Management of Downy Mildew – Considering Varietal Resistance

Downy mildew is capable of causing damage to a hop plant in two ways

- Above-ground foliar infection, which can ultimately spread to the cones and turn them dark brown.
- Systemic spread into the crown of the hop plant, causing a crown rot and decreasing plant vigor year after year.

Interpreting the graph

**Horizontal axis:** Percentage of shoots infected with downy mildew, a measure of resistance to foliar infection. The greater the percentage of shoots infected, the more susceptible the variety to foliar infection.
**Vertical axis:** Number of shoots produced, a measure of resistance to downy mildew crown infection. The fewer the number of shoots produced, the more susceptible to the crown rot phase a variety may be.

**Section 1:** These are varieties that are expected to possess the greatest level of resistance to both foliar infection and tolerance of crown infection. These are the most preferred varieties for downy mildew resistance, and will require the fewest number of spray applications to control the pathogen. Historically, a light spray program involves 0-4 well-timed sprays. This will vary from year to year based on rainfall and other factors such as initial disease pressure. It is important to recognize no variety is completely immune to downy mildew infection.

- Hallertauer Magnum
- Yeoman
- Celeia
- Aurora
- Spalter Select
- Fuggle H
- Wye Challenger
- Hallertauer Gold
- Perle
- Wye Viking

**Section 2:** These varieties are highly susceptible to foliar infection, but maintained high shoot vigor over three years of downy mildew infection, indicating some resistance to crown rot. It is difficult to make a general recommendation for this group because the foliar susceptibility and crown rot susceptibility are antagonistic. A regular spray program will generally be required for this group, but this may vary by variety based on geography and how favorable a given season is for downy mildew.

- AlphAroma
- Sorachi Ace
- Cascade
- Bobek
- Kirin II
- Crystal
- Santam
- Canadian RV
- Nugget
- Hallertauer Mittlefruher
- Vojvodina

**Section 3:** These varieties produced few infected shoots, but had poor vigor over the 3-year study. Depending on the variety, this poor vigor could be caused by susceptibility to downy mildew crown rot, or could be due to generally poor vigor of a variety. Similar to Section 2, these varieties will generally require a regular spray program, but it is improper to make a broad recommendation for this group based on what is currently known.
Section 4: These varieties are highly susceptible to both foliar infection during the season, and reduced vigor from season to season downy mildew exposure. These varieties are generally highly susceptible to reductions in both yield and vigor due to downy mildew, and will require a regular to heavy spray program to manage the disease. Intensity of the spray program will vary based on past disease pressure and amount of rainfall in the current season.

- Mount Hood
- Northern Brewer
- Kent Golding
- Southern Brewer
- Southern Cross
- Comet
- Bullion
- Galena
- Centennial
- Saazer
- Tettnanger
- Horizon


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