Book review

Doenças de Plantas Tropicais: Epidemiologia e Controle Econômico. By Armando Bergamin Filho and Lilian Amorim, 299 pp. Editora Agronômica Ceres Lda., São Paulo - SP, Brazil. ISBN 85-318-0007-2. Local price BRL 28,– (equals US$ 28.00).

Since Portuguese is one of the languages of the European Union, a treatise in Portuguese on plant disease epidemiology merits discussion, even when written in Brazil. The authors are two meritorious Brazilian plant disease epidemiologists. They explicitly discuss the epidemiology of tropical and subtropical plant diseases.

When teaching field-oriented phytopathology in the Wageningen Agricultural University, I often disappointed students, enthousiastic for the tropics which were percieved as 'different', by stating that there is little epidemiological difference between plant diseases in the tropics and in the temperate zone. The present book takes another stance and systematically opposes the workings of temperate and tropical pathosystems.

The book contains 11 chapters, 1. Concepts and objectives, 2. Agroclimate, disease and epidemiology, 3. Tropical phytopathology and epidemiology, 4. Systems, 5. Classical epidemiology: Basic concepts, 6. The temperate phytopathosystem, 7. The tropical phytopathosystem, 8. Tropical phytopathology and epidemiology: selected examples, 9. Management of phytopathosystems: basic concepts, 10. Integrated management of tropical phytopathosystems and Chapter 11. The way ahead. Much of this introductory textbook is conventional wisdom in plant disease epidemiology, seen from a systems point of view. Chapter 11, with recent information on crop physiology and crop ecology, has a fresh flavour.

The surprise news is in Chapter 13. It begins with the acknowledgement of the absence of a clear demarcation line between temperature and tropical epidemiology, but continues with a strong argument to differentiate. Tropical pathosystems differ from temperate ones in several aspects among which more continuity of inoculum, more endemicity, longer seasons, less explosive behaviour of pathogens, less dependence on weather factors since lesion growth is a substitute for re-infection, and a more polyetic disease development. The overwhelming amount of nearby inoculum precludes the 'period of grace' during which the temperate crops, after the off-season, temporarily grow with little disease. Generally speaking, sudden epidemics are considered less threatening in the tropics, notwithstanding rapid modernisation of tropical agriculture towards large scale cropping, high external inputs and increasing genetic uniformity. Table 3.3 summarizes the essence of the reasoning. The authors believe that crop loss in the tropics hardly exceeds that in temperate zones.

Chapter 7 discusses the mechanics of the difference. When the normal infection cycle is represented as a circle on which the successive phases are arranged in a clockwise order, tropical pathosystems have an extra mechanism in lesion growth, represented as an additional but anti-clockwise cycle. Asexual and sexual cycles do not alternate, as often happens in temperate zones with an off-season, but run parallel as two clock-wise cycles, in a complementary way as they respond to different environmental triggers. Thus, three and even more cycles may operate concurrently in highly successful, aggressive pathogens. The reasoning is supported by a wealth of empirical evidence. Relevant authoritative statements are quoted. Chapter 8 provides selected examples of tropical pathosystems among which coffee rust and, interestingly, potato late blight.

The book contains some 85 black-and-white illustrations, 14 tables, some 550 references (extremely useful for students more distant from western literature), a glossary, an index of over 300 entries, and numerous stimulating quotations.

The readership is to be found among agriculturalists and crop protectionists in Latin America and SW Europe, where Romance languages are spoken, and specifically among those interested in tropical agriculture. The authors are to be complimented with this timely and imaginative textbook for their Brazilian students. The book is graciously dedicated to Professor Jürgen Kranz from the Justus Liebig University at Giessen, Germany, who so actively promoted epidemiological research in the tropics.

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