Book reviews

Antiphytovirale Verbindungen. Wissenschaftliche Zeitschrift der Karl-Marx-Universität Leipzig. Mathematisch-Naturwissenschaftliche Reihe, 31 (1982) Heft 4: 289-379. In German. M. 19.50

The story of the search for a 'viricide' applicable to plant virus infections is a long one. Many scientists industriously working over a period of several decades in various countries delivered a great variety of contributions to it. For a number of years new chapters are being added by Professor G. Schuster's group in Leipzig (DDR). The present publication – this journal issue is separately available – presents an article that summarizes many papers published by the group on earlier occasions, as well as a number of original studies dealing with chemotherapy of plant virus diseases and chemicals involved.

The starting point of the investigations by the group is the observation that dilute concentrations of certain herbicides derived from triazines, such as simazin, in some cases exerted an effect on virus-infected plants. Related substances were synthesized and tested for their effect. Of those 2,4-dioxohexahydro – 1,3,5-triazine (DHT = 5-azadihydrouracil) has attained most attention. The summarizing article, written by Schuster, deals with the results obtained with this chemical. It contains a brief description of the antiviral activity of DHT. The application of this chemical would lead to a decrease in concentration of different viruses tested in their respective host plants. Virus concentrations were estimated by using serological or local lesion tests. For tobacco mosaic virus a decrease in the synthesis of virus RNA was observed. It is stated, however, that viruses never disappeared from the treated plants. They quickly increased in concentration as soon as the application of DHT was stopped.

In various virus-infected plant species DHT more or less suppressed symptom development and favoured growth of the plants involved. Among other examples the author cites field experiments with potatoes grown from 'strongly infected' and 'healthy' stock, respectively. The former stands for 24.6% of the tubers being infected by unspecified viruses, and the latter for 4.8% of the tubers infected. DHT applied four to five times led to a 6.5% increase in yield of plants grown from 'strongly infected' stock, but had no effect on the production of plants grown from the other one. It is difficult to evaluate these findings as the ratio of the yield of untreated 'strongly infected' to that of untreated 'healthy' is not mentioned.

Some attention is also being paid to other aspects of DHT, such as its formulation for practical use, uptake by and fate in the plant, its behaviour in the soil, and its possible effect on a variety of laboratory animals. Remarkably, the substance did not show any effect in tissue cultures infected with a number of vertebrate viruses. Neither did it affect infection of various bacteria with their phages.

The summarizing article clearly shows the author's high expectations regarding the practical application of DHT to decrease detrimental effects of plant virus infections. However, the final sentence expressing that also in this case there will be a long way to go, brings the reader back to earth.

The other papers deal with a variety of aspects of chemicals that would or could exercise a certain action on plant virus infection. It is still doubtful, though, whether the results of these investigations will ever lead to a 'viricide' that solves farmers' problems in their struggle with plant viruses. One rather may assume that the 'viricide story' is not expected to reach this happy ending soon.

J.P.H. van der Want

J.G. Manners, 1982. Principles of plant pathology. Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney. VIII + 264 pp., 14 photographs (half-tones), 14 tables and 22 diagrams, glossary and index. Hard covers £ 22.50 net, paperback £ 8.95 net.

In this epoch of highly specialized studies, a book covering the principles on which present-day plant pathology is based may be a welcome variation. This easily readable book aims at serving both as a further reading to students engaged in an elementary course and as a basis for further reading to final year undergraduates.

Part I comprises five chapters on the causes of plant disease: after an introduction, non-parasitic causes of disease, fungi and bacteria, viruses and mycoplasmas, and miscellaneous pathogens are dealt with. Part II gives information on the physiology of host-parasite relationships and is divided into six chapters: disease symptoms, entry into the host plant, invasion of the host plant and damage to host tissues, mechanical resistance to entry and spread, chemical resistance to entry and spread, and effects of pathogens on metabolism, transport and growth. Although the author is well-known from his research work on the physiology of host-parasite relationships, he eschews excessively detailed descriptions. Rather, after having resumed some historical data, he indicates which subjects have been studied, emphasizes the lack of knowledge there still is, and refers to review articles for further reading. Since the author is a mycologist, he presents a critical account on mainly plant-fungal pathogen relationships. Part III deals with the genetics of host-pathogen interaction and is divided into three chapters: genetics of host reaction, genetics of pathogenicity and genetics of host-pathogen interaction. In part IV the epidemiology is treated in two chapters: the causes of epidemics, and quantitative aspects of disease development. Part V, on plant disease control, consists of a chapter on chemical control of plant diseases and one on plant disease control by non-chemical methods. Here again, reference is often made to (review) articles for more details, but not to articles published after 1978. Especially in this moving field a more up-to-date survey might seem desirable, but, as is mentioned in the preface 'control methods change frequently, and information concerning these is best conveyed in booklets or leaflets which can be frequently updated'. Some more recent information, however, on for instance fungicides, would have been useful.

Part V is followed by a glossary of terms frequently used in plant pathology and by an extensive reference list. Tables and diagrams are good illustrations of the text, but the quality of some photographs could be better.

The book can be recommended to students and to those who wish to polish up their knowledge of the principles of plant pathology.

A. van Zaayen