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Concluding Remarks

Part I of this book gives an overview of the history of pine wilt disease in Japan, China, Korea, and North American and Europe. The first author, K. Futai, gives the history of pine wilt disease in Japan starting early in the twentieth century. As well he describes the spread of the disease in Japan and some factors that may have influenced the spread. Various factors such as the role of asymptomatic carriers, which to date have been largely unstudied, may be very important in the persistence and spread of pine wilt disease.

In Chap. 3, J.R. Sutherland briefly summarizes the historical events in North America, and reviews both the PWN situation in Canada and the United States, and some research programs carried out in these countries. He lists three prerequisites needed for disease development, and explains why pine wilt disease is only of minor importance in the USA and Canada. Based on the report of Dwinell and Nickle (1989), he concludes that North American conifers are either immune to or highly resistant to pine wilt disease, and high summer temperatures are of too short a duration to favor the pathogen and pine wilt development.

In Chap. 4, B.G. Zhao describes the invasion and spread of pine wilt disease throughout China from two points of view, that is, the size of the area damaged and the number of trees killed by the disease. Also, he gives the control strategies adopted by the Chinese government including using within China quarantine measures to stop and delay pine wilt spread. As well he recommends newly developed insecticides, sanitation in diseased forests and the use of cutting all trees in belts around affected areas to protect surrounding, unaffected forests. He then reviews the progress of Chinese research on PWN and its vector, and the resistance of native Chinese pines.

At the beginning of Chap. 5, S.-C. Shin points out both the spiritual and cultural importance of pines in Korea. As is the case in China and Japan, pine trees are also an important forest resource in Korea. Shin then reviews the historical development of pine wilt disease in Korea and the control procedures that the Koreans have adopted after evaluating the results and the problems associated with the procedures. Next, the author covers the development of pine wilt research in Korea and stresses the importance of cooperative work between countries, governments institutes and universities.

In Chap. 6, M.M. Mota and P.C. Vieira report historical pine wilt disease events in Europe, and introduce how EU authorities have developed quarantine measures to keep the nematode and vector away from the EU. Regardless of such efforts, however, the PWN was detected in Portugal in 1999. Since then, two major projects, PHRAME and PortCheck were established to understand the scientific basis of pine wilt disease and provide effective control of the disease. After highlighting the progress achieved in Portugal and in the EU by these projects, authors emphasize the importance of international agreements and sharing of scientific information to effectively control the nematode and its vector.