

## 1 INTRODUCTION

CRI's holistic approach to integrated production in the southern African citrus industry is based on recognition of the value of optimally integrating the full range of production practices. Scion and rootstock selection, use of disease-free planting material, orchard design, cultural practices, pest management, pruning, fertilisation and irrigation management are examples of other production practices which have an impact on pre-harvest disease management. Likewise pre-harvest disease management or pathology affects the biological control of arthropod pests, the incidence of post-harvest decay, yield, fruit quality, the environment and consequently the profitability and sustainability of citrus production. Pre-harvest disease management clearly forms a critical component in the development of an integrated production strategy.

## 2 HISTORICAL PERSPECTIVE

The S.A. Co-operative Citrus Exchange Ltd. commenced with research on pre-harvest pathological problems during 1956. This research was focussed on diseases of economic importance to the citrus industry. In 1968 a comprehensive practical guide on orchard management was published for use by growers. This guide, entitled "A Guide to Citrus Orchard Management", formed the basis for pre-harvest disease control until 1974 when a revision was published in booklet form. During the period 1974 to 1979 several publications on recommendations for the control of the two major diseases, black spot and *Phytophthora* root rot, were compiled and released to the growers.

The in-house publication, Outspan News, also served as an important channel for conveying information to growers. This ensured that growers were always kept informed of new developments.

In the 1990s it was decided to consolidate available practical recommendations and guidelines in a loose leaf ring-binder format. This format would facilitate replacing pages with any revised recommendations. The first such edition was produced in 1993 followed by a second edition in 1998 that was aimed at

producing comprehensive integrated production guidelines. This third edition now ensures that these guidelines are up to date with both plant protection practices and marketing requirements.

## 3 THE USE OF THESE GUIDELINES

These recommendations are limited to those aspects of disease management which are of practical and economic significance to southern African citrus growers.

The following parts in **Chapter 2 of these guidelines**, also apply directly to pre-harvest plant pathology:

- IPM rating system
- Orchard inspection
- Blemish factor analysis
- Comments on plant protection products
- The application of plant protection products

**Chapter 5** of these guidelines is devoted to general aspects of pre-harvest plant pathology which are of underlying practical significance and which are not necessarily related to specific diseases. The part on basic principles of plant pathology deals with the concept of disease in plants, the relationship between the host, the pathogen and the environment, and other general pathological principles.

The part on the CRI Diagnostic Centre, a facility created within CRI, is of particular importance in preventing the injudicious use of plant protection products. Such use is often associated with the incorrect diagnosis of problems, development of resistance to plant protection products and possibly a lack of appreciation of the need for a more holistic approach to soil related problems. The CRI Diagnostic Centre also provides advice on how to manage diseases.

The part on nursery diseases gives a brief overview of diseases which can occur under nursery conditions, many of which have the potential to affect the future growth of trees after planting in the field by the grower. Control measures used in the nursery are outlined.

In **Chapter 6** important foliar and fruit diseases

and their control are discussed. Since these diseases result in the blemishing of fruit and the industry has to compete on the international fresh fruit market, their effective control is critical.

**Chapter 7** discusses the citrus root rot complex. The biology and control of the different pathogens is outlined.

**Chapter 8** deals with the most important virus and virus-like diseases affecting the southern African citrus industry. Diseases which have been eliminated through the Cultivar Development and Improvement Programme are not dealt with. Viroids, such as Exocortis, are exceptions as they are mechanically transmitted.

**Chapter 9** covers both pre-packhouse and packhouse precautions in post-harvest disease management.

**Chapter 10** of this volume includes reference tables on the plant protection products referred to in this publication, their suppliers, the pre-harvest diseases and their control measures.

Readers who wish to obtain further information on the biology, ecology and epidemiology of citrus diseases can refer to the following publication which is available from the American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, Minnesota 55121-2097, USA, E-mail: [aps@scisoc.org](mailto:aps@scisoc.org), or the website <http://www.shopapspress.org/>.

TIMMER, L.W., GARNSEY, S.M. and GRAHAM, J.H.. (Eds) 2000. Compendium of Citrus Diseases, Second edition. American Phytopathological Society, Minnesota.

A CD-Rom on diseases of tropical fruits, citrus and sugar cane is also available from <http://www.shopapspress.org/> and contains 550 images.