

LEAF BACTERIAL DISEASES OF TOMATO AND PEPPER

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Bacterial speck of tomato caused by Pseudomonas tomato and bacterial scab of pepper caused by Xanthomonas vesicatoria are widespread in commercial vegetable fields all over Israel. Bacterial speck damaged tomatoes grown for the fresh market and also industrial varieties. Infection of young seedlings caused losses up to 75% of the total yield, whereas the losses in plants infected later were at the most 25%. Bacterial scab damaged all varieties of pepper grown in Israel at different infection degree. Infection of plants (4-6 true leaves) caused losses up to 30% and was minimal in full mature plants. Infection of the diseases were monitored by scanning electron and light microscopy. During incubation, pathogenic cells became located inside the stomata, in the sub-stomatal chamber and in the intercellular spaces between the mesophyll cells. The primary infection sites were the pepper vein areas and tomato stomata and trichomes. Extensive multiplication ( $10^6$ - $10^7$  cells/g leaf) was observed on the leaf surfaces, and masses of P. tomato cells were observed within abraded leaves. Necrosis was first observed microscopically (in both diseases) 100-120 h after inoculation near the leaf veins (pepper) and at broken trichome bases (tomato). There was a sharp delineation between necrotic areas (specks, scabs) and apparently healthy tissue. Infection of sterilised or natural soil with either P. tomato or X. vesicatoria at inoculum concentration of  $10^2$  to  $10^9$  cells/ml inhibited germination of tomato and pepper seeds respectively. Infested tomato plants which were symptomless during the growing season had 20-30% less foliage than uninoculated plants. In addition, infested symptomless pepper plants had 20-30% less yield than uninoculated plants, but had high endogenic population of X. vesicatoria ( $10^6$  cells/g leaf). Necrotic activity of P. tomato in vivo was accompanied with the production of large quantities of ammonia in the diseased plants.

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