

# Managing *Phytophthora* Blight on Snap Bean

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In Michigan, snap beans (green and yellow wax) are grown for the fresh market or for processing. Historically, snap beans were grown in rotation with other vegetables that could include cucumbers, zucchini, squash, or peppers. In 2003, a commercial field of snap beans became heavily diseased from the fungal-like pathogen, *Phytophthora capsici* and could not be harvested. Since that time, additional snap bean crops have become diseased.

## Recognizing *Phytophthora* blight on SNAP BEAN

- Dark green or water-soaking on leaves, petioles, stems and pods
- Brown, water-soaked and sometimes sunken lesions on pods

*Phytophthora capsici* is a pathogen that resides in the soil but can be splashed up onto the plant causing blighting of the leaves, petioles, stems, and pods. Symptoms on leaves, petioles, and stems may initially appear dark green or water-soaked (Fig. 3) and then become brown (Fig. 1). Lesions on pods are brown and can become sunken (Fig. 2). Pods that may come into contact with the soil are especially at risk of infection. Diseased plants may follow the field's drainage pattern as the pathogen moves readily in water (Fig. 4).



Figure 1. Brown lesions on leaves, petioles and stems.



Figure 2. Brown, water-soaked blighting on pods.



Figure 3. Water-soaked leaves on infected plants.

*Phytophthora* is favored by rain and warm temperatures and spreads readily via water. It has also been found in irrigation ponds and surface water sources. In low-lying areas of the field where water may accumulate the pathogen may be splashed into the crop canopy. Because of this, fields should be selected that are well drained if it is suspected that *Phytophthora* is present. Wider inter-row spacing may also help increase air flow and limit *Phytophthora*. The pathogen may overwinter in the soil and persist for >10 years; therefore, it is not recommended that snap beans be planted in a rotation with other susceptible crops.



Figure 4. Plant death in an infested bean field after flooding due to heavy rains.

### Management Strategies

- Plant into well-drained, tilled fields
- Avoid using surface water for irrigation
- Rotate with nonsusceptible crops
- Scout fields regularly for *Phytophthora*
- Powerwash equipment after it has been in infested fields

For fields that are not contaminated with this pathogen, avoid introducing it. Irrigation water should come from a well. Scout fields regularly and rotate only with nonsusceptible crop hosts.

Seed can be treated with mefenoxam (i.e. Apron XL) to prevent damping-off caused by *Phytophthora*. Some *Phytophthora* populations in Michigan are known to be resistant to mefenoxam. Revus and Ridomil Gold/Copper are labeled for downy mildew (*P. nicotianae* and *P. phaseoli*, respectively) on bean. Ridomil Gold is labeled for control of *Pythium* and can be applied to beans by banding or broadcasting as a preplant incorporation or soil spray. Both Presidio and Ranman 400 SC are labeled for control of *Phytophthora* blight on succulent bean. However, only Presidio has performed exceptionally well in Michigan trials for *P. capsici* control on cucurbit hosts.

### *Phytophthora* Fungicides for SUCCULENT BEAN

Product	A.I.	FRAC	Comment
Apron XL	mefenoxam	4	Seed treatment; resistance concerns
Revus	mandipropamid	40	Labeled for <i>Phytophthora nicotianae</i>
Presidio	fluopicolide	43	Foliar application
Ranman 400SC	cyazofamid	21	1st application at 100% bloom-pin pod development; 2nd application at late pin-small pod development
Ridomil Gold SL	mefenoxam	4	Labeled for <i>Pythium</i>
Ridomil Gold/Copper	mefenoxam/copper hydroxide	4/M01	Labeled for <i>Phytophthora phaseoli</i>

NOTE: These recommendations are not intended to replace the specific product labels. Always read and follow label instructions carefully.