

Epiphytic survival of bacterial leaf pathogens

Y. Henis¹ and Y. Bashan²

¹Department of Plant Pathology and Microbiology
The Hebrew University of Jerusalem, Faculty of Agriculture,
Rehovot, Israel.

²Department of Plant Genetics, The Weizmann Institute of Science,
Rehovot, Israel.

Studies on Pseudomonas syringae pv. tomato and Xanthomonas campestris pv. vesicatoria in Israel support the commonly accepted idea that survival of epiphytic leaf pathogens reflects a state of dynamic equilibrium between growth, rest, decline and hypobiosis. As suggested by Leben, three main phases can be distinguished in the life cycle of any epiphytic leaf pathogen, i.e. (i) resident (symptomless), (ii) pathogenic and (iii) saprophytic (on dead host tissue). Pathogen's survival and development of disease symptoms depend on predisposing factors such as temperature, relative humidity, free water, irradiation and leaking nutrients. There is a constant exchange of cells between epiphytic and endophytic leaf populations. Leaf pathogens may survive on host and nonhost seeds and rhizosphere as well as in host and nonhost dead tissues and in soil. High concentrations of leaf pathogens in soil and seed may cause a nonspecific inhibition of seedlings growth and damping-off symptoms. Occasional outbreaks of epidemics may result from a combination of high initial inoculum level and predisposing factors, leading to further growth beyond inoculum threshold level at the infection site and finally to the development of disease symptoms.

4th International Symposium on the Microbiology of the
phyllosphere, Wageningen, 2-6 September, 1985.