Pepper

Bacterial Spot of Fruiting Vegetables - Xanthomonas Bacteria

Lesions of this disease can be found on leaves, stems, and fruit of eggplants, peppers and tomatoes, but it is rarely a problem for eggplants. Infection of blossom stem of tomato prevents fruit set.

Sanitize machinery, and plant production materials (transplant trays, greenhouse benches, and wooden stakes) with a disinfectant such as 10% chlorine bleach or a quaternary ammonium compound solution.

While still in the greenhouse, scout and apply fixed copper alternated with streptomycin (Agri-mycin, Firewall, Streptrol). Once in the field, apply a fixed copper product tank-mixed with mancozeb on 5-7 day schedule, depending on disease pressure, beginning within 1 week after transplanting. Airblast sprayers with high fan speed can make an outbreak worse by sandblasting plants with droplets and opening many small wounds that become infected.

Copper Resistance: Strains of the bacterium that cause bacterial spot on tomato that are resistant to copper products are common in the Midwest. Actigard, streptomycin products, mancozeb products, chlorothalonil products, Tanos, and Serenade used as labeled may help manage copper-resistant strains.

Non-Pesticide

Non-Pesticide Options

Use pathogen-free seed and disease-free transplants. Hot water seed treatment may reduce this seedborne disease. Use temperatures and times of 122 F for 25 minutes for eggplants and tomato, and 125 F for 30 minutes for pepper. Practice good greenhouse sanitation of equipment, tools propagation trays/pots, and surfaces. Avoid fields with a history of the disease and rotate to non-Solanaceous crops for 2-3 years. Stake and mulch the crops to improve air flow and reduce splashing. Avoid working in wet fields. Prompt destruction of the finished crop with tillage to rapidly breakdown tissue is an important method to prevent disease build-up.

Pesticide

Actigard | acibenzolar-s-methyl |

0.3-0.75 oz. per acre for tomato. For ***bell peppers*** *with Michigan 24c label use at 0.25-0.33 oz. per acre.* Begin season with lower rates and increase as plant canopy increases. Do not exceed 6 oz. per season.

REI: 12-hour. PHI: 14-day. FRAC P01 .

copper products | copper diammonium diacetate complex , copper hydroxide , copper octanoate , copper oxychloride , copper sulfate , cuprous oxide |

Several formulations of copper (Badge, Champ, Kocide) are labelled for use. See label for directions. Copper-resistant strains of the bacterial spot pathogen are common in the Midwest. Mancozeb products (e.g., Dithane, Manzate, Penncozeb) when tank-mixed with copper products, allow more copper to become available on the leaf surface and so may help manage copper-resistant bacterial strains.

REI: 4 to 48-hour. PHI: 0-day. FRAC M01 . FRAC M01 . FRAC M01 . FRAC M01 . FRAC M01 . FRAC M01 . OMRI-listed.

LifeGard WG | Bacillus mycoides isolate J | 1-4.5 oz. per acre.

1-4.5 oz. per acre or 4.5 oz. per 100 gals. water. Suppression only; can be used in a rotational program with effective fungicides to reduce synthetic fungicide use

REI: 4-hour. PHI: 0-day. FRAC BM02 . OMRI-listed.

mancozeb products | mancozeb |

Several formulations are labeled at various rates (Dithane, Koverall, Manzate, Penncozeb). Use 37% formulations at 0.6-2.4 qt. per acre. Use 75% and 80% formulations at 0.75-3.0 lb. per acre.

REI: 24-hour. PHI: 5-day. FRAC M03 .

Regalia | Reynoutria sachalinensis extract | 1-4 qts. per acre.

Use in a program with copper products. On greenhouse-produced seedlings, drench planting medium with 1-2 qts. per gal. water or dip seedlings in solution of 1-2 qts. per 100 gal. water immediately before transplanting.

REI: 4-hour. PHI: 0-day. FRAC P05 . OMRI-listed.

Serenade Opti | Bacillus subtilis strain QST-713 |

Use Serenade Opti at 14-20 fl. oz. per acre, or Serenade ASO at 2-4 qts. per acre. Can be used in a rotational program with effective fungicides to reduce synthetic fungicide use.

REI: 4-hour. PHI: 0-day. FRAC BM02 . OMRI-listed.

streptomycin products | Streptomycin sulfate |

Use 17% products at 16 oz. per 100 gals of water, or 50% products at 5.3 oz. per 100 gals. of water to maintain a concentration of 200 ppm. Apply one or two times to seedlings, alternated with a fixed copper product compound beginning at the two-leaf stage. Not labeled for use after transplanting (greenhouse only).

REI: 12-hour. FRAC 25 .

Tanos | cymoxanil , famoxadone |

Tomato: Early blight at 6-8 oz. per acre. Late blight and anthracnose at 8 oz per acre. For suppression of bacterial diseases of tomato, 8 oz. For late blight, tank-mix with a contact fungicide with a different mode of action. Pepper: Anthracnose at 8-10 fl. oz.

REI: 12-hour. FRAC 27 . FRAC 11 .

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