

## Safflower

### **Rhizoctonia Blight and Stem Canker**

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#### **Identification and Life Cycle**

The fungus *Rhizoctonia solani* causes Rhizoctonia blight and stem canker. The pathogen survives in infected plant debris, and inoculum concentrations in the soil are increased by continually cropping fields to susceptible crops such as dry bean, potato and sugar beet. *Rhizoctonia* is spread within and between fields by irrigation water and soil movement. Rhizoctonia root rot of germinating seedlings is favored by moderate to high soil moisture and low soil temperatures. Damage is generally restricted to young seedlings, but can affect older plants, especially when the plants are stressed by extremes in temperature between warm soil and cool water from deep irrigation wells.

#### **Plant Response and Damage**

*Rhizoctonia solani* can cause seedling death, root and hypocotyl rot, and stem cankers. Initial symptoms appear on roots or hypocotyls as linear or circular reddish-brown sunken lesions or cankers delimited by a brown to reddish-brown margin. Rhizoctonia cankers enlarge with age, become darker, rough textured, and retard plant growth. The fungus can invade the central part of the lower stem and produce a brick-red discoloration. Disease symptoms often occur on scattered plants or in a somewhat circular field pattern. Severe seedling infection causes plant death. Rhizoctonia cankers enlarge with age, become darker, rough textured, and retard plant growth.

#### **Management Approaches**

##### **Biological Control**

T-22 Planter Box (*Trichoderma harzianum* strain KRL-AG2) and Kodiak (*Bacillus subtilis* GBO3) are registered, but the efficacy of these biological control agents in the High Plains region are not known.

##### **Cultural Control**

Plant high quality seed in warm, well-prepared seedbeds under conditions favorable to rapid seedling emergence; shallow planting can encourage rapid emergence. Select varieties less susceptible to Rhizoctonia blight and stem canker. Avoid excess irrigation and poor drainage. Crop rotation with non-hosts (i.e., small grains) may provide some reduction in Rhizoctonia blight. Conventional tillage and incorporation of previous crop residues reduce Rhizoctonia blight.

## Chemical Control

Seed treatments may provide some disease suppression, but are most effective when combined with sound cultural practices.

### *Product List for Rhizoctonia Blight and Stem Canker:*

| <b>Pesticide</b>  | <b>Rate per 100 lb seed</b> | <b>Application Frequency (days)</b> | <b>Remarks</b>   |
|---|-----------------------------|-------------------------------------|--|
| <b>Captan</b>   |                             |                                     |  |
| Captan 75   | 6-9 oz                      | Seed treatment                      | Broad spectrum, but weak against <i>Pythium</i> and <i>Phytophthora</i> spp. |
| Captan 30-DD  | 1.25 fl oz                  | Seed treatment                      | Broad spectrum, but weak against <i>Pythium</i> and <i>Phytophthora</i> spp. |
| Captan 400  | 1-2 fl oz                   | Seed treatment                      | Broad spectrum, but weak against <i>Pythium</i> and <i>Phytophthora</i> spp. |
| Captan 400-C  | 1-2 fl oz                   | Seed treatment                      | Broad spectrum, but weak against <i>Pythium</i> and <i>Phytophthora</i> spp. |
| <b>Carboxin and Carboxin + Thiram</b>                       |                             |                                     |  |
| Vitavax 34  | 2 fl oz                     | Seed treatment                      | Suppression of <i>Rhizoctonia</i>  |
| Vitavax 200   | 4 fl oz                     | Seed treatment                      | Broad spectrum   |
| EBDC—several formulations available, but not all are listed |                             |                                     |  |
| Dithane M45   | 2 oz                        | Seed treatment                      | Broad spectrum   |
| <b>Fludioxonil</b>  |                             |                                     |  |
| Maxim 4FS   | 0.08-0.16 fl oz             | Seed treatment                      | Suppression of <i>Fusarium</i> and <i>Rhizoctonia</i> spp.                   |
| <b>Thiram</b>   |                             |                                     |  |
| 42-S Thiram   | 8 fl oz                     | Seed treatment                      | Broad spectrum   |
| Thiram 50WP   | 8 oz                        | Seed treatment                      | Broad spectrum   |

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Categories: Safflower, Disease, Rhizoctonia Blight, Stem Canker

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