to be a chart topper with respect to seed protein.

Table 1. Orange Blossom Wheat Midge trial, Valier, MT.

Variety	Yield bu/a	Test Wt lb/bu	Plant Height in.	Seed Protein %
Egan (Cap 400)	81.0	58.0	33.0	17.8
90% CAP 400/10% Choteau	77.0	58.7	30.7	17.2
CAP 34	75.8	58.3	28.3	14.6
90% CAP 34/10% Choteau	74.7	58.2	28.3	15.3
Choteau	72.5	56.9	28.3	15.9
90% CAP 400/10% Solano	71.3	58.1	31.3	17.0
90% CAP 34/10% Solano	71.0	59.5	29.0	14.7
Solano	48.9	57.4	22.3	16.3
Mean	71.5	58.2	28.9	16.1
LSD (.05)	10.5	2.0	2.3	
C.V. (s/mean)*100	8.4	1.9	4.6	
P-Value	<0.0006	<0.2127	<0.0000	

Planted April 22, 2014 Harvested: 8/28/2014

Pre-plant spray and Fertilizer where applied by Crawford farms

Conducted by MSU Western Triangle Ag Research Center, Conrad, MT.

Table 2. Off-station Spring Wheat variety trial located northeast of Choteau, MT.
Teton County. Western Triangle Ag. Research Center. 2014.

Variety	Source	Class	Yield bu/ac	Test Wt lb/bu	Height in.	Protein %
MT1172		-	50.1	54.4	30.0	14.2
MT1203		-	49.7	55.2	29.7	15.0
WB Gunnison	WestBred	*	49.7	57.1	32.0	13.1
Brennan		-	49.0	57.5	27.0	14.5
Vida	MSU	*	47.9	55.1	30.0	14.3
Duclair	MSU	**	47.6	54.0	30.3	14.2
Volt	WestBred	-	46.6	58.7	28.0	14.1
McNeal	MSU	-	45.5	55.4	31.3	15.1
MT1103		-	44.9	53.5	29.0	13.8
Egan		-	44.9	54.7	27.7	16.4
WB9879CL		CL	44.1	54.3	29.0	14.7
Corbin	WestBred	*	43.9	55.5	30.3	15.0
Mott	N.Dak	-	43.5	55.6	32.7	14.8
SY Tyra	Syngenta	*	42.5	56.0	26.0	13.2
Reeder	N.Dak	-	42.5	55.8	30.7	15.1
ONeal	WestBred	*	41.7	56.9	29.7	15.3
Fortuna	N.Dak	**	40.8	57.4	37.0	14.2
Choteau	MSU	**	40.1	53.5	28.0	15.1
Jedd	WestBred	CL2	39.6	54.1	24.7	15.1
MT1236		-	39.0	50.3	28.7	16.0
Mean			44.7	55.3	29.6	14.7
LSD (.05)			6.5	2.1	3.1	
C.V. (%)			8.9	2.3	6.3	
P-Value			0.0121	0.0000	0.0000	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 3. Off-station spring wheat variety trial located north of Cut Bank, MT.
Glacier county. Western Triangle Ag. Research Center. 2014.

Variety	Class	Yield bu/ac	Test		Protein %
			Wt lb/bu	Height in.	
Duclair	**	44.3	56.1	30.3	15.5
WB Gunnison	*	43.7	55.3	26.7	14.6
Vida	*	39.8	55.2	27.0	15.4
Choteau	**	39.5	55.3	28.0	15.8
Volt	-	38.0	56.3	29.3	15.5
Corbin	*	37.4	56.7	28.3	14.9
MT1172	-	37.2	54.3	27.7	15.7
Brennan	-	37.1	57.3	25.3	15.8
MT1103	-	37.0	56.9	29.3	15.3
McNeal	-	35.2	55.7	28.0	16.8
WB9879CL	CL	35.2	55.2	28.7	16.0
ONeal	*	33.7	55.5	28.7	16.1
MT1203	-	33.2	54.9	27.7	17.4
Jedd	CL	33.1	54.4	24.0	14.5
SY Tyra	*	32.2	56.0	24.5	15.1
Egan	-	31.5	55.4	26.7	17.9
MT1236	-	30.3	54.8	28.0	16.5
Reeder	-	30.2	54.4	28.7	16.5
Fortuna	**	28.5	55.7	35.7	15.5
Mott	-	26.1	56.1	32.0	16.9
Mean		35.1	55.6	28.3	15.9
LSD (.05)		12.4	1.8	3.1	
C.V. 1 (%) (S/mean)*100		17.4	1.6	5.4	
P-Value		NS	0.0058	0.0000	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 4. Off-station spring wheat variety trial located Devon, MT.
Toole county. Western Triangle Ag. Research Center. 2014.

Variety	Class	Test			
		Yield bu/a	Wt lb/bu	Height in.	Protein %
MT1172	-	47.6	59.7	25.0	14.0
Vida	*	45.7	59.8	25.0	14.0
Reeder	-	44.2	60.9	25.3	14.5
MT1103	-	43.1	58.7	23.3	14.6
Duclair	**	43.0	58.6	23.3	14.3
WB9879CL	CL	42.7	59.1	23.3	14.7
Mott	-	42.5	60.0	25.3	14.8
MT1203	-	42.5	59.1	23.7	15.8
SY Tyra	*	42.1	61.3	22.0	13.9
Volt	-	41.9	61.5	24.3	13.6
Brennan	-	40.0	60.4	21.0	15.2
Corbin	*	39.8	59.9	24.3	14.3
McNeal	-	39.4	59.7	24.7	14.4
Choteau	**	39.4	59.1	22.7	14.6
WB Gunnison	*	39.3	60.4	20.7	13.9
MT1236	-	39.3	56.9	23.0	15.3
Egan	-	39.2	57.9	24.7	15.8
Oneal	*	37.4	60.9	22.3	14.0
Fortuna	**	34.1	59.5	28.3	15.4
Jedd	CL	32.9	60.4	20.3	14.0
Mean		40.8	59.7	23.6	14.6
LSD (.05)		4.5	1.2	2.5	
C.V.		6.7	1.2	6.4	
P-Value		0.0000	0.0000	0.0000	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 5. Off-station spring wheat variety trial located near the Knees. Chouteau County.
Western Triangle Ag. Research Center. 2014.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
Mott	-	58.7	58.4	30.7	16.3
MT1172	-	53.7	58.0	27.7	14.3
WB Gunnison	*	52.3	58.6	27.7	14.8
Duclair	**	47.4	55.8	28.3	15.5
Volt	-	46.7	58.8	27.7	14.9
McNeal	-	46.5	57.6	29.7	15.3
MT1103	-	46.5	58.3	26.0	15.0
Vida	*	46.2	56.8	29.3	15.3
MT1203	-	46.1	57.5	27.7	15.9
Choteau	**	45.3	56.8	26.0	15.4
Brennan	-	44.5	58.0	25.0	15.8
MT1236	-	43.6	56.3	24.3	15.4
Egan	-	42.7	57.2	26.3	16.7
Fortuna	**	42.6	58.8	32.0	15.5
Jedd	CL2	41.2	57.3	23.3	14.9
Reeder	-	40.3	59.6	26.3	15.5
WB9879CL	CL	39.3	57.4	26.0	15.3
ONeal	*	38.9	58.4	28.0	15.3
SY Tyra	*	38.0	55.9	23.7	15.1
Corbin	*	31.1	57.5	26.3	15.2
Mean		44.2	57.6	27.1	15.4
LSD (.05)		21.3	3.6	2.8	
C.V. 1 (%) (S/mean)*100		16.7	2.1	6.3	
P-Value		<0.0965	<0.0511	<0.0000	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield System

Conducted by MSU Western Triangle Ag. Research Center.

Table 6. Off-station Irrigated Spring Wheat variety trial located, WTARC MT. Pondera County. Western Triangle Ag. Research Center. 2014.

Variety	Class	Yield bu/ac	Test Wt lb/bu	Height in.	Head Date	Protein %
Volt	-	117.8	63.6	32.3	184.7	13.1
MT1103	-	114.0	63.2	32.3	187.0	12.5
Duclair	**	111.4	61.4	31.7	186.0	13.0
SY Tyra	*	107.8	62.5	31.0	185.0	12.1
MT1172	-	107.6	61.5	31.3	187.7	13.0
Vida	*	107.0	62.0	34.0	186.3	13.3
MT1236	-	104.3	61.2	33.0	186.3	13.7
WB9879CL	CL	103.5	62.0	35.0	185.0	13.5
WB Gunnison	*	103.2	63.0	32.0	187.3	12.8
McNeal	-	100.9	62.1	33.7	184.0	13.2
Corbin	*	99.5	62.3	32.0	186.0	13.3
MT1203	-	98.1	61.7	33.0	185.3	13.7
Choteau	**	97.6	61.5	30.3	185.0	13.1
Brennan	-	97.5	62.6	29.7	185.7	13.9
Reeder	-	96.8	62.7	34.3	185.3	13.1
Egan	-	95.7	61.7	32.7	186.3	14.5
ONeal	*	91.5	62.1	32.7	186.7	12.6
Mott	-	86.6	61.2	36.0	184.0	12.9
Fortuna	**	85.4	62.4	39.7	184.0	14.2
Jedd	CL	78.9	60.9	28.0	185.3	12.3
Mean		100.2	62.1	32.7	185.7	13.2
LSD (.05)		10.1	1.0	5.1	2.6	
C.V. 1 (%) (S/mean)*100		6.1	0.9	9.4	0.8	
P-Value		<0.0000	<0.0000	<0.0477	0.1697	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL= Clearfield
Precipitation during growing season: 8.35 in. Conducted by MSU Western Triangle Ag. Research Center.

Table 7. Five Year averages, advanced dry land Spring Wheat varieties, Conrad area, Pondera, County MT. 2010 - 2014.

Variety	Source	Class	5-Year Average				
			Yield bu/a	Test Weight	Height in.	Head date	Protein %
Duclair	MSU	**	80.2	59.8	32.5	181.8	13.0
SY Soren	Syngenta	-	79.3	61.5	30.9	183.9	13.5
SY605CL	Syngenta	CL	78.8	62.0	35.1	182.6	14.1
Corbin	WestBred	*	77.7	60.6	32.0	183.2	13.3
Volt	WestBred	-	77.1	62.9	30.1	185.8	12.5
Reeder	N.Dak	-	76.6	61.1	33.9	183.5	13.2
Vida	MSU	*	76.1	60.3	33.8	185.0	12.4
Choteau	MSU	**	76.1	59.5	30.8	183.7	13.0
WB9879CL	Westbred	CL	76.1	60.6	32.1	184.7	13.4
McNeal	MSU	-	75.1	60.4	33.7	184.7	13.0
SY Tyra	Syngenta	*	74.6	60.9	28.8	184.6	12.0
WB Gunnison	WestBred	*	73.2	61.4	31.2	183.9	12.8
Buck Pronto	Limagr	-	71.7	59.9	30.3	182.4	13.7
ONeal	Westbred	*	70.9	61.1	33.1	185.1	12.7
Egan		-	69.1	60.0	32.5	184.9	13.9
Fortuna	ND	**	67.1	61.1	39.0	185.3	13.5
Jedd	Westbred	CL	65.8	59.9	27.3	183.5	12.7
Mean			74.4	60.8	32.2	184.0	13.1

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield System

Location: MSU Western Triangle Ag. Research Center, Conrad, MT.

Appendix Two. . Data from 2015 trials conducted by the Western Triangle Agricultural Research Center.

Egan was grown in variety and SM1 trials on a various local environmentally diverse locations around the area. Egan seems to prefer more moisture as it seems to do well in irrigation. Test weight seems to trend in 50 to 60 pounds per bushel. Even with very low water amounts test weights held up. The height varies with the moisture as do most. It is on the taller end of the spectrum. It is around 25 to 30 inches under all conditions. Protein is always among the higher varieties if not the top. Lodging is lower than other varieties. It tolerates wind, lodging and midge.

Table 1. 5-year Means, Advanced spring wheat varieties, Conrad, MT, 2015.

Variety	Yield bu/a	Test Wt lb/bu	Head date	Height in.	Protein %
Reeder	76.1	61.2	181.1	34.3	13.5
Sy Soren	75.7	61.2	181.2	31.2	13.8
Vida	75.2	60.2	182.0	33.7	13.8
McNeal	75.1	60.3	182.4	33.7	13.4
SY Tyra	74.8	61.1	181.8	29.1	12.2
Corbin	74.2	60.7	180.6	32.4	13.6
Duclair	74.2	59.5	179.1	32.8	13.4
WB9668	74.1	61.0	178.6	28.3	14.1
WB9879CL	70.7	60.4	181.7	31.5	13.8
Choteau	69.6	59.7	180.8	31.0	13.4
Egan	68.8	60.6	181.8	32.9	14.4
WB Gunnison	68.8	61.4	180.9	31.0	13.0
Fortuna	65.9	61.2	182.0	39.3	13.5
Means	72.5	60.7	181.1	32.4	13.5

Location: MSU Western Triangle Ag. Research Center, Conrad, MT.

Table 2. Off-station irrigated spring wheat variety trial located, WTARC MT. Pondera County. Western Triangle Ag. Research Center. 2015.

Variety	Class	Yield bu/ac	Test Wt lb/bu	Height in.	Head Date	Protein %
Duclair	**	86.0	61.7	31.0	171.3	14.4
WB Gunnison	*	85.5	63.2	31.7	172.7	13.8
Choteau	**	79.0	61.8	34.0	174.0	14.6
SY Tyra	*	77.7	63.1	27.3	174.3	13.9
MT 1316	-	77.3	62.2	29.7	171.3	15.6
WB9879CLP	CL	76.9	61.9	32.0	173.7	14.8
ONeal	*	71.1	60.5	33.7	173.7	14.1
WPSP2-VIDA1	-	70.8	62.6	33.7	175.0	14.2
Corbin	*	69.9	63.2	32.0	172.7	14.0
MT 1338	-	67.7	62.7	31.7	171.0	15.3
SY Soren	-	67.0	62.4	29.0	174.0	15.8
Egan	-	66.3	61.0	32.7	174.0	17.0
Brennan	-	66.2	62.2	28.3	172.0	16.3
MT1219	-	65.7	61.7	28.3	173.7	14.8
Fortuna	**	61.1	62.0	38.7	175.0	16.0
Reeder	-	59.3	61.5	34.3	174.0	15.3
McNeal	-	57.7	61.0	32.0	174.0	16.0
Vida	*	57.6	60.9	35.0	175.3	15.6
MT1337	-	57.5	61.4	31.3	171.0	16.6
Mott	-	52.7	61.0	36.3	177.3	15.0
Mean		68.7	61.9	32.1	173.5	15.2
LSD (.05)		ns	1.1	4.0	1.1	
C.V. 1 (%) (S/mean)*100		18.3	1.1	7.5	0.4	
P-Value		0.0691	<0.0001	<0.0001	<0.0000	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL= Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 3. Off-station Spring Wheat variety trial located northeast of Choteau, MT.
Teton County. Western Triangle Ag. Research Center. 2015.

Variety	Class	Yield bu/ac	Test Wt lb/bu	Height in.	Protein %
WPSP2- VIDA1	-	64.9	62.2	26.0	13.6
MT 1316	-	60.4	61.7	25.0	15.1
MT 1338	-	59.6	61.9	25.3	15.1
Duclair	**	59.5	59.6	26.0	15.2
Egan	-	59.5	60.5	26.7	16.1
McNeal	-	59.4	60.3	28.0	15.4
Corbin	*	58.6	61.4	24.7	15.1
Reeder	-	58.6	61.9	25.3	15.3
Vida	*	58.5	61.2	25.7	14.5
ONeal	*	56.1	60.8	27.0	14.9
MT1337	-	56.0	59.9	24.7	15.5
SY Soren	-	55.8	61.5	25.0	15.2
WB Gunnison	*	55.6	61.3	25.3	14.1
MT 1219	-	55.6	60.4	25.3	14.9
WB9879CLP	CL	54.8	59.9	24.7	15.5
SY Tyra	*	54.3	61.8	24.7	13.8
Choteau	**	52.7	59.9	25.0	15.5
Mott	-	52.3	61.4	27.3	15.4
Brennan	-	50.4	62.8	25.3	15.3
Fortuna	**	33.6	61.0	30.0	16.3
Mean		55.8	61.1	25.9	15.1
LSD (.05)		5.4	0.7	2.6	
C.V. (%)		5.9	0.7	6.2	
P-Value		<0.0000	<0.0000	<0.0193	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Table 4. Off-station spring wheat variety trial located north of Cut Bank, MT.
Glacier county. Western Triangle Ag. Research Center. 2015.

Variety	Class	Yield bu/ac	Test Wt lb/bu	Height in.	Protein %
MT1316	-	48.3	60.4	24.7	12.1
WPSP2-VIDA1	-	47.7	61.2	27.0	12.2
WB Gunnison	*	47.3	59.5	24.7	12.8
MT1338	-	46.5	60.7	26.3	13.7
Duclair	**	46.1	60.0	25.7	12.7
SY Tyra	*	45.3	60.6	24.3	12.0
SY Soren	-	44.7	60.7	23.0	12.1
ONeal	*	43.4	61.2	26.0	12.5
Brennan	-	43.3	60.1	24.3	13.1
Vida	*	43.0	59.5	29.6	11.8
Reeder	-	42.5	60.2	24.0	12.9
Choteau	**	42.3	58.3	25.0	13.5
WB9879CLP	CL	42.0	58.4	26.3	13.7
MT1337	-	38.8	59.0	26.0	14.4
Egan	-	38.6	57.9	26.0	14.6
Corbin	*	38.4	59.4	25.0	13.1
McNeal	-	36.9	57.8	27.7	13.1
Mott	-	36.6	58.2	26.7	13.7
MT 1219	-	33.5	59.3	24.7	12.9
Fortuna	**	24.2	57.9	26.3	14.3
Mean		41.5	59.4	25.7	13.1
LSD (.05)		6.7	0.8	3.9	
C.V. (%) (S/mean)*100		9.7	0.8	9.2	
P-Value		<0.0000	<0.0000	ns	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 5. Off-station spring wheat variety trial located Devon, MT.
Toole county. Western Triangle Ag. Research Center. 2015.

Variety	Class	Test			
		Yield bu/a	Wt lb/bu	Height in.	Protein %
Reeder	-	28.0	59.2	22.7	16.1
WPSP2-VIDA1	-	27.8	60.4	21.3	14.8
Duclair	**	27.6	58.8	23.3	15.9
McNeal	-	26.9	56.8	24.7	16.1
MT 1316	-	26.6	57.4	20.3	16.8
Vida	*	26.1	58.2	21.3	15.6
SY Tyra	*	25.8	60.2	20.0	15.3
WB Gunnison	*	25.8	58.2	22.3	14.6
MT 1337	-	25.6	57.8	22.3	15.4
Egan	-	25.6	56.7	22.7	17.0
Sy Soren	-	25.2	58.5	18.7	16.5
Choteau	**	24.9	58.4	22.0	16.2
Oneal	*	24.2	59.8	20.7	16.4
WB9879CLP	CL	23.8	57.9	19.7	16.6
Corbin	*	23.3	58.3	21.7	15.8
Mott	-	23.2	58.1	22.0	16.8
MT 1219	-	23.0	57.7	20.3	16.1
Brennan	-	23.0	59.4	20.7	16.2
MT1338	-	18.5	60.7	21.0	16.2
Fortuna	**	16.9	56.6	22.6	16.8
Mean		24.6	58.5	21.5	16.1
LSD (.05)		6.0	0.8	2.3	
C.V.		14.8	0.8	6.4	
P-Value		ns	0.0000	0.0014	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield

Conducted by MSU Western Triangle Ag. Research Center.

Table 6. Off-station spring wheat variety trial located near the Knees. Chouteau County.
Western Triangle Ag. Research Center. 2015.

Variety	Class	Yield bu/a	Test Wt lb/bu	Height in.	Protein %
MT1316	-	40.6	58.0	23.0	15.5
Duclair	**	37.8	58.9	26.7	13.9
Vida	*	37.6	57.8	25.3	14.8
Reeder	-	36.5	58.2	26.7	15.3
McNeal	-	35.7	54.4	27.0	15.4
MT1338	-	35.7	60.1	25.0	15.3
WB9879CLP	CL	34.3	57.4	25.3	15.2
SY Tyra	*	33.9	56.8	24.0	14.5
MT1219	-	33.1	56.0	24.7	14.4
MT1337	-	32.8	58.2	28.3	15.5
Choteau	**	32.6	57.8	24.7	14.7
WSP2-VIDA1		32.5	58.9	24.7	13.9
Egan	-	32.3	54.6	24.0	16.5
SY Soren	-	32.0	57.7	23.3	15.3
Brennan	-	31.5	58.7	23.7	15.6
WB Gunnison	*	31.1	58.0	24.3	14.8
Corbin	*	30.5	57.6	29.3	14.3
Mott	-	25.5	55.4	26.3	15.3
ONeal	*	20.1	56.2	26.3	14.3
Fortuna	**	17.0	55.3	29.0	17.2
Mean		32.5	57.3	25.6	15.1
LSD (.05)		9.1	1.9	3.5	
C.V. 1 (%) (S/mean)*100		16.9	2.0	8.3	
P-Value		<0.0080	<0.0000	<0.0175	

** = Solid stem sawfly-resistant (solid stem score of 19 or higher).

* = Less preferred by sawfly (behavioral preference) in small plots.

CL = Clearfield System

Conducted by MSU Western Triangle Ag. Research Center.

Table 7. Off-station spring wheat SM1 trial located near the Valier, Pondera County, Western Triangle Ag. Research Center, 2015.

Variety	Yield bu/a	Test Wt lb/bu	Height in.	Head Date	Protein %	Midge Head
12401277	86.5	62.6	29.0	184.0	17.6	0
12400877	83.9	62.8	28.0	180.0	17.2	0
Hank	78.4	60.6	28.0	184.3	15.2	1.3
12400817	77.2	63.6	29.0	185.0	18.1	0
12401227	66.7	62.5	27.3	183.3	17.5	0
12401502	65.9	61.9	28.3	185.0	17.3	0
12400592	64.1	61.0	26.7	184.3	17.7	0
12401424	63.9	62.4	27.5	181.3	18.2	0
12400976	63.8	62.1	29.0	184.0	18.1	0
12401182	63.5	63.0	28.3	184.0	17.2	0
12401236	63.1	61.6	28.0	186.0	18.7	0
12401322	61.7	61.8	30.7	184.7	18.4	0
12401161	60.1	62.4	26.8	181.2	17.4	0.1
12400725	59.1	61.4	28.3	183.3	17.7	0
12401935	59.0	62.2	27.7	181.3	19.0	0.2
12401218	57.1	62.0	27.0	183.3	18.8	0
12400038	55.1	62.5	28.0	183.0	18.2	0.1
Egan	54.5	60.1	29.7	183.3	20.3	0
12400986	53.4	62.2	27.7	181.0	18.9	0
12401117	52.7	63.7	30.0	180.0	18.5	0
Mean	63.5	62.0	28.2	183.0	18.0	0.1
LSD (.05)	27.0	0.9	2.6	2.0	1.6	0.3
C.V. 1 (%) (S/mean)*100	21.0	0.7	4.5	0.7	4.5	36.1
P-Value	ns	0.0000	<0.0100	0.0000	0.0000	0.0000