CHAPTER 1

INTRODUCTION

1.1 DECISION SUPPORT SYSTEM (FARMS)

In the management process at enterprise level the most efficient enterprise or combination of enterprises must be chosen and then also managed efficiently. At enterprise level decision-making does not only include direct income/cost aspects, but *inter alia* also the management of labour and mechanisation as well as irrigation systems. The farmer often has various sources of data at his disposal, but the format in which the information is available limits its usefulness and the data therefore require further processing. Such processing is usually of an extensive and complicated nature and therefore instruments for this purpose are not available. The development of a decision support system (*FARMS*) which can be used as a management aid can serve to address the above-mentioned needs.

Management decisions concerning new investments or the financing thereof can only be evaluated by means of financial feasibility studies at farm level. Although models cannot simulate the complex decision-making situation of farmers completely, inclusion of investment, production and marketing decisions may provide insight into the interaction between these decisions.

1.2 THE FARMS PROGRAM

FARMS is a Windows-based "Firm-level Agricultural Management Simulator" designed for Agricultural economists, researchers and farmers. This program serves as a deterministic computer model for decision-making support at enterprise as well as whole farm level, and was primarily developed with a view to the provision of reliable and relevant information on which decisions can be based.

Flexibility and user-friendliness enjoyed high priority in the development of *FARMS*. Users can obtain assistance and training by means of the help lines, and error messages are displayed in certain cases. The *FARMS* program uses the paradox database system as well as binary files.

Most of the transactions on enterprise level (and also on whole farm level) are categorised on the basis of the month it took place, the type of flow involved and the cost category within which it falls.

The reliability of the output values is vested in the accuracy of the inputs and assumptions made in the model. The output of this model facilitates the management process at enterprise level by providing several tables and graphs with information regarding the planned enterprise combination and management methods.

The *FARMS* program is data intensive, but rewarding in terms of the management of the data and operation of the program afterwards. Although it may sound discouraging to a first-time user, much effort was made to make *FARMS* as user-friendly as possible.

1.3 WHY FARMS?

FARMS enables farmers, researchers, extension officers, consultants and advisers to perform among others the following analyses:

- Provide management information to bridge the gap between theory and practice at whole farm level.
- The system is user-friendly and practice-oriented, and its flexibility ensures wide applicability so that changing situations in various localities can be dealt with.
- Data variables are, wherever possible, limited to known values. Most of these values are general values that are used daily.
- The majority of input items are exact values. One exception to the rule is the variables needed to calculate annual reparation cost for each machine and implement.
- Because the *FARMS* program is based on databases, it has the advantage that one has to do only managerial adjustments to data once the user has provided the initial data.
- Secondary databases can also be employed in the *FARMS* program.
- All the product and inputs prices for crops and livestock enterprises, as well as the market value and list prices of the mechanisation and irrigation systems, are stored in central files to be updated annually.
- *FARMS* enables users to estimate total variable and fixed costs satisfactorily. These costs are calculated as absolute amounts for planned applications of water or for alternative crop rotation systems, but are also calculated as fixed cost per hectare cultivated and variable cost per cubic metre of water applied. The calculation procedures are economically founded and also take cognisance of technical characteristics of the mechanisation.
- Labour management can be planned by using tables and graphs that indicate permanent, temporary and total labour hours required on a monthly basis.

- Distinction is made between credit and cash flow in the decision support system; this renders the model realistic and practically useable, and management and advance planning of liquidity can therefore occur on a monthly basis.
- Because of the constant increases in production costs, cost management has become increasingly important.

1.4 HOW TO USE THE USER'S GUIDE

A brief discussion to familiarise the user with the overall structure of the program and the mechanics of running it is presented in Chapter 2 (getting started).

Chapter 3 introduces the user to *FARMS* and how to manage the database of the farmers' information. The file menu controls the main procedures of the program, for example how to open, close, delete and create new databases. A user can also make backups of the database, restore a database, import a database, export a database, change the printer setup or exit from the *FARMS* program under the file option.

The general menu makes provision for data that is relevant to farms in the same region. Guidelines for the general data input required must be given in Chapter 4. The general menu is divided into four groups, *e.g.* cost categories, input as well as product prices and a machinery database.

The data menu provides access to all the input data necessary for a specific farm. These values entail starting date setup, economic variables, land, irrigation system, mechanisation, operation database, labour information and crop as well as livestock enterprises. All the data menu options are discussed in detail in Chapter 5, except crop and livestock enterprises which are attended to in Chapter 6.

Chapter 7 handles the input on the run form that consists of handling negative balances, production system and the run button. The calculations can be done here and the results will be available.

In Chapter 8 the power of this model is illustrated by the extent and nature of its output. This output acts as support to the enterprise decision as well as whole farm planning. The output menu is divided into three groups of results that can either be viewed or printed.

The graphics option on the main menu is used for visual illustrations (Chapter 9).

Appendix A comprises a list of abbreviations as well as terminologies and Appendix B gives examples of FARMS outputs.