

Pepper

Sanitation is critical for limiting Bacterial Leaf Spot (BLS, Xanthomonas) of Pepper.

- BLS can move rapidly within the greenhouse so strict sanitation is critical.
- Isolate production blocks to prevent mechanical spread by personnel, equipment, or splashing water.
- Thoroughly sanitize all equipment and production areas between crop cycles.
- Always use seed tested for BLS to reduce, but not eliminate, the possibility of infection.
- Refer to 'Sanitation for @Risk Crops' for additional tips to make sure you have reduced the risk of spreading this disease within your production.
- **Growers are responsible for managing the spread of BLS in their operations.**

Pepper: At Risk Crop

Pepper Bacterial Leaf Spot is a seed borne disease that is easily spread mechanically and by splashing water, if not managed throughout the production cycle will cause serious plant losses. Ball has worked diligently to minimize the risk, BUT growers are solely responsible for growing the plants under clean cultural conditions and applying correct fungicides to suppress the disease.

PLUG CULTURE

STAGE 1 - Time of radicle emergence (5-7 days)

- Soil temperature 70-75° F (21-24° C).
- Keep media evenly moist but not saturated.
- Cover the seed lightly with coarse vermiculite.
- Pepper is very sensitive to high salts, particularly high ammonium, during germination.

STAGE 2 - Stem and cotyledon emergence (7-10 days)

- Soil temperature 70-75° F (21-24° C).
- Reduce moisture levels once radicle emergence occurs! Allow the soil to dry out slightly before watering for best germination and rooting.
- Increase light levels to 1000-2500 foot-candles.
- Irrigate early in the day so foliage is dry by nightfall to prevent diseases.

STAGE 3 - Growth and development of true leaves (10-14 days)

- Soil temperature 65-70° F (18-21° C). Cooler temperatures will minimize stretching.
- Use DIF whenever possible, especially the first 2 hours after sunrise, to control plant height.
- Allow the soil to dry thoroughly between irrigations but avoid permanent wilting to promote root growth and control shoot growth.
- Sumagic (1.25-5 ppm) applied early in stage 3 will control hypocotyl stretch

STAGE 4 - Plants ready for transplanting or shipping (7 days)

- Soil temperature 60-62° F (16-17° C).
- Allow soil to dry thoroughly between irrigations.
- Maintain soil pH 5.5-5.8 and EC less than 0.75 mmhos/cm.
- Fertilize with a balanced fertilizer at 50-75 ppm N as needed.

GROWING ON TO FINISH (Start with transplants produced under strict sanitation.)

TEMPERATURE

- ◆ Night -- 55-65° F (13-18° C)
- ◆ Day -- 60-70° F (16-21° C)
- ◆ Peppers will be damaged by temperatures below 45° F (7° C).

LIGHT

- ◆ Maintain light levels around 4000-5000 foot-candles while maintaining moderate temperatures.

MEDIA

- Use a well-drained, disease-free soil-less medium with a medium initial nutrient charge and a pH 5.5-6.3.

FERTILIZATION

- Fertilize every third irrigation with a balanced fertilizer at 50-75 ppm nitrogen.
- Low N or K coupled with high Ca and Mg are associated with increased BLS. Using high levels of dolomitic limestone and no fertilization strategies can increase BLS
- Maintain medium electrical conductivity around 1.0 mmhos/cm (using 1:2 extraction).

CONTROLLING HEIGHT

- Once plants are rooted to the sides of the containers allow plants to slightly wilt prior to irrigation to provide some height control.
- Withholding fertilizer, especially phosphorous and ammonium-form nitrogen will reduce stretching.
- Pepper are responsive to day/night temperature differential (DIF), and are shorter with a negative DIF.
- Sumagic (1.25-5 ppm) must be applied after transplant and within 14 days after the 4 leaf has unfolded.

BACTERICIDES TO CONTROL BLS **Be sure to read and follow all pesticide label and instructions.*

- Copper based bactericides are the most effect chemicals to suppress the spread of BLS
- Copper is a protectant and is not curative once BLS infections begin. Apply copper bactericides every 5-7 days when disease pressure is low and every 3-5 days when disease is present
- Copper is easily washed off the foliage after irrigating. Trials have shown that >50% of the copper residue is gone after 2 days when overhead irrigation is used.
- Tank mix of copper compounds and Mancozeb were shown to be more effective than copper alone.
- Though not as effective, rotations of Mancozeb and Cease have suppressive qualities and may be used in part of a complete bactericide program that included copper applications.

For more information on this disease: http://vegetablemdonline.ppath.cornell.edu/factsheets/Pepper_List.htm

Find more resources: <https://www.ballseed.com/QuickCulture/ProductionGuides/>

Tech On Demand Podcast: <https://www.growertalks.com/TechOnDemand/>