AGRICULTURAL DATA NEEDS IN SOUTH AFRICA

by

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ABSTRACT

The deregulation of agricultural marketing resulted in a substantial increase in the need and simultaneously a decrease in the supply of agricultural data. Agricultural data needs also changed significantly. Agricultural data are needed for decision-making, problem solving, managing complexity and uncertainty, improving the competitive market and operational efficiency and also increased knowledge. Mail surveys on agricultural data users showed a significant need for certain categories of agricultural data. Policy-makers need data on quantity of import and exports, volume of production, institutional matters and infrastructure, economics and employment. Researchers need data on areas planted to annual crops, quantities of import and exports, economics, particulars of farming unit and institutional matters and infrastructure. Agribusinesses need data on yields, cost of production, institutional matters and infrastructure, particulars of farming units and economic data. Farmers need data on producer prices, prices of production inputs, employment, economic, institutional matters and infrastructure. Responsible agricultural data suppliers should now focus their efforts on the agricultural data needs as indicated by the users.

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CHAPTER ONE

INTRODUCTION

1.1   Introduction and background

With the rising standards of literacy, education and knowledge, the proliferation of information-producing organisations and the increasingly sophisticated means of communication, man is today confronted with an ever-growing abundance of facts and information (Barnard, 1979). Within agriculture, international agencies, research stations, university departments, marketing organisations, commercial firms, co-operatives and farmers themselves all *supply* and *need* data pertinent to the industry, at levels of aggregation or disaggregation ranging from world commodity statistics down to individual farm and enterprise data. This is especially the case for South Africa, where the deregulation of the agricultural marketing sector in the late 1990's resulted in the abolishment of the marketing boards, which played an important part in the collection and dissemination of agricultural data. As a consequence, the *supply* of agricultural data decreased, and in some cases discontinued, despite a substantial increase in the *need* for data by decision-makers, especially those in the agribusiness and farming sector. Jooste (1999) also stated that there is an inadequate access of some of the data. For most products, however, Section 21 companies and producer organisations replaced the data collection and dissemination functions of the former marketing boards, but according to Willemse (1996) and Van Scalkwyk & Swanepoel (1997) these organisations serve a particular constituency with a particular interest.

In addition, Statistics South Africa, formerly the Central Statistics Service, which is the official supplier of data of both non-agricultural and agricultural data in South Africa, discontinued the 5 yearly agricultural census, and the annual agricultural survey. The decrease in the importance of the agricultural sector, measured by the contribution to the Gross Domestic Products (GDP) and the consequently decrease in the budget for

agricultural data collection, are amongst others, the reasons for the discontinuation of the agricultural censuses and surveys.

Agricultural data play a very important part in the decision making process by private and public decision-makers. Private decision-makers, which include decision-makers in the agribusiness and farming sector, need to make proper production and marketing decisions, while public decision-makers, which include decision-makers in government sectors, need to make and monitor policy decisions. Taking into consideration the inadequate supply of agricultural data in South Africa, the needs of the private and public decision-makers are identified and evaluated, in order to ensure that data collection efforts are focused on their agricultural data needs.

1.2   Problem statement

Barnard (1979) and Russel (1983) pointed out that despite a long history of government involvement in agriculture and the acknowledgement of the need for accurate and valid data, there is still a lack of documented evidence on the actual data needs of those that *need* agricultural data. This is also true for South Africa. The deregulation of the agricultural marketing sector and the discontinuation of the 5 yearly agricultural census and annual survey emphasise the importance of a detailed study on agricultural data needs of decision-makers in South Africa. The study includes:

- A review on literature related to agricultural data needs; and
- postal surveys using structured questionnaires to identify and evaluate the agricultural data needs.

In order to increase the accuracy from the survey results, the decision-makers are stratified according to the agricultural data user population, namely policy-makers, researchers, agribusinesses and farmers. The problem statement can be summarised as follows:

There is insufficient knowledge on the actual agricultural data needs in South Africa. This knowledge is needed to either improve existing agricultural information systems or develop a new effective agricultural information system.

The agricultural data needs of decision-makers are measured according to the priority of the data needed. Priority refers to the degree of importance that decision-makers have for a specific category of agricultural data needed and is measured according to the choices "not important", "somewhat important", "important" and "very important". The frequency of data needed is also measured and refers to how regularly the data is needed. The frequency is measured according to the categories "yearly", "quarterly", "monthly" and "weekly" for current statistics and "ten yearly", "five yearly", "two yearly" and "yearly" for basic statistics.

1.3   Sub problems

The sub problems are categorised according to the agricultural data needs of data of policy-makers, researchers, agribusinesses and farmers, which are assumed to be the agricultural data user population in South Africa (see chapter two for more detail). The agricultural data needs are measured in terms of the priority of the data needed.

The first sub problem is to identify and evaluate the agricultural data needs of policy-makers.

The second sub problem is to identify and evaluate the agricultural data needs of researchers involved in agriculture.

The third sub problem is to identify and evaluate the agricultural needs of agribusinesses.

The fourth sub problem is to identify and evaluate the agricultural data needs of farmers.

The frequency, sources, accuracy, etc. of the data needed are also discussed but they are not specifically listed as sub problems since they form part of each of the four sub problems.

1.4   Hypothesis

It is hypothesised that the decision-makers in South Africa, i.e. the policy makers, researchers, agricultural service industries as well as farmers have specific needs for certain categories of agricultural data. It is expected, however, that these needs will differ among the four categories of decision-makers, since their data needs will depend on the type of decisions they make.

1.5   The delimitations and assumptions of this study

The first assumption is that this study will include only agricultural data obtained by means of censuses, surveys and other similar data collection methods, and not data obtained by experimental methods.

The second assumption is that the term agricultural statistics is used interchangeable with agricultural data since statistics is a presentation of data, and makes it much easier to categorise. Agricultural statistics include statistics on agricultural activities performed more or less continuously annually (current statistics) and statistics which deal with the enduring characteristics of agriculture (basic statistics).

The third assumption is that the following categories of decision-makers, namely policy makers, researchers, agribusinesses and farmers are the most important users of agricultural data in South Africa.

The fourth assumption is that the categories of agricultural statistics under current and basic statistics are the most needed statistics in South Africa (see Appendix B). There are other statistics that could have been included, but only these listed in the questionnaire are included.

Since this study will use only mail surveys to identify agricultural data needs, small-scale or developing farmers are not included in this sample. Some of these farmers will certainly have postal addresses, but at the time of this study no address lists were available. Personal surveys are an alternative to identify these farmers data needs. Cost considerations should, however, be taken into consideration. Therefore, although these farmers are not included in

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the sample, the agricultural data needs in terms of current and basic statistics are expected to be similar to those of the larger commercial farmers.

1.6   The importance of the study

The importance of this study is dualistic, namely the decrease in the *supply* of agricultural data and the increase in the *need* for agricultural data.

The decrease of the supply of agricultural data: Organisations responsible for the collection and *supply* of agricultural data in South Africa do not at present provide adequate agricultural data in order to satisfy the needs of the users of agricultural data.   The responsible organisations include:

- National Department of Agriculture, which in terms of the White Paper on Agriculture (1995) is responsible for market information;

- Provincial Departments of Agriculture, which in terms of the constitution is responsible for provincial statistics; and

- Statistics South Africa, which in terms of the Statistics Act, is responsible for the collection and dissemination of agricultural and non-agricultural data, and

- Organisations replacing former marketing boards, which in terms of 1996 Act on Marketing of Agricultural Products can apply for statutory authority for the collection of agricultural data, if the industries agree to it.

Significant examples of inadequate data supply are abattoir slaughterings of cattle, calves, sheep, lamb, goats and pigs, accurate area and production estimates of the summer and winter crops as well ostrich, egg and broiler production.   These sectors contribute approximately 54% to the total gross income of agricultural producers, which have therefore a significant impact on the economic accounts of agriculture, which is used, amongst others, to calculate the contribution of the agriculture sector to the Gross Domestic Product (GDP).   Ironically, Statistics South Africa uses the contribution of the agricultural sector to the GDP as an important indicator for the continuation of agricultural censuses and surveys.   This raises the question whether it is at all possible to measure the accuracy of

interterm estimates made for commercial production for agricultural products or to benchmark production for own use if no census data are available.

The increase in the need for agricultural data: If you are in business and your objective is make a profit - and no business is sustainable without it - one of the first things to do is to identify the potential market, find out what the market wants and what is it willing to pay. Even though agricultural data is subsidised and provided to the user free of charge, the same principle applies (Metcalfe, 1989).

Taking into consideration that in a regulated market the focus was mainly on the data needs of decision-makers in the marketing boards and the government, while in a deregulated market, i.e. a domestically free market with international exposure the focus should be now on the data needs of the decision-makers in the *farming* and *agribusiness* sector. They need data to make proper production and marketing decisions (Russel, 1983) in order to operate as efficiently, effectively and profitably as possible (United States Department of Agriculture, 1987). In addition, decision-makers in government sectors, i.e. *policy-makers* need still need data, specifically to make and monitor policy decisions (Fennel, 1981). The World Trade Organisation, European Community and South African Development Community trade agreements will in all probability increase the need of policy-makers for data. Although *researchers* themselves do not act specifically as decision-makers, they need data to make projections of current trends of political and economical indicators and also interpret their implications (Ballantyne, 1994) and thus providing and important support function to private and public decision-makers.

1.7 Outline of this study

Chapter one   Introduction
Includes the problem statement of this study as well as a discussion of the sub problems, hypothesis, delineation's, assumptions and the importance of this study.

Chapter two   Review of related literature

Contains a review on literature related to agricultural data needs. An agricultural information system is used as basis.

Chapter three   Methodology

Includes the methodology for this study; methodologies used in similar studies are, however, also discussed.

Chapter four   Results

Includes the results of the mail surveys on policy-makers, researchers, agribusinesses and farmers. Results of a workshop on agriculture statistical needs are also discussed.

Chapter five   Conclusion and recommendations

Embodies a conclusion and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

1.   Introduction

Leedy (1993) stated in order to approach a problem of any project or study correctly, a review on related literature is very important since knowledge what others have done, better prepares one to attack the problem chosen for investigation, with deeper insight and more complete knowledge.   Therefore, this study includes a review on literature related to agricultural data needs. This includes a discussion on an agricultural information system, which provides a clear understanding of where agricultural data needs originates from and where the corresponding supply of agricultural data to satisfy those data needs is created. Based on the agricultural information system, the supply of agricultural data and agricultural data needs are discussed under separate headings. Further, data gaps are also discussed under a separate heading. Data gaps result when the agricultural data supply is inadequate to satisfy the needs of the decision-makers. A review on literature related to the methodologies of identifying and evaluation agricultural data needs are included in chapter three.

2.2   Agricultural information system

2.2.1   Introduction

Information systems in agriculture are very important.   They supply the data and information that are required and needed by its users, who mainly are decision-makers in the agricultural sector as well as sectors linked to agriculture. The agricultural information system discussed in this chapter is static; however, for a discussion on a dynamic agricultural information system, see FAO (1986). This section is discussed according to the definition, working and purpose of agricultural information systems. The guidelines and benefits of agricultural information systems are also discussed.

2.2.2 Definition of an information system

The FAO (1986) defines a *system* as a collection of objects and processes, called components, which interact to perform a given function or functions. The interactions, i.e. the linkage connecting the components, take place through the paths or mechanisms of material, energy and information flow among the components. An *information system* can therefore be defined as a logical configuration of significant information relevant to a decision or selected problem area and is a product of some basic process of enquiry which imposes from and gives meaning to data (Eisgruber, 1967; Barnard, 1975). Bonnen (1975) and Gardner (1975) define an *information system* as the established processes by which data are collected from primary and secondary sources and transformed into information which is then communicated to the decision-maker to produce knowledge. A simple information system is illustrated in Figure 2.1 and consists of three basic elements, namely *input*, *processing* and *output*.

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          ┌─────── FEEDBACK ◄─────────────┐
          ▼
INPUT → PROCESSOR → OUTPUT →CONTROL

Raw data → Process →Information
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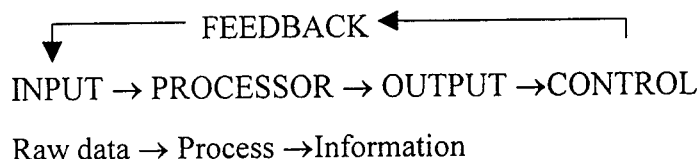
Figure 2.1: A simple information system

Logical decisions can not be made based on raw data, and it is only after the required processing that there is sufficient information to make those decisions. Two other elements of information systems that are also important are control and feedback. Control involves the comparison of output with some predetermined target or standard, while feedback involves the passing back into input of information about any deviation that occurs, so that corrections can be made.

2.2.3 Agricultural information system

When taking into consideration the definition of an information system and also definitions quoted by Riemenschneider & Bonnen (1979) and Eisgruber (1967), an *agricultural information system* can be defined as a logical configuration of significant information for

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public and private decision-makers to make decisions that are related to agriculture from the farm, household, firm, local, regional, national and international levels. Any theory of data or information must therefore have a multidisciplinary perspective to be useful in information systems. Gardner (1975) identifies two types of information systems that exist in agriculture, namely

- A centralised system, which constructs, conducts and disseminates censuses and periodic national surveys; and

- decentralised systems, which collects limited survey data by individual researchers and policy analysts for specific research or policy purposes.

The agricultural information system as illustrated in Figure 2.2 consists of a *data system*, *interpretation and analysis* and *information for decision-makers*. The supply of agricultural data is generated at the *data system* while the agricultural data needs arise at the *interpretation and analysis* as well as the *decision-makers* level. These components are discussed further.
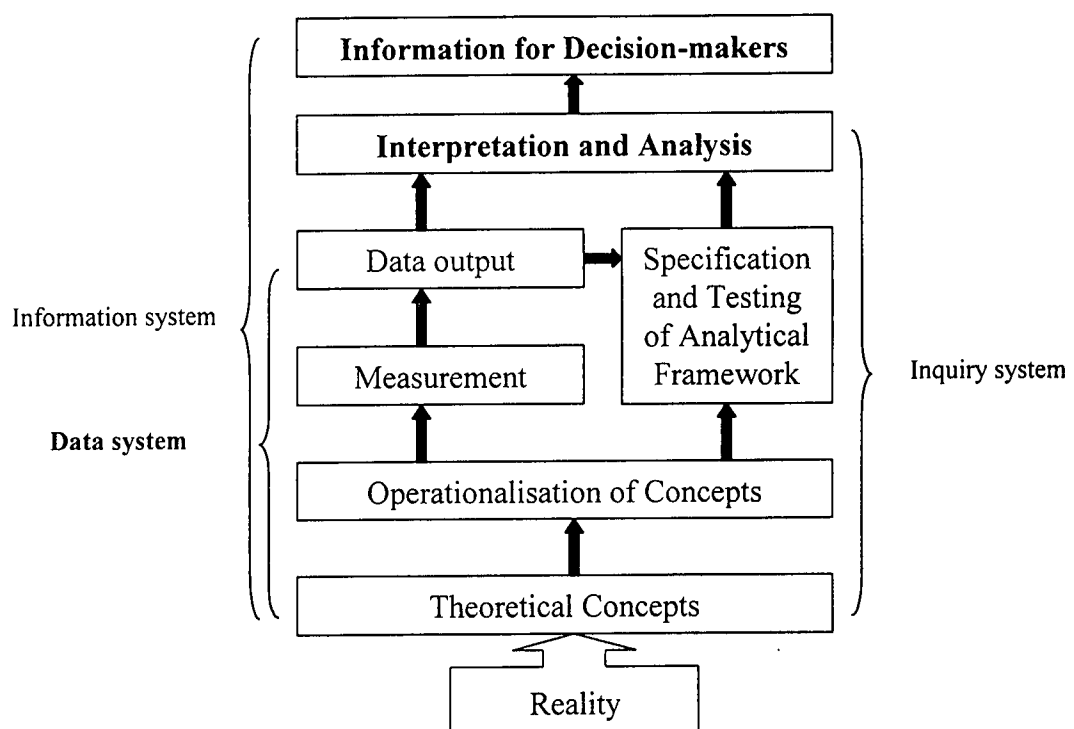
Figure 2.2: An agricultural information system. Source: Bonnen (1975).

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2.2.3.1 The data system

The data system as developed by Bonnen (1975) consists of three distinct steps, namely conceptualisation, operationalisation of concepts and measurement of concepts (see Figure 2.2). Decision-makers need to make decisions based on data that reflect reality. Reality, however, is often difficult not only to understand, but also to describe and measure. To simplify socio-economic phenomena one develops theoretical concepts to represent reality as we understand it. Theoretical concepts in agriculture include concepts such as farm holdings, farmland, agricultural production, food balance sheets, food supplies and stocks of agricultural products (Trant, 1995).

Theoretical concepts can seldom be measured directly because of their abstract nature. To measure a concept, one must first make them operational by translating them into variables or indicators, which are highly correlated with the idea that is to be measured. Measurement refers to the methods of sampling, estimation, data collection, quality assurance and quality control (Trant, 1995). Thus, operational definitions are used as measurements units of the theoretical or more abstract theoretical concepts (Zetterberg, 1954). The result of the data system is data.

Taking the data system from Bonnen (1975) and definitions quoted by Juster (1970) and Larson & Narian (1998) into consideration, data can be defined as symbolic representations of concepts, phenomena and quantities, and are the direct product of measurement, counting, aggregation, valuation, weighting schemes and empirical observations that have direct relevance to a specific decision or problem. According to Larson & Narain (1998) data provide given facts about places, persons or things such as the production or price of a commodity but in statistical terms production or prices are not independent of the statistical operations involved in their measurement. The theoretical background and the analytical aim in mind determine these measurements. The classification of agricultural data is in more detail discussed in section 2.3.4.

2.2.3.2 Interpretation and analysis

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Data are not necessarily already information and are rarely directly used by decision-makers (Bonnen, 1975; Eisgruber, 1967; Drucker, 1989). Therefore, the information system includes not only the production of data but also the analysis and interpretation of these data into useful information (Riemenschneider & Bonnen, 1979). Data are transformed into information by intervening acts of interpretation, i.e. through statistical and economic analysis as well as policy and political evaluation (Bonnen, 1975). Examples of transforming data to information may range from formatting or converting data for presentations, encoding an index or scale or to complex economic, engineering and biological modelling (Bonnen, 1975; Burch et al., 1974 cited in De Waal & Van Zyl, 1991). Drucker (1989), however, emphasises that knowledge is required to convert data into information.

Information can therefore be defined as data that are processed, organised, interpreted and communicated to provide utility in a specific decision or problem context (Bonnen, 1977). Information also increases the level of knowledge for the decision-maker (Burch et al., cited in De Waal & van Zyl, 1991). Information can either be published or unpublished (Aina, 1995). Aina (1995) classifies agricultural information as follows:

- Technical and scientific information, which arises from research and development;
- commercial information, which includes information on prices, co-operatives, credit etc;
- social information, which includes information on agricultural practices, local cultures, labour availability etc; and
- legal information, which includes information on legislation on land tenure, production, distribution and sales on agricultural produce.

Aina's (1995) classification does make provision for the category market information. Marketing information, however, plays an important part in decision-making, competitive market processes and operational efficiency in agriculture (Barnard, 1975; Kohls and Uhl, 1990). It is therefore also necessary to classify market information (intelligence). Smith (1965) classifies market intelligence as follows:

- Short-term information which includes day to day prices and supplies in particular markets;

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- long-term information which includes information on production and consumption as also trends in these; and

- information about marketing prospects for products already produced.

2.2.3.3 The decision maker

Information systems in agriculture are designed for public and private decision-makers at the farm, firm, industry or the national economy level (Riemenschneider & Bonnen, 1979). Decision-makers play an important part in information systems since the product of the system, i.e. information is determined by the mode of inquiry used in defining the nature of the decision or problem. It is important that the goals and values of these decision-makers impact on the design of the information system. However, information systems are often criticised for a lack of attention to the decision-makers or users, although information specialists emphasise the importance of their clients or users in the design of their services and products (Eele, 1989; Gustafson & Thesin, 1981).

Decision-makers include the decision-makers in the private and public sector. For the purpose of this study they will, however, be referred to as users of agricultural data since decision-making is not the only purpose of information systems. (See the following section.)

2.2.4 Purposes of an agricultural information system

Berry (1973) cited by Vlasin et al. (1975) outlines the purposes of an information system as follows:

- Reacting to past problems – *ameliorative problem-solving*;

- responding to predicted futures and planning with the future – *allocate trend-modifying*;

- responding to predicted futures and planning with the future – *exploitive opportunity-seeking*; and

- deciding desired futures and planning for and creating the future desired – *normative goal-oriented*.

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Apart from purposes of an agricultural information system specified by Berry (1973), research on this topic also indicates the following purposes of agricultural information systems, namely decision-making, problem solving, managing complexity and uncertainty, improving a competitive market and operational efficiency as also an increase for knowledge. These are discussed further.

2.2.4.1 Decision making

If knowledge were complete, decision making would be unnecessary because the desirable course of action in any situation would be a matter of logic in light of the individual's objectives (Barnard, 1979). Barnard (1979) also states that the need to make decisions, rather than acting instinctively and without thought, arises from the uncertain environment facing the human species coupled with their desire to make rational choices between alternative course of action. The essence of uncertainty is imperfect knowledge, from which costs arise because decisions made and actions taken are, except fortuitously, never likely to be optimal in light of the decision maker's objective. Amstutz (1998) specifies the following decisions in agriculture, namely merchandising, investing, financing and risk management decisions, however, production and marketing decisions should also be included.

An important part of decision-making in agriculture that needs specific mention is policy-making. Government workers at all levels use agricultural data to improve their efforts to arrive at decisions regarding support levels for farm products, legislation, research or marketing activities or monitor effects of public programs (The American Agricultural Economic Association Committee on Economic Statistics, 1972; United States Department of Agriculture, 1987). According to the United States Department of Agriculture (1987) policy-making includes the following:

- To administer farm programs and measure their effect on agricultural production and prices;
- to set import and export policies on agricultural products;
- to plan future need of agricultural products; and
- to determine when aid is needed by certain parts of the farm sector;

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2.2.4.2 Problem solving

Information relevant to a problem reduces, if even to only a limited extent, the degree of uncertainty that prevails, so that better informed decisions can be made. This could lead to more effective action approaching the optimum more closely than if the information had not been available, so that the payoff is increased and net opportunity costs reduced (Barnard, 1979).

2.2.4.3 Managing complexity and uncertainty

Decision making to formulate and implement policies, programmes and projects for the development of a nation's food and agricultural capabilities is beset by problems arising from complexity (FAO, 1986) and uncertainty (FAO, 1986; Barnard, 1975). A major source of complexity in decision-making is its concern with human systems (FAO, 1986). This complexity is particularly evident since agricultural development, which generally has an economic focus, is frequently implemented as an integral part of broader rural development programmes, which are concerned with all aspects of rural life and welfare. Complexity creates three classes of problems, namely uncertainty, compression of time and space and the need for multi perspective.

Uncertainty is an unavoidable fact of life. The FAO (1986) outlines three broad areas of uncertainty to content with, namely:

- There is uncertainty regarding the present condition and trends of the food and agricultural systems;
- there is uncertainty, which pertains to desired conditions
- there is uncertainty on how to progress from one to the other, i.e. from the present condition to the second condition.

2.2.4.4 Improving the competitive market

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The data and information supplied by information systems are also important in the competitive market processes that regulate product flows and prices in the agricultural sector. Although the perfectly competitive requirement of perfect information is unattainable, more information is better than less in the competitive process (Kohls & Uhl, 1990). Well-informed buyers and sellers contribute to an efficient price mechanism and also benefit by making better decisions.

2.2.4.5 Improving operational efficiency

In marketing, the term operational efficiency refers to all adjustments that may be made by individual firms to reduce unit costs (Hawkins, 1979). It concerns all the various contributions that technology can make towards lowering the costs of producing (operational) and of marketing (exchange) of an agricultural product. To be operationally efficient in the short run, the average producer can select input-output techniques and methods, which, within limits imposed by fixed facilities, maximise output per unit of input. Exchange efficiency is concerned with the accuracy, rapidity and effectiveness of distribution price information and the cost involved in performing these operations. The ability and need to retain flexibility and stability in production decisions in order to meet changes in for example tastes, weather problems, political realities and other external factors beyond normal demand and supply variables are heavily dependent upon minimising distortions to price signals. All markets are characterised by pricing inefficiencies, but wide variations exist between markets. Therefore in order to promote exchange efficiency, Hawkins (1979) established the following criteria related to agricultural information:

- markets will function more effectively if information is available;
- buyers and sellers should be equally and uniformly informed; and
- freedom from excessive government interference is necessary.

2.2.4.6 Increase in knowledge

The purpose of an information system also includes the increase in knowledge, i.e. data or information evaluated in a general way for future use, being the stock of qualitative and quantitative generalisations about economic relationships (Eisgruber, 1967; Juster, 1970).

Knowledge is the end product that results from the chain of events beginning with data and is used is to reduce uncertainty, to support decision-making and problem solving, satisfy our curiosity and it is a necessity for private and public decision-making (Gardner, 1975; Bonnen, 1975). Orcutt (1970) differentiated between the *acquisition* of knowledge and *application* of knowledge. Data for the *acquisition* of knowledge are specific to those behavioural or physical units studied while data for *application* of knowledge must be specific for the application that is to be attempted.

2.2.5 Guidelines for comprehensive information systems

Guidelines for comprehensive information systems are:

- An information system should be based on current concepts that are to be measured (Bonnen, 1975);

- concepts and measurement should be compatible (Bonnen & Wimberley, 1992);

- hasty implementation of information systems should be avoided (Vlasin et al., 1975);

- the information system should be based on **current agricultural data needs** (Sundquist, 1970; Eisgruber, 1967), however, future needs should also be anticipated;

- there should be good communication between the data system and the inquiry system (Lindner, 1998; Bonnen & Wimberley, 1992); and

- there should be clear documentation, standards and definitions for the information system (Bonnen & Wimberley, 1992);

2.2.6 Benefits of comprehensive information systems

The benefits of comprehensive information systems refer to the benefits likely to be gained relative to the costs involved. Barnard (1979) specifies four benefits:

- The ability to make better analyses and decisions as more reliable data are used, problems are studied in greater depth through the incorporation of extra detail, and more thoroughly in that additional alternatives are considered;

- making more timely analyses and decisions because of the ability to retrieve data speedily from storage compared with unsystematic, unsatisfactory and time consuming scratching in a desperate search for relevant data;

- avoiding unnecessary duplication of effort, resulting from different individuals and organisations being unaware that the required data already exists, or that others are in the process of collecting them; and

- improvements in the quality and quantity of data and information, through an increasing awareness of their importance, of the ways in which analyses can be improved, and of the existence of gaps in present stocks.

2.3. Supply of agricultural data

2.3.1 Introduction

As indicated in the first section the data system of the agricultural information system is responsible for the supply of agricultural data. Discussion of the supply of agricultural data is divided into headings involving the sources, classification, and criteria of agricultural data.

2.3.2 Sources of agricultural data

Barnard (1975) distinguished three main sources of data, namely

- Experimental sources;

- farms; and

- government departments, markets, marketing boards, commercial firms etc.

According to Barnard (1975) the data from these sources are collected either by *experimental* or *non-experimental means*. The former rely heavily on testing relationships between phenomena by eliminating or controlling as many extraneous variables as possible, and apply mainly to the natural and biological sciences. In contrast, non-experimental means of data collection depend largely on various forms of censuses and surveys (Barnard, 1975; United States Department of Agriculture, 1987; Juster, 1970; FAO, 1986), farm account projects (Plaunt, 1967), site visits, administrative reports as well as a number of unofficial channels (FAO, 1986). The unofficial channels include qualitative information on values and goals and also direct communications with various interest groups, for

example peasant organisations, farmer co-operatives, landowners, consumer groups, importers and exporters (FAO, 1986). This study focuses only on non-experimental methods of collecting data on agriculture. Therefore, only the two most common methods, namely the agricultural census and survey are discussed.

2.3.2.1 Censuses

A *census* is a complete enumeration of a universe; an *agricultural census* is a complete enumeration of all the farms in a specific country (United States Department of Agriculture, 1987). Agricultural censuses collect data on the changing structure of agriculture, which normally include the number and the characteristics of farms and characteristics of the operators. Censuses also include smaller disaggregations of these data (Gardner, 1983). Except for statistical descriptions of a given situation, census data are normally used for annual, quarterly and monthly benchmarks (Taeuber, 1966), which are, amongst others, used for the economic accounts of agriculture. Census data, however, are usually thin and incomplete, the publication thereof is often delayed (Cochrane, 1966) and are also less valuable in terms of discovering commodity outputs and prices, or subdivisions thereof for products (Gardner, 1983). In South Africa, problems with agricultural censuses and surveys were encountered in terms of inconsistency of definitions (Nieuwoudt, 1972; Brand, 1969), discrepancies between census and other official data sources (Groenewald, 1989) and delayed dates of publication.

2.3.2.1 Surveys

Surveys have overtime become more sophisticated and useful for various agricultural and non-agricultural statistical projects (United States Department of Agriculture, 1987). Units for a sample survey are selected from a universe having known boundaries or coverage and therefore the measures of accuracy are available and can be predicted before sampling. A sample is smaller in size and therefore easier, quicker and cheaper to enumerate (United States Department of Agriculture, 1983).

2.3.3 Classification of agricultural data

Bender et al. (1989) and Gardner (1983) outlined the following categories of data:

- Primary data, which are raw, basic and unprocessed and are those which the individual collects himself and include data on commodity production, prices, resource use and characteristics of farmers, farm households and farm workers; and

- secondary data which are published or recorded data and normally is information generated by governmental agencies from primary data; secondary data include price indexes, costs of production, indicators of farm income and wealth, sectoral value added, productivity and other aggregate indicators for national accounts.

Just (1983) gives a more detailed classification of agricultural data:

- Market and structural data, which normally relate to the phenomenon measured. Market data involve price, acreage, production, livestock numbers, stock, consumption and exports while structural data include data on income, employment, productivity, nutrition and distribution of resources;

- current and historical. Current data is defined as up-to-the-minute data depicting a current situation or a developing market trend as closely as possible, for example daily market prices while historical data can on the other hand be defined as data which depict a situation that has existed in the past, for example final estimates of prices and quantities that compose time series used for economic analysis; and

- public and private data. Public data are data in public domain to which everyone has access, which is characterised by non-rivalness and non-excludability in consumption (Pasour, 1990; Gardner, 1983). Non-rivalness consists of any satisfaction that one consumer gets from a given amount of a public good does not detract from the enjoyment or satisfaction obtained from the same good by other consumers. Non-excludability is the characteristic provision of a public good to any one individual that does not exclude use by or benefits by additional consumers, e.g. by the imposition of fees (Pasour, 1990). The supplier of public data is generally the government. Government crop and livestock reports are considered a public good even though private information is produced simultaneously and would most likely be available without the government information efforts (Carter & Galopin, 1993). The price data for major commercial and futures are also public data, since they are supplied by the

exchanges themselves and disseminated by the media. Private data are controlled and dispensed by private concerns; a fee is usually charged for access to such data.

2.3.4 Classification of agricultural statistics

Agricultural statistics is a way of presenting agricultural data in such a way that interpreters and analysts can transform it into useful information for decision-makers. As mentioned in chapter one, in this study agricultural statistics present agricultural data and therefore needs to be classified. Agricultural statistics is defined as the aggregate of numerical data of different fields of agriculture and its economy (Idaikkadar, 1979). According to Idaikkadar (1979) agricultural statistics can be divided into two broad groups:

- Basic statistics, which include statistics that deal with the enduring characteristics of agriculture, for example land utilisation, land tenure, distribution of holdings etc. These statistics are usually collected by means of decennial agricultural censuses and surveys.

- Current statistics, which include statistics that deal with agricultural activities performed more or less continuously year after year, for example the area under and production of crops, production of meat, milk and eggs. These statistics are usually collected by means surveys done annually or more frequently.

In the questionnaire, this classification of agricultural statistics is used to identify the agricultural data needs of policy makers, researchers, agribusinesses and farmers.

2.3.5 History of the supply of agricultural data in South Africa

The collection of market data on South African agriculture began in 1915 with a system of monthly crop and livestock reports by the Department of Agriculture. Structural and market data on agriculture were included in the population census of 1904 and the agricultural and population census of 1911. At first the data sources were samples of evenly distributed farmers in the districts and reports of livestock inspectors and other officials of the Department. Later in the early 1920's, the districts were as far as was practically possible divided into small areas of four farms, with one farmer being appointed as a crop respondent (Department of Agriculture, 1922). The crop respondent had to

complete a monthly report, which normally included livestock and crop conditions. This report was forwarded to the Magistrate of that District where it was processed, scrutinised, weighted and averaged before being transmitted to Pretoria. Since the system depended on the farmers as a source of data, the Government in return had to keep the farmers well informed with related information that was estimated from the data the farmers supplied. The estimates where then validated with the agricultural censuses and surveys, conducted by the Department of Census at that time. (Department of Agriculture, 1907-1927)

The late 1930's and 1940's were characterised by the establishment of control boards, which regulated the marketing of the most important agricultural products in South Africa. Statutory measures (Article 52 of the Marketing Act) enabled marketing boards to collect data by means of compulsory returns. These data supplied by marketing boards became reliable data sources for decision-makers. As a result, the system of crop and livestock reports was reduced to include only forecasts and final estimates of summer and winter field crops as well as livestock numbers estimates. Agricultural censuses and surveys were valuable sources of structural data as well as benchmark data for crop forecasts and livestock number estimates. However, problems were encountered with the inconsistency of definitions (Nieuwoudt, 1972), the discrepancies between census data and other official data sources (Groenewald, 1989) as well as delayed publishing dates.

The deregulation of marketing in the 1990's was characterised by the disbandment of marketing boards, resulting in a decrease and in some cases, the discontinuation of the supply of administrative data (Willemse, 1996). For some products like grain and oilseeds, cotton, deciduous, citrus, dried and canned fruit, lucerne, wool, mohair, milk and meat, alternative organisations were established under to the Marketing of Agricultural Products Act of 1996 to continue the collection of agricultural data (National Agricultural Marketing Council, 1998). However, these organisations still rely on compulsory or, in some cases, voluntarily returns for the collection of data. Also, as a result of budgetary constrains, Statistics South Africa indicated that agricultural censuses and surveys will be discontinued until funds are supplied by the National Department of Agriculture.

2.3.6 Criteria for agricultural data

According to Barnard (1979), statistical reliability is the most important criterion for agricultural data. Riemenschneider & Bonnen (1979) categorised statistical reliability according to the following:

- Reliability of concepts, i.e. whether the concept is an accurate representative of reality and whether the concepts are pertinent to the decision being made. Reliability is further broken down into the three closely interlocking components, namely *accuracy, relevancy* and *comprehensives*. *Accuracy* implies that estimates of particular phenomena are not significantly different from their true population parameters, i.e. reality. *Relevancy* implies that they are suited to the purpose in hand and are not for example, drawn from populations with different characteristics and are not out of date. *Comprehensiveness* implies that all the variables which have a significant bearing on the outcome of an analysis, are included.

- accuracy of data, which is affected by the reliability with which concepts are operationalised or defined; the categories of empirical variables should be as highly correlated as possible with the conceptual representations of reality; and

- measurement reliability, which according to (Bonnen, 1977) follows from the statistician's usual definition of the term.

Except for statistical reliability, agricultural data must also be complete, trustworthy, timely, confidential as well as balanced at all levels of the agriculture and food industry in order to be relevant in the decision-making process (Kohls & Uhl, 1990). The organisation involved in the data system should be objective and unbiased. Government organisations usually comply to these criteria.

2.4 Agricultural data needs

2.4.1 Introduction

It was clear from the outline of the agricultural information system that agricultural data needs originates at the inquiry system, i.e. at the interpretation and analysis level. Although decision-makers normally use only information for decision-making, they have an impact

on the agricultural data needs. Agricultural data needs are discussed in terms of the policy makers, researchers, agribusiness and farmers needs as well as the factors influencing their needs.

2.4.2 Users of agricultural data

Raup (1959) identified three broad trends in the evolution of users of agricultural data:

- Ministerial function, when historically, the users were almost exclusively governments and ministerial officials who still continue to be a strong user of agricultural data;

- trade function, when traders and commercial groups also became interested in agricultural data; and

- research function, the newest function, since it has only been in recent times (i.e. the 1950's) that interest became focused on data and information produced by researchers, especially by economists and statisticians.

Just's (1983) categories of agricultural data users are very similar to the Raup's (1959) evolution of agricultural data users, but he made a clear distinction between:

- Commercial decision-makers, who usually rely on current market data and comparisons to the recent past in order to formulate decisions for production, storage and marketing. Except for large trading firms, the data are not used in formal economic analyses and considerations beyond the market in question are weak. Nevertheless, many commercial decision-makers use information packages from information producers that rely on some formal economic analysis.

- Speculators, primarily futures market traders, whose data needs depend on their trading strategies. Current market data, forecasts of supply and demand and historical data for formal economic analysis are needed.

- Information producers, which need current market data from both public and private sources to develop up-to-the-minute information, short-term forecasts for sale to commercial interest and speculators. Some private sources of data are used to differentiate the information product in the marketplace. Historical data are used to perform policy analysis, or to do long-term forecasting for either government or commercial interest.

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Agricultural data and information producers are widely documented by Plaunt (1967); Craig (1979); Idaikkadar (1979); Russel (1983); United States Department of Agriculture (1987); Aina (1995) and New Zealand (1998). However, in the current South African context, the following categories of users are considered to be important in this study:

- Policy makers;
- researchers;
- agribusiness; and
- farmers.

2.4.3   Agricultural data needs of specific user groups

The need for agricultural data is derived from its value in decision-making, problem solving, management of complexity and uncertainty, the improvement of competition and operational efficiency and the increase of knowledge of policy makers, researchers, agribusiness and farmers. However, the value of data cannot be known with any certainty until it is obtained and used (Bonnen, 1988). Consequently, problems arise in estimating the need for data and also the needs for specific sets of agricultural data. Data users who are risk averse will tend to demand less data than is socially optimal because of the uncertainty of their returns, *priori* to in investments in data. On the other hand, if its value were known with certainty, *a priori*, that value, paradoxically, would have to be zero because data only becomes an economically valuable commodity under conditions of uncertainty (Bonnen, 1988). The needs of policy makers, researchers, agribusinesses and farmers are discussed further.

2.4.3.1 Policy makers

Policy makers are regarded as these people and/or organisations that are involved in policy-making, usually within the government. Policy makers need agricultural data for policy making and planning in agriculture (Bay-Petersen, 1995; Fennel, 1981; Idaikkadar, 1979; Hauser, 1973; Bonnen, 1977). This includes data on current, domestic and international states of affairs, trends in the agriculture sector and the likely consequences of their policy

actions to manage those affairs as well as other socio-economic sectors which have a bearing on food and agriculture, such as transportation, rural infrastructure and demographics (FAO, 1986).

To provide the information to the policy-maker, data of both the *input* and *output* sector and their interrelationship at all critical production and processing points are needed (Simpson, 1966). On the *output* side, policy makers need data on levels of production, area planted, production, stocks, prices, income, utilisation, market outlook and similar information about the agricultural sector from a regional, national and international perspective (Russel, 1983; United States Department of Agriculture, 1995; Idaikkadar, 1979).

On the *input* side, policy makers need data on the use of resources, environment, irrigation, fertiliser usage, employment, power and machinery, market intelligence and costs related to agriculture (Russel, 1983; Idaikkadar, 1979, American Agriculture Economic Association Committee on Economic Statistics, 1972).

2.4.3.2 Researchers

Researchers are regarded as those people and/or organisations that use data for research. It is assumed that the level of detail needed by the researcher is often the same as or higher than that needed by the farmer and the extension worker (Plaunt, 1967). However, trends in the policy environment can have an influence on information needs (Ballantyne, 1994). Policy trends do not directly influence use or non-use of data by researchers, however, shifts in policies on information and research largely determine the kinds of data that researchers demand, and the ability of data units to respond to their demands.

Researchers transform data into projections of current trends, they interpret the economic implications and evaluate alternative courses of action. Researchers also use data to study the many variables of the farm sector and to understand the complex relationships and interdependence of agriculture (Ballantyne, 1994). Except for agricultural data applied to mathematical and econometric models (Morgenstern, 1963), Juster (1973) specified the following usage of data for researchers, namely:

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- Theoretical and empirical analysis of existing data;

- generation of experimental micro data growing out of a specific research problem;

- generation of non-experimental micro data; and

- generation of processed data.

A study by Hushak et al. (1989) showed that the consumer prices and price indexes, census data, prices received and paid as well as their indexes, agricultural outlooks, field crop area planted and production, farm costs and returns, economic indicators including costs of production, world agricultural supply and demand estimates, farm production expenditures, number of farms and foreign trade statistics are very important to researchers. Geographic levels of data needed were 62,2% on national, 55,2% on state (provincial), 33,8% on county (magisterial) and 31,9% on international level.

It is not possible to anticipate all of the types of analyses that are likely to be conducted once a detailed set of data is available (Plaunt, 1967). Data collection for basic research must be responsive to frequently changing requirements and needs as old hypotheses are set aside and new hypotheses are introduced. Data needs for government also change as the stock of available knowledge grows, but since relatively few hypotheses ultimately prove useful, the requirements of government for responsiveness, with regard to data collection, are substantially less than those flowing from research needs (Orcutt, 1970).

2.4.3.3 Agribusinesses

Agribusinesses are regarded as those businesses and/or organisations involved in the secondary agricultural sector, which consist both of the input and output sector. Agribusinesses need data on market trends, production estimates and prospects about agricultural industries (Russel, 1983). They need production data for small areas within a country, preferable ahead of harvest, in order to make transportation, marketing and processing plans (Just, 1983). These industries also need data on costs of production, marketing and transportation in competing countries (Allen, 1998). The likely actions of public decision-makers is also important (FAO, 1986).

They often need data on the demand for products; however, it is much easier to measure present supplies and disappearance of those supplies than to estimate what quantities might have been demanded or marketed if they had been available. There is also an increase in data for economic planning, especially towards facility planning and product flow management on an industry basis (The American Agriculture Economic Association Committee on Economic Statistics, 1972). As the result of high competition, rapid access to new information can be critical to their profitability and competitive position and therefore their needs are often met through highly specialised services (Russel, 1983).

2.4.3.4 Farmers

Farmers are represented by persons and/or organisations involved in the primary farming sector. They represent the beginning and the end of the data and information chain (Russel, 1983). Ozowa (1995) states that it is very difficult to categorically determine all the agricultural data needs of farmers, especially in a data and information dependent sector like agriculture, where there are new and rather complex problems facing farmers every day.

The data needs of farmers are similar to those of agribusinesses, except that farmers also need data particularly for production and marketing decisions, especially decisions such as which crops to plant, whether some crops should be sold or stored until prices improve and the level and type of capital (United States Department of Agriculture, 1987). In order to make these decisions, data on price and cost expectations (Brown & Claar, 1956), production trends and cycles (Riemenschneider and Bonnen, 1979) as well as data for assessing capital requirements and credit needs, for drawing-up accounts for comparative analysis and tax purposes, for identifying least-cost technology and for assessing market prospects are needed (Barnard, 1979). The impact of the data, however, depends on the type and size of the farm operation (United States Department of Agriculture, 1983).

In South Africa farmers have apparently had rather limited data needs for marketing information (Frick & Groenewald, 1998). In a regulated marketing environment, with marketing decisions removed from farmers, marketing information had rather limited value.

With the deregulation of agricultural marketing, the need for agricultural data increased while the nature of agricultural data needs also changed simultaneously. In a survey of organisations representing farmers, the South African Agricultural Union (1999) concluded that farmers are currently more focussed on marketing compared to the focus on production during the regulated marketing area. Therefore, is there a growing interest for price forecasts and market trends. Historical data seems to decrease in importance. A survey in the Eastern Cape in South Africa found that particularly younger small-scale farmers indicated an intense shortage of marketing information (Madikizela & Groenewald, 1998). Using Nigeria as an example, data on product planning, current prices, forecast of market trends, sales timing, improved marketing practises and group marketing were needed by the small-scale farmers (Ozowa, 1995).

Data needs of extension officers constitute an important part of the agricultural data needs of farmers. The extension officer who wants to work effectively with the individual farmer needs not only the exactly same type of data as does the individual farmer, but also the alternatives available in his area (Plaunt, 1967; Brown & Claar, 1956). These data are used to improve decisions made by five important groups in our society. These groups include individual farmers and their families, neighbourhood and community groups, government policy makers and administrators, business firms and consumers (Brown and Claar, 1956). A survey on extension officers in the USA indicated the following agricultural data needs:

- State and county data regarding the production of crops and livestock on a monthly and quarterly basis as indicated by the production cycle;
- more county and state data on farm and non-farm income with additional breakdown and cross referencing as to size of farm, type of farm, age of operator, source of income, etc. Similar data were needed for more cost of production data on crops and livestock;
- additional state and county data on the use of major production practises and farm equipment, particularly new practises and equipment;
- separation of irrigated from non-irrigated production. Data were also needed as to the irrigated area of crops and the source of water, type of equipment, costs etc.;
- additional data to trace the movement of farm products via rail or truck;
- data in an increased quantity regarding the destination and utilisation of all farm products;

- additional price data by grades and classes;

- additional price, production and utilisation data for forestry crops, fruits and vegetables by grades and uses; and

- state and county level data on family living and community characteristics. (Brown & Claar, 1956)

2.4.4 Factors influencing the agricultural data needs

The factors that increase either the supply of data, the productivity efficiency in which data is transformed into information or the need for agricultural data are:

- Technological changes, i.e. technological and institutional innovations of farming practises, transportation, communication and data processing and, to a lesser extent, in statistical methods (Trelogan, 1963; FAO, 1986). The tremendous upsurge in computer technology and services coupled with increasing refinement of analytical methodology has increased the need for agricultural data. Access to computer technology at a decision-making level reduces the cost of evaluation and analysis of data and thus increases demand for data (Just, 1983; Barnard, 1979; Allen, 1998);

- the volatility of agricultural markets resulting from the relationships of domestic agricultural markets to other markets and also the interactions of demand and supply (Just, 1983);

- the development and growth of non-commercial markets that can be used to turn commodity information into quick, large-scale and highly leveraged profits without developing commercial interests (Just, 1983);

- the development and perfection of remote sensing technology and related production of data by satellite (Just, 1983);

- changes in the organisation, nature and the basic characteristics of the agricultural sector, i.e. industrialisation and development (Bonnen, 1975; Lindner, 1998; Sundquist, 1970). Development leads to specialisation of functions and organisations. This greatly increases the need for co-ordination and thus the social returns to and the demand for information;

- changes in agricultural policies (Bonnen, 1975; Hauser, 1973);

- decreased government intervention (Amstutz, 1998);

- reduction in government budgets for agricultural data collection and the lack of effective planning and co-ordination among these agencies (Gardner, 1983); and

- trends in economic, political and trade integration towards market globalisation (Oresnik, 1998).

2.5 Data gaps

2.5.1 Introduction

A data gap develops when the need for data outstrips the supply (Barnard, 1975), in other words when the data system cannot satisfy data needs of the inquiry system. However, Eisgruber (1967) states that to expect a system which anticipates all data needs is an expectation which is a significant distance removed from reality. According to Idaikkadar (1979), the users rather than the producers of data usually detect data gaps. The reasons for data gaps and the most common agricultural data gaps will now be discussed.

2.5.2 Classification of data gaps

Cochrane (1966) classified data gaps under the headings *basic data* gaps, *collection methodology* gaps and *data refinement* gaps. They are discussed further.

2.5.2.1 Basic data gaps

According to Houseman (1964), cited in Cochrane (1966) the following are examples of basic data gaps:

- An annual breakdown of gross farm income, production expenses, net farm income, and per capita income of farm people by types and economic classes of farms;

- an annual series on acreage of land irrigated, water used for irrigation, and water storage for agricultural uses;

- annual data on farm tenure to provide more current appraisal of rapidly changing tenure conditions than is available from the census;

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- a time series of production inputs for major commodities and for broad farm production regions;

- an expanded series on taxes levied on farm real estate to permit comparison of levels of taxes and rates of increase between different types of farming areas, irrigated and non-irrigated land, and farms of different sizes;

- additional information on farm labour input and productivity to obtain kinds and amounts of labour used on major crop and livestock enterprises per units of production; and

- data on the livestock carrying capacity of grazing land.

2.5.2.2 Data collection methodology gaps

Data collection methodology gaps exist with respect to agricultural development statistics. First, in many less-developed countries, the nationals that have the responsibility for collecting agricultural data do not know modern statistical methods and are hence unable to conceive and develop methods for collecting relevant and reliable agricultural data. Second, many if not the most developing nations cannot afford the luxury of a statistical agency capable of reaching effectively into the rural areas. Third, surveying and sampling methods that work in a literate society with an urbanised culture are not directly transferable to primitive cultures and illiterate societies. Fourth, there is the problem of aggregating data on regions or groups of countries where definitions vary and the data vary with regard to reliability.

2.5.2.3 Data refinement gaps

Data refinement gaps often occur where quantitative data are collected as a by-product of an operating program, as sometimes happens with data collected by statistical agencies. Data do not become useful to policy decision-makers until they are put into meaningful tabulations and classifications.

2.5.3   Reasons for data gaps

The main reasons for data gaps are conceptual obsolescence, property rights, inadequate analysis and increased demand. These are discussed further.

2.5.3.1 Conceptual obsolescence

Conceptual obsolescence is one of the most important reasons for data gaps. According to Bonnen (1975); Hushak et al. (1989), it is not in the measurement of data where suppliers fail but in the adequacy of the concepts underlying the data or which data the system attempts to measure. When historically collected agricultural data do not perform as well as they had in earlier years, the problem is a growing obsolescence in the concepts which the data system attempts to measure (American Agriculture Economics Association, Committee on Economic Statistics, 1972). In other words, the basic unit of observation from which an agricultural statistics system is constructed is conceptually obsolete, especially on economic and social indicators (Madden, 1970; American Agriculture Economics Association, Committee on Economic Statistics, 1972).

Conceptual obsolescence occurs in two ways, namely changes in reality in such a manner that the concepts no longer represent reality and changes in the public and private policy for agriculture (Bonnen, 1975). The changes in reality refers to changes in the structure of agriculture, especially on production and marketing (Sundquist, 1970). The changes in policy result in changing questions from policy makers. When the questions change, the conceptual base of data, especially secondary data, is not a fully appropriate representation. Also, data critical to the new questions are not even collected (Bonnen, 1975).

Rapid or steady long-term technological, or organisational and associated value changes not only create obsolescence and mismatching in the conceptual base but also in the institutional structure of statistical systems (Bonnen, 1975). Institutional obsolescence occurs when the reorganisation or development of a new administrative structure takes place without adequate care for the integrity or capability of involved data systems or when changes in basic statistical measurement techniques are unmatched by an implementing or organisational adjustment.

2.5.3.2 Property rights

Data gaps also occur in terms of the *property rights* to the data. According to Bonnen (1975) property rights apply to data that are privately held. In attempts to redesign or create new data responding to the public interest in problems involving the behaviour and performance of the agricultural sector, one finds that essential data is often held by a few firms whose immediate interests are often not served by releasing that data. Bonnen (1975) speculates that as industrial concentration continues to grow in the agricultural market, the issue of private ownership of information versus the public's right to know will become more critical and heated. With the deregulation of the South African agricultural market, organisations are withholding certain data in order to maintain a competitive edge in the market.

2.5.3.3 Inadequate analysis

If unreliable data are applied in the context of valid theories, analyses and inferences may lead to unsound prescriptions and sound data may become distorted through weaknesses in other aspects of the decision-making process (Morgenstern, 1963). A great weakness of information systems arises from the failure of statisticians, analysts and researchers to do adequate data analysis (Bonnen & Wimberley, 1992). Analysts often seem to think they know the meaning of data before even looking at it; they simply design its collection, or worse, use it without even designing its collection or getting acquainted with the design, which is a fundamental error. This also leads to researchers taking data too much for granted so that they fail to make any strong demand for better data (Juster, 1970). In general, statistical methods have not kept pace with economic and policy developments (Lindner, 1998). This caused the gap in the information for emergency policy decisions, micro and macro monetary statistics to increase (Lindner, 1998).

2.5.3.4 Increased demand

A fundamental reason for an increased demand for data and information at the decision-making level is the tremendous growth that has taken place in computer technology and in

the availability of computer services (Barnard, 1975). There has in turn been a parallel growth in the application of models based both on mathematical programming methods, such as a linear programming, and on econometric techniques based on linear regression or extensions of it. Management at farm level now also considered now to be a science and not a rule of thumb affair. At the same time, paralleling such advances on farms, there has been an increased demand for data from the many agencies and firms compromising the agricultural infra-structure, including government departments, manufacturers, processors, banks and advisory services (Barnard, 1975).

2.6   Conclusion

The agricultural information system as discussed in this chapter form an integral part of this study. It consists of three distinct components, namely the *data system* where the supply of agricultural data is created, the *interpretation and analysis* as well as the *decision-makers* components where the agricultural data needs are created. *Decision-makers* rarely use raw data but rather after the data supplied by the *data system* have been transformed at the *interpretation and analysis* into information. Agricultural censuses or surveys can either be used to collect data at the data system. The choice, however, between an agriculture census and a survey should be influenced by the agricultural data requirements (United States Department of Agriculture, 1987), the needs of the various users and decision-makers (Tauber, 1966) and also the funds available. Except for decision-making, the purposes of an agricultural information system are problem solving, managing complexity and uncertainty, improving the competitive market and operational efficiency and also the increase in knowledge.

The *decision-makers* are categorised into the following agricultural data users, namely policy makers, researchers, agribusiness and farmers. Their agricultural data needs can vary in respect of the specificity, responsiveness, regularity, longitudinally, depth and level of aggregation of the data (Plaunt, 1967; Orcutt, 1970). However, according to Eigruber (1967) a considerable overlap exists in terms of the basic data needs of these users. Therefore, if the needs of these different users are to be serviced from a common information system, its data base should be founded on as highly disaggregated data as

possible, so that they can construct their own aggregates as appropriate. Factors influencing the agricultural needs are technological changes, the volatility of the markets, the development and growth of non-commercial markets, the development of remote sensing technology, changes in the organisation and nature of the agricultural sector, agricultural policies, decreased government intervention, reduction in government budgets for agricultural data collection and trends in economic, political and trade integration.

Data gaps arise when the supply of agricultural data at the data system is inadequate to satisfy the decision-makers needs for agricultural data. Type of data gaps are basic data gaps, collection methodology gaps and data refinement gaps. Reasons for data gaps are conceptual obsolescence, property rights, inadequate analysis and increased demand.

The following chapter discusses the methodology used to identify and evaluate agricultural data needs of policy makers, researchers, agribusinesses and farmers.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter's primary objective is to develop a methodology to identify agricultural data needs in South Africa. In its review of literature on agricultural data needs, chapter two did not specifically mention the methods available to identify and evaluate agricultural data needs. The *first part* of this chapter concentrates on the type of study, while the focus of the *second part* is a review on data collection methodologies available for identifying and evaluating agricultural data needs.

The *third* part discusses the sample according to the target population and sampling frame, the sample size and the sampling method. The *fourth* part discusses the questionnaire design according to the structure of the questionnaire and the types of questions asked.

3.2 Type of study

This research study is *exploratory* and *descriptive*. The main purpose of *exploratory* research is to reach a better understanding of the research problem (FAO, 1997). This includes helping to identify the variables that should be measured within the study. When there is little understanding of the topic it is impossible to formulate hypotheses without some exploratory studies. *Descriptive* research is concerned with describing market characteristics and/or marketing mix characteristics. Typically, a descriptive study specifies the number and size of market segments, the alternative ways in which products are currently distributed, listing and comparison of the attributes and features of competitive products etc. (FAO, 1997).

3.3 Data collection methods

3.3.1 Introduction

Methods available for identifying agricultural data needs will first be discussed, followed by the data collection methods used particularly for this study.

3.3.2 Methodologies available

The United States Department of Agriculture (1989), a world leader in the collection and dissemination of agricultural statistics, prescribed the following methodologies to collect data for identifying agricultural data needs:

- Informal methods (indications received from data users verbally or in written form);
- data users conferences or meetings; and
- survey techniques

Since informal methods do not apply to this study, only data users conferences and surveys are discussed in detail.

3.3.2.1 Data users conferences

Data users conferences or meetings are based on qualitative-interviewing methods. A good example is the Unites States Department of Agriculture Data Users Meetings facilitated by the National Agricultural Statistics Service (NASS). These meetings have been held nearly every year since 1978 with the various users of agricultural data to identify agricultural data needs (United States Department of Agriculture, 1989). These meetings are held over a period of two days (Allen, 1998b). The first day consists of seminars on related topics while the second day consists of discussions with the various users on their specific data needs. These meetings have been rotated according to various crops and different States.

The Australian Bureau of Statistics holds meetings with users every year on either an individual or group basis over a period of three months to identify the agricultural data needs in order to finalise additional questions on the yearly census form (Sward et al.,

1998). A meeting with the Agricultural Statistics User Advisory Group is also held where priorities for the forthcoming collection are determined by examining the full range of existing and new statistical user requirements.

A workshop on statistical needs of the agricultural sector was held in February 1999 at the Pretoria office of Statistics South Africa. Attendants of the workshop were divided into four groups whereby each group had to identify their agricultural statistics needs and the purposes for it. The results are discussed at the end of chapter four.

3.3.2.2 Surveys

3.3.2.2.1. Mail surveys

Mail surveys to identify agricultural data needs are not a new phenomenon and were undertaken as far back as 1954 by Ebling and Ahlgren. Mail surveys were also undertaken by Blanch (1955), the Economic Statistics Committee of the American Agricultural Economic Association and the Agriculture Statistics Review established under the Government Statistician of New Zealand. Mail surveys on this topic undertaken in South Africa include the Bureau for Financial Analysis of the University of Pretoria, South African Department of Agriculture and recently by the South African Agricultural Union. They are discussed further according to the objectives and the questions asked. The advantages and disadvantages of mail surveys are also discussed.

The objective of surveys undertaken by Ebling and Ahlgren was to identify the specific agricultural data needs at national, state and county level (Brown and Claar, 1956). The following questions were included in the questionnaire:

- What data were needed by the Agricultural Extension Service in that specific state;
- what data that they received they wanted to be continued in that form;
- what changes were suggested in the type and form of data available at that time; and
- what additional data, that were not available at that time, they needed for better planning (Brown and Claar, 1956).

Blanch (1955) improved on the study by Ebling and Ahlgren (1954) by adding categories under four general headings, namely:

- Data pertaining to the resources used in agricultural production;
- data pertaining to production practices, costs and quantities and other characteristics of commodities produced;
- data pertaining to the marketing of farm products; and
- miscellaneous.

The Economic Statistics Committee of the American Agriculture Economic Association undertook mail surveys to assemble comprehensive statements about current and future data needs of agricultural and rural social scientists (Hushak et al., 1989). The following questions were included in the questionnaire:

- Characteristics of the respondents;
- questions on past and future use of data;
- the types of data that are the most important and at what level; and
- series of statements about potential changes in the future.

The Agriculture Statistics Review established under the Government Statistician of New Zealand undertook mail surveys to determine the adequacy of the current set of agricultural statistics (New Zealand, 1998). Although no structured questionnaires were used the following questions were included in the questionnaire:

- Identification of which agricultural statistics have been used and at what level of disaggregation;
- the sources of the statistics;
- how the statistics were used;
- if the users were satisfied with the current supply of agricultural statistics; and
- the preferred medium for the dissemination of statistics.

The Bureau for Financial Analysis of the University of Pretoria conducted a mail survey on the information needs of the users of information regarding fresh market products (Bureau for Financial Analysis, 1990). The target groups were producers of fresh produce, market

agents, fresh markets, buyers of fresh produce and other organisations involved with the production and marketing of fresh produce. The data collection methods were mainly postal questionnaires while reconnoitre talks and personal interviews were also used. The following questions were asked:

- Characteristics of respondents;
- the income from vegetables and fruits as a percentage of the total income;
- whether the respondent received particular publications;
- if they did, to which extent; and
- suggestions for improvements of the publications

The South African Department of Agriculture (1992) identified the need for economic and financial information on farm level by the relevant users by means of questionnaires and personal interviews. The project identified the need for information on national, area and individual basis. Mail questionnaires were sent to co-operatives, organisations affiliated to the South African Agricultural Union, marketing boards, Department of Agriculture, other Government departments, private consultants, financial institutions, Agricultural and Land Bank and the Development Bank of Southern Africa. The following questions were included:

- Whether organisations had a need for specific types of information;
- whether the organisations collected the information themselves;
- how frequent the information was collected; and
- whether the organisations would make the information available.

The South African Agricultural Union (1999) developed a short questionnaire in order to determine the minimum necessary agricultural information for clients, i.e. farmers or organisations representing them. Producer organisations were asked to:

- categorise the minimum necessary agricultural information needed; and
- sources of the information.

Mail surveys have some advantages and disadvantages compared to interview surveys. The advantages are that

- questionnaire can be sent to sampling units in widely scattered locations covering a large geographical area;

- prospective respondents can be reached at relatively low cost;

- respondents can be reached in their homes or offices;

- questions can be answered more carefully than with personal or telephone questionnaires; and

- no interviewer is present to bias the answers (Clover & Balsley, 1979).

The disadvantages of mail questionnaires are:

- A relative low response rate;

- answers to certain questions may be omitted or the questions may be incorrectly answered because they are misunderstood;

- mail questionnaires can be sent only to persons who can read and write;

- motivational techniques must be used to increase the response rate;

- up-to-date mailing lists may be expensive to obtain;

- valuable information obtained from personal interviews cannot be obtained from this method;

- the degree of representativeness of a sample obtained by mail may be difficult to determine (Clover & Balsley, 1979).

3.3.2.2.2   Personal surveys

Personal surveys were undertaken by BDPA-SCERAGRI and Bembridge. They are discussed further. A survey on information needs was carried out by BDPA-SCERAGRI, a private consulting firm, working world-wide in the field of rural development and environment. The target groups were private farmers, collective farm managers, agricultural administration officials, agricultural training institutes, managers, teachers and agricultural students. Personal interviews were used to discuss the questions on information needs with the motivated people of each target group (Gachie, 1996).

A survey on farmer characteristics, information sources as well information needs were carried out in a village in Venda, South Africa. Data was also obtained by personal interviews with de facto heads of households (Bembridge, 1993).

3.3.3 Methods used for this study

It appears mail surveys that are mainly used to collect the data; personal interviews are used to a much lesser extent. This study will also use mail surveys. The following reasons dictated the choice of a mail survey:

- The type of data required can be obtained in satisfactory form by mail questionnaires that can be answered easily and quickly;
- the information are possessed by persons who are able and willing to respond through mail;
- the target population, i.e. the policy makers, researchers, agribusinesses and farmers is composed of a relative homogeneous group of persons with similar interests;
- up-to-date and satisfactory complete mailing lists were available;
- sufficient funds were available for the completion of the survey;
- sufficient time could be given for the replies to be received from the respondents

Although this study focuses on mail surveys in order to identify and evaluate agricultural data needs, users of agricultural data for policy-making were asked to outline their agricultural data needs at a workshop held in February 1999 at Pretoria, thus a agricultural data users conference as described in section 3.3.2.1. The methodology is not discussed in this chapter; the results are, however, discussed in chapter four.

3.3 Sample

3.3.1 Introduction

The target population and sampling frame, the sample size and sampling techniques are to receive attention.

3.3.2 Target population and sampling frame

The target population consists of agricultural data users that use agricultural data primarily for decision-making, problem solving, solving, managing complexity and uncertainty, improving the competitive market and operational efficiency and also the increase in knowledge as outlined in chapter two. The users are categorised as policy makers, researchers, agribusiness and farmers. Since no complete list of this population exists, a list of all the sampling units had to be constructed for each target population – also referred to as the sampling frame (Scheaffer, et al. 1990). The sampling frame of this study was constructed by listing any or all organisations who would form part of the population of a particular agricultural data user group, under that particular group. The construction of sampling frames for each of the various data user groups are discussed further (see also Appendix A for a complete list of the data users groups).

3.3.2.1 Agricultural policy makers

The sampling frame of agricultural policy makers is constructed from the addresses of decision-makers within the National Department of Agriculture (including various directorates), Provincial Departments of Agriculture, Land and Agriculture Policy Centre, the South African Reserve Bank, National Agricultural Marketing Council as well as other government departments. Addresses were obtained from mailing lists of the National Department of Agriculture, Agriculture Readers Digest, (1998/99), Effective Farming (1996) and telephone directories. The total number of addresses was 30.

3.3.2.2 Researchers

The sampling frame of researchers is constructed on addresses of researchers at universities and colleges, agricultural economists and consultants, financial institutions and the Agricultural Research Council. Addresses were obtained from the Agriculture Readers Digest (1998/99), Effective Farming (1996), the address list of the Agricultural Economic Association of South Africa and telephone directories. The total number of addresses was 560.

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3.3.2.3 Agribusinesses

The sampling frame of agribusiness is constructed on the addresses of decision-makers in business/organisations involved in the output and input sector of agriculture (but not in the primary farming sector), producer and commodity organisations as well as agricultural and farmers unions. Producer and commodity organisations as well as agricultural and farmers unions are included in this sample frame because many of these organisations perform marketing activities past the primary level of agriculture. The addresses were obtained from an address list of the Chamber of Agribusiness, Agriculture Readers Digest (1998/99), Effective farming (1996), mailing list of the National Department of Agriculture and telephone directories. The total number of addresses was 358.

3.3.2.4 Farmers

The sampling frame of farmers is constructed on addresses of decision-makers mainly involved in the primary sector of agriculture. The addresses were obtained from the Deciduous Producer Trust, address list of the National Crop Estimates Committee and other organisations (names are not allowed to be mentioned). The total number of addresses was 17300.

3.3.3 Sample

A sample is a collection of sampling units drawn from the sampling frame (Scheaffer, et al. 1990). The selection of the items to constitute a sample must be made in consideration of the *adequacy* of the sample, the *representativeness* of the sample and the fact that the sample will be used to make inferences to a universe (Clover & Balsley, 1979). The sample does not have to be representative of the universe (general population), but it must be representative of the population of interest (Dillon et al, 1990). A statistically *adequate sample* is one that is of such size that the inferences drawn from the sample are accurate to a given level of confidence. When a population is not homogeneous, stratification helps to produce several smaller sub-populations which are more homogeneous, and which will

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therefore require a smaller sample (Baily, 1987). Strata may be sampled proportionately, in other words so that the number of units selected from each stratum is proportionate to their distribution in the total population (Yates, 1971).

A *representative sample* is one that has been drawn from the universe in such a manner that it is a small replica of all the factors that exist in the universe. The two major reasons for inaccuracy in samples are the human factor or bias and the distortion due to the selection system. If a sample is not representative of the entire population, is it biased (Yates, 1971). The methods used to select samples should avoid bias wherever possible. However, the choice of sampling method depends not only on the degree of accuracy it offers, but also on its practical convenience (Yates, 1971).

3.3.3.1 Sample size

According to Bailey (1987) the sample size is more important in determining sampling error than the sampling fraction, provided the total population is large and homogeneous. Although many researchers regard one hundred as the minimum size for a sample (Bailey, 1987), sample size can be determined based up *blind guesses, statistical precision, Bayesian considerations, cost limitations* and *industry standards* (Dillon et al, 1990).

Blind guesses are the most unsatisfactory method of determining sample size, using informed intuition as the basis for determining how many units to sample.

Statistical precision relies on traditional statistical formulas for determining sample size. According to (Whitten & Bentley, 1998) an easy formula to calculate sample size is:

$$\text{Sample size} = 0{,}25 \times (\text{certainty factor/acceptable error})^2$$

Bayesian considerations bases the decision regarding how large a sample to draw both the expected value of the information obtained by the sample and the cost of taking the sample.

Cost limitations determines sample size on the basis of the budget allocated to the project.

Industry standards refer to those rule of thumb, developed from experience, that have become standard industry guidelines for determining how large a sample to draw.

3.3.3.2 Calculating sample sizes for this study

The parameters needed to determine a sample size with a certain degree of statistical precision or to apply Bayesian consideration are not available, this is being an exploratory and descriptive study. Other considerations were therefore used. Taking into consideration the sample sizes of previous studies on agricultural data needs (as discussed in 3.3.2), the sample size of the study by Hushak et al (1989) consisted of 6200 sampling units while the sample size of the study by New Zealand (1998) consisted of only 80 sampling units. The sample size of the study by the Bureau of Financial Analysis (1990) ranged from 1100 for producers to 84 for fresh produce markets. The sample size for each of the target population is discussed further.

3.3.3.2.1   Policy makers

Since the sampling frame consisted only of 30 units, all 30 units were selected.

3.3.3.2.2   Researchers

The minimum size of 100 sampling units was taken as the basis, however, an expected response of 50% was taken into consideration. Thus the sample size of researchers consists of 200 sampling units.

3.3.3.2.3   Agribusinesses

The minimum size of 100 sampling units was taken as the basis, however, an expected response of 50% was taken into consideration. Thus the sample size of agribusiness consists of 200 sampling units.

3.3.3.2.4   Farmers

The minimum size of 100 sampling units was taken as the basis each for field crops, horticulture and livestock, thus with an expected response of 50% into consideration, the sample size of farmers consists of 600 sampling units.

3.3.3.3   Sampling techniques

The objective of sampling is to estimate population parameters, such as the means or the totals from data contained in a sample (Sceaffer, et al., 1990). There are mainly two types of sampling techniques, namely probability and non-probability methods. These methods are discussed more in detail.

3.3.3.3.1   Probability methods

Probability sampling is any procedure of selecting the cases for each sample that gives each case in the universe and equal chance of being chosen for the sample and is based on randomness. This technique takes both the *adequate* and *representative* principals into consideration (Clover & Balsley, 1979). Probability methods include *random sampling, systematic sampling, stratified sampling, cluster sampling, area sampling, double sampling, multiphase sampling* and *disproportionate sampling* (Dillon et al, 1990; FAO 1997; Clover & Balsley, 1979). Only the sampling techniques relevant to the study are discussed further.

Random sampling is the simplest method of drawing a probability sample by using the lottery method, e.g. picking numbers of a hat or bag or the use of a table of random numbers.

Systematic sampling is a modification of random sampling. The target sample is generated by picking an arbitrary starting point (in a list) and then picking every *n*th element in succession from a list.

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Stratified sampling involves partitioning the entire population of elements into sub populations (stratum) and then selecting elements separately from each sub population (stratum). Stratification increases precision without increasing sample size and still uses the principles of randomness.

3.3.3.3.2 Non probability methods

With a non-probability sampling method is there no way of determining exactly what is the chance of selecting any particular element into the sample. Consequently, estimates are not statistically projectable to the entire population. Some of the major non-probability sampling methods include convenience sampling, judgmental sampling and quota samples. However, they are not discussed in detail since they were not used in this study.

3.3.3.4 Sampling methods used for this study

Although all possible care was taken to avoid bias in this survey, it is certain that it is present. However, this research is exploratory and descriptive and therefore falls into the category of surveys in which a certain degree of bias is permissible (Yates, 1971). The sampling techniques used for the various sampling frames are discussed further.

3.3.3.4.1 Policy makers

Since the number of units in the sampling frame and the sample size is equal, no sampling was needed.

3.3.3.4.2 Researchers

Systematic sampling was used to select the sample.

3.3.3.4.3 Agribusinesses

Systematic sampling was used to select the sample.

3.3.3.4.4 Farmers

Systematic sampling was used to select the sample.

3.4 Questionnaire design

3.4.1 Introduction

This part discusses the design of the questionnaire. It is consists of two parts, namely the structure of questionnaires and the types of questions.

3.4.2 Structure of questionnaires

The questionnaire on the agricultural data needs for the four target populations consist of four sections: introduction, need for current statistics, need for basic statistics and the need for statistics supplied by the National Department of Agriculture. See Appendix C for examples of questionnaires.

The introduction contains only questions regarding the characteristics of each sampling unit. The questions differ for each of the four different sampling frames.

The need for current statistics is divided into four parts. The *first* part involves questions on the priority and frequency of a list of statistics needed for field crops, the *second* part for horticulture and the *third* part for livestock. This classification for agricultural products, i.e. field crops, horticulture and animal product is used since it is similar to the classification used by Statistics South Africa and the National Department of Agriculture (see Appendix E for a complete list). The *fourth* part asks questions concerning forecasts, sources and types of decisions pertaining to field crops, horticulture and livestock.

The need for basic statistics is divided into two parts. The *first* part asks questions on the priority and frequency for a list basic statistics while the *second* part discussed questions of

sources and types of decisions to basic statistics. The list of basic statistics is categorised according to basic household, particulars of farmers, particulars of farming unit, employment, institutional or infrastructure and economic statistics.

The need for statistics supplied by the National Department of Agriculture does not specifically relate to problem statements and hypothesis, but is included to identify the needs for statistics supplied by the National Department of Agriculture. This need is divided into two parts. The *first* part asks the priority and frequency of data available while the *second* part asks questions relating to the Departmental publications containing data (statistics). The results are not discussed in this study.

3.4.3 Types of questions

The questionnaire contains mainly *multi choice* questions but o*pen questions* are also asked to a lesser extent. The following were avoided:

- Leading questions (worded in such a way as to strongly influence the respondent to give a certain answer);
- misleading questions (questions that are deliberately leading);
- ambiguous questions (questions that do not have a clear meaning);
- double questions (ambiguous questions and questions that contain two questions ore more); and
- uninformative questions (questions that supply meaningless or unreliable information when it is answered).

The questions to the policy makers, researchers and agribusiness in were asked in English, while the questions to the farmers were asked both in English and Afrikaans.

3.4.3.1 Multi choice questions

These questions allow several choices of answers. This questionnaire uses interval scales as choices. Only four choices are given in order to force the respondent not to choose an average answer (in most cases number 3 if in the interval scale consists of 5 choices). The

replies by the respondent may be recorded by placing a check mark in the appropriate numbered checkbox. The following characteristics for constructing a satisfactory list of answers were taken into consideration:

- The list was exhaustive in terms of the four choices;
- the list did not contain overlapping or unclear choices;
- none of the choices were worded as to cause it to be checked or avoided because of the prestige or social approval connotations connected with the wording;
- the choice of "Other, please specify" or its equivalent was included to allow sufficient freedom of additional needs;
- the choices were psychologically consistent.

The multi choice questions were divided into questions relating to the priority and frequency of the data (statistic) needed. Under the heading priority, respondents were to indicate whether it is 1 = not important, 2 = somewhat important, 3 = important, 4 = very important. Under the heading frequency, respondents were to indicate whether the data is needed 1 = yearly, 2 = quarterly, 3 = monthly, 4 = weekly for current statistics and 1 = 10 yearly, 2 = 5 yearly, 3 = 2 yearly and 4 = yearly for basic statistics (see Table 3.1). The numbers were used to code the questionnaire after respondents have completed it. Provision was made at the left-hand side of the questionnaire for the coding.

FIELD CROPS	PRIORITY				FREQUENCY					
Area planted estimates	1	2	3	4	1	2	3	4		

Table 3.1: Extract from questionnaire mailed to respondents

3.4.3.2 Open questions

Open questions leave the answers open to whatever kind of reply the respondent decides to give. The advantages of open questions are:

- Free expression is encouraged;
- response is not biased by a list of possible answers that might suggest replies that were not true reflections of the thoughts of the respondents;

The disadvantages of open questions are:

- respondents often will not answer fully or at all when faced with such a general discussion type of answer
- open questions are not as clear to the respondent as are more specific questions;
- the compilations, classification and interpretation of answers to open questions often present a difficult problem.

The different questionnaires are included in Appendix C.

3.4.4 Questions asked in the questionnaire

The questions asked in the questionnaire are discussed according to the four different parts in the questionnaire.

3.5 Conclusion

There are basically three methods to identify and evaluate agricultural data needs, namely informal methods (which is not discussed in this study), data users conferences and surveys techniques. Although indications were received from data users at a workshop concerning agricultural data needs (very similar to a data users conference) held in February 1999 at Pretoria, this study revolves around survey techniques. According to literature, is mail surveys are the most popular technique, in contrast to personal surveys. Advantages of mail surveys are amongst others, the relatively low costs and that respondents can be readily reached in their homes or offices if addresses are available. Since no complete lists of respondents' addresses were available, sampling frames were constructed for each of the categories policy makers, researchers, agribusinesses and farmers from various publications, mailing and member lists as well as telephone directories.

For each of the categories of agricultural data users, a representative sample was drawn by using probability-sampling techniques – except for policy makers, systematic sampling was applied. The sample sizes ranged from 30 for policy makers to 200 for both researchers and

agribusinesses and 600 for farmers. The questionnaire that will be used to identify agricultural data needs consists of four sections, namely introduction, need for current statistics, need for basic statistics and the need for statistics supplies by the National Department of Agriculture (not discussed in this study). The questionnaire contained mainly multi choice questions, but open questions were also asked to a lesser extent. Except for farmers that received questionnaires both in Afrikaans and English, policy makers, researchers and agribusiness received questionnaires in English.

CHAPTER FOUR

RESULTS

4.1   Introduction

The objective of this chapter is to identify and evaluate the agricultural data needs as indicated by the results of the mail surveys on *policy makers, researchers, agribusinesses* and *farmers*.   Surveys were undertaken during the period February 1999 to July 1999. Questionnaires were given out to mostly *policy makers* and *researchers* during a workshop on agricultural data needs held at Statistics South Africa in Pretoria on the 16th of February 1999 and also later in June after the election.   Questionnaires for agribusinesses and the remainder of researchers were sent out during the same batch in April while the questionnaires for farmers were mailed at the end of June.   Returned questionnaires were checked for errors and coded.   The data were captured by a data typist via customised forms in a database.   The statistical package – SPPS was used to generate the results.

The results of the mail surveys are discussed separately according to the needs for *policy makers, researchers, agribusinesses* and *farmers*.   The **priority** of the data, as indicated by the respondents is only discussed according to the highest priority, namely "very important". The number of respondents indicating a specific statistic as "very important" is expressed as a percentage of the sum of the all the choices.   A 60% and higher of the respondents will be regarded as very important while 30% and lower of the respondents will be regarded as not as important.

The results of the *need for current statistics* are discussed according to field crops, horticulture and livestock.   Since the categories, which form part of *the need for basic statistics* are to many, only the three highest calculated averages of the choice "very important" are discussed.   **Frequency** is discussed according to the choices "yearly", "quarterly", "monthly" and "weekly" for current statistics and "10 yearly", "5 yearly", "2

yearly" and "yearly" for basic statistics. In order to evaluate the indications received form the respondents for the **level** of the statistics needed, an average is calculated from the choices as indicated by the respondents. Although not specifically part of the problem statement, indications on agricultural data needs received from attendants of a workshop on statistical needs of the agricultural sector are discussed at the end of this chapter. This workshop was very similar to the agricultural data users conferences held by the United States Department of Agriculture, and the results are therefore discussed.

4.2   Policy makers

4.2.1   Introduction

From the 30 questionnaires sent out, 17 were received back (a 56% response rate); 16 were used in the analysis. No questions pertaining to characteristics were put to policy makers. The results of the policy makers are further discussed according to the need for *current statistics* and the need for *basic statistics*. The need for *current statistics* is discussed according to the needs for *field crops*, *horticulture* and *livestock*.

4.2.2   The need for current statistics

4.2.2.1 Field crops

The need for current statistics for *field crops* is summarised in Table 4.1. The **priority** column lists the percentage of respondents indicating the listed statistics as very important. For example, 80% of the respondents indicated that *quantity of imports and exports* is very important. Statistics indicated by 60% and more of the respondents as being very important, are *quantity of imports and exports, yield, value of imports and exports, volume of production, producer prices, stocks of products* and *area planted to annual crops*. Statistics that seem not to be as important, i.e. less than 30% of the respondents are *cost of production, consumer prices of products* and *utilisation of products*. The **frequency** column lists the percentage of respondents indicating whether they need the data yearly, quarterly, monthly or weekly. For example, 13,3% of the respondents indicated they need

quantity of imports and exports yearly, 40,0% quarterly, 33,4% monthly and 13,3% weekly. Except for *cost of production*, the results indicate that the statistics are mostly needed quarterly.

Statistics are needed either on a national or magisterial district level (36% of the respondents). Statistics needed on a provincial level are also important to a lesser extent (27% of the respondents). Products for which the statistics are needed in order of importance are maize, wheat, sunflower seed, groundnuts and sorghum.

Table 4.1: The need for current statistics by policy makers: Field crops

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Quantity of imports and exports	80.0%	13.3%	**40.0%**	33.4%	13.3%
Yield	73.3%	40.0%	**53.3%**	6.7%	0.0%
Value of imports and exports	73.3%	13.3%	**40.0%**	33.4%	13.3%
Volume of production	66.7%	13.3%	**53.3%**	33.4%	0.0%
Producer prices	66.7%	33.3%	**46.7%**	20.0%	0.0%
Stocks of products	66.7%	6.7%	**40.0%**	13.3%	40.0%
Area planted to annual crops	60.0%	13.3%	**40.0%**	26.7%	20.0%
Area harvested estimates	46.6%	33.3%	**53.3%**	13.4%	0.0%
Consumption of products	33.3%	40.0%	**46.7%**	6.6%	6.7%
Prices of production inputs	33.3%	26.7%	**40.0%**	26.6%	6.7%
Utilisation of products	20.0%	33.3%	**53.3%**	13.4%	0.0%
Consumer prices of products	20.0%	13.3%	**40.0%**	26.7%	20.0%
Cost of production	20.0%	**46.7%**	26.7%	19.9%	6.7%

4.2.2.2 Horticulture

The need for current statistics for *horticulture* is summarised in Table 4.2. The statistics indicated by 60% and more of the respondents to be very important are *volume of production, quantity of imports and exports, value of imports and exports* and *area planted to annual crops*. Statistics on *prices of production inputs* and *stocks of products* seem not to be as important. The statistics are mostly needed quarterly, however, statistics on

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consumer prices of products are needed monthly while *producer prices* are needed weekly. *Volume of production* is needed yearly.

Table 4.2: The need for current statistics by policy makers: Horticulture

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Volume of production	73.3%	**42.9%**	28.6%	28.5%	0.0%
Quantity of imports and exports	73.3%	15.4%	**46.2%**	30.7%	7.7%
Value of imports and exports	66.7%	21.4%	**42.9%**	28.6%	7.1%
Area planted to annual crops	60.0%	28.6%	**50.0%**	21.4%	0.0%
Consumer prices of products	53.3%	28.6%	7.1%	**35.7%**	28.6%
Area harvested estimates	46.7%	35.7%	**50.0%**	14.3%	0.0%
Yield forecasts	46.7%	28.6%	**42.9%**	28.5%	0.0%
Producer prices	46.7%	21.4%	21.5%	21.4%	**35.7%**
Cost of production	40.0%	35.7%	**50.0%**	7.2%	7.1%
Utilisation of products	33.3%	35.7%	**57.1%**	7.2%	0.0%
Consumption of products	33.3%	**35.7%**	**35.7%**	28.6%	0.0%
Stocks of products	26.7%	35.7%	**50.0%**	14.3%	0.0%
Prices of production inputs	26.7%	23.1%	**38.5%**	30.7%	7.7%

The statistics are needed on average on a national basis (36% of the respondents), followed by magisterial district level (34% of the respondents) and provincial level (28% of the respondents). Products for which the statistics are needed in order of importance are deciduous and other fruits, vegetables, citrus fruits as well as subtropical fruits.

4.2.2.3 Livestock

The need for current statistics for *livestock* is summarised in Table 4.3. According to the results the statistics that are very important to 60% and more of the policy makers, are *quantity of import and exports*, *abattoir slaughter volumes*, *producer prices* and *value of import and exports*. Statistics on *herd composition, cost of production, prices of production inputs, utilisation of products, consumer prices of products* and *number of animals in feedlots* seem to be very important for 30% or less of the respondents, and in aggregate terms therefore not important. Statistics are needed quarterly and monthly,

however, *quantity of import and exports* is needed weekly while *herd composition* is needed yearly.

Table 4.3: The need for current statistics by policy makers: Livestock

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Quantity of imports and exports	78.6%	16.7%	25.0%	25.0%	**33.3%**
Abattoir slaughter volumes	64.3%	7.7%	23.1%	**61.5%**	7.7%
Producer prices	64.3%	15.4%	15.4%	**38.5%**	30.7%
Value of imports and exports	64.3%	25.0%	25.0%	**33.3%**	16.7%
Livestock numbers by category	57.1%	38.5%	**46.2%**	15.3%	0.0%
Farm slaughter volumes	57.1%	7.7%	**46.2%**	38.5%	7.6%
Consumption of products	42.9%	30.8%	**38.5%**	23.1%	7.6%
Number of animals in feedlots	28.6%	30.8%	**53.8%**	15.4%	0.0%
Consumer prices of products	28.6%	15.4%	30.8%	**38.5%**	15.3%
Utilisation of products	21.4%	38.5%	**53.8%**	7.7%	0.0%
Prices of production inputs	21.4%	8.3%	**66.7%**	16.7%	8.3%
Cost of production	21.4%	27.3%	**45.5%**	27.2%	0.0%
Herd composition	7.1%	**72.7%**	27.3%	0.0%	0.0%

The statistics are needed on average on a national (42% of the respondents) and provincial level (38% of the respondents). Statistics needed on a magisterial district level seem not be as important (19% of the respondents). Products for which the statistics are needed in order of importance are cattle and calves, sheep and goats, broilers, pigs and ostriches.

4.2.2.4 General

Among all respondents, irrespective of whether their main interest is in *field crops*, *horticulture* or *livestock*, 87,5% indicated they need forecasts of the statistics. The products for which the forecasts are needed in order of importance are maize, cattle and calves, wheat, sheep and goats, deciduous fruits, ostriches and poultry. The statistics were needed mostly between 1 month (56,3% of respondents) and 3 months (31,3% of respondents) after the date of the collection of the data. The sources of statistics indicated by the respondents are the Department of Agriculture, especially the publication Abstract of Agricultural

Statistics, own sources and Statistics South Africa (formerly the Central Statistics Service). The statistics are used mainly for information services, trade strategies and policy decisions. The level of accuracy for the desired statistics indicated by 52,9% of the respondents is 80% while 41,2% of the respondents indicated a level of 90%.

4.2.3 The need for basic statistics

Basic statistics for policy makers are discussed according to the needs for *institutional or infrastructural*, *economic* and *employment* statistics. Respondents indicated a very low need for basic household statistics, particulars of farmers and farming unit statistics and these are not discussed in detail. Although *number of farmers* falls into the basic household category, 44,7% of the respondents indicated it as very important.

Table 4.4 lists the results of the needs for *institutional and infrastructural* statistics. The category *methods of marketing* is indicated by 60% and more of the respondents as being very important. Statistics on the *level of mechanisation, quantity of land purchased or sold, pesticides usage* and *sources of water* supply not to be regarded as important.

Table 4.4: The need for basic statistics by policy makers: Institutional or infrastructural

	Priority	Frequency			
	Very important	10 Yearly	5 Yearly	2 Yearly	Yearly
Methods of marketing	64.7%	**40.0%**	20.0%	13.3%	26.7%
Access to credit and finance	58.8%	**30.8%**	23.1%	23.1%	23.0%
Area under irrigation	52.9%	**50.0%**	16.7%	16.7%	16.6%
Access to training and development	47.1%.	28.6%	**35.7%**	21.4%	14.3%
Land utilisation	41.2%	**38.5%**	30.8%	15.4%	15.3%
Methods of irrigation	41.2%	**46.2%**	23.1%	7.7%	23.0%
Capital structure	35.3%	**42.9%**	35.7%	14.3%	7.1%
Fertiliser or chemical usage	35.3%	**30.8%**	**30.8%**	23.1%	15.3%
Access to government support	35.3%	30.8%	**30.8%**	23.1%	15.3%
Sources of water supply	29.4%	38.5%	**38.5%**	7.7%	15.3%
Pesticides usage	29.4%	**38.5%**	23.1%	23.1%	15.3%
Quantity of land purchased or sold	23.5%	**33.3%**	16.7%	25.0%	25.0%
Level of mechanisation	17.6%	**42.9%**	28.6%	21.4%	7.1%

Statistics are needed mostly ten yearly, except for statistics on access to *training and development*, *access to government support* and *sources of water supply* that is needed five yearly.

Table 4.5 lists the result of the need for economic statistics. *Income from farm activities* regarded is regarded as very important by 70,6% of the respondent. *Non farm expenditure*, *value of other assets* and *household expenditure pattern* seem to be not as important. Statistics are mostly needed ten yearly.

Table 4.5: The need for basic statistics by policy makers: Economic

	Priority	Frequency			
	Very important	10 Yearly	5 Yearly	2 Yearly	Yearly
Income from farm activities	70.6%	**40.0%**	26.7%	0.0%	33.3%
Income from non-farm activities	47.1%	**42.9%**	21.4%	7.1%	28.6%
Value of land	47.1%	**38.5%**	30.8%	7.7%	23.0%
Amount of farming debt	47.1%	**42.9%**	14.3%	14.3%	28.5%
Interest payments	41.2%	**38.5%**	15.4%	15.4%	30.7%
Rent payments	41.2%	**38.5%**	15.4%	15.4%	30.7%
Intermediate production expenses	35.3%	**42.9%**	21.4%	7.1%	28.6%
Household expenditure pattern	23.5%	**42.9%**	21.4%	7.1%	28.6%
Value of other assets	23.5%	**53.8%**	15.4%	7.7%	23.1%
Non-farm expenditure	17.6%	**46.2%**	15.4%	7.7%	30.7%

Table 4.6 contains *employment* statistics needed by policy makers. None of these was regarded as very important by 60% or more of the respondents. Those required more than the others are *number of regular workers, number of unemployed workers* and *number of family workers*. Statistics on *salary or wage rate* and *remuneration of employees* seem to be regarded as important. Statistics are needed mostly ten yearly.

Irrespective of the category of basic statistics needed, respondents on average needed the statistics mostly on a magisterial district level (42,5% of respondents), followed by provincial level (30% of respondents) and national level (25,3% of respondents). Among the respondents, 93,3% needed the statistics for both the commercial and developing sector, while 6,7% needed the statistics for the developing sector only.

Table 4.6: The need for basic statistics by policy makers: Employment

	Priority	Frequency			
	Very important	10 Yearly	5 Yearly	2 Yearly	Yearly
Number of regular workers	41.2%	**50.0%**	21.4%	14.3%	14.3%
Number of unemployed workers	41.2%	**46.2%**	30.8%	7.7%	15.3%
Number of family workers	35.3%	**50.0%**	21.4%	21.4%	7.2%
Remuneration of employees	29.4%	**38.5%**	30.8%	15.4%	15.3%
Salary or wage rate	23.5%	**38.5%**	30.8%	15.4%	15.3%

Regarding the degree of currency of the statistics (how much time between date of collection and date of publication), 50% of the respondents needed the statistics within 3 months, 18,8% within 6 months and 31,3% within 1 year. The types of decisions are very much the same as for current statistics. The level of accuracy required from 46,7% of the respondents is 90%.

4.3   Researchers

4.3.1   Introduction

From the 200 questionnaires sent out, only 56 questionnaires (a 28% response rate taking into consideration 5 undelivered questionnaires) were received back; 54 were used in the analysis. Although more than one choice was allowed, 22,6% of the respondents indicated that they are involved in micro economic research, 17,9% macro economic research, 20,2% marketing research, 20,2% management research and 40,8% in industry relationship research. The results are further discussed according to the need for *current statistics* and the need for *basic statistics*. The need for current statistics is discussed according to the need for current statistics for *field crops*, *horticulture* and *livestock*.

4.3.2   The need for current statistics

4.3.2.1 Field crops

Sixty percent or more of the 54 respondents regard statistics on *area planted to annual crops, quantity of imports and exports, producer prices, volume of production, yield, consumer prices of products* and *area harvested* as very important (see Table 4.7). None of the statistics were regarded by less than 30% of the respondents as very important. Except for *producer prices* that are needed weekly, the statistics are mostly needed monthly, quarterly and yearly.

Table 4.7: The need for current statistics by researchers: Field crops

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Monthly
Area planted to annual crops	71.7%	**47.7%**	25.0%	27.3%	0.0%
Quantity of imports and exports	69.6%	25.6%	25.6%	**41.9%**	7.0%
Producer prices	67.4%	11.6%	20.9%	**37.2%**	30.2%
Volume of production	63.0%	**43.9%**	24.4%	24.4%	7.3%
Yield	60.9%	25.0%	34.1%	**36.4%**	4.5%
Consumer prices of products	60.9%	7.7%	38.5%	**38.5%**	15.4%
Area harvested	60.0%	**38.1%**	31.0%	28.6%	2.4%
Area planted to perennial crops	58.7%	**61.0%**	26.8%	12.2%	0.0%
Cost of production	58.7%	**47.5%**	30.0%	20.0%	2.5%
Value of imports and exports	53.2%	30.8%	23.1%	**41.0%**	5.1%
Prices of production inputs	52.2%	26.8%	**56.1%**	14.6%	2.4%
Consumption of products	47.8%	**35.0%**	**35.0%**	27.5%	2.5%
Stocks of products	45.7%	22.5%	35.0%	**37.5%**	5.0%
Utilisation of products	37.0%	**42.5%**	32.5%	22.5%	2.5%

On average, the statistics are mostly needed on a provincial level (38% of the respondents) and national level (34% of the respondents). Statistics are most needed in order of importance for maize, wheat, sunflower, groundnuts and soybeans.

4.3.2.2 Horticulture

Area planted to annual crops seems to be the most important statistics needed while *stocks of products* seems to be not as important (Table 4.8). Statistics are mostly needed yearly, while statistics needed quarterly and monthly are also needed to a lesser extent.

On average, the statistics mostly are needed on a national level (37% of the respondents) and a provincial level (36% of the respondents). The statistics are needed in order of importance, for deciduous and other soft fruits, citrus and subtropical fruits, vegetables and viticulture.

Table 4.8: The need for current statistics by researchers: Horticulture

	Priority	Frequency			
·	Very important	Yearly	Quarterly	Monthly	Monthly
Area planted to annual crops	63.6%	**53.7%**	29.3%	14.6%	2.4%
Area planted to perennial crops	58.1%	**71.1%**	21.0%	7.9%	0.0%
Volume of production	56.8%	**43.8%**	31.8%	24.4%	0.0%
Producer prices	56.8%	18.9%	24.3%	**35.1%**	21.7%
Consumer prices of products	56.8%	8.3%	**36.6%**	30.1%	25.0%
Quantity of imports and exports	56.8%	**35.6%**	30.3%	30.3%	3.8%
Value of imports and exports	56.8%	**40.6%**	29.3%	27.4%	2.7%
Area harvested estimates	54.5%	**47.5%**	35.0%	17.5%	0.0%
Yield forecasts	50.0%	29.3%	**39.0%**	29.3%	2.4%
Cost of production	50.0%	**53.8%**	33.3%	10.3%	2.6%
Consumption of products	45.5%	28.6%	**37.1%**	31.4%	2.9%
Prices of production inputs	45.5%	33.3%	**53.8%**	10.3%	2.6%
Utilisation of products	31.4%	**48.6%**	20.0%	28.6%	2.8%
Stocks of products	29.5%	**38.2%**	23.5%	23.5%	14.8%

4.3.2.3 Livestock

According to the listed results in Table 4.9, *farm slaughter volumes* are not important. However, *livestock number by category, quantity of imports and exports, producer prices, value of imports and exports* and *cost of products* are indicated by 60% and more of the respondents as very important. Statistics are mostly needed yearly, however, statistics needed quarterly and monthly are also needed to a lesser extent.

On average, the statistics are mostly needed on a national and magisterial district level (35% of the respondents respectively). The statistics are needed mostly in order of importance for cattle and calves, fowls slaughtered, sheep and goats and wool.

Table 4.9: The need for current statistics by researchers: Livestock

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Monthly
Livestock numbers by category	62.5%	63.9%	33.3%	2.8%	0.0%
Quantity of imports and exports	62.5%	35.3%	26.5%	29.4%	8.8%
Producer prices	60.0%	17.6%	29.4%	29.4%	23.6%
Value of imports and exports	60.0%	34.3%	28.6%	34.2%	2.9%
Cost of production	60.0%	58.3%	22.2%	16.7%	2.8%
Consumer prices of products	57.5%	12.1%	30.3%	33.4%	24.2%
Prices of production inputs	55.0%	35.3%	38.2%	23.6%	2.9%
Consumption of products	42.5%	39.4%	27.3%	24.2%	9.1%
Abattoir slaughter volumes	40.0%	20.0%	31.4%	28.6%	20.0%
Number of animals in feedlots	35.0%	35.3%	41.2%	17.6%	5.9%
Herd composition	35.0%	70.6%	29.4%	0.0%	0.0%
Utilisation of products	35.0%	47.1%	32.4%	20.5%	0.0%
Farm slaughter volumes	27.5%	37.1%	34.3%	20.0%	8.6%

4.3.2.4 General

Seventy eight percent of the 54 respondents need forecasts of the statistics. Forecasts are needed for maize, wheat, deciduous fruits, cattle and calves and fowls slaughtered. Among the respondents, 44,7% need the statistics within 1 month after the date of collection, 42,6% after 3 months while a small percentage need the statistics after 6 months or 1 year. Important sources of statistics are the Abstract of Agricultural Statistics issued by the National Department of Agriculture, Statistics South Africa as well as the National Department of Agriculture. The level of confidence is between average and good. Decisions based on the statistics are mainly research, advice and marketing strategy and planning decisions. The level of accuracy of the statistics are required by 34,8% of the respondents to be 80% and 50% of the respondents 90%.

4.3.3 The need for basic statistics

Basic statistics are divided into *economic, particulars of farming unit* and *institutional or infrastructural* statistics. Questions were asked about statistics on *employment, basic household* and *economic* statistics; respondents indicated a very low need for those statistics, and they are not discussed in this study. According to Table 4.10 statistics on *income from farm activities* are very important. Statistics on *amount of farming debt, income from non-farm activities* and *value of land* are also regarded as very important by 50% and more of the respondents. Statistics on *non-farm expenditure* seem not to be regarded as important. All the statistics are needed annually. The low level of interest on the part of researchers on most types of basic statistics is rather surprising.

Table 4.10: The need for basic statistics by researchers: Economic

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Income from farm activities	68.0%	7.0%	16.3%	20.9%	**55.8%**
Amount of farming debt	54.0%	12.2%	9.8%	17.0%	**61.0%**
Income from non-farm activities	50.0%	11.6%	18.6%	20.9%	**48.9%**
Value of land	50.0%	16.7%	7.1%	26.2%	**50.0%**
Intermediate production expenses	40.0%	7.3%	12.2%	26.8%	**53.7%**
Household expenditure pattern	40.0%	7.5%	22.5%	25.0%	**45.0%**
Interest payments	38.0%	7.3%	12.2%	22.0%	**58.5%**
Rent payments	36.0%	7.3%	19.5%	26.8%	**46.4%**
Value of other assets	36.0%	12.2%	12.2%	31.7%	**43.9%**
Non-farm expenditure	30.0%	7.5%	27.5%	22.5%	**42.5%**

Only 50 and 42% of the respondents regard statistics on *particulars of farming* unit as very important, the *size of farming units* and *type of farming operations* (see Table 4.11). *Number of people living on farm unit* and *type of land tenure* do not seem to be important to the respondents. Except for *size of farming unit*, the statistics are needed mostly five yearly. These results are once again surprising, given the political interest in these matters and the amount of controversy among South Africa agricultural economist regarding the relative merits of small and large farm units.

Table 4.11: The need for basic statistics by researchers: Particulars of farming unit

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Size of farming unit	50.0%	10.3%	30.8%	23.1%	**35.8%**
Type of farming operation	42.0%	7.7%	**35.9%**	30.8%	25.6%
Type of land tenure	36.0%	13.2%	**34.2%**	28.9%	23.7%
Number of people living on farm unit	34.0%	13.5%	**35.1%**	21.6%	29.8%

Table 4.12 suggests that *area under irrigation* is regarded as the most important statistics by the respondents (57%). *Level of mechanisation* does not seem to be not very important to the respondents. The statistics are needed yearly.

Table 4.12: The need for basic statistics by researchers: Institutional or infrastructural

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Area under irrigation	57.0%	7.5%	20.0%	20.0%	**52.5%**
Land utilisation	48.0%	13.5%	18.9%	24.3%	**43.2%**
Access to credit and finance	47.0%	5.4%	18.9%	21.6%	**51.1%**
Methods of marketing	45.1%	7.7%	12.8%	28.2%	**51.3%**
Fertiliser or chemical usage	38.0%	8.1%	16.2%	24.3%	**51.4%**
Access to training and development	38.0%	8.1%	10.8%	29.7%	**51.4%**
Methods of irrigation	37.3%	7.9%	28.9%	21.1%	**42.1%**
Quantity of land purchased or sold	36.0%	5.6%	22.2%	19.4%	**52.8%**
Sources of water supply	36.0%	10.3%	23.1%	30.8%	**35.9%**
Capital structure	34.0%	10.8%	21.6%	29.7%	**37.8%**
Pesticides usage	34.0%	7.9%	13.2%	23.7%	**55.3%**
Access to government support	34.0%	7.9%	15.8%	31.6%	**44.7%**
Level of mechanisation	27.5%	7.9%	18.4%	**39.5%**	34.2%

The statistics are on average mostly needed on a magisterial district level (30% of the respondents), followed by 28% of the respondents who needed the statistics on a provincial basis. Among the respondents, 14,6% needed the statistics for the commercial sector only, 4,2% for the developing sector only and 81,3% for both the commercial and developing sectors. Further, 30% of the respondents needed the statistics 3 months after the collection of data, 32% needed it after 6 months and 36% needed it after 1 year. Only 2% needed the

statistics after 2 years of the date of collection of the data. The sources of the statistics are mainly the Abstract of Agricultural Statistics, National Department of Agriculture, various publications and own surveys. Respondents utilise statistics currently and in future mainly for decisions regarding research programmes, consultation, research and policy analysis. As far as the level of accuracy for the statistics is concerned, with 46,5% of the respondents indicated a level of 90%, 39,5% of the respondents a level of 80% and 11.6% of the respondents a level of 70%. Only 2,3% of the respondents indicated a level of 60%.

4.4 Agribusinesses

4.4.1 Introduction

From the 200 questionnaires sent out, 58 questionnaires (a 30% response rate taking into consideration 2 undelivered questionnaires) were received back; 55 were used in the analysis. Of the 55 agribusinesses, 27,3% are involved in the output sector (processing and or marketing agricultural products), 23,6% in the input sector (providing inputs for agricultural production) and 49,1% in both the input and output sectors (Graph 4.1)
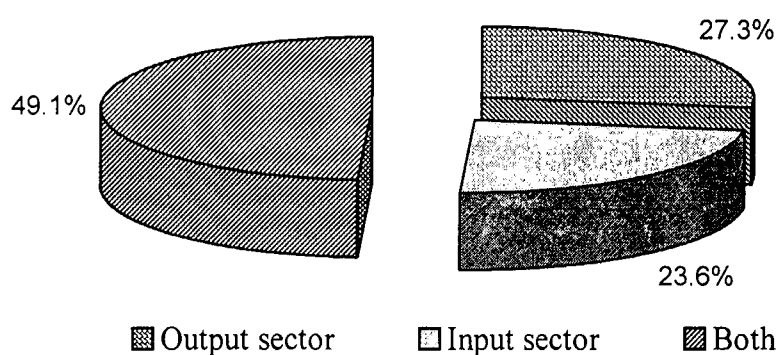
Graph 4.1: The sectors of respondent agribusinesses

These businesses production or marketing activities occur 41,8% in the domestic market, 1,8% in the international market and 56,4% in both the domestic and international markets (Graph 4.2)

68

Domestic market **International market** **Both**
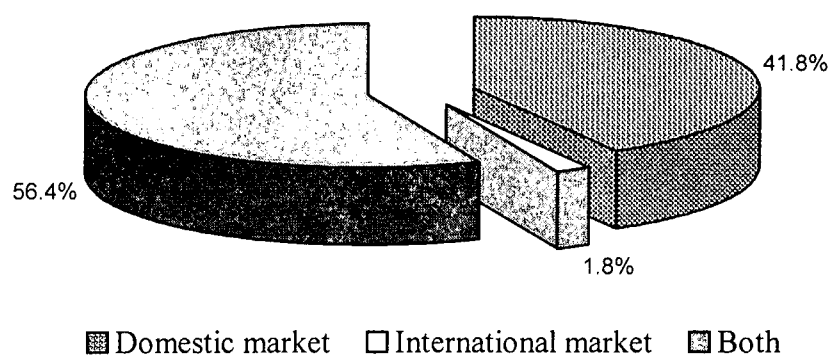
Graph 4.2: The markets of respondents agribusinesses

Of the respondents 54, 25 and 21% are mainly involved in business involved with field crops, horticulture and livestock respectively (Graph 4.3). The results are further discussed according to the need for *current statistics* and the need for *basic statistics*. The need for current statistics is discussed according to the need for current statistics for *field crops*, *horticulture* and *livestock*.

Field crops **Horticulture** **Livestock**
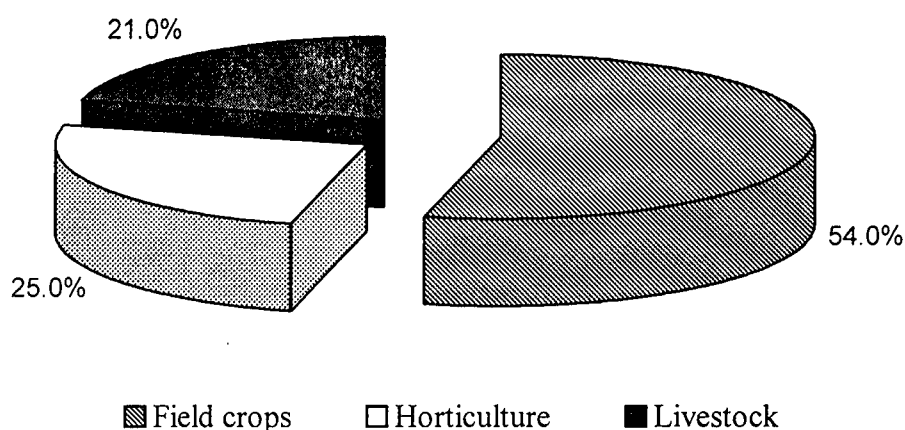
Graph 4.3: The agricultural sectors respondent agribusinesses are involved with

4.4.2 The need for current statistics

4.4.2.1 Field crops

The results of the needs for *field crops* are summarised in Table 4.13. *Yield* is indicated by 60,6% of the respondents as very important. *Area planted to annual crops* and *volume of production* are also regarded as very important by over half of the respondents. *Utilisation of products, value of imports and exports, consumer prices of products, consumption of products, area planted to perennial crops* and *stocks of products* do not seem to be as important to agribusinesses. The listed statistics are mostly needed quarterly and monthly. *Area harvested, consumption of products, value of imports and exports* and *utilisation of products* are needed yearly.

The statistics are on average needed mostly on a national level (46,2% of the respondents). The statistics are needed in order of importance for wheat, maize, sorghum and soya beans.

Table 4.13: The need for current statistics by agribusinesses: Field crops

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Yield	60.6%	19.4%	**41.9%**	38.7%	0.0%
Area planted to annual crops	51.5%	35.5%	**41.9%**	22.6%	0.0%
Volume of production	51.5%	35.7%	**46.7%**	17.6%	0.0%
Producer prices	48.5%	24.1%	24.1%	**34.5%**	17.3%
Cost of production	45.5%	37.9%	**44.9%**	17.2%	0.0%
Prices of production inputs	40.6%	25.9%	**44.5%**	29.6%	0.0%
Area harvested	39.4%	**46.4%**	35.7%	17.9%	0.0%
Quantity of imports and exports	33.3%	25.0%	32.1%	**42.9%**	0.0%
Stocks of products	27.3%	32.1%	28.6%	**35.7%**	3.6%
Area planted to perennial crops	24.2%	38.5%	23.0%	**38.5%**	0.0%
Consumption of products	24.2%	**61.5%**	38.5%	0.0%	0.0%
Consumer prices of products	21.2%	26.9%	30.8%	**38.5%**	3.8%
Value of imports and exports	18.2%	**38.5%**	38.4%	23.1%	0.0%
Utilisation of products	15.2%	**42.3%**	30.8%	26.9%	0.0%

4.4.2.2 Horticulture

The results of the need for current statistics for *horticulture* are summarised in Table 4.14.

None of these was regarded as very important by 60% or more of the respondents. Those required more than 40% and more of the respondents are *volume of production, producer prices, area planted* and *yield* to be very important. At least 30% of respondents required the statistics yearly or monthly. The statistics are mostly needed on a national level. The respondents indicated that they need the statistics in order of importance for vegetables, deciduous fruits and potatoes, citrus fruits and viticulture.

Table 4.14: The need for current statistics by agribusinesses: Horticulture

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Volume of production	46.9%	36.6%	**36.7%**	20.0%	6.7%
Producer prices	46.9%	14.2%	25.0%	**42.9%**	17.9%
Area planted to annual crops	43.8%	**56.0%**	32.0%	4.0%	8.0%
Yield	40.6%	27.6%	**41.4%**	27.6%	3.4%
Area harvested	37.5%	**40.8%**	37.0%	14.8%	7.4%
Stocks of products	37.5%	30.7%	15.4%	**30.8%**	23.1%
Cost of production	37.5%	**44.5%**	22.2%	29.6%	3.7%
Consumer prices of products	34.4%	30.8%	11.5%	**34.6%**	23.1%
Prices of production inputs	34.4%	**40.8%**	25.9%	29.6%	3.7%
Area planted to perennial crops	31.1%	**56.0%**	32.0%	4.0%	8.0%
Consumption of products	21.9%	**48.0%**	16.0%	28.0%	8.0%
Value of imports and exports	21.9%	**42.9%**	10.7%	35.7%	10.7%
Quantity of imports and exports	18.8%	30.7%	15.4%	**38.5%**	15.4%
Utilisation of products	12.5%	**50.0%**	23.1%	19.2%	7.7%

4.4.2.3 Livestock

The results of the need for current statistics for *livestock* are summarised in Table 4.15. The statistic that are very important by 60% and more of the respondents is *cost of production*. *Number of animals in feedlots* seems to be of small importance for agribusinesses.

The statistics are mostly needed yearly, quarterly and monthly. The statistics are needed on a national level, although statistics needed on a provincial level are also important, but to a

lesser extent. The statistics are needed in order of importance for cattle, calves, sheep and goats, broilers and dairy products (including fresh milk).

Table 4.15: The need for current statistics by agribusinesses: Livestock

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Monthly
Cost of production	60.9%	23.8%	38.1%	**38.1%**	0.0%
Quantity of imports and exports	56.5%	22.7%	**45.5%**	31.8%	0.0%
Livestock numbers by category	52.2%	**47.6%**	28.6%	23.8%	0.0%
Producer prices	52.2%	18.2%	31.8%	**40.9%**	9.1%
Consumption of products	52.2%	31.8%	27.3%	**40.9%**	0.0%
Consumer prices of products	52.2%	27.3%	27.3%	**40.9%**	4.5%
Prices of production inputs	52.0%	19.0%	**42.9%**	38.1%	0.0%
Value of imports and exports	43.5%	38.1%	**42.9%**	19.0%	0.0%
Abattoir slaughter volumes	39.1%	36.8%	15.8%	**42.1%**	5.3%
Herd composition	34.8%	**52.4%**	28.6%	19.0%	0.0%
Utilisation of products	34.8%	33.3%	**38.1%**	28.6%	0.0%
Farm slaughter volumes	30.4%	**36.9%**	26.3%	36.8%	0.0%
Number of animals in feedlots	17.4%	**52.6%**	31.6%	15.8%	0.0%

4.4.2.4 General

Among all respondents, irrespective of whether their main interest is in *field crops*, *horticulture* or *livestock*, 90,2% indicated they need forecasts of the statistics. The products for which the forecasts are needed are in order of importance wheat, maize, sunflower seed and sheep and goats, cattle and calves and potatoes. The statistics are mostly needed between 1 month and 3 months after the date of the collection of the data. The sources of statistics indicated by the respondents are mostly the Department of Agriculture, agricultural publications and own sources with a level of confidence between average and good. The statistics are mainly used for the business strategy planning and development, development programmes, marketing, production, budgeting and financial decisions. The level of accuracy for the desired statistics is 90% (57,1% of the respondents) while 34,7% of the respondents also indicated a 80% level of accuracy.

4.4.3   The need for basic statistics

Basic statistics are discussed according to needs for *institutional or infrastructural* statistics, *particulars of farm unit* and *economic* statistics. The sources, level of confidence and accuracy as well as the type of decisions are also discussed. Questions were asked about statistics on *particulars of farmers*, *employment* and *basic household*; respondent indicated a very low need for those statistics, and these are not discussed further. As seen in Table 4.16, none of these was regarded as very important by 60% or more of the respondents. Fifty percent of the respondents regard data on *access to credit and finance* as very important. *Access to government support, sources of water supply, quantity of land purchased or sold and level of mechanisation* seem to be not as important. Except for *sources of water supply*, the statistics are mostly needed yearly.

Table 4.16: The need for basic statistics by agribusiness: Institutional or infrastructural

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Access to credit and finance	50.0%	6.2%	9.4%	25.0%	**59.4%**
Area under irrigation	47.4%	9.4%	3.1%	40.6%	**46.9%**
Methods of marketing	42.1%	10.3%	0.0%	34.5%	**55.2%**
Fertiliser or chemical usage	39.5%	10.0%	10.0%	36.7%	**43.3%**
Land utilisation	36.8%	7.0%	24.1%	31.0%	**37.9%**
Methods of irrigation	36.8%	17.9%	7.1%	35.7%	**39.3%**
Capital structure	34.2%	6.7%	23.3%	30.0%	**40.0%**
Pesticides usage	34.2%	10.4%	6.9%	31.0%	**51.7%**
Access to training and development	34.2%	9.7%	12.9%	38.7%	**38.7%**
Level of mechanisation	28.9%	6.7%	30.0%	30.0%	**33.3%**
Quantity of land purchased or sold	26.3%	10.3%	13.8%	27.6%	**48.3%**
Sources of water supply	26.3%	13.3%	23.3%	**36.7%**	26.7%
Access to government support	23.7%	6.6%	20.0%	26.7%	**46.7%**

Although not indicated by more than 60% of the respondents, *size of farm units* is the most important statistic concerning particulars of farm units needed, followed by *types of farming operation* (see Table 4.17). These two statistics are needed on a yearly basis. *Types of land*

tenure and *numbers of people living on farms* do not appear to be important for most agribusinesses.

Table 4.17: The need for basic statistics by agribusinesses: Particulars of farm units

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Sizes of farm unit	42.1%	12.1%	12.1%	36.4%	**39.4%**
Types of farm operation	39.5%	14.7%	11.8%	35.3%	**38.2%**
Types of land tenure	21.1%	20.1%	23.3%	**33.3%**	23.3%
Number of people living on farm units	13.2%	14.2%	**42.9%**	25.0%	17.9%

Table 4.18, shows that as with most other basic statistics, South African agribusinesses does not have a high level of interest in economic agricultural statistics. Only *income from farm activities, value of land* and *farming debt* are regarded as very important by 30% of the respondents. The statistics are needed on a yearly basis.

Table 4.18: The need for basic statistics : Economic

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Income from farm activities	39.5%	6.5%	12.9%	12.9%	**67.7%**
Value of land	39.5%	3.4%	13.8%	27.6%	**55.2%**
Farming debt	39.5%	6.5%	12.9%	16.1%	**64.5%**
Value of other assets	28.9%	10.0%	20.0%	26.7%	**43.3%**
Intermediate production expenses	26.3%	0.0%	16.2%	29.0%	**54.8%**
Interest payments	26.3%	6.9%	13.8%	20.7%	**58.6%**
Income from non-farm activities	23.7%	0.0%	27.6%	24.1%	**48.3%**
Rent payments	18.4%	6.9%	20.7%	20.7%	**51.7%**
Household expenditure pattern	15.8%	16.7%	20.0%	**33.3%**	30.0%
Non-farm expenditure	13.2%	13.8%	27.6%	24.1%	**34.5%**

The statistics are mostly needed on a magisterial district level. Of the respondents, 21,1% indicated that they need the statistics for the commercial agricultural sector only, none for the developing sector only and 78,9% for the both the commercial and developing sectors. The statistics were mostly needed between 3 months and 1 year after the date of the

collection of the data. The sources of the statistics are the same as for current statistics, namely Department of Agriculture, agricultural publications, and own sources with the degree of confidence also between average and good. The decisions requiring statistics were similar to those for which current statistics are needed. The level of accuracy for the statistics are 80% (41,7% of the respondents) and 90% (41,7% of the respondents).

4.5 Farmers

4.5.1 Introduction

From the 600 questionnaires send out, 105 were received back but only 99 were used in the analysis (a response rate of 18% taking into consideration 17 undelivered questionnaires). Farmers in general tend to have very low response rates to mail questionnaires, and taking into consideration the length of the questionnaire, the response rate of 18% while disappointing, is still acceptable. It does, however, indicate a low level of interest in statistical data. Among the 99 respondents, 42,7% were 50 years and older, 34,4% between 41 and 50 years, 18,5% between 31 and 40 years, 3,1% between 21 and 30 years and 1% younger than 20 (see Graph 4.4).

□ Younger than 20 years ▨ Between 21 and 30 years ▦ Between 31 and 40 years
□ Between 41 and 50 years □ 50 years or older
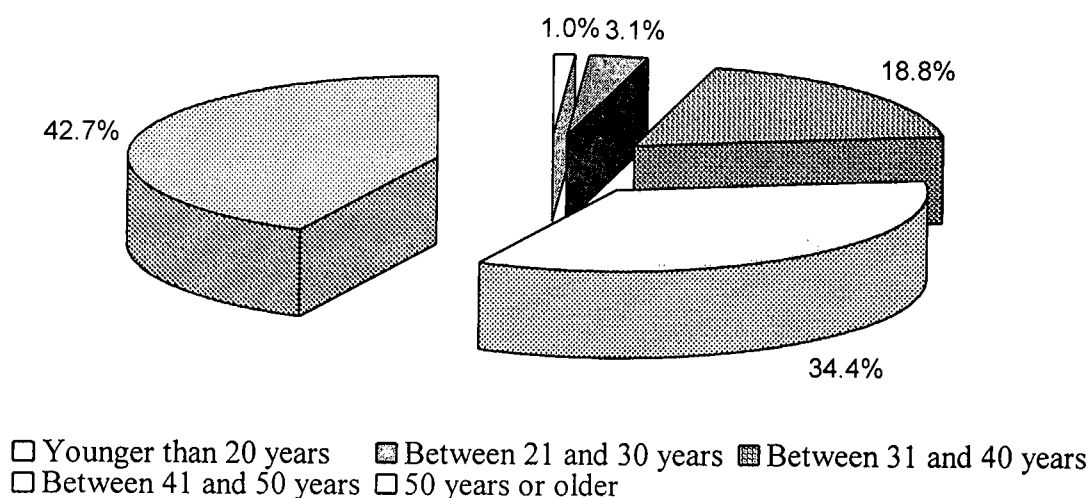
Graph 4.4: The age of respondent farmers

Among the respondents, 63,5% had received more than 12 years of school education (including any tertiary education, for example degrees or diplomas) while 36,5% had received between 7 and 12 years school education (See graph 4.5).

36.5%

63.5%

☐ Between 7 and 12 years   ▓ More than 12 years
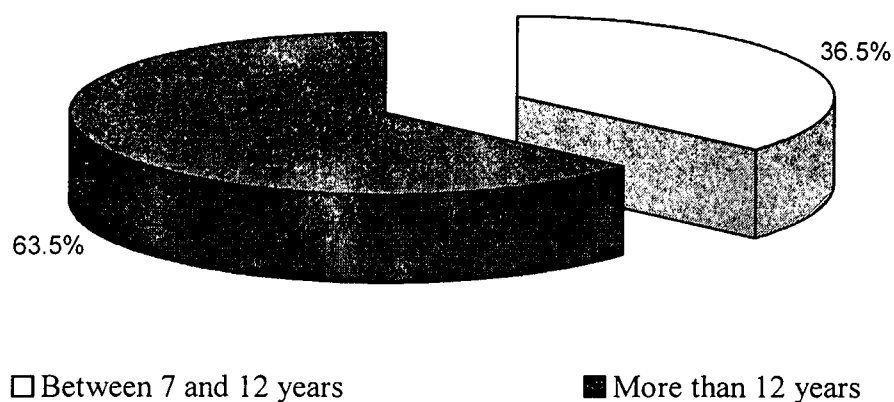
Graph 4.5: The education of respondent farmers

Full-time farmers represented 89,6% of the farmers, while 10,4% are farming part-time. The domestic market represented 64,9% of farmers marketing their products, while 35,1% of the farmers indicated both the domestic and international market. Farmers indicated that 22,8% of their income was derived from field crops, 57,5% from livestock and 19,5% from horticulture.

22.8%

57.6%

19.5%

■ Field crops   ▣ Horticulture   ▥ Livestock
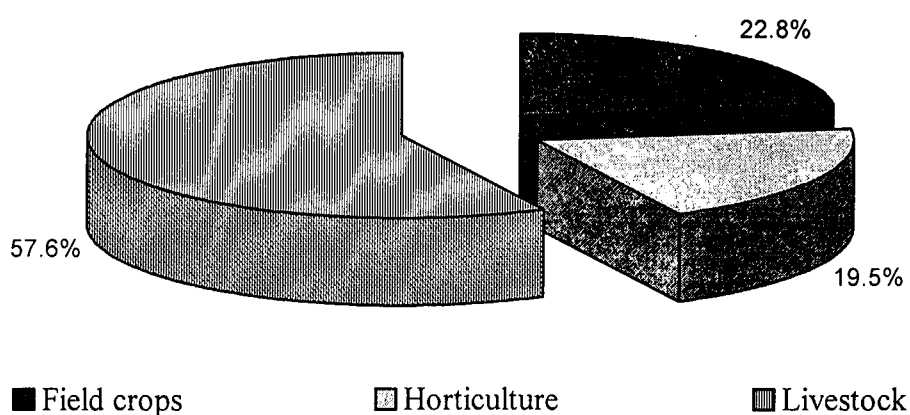
Graph 4.6: The agricultural branches of respondent farmers

4.5.2 The need for current statistics

4.5.2.1 Field crops

The need for current statistics on field crops is summarised in Table 4.19. *Producers prices* and *prices of production inputs* are indicated by 60% and more of the respondents as very important. *Utilisation of products* and *area planted to perennial* are desired by fewer than 30% of the respondents. The statistics are mostly needed yearly, while statistics on *stock of products*, *volume of production* and *consumption* are needed quarterly. *Prices of production inputs* and *quantity of import and exports* are needed monthly while *producer prices* are needed weekly. The reason for the need of *producer prices* on a weekly basis could be due both to volatile prices and the readily availability of prices of maize, wheat and sunflower via the South African Future Exchange (SAFEX).

The statistics are mostly needed on average on a national level (61,8% of the respondents). The statistics are needed in order of importance mainly for maize, wheat, sunflower, soybeans and dry beans.

Table 4.19: The need for current statistics by farmers: Field crops

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Producer prices	69.2%	20.0%	14.5%	21.8%	**43.6%**
Prices of production inputs	61.5%	28.3%	26.4%	**34.0%**	11.3%
Cost of production	58.8%	**34.6%**	26.9%	30.8%	7.7%
Quantity of imports and exports	55.1%	18.2%	20.0%	**38.2%**	23.6%
Yield forecasts	47.7%	**38.5%**	25.0%	28.8%	7.7%
Stocks of products	47.7%	17.6%	**41.2%**	31.4%	9.8%
Volume of production	46.9%	34.6%	**34.6%**	23.1%	7.7%
Area planted to annual crops	44.6%	28.8%	28.8%	**36.5%**	5.8%
Consumer prices of products	43.1%	20.8%	30.2%	22.6%	26.4%
Value of imports and exports	43.1%	28.3%	28.3%	22.6%	20.8%
Area harvested estimates	35.4%	**52.9%**	13.7%	25.5%	7.8%
Consumption of products	32.3%	35.8%	**37.7%**	22.6%	3.8%
Area planted to perennial crops	26.2%	**50.0%**	34.8%	10.9%	4.3%
Utilisation of products	24.6%	**36.0%**	40.0%	22.0%	2.0%

4.5.2.2 Horticulture

The listed results indicate that 65,5% of the respondents regard *producer prices* as very important. *Utilisation of products* and *area planted to annual crops* seem to be not as important, with only 24,1 and 26,7% respectively of the respondents regarding these as very important. The statistics are needed mostly yearly; however, *consumption* and *utilisation of products* are needed quarterly, *stocks of products* and *quantity of import and exports* are needed monthly and *producer* and *consumer prices* of products are needed weekly.

The statistics are mostly needed on average on a national level (50,3% of the respondents) while on a provincial level are desired by 23,1% of the respondents. The statistics are needed for deciduous and other summer fruits, viticulture, citrus and subtropical fruits and vegetables.

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Table 4.20: The need for current statistics by farmers: Horticulture

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Weekly
Producer prices	65.5%	27.6%	20.7%	20.7%	**31.0%**
Volume of production	51.7%	**40.7%**	18.5%	29.6%	11.2%
Stocks of products	51.7%	11.5%	26.9%	**34.6%**	27.0%
Consumer prices of products	48.3%	25.9%	14.8%	29.6%	**29.7%**
Cost of production	48.3%	**40.7%**	25.3%	22.5%	11.5%
Yield forecasts	44.8%	**55.6%**	25.9%	7.4%	11.1%
Prices of production inputs	44.8%	**37.0%**	25.9%	25.9%	11.2%
Consumption of products	44.6%	22.2%	**33.3%**	29.6%	14.9%
Area planted to perennial crops	41.4%	**62.1%**	20.7%	17.2%	0.0%
Quantity of imports and exports	41.4%	**32.1%**	17.9%	**32.1%**	17.9%
Area harvested estimates	34.5%	**59.3%**	18.5%	18.5%	3.7%
Value of imports and exports	31.0%	**44.0%**	12.0%	32.0%	12.0%
Area planted to annual crops	26.7%	**52.2%**	13.0%	30.4%	4.4%
Utilisation of products	24.1%	**34.6%**	**34.6%**	23.1%	7.7%

4.5.2.3 Livestock

The need for current statistics of livestock is listed in Table 4.21. *Producer prices* and *quantity of imports and exports* are indicated by 60% and more of the respondents as very important. *Herd composition, number of animal in feedlots, utilisation of products, and farm slaughter volumes* appear to be less important; fewer than 30% of the respondents classified these as very important. Statistics are needed mostly monthly, while *producer prices* are needed weekly.

On average, statistics are mostly needed on a national level (74,4% of the respondents). Statistics on provincial level are needed by 25,8% of the respondents. The products for which the statistics are needed are in order of importance cattle and calves, sheep and goats, dairy (including fresh milk), pigs and wool.

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Table 4.21: The need for current statistics by farmers: Livestock

	Priority	Frequency			
	Very important	Yearly	Quarterly	Monthly	Monthly
Producer prices	73.2%	11.9%	20.9%	22.4%	**44.8%**
Quantity of imports and exports	63.4%	10.9%	26.6%	**32.8%**	29.7%
Consumer prices of products	54.9%	14.1%	25.0%	**31.0%**	29.9%
Cost of production	51.2%	20.3%	**32.8%**	28.0%	18.9%
Prices of production inputs	48.8%	20.3%	29.7%	**29.9%**	20.1%
Value of imports and exports	46.3%	14.5%	27.4%	**37.1%**	21.0%
Livestock numbers by category	41.6%	**47.6%**	25.4%	20.5%	6.5%
Consumption of products	41.5%	17.7%	30.0%	**37.8%**	14.5%
Abattoir slaughter volumes	36.6%	25.0%	20.0%	**33.3%**	21.7%
Farm slaughter volumes	24.4%	**33.3%**	21.1%	29.7%	15.9%
Utilisation of products	24.4%	**32.2%**	**32.2%**	27.1%	8.5%
Number of animals in feedlots	23.2%	32.8%	19.7%	**41.0%**	6.5%
Herd composition	23.2%	**56.7%**	25.0%	16.7%	1.6%

4.5.2.4 General

Among the 99 farmers, 89,5% need forecasts of the statistics. The products for which the forecasts are needed are maize, cattle and calves, wheat, sheep and goats as well as deciduous citrus fruits. Farmers indicated that they needed the data 1 month of the date of the collection of the data (45,6% of the respondents), 26,7% of the respondents indicated statistics 3 months after the date while 22,2% of the respondents need the statistics 6 months after the date. Sources of the statistics include mainly "Landbou Weekblad", the internet and also agents and marketers. Farmers also indicated that the level of confidence in the sources is between average and good. Decisions that are made with aid of statistics include planning, production and marketing. The level of the accuracy required by the respondents are 90% (50,6% of the respondents), 80% (33,3% of the respondents) and 70% (16,1% of the respondents).

4.5.3 The need for basic statistics

Basic statistics are discussed according to needs for *employment, economic* and *institutional or infrastructural* matters. Questions were also asked about statistics on *particulars of farmers and basic household statistics;* respondent indicated a very low need for those statistics, which are therefore not discussed further. The results of the need for basis statistics on *employment* are listed in Table 4.22. According to the results, none is regarded as very important by 60% or more; *salary or wage rate* and *remuneration of employees* are regarded as very important by more than 40% of the respondents. *Number of regular* and *family workers* do not seem to be regarded as important. The statistics are needed yearly.

Table 4.22: The need for basic statistics by farmers: Employment

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Salary or wage rate	44.9%	6.6%	6.6%	22.4%	**64.4%**
Remuneration of employees	42.7%	8.0%	6.7%	20.0%	**65.3%**
Number of unemployed workers	33.7%	8.8%	20.6%	20.6%	**50.0%**
Number of family workers	28.1%	10.1%	21.7%	21.7%	**46.5%**
Number of regular workers	24.7%	11.1%	20.8%	19.4%	**48.7%**

The results of the need for *economic statistics* are listed in Table 4.23. *Income from farm activities* and *value of land* are indicated by respectively 53,6% and 52,3% of the respondents as very important. *Non farm expenditure, household expenditure pattern, income from non-farm activities* and *rent payments* do no seem to be regarded as important. The statistics are needed yearly.

The results of the need for *institutional and infrastructural* matters are listed in Table 4.24. *Methods of marketing* is indicated by 50,6% of the respondents ass very important. The *methods of irrigation, area under irrigation, quantity of land purchased or sold, capital structure, sources of water supply, level of mechanisation* and *land utilisation* seems to be not as important. The statistics are needed yearly.

Table 4.23: The need for basic statistics by farmers: Economic

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Income from farm activities	53.6%	7.7%	3.8%	23.1%	**65.4%**
Value of land	52.3%	5.2%	10.4%	20.8%	**63.6%**
Amount of farming debt	45.5%	6.8%	9.6%	20.5%	**63.1%**
Interest payments	40.9%	8.6%	8.6%	22.8%	**60.0%**
Value of other assets	35.2%	9.1%	12.1%	24.3%	**54.5%**
Intermediate production expenses	33.0%	8.3%	6.9%	27.9%	**56.9%**
Rent payments	29.5%	11.8%	13.2%	20.6%	**54.4%**
Income from non-farm activities	21.6%	18.8%	13.0%	26.1%	**42.1%**
Household expenditure pattern	17.0%	18.8%	9.4%	32.7%	**39.1%**
Non-farm expenditure	14.8%	18.8%	12.5%	**34.3%**	**34.4%**

The statistics are on average needed mostly on a magisterial district level (35% of the respondents). Statistics are also needed on a national level (32.6% of the respondents).

Among the respondents, 46,9% of the respondents indicated that they need the statistics on the commercial sector, while 2,5% indicated for the developing sector. The majority, 50,6% of the respondents indicated that they need the statistics both for the commercial and developing sector. Respondents indicated that they need that statistics mostly 6 months after the date of the collection of the data (31,8% of the respondents). Among the respondents indicated that they need the statistics 1 and 2 years after the date of the collection of the data.

The sources of the statistics are mainly media publications, farmer associations and agents. The level of confidence of the sources is between average and good. Decisions of farmers with the statistics include planning, marketing, management and viability. The level of accuracy is needed between 80% (44,1% of the respondents) and 90% (42% of the respondents).

Table 4.24: The need for basic statistics by farmers: Institutional or infrastructural

	Priority	Frequency			
	Very important	10 yearly	5 yearly	2 Yearly	Yearly
Methods of marketing	50.6%	2.8%	12.7%	25.4%	**59.1%**
Access to credit and finance	40.9%	4.2%	11.3%	21.1%	**63.4%**
Access to training and development	36.0%	6.9%	15.3%	26.4%	**51.4%**
Access to government support	32.6%	7.0%	16.9%	22.5%	**53.6%**
Fertiliser or chemical usage	31.5%	7.5%	17.6%	32.4%	**42.5%**
Pesticides usage	31.5%	7.4%	19.1%	29.4%	**44.1%**
Land utilisation	27.0%	11.8%	17.6%	29.4%	**41.2%**
Level of mechanisation	27.0%	7.2%	29.0%	23.2%	**40.6%**
Sources of water supply	27.0%	9.0%	26.9%	23.9%	**40.2%**
Capital structure	23.9%	7.2%	23.2%	30.4%	**39.2%**
Quantity of land purchased or sold	22.5%	9.0%	19.4%	26.9%	**44.7%**
Area under irrigation	16.9%	8.5%	31.0%	25.4%	**35.1%**
Methods of irrigation	16.9%	10.3%	29.4%	25.0%	**35.3%**

4.6 Workshop on statistical needs of the agricultural sector

In February 1999, the National Department of Agriculture and Statistics South Africa held a workshop on statistical needs of the agricultural sector and ways to obtain the required statistics. The workshop was attended by delegates from the National Department of Agriculture, Provincial Departments of Agriculture (with the exception of Gauteng), National Agricultural Marketing Council, South African Reserve Bank, South African Agricultural Union, Statistics South Africa, Agricultural Research Council, National African Farmers Union, Land Bank, Human Sciences Research Council, Satellite Application Centre of the CSIR, Statistics Botswana, Tracey Simbi (advisor to the Minister for Agriculture and Land Affairs and Donald Bay and Theresa Holland from National Agriculture Statistics Service of the United States Department of Agriculture. The attendants were subdivided into four groups; each group had to identify their agricultural statistics needs and also the purpose for which the statistics are used. These results were presented to the whole group. The results of each of the four groups are discussed further.

4.6.1 Group one

This group identified two groups of agricultural statistics needed, namely:

- Statistics collected only once , but which should be monitored and updated. Statistics include type of farming, location, land potential, climate, farm assets, farming practices etc.; and

- Statistics collected quarterly to yearly. Statistics include area planted, land use of crops and livestock, forecasts of crop size, area harvested, consumption and use of products, prices of production inputs, recurrent and capital costs of production and change in inventory.

4.6.2 Group two

This group identified the following categories of agricultural statistics needed:

- Land, including the availability, quality and the use thereof;

- socio-economic, which include the number, status, wealth and education of small-scale farmers;

- marketing, which include price trends at local, provincial, national and international level;

- infrastructure;

- research;

- agricultural area cropped; and

- production of field crops and livestock

4.6.3 Group three

This group identified the need for the following categories of agricultural statistics:

- Land utilisation, which includes area used for production of crops, grazing land, land availability and potential of unused land for agricultural purposes;

- production of crops and livestock; and

- employment in the agricultural sector.

4.6.4 Group four

This group identified their agricultural statistics needs, and as group one did also indicate the frequency at which the statistics needed. They are:

- Statistics needed less than a month, which include statistics on prices, food and water resources availability, market information, forecasts and inventory;

- statistics needed quarterly, which include statistics on capital investments and economic accounts of agriculture;

- statistics needed annually, which include statistics on affordability, area planted, yield, carry over stock and risk;

- statistics needed five yearly, which include statistics on infrastructure, national resources (for example invaders and land cover), population, nutrition and farming systems; and

- statistics needed ten yearly, which include statistics on comparative advantages and soil.

4.7 Conclusion

According to the hypotheses stated in chapter one, the results of the mail surveys on agricultural data users, i.e. policy makers, researchers, agribusinesses and farmers indicate a significant need for current and basic statistics. However, the needs vary according to the different categories of agricultural statistics and different users. Although the number of questionnaires sent out to the various users differed, the response rate calculated for policy makers is 56%, researchers 28%, agribusinesses 30% and farmers 18%, which is slightly disappointing in terms of the expectations. However, if one takes the lengthy questionnaire into consideration and also that no follow up efforts took place, these response rates are still acceptable for the purpose of this study.

Policy makers are more concerned with current statistics related to *quantity of import and exports* and *volume of production. Cost of production, prices of production inputs* and *utilisation of products* seem to be not important to policy makers. Basic statistics needed by policy makers include statistics on institutional or infrastructural, economic and

employment matters. The agricultural data needs in terms of current statistics of researchers are very similar to those of the policy makers. Basic statistics needed by researchers include statistics on economic, particular of farming unit and institutional or infrastructural matters.

Current statistics that are very important to agribusinesses are *yield, volume of production* and *producer prices* for field crops and horticulture, while *cost of production* and *quantity of import and exports* are more important for livestock. *Utilisation of products* seems not to be as important. In terms of basic statistics is institutional or infrastructural matters, particulars of farm units and economic statistics mostly needed. *Producer prices* are mostly needed by farmers, while *utilisation of products* seems to be not as important.

Results indicated by the four groups of workshop attendants produced a wide variety of statistics needed. Some of the statistics do not fall into the current and basic statistics categories as outlined for this study. However, most of the statistics that are needed by the attendants are already included in the results of the mail surveys.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This objective of this chapter is to summarise the preceding four chapters and to make recommendations to the official and responsible suppliers of agricultural data in South Africa.

5.2   Summary of study

Kabat, et al. (1998) stated that if a country has problems with the supply of agricultural data, it is necessary as a first step to address these problems to identify the data needs vis-à-vis the existing availability. Taking into consideration the problems with the supply of agricultural data currently existing in South Africa, the objective of this study is to identify and evaluate the agricultural data needs of decision-makers in South Africa. The end result of this study will hopefully lead to better and more focused efforts by responsible and official suppliers of agricultural data to increase the supply of agricultural data, which will eventually satisfy the needs of decision-makers involved in the South African agricultural sector. Official suppliers of agricultural data are the National Department of Agriculture, Provincial Departments of Agriculture, Statistics South Africa and organisations replacing data collection functions of the former marketing boards. The conclusion is further discussed according to the agricultural information system, the methodology used for this study and the results of the various surveys.

5.2.1   Agricultural information system

The agricultural information as illustrated by Bonnen (1975) forms an important part in this study. The agricultural information system consists of the data system, interpretation and analysis and decision-makers. The data system consists of conceptualisation,

operationalisation of concepts and measurement of concepts. The data system produces agricultural data which should be accurate, relevant, comprehensive, complete, trustworthy, timely and confidential. It also important the organisation involved with the data system is objective and unbiased.

Decision-makers, however, rarely use the data supplied by the data system, therefore the data is interpreted and analysed into information which is then used by decision-makers for decision-making, problem solving, managing complexity and uncertainty, improving the competitive market and operational efficiency and also the increase in knowledge. Thus, the agricultural data needs are created at the decision-maker level. However, for the purpose of this study decision-makers were stratified according to the agricultural data user population. The agricultural data users were identified as policy makers, researchers, agribusinesses and farmers. Policy makers form part of the decision-makers in the public sector while agribusinesses and farmers form part of decision-makers in the private sector. Researchers play and important supportive function for public and decision-makers since they are in most cases responsible for the interpretation and analysis of the data.

In order to identify the agricultural data needs, the term agricultural statistics is used instead and consequently the categories of agricultural statistics as outlined by Idaikadar (1979) are applied throughout the study. Factors influencing the needs of agricultural data users are technological changes, volatility of agricultural markets, development and growth of non-commercial markets, development of remote sensing technology, changes in the organisation of agriculture, changes in agricultural policies, decrease in government intervention, reduction in government budgets and trends in economic and political integration.

If the data system of the agricultural information system supplies inadequate agricultural data for decision-makers, data gaps occur. Types of data gaps include basic data gaps, collection methodology gaps and data refinement gaps. Reasons for these data gaps are conceptual obsolescence, property rights, inadequate analysis and an increase in demand for data.

5.2.2 Methodology

Two methods are available to identify agricultural data needs, namely agricultural data user conferences and surveys. A conference similar to the United States Department of Agriculture's Data Users Meetings was held on the 16th of February 1999 at Statistics South Africa in Pretoria. Although good indications of agricultural data needs were received from the conference attendants, it was difficult to measure the priority and frequency of the agricultural data needed. Some agricultural data needs expressed by attendants were beyond the scope of this study.

Although personal surveys can be used to satisfy the objective of this study, previous studies similar to this one and cost considerations dictated mail surveys. Since no complete address lists were available for the different categories of agricultural users, sampling frames were constructed from mailing lists, address lists included in various publications, member lists and telephone directories. Except for policy makers where the selected number of sampling units (30 units) were the same as the sampling frame, systematic sampling was used to select 200 researchers and agribusinesses respectively and 600 farmers.

The questionnaire consisted of four parts, namely an introduction, the need for current statistics, the need for basic statistics and the need for statistics supplied by the National Department of Agriculture (not discussed in this study). Current statistics included sub categories of field crops, horticulture and livestock while basic statistics included sub categories of basic hold, particulars of farmers, particulars of farming unit, employment, institutional or infrastructure and economic statistics. Respondents needs were measured according to the priority of the agricultural data needed, by using multi choice questions with four choices.

5.2.3 Results

After the questionnaires were received back from the respondents, the questionnaires were checked for errors and coded. Although the results indicate that every bit of statistical data

is regarded as important by some, some statistics are more important than others. This study discusses only statistics indicated as very important by respondents. The statistics that indicated as very important by enough respondents are discussed in this chapter. The results are discussed according to the four sub problems a stated in chapter one, namely the agricultural data needs of policy makers, researchers, agribusinesses and farmers.

5.2.3.1 Agricultural data needs of policy makers

Policy makers need data for the *field crop* sector on quantity of imports and exports, yield, value of imports and exports, volume of production, producer prices, stocks and area planted to annual crops. For the *horticulture* sector, volume of production, quantity of imports and exports, value of imports and exports and area planted to annual crops are important. Quantity of imports and exports, abattoir slaughter volumes, producer prices and value of imports and exports are mostly urgently needed for the *livestock* sector.

In terms of basic statistics, policy makers need data for *institutional or infrastructural, economic* and *employment* matters. Methods of marketing and income from farm activities are very important.

5.2.3.2 Agricultural data needs of researchers

Researchers need data for the *field crop* sector on area planted to annual crops, quantity of imports and exports, producer prices, volume of production, yield, consumer prices of products and area harvested. For the *horticulture* sector, area planted to annual crops is the only one regarded as very important by 60% or more. Livestock numbers by category, quantity of imports and exports, producer prices, value of imports and exports and cost of products are needed for the *livestock* sector.

Researchers indicated a surprisingly low level of interest in basic statistics, with only income from farm activities being regarded as very important by 60% or more.

5.2.3.3 Agricultural data needs of agribusinesses

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Agribusinesses need data for the *field crops* sector on yield. For the *horticulture sector* no particular data set is very important to 60% and more of the respondents while for the *livestock sector* cost of production is very important.

In terms of basic statistics, agribusinesses need data for *institutional or infrastructural, particulars of farm units* and *economic* matters. None of the data sets are very important to 60% more of the respondents.

5.2.3.4 Agricultural data needs of farmers

Farmers need data for the *field crop* sector on producer prices and prices of production inputs. For the *horticulture* sector, producer prices is very important while for the *livestock sector,* producer prices and quantity of import and exports are very important.

In terms of basic statistics, agribusinesses need data on *employment, economic* and *institutional or infrastructural* matters. However, no particular data set was indicated by 60% and more of the respondents as very important.

5.3   Recommendations

Although the results indicate only data sets that are very important to at least 60% of the respondents, to a large extent all the data sets are important. It is clear from the conclusion that different data sets are important to the different agricultural data users, however, there is an overlap. Taking into consideration the criteria of 60% and more of the respondents indicating a particular data set as very important, it seems according to the results that policy makers and researchers need more categories of agricultural data than agribusinesses and farmers. In general, agricultural data users regard current statistics more important than basic statistics. The need for current and basic statistics are further discussed according to the data (statistics) that official suppliers of agricultural data should focus their collection efforts on.

5.3.1 Current statistics

Agricultural data needed for the *field crops sector* in no significant order of importance:

- Producer prices;
- yield
- volume of production
- stocks
- area planted to annual crops; and
- quantity and value of import and exports.

Producer prices are available and are currently supplied by the National Department of Agricultural by means of a quarterly agricultural producer price index. However, since users also require the statistics on a monthly basis, efforts could be made to enhance the frequency of the statistics published. Prices for maize, wheat and sunflower are available daily from the South Africa Futures Exchange (Safex). Quantity and value of import and exports are available at Customs and Excise, the National Department of Agriculture and the Perishable Export Control Board (PPECB). However, the accuracy of the data could be questionable.

Area planted to most of the annual summer and winter crops, yield and volume of production (crop estimates) are supplied by the National Crop Estimating Committee (NCEC). De Villiers & Jooste (1999) question the composition of the committee and also the accuracy of the estimates. However, steps are underway that deals with the composition of the committee and accuracy of the estimates, since these crop estimates have a profound effect on derivative instruments of the South African Agricultural Futures Exchange (Safex). For the other crops, producer organisations and Article 21 companies, for example Cotton South Africa, Tobacco exchange supply most of the data. The South African Grain Information Service (SAGIS) provides monthly stock figures for summer and winter crops. A total volume of production figure, which include production for own use, production for farm labourers etc. cannot a present be calculated since some benchmark data are lacking. These benchmarks were previously obtained from agricultural censuses and surveys.

Agricultural data needed for *the horticulture sector* in no significant order of importance are:

- Volume of products;
- producer prices;
- area planted; and
- quantity and value of import and exports

Although administrative data supplied by the fresh produce markets gives a good indication of producer prices, volume of production is very difficult to estimate, mainly as the result of the increase in marketing channels bypassing the fresh produce market in recent times. Some producer organisations estimate the area planted and volume of production. One will, however, never now how accurate the data is. Agricultural censuses and surveys could be used to determine the accuracy of these estimates. Quantity and value of import and exports are available from Customs and Excise, National Department of Agriculture and Perishable Export Control Board (PPECB).

Agricultural data needed for the *livestock sector* in no significant order of importance are:

- Quantity and value of import and exports;
- producer prices; and
- abattoir slaughter volumes.

Quantity and value of import and exports are available from Customs and Excise, National Department of Agriculture and Perishable Export Control Board (PPECB). Quantity of imports from countries within the South African Development Community (SADC) is also very important. However, with the free trade negotiations within SADC, this will possible decrease in importance. Producer prices, especially for ostriches, are inadequate. The importance of auction markets is also decreasing in importance, therefore prices will in future be difficult to collect. One of the most significant agricultural data which became discontinued with the deregulation of the agricultural marketing sector is abattoir slaughter volume, which is used amongst others to estimate volume of production. As already illustrated in chapter one, these statistics contribute a significant share to the gross income of agricultural producers. Efforts to enhance the accuracy are therefore of utmost

importance. Efforts are currently made by the Directorate: Food Safety and Veterinary Public Health of the National Department of Agriculture to monitor slaughterings of livestock at various categories of abattoirs. Although owners of abattoirs are obligated according to Law to complete a schedule eight form, problems are encountered with the response and the accuracy of the data supplied.

5.3.2 Basic statistics

Agricultural data users mostly need data on *employment, economic* and *institutional or infrastructural* matters. Researcher specifically needed data on particulars of *farming unit*. Data on basic household and particulars of farmers seem to be not as important. Previous agricultural censuses and surveys did include data on *economic, particulars of farming unit and employment*. Data on institutional or infrastructural data were, however, excluded. In the light of the importance of institutional or infrastructural statistics, questions ought to be included in the census or survey questionnaire or a ad-hoc survey should alternatively be undertaken.

5.4 Conclusion

Decision-makers in agriculture need agricultural data, especially current statistics. Most of the agricultural data are available, but decision-makers have to look for it and in some cases have to pay for the data (South African Agricultural Union, 1999). However, data of the livestock sector are not adequate to satisfy decision-makers' needs, especially on abattoir slaughter volumes. Efforts should be made by the National Department of Agriculture, South African Meat Industry Company (SAMIC) and involved producer organisations to improve these data. With the changes in the members of the National Crop Estimating Committee (NCEC) and improved methodology involving remote sensing, these sets of data will satisfy the needs of the decision-makers in the future.

Funds should also be made available by the National Department of Agriculture to Statistics South African to continue the agricultural censuses and surveys, especially taking into consideration the world agricultural census planned for the year 2000. Cognisance must be

taken that although efforts are made by Government to undertake censuses and surveys on the small-scale and developing sector, decision-makers still also need data pertaining to the commercial sector, which is a significantly contributor to the South African economy in terms of the forward and backward linkages.

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APPENDIX A

AGRICULTURAL DATA USER GROUPS

1. Policy-makers

The agricultural data user groups of policy-makers consist of:

- The National Department of Agriculture
  - Top management
  - Other Directorates
- Provincial Departments of Agriculture
- Organisations/institutions actively involved with agricultural policy-makers
  - Land and Agriculture Policy Centre
  - The South Africa Reserve Bank
  - Other Departments of Agriculture
    - Land Affairs
    - Trade and Industry
    - Finance
    - Water and Forestry
    - Environment
  - National Agricultural Marketing Council

2. Researchers

The agricultural data user groups of researchers consist of:

- Universities and colleges
  - Faculties in Economics
  - Faculties in Agricultural Economics
  - Other Economic faculties
- Agricultural economists and consultants
- Financial institutions
  - The World bank

- The Development Bank of Southern Africa
- The Land Bank
- Commercial Banks
- Agriculture Research Council

3. Agribusinesses

The agricultural data user groups of agribusinesses consist of:

- Agribusinesses
- Producer organisations
- Agricultural and farmers unions

4. Farmers

The agricultural data user groups of farmers consist of:

- Commercial farmers

APPENDIX B

LIST OF CURRENT AND BASIC STATISTICS

1. CURRENT STATISTICS

1.1 Field crops

- Area planted to annual crops
- Area planted to perennial crops
- Area harvested
- Yield
- Volume of production
- Producer prices
- Stocks of products
- Utilisation of products
- Consumption of products
- Consumer prices of products
- Volume of imports and exports
- Value of imports and exports
- Prices of production inputs
- Cost of production

1.2 Horticulture

- Area planted to annual crops
- Area planted to perennial crops
- Area harvested
- Yield
- Volume of production
- Producer prices

- Stocks of products
- Utilisation of products
- Consumption of products
- Consumer prices of products
- Volume of imports and exports
- Value of imports and exports
- Prices of production inputs
- Cost of production

1.3 Livestock

- Livestock numbers by category
- Number of animals in feedlots
- Herd composition
- Abattoir slaughter volumes
- Farm slaughter volumes
- Producer prices of products
- Utilisation of products
- Consumption of products
- Consumer prices of products
- Volume of imports and exports
- Value of imports and exports
- Prices of production inputs
- Cost of production

2. BASIC STATISTICS

2.1 Basic household

- Locality
- Type of household
- Type of dwelling
- Number of people living in household

- Access to land for farming purposes
- Consumption of electricity
- Access to piped water
- Number of farmers

2.2 Particulars of farmers

- Gender
- Age
- Occupation
- Level of education
- Years of farming experience
- Full-time or part-time farmer

2.3 Particulars of farming unit

- Type of land tenure
- Type of farming operation
- Size of farming unit
- Number of people living on farm unit

2.4 Employment

- Number of family workers
- Number of regular workers
- Number of unemployed workers
- Salary or wage rate
- Remuneration of employees

2.5 Institutional or infrastructure

- Land utilisation
- Quantity of land purchased or sold

- Level of mechanisation

- Capital structure

- Sources of water supply

- Area under irrigation

- Methods of irrigation

- Methods of marketing

- Fertiliser or chemical usage

- Pesticides usage

- Access to government support

- Access to training and development

- Access to credit and finance

2.6   Economic

- Income from farm activities

- Income from non-farm activities

- Intermediate production expenses

- Interest payments

- Rent payments

- Non-farm expenditure

- Household expenditure pattern

- Value of land

- Value of other assets

APPENDIX C

EXAMPLE OF QUESTIONNAIRES

The questionnaires mailed to policy-makers, researchers, agribusinesses and farmers are fairly the same. This questionnaire was mailed to farmers.

AGRICULTURAL STATISTICS NEEDS OF FARMERS

LANDBOU STATISTIEK BEHOEFTES VAN BOERE

Please complete the following questions. *Mark your answer with a cross.*

For example: *In which province do you currently live?*

Gauteng | 1
Free State | ☒ (2)
Western Cape | 3

1. How old are you?

Younger than 20 years	1
Between 21 and 30 years	2
Between 31 and 40 years	3
Between 41 and 50 years	4
Older than 50 years	5

    ☐

2. How many years school education did you receive?

Less than 4 years	1
Between 4 and 7 years	2
Between 7 and 12 years *(gr12/std 10)*	3
More than 12 years *(diploma or degree)*	4

    ☐

3. How are you farming at present?

    Full-time [1]   Part-time [2]   ☐

4. In which of the following markets are your farm products marketed?

    | Domestic market | 1 | | International market | 2 | | Both | 3 | ☐

5. What percentage of the income from field crops, horticultural products or livestock does your *farm income* consists of?

Field crops *(Summer and winter crops, sugarcane, tobacco, lucerne and other field crops)*	%
Horticultural products *(Viticulture, fruits, vegetables, potatoes, tea, rooibos tea and flowers)*	%
Livestock products *(Wool, mohair, ostriches, livestock, poultry and dairy)*	%

This questionnaire is divided into three parts:
- The *first part*, which starts on page 2 deals with statistics that may be needed on a weekly, monthly, quarterly or yearly basis **(current statistics)**.
- The *second part*, which starts on page 6 deals with statistic that may be needed on a yearly, 2 yearly, 5 yearly or 10 yearly basis **(basic statistics)**.
- The *third part*, which starts on page 7 deals with statistics that are currently supplied by the National Department of Agriculture.

IF YOU ARE NOT INTERESTED IN ANY PARTICULAR PART OF THE QUESTIONNAIRE, YOU ARE FREE TO SCRAP IT.

Voltooi asseblief die volgende vrae. *Merk jou antwoord met 'n kruisie.*

Byvoorbeeld: *In watter provinsie is u tans woonagtig?*

Gauteng
Vrystaat
Weskaap

1
☒
3

1. Hoe oud is u?

Jonger as 20 jaar	1
Tussen 21 en 30 jaar	2
Tussen 31 en 40 jaar	3
Tussen 41 en 50 jaar	4
Ouer as 50 jaar	5

☐

2. Hoeveel jare skool opleiding het u ontvang?

Minder as 4 jaar	1
Tussen 4 en 7 jaar	2
Tussen 7 en 12 jaar *(gr12/st 10)*	3
Meer as 12 jaar *(diploma of graad)*	4

☐

3. Hoe boer u op die oomblik?

Voltyds [1]   Deeltyds [2]   ☐

4. In watter van die volgende markte word u boerdery se produkte bemark?

| Plaaslike mark | 1 | | Internasionale mark | 2 | | Beide | 3 | ☐ |

5. Watter persentasie van u totale *boerdery inkomste* bestaan uit akkerbou, tuinbou of veeteelt?

Akkerbou *(Somer en wintergrane, suikerriet, tabak, katoen, lusern en ander akkerbou gewasse)*	%
Tuinbou *(Wynbou, vrugte, groente, aartappels, tee, rooibostee en blomme)*	%
Veeteelt *(Wol, bokhaar, volstruise, lewende hawe, pluimvee en suiwel)*	%

Hierdie vraelys is opgedeel in drie dele:
- Die *eerste deel*, wat op bladsy 2 begin handel oor statistieke wat moontlik op 'n weeklikse, maandelikse, kwartaalikse of jaarlikse basis benodig word **(huidige statistiek)**.
- Die *tweede deel*, wat op bladsy 6 begin handel oor statistiek wat moontlik op 'n jaarlikse, 2 jaarlikse, 5 jaarlikse of 10 jaarlikse basis benodig word **(basiese statistiek)**.
- Die *derde deel*, wat op bladsy 7 begin handel oor statistiek wat huidiglik deur die Nasionale Departement van Landbou verskaf word.

AS U NIE BELANGSTEL IN 'N SPESIFIEKE DEEL VAN DIE VRAELYS NIE, IS U VRY OM DIT TE SKRAP

A. THE NEED FOR CURRENT AGRICULTURAL STATISTICS

Listed below are statistics that may be needed on a weekly, monthly, quarterly or yearly basis. They are subdivided into *field crops, horticulture* and *livestock.* Under the heading **priority,** please indicate (*with a cross*) whether it is:

    1 = not important; 2 = somewhat important; 3 = important or 4 = very important.

Under the heading **frequency,** please indicate whether the data is needed:

    1 = yearly; 2 = quarterly; 3 = monthly or 4 = weekly.

If you have more than one choice, please indicate the applicable one.

1. FIELD CROPS (Summer and winter crops, sugarcane, tobacco, luceme etc.)	PRIORITY				FREQUENCY					
R.S.A. statistics	1	2	3	4	1	2	3	4		
1 Area planted to annual crops	1	2	3	4	1	2	3	4		
2 Area planted to perennial crops	1	2	3	4	1	2	3	4		
3 Area harvested	1	2	3	4	1	2	3	4		
4 Yield	1	2	3	4	1	2	3	4		
5 Volume of production	1	2	3	4	1	2	3	4		
6 Producer prices	1	2	3	4	1	2	3	4		
7 Stocks of products	1	2	3	4	1	2	3	4		
8 Utilisation of products	1	2	3	4	1	2	3	4		
9 Consumption of products	1	2	3	4	1	2	3	4		
10 Consumer prices of products	1	2	3	4	1	2	3	4		
11 Volume of imports and exports	1	2	3	4	1	2	3	4		
12 Value of imports and exports	1	2	3	4	1	2	3	4		
13 Prices of production inputs	1	2	3	4	1	2	3	4		
14 Cost of production	1	2	3	4	1	2	3	4		
Other (Please specify)										
15 _____	1	2	3	4	1	2	3	4		
16 _____	1	2	3	4	1	2	3	4		
17 _____	1	2	3	4	1	2	3	4		
International statistics										
18 _____	1	2	3	4	1	2	3	4		
19 _____	1	2	3	4	1	2	3	4		
20 _____	1	2	3	4	1	2	3	4		
21 _____	1	2	3	4	1	2	3	4		
22 _____	1	2	3	4	1	2	3	4		

Please indicate (*only the numbers*) from the above list in order of importance, the statistics that are most important to you. Under the heading **level**, please indicate whether it is needed on *1 = national level; 2 = provincial level or 3 = magisterial district level*

	LEVEL			
1. _____	1	2	3	
2. _____	1	2	3	
3. _____	1	2	3	
4. _____	1	2	3	
5. _____	1	2	3	

Please indicate for which **field crop**, the statistics are needed the most (*for example maize*)

1. _____
2. _____
3. _____
4. _____
5. _____

A. DIE BEHOEFTE AAN HUIDIGE LANDBOU STATISTIEK

Hieronder word statistieke gelys wat moontlik weekliks, maandeliks, kwartaaliks of jaarliks benodig word. Dit is onderverdeel in akkerbou, tuinbou en veeteelt. Onder die opskrif **prioriteit**, sal u asseblief aandui (*met 'n kruisie*) of dit:

1 = nie belangrik; 2 = effens belangrik; 3 = belangrik of 4 = baie belangrik is.

Onder die opskrif **frekwensie**, sal u asseblief aandui (*met 'n kruisie*) of die statistiek benodig word:

1 = jaarliks; 2 = kwartaaliks; 3 = maandeliks of 4 = weekliks.

As u meer as een keuse het, dui asseblief net die een wat die toepaslikste is.

1. AKKERBOU *(Somer en wintergrane, suikerriet, tabak, katoen, lusern ens.)*

R.S.A. statistieke

	PRIORITEIT				FREKWENSIE			
1 Oppervlak geplant (eenjarige gewas)	1	2	3	4	1	2	3	4
2 Oppervlak geplant (meerjarige gewas)	1	2	3	4	1	2	3	4
3 Oppervlak ge-oes	1	2	3	4	1	2	3	4
4 Opbrengs	1	2	3	4	1	2	3	4
5 Produksie volumes	1	2	3	4	1	2	3	4
6 Produsentepryse van produkte	1	2	3	4	1	2	3	4
7 Voorade van produkte	1	2	3	4	1	2	3	4
8 Verwerking van produkte	1	2	3	4	1	2	3	4
9 Verbruik van produkte	1	2	3	4	1	2	3	4
10 Verbruikerspryse van produkte	1	2	3	4	1	2	3	4
11 Volume van invoere en uitvoere	1	2	3	4	1	2	3	4
12 Waarde van invoere en uitvoere	1	2	3	4	1	2	3	4
13 Pryse van produksie insette	1	2	3	4	1	2	3	4
14 Koste van produksie	1	2	3	4	1	2	3	4

Ander (spesifiseer asseblief)

	PRIORITEIT				FREKWENSIE			
15 _____	1	2	3	4	1	2	3	4
16 _____	1	2	3	4	1	2	3	4
17 _____	1	2	3	4	1	2	3	4

Internasionale statistieke

	PRIORITEIT				FREKWENSIE			
18 _____	1	2	3	4	1	2	3	4
19 _____	1	2	3	4	1	2	3	4
20 _____	1	2	3	4	1	2	3	4
21 _____	1	2	3	4	1	2	3	4
22 _____	1	2	3	4	1	2	3	4

Dui asseblief aan (*alleenlik die nommers*) uit die bostaande lys in orde van belangrikheid, die statistieke wat die belangrikste is vir u. Onder die opskrif **vlak**, dui aan of dit benodig word op 'n 1 = nasionale vlak; 2 = provinsiale vlak of 3 = landros distrik vlak.

	VLAK		
1. _____	1	2	3
2. _____	1	2	3
3. _____	1	2	3
4. _____	1	2	3
5. _____	1	2	3

Dui asseblief aan vir watter **akkerbou produk** die statistiek die meeste benodig word (*byvoorbeeld mielies*).

1. _____
2. _____
3. _____
4. _____
5. _____

2. HORTICULTURE (*Viticulture, fruits, vegetables, potatoes, tea, rooibos tea and flowers*)

R.S.A. statistics

	PRIORITY				FREQUENCY					
1 Area planted to annual crops	1	2	3	4	1	2	3	4		
2 Area planted to perennial crops	1	2	3	4	1	2	3	4		
3 Area harvested	1	2	3	4	1	2	3	4		
4 Yield	1	2	3	4	1	2	3	4		
5 Volume of production	1	2	3	4	1	2	3	4		
6 Producer prices	1	2	3	4	1	2	3	4		
7 Stocks of products	1	2	3	4	1	2	3	4		
8 Utilisation of products	1	2	3	4	1	2	3	4		
9 Consumption of products	1	2	3	4	1	2	3	4		
10 Consumer prices of products	1	2	3	4	1	2	3	4		
12 Volume of imports and exports	1	2	3	4	1	2	3	4		
13 Value of imports and exports	1	2	3	4	1	2	3	4		
14 Prices of production inputs	1	2	3	4	1	2	3	4		
15 Cost of production	1	2	3	4	1	2	3	4		

Other (Please specify)

	PRIORITY				FREQUENCY					
15 _____	1	2	3	4	1	2	3	4		
16 _____	1	2	3	4	1	2	3	4		
17 _____	1	2	3	4	1	2	3	4		

International statistics

	PRIORITY				FREQUENCY					
18 _____	1	2	3	4	1	2	3	4		
19 _____	1	2	3	4	1	2	3	4		
20 _____	1	2	3	4	1	2	3	4		
21 _____	1	2	3	4	1	2	3	4		
22 _____	1	2	3	4	1	2	3	4		

Please indicate (*only the numbers*) from the above list in order of importance, the statistics that are most important to you. Under the heading **level**, please indicate whether it is needed on *1 = national level; 2 = provincial level or 3 = magisterial district level*

	LEVEL				
1. _____	1	2	3		
2. _____	1	2	3		
3. _____	1	2	3		
4. _____	1	2	3		
5. _____	1	2	3		

Please indicate for which **horticultural product**, the statistics are needed the most (*for example viticulture*)

1. _____
2. _____
3. _____
4. _____
5. _____

2. TUINBOU *(Wynbou, vrugte, groente aartappels, tee, rooibostee en blomme)*

R.S.A. statistieke

	PRIORITEIT				FREKWENSIE					
1 Oppervlak geplant (eenjarige gewas)	1	2	3	4	1	2	3	4		
2 Oppervlak geplant (meerjarige gewas)	1	2	3	4	1	2	3	4		
3 Oppervlak ge-oes	1	2	3	4	1	2	3	4		
4 Opbrengs	1	2	3	4	1	2	3	4		
5 Produksie volume	1	2	3	4	1	2	3	4		
6 Produsentepryse van produkte	1	2	3	4	1	2	3	4		
7 Voorade van produkte	1	2	3	4	1	2	3	4		
8 Verwerking van produkte	1	2	3	4	1	2	3	4		
9 Verbruik van produkte	1	2	3	4	1	2	3	4		
10 Verbruikerspryse van produkte	1	2	3	4	1	2	3	4		
11 Volume van invoere en uitvoere	1	2	3	4	1	2	3	4		
12 Waarde van invoere en uitvoere	1	2	3	4	1	2	3	4		
13 Pryse van produksie insette	1	2	3	4	1	2	3	4		
14 Koste van produksie	1	2	3	4	1	2	3	4		

Ander (spesifiseer asseblief)

	PRIORITEIT				FREKWENSIE					
15 _____	1	2	3	4	1	2	3	4		
16 _____	1	2	3	4	1	2	3	4		
17 _____	1	2	3	4	1	2	3	4		

Internasionale statistieke

	PRIORITEIT				FREKWENSIE					
18 _____	1	2	3	4	1	2	3	4		
19 _____	1	2	3	4	1	2	3	4		
20 _____	1	2	3	4	1	2	3	4		
21 _____	1	2	3	4	1	2	3	4		
22 _____	1	2	3	4	1	2	3	4		

Dui asseblief aan (*alleenlik die nommers*) uit die bostaande lys in orde van belangrikheid, die statistieke wat die belangrikste is vir u. Onder die opskrif **vlak,** dui aan of dit benodig word op 'n *1 = nasionale vlak; 2 = provinsiale vlak of 3 = landros distrik vlak.*

VLAK

1. _____	1	2	3		
2. _____	1	2	3		
3. _____	1	2	3		
4. _____	1	2	3		
5. _____	1	2	3		

Dui asseblief aan vir watter **tuinbou produk** die statistiek die meeste benodig word *(byvoorbeeld wynbou).*

1. _____
2. _____
3. _____
4. _____
5. _____

3. LIVESTOCK *(Wool, mohair, ostriches, livestock, poultry and dairy)*

R.S.A. statistics

	PRIORITY				FREQUENCY						
1 Livestock numbers by category	1	2	3	4	1	2	3	4			
2 Number of animals in feedlots	1	2	3	4	1	2	3	4			
3 Herd composition	1	2	3	4	1	2	3	4			
4 Abattoir slaughter volumes	1	2	3	4	1	2	3	4			
5 Farm slaughter volumes	1	2	3	4	1	2	3	4			
6 Producer prices of products	1	2	3	4	1	2	3	4			
7 Utilisation of products	1	2	3	4	1	2	3	4			
8 Consumption of products	1	2	3	4	1	2	3	4			
9 Consumer prices of products	1	2	3	4	1	2	3	4			
10 Volume of imports and exports	1	2	3	4	1	2	3	4			
11 Value of imports and exports	1	2	3	4	1	2	3	4			
12 Prices of production inputs	1	2	3	4	1	2	3	4			
13 Cost of production	1	2	3	4	1	2	3	4			

Other (please specify)

	PRIORITY				FREQUENCY			
14 _____	1	2	3	4	1	2	3	4
15 _____	1	2	3	4	1	2	3	4
16 _____	1	2	3	4	1	2	3	4

International statistics

	PRIORITY				FREQUENCY			
17 _____	1	2	3	4	1	2	3	4
18 _____	1	2	3	4	1	2	3	4
19 _____	1	2	3	4	1	2	3	4
20 _____	1	2	3	4	1	2	3	4
21 _____	1	2	3	4	1	2	3	4

Please indicate (*only the numbers*) from the above list in order of importance, the statistics that are most important to you. Under the heading **level**, please indicate whether it is needed on *1 = national level; 2 = provincial level or 3 = magisterial district level*

LEVEL

1. _____	1	2	3
2. _____	1	2	3
3. _____	1	2	3
4. _____	1	2	3
5. _____	1	2	3

Please indicate for which **livestock product**, the statistics are needed the most (*for example cattle*).

1. _____
2. _____
3. _____
4. _____
5. _____

ETEELT *(Wol, bokhaar, volstruise, lewende ve, pluimvee en suiwel)*

S.A. statistieke

Diere getalle volgens kategorië
Aantal diere in voerkrale
Kudde samestelling
Volumes abatoir slagting
Volumes plaas slagtings
Produsente pryse van produkte
Verwerking van produkte
Verbruik van produkte
Verbruikerspryse van produkte
) Volume van invoere en uitvoere
1 Waarde van invoere en uitvoere
2 Pryse van produksie insette
3 Koste van produksie

nder (spesifiseer asseblief)

4 _____
5 _____
6 _____

nternasionale statistieke

7 _____
8 _____
9 _____
0 _____
1 _____

	PRIORITEIT				FREKWENSIE			
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	
1	2	3	4	1	2	3	4	

ui asseblief aan (*alleenlik die nommers*) uit die bostaande lys in orde van belangrikheid, die tatistieke wat die belangrikste is vir u. Onder die opskrif **vlak,** dui aan of dit benodig word p 'n *1 = nasionale vlak; 2 = provinsiale vlak of 3 = landros distrik vlak.*

VLAK

1	2	3
1	2	3
1	2	3
1	2	3
1	2	3

. _____
. _____
. _____
. _____
. _____

ui asseblief aan vir watter **veeteelt produk** die statistiek die meeste benodig word *(byvoorbeeld beesste).*

. _____
2. _____
3. _____
4. _____
5. _____

This part is applicable to field crops, horticulture and livestock

Do you need forecasts of the above mentioned statistics?

No	1		Yes	2

☐

If **yes**, for what products do you need it?

1. _____
2. _____
3. _____
4. _____
5. _____

☐☐☐☐☐

How **current** must the statistics be, i.e. how much time between the date of the collection of the data to the date of publication?

1 Month	1	3 Months	2	6 Months	3	1 Year	4	2 Years	5

☐

What **sources** of statistics do you currently use? Indicate also the degree of confidence of the sources if *1 = poor; 2 = average; 3 = good or 4 = excellent?*

1. _____
2. _____
3. _____

1	2	3	4
1	2	3	4
1	2	3	4

☐☐☐☐☐☐

What **current** decisions are based on the statistics?

1. _____
2. _____
3. _____

☐☐

What **future** decisions will be based on the statistics?

1. _____
2. _____
3. _____

☐☐☐

What is the **level of accuracy** you need for the statistics?

50%	1	60%	2	70%	3	80%	4	90%	5

☐
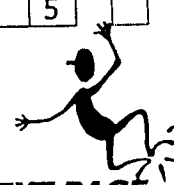
FOR BASIC AGRICULTURAL STATISTICS, PLEASE TURN TO THE NEXT PAGE

Hierdie deel is toepaslik op akkerbou, tuinbou en veeteelt produkte

Het u vooruitskattings nodig van bogenoemde statistieke?

| Nee | 1 | | Ja | 2 | ☐

As die antwoord **ja** is, vir watter produkte is die vooruitskattings nodig?

1. _____
2. _____
3. _____
4. _____
5. _____

☐
☐
☐
☐
☐

Hoe **huidig** moet die statistiek wees, m.a.w. hoeveel tyd tussen die datum van die insameling van die data tot die datum van publikasie?

| 1 Maand | 1 | | 3 Maande | 2 | | 6 Maande | 3 | | 1 Jaar | 4 | | 2 Jare | 5 | ☐

Wat is die **bronne** van die statistiek wat u huidiglik gebruik? Dui ook aan die graad van vertroue in die bronne as *1 = swak; 2 = gemiddeld, 3 = goed of 4 = uitstekend* is?

1. _____
2. _____
3. _____

1	2	3	4
1	2	3	4
1	2	3	4
1	2	3	4

Wat is die besluite wat **huidiglik** geneem met die statistiek?

1. _____
2. _____
3. _____

☐
☐

Wat is die besluite wat **toekomstig** geneem kan word met statistiek?

1. _____
2. _____
3. _____

☐
☐

Wat is die **vlak van akkuraatheid** wat u benodig vir die statistiek?

| 50% | 1 | | 60% | 2 | | 70% | 3 | | 80% | 4 | | 90% | 5 | ☐

VIR BASIESE STATISTIEK, BLAAI ASSEBLIEF OM

B. THE NEED FOR BASIC AGRICULTURAL STATISTICS

Listed below are statistical data sets that may be needed on a yearly, 2 yearly, 5 yearly or 10 yearly basis. Under the heading **priority,** please indicate whether it is:

1 = not important; 2 = somewhat important; 3 = important or 4 = very important.

Under the heading **frequency,** please indicate whether the data is needed:

10 = yearly; 2 = 5 yearly; 3 = 2 yearly or 4 = yearly.

If you have more than one choice, please indicate the one that is the most applicable.

	PRIORITY				FREQUENCY					
Basic household										
1 Locality	1	2	3	4	1	2	3	4		
2 Type of household	1	2	3	4	1	2	3	4		
3 Type of dwelling	1	2	3	4	1	2	3	4		
4 Number of people living in household	1	2	3	4	1	2	3	4		
5 Access to land for farming purposes	1	2	3	4	1	2	3	4		
6 Consumption of electricity	1	2	3	4	1	2	3	4		
7 Access to piped water	1	2	3	4	1	2	3	4		
8 Number of farmers	1	2	3	4	1	2	3	4		
Particulars of farmers										
9 Gender	1	2	3	4	1	2	3	4		
10 Age	1	2	3	4	1	2	3	4		
11 Occupation	1	2	3	4	1	2	3	4		
12 Level of education	1	2	3	4	1	2	3	4		
13 Years of farming experience	1	2	3	4	1	2	3	4		
14 Full-time or part-time farmer	1	2	3	4	1	2	3	4		
Particulars of farming unit										
15 Type of land tenure	1	2	3	4	1	2	3	4		
16 Type of farming operation	1	2	3	4	1	2	3	4		
17 Size of farming unit	1	2	3	4	1	2	3	4		
18 Number of people living on farm unit	1	2	3	4	1	2	3	4		
Employment										
19 Number of family workers	1	2	3	4	1	2	3	4		
20 Number of regular workers	1	2	3	4	1	2	3	4		
21 Number of unemployed workers	1	2	3	4	1	2	3	4		
22 Salary or wage rate	1	2	3	4	1	2	3	4		
23 Remuneration of employees	1	2	3	4	1	2	3	4		
Institutional or infrastructure										
24 Land utilisation	1	2	3	4	1	2	3	4		
25 Quantity of land purchased or sold	1	2	3	4	1	2	3	4		
26 Level of mechanisation	1	2	3	4	1	2	3	4		
27 Capital structure	1	2	3	4	1	2	3	4		
28 Sources of water supply	1	2	3	4	1	2	3	4		
29 Area under irrigation	1	2	3	4	1	2	3	4		
30 Methods of irrigation	1	2	3	4	1	2	3	4		
31 Methods of marketing	1	2	3	4	1	2	3	4		
32 Fertiliser or chemical usage	1	2	3	4	1	2	3	4		
33 Pesticides usage	1	2	3	4	1	2	3	4		
34 Access to government support	1	2	3	4	1	2	3	4		
35 Access to training and development	1	2	3	4	1	2	3	4		
36 Access to credit and finance	1	2	3	4	1	2	3	4		

B. DIE BEHOEFTE AAN BASIESE LANDBOU STATISTIEK

Hieronder word statistieke gelys wat moontlik jaarliks, 2 jaarliks, 5 jaarliks of 10 jaarliks benodig word. Onder die opskrif **prioriteit**, sal u asseblief aandui (*met 'n kruisie*) of dit:
1 = nie belangrik; 2 = effens belangrik; 3 = belangrik of 4 = baie belangrik is.
Onder die opskrif **frekwensie**, sal u asseblief aandui of die statistiek benodig word:
1 = 10 jaarliks; 2 = 5 jaarliks; 3 = 2 jaarliks of 4 = jaarliks.

As u meer as een keuse het, dui asseblief net die een wat die toepaslikste is.

	PRIORITEIT				FREKWENSIE			
Basiese huishouding								
1 Lokaliteit	1	2	3	4	1	2	3	4
2 Tipe huishouding	1	2	3	4	1	2	3	4
3 Tipe woning	1	2	3	4	1	2	3	4
4 Aantal mense woonagtig in woning	1	2	3	4	1	2	3	4
5 Toegang tot boerdery grond	1	2	3	4	1	2	3	4
6 Verbruik van elektrisiteit	1	2	3	4	1	2	3	4
7 Toegang tot gepypde water	1	2	3	4	1	2	3	4
8 Aantal boere	1	2	3	4	1	2	3	4
Besonderhede van boere								
9 Geslag	1	2	3	4	1	2	3	4
10 Ouderdom	1	2	3	4	1	2	3	4
11 Okkupasie	1	2	3	4	1	2	3	4
12 Vlak van opvoeding	1	2	3	4	1	2	3	4
13 Jare ervaring in boerdery	1	2	3	4	1	2	3	4
14 Voltyds of deeltydse boer	1	2	3	4	1	2	3	4
Besonderhede van boerdery eenheid								
15 Tipe eiendomsreg	1	2	3	4	1	2	3	4
16 Tipe boerdery aktiwiteite	1	2	3	4	1	2	3	4
17 Grootte van eenheid	1	2	3	4	1	2	3	4
18 Aantal mense woonagtig op eenheid	1	2	3	4	1	2	3	4
Indiensneming								
19 Aantal familie arbeiders	1	2	3	4	1	2	3	4
20 Aantal gereelde arbeiders	1	2	3	4	1	2	3	4
21 Aantal werkloses	1	2	3	4	1	2	3	4
22 Salaris of loon tarief van arbeiders	1	2	3	4	1	2	3	4
23 Vergoeding van arbeiders	1	2	3	4	1	2	3	4
Institusioneel of infrastruktuur								
24 Grond benutting	1	2	3	4	1	2	3	4
25 Hoeveelheid grond gekoop of verkoop	1	2	3	4	1	2	3	4
26 Vlak van meganisasie	1	2	3	4	1	2	3	4
27 Kapitaal struktuur	1	2	3	4	1	2	3	4
28 Bronne van water bediening	1	2	3	4	1	2	3	4
29 Area onder besproeing	1	2	3	4	1	2	3	4
30 Metodes van besproeing	1	2	3	4	1	2	3	4
31 Metodes van bemarking	1	2	3	4	1	2	3	4
32 Gebruik van chemiese stowwe	1	2	3	4	1	2	3	4
33 Gebruik van insek en onkruid doders	1	2	3	4	1	2	3	4
34 Toegang tot owerheids ondersteuning	1	2	3	4	1	2	3	4
35 Toegang tot opleiding en ontwikkeling	1	2	3	4	1	2	3	4
36 Toegang tot krediet en finansiering	1	2	3	4	1	2	3	4

Economic

37 Income from farm activities	1	2	3	4	1	2	3	4	
38 Income from non-farm activities	1	2	3	4	1	2	3	4	
39 Intermediate production expenses	1	2	3	4	1	2	3	4	
40 Interest payments	1	2	3	4	1	2	3	4	
41 Rent payments	1	2	3	4	1	2	3	4	
42 Non-farm expenditure	1	2	3	4	1	2	3	4	
43 Household expenditure pattern	1	2	3	4	1	2	3	4	
44 Value of land	1	2	3	4	1	2	3	4	
45 Value of other assets	1	2	3	4	1	2	3	4	
46 Amount of farming debt	1	2	3	4	1	2	3	4	

Other

47 _____	1	2	3	4	1	2	3	4	
48 _____	1	2	3	4	1	2	3	4	
49 _____	1	2	3	4	1	2	3	4	
50 _____	1	2	3	4	1	2	3	4	
51 _____	1	2	3	4	1	2	3	4	

Please indicate (*only the numbers*) from the above list in order of importance, the statistics that are most important to you. Under the heading **level**, please indicate whether it is needed on *1 = national level; 2 = provincial level; 3 = magisterial district or 4 = household level.*

LEVEL

1. _____	1	2	3	4	
2. _____	1	2	3	4	
3. _____	1	2	3	4	
4. _____	1	2	3	4	
5. _____	1	2	3	4	

Please indicate on what **sector** the statistics are needed?

Commercial sector	1		Developing sector	2		Both	3	

How **current** must the statistics be, i.e. how much time between the date of the collection of the data to the date of publication?

3 Months	1		6 Months	2		1 Year	3		2 Years	4		5 Years	5	

What **sources** of statistics do you currently use? Indicate also the degree of confidence of the sources if *1 = poor; 2 = average; 3 = good or 4 = excellent?*

1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4

What **current** decisions are based on the statistics?

1. _____

2. _____

3. _____

What **future** decisions will be based on the statistics?

1. _____

2. _____

3. _____

What is the **level of accuracy** you need for the statistics?

50%	1		60%	2		70%	3		80%	4		90%	5	

Ekonomies

37 Inkomste uit boerdery aktiwiteite	1	2	3	4	1	2	3	4			
38 Inkomste uit nie-boerdery aktiwiteite	1	2	3	4	1	2	3	4			
39 Intermediêre produksie uitgawes	1	2	3	4	1	2	3	4			
40 Rente betalings	1	2	3	4	1	2	3	4			
41 Huur betalings	1	2	3	4	1	2	3	4			
42 Nie boerdery uitgawes	1	2	3	4	1	2	3	4			
43 Huishouding uitgawe patroon	1	2	3	4	1	2	3	4			
44 Waarde van grond	1	2	3	4	1	2	3	4			
45 Waarde van ander bates	1	2	3	4	1	2	3	4			
46 Bedrag boerdery skuld	1	2	3	4	1	2	3	4			

Ander

47 _____	1	2	3	4	1	2	3	4	
48 _____	1	2	3	4	1	2	3	4	
49 _____	1	2	3	4	1	2	3	4	
50 _____	1	2	3	4	1	2	3	4	
51 _____	1	2	3	4	1	2	3	4	

Dui asseblief aan (*alleenlik die nommers*) uit die bostaande lys in orde van belangrikheid die statistieke wat die belangrikste is vir u. Onder die opskrif **vlak,** dui aan of dit benodig word op 'n *1 = nasionale vlak; 2 = provinsiale vlak; 3 = landros distrik vlak of 4 = huishouding vlak*

VLAK

1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4
4. _____	1	2	3	4
5. _____	1	2	3	4

Dui asseblief aan vir watter sektor die statistiek benodig word?

| Kommersiële sektor | 1 | | Ontwikkelende sektor | 2 | | Beide | 3 |

Hoe **huidig** moet die statistiek wees, m.a.w. hoeveel tyd tussen die datum van insameling van data tot die datum van publikasie?

| 1 Maand | 1 | | 3 Maande | 2 | | 6 Maande | 3 | | 1 Jaar | 4 | | 2 Jare | 5 |

Wat is die **bronne** van die statistiek wat u huidiglik gebruik? Dui ook aan die graad van vertroue in die bronne as *1 = swak; 2 = gemiddeld, 3 = goed; 4 = uitstekend?*

1. _____	1	2	3	4
2. _____	1	2	3	4
3. _____	1	2	3	4

Wat is die besluite wat **huidiglik** geneem word met die statistiek?

1. _____
2. _____
3. _____

Wat is die besluite wat **toekomstig** geneem kan word met die statistiek?

1. _____
2. _____
3. _____

Wat is die **vlak van akkuraatheid** wat u benodig van die statistiek?

| 50% | 1 | | 60% | 2 | | 70% | 3 | | 80% | 4 | | 90% | 5 |

C. STATISTICS SUPPLIED BY NATIONAL DEPARTMENT OF AGRICULTURE

Listed below are the statistics that are currently supplied by the National Department of Agriculture. Under the heading **priority**, please indicate (*with a cross*) whether it is:
1 = not important; 2 = somewhat important; 3 = important or 4 = very important.
Under the heading **frequency,** please indicate whether the data is needed:
1 = yearly; 2 = quarterly; 3 = monthly or 4 = weekly.

If you have more than one choice, please indicate the one that is the most applicable.

	PRIORITY				FREQUENCY					
1 Producer price index	1	2	3	4	1	2	3	4		
2 Farming requisites price index	1	2	3	4	1	2	3	4		
3 Interest rate index	1	2	3	4	1	2	3	4		
4 Land price index	1	2	3	4	1	2	3	4		
5 Volume of production index	1	2	3	4	1	2	3	4		
6 Food basket	1	2	3	4	1	2	3	4		
7 Sales on fresh produce markets	1	2	3	4	1	2	3	4		
8 Intake of fresh produce for processing	1	2	3	4	1	2	3	4		
9 Gross value of production	1	2	3	4	1	2	3	4		
10 Gross income of farmers	1	2	3	4	1	2	3	4		
11 Expenditure on intermediate goods	1	2	3	4	1	2	3	4		
12 Interest payments	1	2	3	4	1	2	3	4		
13 Rent payments	1	2	3	4	1	2	3	4		
14 Labour remuneration	1	2	3	4	1	2	3	4		
15 Net income of farmers	1	2	3	4	1	2	3	4		
16 Investment in agriculture	1	2	3	4	1	2	3	4		
17 Additions to fixed assets	1	2	3	4	1	2	3	4		
18 Value of farm assets	1	2	3	4	1	2	3	4		
19 Value of farm debt	1	2	3	4	1	2	3	4		
20 Production tables for agriculture	1	2	3	4	1	2	3	4		
21 Utilisation tables for agriculture	1	2	3	4	1	2	3	4		
22 Food balance sheets	1	2	3	4	1	2	3	4		
23 Cereal balance sheets	1	2	3	4	1	2	3	4		
24 Livestock numbers	1	2	3	4	1	2	3	4		
25 Intentions to plant field crops	1	2	3	4	1	2	3	4		
26 Imports of agricultural products	1	2	3	4	1	2	3	4		
27 Exports of agricultural products	1	2	3	4	1	2	3	4		
Other (Please specify)	1	2	3	4	1	2	3	4		
28 _____	1	2	3	4	1	2	3	4		
29 _____	1	2	3	4	1	2	3	4		
30 _____	1	2	3	4	1	2	3	4		
31 _____	1	2	3	4	1	2	3	4		
32 _____	1	2	3	4	1	2	3	4		

Please indicate (only numbers) from the above list in order of importance, the statistics that are most important to you. Under the heading **level**, please indicate whether it is needed on: *1 = national level; 2 = provincial level or 3 = magisterial district level*

	LEVEL				
1. _____	1	2	3		
2. _____	1	2	3		
3. _____	1	2	3		
4. _____	1	2	3		
5. _____	1	2	3		

C. STATISTIEK VERSKAF DEUR NASIONALE DEPARTEMENT VAN LANDBOU

Hieronder word statistieke gelys wat huidig verskaf word deur die Nasionale Departement van Landbou. Onder die opskrif **prioriteit**, sal u asseblief aandui (*met 'n kruisie*) of dit:
1 = nie belangrik; 2 = effens belangrik; 3 = belangrik of 4 = baie belangrik is.
Onder die opskrif **frekwensie**, sal u asseblief aandui of die statistiek benodig word:
1 = jaarliks; 2 = kwartaaliks; 3 = maandeliks of 4 = weekliks.

As u meer as een keuse het, dui asseblief net die een wat die toepaslikste is.

	PRIORITEIT				FREKWENSIE			
1 Produsente prys indeks	1	2	3	4	1	2	3	4
2 Boerdery benodigdhede prys indeks	1	2	3	4	1	2	3	4
3 Rentekoers indeks	1	2	3	4	1	2	3	4
4 Grond prys indeks	1	2	3	4	1	2	3	4
5 Volume van produksie indeks	1	2	3	4	1	2	3	4
6 Voedsel mandjie	1	2	3	4	1	2	3	4
7 Verkope op vars produkte markte	1	2	3	4	1	2	3	4
8 Inneem van vars produkte vir verwerking	1	2	3	4	1	2	3	4
9 Bruto waarde van landbou	1	2	3	4	1	2	3	4
10 Bruto inkomste uit landbou	1	2	3	4	1	2	3	4
11 Besteding aan intermediêre goedere	1	2	3	4	1	2	3	4
12 Rente betalings	1	2	3	4	1	2	3	4
13 Huur betalings	1	2	3	4	1	2	3	4
14 Arbeids vergoeding	1	2	3	4	1	2	3	4
15 Netto boerdery inkomste	1	2	3	4	1	2	3	4
16 Investering in landbou	1	2	3	4	1	2	3	4
17 Byvoegings tot vaste bates	1	2	3	4	1	2	3	4
18 Waarde van boerdery bates	1	2	3	4	1	2	3	4
19 Waarde van boerdery skuld	1	2	3	4	1	2	3	4
20 Produksie tabelle vir landbou	1	2	3	4	1	2	3	4
21 Verwerkings tabelle vir landbou	1	2	3	4	1	2	3	4
22 Voedsel balans staat	1	2	3	4	1	2	3	4
23 Graan balans staat	1	2	3	4	1	2	3	4
24 Diere getalle	1	2	3	4	1	2	3	4
25 Intensies vir graan aanplantings	1	2	3	4	1	2	3	4
26 Invoere van landbou produkte	1	2	3	4	1	2	3	4
27 Uitvoere van landbou produkte	1	2	3	4	1	2	3	4
Ander (spesifiseer asseblief)	1	2	3	4	1	2	3	4
28	1	2	3	4	1	2	3	4
29	1	2	3	4	1	2	3	4
30	1	2	3	4	1	2	3	4
31	1	2	3	4	1	2	3	4
32	1	2	3	4	1	2	3	4

Dui asseblief aan (*alleenlik die nommers*) uit die bostaande lys in orde van belangrikheid die statistieke wat die belangrikste is vir u. Onder die opskrif **vlak,** dui aan of dit benodig word op 'n *1 = nasionale vlak; 2 = provinsiale vlak of 3 = landros distrik vlak*

	LEVEL		
1.	1	2	3
2.	1	2	3
3.	1	2	3
4.	1	2	3
5.	1	2	3

Please indicate the **priority** and **frequency** of these publications.

	PRIORITY				FREQUENCY			
Abstract of Agricultural Statistics	1	2	3	4	1	2	3	4
Trends in the Agricultural Sector	1	2	3	4	1	2	3	4
Economic Review of S.A. Agriculture	1	2	3	4	1	2	3	4
Crops and Market	1	2	3	4	1	2	3	4
Farm Figures	1	2	3	4	1	2	3	4

How do you want to receive the statistics?

| Hard copy | 1 | | E-mail | 2 | | Internet | 3 | | Other *(specify)* | 4 |

Comments:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Dui asseblief aan die **prioriteit** en **frekwensie** van die volgende publikasies.

	PRIORITEIT				FREKWENSIE			
Abstract of Agricultural Statistics	1	2	3	4	1	2	3	4
Trends in the Agricultural Sector	1	2	3	4	1	2	3	4
Economic Review of S.A. Agriculture	1	2	3	4	1	2	3	4
Crops and Market	1	2	3	4	1	2	3	4
Farm Figures	1	2	3	4	1	2	3	4

Watter metode verkies u om die statistiek te kry?

| Harde kopie | 1 | | E-pos | 2 | | Internet | 3 | | Ander (*spesifiseer*) | 4 |

Kommentaar:

BAIE DANKIE VIR DIE VOLTOOING VAN DIE VRAELYS!

APPENDIX D

EXAMPLE OF COVERING LETTERS

The covering letters mailed to policy-makers, researchers, agribusinesses and farmers are fairly the same. This covering letter was mailed to farmers.

Directorate: Statistical Information
Dirk Uys Building, 30 Hamilton Street, Arcadia 0007, Pretoria
Republic of South Africa

<Date>

Dear Sir/Madam

THE NEED FOR AGRICULTURAL STATISTICS OF FARMERS IN SOUTH AFRICA

The deregulation of agricultural marketing has had many effects on the marketing of agricultural products in South Africa. One of the most important effects of the deregulation is the greater need for agricultural statistics for decision-making.

For this reason the Directorate: Statistical Information launched a project to determine the needs by means of a sample survey. The project is also supported by the Chair in International Agricultural Marketing and Development (CIAMD) of the University of the Orange Free State as well as the South African Agricultural Union. The results will be used to focus the efforts of the National Department of Agriculture to improve the collection and supply of agricultural statistics.

In order to successfully identify and evaluate the need for agricultural statistics in South Africa, especially that of farmers, the Directorate needs your input by completing and returning the attached questionnaire **before or on 30 July 1999** in the envelope provided.

Only by providing the Directorate with the completed questionnaire can you ensure that your needs are reflected in the eventual results.

Your assistance in this matter will be greatly appreciated.

Kind regards

Arjen Frick

DIRECTOR: STATISTICAL INFORMATION
^

Enquiries: A. Frick

⊠ Private Bag X246, Pretoria, 0001, Republic of South Africa

Reference: B9

☎ (012) 319 6167   Fax   (012) 319 6267

<Datum>

Geagte Meneer/Mevrou

DIE BEHOEFTE AAN LANDBOUSTATISTIEK VAN BOERE IN SUID-AFRIKA

Die deregulasie van landboubemarking het baie gevolge gehad op die bemarking van landbouprodukte in Suid-Afrika. Een van die grootste effekte van die deregulering is die verhoging in die vraag na landboustatistiek vir besluitneming.

Vir hierdie rede het die Direktoraat: Statistiese Inligting 'n projek geloods om die behoefte te bepaal deur middel van 'n steekproef opname. Hierdie projek word ook ondersteun deur die Leerstoel in Internasionale Bemarking en Ontwikkeling van die Universiteit van die Oranje Vrystaat asook deur die Suid-Afrikaanse Landbou-Unie. Die resultate van hierdie projek sal gebruik word om die Nasionale Departement van Landbou se pogings te fokus om die insameling en verspreiding van landboustatistiek te verbeter.

Om die behoefte aan landboustatistiek suksesvol te identifiseer en te evalueer, spesfiek ten opsigte van die boerderysektor, het die Direktoraat u insette nodig. Daarom word u vriendelik versoek om die meegaande vraelys in te vul en terug te stuur **voor op of 30 Julie 1999** in die koevert verskaf.

Alleenlik deur die voltooide vraelys aan ons te stuur, kan u veseker dat u behoeftes gereflekteer word in die eventuele resultate.

U samewerking in hierdie verband sal waardeer word.

Vriendelike groete

Arjen Frick

DIREKTEUR: STATISTIESE INLIGTING
^

APPENDIX E

LIST OF AGRICULTURAL PRODUCTS

1. FIELD CROPS

- Maize
- Wheat
- Oats
- Barley
- Rye
- Grain Sorghum
- Hay
- Lucerne seed
- Cow peas
- Dry beans
- Dry peas
- Lentils
- Sugar cane
- Chicory root
- Tobacco
- Cotton
- Groundnuts
- Sunflower seed
- Soya beans
- Wattle bark
- Phormium Tenax
- Sisal
- Other field crops

2. HORTICULTURAL PRODUCTS

- Viticulture
- Rooibos tea
- Citrus fruit
- Subtropical fruit
- Deciduous and other fruit
- Tea
- Dried fruit
- Nuts
- Vegetables
- Flowers and bulbs
- Other horticultural products

3.   ANIMAL PRODUCTS

- Wool
- Mohair
- Karakul pelts
- Ostrich feathers and products
- Cattle and calves slaughtered
- Sheep slaughtered
- Goats slaughtered
- Pigs slaughtered
- Fresh milk
- Butter fat
- Cheese milk
- Condense milk
- Poultry products
- Other