

Eggplant, Pepper, and Tomato

Damping-Off and Seedling Blight

Howard F. Schwartz and David H. Gent

Identification and Life Cycle

Damping-off is caused by a complex of fungi, including *Rhizoctonia* spp., *Fusarium* spp., *Phytophthora* spp., and *Pythium* spp. Damping-off is associated with cool to warm soil temperatures, excess soil moisture, and delayed seedling emergence. Pathogens associated with damping-off are common soil inhabitants, and can survive in soil as dormant oospores or sclerotia, pathogenically on alternate hosts and weeds, and saprophytically on crop residues.

Plant Response and Damage

Damping-off can occur before or after crop emergence. Pre-emergence damping-off results in a brown, gelatinous rotting within the seed coat. Radicles and cotyledons may become brown and soft after germination, but fail to emerge. Water-soaked, greasy lesions may also form on hypocotyls and roots after emergence when infected with *Pythium* spp., causing plants to collapse and wither. Post-emergence damping-off caused by *R. solani* begins as elliptically-shaped, brown to black sunken cankers on roots and hypocotyls with a sharp margin between infected and healthy tissue. Plants can become girdled and die, but lightly infected roots often survive and produce nearly normal roots.

Management Approaches

Biological Control

Biological control agents (Kodiak—*Bacillus subtilis*) are available commercially, but their efficacy has not been determined in all High Plains production areas.

Cultural Control

Encourage rapid seed germination and vigorous growth of seedlings by planting high quality seed in warm, well-prepared seedbeds. Avoid planting into cold soils, excessive irrigation, poor drainage, and compaction. Ensure crop residues from the previous crop are thoroughly decomposed before planting. Avoid excess nitrogen fertilization and dense plant stands. Crop rotation with non-hosts (i.e., small grains) may provide some reduction in damping-off pathogens, but some damping-off and seedling blight pathogens have very broad host ranges and can attack most plants. Nematode control can provide some suppression of damping-off and seedling blight caused by *Rhizoctonia* spp.

Chemical Control

Broad-spectrum fumigants may provide effective control of damping-off pathogens, but are generally cost-prohibitive in the High Plains production region. Fungicides are most effective when used in combination with cultural control strategies, but accurate diagnosis of the casual pathogen is essential for selecting the proper fungicide.

Product List for Damping-Off and Seedling Blight Eggplant:

Pesticide	Rate/Acre	Application Frequency Remarks (days)
Captan		
Captan 50	6 lbs	4 day REI
Captan 400	2-3 oz/100 lbs	Seed treatment
Captan 400-C	2-3 fl oz/100 lbs	Seed treatment
Fludioxinil		
Maxim 4FS	0.08 - 0.16 fl oz/100 lbs	Seed treatment
Metalaxyl/Mefenoxam		
Allegiance-FL	0.75-1.50 fl oz/100 lbs	Seed treatment
Ridomil Gold EC	1-2 pts	Broadcast or banded at planting; Maximum of three injections by drip irrigation; maximum of three pts per season; 7 day PHI
Thiram		
Arasan 70S	4 oz/100 lb	Seed treatment

42-S Thiram	6.5 fl oz/100 lbs	Seed treatment
Thiram 50WP	6 oz/100 lbs	Seed treatment
<p><i>The information herein is supplied with the understanding that no discrimination is intended and that listing of commercial products, necessary to this guide, implies no endorsement by the authors or the Extension Services of Nebraska, Colorado, Wyoming or Montana. Criticism of products or equipment not listed is neither implied nor intended. Due to constantly changing labels, laws and regulations, the Extension Services can assume no liability for the suggested use of chemicals contained herein. Pesticides must be applied legally complying with all label directions and precautions on the pesticide container and any supplemental labeling and rules of state and federal pesticide regulatory agencies. State rules and regulations and special pesticide use allowances may vary from state to state: contact your State Department of Agriculture for the rules, regulations and allowances applicable in your state and locality.</i></p>		

Product List for Damping-Off and Seedling Blight Pepper:

Pesticide	Rate/Acre	Application Frequency Remarks (days)
Captan		
Captan 30-DD	2.33 fl oz/100 lb	Seed treatment
Captan 50	6 lbs	4 day REI
Captan 400	2-3 oz/100 lbs	Seed treatment
Captan 400-C	2-3 fl oz/100 lbs	Seed treatment
Fludioxinil		
Maxim 4FS	0.08 - 0.16 fl oz/100 lbs	Seed treatment
Metalaxyl/Mefenoxam		
Allegiance-FL	0.75-1.50 fl oz/100 lbs	Seed treatment
Ridomil Gold EC	1-2 pts	Broadcast or banded at planting; Maximum of three injections by drip irrigation; maximum of three pts per season; 7 day PHI
Thiram		
Arasan 70S	4 oz/100 lb	Seed treatment
42-S Thiram	8 fl oz/100 lbs	Seed treatment
Thiram 50WP	8 oz/100 lbs	Seed treatment
<p><i>The information herein is supplied with the understanding that no discrimination is intended and that listing of commercial products, necessary to this guide, implies no endorsement by the authors or the Extension Services of Nebraska, Colorado, Wyoming or Montana. Criticism of products or equipment not listed is neither implied nor intended. Due to constantly changing labels, laws and regulations, the Extension Services can assume no liability for the suggested use of chemicals contained herein. Pesticides must be applied legally complying with all label directions and precautions on the pesticide container and any supplemental labeling and rules of state and federal pesticide regulatory agencies. State rules and regulations and special pesticide use allowances may vary from state to state: contact your State Department of Agriculture for the rules, regulations and allowances applicable in your state and locality.</i></p>		

Product List for Damping-Off and Seedling Blight Tomato:

Pesticide	Rate/Acre	Application Frequency Remarks (days)
Captan		
Captan 50	6 lbs	4 day REI
Captan 400	2-3 oz/100 lbs	Seed treatment
Captan 400-C	2-3 fl oz/100 lbs	Seed treatment
Fludioxinil		
Maxim 4FS	0.08 - 0.16 fl oz/100 lbs	Seed treatment
Metalaxyl/Mefenoxam		
Allegiance-FL	0.75-1.50 fl oz/100 lbs	Seed treatment
Ridomil Gold EC	1-2 pts	Broadcast or banded at planting; Maximum of three injections by drip irrigation; maximum of three pts per season; 7 day PHI
Ridomil Gold GR	20 lbs	Band (7") or broadcast and incorporate with 0.5 to 1" of irrigation water; a second application can be made; 7 day PHI
Thiram		
Arasan 70S	4 oz/100 lb	Seed treatment
42-S Thiram	6.5 fl oz/100 lbs	Seed treatment
Thiram 50WP	6 oz/100 lbs	Seed treatment
<p><i>The information herein is supplied with the understanding that no discrimination is intended and that listing of commercial products, necessary to this guide, implies no endorsement by the authors or the Extension Services of Nebraska, Colorado, Wyoming or Montana. Criticism of products or equipment not listed is neither implied nor intended. Due to constantly changing labels, laws and regulations, the Extension Services can assume no liability for the suggested use of chemicals contained herein. Pesticides must be applied legally complying with all label directions and precautions on the pesticide container and any supplemental labeling and rules of state and federal pesticide regulatory agencies. State rules and regulations and special pesticide use allowances may vary from state to state: contact your State Department of Agriculture for the rules, regulations and allowances applicable in your state and locality.</i></p>		

Categories: Eggplant, Pepper, Tomato, Disease, Damping-Off, Seedling Blight

Date: 04/01/2007