

Managing *Pythium* on Ginseng

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Pythium spp. are soilborne oomycetes (fungal-like organism) that cause damping-off and root rot. Known as a “root nibbler”, young plants are especially susceptible, especially 1- and 2-year-old ginseng plants.

Pythium spp. are one of the fungi that can cause damping-off even before the seedling has a chance to emerge. This pre-emergence damping off can be confused with poor seed germination. Damping-off that occurs after the seedling has emerged is called postemergence damping off. Postemergence damping-off includes discoloration of the seedling foliage as the roots become infected and water and nutrient uptake become limited. Below ground symptoms include the root tip and fibrous roots appearing water soaked. *Pythium* spp. can produce spores on ginseng debris and can be seed-disseminated.



Discoloration of ginseng seedlings resulting from *Pythium* infection.

Pythium spp. can infect a wide variety of plants including commonly grown agronomic crops (e.g. corn) that may be part of a crop rotation that precedes the establishment of a ginseng garden. Cool and wet springs can slow seed germination of seedling emergence that increases their susceptibility to damping off and tip over. Root rot caused by *Pythium* spp. is a devastating disease if not detected and controlled adequately. *Pythium* requires excess water and soil saturation to develop into an outbreak. The pathogen will be less of a problem in warm and dry years. During wet weather, fungicide applications are strongly recommended and should be used preventively and reapplied until the threat of disease has passed. Seed treatments are helpful and should include those that have proven activity against *Pythium*.



Tip over is a problem affecting seedlings and two-year old plants and can be caused by *Pythium* spp..

Cultural Management Strategies

- Choose sites with good soil drainage.
- Use treated seed produced in healthy gardens.
- Avoid working in the garden when soils is wet to avoid compaction which prevents drainage.
- Avoid standing water by digging trenches to drain water away from the garden.
- Do not allow water from older gardens to drain into younger gardens.
- Form plant beds with a flat top to allow water to run off and prevent pooling.
- Work in a garden with diseased plants at the end of the day.
- Clean equipment used in a garden with disease plants using a power washer to remove soil and plant debris, then use a detergent.
- Use disposable, plastic boots over footwear before entering a garden with *Pythium*.
- Clean hand tools with a disinfectant such as bleach (10% solution) and rinse.



Pythium is a root nibbler causing browning of the feeder roots.



As the root rot advances, the seedling becomes incapable of taking up the necessary water and nutrients.

Product	A.I.	FRAC Group
<i>Pythium</i> 'A' Team		
Captan 80WDG	captan	M4
Elumin SC	ethaboxam	22
Ridomil Gold G (apply monthly)	mefenoxam	4
<i>Pythium</i> 'B' Team		
Fosphite, Phostrol, Rampart, etc.	phosphorous acid salts	33
Reason 500SC	fenamidone	11
Presidio SC	fluopicolide	43

Remember that the pesticide label is the legal document on pesticide use. Read the label and follow all instructions closely. The use of a pesticide in a manner not consistent with the label can lead to the injury of crops, humans, animals, and the environment, and can also lead to civil or criminal fines and/or condemnation of the crop. Pesticides are good management tools for the control of pests on crops, but only when they are used in a safe, effective and prudent manner according to the label.