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An identification guide to Common Stem Diseases of Sunflower in South Dakota

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Phomopsis Stem Canker

Symptoms

- V-shaped browning of leaves at the margins
- Stem lesions (greater than 6 inches) with sunken canker
- Stem lesions are light brown and situated at base of petiole on stem
- Stem can be hollow and easily pushed down with thumb
- Wilting and lodging

Management

- Crop rotation with non-hosts
- Use partially resistant hybrids
- Fungicide applications at early reproductive growth stages



Figure 1. Initial symptoms are small brown necrotic triangular lesions, which develop at leaf margins.



Figure 2. Brown lesions on the stem. Pressure from thumb can cause stem to collapse at these lesions.

Phoma Black Stem

Symptoms

- Stem lesions develop at the base of the leaf petiole, are typically black and 1-to-2 inches long
- Stem may have several lesions
- Lesions become noticeable late in the season
- Stem remains firm to touch

Management

- Crop rotation with non-hosts



Figure 3. Phoma black stem lesions are jet black in color, and centered around petioles.



Figure 4. Phoma black stem (black lesion) and Phomopsis stem canker (brown lesion) on the same stem

Charcoal Rot

Symptoms

- Gray to silver colored lesion at the base of the stem
- Premature senescence and death of sunflower plant
- Abundant black bodies inside the stem which can be seen with a hand lens
- Pith tissue is compressed into layers

Management

- Crop rotation with non-hosts
- Minimal tillage



Figure 5. Charcoal rot lesion on the base of the stem



Figure 6. Inside the stem affected by charcoal rot

Verticillium Wilt

Symptoms

- Tissue between leaf veins become yellow, then brown (mottled in appearance)
- Lower leaves are affected and progresses upwards
- Pith appears shrunk and black at maturity
- Plants wilt at bloom in rows or small patches

Management:

- Crop rotation with small grains and other non-host crops
- Use cultivars with genetic resistance



Figure 7. Verticillium wilt on the lower stem



Figure 8. Browning from Verticillium wilt inside the stem

Sclerotinia Mid-Stalk Rot

Symptoms

- Tan colored lesion (greater than 6-inch) on the stem
- White mycelial growth and hard black bodies (sclerotia) may be visible
- Stalk may shred and plant can lodge at the lesion site.
- Fungus can completely disintegrate the stem

Management:

- Crop rotation with small grains and corn
- Sunflower hybrids with resistance (if available)
- Plant lower population



Figure 9. Sunflower stem affected by Sclerotinia mid-stalk rot

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