

Onion Smudge

Onions can get a variety of pre- and postharvest issues. One issue of note that tends to show up around harvest or during postharvest is onion smudge. As its name implies, it can look like someone has grabbed the bulb with dirty fingers and left dark smudges on the surface.

1. Yellow onion bulb with distinct smudges on its surface. (Left image)

2. White onion bulb with distinct smudges on its surface. (Right image)



Photo by Sherrie Smith, University of Arkansas Division of Ag



5361514

Photo by Howard F. Schwartz, Colorado State University, Bugwood.org

3. White onion bulb with several scattered dark spots on its surface caused by *Colletotrichum circinans*.



1577104

Photo by Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org

Onion smudge is a fungal disease caused by *Colletotrichum circinans*. While the disease is more commonly a problem on white onions, smudge can be found on all onion varieties. The most noticeable symptom is dark green to black circular lesions on the dried wrapper scales of the onions. Initially these circular lesions start as small dark spots. They can develop into concentric rings over time and several of the small, round spots may be scattered over a large surface of the bulb. Symptoms may be seen at harvest or may develop in storage. The fruiting structures of the fungus have stiff bristles (called setae) that may be seen with a hand lens. Under wet conditions, cream-colored spore masses can be found in these smudged spots.

4. Stiff bristles (setae) of *Colletotrichum circinans* visible with a hand lens on the surface of a white onion bulb.



Photo by Cesar Calderon, USDA APHIS PPQ, Bugwood.org

Onions can be infected any time temperatures are above 50°F, though temperatures between 68°F and 86°F bring the highest risk. Irrigation or rain is needed to provide the free moisture for the fungal spores to spread. Infections in the field can originate from debris from a previous onion crop or from the planting of already infected seeds or bulbs.

Onion smudge may induce premature sprouting of the onion in storage. The smudged appearance may also simply make bulbs more difficult to sell. The fungus doesn't usually attack actively growing bulb tissue, so it tends to remain only on the one or two dried outer layers of an onion during the growing season. After harvest, if the conditions are conducive to disease spread, it can rot the inner bulb. This inner bulb rot is especially likely if the onions were harvested during wet weather and left at temperatures above 68°F.

It is extremely important to use clean seeds and bulbs when planting. Good field drainage and proper drying before storage will help reduce disease infection and spread. After harvest and before planting, onions should be stored at 32°F with less than 70% relative humidity. Crop rotation with at least 3 years between onion crops is recommended. If the disease has spread enough that chemical control is deemed necessary, commercial growers may apply boscalid + pyraclostrobin (Pristine), chlorothalonil (Bravo Ultrex, Bravo Weatherstik), or pyraclostrobin (Cabrio). Homeowners may use a garden fungicide containing chlorothalonil.