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Crop Pest Management Series

Diseases of Sunflowers

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1. Sclerotinia Stalk and Head Rot



2. Sclerotinia Stalk and Head Rot



3. Sclerotinia Stalk and Head Rot



4. Sclerotinia Stalk and Head Rot



5. Verticillium Wilt



6. Verticillium Wilt



7. Premature Ripening



8. Premature Ripening



10. Downy Mildew



11. Rust



12. Phoma Black Stem



13. Phoma Black Stem



9. Downy Mildew



14. Powdery Mildew



15. Rhizopus Head Rot



(See descriptions on back)

Diseases of Sunflowers

Picture Number

- 1, 2, 3, & 4 *Sclerotinia* Stalk and Head Rot (*Sclerotinia sclerotiorum*)
 This disease is characterized by wilting and desiccation of the leaves and light tan to brown lesions encircling the stems (figure 1). These lesions may be found at the ground line (figure 2) or higher on the stem. White mycelium is usually associated with the lesions, eventually forming hard, black sclerotia. Sclerotia are formed either on the surface of the plant, on the roots, or within the stem (figure 3). Foliar infection may also occur. Head rot is characterized by light-colored, shredded heads with sclerotia present throughout (figure 4). The disease is controlled by crop rotation with a nonsusceptible crop.
- 5 & 6 Verticillium Wilt (*Verticillium dahliae*)
 Verticillium wilt is characterized by a prominent yellow mottling of the leaves, appearing first on lower leaves and progressing upward with disease development. These yellow, chlorotic areas enlarge while their centers turn necrotic (figure 5). Cross sections of a diseased plant reveal a brown discolored vascular system (figure 6, top) compared to a healthy vascular system (figure 6, bottom). Control is best achieved through use of resistant cultivars and crop rotation with a nonsusceptible species.
- 7 & 8 Premature Ripening (*Fusarium* spp.)
 Affected plants turn brown and appear to "ripen" earlier than usual. Stems are shriveled, dark brown, and brittle, compared to healthy green stems (figure 7). Dissection of stalks reveals discoloration of the pith ranging from pink, olive green, or black (figure 8). There is no available means of control.
- 9 & 10 Downy Mildew (*Plasmopara halstedii*)
 Downy mildew is characterized by stunting of the plant and the development of light green areas on the upper leaf surface (figure 9). Discoloration begins at the leaf veins and spreads toward the leaf margins. White masses of spores appear on the underside of the leaf, directly below the lighter discolored area (figure 10). Affected plants have erect, usually sterile flower heads. Most hybrids are resistant to downy mildew.
- 11 Rust (*Puccinia helianthi*)
 Sunflower rust is characterized by small circular to oval pustules occurring over the entire vegetative surface of the plant, but most commonly on the leaves (figure 11). Chestnut brown in color when the urediospores are produced, the pustules become black as the plant approaches maturity and teliospores are produced. Control is achieved by using resistant cultivars and early elimination of wild and volunteer sunflowers near the production field.
- 12 & 13 Phoma Black Stem (*Phoma oleracea*)
 Black stem is characterized by large black to brown lesions on the stem (figures 12 & 13), but may occur on leaves, petioles, and the back of the head. Lesions usually begin and spread on the stem, starting at the basal end of the petioles. No control measures are known.
- 14 Powdery Mildew (*Erysiphe cichoracearum*)
 Powdery mildew is characterized by white to grey mycelium primarily on leaves (figure 14). Under heavy infestations all aerial portions of the plant may be affected. As the season progresses, small black dots (cleistothecia) appear within the mildewed areas. Cultivars differ in their reaction to the pathogen.
- 15 Rhizopus Head Rot (*Rhizopus* spp.)
 Characterized by water-soaked areas on the back of the head, the lesions enlarge and turn brown (figure 15). Simultaneously, the back of the head becomes soft and pulpy. On close examination, white mycelium containing small black bodies can be observed. Eventually the head becomes rotted and shredded as with *Sclerotinia* head rot. Warm, wet weather at the time of flowering appears to be conducive to the development of this disease. No effective control measures are known.