

Table 1. Agronomic trait means of the 2012-2013 Winter Malting Barley Trial (WMBT)^a at nine locations.

Trial location	Winter Survival (%)	Yield (Bu/A)	Heading date (Julian day)	Height (cm)	Lodging degree (0-9)	Lodging incidence (%)	Straw breakage (%)	Test Weight (lb/Bu)	Grain Protein-breeder measure (%)	Plump-breeder measure (%)	BYDV susceptibility (0-9)	Leaf Scald severity (%)	Leaf Rust susceptibility (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)	Stripe Rust severity (%)
Aberdeen, ID	.	142.3	142.0	82.7	0.0	.	.	47.2	.	.	.	.	.	.	.	.
Filer, ID	.	187.9	.	89.7	0.4	.	.	54.0	.	.	.	.	.	.	.	.
Saint Paul, MN	0.0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Corvallis, OR	100.0	118.9	116.1	106.7	.	8.9	14.9	49.0	.	83.0	.	24.8	.	.	.	28.5
McGregor, TX	.	46.0	.	.	.	.	.	36.0	12.1	.	.	.	.	.	.	.
Blacksburg, VA	89.8	100.4	124.1	86.7	6.3	.	.	42.5	.	.	.	.	4.7	.	.	.
Warsaw, VA	.	105.4	114.3	77.7	3.0	.	.	40.9	.	.	1.2	.	3.6	1.1	2.9	.
Alburgh, VT	48.2	51.0	152.6	70.9	1.1	.	.	.	.	.	.	.	.	.	1.2	.
Pullman, WA	90.0	104.7	146.3	91.1	0.0	.	.	51.8	.	90.9	.	.	.	.	.	.
GRAND MEAN	65.6	112.6	132.6	86.5	1.8	8.9	14.9	46.9	12.1	87.0	1.2	24.8	4.1	1.1	2.1	28.5

^a Agronomic data reported for nine of 16 locations planted

Table 2. Malt quality^a trait means of the 2012-2013 Winter Malting Barley Trial (WMBT)^b at four locations.

Trial location	Kernel weight (mg)	Plump grains (%)	Malt extract (%)	Grain Protein (%)	Wort Protein (%)	S/T (%)	Diastatic Power °ASBC	Alpha Amylase (20°DU)	Beta Glucan (ppm)	Free Amino Nitrogen (ppm)	Grain color (°ASBC)	Wort color (°ASBC)	Wort clarity (1-3)
Mead, NE	36.0	83.1	74.2	17.0	5.6	33.9	171.1	75.5	276.9	220.2	30.5	3.0	1.3
Corvallis, OR	36.6	88.5	81.1	10.2	3.9	41.6	114.1	68.1	148.8	163.1	24.5	2.9	1.1
Logan, UT	40.5	93.9	76.7	14.3	3.9	28.3	126.5	50.9	450.8	149.6	65.7	2.2	1.7
Blacksburg, VA	29.4	68.5	74.0	13.9	4.4	33.2	131.3	66.9	345.4	164.3	34.1	2.8	1.2
GRAND MEAN	35.4	83.0	76.3	14.0	4.5	33.8	135.3	64.9	314.7	173.8	39.3	2.8	1.3

^a Malt quality data courtesy of the USDA-ARS Cereal Crops Research Unit, Madison, WI

^b Malt quality data reported for four of 16 locations planted

Table 3. Winter Survival (%) line means for 2012-2013 Winter Malting Barley Trial (WMBT) entries at five locations.

Line	Line Mean	Saint Paul, MN	Corvallis, OR	Blacksburg, VA	Alburgh, VT	Pullman, WA
CHARLES	67.4	0	100	85	64	88
STRIDER	66.8	0	100	87	47	100
MCGREGOR	72.0	0	100	90	73	97
6AB08-X03W012-5	56.2	0	100	77	11	93
02AB431	57.2	0	100	85	11	90
02AB671	62.0	0	100	87	33	90
2AB08-X05W061-208	72.0	0	100	88	94	78
AC07x022x2	57.2	0	100	95	11	80
AC06x054x1	75.6	0	100	95	83	100
AC05x004x12	68.0	0	100	90	52	98
KWS_SCALA	67.2	0	100	92	66	78
KWS_ARIANE	72.4	0	100	99	63	100
KWS_JOY	71.4	0	100	95	70	92
KWS_LIGA	70.0	0	100	93	57	100
THOROUGHBRED	59.4	0	100	92	8	97
VA09B-29	51.6	0	100	90	8	60
VA09B-34	61.6	0	100	92	31	85
VA10B-43	59.0	0	100	92	36	67
LCS_SATURN	57.6	0	100	80	8	100
LCS_VIOLETTA	72.4	0	100	87	75	100
ARCHER	72.8	0	100	90	79	95
CALIFORNIA	73.6	0	100	95	80	93
GRAND MEAN	65.6	0	100	89.8	48.2	90.0

Table 4. Yield (Bu/A) line means for 2012-2013 Winter Malting Barley Trial (WMBT) entries at eight locations.

	Line Mean	Aberdeen, ID	Filer, ID	Corvallis, OR	McGregor, TX	Blacksburg, VA	Warsaw, VA	Alburgh, VT	Pullman, WA
CHARLES	99.2	143.5	193.7	125.1	27.6	76.6	52.0	67.2	108.0
STRIDER	116.6	162.1	201.0	132.8	.	77.6	83.5	40.0	119.4
MCGREGOR	119.2	142.5	188.9	125.4	.	117.7	126.1	54.9	79.0
6AB08-X03W012-5	91.4	130.8	189.3	117.5	30.4	81.1	70.9	10.5	100.5
02AB431	95.2	143.4	201.7	112.1	34.2	69.5	59.7	12.1	129.1
02AB671	113.6	153.6	200.3	120.4	.	73.9	86.8	38.0	122.5
2AB08-X05W061-208	111.8	172.1	209.9	124.1	.	64.4	60.8	22.8	128.5
AC07x022x2	115.6	144.2	182.2	117.5	.	100.7	104.7	43.6	116.7
AC06x054x1	125.3	155.2	196.7	108.3	.	104.6	116.3	68.7	127.1
AC05x004x12	110.1	151.1	189.4	134.6	.	83.7	57.7	38.3	116.1
KWS_SCALA	129.5	141.3	202.0	125.9	.	116.8	134.4	83.5	102.5
KWS_ARIANE	116.8	135.8	183.5	109.9	.	107.4	137.0	26.3	117.5
KWS_JOY	128.8	159.0	210.9	94.3	.	95.2	124.9	84.4	133.0
KWS_LIGA	126.7	146.1	192.7	107.5	.	113.8	124.4	73.5	129.2
THOROUGHbred	95.6	107.7	167.6	110.4	68.8	116.1	107.7	20.5	66.1
VA09B-29	92.1	103.0	162.9	85.4	57.8	125.2	116.6	22.1	63.8
VA09B-34	106.8	108.4	142.3	95.4	72.2	128.9	131.9	126.1	49.3
VA10B-43	104.8	121.5	159.6	112.6	68.9	141.1	137.1	27.9	69.9
LCS_SATURN	116.4	155.2	201.8	148.1	48.0	117.9	122.9	53.2	84.2
LCS_VIOLETTA	121.0	132.6	174.6	121.2	.	123.0	144.9	66.9	83.5
ARCHER	112.8	157.7	197.3	152.6	6.5	84.0	102.0	70.1	132.0
CALIFORNIA	127.1	164.0	186.2	135.2	.	90.3	117.5	71.6	125.1
GRAND MEAN	112.6	142.3	187.9	118.9	46.0	100.4	105.4	51.0	104.7

Table 5. Agronomic trait line means for 2012-2013 Winter Malting Barley Trial (WMBT) entries.

Line	Winter Survival (%)	Yield (Bu/A)	Heading date (Julian day)	Height (cm)	Lodging degree (0-9)	Lodging incidence (%)	Straw breakage (%)	Test weight (lb/Bu)	Grain Protein-breeder measure (%)	Plump-breeder measure (%)	BYDV susceptibility (0-9)	Leaf Scald severity (%)	Leaf Rust susceptibility (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)	Stripe Rust severity (%)
CHARLES	67.4	99.2	129.5	81.1	2.1	17	32	42.1	10.5	95.0	0	33	8.5	0	0.0	15
STRIDER	66.8	116.6	131.3	87.9	0.7	15	10	46.2	.	90.5	5	28	6.5	1	0.0	25
MCGREGOR	72.0	119.2	130.8	86.2	2.2	5	27	46.4	.	91.5	0	33	4.0	0	3.0	12
6AB08-X03W012-5	56.2	91.4	131.2	96.0	3.0	10	7	43.5	10.4	87.5	0	13	7.5	0	7.0	35
02AB431	57.2	95.2	131.5	85.2	3.2	10	40	44.7	9.9	86.5	0	67	8.0	0	5.0	12
02AB671	62.0	113.6	132.8	88.7	2.2	3	14	47.3	.	89.5	1	37	7.5	0	5.5	22
2AB08-X05W061-208	72.0	111.8	136.8	79.2	3.1	2	12	44.8	.	84.5	2	28	8.0	0	5.0	7
AC07x022x2	57.2	115.6	133.5	83.7	1.7	0	8	46.9	.	95.5	1	13	0.5	6	0.0	22
AC06x054x1	75.6	125.3	136.7	92.3	1.6	7	17	47.3	.	88.0	1	25	1.5	1	1.0	40
AC05x004x12	68.0	110.1	138.0	91.3	1.2	5	2	49.5	.	97.0	3	10	0.5	2	1.0	12
KWS_SCALA	67.2	129.5	131.2	81.6	1.3	20	8	48.2	.	89.5	0	15	3.0	0	2.5	17
KWS_ARIANE	72.4	116.8	131.7	85.0	2.3	10	25	49.6	.	94.5	2	45	5.5	0	0.0	62
KWS_JOY	71.4	128.8	134.8	86.4	1.3	10	12	46.8	.	88.5	3	42	4.5	0	1.5	57
KWS_LIGA	70.0	126.7	135.2	88.0	1.0	10	22	48.7	.	93.0	2	42	3.5	1	2.5	27
THOROUGHbred	59.4	95.6	130.3	86.0	2.2	3	5	46.8	14.1	58.0	0	5	7.5	0	5.5	38
VA09B-29	51.6	92.1	129.0	81.9	2.2	25	22	46.8	14.1	51.0	0	42	3.5	6	1.5	68
VA09B-34	61.6	106.8	127.5	88.5	1.3	27	35	49.1	13.8	67.5	0	18	2.0	2	2.0	65
VA10B-43	59.0	104.8	129.8	88.1	1.9	10	4	48.9	15.1	84.5	0	5	2.0	0	0.5	40
LCS_SATURN	57.6	116.4	134.0	85.4	1.8	0	0	45.9	15.5	93.0	1	3	3.5	2	0.5	12
LCS_VIOLETTA	72.4	121.0	129.3	84.9	1.3	5	19	50.7	.	97.0	0	23	1.0	2	1.0	5
ARCHER	72.8	112.8	135.2	89.4	1.0	0	2	43.9	5.1	98.0	3	5	1.0	1	0.5	7
CALIFORNIA	73.6	127.1	136.0	86.0	1.0	2	5	47.7	.	93.0	2	13	1.5	0	0.0	28
GRAND MEAN	65.6	112.6	132.6	86.5	1.8	8.9	14.9	46.9	12.1	87.0	1.2	24.8	4.1	1.1	2.1	28.5
# of Env.	5	8	6	7	6	1	1	7	1	2	1	1	2	1	2	1

Table 6. Malt quality^a trait line means for 2012-2013 Winter Malting Barley Trial (WMBT) entries at four locations.

Line	Kernel weight (mg)	Plump grains (%)	Malt extract (%)	Grain Protein (%)	Wort Protein (%)	S/T (%)	Diastatic Power °ASBC	Alpha Amylase (20°DU)	Beta Glucan (ppm)	Free Amino Nitrogen (ppm)	Grain color (°ASBC)	Wort color (°ASBC)	Wort clarity (1-3)
CHARLES	33.1	88.0	78.5	13.7	5.6	42.2	155.5	103.1	161.3	245.5	40.8	3.1	1.0
STRIDER	30.4	58.7	73.5	15.0	4.3	29.4	70.0	56.2	538.3	147.0	41.7	5.8	2.7
MCGREGOR	33.0	81.7	73.9	14.7	4.2	29.4	74.7	51.0	465.3	147.7	34.7	2.8	1.3
6AB08-X03W012-5	32.6	75.4	75.5	13.6	4.9	36.7	165.8	72.2	218.8	202.5	47.3	2.8	1.3
02AB431	35.3	85.2	79.3	13.3	5.8	46.2	135.8	108.5	169.3	262.3	34.8	2.8	1.0
02AB671	34.9	84.6	79.8	13.5	5.6	44.3	144.8	106.1	156.5	245.3	37.8	2.8	1.0
2AB08-X05W061-208	31.1	69.0	78.4	13.4	5.5	42.8	142.5	113.7	161.8	229.5	43.0	2.8	1.0
AC07x022x2	40.5	90.8	76.6	14.3	4.3	31.3	152.5	56.9	210.0	159.3	37.8	2.2	1.0
AC06x054x1	38.6	90.5	76.6	14.1	3.8	28.5	150.8	47.6	310.8	133.0	37.0	3.0	1.5
AC05x004x12	39.0	89.8	75.6	13.8	3.8	29.4	134.0	39.9	439.8	134.3	40.8	2.7	1.5
KWS_SCALA	40.8	94.6	78.2	14.1	4.5	34.0	189.5	64.5	135.3	173.3	39.0	2.3	1.3
KWS_ARIANE	37.1	88.4	77.3	14.4	4.5	33.3	166.5	61.5	159.5	171.3	41.3	2.6	1.3
KWS_JOY	36.2	88.4	77.6	13.7	4.3	33.0	145.3	64.7	144.3	163.0	38.3	2.9	1.3
KWS_LIGA	38.7	91.6	76.9	14.2	4.3	31.8	173.5	57.5	104.3	156.5	40.5	2.4	1.0
THOROUGHbred	31.5	80.5	76.2	13.7	4.1	31.0	158.0	57.2	256.3	151.7	49.7	2.2	1.3
VA09B-29	27.0	54.7	72.9	13.8	4.0	29.8	67.8	43.8	681.0	145.5	33.5	3.3	1.5
VA09B-34	31.0	81.7	73.9	13.9	4.0	30.6	70.3	53.1	541.0	151.0	42.0	2.7	1.0
VA10B-43	29.0	82.0	74.9	13.2	4.1	32.3	54.0	56.1	536.8	162.8	29.0	2.7	1.3
LCS_SATURN	36.1	86.0	73.3	13.4	4.0	31.6	133.0	48.1	512.8	142.8	43.5	.	3.0
LCS_VIOLETTA	41.3	94.3	77.9	14.5	4.7	34.7	208.8	63.0	234.5	181.0	37.0	2.3	1.0
ARCHER	43.3	86.6	73.8	14.8	4.1	29.1	126.5	43.0	569.3	146.8	38.3	2.4	1.3
CALIFORNIA	39.3	83.4	77.4	14.8	4.6	32.9	156.8	59.8	217.3	172.3	37.5	2.6	1.3
GRAND MEAN	35.4	83.0	76.3	14.0	4.5	33.8	135.3	64.9	314.7	173.8	39.3	2.8	1.3

^a Malt quality data courtesy of the USDA-ARS Cereal Crops Research Unit, Madison, WI

Table 7. Line entry details available for submissions to the 2012-2013 Winter Malting Barley Trial (WMBT).

Entry	Line	Row type	Submitter
1	CHARLES	2	
2	STRIDER	6	
3	MCGREGOR	6	
4	6AB08-X03W012-5	6	USDA-ARS Aberdeen
5	02AB431	2	USDA-ARS Aberdeen
6	02AB671	2	USDA-ARS Aberdeen
7	2AB08-X05W061-208	2	USDA-ARS Aberdeen
8	AC07x022x2	2	Ackermann Saatzucht GmbH
9	AC06x054x1	2	Ackermann Saatzucht GmbH
10	AC05x004x12	2	Ackermann Saatzucht GmbH
11	KWS_SCALA	2	KWS
12	KWS_ARIANE	2	KWS
13	KWS_JOY	2	KWS
14	KWS_LIGA	2	KWS
15	THOROUGHbred	6	Viginia Tech
16	VA09B-29	6	Viginia Tech
17	VA09B-34	6	Viginia Tech
18	VA10B-43	6	Viginia Tech
19	LCS_SATURN	6	LimaGrain
20	LCS_VIOLETTA	2	LimaGrain
21	ARCHER	2	LimaGrain
22	CALIFORNIA	2	LimaGrain