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BOTRYTIS NECK ROT OF ONION

Botrytis neck rot is a major disease of onion, destroying bulbs in storage and transit. When rain occurs during fall harvest, it is not uncommon for growers to lose 50% or more of their crop to this disease. Susceptibility varies by variety. In general, white varieties are especially susceptible, but red and yellow varieties may also sustain heavy losses.

*Botrytis allii, B. squamosa* and *B. cinerea* each cause neck rot. *Botrytis squamosa* also causes a leaf blight of onion. Plants in the genus *Allium* (onion, garlic, shallots, chives, and leeks) are all affected by neck rot.

Symptoms usually appear after harvest, although infections originate in the field. Greatest epidemic development occurs when cool (50° to 75°F), moist weather prevails for some days before or during harvest. If the weather remains dry during harvest and curing, losses found in storage are usually small.

Conditions also favor disease development when heavy or late applications of nitrogen fertilizer delay onion maturity. Irrigating onions near harvest delays maturity and increases susceptibility of onions to neck rot.

The fungus often enters bulbs through the neck when tops are cut or twisted off before they have dried adequately. Wounds (hail and harvest damage) are other points of entry for the *Botrytis* fungi. After infection, the fungus grows down through the inner scales and may partly rot the bulb before any damage shows on the outside.

**Disease Symptoms**

Symptoms are first seen as a softening of the tissues around the neck of the bulb, or more rarely, at a wound. A definite margin separates diseased and healthy tissues. Infected tissues become sunken, soft, and appear brownish to grayish in color, as if they had been cooked. These symptoms progress gradually to the base of the bulb. In a humid atmosphere, a gray felt-like mold later forms on the rotting scales. Often, the outer scales of the bulb need to be removed before the mold can be seen. Hard, irregularly shaped kernel-like bodies, sclerotia, may form between scales, especially at the neck region. White at first, these turn black with age; they vary from \( \frac{1}{5} \) to \( \frac{1}{4} \)-inch in size. The neck area becomes sunken and dried out; the entire bulb may become mummified. Secondary invasion by soft rot bacteria causes a watery rot.

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The fungi that cause neck rot survive the winter on previously infected onion debris in the soil, in cull piles and refuse dumps, and in trash in storage sheds. These are sources of inoculum the following season.

**Control**

The incidence of neck rot can be reduced by combining several control practices. Failure to follow any one will reduce the effectiveness of the others.

1. Grow varieties that are known to store well, and follow production practices that promote crop storability. Good storage onions have at least three wrapper scales, and the neck will tighten when dried.
2. Avoid excessive and late (after mid-July) applications of nitrogen.
3. Do not irrigate within 10 to 14 days of lifting onions.
4. Allow tops to dry approximately 1 week before topping.
5. Harvest only when the crop is mature, and during dry weather.
6. Provide good ventilation for curing onions before storage.

Good storage is important in reducing disease losses. Store onions at a temperature of 34° to 36°F, with a relative humidity of less than 70%. Leave space between crates or bulked onions and outer walls of the shed to promote air circulation. Before storage, cull thick-necked onions, scallions, and bulbs with any sign of rot, splits, bruises, sunburn or freezing damage. Bury culls and trash from storage sheds before planting the next crop.
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