

Helleborus Downy Mildew (*Peronospora pulveracea*)

UGA Extension Recommendation:

Cooler, wet conditions favor downy mildew infection. Remove and discard the downy mildew infected foliage. Do not propagate from infected plants. Infection may occur again in the fall. Keep plant foliage as dry as possible. Fungicides cannot cure already infected plants, but can protect uninfected plants from infection. Drenching with Subdue Maxx, or spraying with Aliette, other phosphonates, Segovis, Segway, or Stature can help reduce infection.

Symptoms of Downy Mildew:

Downy mildew causes foliage blight and distortion. It favors cool, wet weather, develops quickly, and is difficult to control. At first, the symptoms may be mistaken for other problems such as Hellebore leaf spot, frost damage or lack of nutrients. For example, older hellebore leaves naturally darken with age and cold weather, and then fall off to be replaced with new leaves. With downy mildew, some leaves also turn dark and appear to be just regular older leaves, but this can also be one of the signs of the disease. A second sign is that newer growth may be pale in color with a greyish brown or purple hue, and have a curled or wrinkled and distorted appearance. The color may be more noticeable on the underside of leaves where the spores of the mildew develop. If you think that your hellebores have this disease, we recommend having them tested by your local Extension Service office. Downy mildew is not a fungus, but the only preventive chemicals available are fungicides.



What Piccadilly Farm is doing:

The fungicides listed in the UGA Extension Recommendations are very expensive and we have not found them to be very effective in controlling the disease. They also recommend rotating between several types of chemicals. This would be prohibitively expensive for us or the average home gardener since a small container of chemicals costs more than \$100. At Piccadilly Farm, we removed all *Helleborus x hybridus* plants showing disease in our production areas and sprayed those that did not appear to have infection with Segway on a regular basis for a few months (every 10-14 days). The spraying did not seem to have any preventative effect on the remaining plants. We ended up disposing of all hellebores in production that were propagated from *Helleborus x hybridus* from our property.

Hybrid Hellebores not propagated here and purchased from outside growers have been kept separated and treated with Segway fungicide on a regular basis as a preventive measure. These plants are being held in a shade house where irrigation is controlled, and there is no leaf litter or other debris around plants that can hold excess moisture. Irrigation is being done in the morning, so foliage can dry during the day.

We are trying to remove and dispose of all infected leaves from hellebores in our gardens, but this is very time consuming and somewhat impractical for us because we have so many hellebores. In a smaller garden, this would be a good first step to take. This step will need to be repeated as not all leaves will show signs of the disease at one time. We have observed that hellebores in our garden that are surviving are located in areas with good drainage, on a hillside or mound for example. Step two would be to control moisture by planting hellebores in well drained areas and only watering in the morning so the foliage can dry out before night time. Drip irrigation (if available) is better than overhead irrigation. Step three would be to remove mulch from around plants and avoid overcrowding of plants so that foliage can dry out better. Pine straw mulch drains faster than leaf mulch, so hellebores under pines also seem to have less incidence of the disease. Hellebores grown in containers may be another option to consider because containers generally have better drainage, and leaf litter can be better controlled.

Here is a good article on the subject from a horticultural magazine called GreenProfit.
<https://www.greenprofit.com/Newsletters/View/?article=2636>

Alternatives to Hellebores in the Landscape:

The prospect of the gardens of Piccadilly Farm without thousands of hellebores was at first very depressing. However, having fewer hellebores causes us to appreciate the beauty of the many other wonderful plants that are in our gardens. Low growing evergreen perennials for dry shaded woodland gardens include ferns, epimedium, rhododendron, aspidistra, ardisia, *Robbia*, euphorbia, pachysandra, tiarella, saxifraga, dwarf sarcococca, acorus, carex, arum, ginger, and cyclamen. Also evergreen shrubs like anise, ruscus, daphne, many varieties of cephalotaxus and cryptomeria plus other conifers, camellias, danaea, sarcococca. and many others provide interest year round. And this list does even begin to cover all the deciduous wildflowers, perennials, bulbs, shrubs and trees that are available. When "life gives you lemons, make lemonade". Gardens change, plants die, but life goes on and new exciting plants are always available to fill the empty spaces!

