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University of California
Agriculture and Natural Resources
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UCCE

Kern County Vegetable Crops

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Fusarium Basal Rot in Onion and Garlic

Fusarium basal rot is a soilborne disease caused by the fungus *Fusarium oxysporium* f.sp. *cepae* that can affect all *allium* spp. but are economically significant for onion and garlic production. The fungus can infect onions and garlic at any growth stage and the disease begins with rotting of the basal plate. Symptoms in the field are observed as leaf curling, yellowing and dieback and poor bulb development. The brownish rot at the base moves up from the basal plate towards the neck of the bulb. Bulb tissue may appear watery and will show brown discoloration when an infected bulb is cut open vertically. Affected roots rot and a white fungal growth may sometimes develop at the stem plate or on the affected bulb tissue.

Pic 1. Fusarium basal rot symptoms on onion foliage

Pic 2. Discoloration at the basal plate

The disease can continue to develop in storage and is commonly associated with bulb mites colonizing the diseased basal plate. Soil temperatures ranging from 77^{o}-82^{o} are optimal for disease development and damaged tissue due to insect injury or mechanical damage increases the occurrence of Fusarium Basal Rot.

Pic 3. Base plate rotting with white fungal growth

Pic 4. Bulb with discoloration, rot and fungal growth

Management

1. Plant resistant cultivars.
2. Crop rotation: Rotate out of Alliums or any other susceptible crops for 3-4 years and avoid fields with a history of Fusarium basal rot problems.
3. Minimize insect damage or any other mechanical injury to the plants and cure bulbs properly before storage.
4. Store bulbs at 39^{o} F and at a low relative humidity (70%) to minimize post-harvest losses.

Note: A group of three UC Farm Advisors and a UCR Plant Pathologist have received a grant from USDA (NIFA Award #2019-51181-30013) to research onion bacterial bulb diseases in collaboration with a larger group of researchers from 11 other states. This past onion season, we surveyed some commercial onion fields for diseased samples, and have established field trials to evaluate management options. I will be again looking for and surveying affected onion fields in spring/early summer of 2021. I hope you'll call or email me to let me know about any local fields with suspected symptoms.

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