

BARLEY (*Hordeum vulgare*)

Fusarium head blight; *Fusarium graminearum*

Leaf rust; *Puccinia hordei*

Powdery mildew; *Blumeria graminis* f. sp. *hordei*

Spot blotch; *Bipolaris sorokiniana*

Scald; *Rhynchosporium secalis*

A.F. Blachez and G.C. Bergstrom, Plant Pathology and Plant-Microbe Biology Section, D. Benscher and M.E. Sorrells, Plant Breeding and Genetics Section, Cornell University, Ithaca, NY 14853

**Evaluation of foliar diseases and Fusarium head blight on spring malting barley varieties in New York, 2015.**

Spring malting barley variety trials were conducted at four locations: Ketola and Snyder farms in Ithaca, Tompkins County, NY; Batavia, Genesee County, NY; and Wayland, Steuben County, NY. These locations will be referred to as Ketola, Snyder, Genesee, and Steuben, respectively. Most of the barley varieties planted consisted of either 2- or 6-row malting barley, except for the 6-row feed varieties, 'Bastille' and 'Harmony'. Each trial was conducted in a randomized complete block design with three replicates. Plots were 13 ft long and 6 rows wide with 7-in. row spacing. The seeding rate was 96 lb/A for all trials. Trials were planted 28 Apr at Snyder, 29 Apr at Steuben, 5 May at Ketola, and 11 May at Genesee. Fields were prepared with a 300 lb/A pre-plant application of 10:20:20 (delivering 30 lb/A of nitrogen). No fungicides or insecticides were applied over the course of the trials. Broadleaf herbicide (Maestro 2EC and Harmony Extra SG, with Induce) was applied in early May. No artificial inoculations were performed. Foliar disease severities were estimated across the plot as percentage of symptoms on the top two leaves. Fusarium head blight (FHB) incidence was estimated by counting the number of symptomatic heads out of a representative 25. Foliar diseases were evaluated on 3 Jul at Snyder and 7 Jul at Ketola. FHB incidence was estimated on 8 Jul at Snyder and 15 Jul at Ketola. Foliar diseases and FHB were evaluated on 17 Jul at Genesee and Steuben. Disease incidence and severity means were analyzed with analysis of variance and separated by Tukey's HSD test ( $P=0.05$ ).

Very little differentiation in FHB incidence was observed between varieties, suggesting that all varieties are susceptible under favorable conditions. The greatest differentiation between varieties was observed in powdery mildew severity. 'Lacey' was consistently observed to have greater levels of powdery mildew. 'M152' and 'Quest' also had greater levels of powdery mildew than most other varieties at two of the locations. Notably, 6-row barleys had the greatest severity ratings for powdery mildew, while 2-row barleys were largely unaffected by the disease. No single variety had consistently greater spot blotch ratings at all locations, but 'Scarlet' had a greater disease severity than most other varieties at Snyder, and 'KWS' Tinka had a similar result at Genesee. For scald, 'M152' was observed to have a significantly greater severity than most other varieties at Snyder. In addition, leaf rust was present at low levels at every location, but there was no difference in severity observed between varieties. It may be difficult to identify spring malting barley varieties that will provide resistance to FHB and foliar diseases, other than powdery mildew, in New York environments.

Entry	Rows	FHB incidence (%)						Powdery mildew (%)						Spot blotch (%)				Scald (%)					
		Ketola <sup>x</sup>		Snyder		Genesee		Ketola		Snyder		Steuben		Snyder		Genesee		Steuben		Snyder		Genesee	
2ND28065	2	22	abc	0.67	b	22.66	abc	0.67	c	0.17	bc	18	bc	0.33	b	1	b	1.67	ab	0.83	b	0	b
AAC Synergy	2	1.33	c	0.33	b	18	abc	0.33	c	0	c	0.83	c	0.17	b	0.5	b	1	ab	0.33	b	0	b
Cerveza	2	2.67	bc	0.67	b	34	abc	0	c	0	c	0.83	c	0.33	b	1	b	0.83	b	0	b	0	b
Conlon	2	44	abc	9.33	ab	5.33	c	0	c	0	c	0.5	c	4.67	ab	1.67	ab	1	ab	0.67	b	0	b
Craft	2	27.34	abc	0.33	b	48.66	abc	0.5	c	0	c	2.33	c	0.17	b	3	ab	1.67	ab	2.33	ab	0	b
Herta	2	12	abc	3	ab	34.66	abc	0	c	0	c	0.17	c	1.5	ab	3.67	ab	1.67	ab	0.5	b	0	b
KWS 13/207	2	46	a	1.67	b	44.66	abc	0	c	0	c	0	c	0.83	b	1.67	ab	3.67	ab	0.33	b	0	b
KWS 13/3353	2	40.66	abc	13.33	ab	34.66	abc	0	c	0	c	0.5	c	6.67	ab	2.33	ab	3.67	ab	2.33	ab	0	b
KWS Amadora	2	19.33	abc	8	ab	45.34	abc	0	c	0	c	0.33	c	4	ab	0.83	b	1	ab	0.83	b	0	b
KWS Tinka	2	26.66	abc	1	b	52.66	ab	0	c	0	c	0	c	0.5	b	4.33	a	1.67	ab	0.83	b	0	b
ND Genesis	2	43.34	abc	0.33	b	56	ab	0	c	0	c	1	c	0.17	b	2.33	ab	1	ab	1.67	ab	0	b
Newdale	2	12	abc	0	b	19.33	abc	0.17	c	0	c	1.67	c	0	b	1	b	1	ab	0.33	b	0	b
Pinnacle	2	24.66	abc	4	ab	56.66	ab	0.17	c	0	c	3.67	c	2	ab	2.33	ab	9.33	a	0.83	b	0	b
Scarlett	2	12.67	abc	25	a	20	abc	0.17	c	0	c	0	c	12.5	a	1.67	ab	4	ab	0.33	b	0.67	a
Bastille	6	24.66	abc	0.67	b	44.66	abc	0	c	0	c	1.33	c	0.33	b	1	b	0.83	b	0.67	b	0	b
Harmony	6	44.66	ab	0	b	56.66	ab	0.17	c	0	c	1.67	c	0	b	0.83	b	0.83	b	1	b	0	b
Lacey	6	16	abc	0	b	48.66	abc	15	a	0.67	a	46.67	ab	0	b	1	b	2.33	ab	2.17	ab	0	b
M152	6	43.34	abc	0	b	21.34	abc	12.33	ab	0.17	bc	58.33	a	0	b	0.67	b	3.67	ab	5.33	a	0	b
M159	6	16	abc	0	b	15.33	bc	5	bc	0.5	ab	18.33	bc	0	b	0.5	b	2.33	ab	1	b	0	b
ND26891	6	42.66	abc	1	b	62.66	a	3	c	0.5	ab	12.67	c	0.5	b	0.67	b	4.67	ab	1.5	ab	0	b
Oceanik	6	21.34	abc	0.33	b	38.66	abc	0.17	c	0	c	2.17	c	0.17	b	0.67	b	4.33	ab	0.67	b	0.17	b
Quest	6	16	abc	1	b	22.66	abc	2.33	c	0.5	ab	63.33	a	0.5	b	1.5	ab	2.33	ab	0.83	b	0	b
Rasmusson	6	31.34	abc	0.67	b	32	abc	7.33	abc	0.5	ab	20	bc	0.33	b	0.83	b	4.33	ab	2.33	ab	0	b
HSD ( <i>P</i> =0.05)		43.18		22.92		45.99		7.89		0.46		33.81		11.46		3.28		8.37		3.85		0.27	

<sup>x</sup> Column numbers followed by the same letter are not significantly different at *P*=0.05 as determined by Tukey's HSD.