

BARLEY (*Hordeum vulgare*)
Spot blotch; *Bipolaris sorokiniana*
Leaf rust; *Puccinia hordei*
Powdery mildew; *Blumeria graminis* f. sp. *hordei*

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Evaluation of foliar diseases on spring barley varieties in New York, 2017.

Spring malting barley variety trials were conducted at four locations in central and western New York. One trial was planted in Genesee County, another was planted in Steuben County, and two were planted in Tompkins County (Helfer and Ketola). Each trial was conducted in a complete randomized block design with three replicates. The fields were prepared with an application of 120 lb/A 27:18:9 fertilizer (delivering 32 lb/A of nitrogen). Plots were 13-ft long and six rows wide with 7-in. row spacing. Seed was planted at 96 lb/A on 24 Apr at Ketola, 27 Apr in Steuben County, 28 Apr at Helfer, and 11 May in Genesee County. No fungicides were applied, and no artificial inoculations were performed. The severities of the foliar diseases were estimated as the percent of the top two leaves showing symptoms of disease averaged across the plot. Diseases were rated on 14 Jul at Helfer, on 15 Jul at Ketola, and on 16 Jul in Genesee and Steuben Counties. The barley was at the hard dough growth stage for all disease ratings. All disease severities were square root-transformed except for the ratings of leaf rust at Ketola. The mean values were analyzed with analysis of variance and separated by Tukey's HSD test ($P=0.05$).

There were reportable levels of spot blotch at all four locations. 'Odyssey', a 6-row malting variety, had the highest severity at Helfer and Steuben County, but had below 5% spot blotch severity at Ketola and Genesee County. At Ketola, 'KWS 15/3716' had the highest level of spot blotch with 52.5% severity, and in Genesee County, '07AB-59' had the highest severity at 11.7%. Both of these lines had mid- to high-severity at the other locations. The Helfer location had high levels of spot blotch, with most varieties reaching greater than 10% severity. A few varieties, especially 6-rows, had no or very low levels of spot blotch at that location. The 6-row varieties, 'Quest' (malting), 'Bastile' (feed), and 'AAC Azimuth' (food) had no spot blotch at any location. The 2-row variety 'AAC Synergy' (malting) had only 3.7% severity spot blotch at Helfer and was not observed at the other trial locations. Leaf rust was consistently highest on the 6-row feed barley varieties, 'Bastile' and 'Harmony'. Most varieties had moderate severities of leaf rust (20-40%) at Ketola. The 2-row varieties 'KWS 15/2650' and 'KWS 15/3716' consistently had the lowest leaf rust severities. Powdery mildew was also reported at all four locations. The 6-row varieties 'Quest' and 'M160' had the highest powdery mildew severities, both reaching more than 80% in Steuben County. 'Craft' was the only 2-row variety with powdery mildew severity over 50%, reaching 55% in Ketola. These data indicate that the tested varieties have a range of susceptibility to the diseases observed on spring barley in 2017.

| Variety | Rows* | Spot Blotch (%) | | | | | | Leaf Rust (%) | | | | | | Powdery Mildew (%) | | | | | | | | | |
|----------------|-------|-----------------|-----|--------|---|---------|---|---------------|-----|--------|----|--------|----|--------------------|-----|--------|--------|---------|---------|-------|----|--------|-----|
| | | Helfer** | | Ketola | | Genesee | | Steuben | | Helfer | | Ketola | | Steuben | | Helfer | Ketola | Genesee | Steuben | | | | |
| 07AB-59 | 2 | 71.7 | a-e | 0.0 | b | 11.7 | a | 18.3 | ab | 0.7 | bc | 25.0 | ab | 0.7 | abc | 0.0 | f | 0.0 | c | 0.0 | b | 0.0 | e |
| 08MT-03 | 2 | 35.0 | a-g | 0.0 | b | 0.0 | b | 2.0 | bcd | 0.7 | bc | 35.0 | ab | 0.2 | bc | 2.0 | ef | 30.0 | abc | 0.0 | b | 23.7 | b-e |
| 08WA-32 | 2 | 46.7 | a-g | 0.0 | b | 0.0 | b | 1.7 | bcd | 1.7 | bc | 10.0 | b | 0.0 | c | 0.0 | f | 2.5 | bc | 6.7 | ab | 1.7 | de |
| 09N2-21 | 2 | 21.7 | c-h | 0.0 | b | 1.7 | b | 3.3 | bcd | 1.8 | bc | 25.0 | ab | 0.2 | bc | 0.3 | ef | 7.5 | abc | 3.3 | ab | 5.0 | de |
| 09N2-31 | 2 | 21.7 | c-h | 0.0 | b | 0.0 | b | 3.3 | bcd | 0.3 | bc | 15.0 | b | 0.3 | abc | 8.3 | b-f | 7.5 | abc | 0.2 | ab | 25.0 | a-e |
| 09N2-58 | 2 | 8.3 | fgh | 0.0 | b | 0.3 | b | 0.0 | d | 0.2 | bc | 40.0 | ab | 0.3 | abc | 3.3 | ef | 17.5 | abc | 0.3 | ab | 10.0 | cde |
| 09N2-65 | 2 | 50.0 | a-f | 0.0 | b | 0.2 | b | 3.3 | bcd | 0.2 | bc | 22.5 | ab | 0.2 | bc | 3.3 | ef | 25.0 | abc | 0.3 | ab | 23.3 | a-e |
| 09N2-66 | 2 | 3.7 | fgh | 0.0 | b | 0.0 | b | 0.3 | cd | 1.0 | bc | 20.0 | ab | 1.0 | abc | 0.3 | ef | 15.0 | abc | 0.3 | ab | 0.5 | de |
| 09N2-67 | 2 | 5.0 | fgh | 0.0 | b | 0.0 | b | 0.3 | cd | 0.5 | bc | 27.5 | ab | 0.8 | abc | 8.8 | c-f | 12.5 | abc | 0.5 | ab | 1.8 | de |
| 09N2-68 | 2 | 11.7 | e-h | 0.0 | b | 0.0 | b | 0.0 | d | 3.3 | bc | 15.0 | b | 0.8 | abc | 2.0 | ef | 35.0 | abc | 0.0 | b | 8.5 | cde |
| 09N2-96 | 2 | 16.7 | d-h | 0.0 | b | 0.0 | b | 0.2 | d | 0.2 | bc | 12.5 | b | 0.3 | abc | 3.3 | ef | 7.5 | abc | 0.0 | b | 3.5 | de |
| 2MS14_3305-002 | 2 | 6.7 | gh | 0.0 | b | 0.0 | b | 0.2 | d | 5.3 | bc | 20.0 | ab | 0.8 | abc | 13.3 | b-e | 45.0 | abc | 1.7 | ab | 30.0 | a-e |
| 2MS14_3317-015 | 2 | 33.3 | a-g | 0.0 | b | 0.2 | b | 0.5 | cd | 0.2 | bc | 30.0 | ab | 2.0 | abc | 0.0 | f | 5.0 | bc | 0.0 | b | 0.0 | e |
| 2MS14_3336-002 | 2 | 28.3 | a-h | 0.0 | b | 0.0 | b | 3.5 | bcd | 2.3 | bc | 40.0 | ab | 1.5 | abc | 0.0 | f | 0.0 | c | 0.0 | b | 0.0 | e |
| 2MS14_3336-018 | 2 | 10.0 | e-h | 0.0 | b | 0.0 | b | 0.2 | d | 3.7 | bc | 40.0 | ab | 0.8 | abc | 8.3 | c-f | 15.0 | abc | 0.2 | ab | 23.3 | a-e |
| 2MS14_3342-026 | 2 | 43.3 | a-h | 0.0 | b | 0.0 | b | 3.7 | bcd | 6.7 | bc | 20.0 | ab | 2.0 | abc | 6.7 | def | 12.5 | abc | 0.0 | b | 11.7 | cde |
| AAC Synergy | 2 | 3.7 | fgh | 0.0 | b | 0.0 | b | 0.0 | d | 0.5 | bc | 35.0 | ab | 0.0 | c | 0.5 | ef | 12.5 | abc | 0.0 | b | 6.8 | de |
| CDC Clear | 2 | 12.0 | e-h | 2.5 | b | 0.0 | b | 0.5 | cd | 1.7 | bc | 35.0 | ab | 3.5 | ab | 0.0 | f | 0.0 | c | 0.0 | b | 0.0 | e |
| Cerveza | 2 | 15.0 | d-h | 0.0 | b | 0.0 | b | 0.3 | d | 0.2 | bc | 20.0 | ab | 0.0 | c | 0.0 | f | 10.0 | abc | 0.0 | b | 6.8 | de |
| Conlon | 2 | 23.3 | b-h | 0.0 | b | 0.2 | b | 1.7 | bcd | 0.3 | bc | 45.0 | ab | 2.3 | abc | 0.0 | f | 0.0 | c | 0.0 | b | 1.7 | de |
| Craft | 2 | 5.0 | fgh | 0.0 | b | 0.0 | b | 0.0 | d | 6.7 | bc | 17.5 | b | 1.2 | abc | 26.7 | a-d | 55.0 | ab | 1.7 | ab | 46.7 | a-d |
| KWS 15/2650 | 2 | 98.3 | ab | 5.0 | b | 0.2 | b | 5.3 | bcd | 0.0 | c | 2.0 | b | 0.2 | bc | 0.0 | f | 0.0 | c | 0.0 | b | 0.2 | de |
| KWS 15/3716 | 2 | 93.3 | abc | 52.5 | a | 1.7 | b | 11.7 | a-d | 0.0 | c | 3.0 | b | 0.2 | bc | 0.0 | f | 0.0 | c | 0.0 | b | 0.0 | e |
| KWS Tinka | 2 | 80.0 | a-d | 0.5 | b | 0.0 | b | 3.7 | bcd | 0.0 | c | 12.5 | b | 0.2 | bc | 0.0 | f | 2.5 | bc | 1.7 | ab | 0.0 | e |
| ND Genesis | 2 | 33.3 | a-g | 2.5 | b | 0.2 | b | 3.7 | bcd | 0.5 | bc | 7.5 | b | 0.2 | bc | 1.7 | ef | 15.0 | abc | 0.0 | b | 0.0 | e |
| Newdale | 2 | 18.3 | d-h | 0.0 | b | 0.2 | b | 0.0 | d | 0.3 | bc | 25.0 | ab | 0.0 | c | 0.0 | f | 10.0 | abc | 0.0 | b | 2.2 | de |
| Odyssey | 2 | 100.0 | a | 2.5 | b | 1.7 | b | 33.3 | a | 0.0 | c | 10.0 | b | 0.0 | c | 0.0 | f | 0.0 | c | 0.0 | b | 0.0 | e |
| Pinnacle | 2 | 60.0 | a-f | 0.0 | b | 0.0 | b | 26.8 | abc | 1.8 | bc | 15.0 | b | 0.0 | c | 5.0 | ef | 7.5 | abc | 0.0 | b | 11.7 | b-e |
| AAC Azimuth | 6 | 0.0 | h | 0.0 | b | 0.0 | b | 0.0 | d | 7.3 | bc | 12.5 | b | 1.7 | abc | 33.3 | ab | 40.0 | abc | 5.0 | ab | 45.0 | a-e |
| Bastile | 6 | 0.0 | h | 0.0 | b | 0.0 | b | 0.5 | cd | 30.0 | a | 80.0 | a | 2.3 | abc | 0.0 | f | 0.0 | c | 0.0 | b | 1.7 | de |
| Harmony | 6 | 2.3 | gh | 0.0 | b | 0.0 | b | 0.0 | d | 8.3 | ab | 60.0 | ab | 3.7 | a | 0.0 | f | 2.5 | bc | 0.0 | b | 1.8 | de |
| HS5617-11 | 6 | 2.3 | gh | 0.0 | b | 0.0 | b | 0.2 | d | 1.0 | bc | 40.0 | ab | 0.8 | abc | 1.8 | ef | 7.5 | abc | 0.0 | b | 0.5 | de |
| M160 | 6 | 0.0 | h | 0.0 | b | 0.0 | b | 0.0 | d | 1.7 | bc | 5.0 | b | 0.2 | bc | 56.7 | a | 80.0 | a | 31.7 | a | 88.3 | a |
| ND26891 | 6 | 0.0 | h | 0.0 | b | 0.0 | b | 0.0 | d | 0.5 | bc | 5.0 | b | 1.8 | abc | 31.7 | abc | 45.0 | ab | 10.0 | ab | 73.3 | abc |
| Oceanik | 6 | 2.3 | gh | 0.0 | b | 0.0 | b | 0.7 | cd | 1.0 | bc | 25.0 | ab | 1.5 | abc | 0.5 | ef | 5.0 | bc | 25.3 | ab | 16.8 | cde |
| Quest | 6 | 0.0 | h | 0.0 | b | 0.0 | b | 0.0 | d | 1.0 | bc | 30.0 | ab | 0.2 | bc | 68.3 | a | 40.0 | abc | 16.7 | ab | 85.0 | ab |
| p-value | | <0.001 | | <0.001 | | <0.001 | | <0.001 | | <0.001 | | <.01 | | <0.001 | | <0.001 | | <0.001 | | <0.01 | | <0.001 | |

*Number of rows of fertile florets along the spike; **Columns followed by the same letter are not significantly different at $P=0.05$ as determined by Tukey's HSD