Table 1. Agronomic trait means of the 2016-2017 Winter Malting Barley Trial (WMBT)[a] at 23 locations.

Trial location	Winter Survival (%)	Yield (Bu/A)	Heading date (Julian day)	Height (cm)	Lodging degree (0-9)	Straw breakage (%)	Test Weight (lb/Bu)	Grain Protein-breeder measure (%)	Plump-breeder measure (%)
Fayetteville, AR	100.0	50.9	92.8	82.0	.	.	31.7	.	.
Plains, GA	.	63.0	94.4	73.1	.	.	43.4	.	.
Aberdeen, ID	50.0	.	.	.	.	.	.	.	.
Schochoh, KY	.	63.6	.	81.3	.	.	39.5	.	.
Versailles, KY	.	69.7	112.3	77.7	.	.	37.5	.	.
Clarksville, MD	93.9	88.6	113.3	75.4	1.1	.	43.1	.	69.3
Hickory Corners, MI	89.3	129.3	103.8	.	4.7	.	46.7	.	.
Saint Paul, MN	0.0	.	.	.	.	.	.	.	.
Laurel Springs, NC	100.0	.	.	.	.	.	.	.	.
Mills River, NC	100.0	64.5	.	88.7	.	.	41.6	10.8	.
Raleigh, NC	100.0	73.5	.	65.5	2.0	.	40.4	10.3	.
Farmington, NM	100.0	100.9	115.1	.	.	.	.	11.2	.
Ithaca, NY	64.2	89.6	139.3	79.1	.	.	47.8	.	.
Wooster, OH	.	97.1	125.3	100.2	0.7	.	.	.	88.2
Corvallis, OR	100.0	119.7	130.1	94.3	0.0	16.3	54.4	9.3	94.9
Landisville, PA	98.6	60.1	121.3	83.1	8.4	.	45.8	.	.
Logan, UT	98.9	135.7	140.6	92.6	0.8	.	53.7	.	91.0
Blacksburg, VA	.	80.3	109.8	73.9	2.9	.	44.4	.	.
Mt. Holly, VA	.	.	103.5	.	.	.	.	.	.
Warsaw, VA	.	73.0	100.7	70.4	5.2	.	40.4	.	.
Pullman, WA	97.4	128.8	151.5	86.1	.	.	53.3	13.2	92.5
Alma, WI	75.9	88.0	.	.	.	.	.	.	.
River Falls, WI	89.4	109.5	149.8	73.4	1.9	.	39.4	.	.
GRAND MEAN	84.7	88.2	118.8	80.9	2.8	16.3	43.8	10.9	86.8

[a] Agronomic data reported for 23 of 28 locations planted

Table 2. Disease trait means of the 2016-2017 Winter Malting Barley Trial (WMBT)[a] at 10 locations.

Trial location	Deoxynivalenol content (ppm)	Fusarium Head Blight severity (%)	Fusarium Head Blight incidence (%)	BYDV susceptibility (0-9)	Leaf Scald severity (%)	Leaf Rust susceptibility (0-9)	Leaf Scald reaction (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)
Clarksville, MD	.	.	.	1.5	.	1.9	.	.	0.8
Mills River, NC	.	.	.	4.6	.	4.0	.	.	.
Raleigh, NC	.	.	.	3.4	.	.	.	2.1	1.5
Ithaca, NY	.	14.0	53.1	.	.	.	1.7	.	1.2
Wooster, OH	0.2	.	.	.	.	.	.	.	.
Corvallis, OR	.	.	.	.	29.9	.	.	.	.
Landisville, PA	.	.	.	.	.	2.8	.	1.1	2.8
Logan, UT	.	.	.	.	.	.	.	.	.
Mt. Holly, VA	3.3	14.0	67.8	.	.	.	.	.	.
Warsaw, VA	.	.	.	.	.	4.9	.	.	.
GRAND MEAN	1.8	14.0	60.4	3.2	29.9	3.4	1.7	1.6	1.6

[a] Disease data reported for 10 of 28 locations planted

Table 3. Malt quality[a] trait means of the 2016-2017 Winter Malting Barley Trial (WMBT)[b] at two 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)
Wooster, OH	33.7	85.9	79.4	12.6	4.9	39.8	131.3	71.9	190.6	197.8	25.7	3.1	1.5
Corvallis, OR	40.1	96.5	82.7	9.8	4.7	51.4	113.5	84.1	151.0	198.2	66.4	2.1	1.1
GRAND MEAN	36.9	91.2	81.1	11.2	4.8	45.6	122.4	78.0	170.8	198.0	46.1	2.6	1.3

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

[b] Malt quality data reported for two of 28 locations planted

Table 4. Winter Survival (%) line means for 2016-2017 Winter Malting Barley Trial (WMBT) entries at 16 locations.

Line	Line Mean	Fayetteville, AR	Aberdeen, ID	Clarksville, MD	Hickory Corners, MI	Saint Paul, MN	Laurel Springs, NC	Mills River, NC	Raleigh, NC	Farmington, NM	Ithaca, NY	Corvallis, OR	Landisville, PA	Logan, UT	Pullman, WA	Alma, WI	River Falls, WI
CHARLES	86.9	100	53.3	97.0	86.7	0	100	100	100	100	83.3	100	100.0	100.0	100.0	74.4	96.3
MCGREGOR	88.0	100	56.7	98.3	96.7	0	100	100	100	100	77.7	100	100.0	99.3	100.0	81.9	98.1
THOROUGHBRED	87.5	100	66.7	99.3	90.0	0	100	100	100	100	66.7	100	100.0	.	93.3	96.7	100.0
ENDEAVOR	83.5	100	61.7	96.0	76.7	0	100	100	100	100	33.3	100	100.0	94.3	100.0	89.6	85.2
WINTMALT	88.0	100	56.7	99.3	93.3	0	100	100	100	100	70.0	100	100.0	100.0	93.3	96.3	98.3
LCS_VIOLETTA	88.1	100	63.3	96.0	90.0	0	100	100	100	100	72.7	100	100.0	99.3	100.0	90.5	98.1
LCS_CALYPSO	89.1	100	65.0	92.7	93.3	0	100	100	100	100	86.7	100	100.0	98.0	100.0	91.5	98.1
LCS_PUFFIN	83.9	100	33.3	93.3	86.7	0	100	100	100	100	46.7	100	100.0	100.0	100.0	91.1	90.7
LGBB13-W102	87.2	100	36.7	97.7	90.0	0	100	100	100	100	91.0	100	100.0	98.3	96.7	85.9	98.1
05ARS561-208	86.1	100	55.0	97.0	86.7	0	100	100	100	100	73.3	100	100.0	100.0	100.0	74.6	90.9
06ARS633-3	85.5	100	33.3	94.3	83.3	0	100	100	100	100	86.0	100	100.0	100.0	100.0	76.7	94.6
06ARS617-25	88.6	100	66.7	98.3	83.3	0	100	100	100	100	88.3	100	100.0	100.0	100.0	87.8	92.8
07ARS515-7	85.8	100	58.3	99.3	90.0	0	100	100	100	100	66.7	100	100.0	98.7	100.0	75.9	84.3
DH130004	78.0	100	45.0	75.0	90.0	0	100	100	100	100	46.7	100	90.0	100.0	100.0	49.8	51.9
DH130939	85.5	100	63.3	96.7	90.0	0	100	100	100	100	40.0	100	100.0	98.0	100.0	93.0	86.3
DH130718	68.2	100	10.0	78.3	93.3	0	100	100	100	100	48.3	100	86.7	100.0	68.3	0.0	6.0
LIGHTNING	87.6	100	33.3	98.3	100.0	0	100	100	100	100	87.7	100	100.0	97.0	100.0	89.6	96.3
MW12_4028-007	87.7	100	60.0	98.7	93.3	0	100	100	100	100	76.7	100	96.7	95.0	100.0	85.2	98.3
MN-EQUINOX	86.7	100	33.3	94.3	93.3	0	100	100	100	100	70.0	100	100.0	100.0	100.0	96.3	100.0
MW13_4159-012	88.1	100	65.0	96.7	96.7	0	100	100	100	100	65.0	100	100.0	97.0	100.0	92.5	96.7
MW13_4107-010	89.5	100	66.7	90.0	96.7	0	100	100	100	100	92.0	100	96.7	97.7	100.0	92.5	100.0
2WI14-7462	82.6	100	53.3	88.3	76.7	0	100	100	100	100	66.7	100	100.0	.	95.0	72.2	87.0
2WI14-7465	83.5	100	63.3	94.3	90.0	0	100	100	100	100	33.3	100	100.0	.	100.0	79.6	92.1
2WI14-7577	78.9	100	10.0	83.3	76.7	0	100	100	100	100	61.7	100	96.7	.	100.0	66.4	88.9
2WI14-7581	79.4	100	31.7	81.7	90.0	0	100	100	100	100	36.7	100	90.0	.	98.3	71.3	90.7
FLAVIA	86.7	100	61.7	93.3	90.0	0	100	100	100	100	78.3	100	100.0	99.0	100.0	67.8	96.5
SU_MATEO	86.3	100	55.0	97.0	90.0	0	100	100	100	100	56.7	100	100.0	99.7	100.0	85.9	96.3
LYBERAC	80.3	100	45.0	97.7	93.3	0	100	100	100	100	42.7	100	100.0	100.0	93.3	20.5	92.6
MISSION	82.2	100	31.7	93.3	83.3	0	100	100	100	100	40.0	100	100.0	100.0	96.7	86.1	83.3
HIRONDELLA	80.6	100	65.0	100.0	90.0	0	100	100	100	100	40.0	100	100.0	100.0	86.7	14.5	93.0
GRAND MEAN	84.7	100	50.0	93.9	89.3	0	100	100	100	100	64.2	100	98.6	98.9	97.4	75.9	89.4

Table 5. Yield (Bu/A) line means for 2016-2017 Winter Malting Barley Trial (WMBT) entries at 19 locations.

Line	Line Mean	Fayetteville, AR	Plains, GA	Schochoh, KY	Versailles, KY	Clarksville, MD	Hickory Corners, MI	Mills River, NC	Raleigh, NC	Farmington, NM	Ithaca, NY	Wooster, OH	Corvallis, OR	Landisville, PA	Logan, UT	Blacksburg, VA	Warsaw, VA	Pullman, WA	Alma, WI	River Falls, WI
CHARLES	73.7	48.6	62.4	33.5	61.6	67.3	108.8	43.9	78.4	84.2	79.3	71.8	102.2	16.4	141.6	56.5	40.2	134.6	70.9	97.7
MCGREGOR	107.6	64.5	43.7	106.0	41.3	131.2	162.8	121.2	91.4	118.5	113.0	129.3	134.7	83.3	150.8	95.4	90.9	108.2	99.0	159.8
THOROUGHBRED	102.7	93.9	50.8	106.2	72.7	121.0	161.3	97.1	102.6	60.8	91.4	105.7	137.7	75.3	.	88.9	74.6	123.7	113.0	171.5
ENDEAVOR	86.5	57.3	77.5	44.5	78.5	102.2	114.8	38.0	66.6	93.6	76.1	83.4	106.4	54.7	142.8	78.3	69.6	126.4	106.2	126.4
WINTMALT	97.5	26.6	61.5	115.3	71.2	103.7	128.4	85.2	74.4	106.9	127.1	114.5	120.1	77.3	149.3	89.6	88.6	146.7	84.9	81.7
LCS_VIOLETTA	103.2	62.0	62.7	92.0	74.4	106.5	140.3	94.4	90.8	120.3	118.6	116.3	140.0	86.2	137.8	84.4	90.5	142.6	90.5	109.9
LCS_CALYPSO	107.6	25.8	69.6	87.7	108.7	111.3	155.0	108.6	80.1	132.4	128.3	120.3	142.8	85.9	144.4	97.9	97.3	138.2	89.3	121.5
LCS_PUFFIN	90.2	35.6	59.6	74.0	83.0	78.8	126.6	51.6	49.3	102.8	84.9	117.0	122.2	82.4	145.9	90.7	85.2	142.5	80.8	101.9
LGBB13-W102	105.2	51.8	50.9	74.9	66.3	111.6	150.7	96.3	65.3	125.1	110.8	104.8	152.2	73.0	159.8	96.0	96.6	156.4	129.4	126.3
05ARS561-208	73.0	31.4	55.5	26.8	74.4	62.5	94.3	37.4	62.2	69.1	82.4	79.4	119.3	27.3	128.0	67.3	48.0	139.3	80.5	101.8
06ARS633-3	74.0	46.9	101.2	20.7	56.3	54.9	103.9	22.3	57.7	100.5	77.7	74.3	90.9	50.4	119.0	73.5	65.2	124.1	66.7	98.9
06ARS617-25	86.9	62.2	58.1	43.0	55.9	96.0	134.9	37.7	87.6	89.3	99.5	105.2	119.1	48.1	130.9	73.8	76.0	135.9	91.2	107.6
07ARS515-7	83.8	38.8	80.3	31.8	71.6	83.0	110.2	58.2	69.3	132.2	87.1	78.0	123.8	45.2	125.7	79.6	57.1	139.0	76.6	104.4
DH130004	71.7	44.9	60.7	75.9	124.4	61.9	107.8	42.9	74.1	76.0	59.4	68.5	85.6	24.4	134.3	66.5	51.9	89.8	60.1	53.5
DH130939	97.8	72.5	69.1	78.2	84.4	99.4	146.4	98.7	94.3	120.4	64.1	103.6	115.6	67.3	164.2	89.7	75.3	125.5	72.2	117.3
DH130718	71.2	52.3	66.9	74.9	53.6	56.1	115.3	47.8	75.3	76.2	85.3	92.6	87.4	33.9	110.7	75.5	58.0	100.3	75.7	15.1
LIGHTNING	99.0	19.5	50.9	71.9	63.5	104.1	153.8	90.6	89.9	124.7	112.4	104.8	121.8	85.4	151.6	89.6	92.9	133.6	83.2	137.0
MW12_4028-007	80.1	86.3	61.0	49.7	50.0	61.2	118.8	77.5	55.6	56.3	84.2	102.3	136.0	28.3	99.8	50.9	59.1	117.6	109.0	118.1
MN-EQUINOX	81.0	59.2	60.1	49.0	66.3	77.7	123.4	48.0	55.6	69.9	103.3	89.9	128.5	41.9	91.9	80.7	57.6	121.3	94.4	121.3
MW13_4159-012	90.5	82.8	68.1	48.5	75.7	92.8	112.3	61.8	64.8	116.0	108.9	94.9	132.6	39.9	141.7	79.1	55.0	118.3	112.0	115.0
MW13_4107-010	75.2	55.2	67.0	34.7	54.5	65.7	109.5	17.8	50.9	85.0	94.2	88.4	119.7	36.9	118.1	66.3	65.3	109.4	80.7	108.7
2WI14-7462	69.8	54.6	47.1	28.6	81.6	83.7	100.8	13.7	71.5	85.7	59.6	63.8	87.2	55.2	.	71.7	63.3	128.9	73.0	85.8
2WI14-7465	71.8	36.8	63.9	13.6	57.8	68.2	122.6	18.8	73.3	89.6	61.6	63.4	122.0	52.0	.	55.4	62.0	132.9	86.5	112.1
2WI14-7577	74.7	64.2	62.2	26.3	72.5	78.0	135.4	43.0	44.6	77.3	75.1	80.5	96.5	62.8	.	74.0	43.3	127.3	83.1	99.1
2WI14-7581	75.7	48.8	67.8	48.2	62.5	79.5	131.8	50.0	58.4	73.7	70.5	83.9	97.0	49.8	.	74.0	55.3	133.7	81.8	95.2
FLAVIA	102.8	46.4	92.3	129.3	55.3	86.2	151.3	82.0	66.8	140.0	99.0	109.2	129.4	90.5	128.1	101.4	93.9	132.8	82.5	135.9
SU_MATEO	100.5	22.2	58.5	77.6	55.2	93.8	151.9	83.5	75.1	119.6	105.5	132.6	139.3	87.1	150.7	79.7	95.1	133.9	120.1	127.4
LYBERAC	95.0	35.0	60.7	100.0	51.0	100.0	134.5	82.1	95.8	130.8	45.2	118.2	135.4	88.0	141.7	97.2	96.5	131.4	61.3	99.6
MISSION	91.5	34.7	59.5	61.7	81.2	85.7	116.6	72.2	76.4	122.3	112.2	87.4	111.2	66.6	153.3	83.9	86.5	132.2	98.5	96.5
HIRONDELLA	107.0	65.5	41.5	82.0	86.1	135.1	156.1	113.5	106.0	127.8	70.9	129.4	133.4	88.8	131.1	102.6	100.0	137.4	88.5	137.2
GRAND MEAN	88.2	50.9	63.0	63.6	69.7	88.6	129.3	64.5	73.5	100.9	89.6	97.1	119.7	60.1	135.7	80.3	73.0	128.8	88.0	109.5

Table 6. Agronomic trait line means for 2016-2017 Winter Malting Barley Trial (WMBT) entries.

Line	Winter Survival (%)	Yield (Bu/A)	Heading date (Julian day)	Height (cm)	Lodging degree (0-9)	Straw breakage (%)	Test weight (lb/Bu)	Grain Protein-breeder measure (%)	Plump-breeder measure (%)	Deoxynivalenol content (ppm)	Fusarium Head Blight severity (%)	Fusarium Head Blight incidence (%)	BYDV susceptibility (0-9)	Leaf Scald severity (%)	Leaf Rust susceptibility (0-9)	Leaf Scald reaction (0-9)	Net blotch (net form) reaction (0-9)	Powdery Mildew susceptibility (0-9)
CHARLES	86.9	73.7	118.6	76.2	4.1	28.3	39.2	11.0	87.2	1.38	13.0	58.3	4.1	73.3	7.0	2.0	0.5	0.5
MCGREGOR	88.0	107.6	120.0	85.7	2.1	3.3	43.3	10.8	87.9	4.16	17.6	59.4	0.0	0.0	1.4	1.3	1.4	1.8
THOROUGHBRED	87.5	102.7	113.5	85.3	2.7	5.0	44.8	10.7	87.0	2.45	18.6	70.4	0.3	10.0	4.6	1.0	3.3	1.3
ENDEAVOR	83.5	86.5	118.6	83.1	2.5	5.0	45.0	10.8	84.9	0.95	13.0	58.8	3.6	43.3	2.2	3.0	1.2	0.5
WINTMALT	88.0	97.5	124.0	82.2	2.3	5.0	45.3	10.7	90.5	1.59	14.6	66.5	2.0	45.0	2.1	1.7	1.3	1.0
LCS_VIOLETTA	88.1	103.2	118.3	84.3	2.7	10.0	46.3	11.6	91.6	1.32	12.9	60.8	1.0	0.0	0.8	0.7	2.5	0.0
LCS_CALYPSO	89.1	107.6	121.3	88.8	2.4	6.7	46.5	10.9	90.3	0.65	11.0	43.1	1.4	3.3	0.6	0.7	1.9	0.0
LCS_PUFFIN	83.9	90.2	122.1	83.5	1.7	5.0	46.4	11.4	91.5	0.88	13.0	56.3	4.7	1.7	2.0	1.7	2.0	0.8
LGBB13-W102	87.2	105.2	120.9	81.5	3.1	13.3	44.0	10.0	89.6	5.73	23.5	83.5	2.2	0.0	0.3	1.0	1.8	0.3
05ARS561-208	86.1	73.0	126.2	72.6	2.9	6.7	39.6	10.0	78.7	2.30	11.5	58.1	5.5	63.3	6.5	3.7	0.5	3.8
06ARS633-3	85.5	74.0	119.9	75.1	2.5	43.3	39.9	10.4	77.6	1.13	11.9	63.1	4.9	86.7	5.2	4.3	0.8	3.3
06ARS617-25	88.6	86.9	117.3	77.9	3.2	26.7	43.2	10.5	81.7	1.71	16.7	58.3	3.9	83.3	1.3	2.3	1.8	0.8
07ARS515-7	85.8	83.8	120.1	79.7	3.1	36.7	44.4	10.7	81.9	0.89	12.3	49.6	4.1	71.7	4.0	1.0	0.8	0.8
DH130004	78.0	71.7	118.1	69.7	2.1	0.0	44.4	12.8	90.1	2.41	10.0	59.2	5.1	0.0	7.0	1.0	2.7	3.7
DH130939	85.5	97.8	116.0	79.4	2.8	15.0	47.2	11.7	91.8	0.40	9.5	41.7	2.0	8.3	3.2	2.7	2.0	0.3
DH130718	68.2	71.2	116.9	67.1	2.4	0.0	44.7	11.4	88.1	1.19	13.1	60.6	5.7	0.0	5.9	0.3	1.3	2.9
LIGHTNING	87.6	99.0	122.0	86.3	3.1	1.7	45.8	11.3	91.3	1.06	8.5	49.8	0.7	0.0	1.2	2.3	1.0	0.0
MW12_4028-007	87.7	80.1	111.1	74.6	4.5	83.3	42.5	10.8	79.0	2.55	19.0	64.0	1.0	3.3	5.3	0.0	1.5	3.4
MN-EQUINOX	86.7	81.0	115.0	90.3	3.2	21.7	42.9	10.9	87.4	1.44	12.9	65.4	4.9	3.3	6.4	0.0	2.3	4.1
MW13_4159-012	88.1	90.5	117.4	90.5	3.6	11.7	42.0	10.5	79.8	4.06	13.6	68.8	3.9	3.3	5.8	0.3	2.0	4.1
MW13_4107-010	89.5	75.2	115.0	88.0	3.1	33.3	41.9	11.0	83.6	1.82	12.6	56.5	4.9	0.0	5.9	2.3	2.2	3.0
2WI14-7462	82.6	69.8	115.3	77.4	2.7	16.7	40.9	11.2	85.0	2.72	11.9	55.4	4.8	81.7	4.1	4.0	1.8	0.0
2WI14-7465	83.5	71.8	116.2	77.1	3.8	23.3	42.0	11.0	83.3	1.38	16.7	60.0	3.8	58.3	1.7	1.0	0.7	0.3
2WI14-7577	78.9	74.7	113.6	79.5	3.3	36.7	43.0	11.6	86.6	2.04	18.5	59.6	5.6	75.0	5.1	2.7	1.5	4.3
2WI14-7581	79.4	75.7	113.4	76.9	2.1	30.0	43.9	11.2	88.4	0.96	17.6	76.7	4.1	80.0	5.7	5.0	0.8	3.7
FLAVIA	86.7	102.8	121.8	77.9	1.7	5.0	45.5	10.7	91.8	1.66	14.1	59.8	3.6	60.0	1.5	2.3	2.5	0.4
SU_MATEO	86.3	100.5	122.4	89.3	2.4	1.7	45.8	10.5	89.0	0.42	9.5	42.9	2.0	1.7	2.0	0.3	1.8	0.4
LYBERAC	80.3	95.0	123.0	80.4	2.2	8.3	45.2	10.4	90.9	1.02	12.8	67.9	2.5	26.7	2.1	0.3	1.1	1.3
MISSION	82.2	91.5	123.6	81.8	2.8	1.7	44.2	10.9	87.9	1.12	11.7	64.4	2.5	15.0	0.7	0.3	1.5	0.3
HIRONDELLA	80.6	107.0	122.0	85.3	3.2	5.0	44.8	10.5	88.7	3.37	18.6	74.2	0.0	0.0	0.5	1.7	1.1	0.0
GRAND MEAN	84.7	88.2	118.8	80.9	2.8	16.3	43.8	10.9	86.8	1.82	14.0	60.4	3.2	29.9	3.4	1.7	1.6	1.6
# of Env.	16	19	16	16	10	1	16	5	5	2	2	2	3	1	4	1	2	4

Table 7. Malt quality[a] trait line means for 2016-2017 Winter Malting Barley Trial (WMBT) entries at two 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	93.1	81.0	11.2	5.3	50.2	103.0	105.5	97.5	238.9	47.0	3.8	1.5
MCGREGOR	34.5	93.5	78.9	10.6	4.1	40.6	58.6	54.1	467.8	132.6	34.0	2.0	1.0
THOROUGHBRED	33.2	93.1	78.4	11.3	4.1	39.2	106.8	52.4	562.0	132.1	40.5	1.7	2.0
ENDEAVOR	35.9	88.3	81.3	10.6	5.1	50.2	128.6	102.4	169.8	212.0	49.0	3.1	1.5
WINTMALT	41.3	96.7	81.6	10.1	4.2	45.1	113.5	65.1	71.3	151.0	52.0	1.9	1.0
LCS_VIOLETTA	42.0	96.9	81.0	11.4	4.7	42.9	161.0	61.0	130.5	177.4	40.5	1.8	1.0
LCS_CALYPSO	45.9	97.5	82.3	10.7	4.2	40.3	142.2	51.7	112.1	159.3	48.0	1.8	1.0
LCS_PUFFIN	39.1	95.4	80.2	11.7	4.6	41.4	100.8	51.3	299.4	170.3	39.0	1.9	1.0
LGBB13-W102	33.7	91.7	79.7	10.1	4.0	43.7	127.7	50.5	205.9	133.7	57.5	2.0	1.5
05ARS561-208	29.9	76.5	81.2	10.6	4.7	48.1	100.7	107.2	147.0	200.4	50.0	2.7	1.0
06ARS633-3	29.3	79.8	79.6	11.3	5.1	48.9	96.7	114.3	137.7	225.6	50.0	3.7	1.0
06ARS617-25	30.9	83.5	81.8	10.9	5.3	52.6	151.3	109.5	65.9	236.9	47.0	3.0	1.0
07ARS515-7	30.7	85.1	82.3	10.8	5.1	50.1	110.0	112.6	77.6	231.5	49.5	3.3	1.5
DH130004	42.8	97.1	81.7	13.8	5.9	44.5	194.0	89.0	55.3	268.3	27.5	3.3	1.5
DH130939	43.5	97.3	81.7	12.7	5.6	46.7	117.4	88.5	101.6	264.1	39.0	4.0	1.0
DH130718	40.8	96.9	80.8	12.9	5.7	47.4	161.1	102.1	48.4	262.5	34.0	3.2	1.0
LIGHTNING	47.5	98.5	81.3	10.9	4.5	44.9	143.8	49.1	94.5	172.9	52.5	1.8	1.0
MW12_4028-007	28.3	79.3	80.1	11.5	4.7	44.9	128.0	70.1	389.6	204.4	41.0	2.0	1.0
MN-EQUINOX	30.7	85.0	79.8	11.2	4.8	45.9	119.4	77.1	258.4	205.8	47.5	2.3	1.5
MW13_4159-012	29.1	77.8	79.9	10.4	4.3	45.0	82.5	70.6	212.8	190.4	52.5	2.0	1.0
MW13_4107-010	29.3	84.8	80.5	11.7	5.0	47.7	126.1	79.6	299.3	224.8	47.0	2.5	1.0
2WI14-7462	32.4	87.9	82.8	11.7	5.2	49.1	126.3	105.1	157.8	231.4	49.5	3.2	1.0
2WI14-7465	33.2	86.2	82.5	11.8	5.6	50.5	116.5	103.1	137.7	259.5	45.0	4.3	1.5
2WI14-7577	41.2	96.4	81.9	12.5	5.5	47.3	129.4	99.4	69.3	258.4	48.0	3.1	1.5
2WI14-7581	41.0	97.3	82.1	11.8	5.4	48.4	118.6	96.0	54.9	255.8	48.5	3.0	1.5
FLAVIA	41.6	96.8	81.8	10.8	4.2	42.7	114.7	52.1	62.5	146.8	42.5	1.9	1.0
SU_MATEO	42.9	97.5	81.2	10.3	4.2	43.5	121.1	49.6	204.5	138.3	49.0	.	3.0
LYBERAC	42.1	96.4	82.6	10.2	4.1	44.8	123.3	59.7	92.7	157.8	52.0	1.7	1.0
MISSION	43.2	95.7	81.8	10.7	4.1	40.7	130.5	58.7	68.0	157.8	49.5	1.8	1.5
HIRONDELLA	37.2	95.3	80.0	10.3	4.0	41.9	118.4	53.1	271.9	140.0	53.0	1.9	1.0
GRAND MEAN	36.9	91.2	81.1	11.2	4.8	45.6	122.4	78.0	170.8	198.0	46.1	2.6	1.3

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

Table 8. Line entry details available for submissions to the 2016-2017 Winter Malting Barley Trial (WMBT).

Entry	Line	Row type	Submitter
1	CHARLES	2	
2	MCGREGOR	6	
3	THOROUGHBRED	6	
4	ENDEAVOR	2	
5	WINTMALT	2	
6	LCS_VIOLETTA	2	Limagrain
7	LCS_CALYPSO	2	Limagrain
8	LCS_PUFFIN	2	Limagrain
9	LGBB13-W102	6	Limagrain
10	05ARS561-208	2	USDA-ARS Aberdeen
11	06ARS633-3	2	USDA-ARS Aberdeen
12	06ARS617-25	2	USDA-ARS Aberdeen
13	07ARS515-7	2	USDA-ARS Aberdeen
14	DH130004	2	Oregon State U
15	DH130939	2	Oregon State U
16	DH130718	2	Oregon State U
17	LIGHTNING	2	Oregon State U
18	MW12_4028-007	6	U of Minnesota
19	MN-EQUINOX	6	U of Minnesota
20	MW13_4159-012	6	U of Minnesota
21	MW13_4107-010	6	U of Minnesota
22	2WI14-7462	2	BARI
23	2WI14-7465	2	BARI
24	2WI14-7577	2	BARI
25	2WI14-7581	2	BARI
26	FLAVIA	2	Ackermann Saatzucht GmbH
27	SU_MATEO	2	Ackermann Saatzucht GmbH
28	LYBERAC	2	Ackermann Saatzucht GmbH
29	MISSION	2	Ackermann Saatzucht GmbH
30	HIRONDELLA	6	Ackermann Saatzucht GmbH