

1. BACKGROUND

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In most countries of E. & C. Africa, agricultural production is carried out overwhelmingly on small-scale farms. Small scale farming families account for the large majority of the population in these countries. On many of these farms, a single family is the only labour available, and inputs such as pesticides and machinery are not affordable.

However, in many of these countries, there is an urgent need to improve the productivity of food crops within these constraints. Extensive yield losses are inflicted upon these crops on small scale farms by insects, weeds, diseases and nematodes. Improvement of crop protection practices is therefore seen as an important means of raising yields.

Much of agricultural research into plant protection in the tropics has focussed on chemical control of cash crops, particularly in large farms and plantations. Where pesticides are used on small scale farms these are often inappropriate types, mishandled, mismanaged, and dangerous to both the user's health and the environment. The improvement of food crop protection on small scale farms by low input means has only recently become a focus of research. Very little is known of the crop protection related issues in farming systems of this region. In order to determine appropriate crop protection practices and research, there is a need to analyse these complex agroecosystems from biological, technical, ecological, social and economic points of view. Such an analysis was carried out of farming systems in Embu district in Kenya in 1987 by the Commonwealth Science Council (CSC) (1). A workshop was held in the Embu district where systems analysis techniques were combined with farm visits and a detailed study of the area. This workshop was used to identify constraints to improving crop protection, to encourage an interdisciplinary approach and to provide a rigorous means of thinking about current and future problems and how to deal with them. The workshop brought together an interdisciplinary group of scientists from the E. & C. African region involved in research and extension on crop protection for small scale farms. Following analysis and discussion of the varied farming systems in Embu and comparisons with systems in other countries in the region, major research gaps concerning crop protection for small scale farms were defined. These included:

- (1) Intercropping, its use to control incidence of weeds, diseases, insect pests and nematodes and appropriate control methods in intercropping systems.
- (2) Maize stalk borer - does it contribute to extensive yield losses?
- (3) Efficient control of weeds.
- (4) The role of nematodes in maize, bean and banana productivity.
- (5) Pesticide safety and management.

The development of a coordinated collaborative regional research project concerning the resolution of these major issues was therefore recommended (1).

This project was planned and developed further at a CSC project planning meeting in Harare in March 1988 (2). At this meeting, selected experts in the field presented thorough reviews of research concerning the major problems identified in this region. These reviews provided necessary background information to further research in the E. & C. African region and allowed the identification of areas where more research was required.

This volume represents the collection of review papers. It is intended as a handbook for the scientists involved in the CSC research programme but should also be of interest to other scientists involved in crop protection for small scale farms in Africa.

The need for environmentally safe methods of plant protection is expressed in the second part of this chapter by Mrs N R Gata and within this context she outlines and briefly discusses appropriate methods of plant protection for small scale farms.

Chapter 2 provides an extensive review of intercropping and its relation to crop protection and recommends appropriate research.

Chapter 3 discusses major weed control problems in the region and in particular looks at potential control methods for Striga and also at intercropping practices.

In Chapter 4, Dr S Z Sithole reviews the available information on yield losses in maize due to maize stalk borer and identifies the need for further information using standardised and quantitative procedures.

Chapter 5 discusses pesticide safety, management, storage and disposal.

In Chapter 6, Mr Peter Johnson of the Department of Agricultural, Technical and Extension Services of Zimbabwe, expresses the need to learn from farmers of their approaches to crop protection and in general how their farming systems work. This information should be the basis for further development and extension of successful crop protection practices.

LITERATURE CITED

1. Prinsley R T (1987) Ed. Proceedings and Recommendations of a Planning Workshop on Integrated Crop Protection for Small Scale Farms in E. & C. Africa, CSC Technical Publication Series No.243, CSC (87) AGR-7.
2. Prinsley R T (1988) Ed. Project: Integrated Crop Protection for Small Scale Farms in E. & C. Africa. Proceedings and Recommendations of a Project Planning Meeting. CSC Technical Publications Series No. 253, CSC(88)AGR-10.