

UK Heritage Malting Barley Results – 2016
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The John Innes Centre in Norwich, UK partners with eastern US research programs to analyze heritage varieties, and evaluate a wide genetic diversity pool to identify novel traits for crop improvement – specifically resistance to *Fusarium* head blight. UPREC researchers have an ongoing relationship with this research team, which supports the trials and international knowledge transfer. In 2016, thirty-one varieties were planted for purposes of increasing seed stock. Harvested seed was cleaned in an A.T. Ferrell Eclipse fanning mill and the seed was processed through a Dickey-John GAC 2500 for test weight and grain moisture percentage. Yield was corrected for 13% moisture, and test weight was recorded in pounds per bushel. Seed was analyzed for grain quality at the MSU malting barley quality lab and submitted for malt analysis to the USDA ARS Cereal Crops Research laboratory. Agronomic details for the plots are outlined in Table 1. Weather information is reported in Table 2.

Table 1. Plot information for each trial location

Chatham (UPREC)	
Soil Type	Eben Very cobbly sandy loam
Previous Crop	Soybeans
Planting Date	5-3-2016
Fertility applied	108 lbs/ac of 46-0-0
Herbicide applied	13.5 ozs/ac Huskie
Fungicide applied	8.2 ozs/ac Prosaro
Insecticide applied	NA
Harvest date	8-17-2016

Table 2. Weather data from each trial location

Chatham		
	Precip. (in.)	GDD ¹
May	3.09	248.2
June	2.91	608.4
July	2.08	1151.1
Total	8.08	
Average	7.99²	1093³

¹ GDD (Base level 50°) since 1/1/16

² 6-year rainfall summary from May 1 – July 31

³ 6-year GDD average from January 1 – July 31

Table 3. Agronomic and grain quality information for UK Heritage Varieties at Chatham, MI

Variety	Type	Heading Date	% Moisture	Test weight	Yield (Bu/ac)	DON	Protein	RVA	% Plump
Ankara Tobak	2	7/18/2016	14.58	47.7	55.1	0.0	12.71	141	93.4
Arabische	2	7/20/2016	14.75	48.9	58.8	0.0	12.98	21	86.9
Bavaria	2	7/13/2016	14.35	48.7	49.4	0.0	14.29	60	95.3
Beavans Archer	2	7/22/2016	14.27	44.3	45.6	0.0	13.23	41	91.5
Bere	2	7/13/2016	15.09	41.5	38.4	0.0	11.56	119	79.6
Burtons Malting	2	7/22/2016	14.05	42.8	31.8	0.0	12.79	11	88.6
Chevallier 1	2	7/20/2016	14.37	48.9	57.5	0.0	12.76	88	86.1
Chevallier Chile	2	7/13/2016	14.52	49.3	49.6	0.0	14	123	89.7
Chevallier French	2	7/22/2016	14.31	47.1	41.0	0.0	13.1	75	67.8
Djugay	2	7/18/2016	14.4	44.9	41.0	0.0	15.39	67	71.7
Domen	2	7/13/2016	14.55	48.6	55.2	0.0	14.42	108	88.6
Ducksbill	2	7/20/2016	15.18	41.3	38.6	0.0	13.67	110	92.7
Golden Promise	2	7/22/2016	14.16	46.1	60.3	0.0	13.63	6	87.1
Goldthorpe	2	7/18/2016	14.54	47.7	53.4	0.0	13.42	21	88.8
Gotlands	2	7/22/2016	14.17	47.1	48.1	0.0	13.95	62	78.7
Guls	2	7/11/2016	14.73	48.7	47.4	0.0	13.9	53	92.8
Hansen 181	2	7/20/2016	14.65	45.6	45.8	0.0	14.41	38	87.2
Kherson	2	7/5/2016	14.07	56.3	36.3	0.0	16.8	6	85
Kitchin	2	7/11/2016	14.98	44.6	41.7	0.0	15.7	5	94.5
Long Eared Nottingham	2	7/22/2016	13.4	48	54.4	0.0	13.7	88	90.8
Mestny	2	7/13/2016	-- ¹	41.2	36.7	0.0	-- ¹	156	95.1
Moravian Barley	2	7/13/2016	14.1	47.6	47.8	0.0	13.14	55	91.4
Nikaku Chevallier	2	7/13/2016	14.39	49.6	56.1	0.0	14.09	61	93.3
Nurnberg	2	7/13/2016	14.05	47.9	59.0	0.0	14.61	41	94
Nutans Moskva	2	7/13/2016	14.39	48.1	54.7	0.0	14.03	72	92.7
Odessa	2	7/13/2016	13.98	43.7	55.6	0.0	13.22	8	78.8
Old Wiltshire	2	7/22/2016	14.5	48.4	44.4	0.0	13.34	113	86
Prior	2	7/1/2016	14.56	47.7	38.6	0.0	14.09	111	95.6
Scotch Common	2	7/13/2016	13.98	43.8	22.4	0.0	12.46	3	92.7
Spratt	2	7/22/2016	14.71	46.9	35.0	0.0	14.04	15	88.7
Swanneck	2	7/11/2016	14.41	47.9	46.8	0.0	14.05	79	85

¹Missing data – NIR could not read due to barley color

Table 6. Malt analysis information for UK Heritage Varieties at Chatham, MI

Variety	Type	Kernel Weight	On 6/64"	Barley Color (Agtron)	Malt Extract (%)	Wort Color	Wort Clarity	Barley Protein (%)	Wort Protein	S/T (%)	DP (°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	FAN (ppm)
Ankara Tobak	2	40.2	91.9	26	78.0	2.1	1	13.2	4.92	38.1	74	50.7	544	145
Arabische	2	33.8	89.5	20	77.4	ND	3	13.3	4.79	38.1	35	53.1	723	158
Bavaria	2	38.5	96.7	16	77.2	ND	3	15.0	5.65	37.7	92	39.3	434	182
Beavans Archer	2	34.5	90.4	16	76.7	3.2	1	14.6	5.09	36.5	65	58.1	579	204
Bere	2	32.3	81.2	24	73.8	ND	3	13.3	4.98	40.0	110	55.6	459	164
Burtons Malting	2	30.4	87.7	26	75.7	5.0	2	14.4	6.06	43.6	56	69.6	397	271
Chevallier 1	2	36.0	88.6	25	77.7	2.4	1	13.5	4.83	37.2	65	49.0	684	165
Chevallier Chile	2	35.5	91.8	18	75.6	2.7	2	15.2	4.64	32.1	97	38.4	647	150
Chevallier French	2	27.6	78.0	24	78.4	3.7	2	14.1	5.20	39.2	63	61.2	468	212
Djugay	2	30.5	70.6	14	73.2	ND	3	17.4	4.74	28.8	63	39.6	658	158
Domen	2	32.6	89.7	20	76.8	ND	3	15.6	4.85	32.2	86	47.0	517	174
Ducksbill	2	33.5	91.8	21	75.5	ND	3	16.6	6.84	42.5	64	47.9	409	277
Golden Promise	2	34.7	90.9	18	76.8	ND	3	14.7	5.55	39.8	64	39.9	391	208
Goldthorpe	2	33.6	89.6	17	77.1	ND	3	14.2	4.96	35.4	78	49.0	626	175
Gotlands	2	31.2	81.5	26	76.6	ND	3	15.6	5.17	34.7	64	44.1	481	191
Guls	2	33.0	94.3	12	76.4	ND	3	14.7	5.03	35.7	54	42.0	592	178
Hansen 181	2	33.9	89.8	25	74.6	ND	3	15.3	5.59	36.9	73	49.1	628	219
Kherson	2	43.4	90.7	2	77.7	ND	3	18.1	5.99	34.0	43	39.1	731	210
Kitchin	2	40.2	94.0	21	74.4	ND	3	17.9	7.84	44.6	34	49.9	537	264
Long Eared Nottingham	2	33.8	94.0	24	76.4	ND	3	14.2	4.79	34.1	82	53.3	561	166
Mestny	2	32.2	95.2	0	*70.8	ND	3	15.3	4.35	29.4	32	29.4	691	155
Moravian Barley	2	35.7	93.0	18	78.1	ND	3	14.6	5.16	36.7	61	48.3	523	189
Nikaku Chevallier	2	36.7	95.1	15	76.3	ND	3	15.2	5.00	34.0	69	42.3	565	159
Nurnberg	2	35.5	92.7	14	75.8	ND	3	16.6	5.42	34.5	96	42.0	549	177
Nutans Moskva	2	33.0	90.1	23	77.2	ND	3	14.8	4.91	34.3	57	55.1	674	175
Odessa	2	31.4	81.6	19	77.3	ND	3	14.5	5.82	42.2	69	53.7	401	231
Old Wiltshire	2	34.3	90.5	27	77.7	3.1	2	14.8	4.85	34.1	82	52.7	482	189
Prior	2	39.5	96.4	2	73.7	2.8	2	17.7	5.66	33.3	59	47.4	536	224
Scotch Common	2	34.8	92.5	8	78.3	ND	3	14.1	7.26	52.8	44	45.7	164	306
Spratt	2	28.8	87.2	15	75.6	ND	3	15.1	5.66	39.4	63	59.0	449	237
Swanneck	2	28.5	86.4	23	75.3	ND	3	15.8	4.74	31.8	75	36.2	467	160

¹ ND – Wort Colors were not determined on hazy samples

* Outliers