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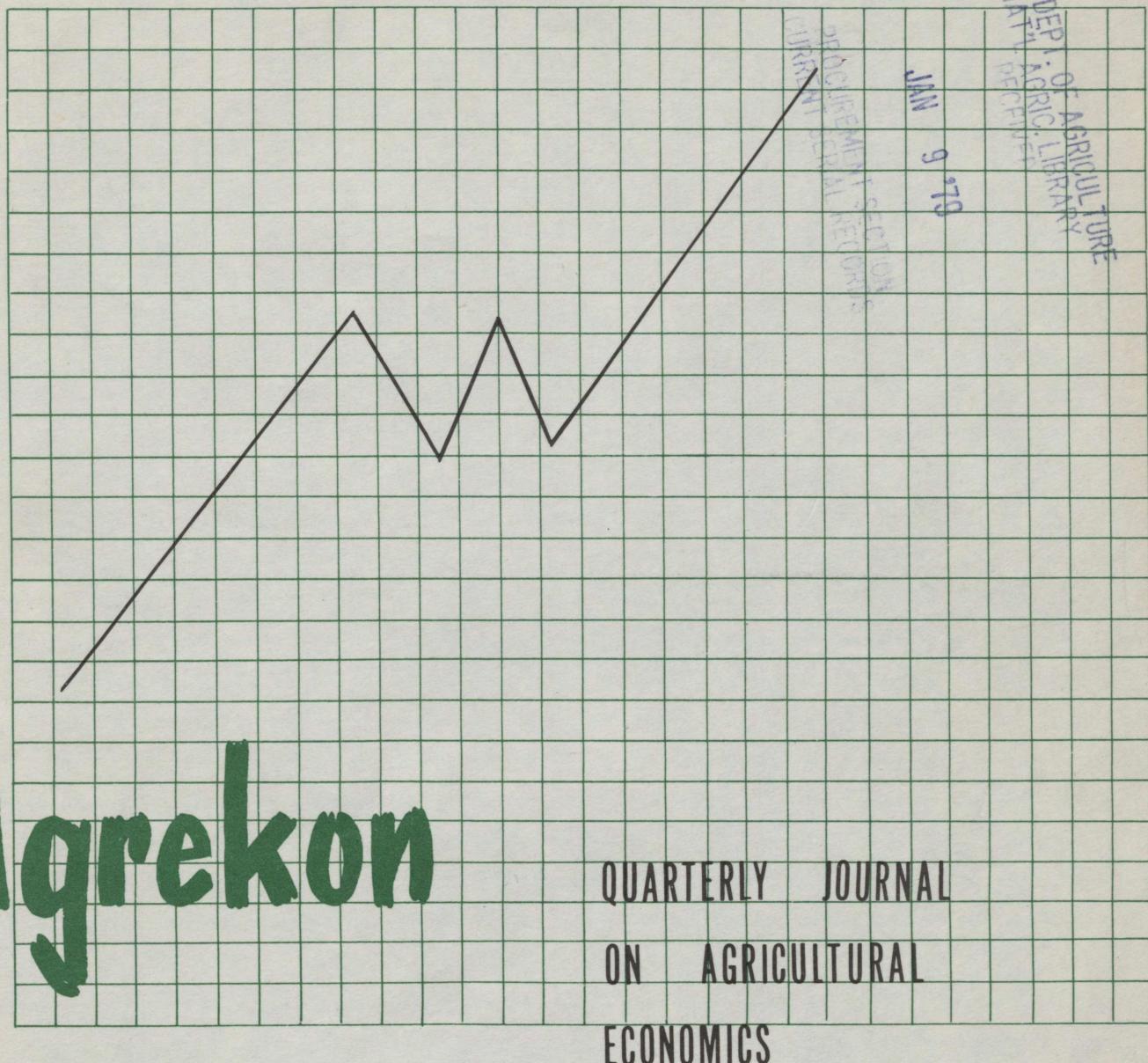
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FARM MANAGEMENT INFORMATION SYSTEMS AS DIRECTIVE FOR FARM MANAGEMENT SERVICES PROVIDED BY THE DIVISION OF AGRICULTURAL PRODUCTION ECONOMICS,

by

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INTRODUCTION

The three questions to be answered in this paper are:

1. To what extent do the farm management services of the Division of Agricultural Production Economics comply with the needs of an effective farm management information system?
2. What is the nature of the present deficiencies of farm management services?
3. What should be done to alleviate the deficiencies, and in so doing to provide an effective farm management information system?

QUESTION 1

DO FARM MANAGEMENT SERVICES OF THE DIVISION OF AGRICULTURAL PRODUCTION ECONOMICS COMPLY WITH THE NEEDS OF AN EFFECTIVE FARM MANAGEMENT INFORMATION SYSTEM?

Two aspects must be made clear before this question, and therefore necessarily question two and three, can be answered, namely:

1. What is the task of the Division of Agricultural Production Economics? Is it the function of this Division to provide farm management services?
2. What exactly are the requirements of an effective farm management information system?

The task of the Division of Agricultural Production Economics

In brief, the main function of the Division of Agricultural Production Economics is to do research on the production economic problems of agriculture, and to make the results of this research known.

Does this mean that the Division is responsible for the provision of a farm management service?

This depends on what is meant by a farm management service. If by this term is meant the provision of a farm management service to individual farmers, then it is definitely not the responsibility of the Division to provide such a service.

The laboratory of the agricultural economist is, however, to a great extent the farmer and his farming activities. The primary goal of visits to farmers is to accumulate data for calculating norms, and for research purposes. In this process of take it is proper to give back something in exchange, and in this way, a measure of direct and often individual extension to participating farmers takes place. There is nothing wrong with this. In this way, knowledge is gained of the management problems which confront farmers, of the best methods of conveying economic ideas to farmers and the type of farm management norms which provide the best results. The post record project of the Division must therefore be seen as primarily a research project and not as a service which is being provided to participating farmers.

Research is therefore the main task of the Division. As with any research institution the findings of this research must be made available.

Requirements of an effective farm management information system

Basically this is reduced to providing the *right information* in the *right form* at the *right time* to the *right people*.

The type of information

It must first be made clear in whose regard the information must be obtained as well as the nature of the service to be provided before specific

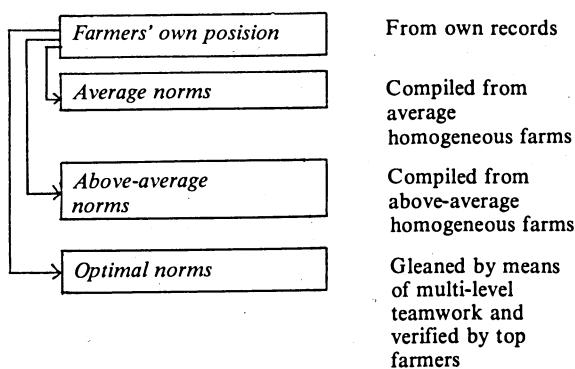
norms can be set as regards the type of information which must be made available.

It is common knowledge that there exists, in the agricultural sector, a wide gap between the level of efficiency of the best third of the farmers and the weakest one-third of the farmers. As a result of this discrepancy in efficiency, distinction can be made between two types of research. On the one hand there is that type of research which is aimed at developing new production technology as well as advanced economic research which includes refined farm planning techniques. Although this type of research is of great importance it contributes nothing to narrowing the present efficiency gap. If the results of this type of research are made available faster than the assimilation rate of the average and sub-average farmer, then this type of research can actually aggravate the present discrepancy.

In contrast to this type of research we have research which is aimed at identifying and seeking solutions to those factors which lead to the discrepancy in performance between the best farmers on the one hand and sub-average and average farmers on the other hand.

It is naturally the duty of the various Agricultural Departments to give attention to all farmers, and, within the constraints of their ability, to try and increase the level of efficiency of all farmers.

Experience has proved that the criteria used must be within the reach of the farmer or farmers if success is to be achieved. It serves no purpose to use exceptionally successful farmers or experimental results as a norm for farmers who haven't yet reached an average level of efficiency. The types of norms which are required are therefore as follows:



The most simple planning technique is to take informal decisions based on interfarm comparisons.

For purposes of interfarm comparisons, norms for homogeneous farms as regards the following criteria are needed:

1. Farm size and composition of land.
2. Capital investment and composition.
3. Net farm income, net income per hectare and net income per R100 capital investment.
4. Gross farm income and factors which influence it.

5. Farm expenditure and the composition thereof.

Interfarm comparisons are, however, less effective in helping farmers who already maintain a high level of efficiency. The reasons for this are mainly that:

- (a) Applicable norms seldom exist.
- (b) Interfarm comparisons are effective for identifying defects. As such the norms can, however, hardly ever indicate a means of correcting the defects.
- (c) Interfarm comparisons tend to place too much emphasis on the past, while ignoring expectations for the future as well as new production techniques.
- (d) The technique does not provide a basis for the drafting of optimal farm plans.

For this group of farmers, norms of the following type are needed:

- (a) The relative profitability of farming activities at various levels of input and output and with different techniques, taking into account new findings and related price movements.
- (b) Restrictions placed on the composition and scope of farming activities. Restrictions can be of a physical, technical, financial, institutional or personal nature.
- (c) Technical coefficients. This is the quantity of a restricted resource needed by one unit of an activity for a certain time period.

This then as regards the requirements placed on the type of information. The other three requirements of an effective farm management information system, namely that information must be made available in the right form at the right time and to the right people needs no further comment - it is obvious.

After having defined the requirements of information which should be made available by the Division, it must be admitted that all these requirements are not being met. The compilers of these three questions expected such an answer. It is for this reason that questions two and three were set.

QUESTION 2

WHAT IS THE NATURE OF THE PRESENT SHORTCOMINGS OF FARM MANAGEMENT SERVICES?

Although it has already been stated that it is not the primary task of the Division of Agricultural Production Economics to provide a farm management service to the farmers themselves, it is still desirable to reconsider this question as it has been formulated before reformulating it. To whom must the Division make information available? In other words, to whom must it provide farm management services?

One or more of the following possibilities exist:

- (a) Extension officers of the Department of Agricultural Technical Services.

- (b) Agricultural economists connected with co-operatives, and private societies or companies.
- (c) Agricultural economists at universities.
- (d) Private farm management consultants.
- (e) Directly to farmers.

In my opinion agricultural extension, as provided by the State should stay with the Department of Agricultural Technical Services. This includes technical as well as economic extension to farmers. Unfortunately, it is true that not all of the extension officers of the Department of Agricultural Technical Services have sufficient knowledge to provide economic extension to farmers.

Priorities as regards agricultural extension are determined by the level of development of the agricultural sector. Originally, technical extension was sufficient. However, as development takes place the emphasis falls more on economic extension to complement technical extension. It is inconceivable today to recommend technical changes without taking full account of the financial implications.

Apart from the fact that the extension personnel of the Department of Agricultural Technical Services are often not sufficiently trained, doubt also exists whether they have the time at their disposal to provide a farm management advisory service to individual farmers.

The reason is that an individually orientated service of this nature requires a lot of time. Each farmer's farm and circumstances differ from those of other farmers. Even in a small, homogeneous area there is little farm management advice which is applicable to the same degree to all the farmers. There are too many physical, financial and personal differences between farmers. There are therefore few recipes available.

The philosophy of the State in the promotion of farm management in practice should therefore mainly be to teach farmers to help themselves. Farmers should be motivated and taught to do their own planning, organising and controlling. It is for this purpose that farmers are encouraged to form farm management study groups, and why courses in farm management are regularly provided by the Division of Agricultural Production Economics.

This is, however, insufficient. A stage is reached where farmers need more personal attention, and this cannot be done satisfactorily by the State alone. I foresee therefore that more and more farmers will be prepared to pay for such a service, be it directly as in the case of universities and private farm management consultants, or indirectly as in the case of agricultural economists connected with agricultural co-ops and societies.

After these few introductory statements, questions 2 and 3 can be reformulated and answered jointly.

QUESTIONS 2 AND 3

WHAT IS THE NATURE OF THE PRESENT SHORTCOMINGS OF THE FARM MANAGEMENT INFORMATION WHICH IS PROVIDED BY THE DIVISION OF AGRICULTURAL ECONOMICS, AND WHAT SHOULD BE DONE TO ALLEVIATE THESE SHORTCOMINGS?

1. The type of information

1.1 Average and above-average norms for purposes of interfarm comparison

1.1.1 Information gleaned from business surveys

It is also, among other things, the duty of the Division of Agricultural Production Economics to determine the cost of production of certain farming activities. This information is used by parties concerned for the calculation of the price of certain agricultural products. For this purpose, rightly or wrongly, figures for average production cost are required, and surveys must necessarily be made in order to glean the relevant information from the farmers.

When the emphasis is not on the results of individual farmers, but on averages, the accuracy of the survey method, given that it is executed correctly, cannot be questioned. The reason for this is that, in the case of a representative sample where no element of bias is present, data will tend to fall in the range of the correct figure, and divergences to both sides will tend to cancel one another out.

For purposes of farm management extension, where the emphasis falls on the application of business principles on individual farming enterprises, the value of the survey method falls under suspicion.

We must accept that the information from individual farmers gained according to the survey method, can differ considerably from reality. The use-value of information gathered in this way must therefore be seen in this light.

It is however often the only way of getting information from farmers, as -

- (a) the primary aim is often to calculate an average situation or a cost-figure; and
- (b) farmers around the world are generally not keen on keeping records.

Therefore although criticism can be levelled at the technique, it cannot be condemned and ignored. Were we to do this, we would necessarily place a question mark over all research results based on information gained in this manner. We would then imply that all theses, dissertations, bulletins and so on which are based on such information are useless. If a business survey is planned and executed in a responsible manner, it is often more accurate than the recorded information of some farmers. Criticizing this method unnecessarily, contributes nothing to the motivation of our personnel to assimilate and process the information as accurately as possible.

It is my opinion that much valuable information is to be found in these surveys, apart from the income and cost information which is normally forthcoming. What is needed is firstly to stipulate exactly which norms are needed for effective farm management extension. If we were to do this, I believe we would be surprised at the quantity of norms which could result from surveys. This aspect definitely deserves attention.

1.1.2 Recorded information

Reliable average and above-average norms for interfarm comparisons should preferably be based on recorded information.

Farmers are, however, lazy where record-keeping is concerned. Apart from this, there exists no system or systems for record-keeping which -

- is simple enough to be generally accepted by all farmers; and
- systematic and comprehensive enough to the degree of making further analyses, which could lead to more effective management, possible.

Many farmers prefer doing their business independently to the Division of Agricultural Production Economics. There is also much to be said in favour of farmers being able to do their own farm analyses. There is a big demand among many farmers for an uncomplicated record-system which includes matching analysis sheets. This matter demands urgent attention.

From the mid-sixties up until now, the Division has given its attention, as far as record-keeping is concerned, exclusively to the development of the popular postal record-system. Certain adjustments must, however, be made to the system in its present state in order to make it an effective farm management information system.

In the first instance the present system is too complicated for most farmers. Secondly, errors are made because analyses are done for one defined financial year. In mixed-farming areas, or in areas where final payments (deferred payments) occur, the production and marketing seasons of the different activities overlap the current financial year.

To bridge these problems, a multi-phase system which enables variable degrees of participation by farmers is necessary. The various programs range from the most simple farm analysis, through the analysis of individual farm activities in conjunction with their production and marketing periods, to highly sophisticated analysis and planning. Attention is already being given to such a multi-phase system.

Secondly the system must potentially be able to feed results more accurately and more quickly back to participants. To enable this, certain basic classifications must be made by hand either in the district, or by the co-ops concerned. In this way an enormous amount of punch-work is eliminated and errors can be identified and corrected more easily.

Thirdly it would seem more preferable to analyse results as they come in, without waiting until all the information from farmers in a certain studygroup is available for analysis. It often happens that one farmer delays the analyses of a whole group of farmers. This would imply that a farmer would initially receive only his own results. At a later stage, when all the information has been analysed, average and above-average norms can be set up on the basis of district and homogeneous farming operations, instead of studygroup averages, which are often unreliable and inapplicable. In this regard better attention can be given to the type of norm which is made available. The only norms which need be compiled are those which facilitate decision-making, instead of the appalling number of averages which are at present being made available to participating farmers.

To complete reliable and applicable norms for homogeneous farms, the number of participating farmers in the various areas of the country must be drastically increased. As far as this is concerned, both the Department of Agricultural Technical Services as well as the agricultural co-ops can play a far greater role than is at present the case.

1.2 Optimal guidelines

Income and cost budgets for individual farm activities are compiled by the Division of Agricultural Production Economics. Income is calculated at various levels of production and product prices, while costs are calculated according to certain methods of production and factor prices.

The physical information upon which these budgets are based is gleaned from discussion with small groups of farmers who are supposed to be experts in their respective fields, or by getting information from technical researchers. Therefore it has bearing on a certain practice, and not on a conglomeration of practices as is the case with average figures. The goal of these budgets is to serve as a guideline to extension officers as well as farmers in deciding whether it will be profitable to start, or expand an activity on the farm. It serves only as a realistic example and farmers are supposed to adjust figures as they see fit to reflect a more realistic situation according to the dictates of their own particular circumstances.

The value of these budgets could be increased considerably, and cause less confusion if they were to reflect as closely as possible optimum gross margins. For the purpose of composing optimum guidelines for ecotypes, in striving to achieve the goal of optimum resource utilization, such optimal gross margins and technical coefficients are also of cardinal value.

Optimal gross margins can, however, not be compiled solely by getting physical information from farmers. The premise should be the appropriate technical research results. The results of technical research should be studied and interpreted in economic terms and on this basis a theoretical budget should be constructed, which can

serve as a hypothesis to be verified by expert farmers. The process can continue along these lines until a satisfactory answer is found which can then be adjusted over a number of years as and when factor and product prices change.

In this way multidisciplinary research could become reality instead of hollow words which are never fully implemented in practice.

2. The timeliness and form in which information is made available

2.1 Business surveys

Excellent work, based on business surveys, has been done in the form of theses or bulletins. Timeliness causes a problem, however, as it normally takes more than a year before a bulletin is available in both official languages. If a new theory, principle or methodology is to be published, in which the relevance of information as such is of secondary importance, there is nothing wrong with this method of publication. Where the emphasis falls, however, on the relevance of the data, different methods must be found to make the information available as soon as possible.

During the past 18 months the Division has published business survey results in the form of pamphlets. It takes 2 to 3 months to publish a pamphlet in both official languages. It is my opinion that this attempt has already contributed much to stimulating the interest of farmers in the business side of their farming activities. This attempt should be critically evaluated and revised but definitely not stopped.

In the past the Division has made itself guilty of taking information from farmers without providing anything in return. As from the previous few business surveys executed by the Division, the farmers have been provided with an analysis of their own results as well as average results within 2 or 3 months of giving the information. In the first instance this keeps the researchers on their toes - farmers have use of information gleaned from them. Secondly, it leads to a better understanding by farmers of what is being done - it leads to an improved relationship between the farmer and the Division. In the third instance it stimulates the interest of farmers in the business side of their farming. Fourthly, it illustrates the importance of accurate information to the farmer - it may encourage farmers to better record-keeping.

As far as this form of making information available is concerned, I believe it has already contributed much to advancing farm management in practice. The type of information given to farmers, as well as the form in which it is given, deserves attention.

2.2 Results of postal records

The return date of information (2 months after the end of the financial year) of the postal record system can hardly be shortened as the

system functions at present. The problem is, however, that these return dates are not always complied with. With a revision of the system as such, renewed cognisance will have to be taken of the timeliness factor.

The calculation of studygroup averages has also presented problems as regards the publishing of information. To make all studygroup averages freely available is an impossible task. By making only applicable average and above average norms with regard to homogeneous farms on a basis of homogeneous farming areas available, these norms can be provided timeously, as well as being more readily published.

2.3 Income and cost budgets

Income and cost budgets which are compiled by the Division are collected in a loose-leaf file. Apart from budgets for individual farm activities, various other data are given, such as labour costs, cost of implements, construction costs for fixed improvements, and so forth.

As it is in loose-leaf form, the opportunity for affecting changes without effort is present. In this way, for example, income and cost budgets can be changed regularly as factor and product prices change.

As far as the format for the presentation of information is concerned, it is my opinion that:

- As a result of the time-lag which occurs when placing articles in Agrekon, or when publishing articles in bulletins, the media should only be used when new methodology or basic principles are described and expounded, i.e. when the relevance of recent figures is of secondary importance.
- There should be regular interaction between the Division of Agricultural Production Economics and participating farmers. That is to say the Division must not only collect data from the farmer and not return their results plus comparable results to them.
- The main format for the Division for providing information should be a "Farm business management manual".

In a manual of this kind there should be information, apart from income and cost budgets and results of the postal record system on a homogeneous area and farm-activity basis, on other norms which could help with decision-making. It should be a loose-leaf system so that adjustments and additions can be made easily and timeously. Timeliness is of paramount importance. The best information in the world is worth nothing if it is a minute late. It is my opinion that the Division should give urgent attention to a "Farm business management manual" and that a manual such as this can form the foundation of an effective farm management information system for those who are responsible for providing farm management services to individual farmers.