

Table 1. Agronomic trait means of the 2010-2011 Winter Malting Barley Trial (WMBT)^a at 12 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 (%)	Thin grain (%)	Leaf Rust severity (%)	Leaf Scald reaction (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)	Stripe Rust severity (%)
Aberdeen, ID	.	176.7	157.8	104.0	1.9	.	.	.	.	.	.	.	.	.	.	.
Filer, ID	.	133.0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Saint Paul, MN	33.4	50.0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bozeman, MT	36.2	50.4	179.7	60.0	.	.	.	49.4	15.1	.	.	.	.	.	.	.
Carrington, ND	47.3	14.7	178.6	.	.	.	.	39.1	.	80.7	16.8	.	.	.	.	.
Williston, ND	55.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mead, NE	55.4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Corvallis, OR	.	99.7	130.2	113.2	.	6.5	32.3	42.7	.	63.2	22.3	23.2	2	.	.	2.7
Logan, UT	92.0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Warsaw, VA	.	136.9	114.0	77.1	1.9	.	.	46.5	.	.	.	.	.	2.5	1.2	.
Pullman, WA	92.5	107.2	156.8	.	.	.	.	51.7	.	90.2	.	.	.	.	.	.
Sturgeon Bay, WI	91.9	85.5	159.4	71.8	.	.	.	.	.	.	.	.	.	.	.	.
GRAND MEAN	63.0	98.3	154.0	84.8	1.9	6.5	32.3	46.0	15.1	78.4	19.2	23.2	2	2.5	1.2	2.7

^a Agronomic data reported for 12 of 12 locations planted

Table 2. Malt quality^a trait means of the 2010-2011 Winter Malting Barley Trial (WMBT)^b at six 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)
Aberdeen, ID	39.2	90.9	79.1	12.0	4.4	38.7	132.4	55.6	219.1	168.1	69.4	2.9	2.0
Corvallis, OR	29.8	73.7	76.3	10.6	4.5	44.8	124.7	66.0	212.6	227.8	39.4	3.6	1.4
Logan, UT	41.0	94.6	80.0	11.2	4.2	39.3	118.6	56.3	233.0	145.9	69.6	2.0	2.1
Warsaw, VA	34.5	83.0	79.6	11.4	4.6	42.0	140.0	63.4	184.9	178.6	51.1	2.1	1.6
Pullman, WA	38.8	92.5	78.6	11.0	4.1	38.9	124.6	63.2	232.7	160.1	59.7	1.9	1.5
Sturgeon Bay, WI	38.0	87.8	77.5	12.2	4.6	40.0	108.4	58.9	332.4	177.0	37.0	2.2	1.7
GRAND MEAN	36.9	87.1	78.5	11.4	4.4	40.6	124.8	60.6	235.8	176.2	54.4	2.6	1.7

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

^b Malt quality data reported for six of 12 locations planted

Table 3. Winter Survival (%) line means for 2010-2011 Winter Malting Barley Trial (WMBT) entries at eight locations.

Line	Line Mean	Saint Paul, MN	Bozeman, MT	Carrington, ND	Williston, ND	Mead, NE	Logan, UT	Pullman, WA	Sturgeon Bay, WI
CHARLES	50.3	2.3	17.8	41.7	38.8	33.3	95.0	96.7	76.7
STRIDER	50.8	4.2	34.4	10.7	48.8	36.7	98.7	96.7	76.7
MCGREGOR	70.7	4.5	75.8	53.3	68.8	70.0	98.0	95.0	100.0
MAJA	62.4	2.2	43.3	56.7	68.8	56.7	93.0	78.3	100.0
OR76	66.4	14.4	15.0	56.7	62.5	86.7	96.3	100.0	100.0
ENDEAVOR	52.3	6.2	32.6	21.7	62.5	46.7	84.0	85.0	80.0
93AB669	56.7	1.9	24.8	63.3	52.5	43.3	81.3	96.7	90.0
93AB631	79.9	100.0	54.0	75.0	65.0	83.3	83.3	91.7	86.7
02AB1604	52.0	4.1	20.7	48.3	40.0	36.7	94.7	88.3	83.3
WINTMALT	66.0	45.8	19.2	58.3	43.8	73.3	91.0	96.7	100.0
KW2-832	60.8	45.3	28.1	17.3	62.5	66.7	86.7	90.0	90.0
KW2-849	60.8	2.6	48.3	53.3	51.3	46.7	93.0	98.3	93.3
AC03x220x158	68.1	57.9	40.4	40.0	61.3	50.0	95.3	100.0	100.0
AC04x153x2	70.5	64.8	50.0	55.0	50.0	70.0	94.3	90.0	90.0
AC04x002x23	66.0	48.3	29.3	59.0	70.0	33.3	92.7	95.0	100.0
AC04x028x36	67.5	97.8	27.3	41.7	56.3	50.0	84.0	86.7	96.7
FAMOSA	63.2	56.4	40.7	45.0	47.5	43.3	97.3	85.0	90.0
LCS_SATURN	69.1	42.6	50.4	55.0	42.5	70.0	97.3	95.0	100.0
GRAND MEAN	63.0	33.4	36.2	47.3	55.1	55.4	92.0	92.5	91.9

Table 4. Yield (Bu/A) line means for 2010-2011 Winter Malting Barley Trial (WMBT) entries at nine locations.

Line	Line Mean	Aberdeen, ID	Filer, ID	Saint Paul, MN	Bozeman, MT	Carrington, ND	Corvallis, OR	Warsaw, VA	Pullman, WA	Sturgeon Bay, WI
CHARLES	90.8	162.7	123.5	.	45.9	12.7	.	129.6	97.3	63.8
STRIDER	120.7	155.5	173.2	.	49.2	.	152.6	120.8	118.2	75.3
MCGREGOR	112.3	158.1	145.2	.	77.6	24.8	104.1	161.9	132.4	94.0
MAJA	98.3	178.1	126.4	.	64.2	13.0	110.4	100.1	94.8	99.4
OR76	105.8	189.0	146.5	.	24.5	15.4	121.3	131.5	123.8	94.6
ENDEAVOR	94.8	165.2	116.3	.	44.9	10.6	97.2	151.6	93.1	79.8
93AB669	97.4	195.9	144.0	.	92.6	14.9	9.2	133.7	115.2	73.4
93AB631	100.3	189.7	161.8	38.4	71.1	11.8	.	128.2	117.7	84.1
02AB1604	84.7	187.6	117.8	.	34.1	20.0	81.0	113.6	71.8	51.7
WINTMALT	76.9	139.6	132.0	16.4	28.7	22.7	55.9	130.6	92.0	73.8
KW2-832	85.4	163.3	132.2	33.3	39.5	10.5	52.7	149.2	99.3	88.9
KW2-849	93.5	182.0	108.0	.	49.1	15.4	78.6	144.8	91.5	78.3
AC03x220x158	106.8	178.8	119.6	81.5	49.3	15.4	131.3	154.7	116.2	113.9
AC04x153x2	98.1	202.6	123.9	49.3	60.1	12.9	99.8	145.4	103.4	85.8
AC04x002x23	98.8	185.5	117.9	59.4	36.2	12.6	124.2	136.5	106.5	110.7
AC04x028x36	95.4	181.8	115.1	65.7	35.4	10.2	120.4	131.3	110.3	88.1
FAMOSA	90.2	152.6	133.7	43.2	42.8	13.3	104.2	145.7	93.3	83.2
LCS_SATURN	118.4	212.0	156.0	62.3	62.4	13.1	152.2	154.3	152.4	100.9
GRAND MEAN	98.3	176.7	133.0	50.0	50.4	14.7	99.7	136.9	107.2	85.5

Table 5. Agronomic trait line means for 2010-2011 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 (%)	Thin grain (%)	Leaf Rust severity (%)	Leaf Scald reaction (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)	Stripe Rust severity (%)
CHARLES	50.3	90.8	156.8	73.2	4.8	.	.	44.6	16.2	91.9	9.5	.	.	0.0	0.0	.
STRIDER	50.8	120.7	153.6	81.1	2.3	10	23	47.5	16.1	72.2	17.0	0	1	0.3	2.0	1
MCGREGOR	70.7	112.3	149.8	89.8	2.7	0	53	46.6	14.6	78.1	18.3	30	1	5.0	1.0	0
MAJA	62.4	98.3	152.3	88.4	4.0	50	60	47.4	15.0	67.4	22.5	2	4	8.3	0.0	0
OR76	66.4	105.8	149.3	96.8	1.2	15	50	47.8	18.7	83.8	13.5	0	3	7.0	0.3	0
ENDEAVOR	52.3	94.8	152.8	85.6	2.0	0	15	48.3	15.4	76.1	19.9	20	5	2.0	0.7	0
93AB669	56.7	97.4	152.4	86.1	1.7	0	95	41.6	13.1	49.4	54.7	78	2	1.7	0.0	0
93AB631	79.9	100.3	155.3	79.9	0.3	0	97	46.3	12.5	56.5	46.1	63	5	5.0	3.0	0
02AB1604	52.0	84.7	152.3	84.8	2.8	0	40	46.7	15.2	80.8	14.9	28	4	8.7	0.0	0
WINTMALT	66.0	76.9	157.9	82.4	3.2	0	0	43.1	15.3	67.8	30.6	32	1	4.0	1.3	0
KW2-832	60.8	85.4	157.7	81.0	1.3	0	2	42.8	14.8	70.1	26.7	22	2	2.7	1.0	0
KW2-849	60.8	93.5	153.9	78.9	0.7	0	10	44.6	14.9	90.0	9.2	35	2	1.0	2.3	0
AC03x220x158	68.1	106.8	155.2	90.5	0.0	5	53	45.4	14.9	89.0	6.9	17	1	0.0	0.7	10
AC04x153x2	70.5	98.1	156.6	89.8	1.5	5	2	48.3	15.3	94.7	3.1	27	1	0.0	2.7	5
AC04x002x23	66.0	98.8	151.1	82.8	2.0	5	33	45.4	14.3	70.3	28.3	7	0	0.0	2.0	0
AC04x028x36	67.5	95.4	154.5	81.5	0.8	5	8	47.6	16.4	94.2	6.2	15	1	0.0	2.3	10
FAMOSA	63.2	90.2	159.1	86.1	1.5	5	5	48.0	15.5	89.2	10.3	10	1	0.0	1.0	15
LCS_SATURN	69.1	118.4	151.6	87.1	1.0	10	3	46.4	13.7	89.9	8.5	8	0	0.0	1.0	5
GRAND MEAN	63.0	98.3	154.0	84.8	1.9	6.5	32.3	46.0	15.1	78.4	19.2	23.2	2.0	2.5	1.2	2.7
# of Env.	8	9	7	5	2	1	1	5	1	3	2	1	1	1	1	1

Table 6. Malt quality^a trait line means for 2010-2011 Winter Malting Barley Trial (WMBT) entries at six 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	37.1	92.5	81.2	11.3	5.1	47.4	129.5	94.1	75.7	225.8	53.8	2.1	1.0
STRIDER	34.9	86.0	77.7	10.9	3.8	36.7	57.3	47.6	570.1	135.1	49.6	3.1	2.9
MCGREGOR	33.6	83.5	76.7	11.8	3.9	34.7	73.6	52.9	370.0	144.0	47.6	1.9	1.0
MAJA	29.3	73.7	79.2	11.0	4.5	44.1	145.1	63.2	79.1	200.1	59.1	2.2	1.6
OR76	36.5	91.0	79.2	11.3	4.5	41.6	100.9	68.3	261.8	178.3	64.9	2.4	1.9
ENDEAVOR	37.0	89.2	80.8	11.7	5.3	47.6	144.3	99.0	127.6	229.8	58.0	2.0	1.0
93AB669	27.3	66.0	75.7	11.5	4.6	42.3	140.2	65.8	242.7	198.4	56.0	3.5	2.2
93AB631	31.4	70.4	74.2	10.8	4.5	43.9	99.1	62.5	313.6	195.7	48.3	3.3	2.1
02AB1604	38.8	91.2	79.9	11.4	4.6	42.2	125.2	70.5	185.0	178.7	53.1	2.3	1.7
WINTMALT	40.3	91.1	78.7	11.9	4.5	39.7	131.5	57.6	104.8	176.1	55.1	2.7	1.6
KW2-832	39.6	90.9	78.9	11.8	4.3	38.4	131.1	56.6	126.0	165.4	58.1	2.5	1.4
KW2-849	40.2	94.2	79.3	12.2	4.7	39.8	173.9	59.3	82.4	186.7	53.1	2.8	1.3
AC03x220x158	39.0	92.3	79.7	11.4	4.3	39.9	162.0	54.5	142.5	169.2	57.8	2.1	1.3
AC04x153x2	41.0	94.2	79.8	11.2	4.4	40.4	121.1	56.4	226.9	169.5	52.4	2.1	2.1
AC04x002x23	33.5	87.7	79.3	11.8	4.4	39.5	146.2	50.5	153.4	177.6	52.5	2.2	1.3
AC04x028x36	41.6	90.8	80.3	11.8	4.7	41.0	137.9	48.8	119.3	190.8	50.9	2.4	1.6
FAMOSA	45.1	92.1	76.9	10.7	3.5	34.5	104.8	39.5	545.3	119.2	52.9	2.8	2.3
LCS_SATURN	38.0	91.2	75.6	10.8	3.8	37.3	122.2	42.8	517.8	131.8	55.6	4.5	3.0
GRAND MEAN	36.9	87.1	78.5	11.4	4.4	40.6	124.8	60.6	235.8	176.2	54.4	2.6	1.7

^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 2010-2011 Winter Malting Barley Trial (WMBT).

Entry	Line	Row type	Submitter
1	CHARLES	2	
2	STRIDER	6	
3	MCGREGOR	6	
4	MAJA	6	Oregon State U
5	OR76	6	Oregon State U
6	ENDEAVOR	2	USDA-ARS Aberdeen
7	93AB669		USDA-ARS Aberdeen
8	93AB631		USDA-ARS Aberdeen
9	02AB1604		USDA-ARS Aberdeen
10	WINTMALT	2	KWS
11	KW2-832		KWS
12	KW2-849		KWS
13	AC03x220x158	6	Ackermann Saatzucht GmbH
14	AC04x153x2	2	Ackermann Saatzucht GmbH
15	AC04x002x23	6	Ackermann Saatzucht GmbH
16	AC04x028x36	2	Ackermann Saatzucht GmbH
17	FAMOSA		Breun
18	LCS_SATURN	6	Breun