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AGRICULTURAL BOOKKEEPING SYSTEMS IN  
FINLAND AND POLAND

HELSINKI 1982

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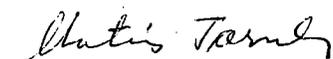
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## PREFACE

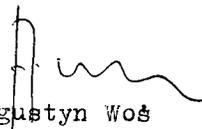
The cooperation of two institutes active in the same field, the Agricultural Economics Research Institute in Helsinki and the Institute of Agricultural Economics in Warsaw has already a long and fine tradition. It has been developing well for many years now, serving the friendship of close and neighboring nations and benefiting research efforts as well. This cooperation includes an exchange of experience through mutual visits, an exchange of scientific publications, joint seminars and conferences. Almost all problems researched by both institutes are a subject of co-operation. One such problem is agricultural bookkeeping. The possibilities of practical cooperation and joint research in the field of methodology, methodics, organization and use of the results of agricultural bookkeeping are especially great.

This work presents an outline of the agricultural bookkeeping systems in Finland and in Poland, thus being a fine starting point for further valuable and beneficial for both sides scientific cooperation.



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Helsinki - Warsaw, June 1, 1982

## Contents

	Page
Bookkeeping activity in Finland	
Heikki Järvelä: On the Development of agricultural Profitability Surveys in Finland, 1912-1982	7
Heikki Järvelä: The Organization of Agricultural Bookkeeping in Finland	19
Matias Torvela: Assessment of Financial Result of Family Farms in Finland	25
Heikki Järvelä: The Use of Bookkeeping Results in Finland	36
Matias Torvela: Improving Bookkeeping in Finland in the Near Future	43
Bookkeeping activity in Poland	
Bożena Gulbicka: A Historical Outline of the Development of Agricultural Bookkeeping in Poland	51
Zygmunt Radoh: Organization of Agricultural Bookkeeping in Poland	64
Teresa Pokrzywa: Methods of Determination of the Economic Results of the Private Farms in Poland	74
Józef St. Zegar: The Use of the Results of Agricultural Bookkeeping in Poland	88
Józef St. Zegar: Foreseen Changes in the System of Agricultural Bookkeeping in Poland	99

Heikki Järvelä

I. ON THE DEVELOPMENT OF AGRICULTURAL PROFITABILITY  
SURVEYS IN FINLAND, 1912-1982

1. Setting up the operations and organization

At the beginning of the 20th century, interest in determining and monitoring the profitability of agriculture and the incomes of farmers was aroused in the various Nordic countries. This required regular and continuous survey work, based on organized bookkeeping. In 1907 the matter was discussed officially for the first time at a meeting of the representatives of Maatalousseurojen Keskusliitto (Central Organization of the Agricultural Associations), and this discussion was continued at the corresponding meeting the following year. In 1909 a competition was arranged to find an appropriate bookkeeping system. The 1911 meeting of representatives decided to appoint a committee of experts to draw up a plan for the profitability survey. The bookkeeping was started in accordance with the committee's proposals on July 1, 1912, under the direction of Dr. J.E. Sunila, who also designed the bookkeeping system. During the first financial period, which started on July 1, 1912 and ended on June 30, 1913, well over 100 farms kept the books, and final statements were received from 122 farms. State funds were applied for to support these operations and the research work of the bookkeeping office set up at the central organization, but the applications were turned down during the first few years. The financial problem was solved by moving the office away from the central organization in 1915 and making it a department of the then Board of Agriculture.

J.E. Sunila was the first head of the department, which also became responsible for auditing the bookkeeping of the State training farms and drawing up statistics on the results. In 1917 the 'Research Office for Agricultural Economics' was set up in the general agricultural department to direct and develop the profitability surveys.

Initially, the purpose of operations was to compile material, not only for the use of farmers themselves but also for economic advisory work among the farming population. This is further evidenced by the fact that operations were started by the advisory organization. A single-entry system of agricultural bookkeeping - also known in Finland as the Sunila system - was used. It should be pointed out that later, mainly in the 1930s to '50s, some farms also did double-entry bookkeeping. This later system did not, however, become very popular among farmers, and there were never more than a few dozen farms keeping the books on this basis. The local field organization consisted of the agricultural associations and the central organizations of small farmers, which were responsible for finding the farms, giving bookkeeping guidance there, and collecting and checking the material. In addition, the material from each farm was mainly processed by the above organizations. Up to 1962, the Board of Agriculture was in charge of the final checking of the material and computed the statistics. The results for each year were published in the News Bulletin of the Board of Agriculture.

Operations have always been based on voluntary participation by the farmers, and the number of farms has varied considerably. The number of farms involved was lowest, only 84, during the financial period 1918/1919. Later, the number of farms participating started to increase, and on the eve of World War II it exceeded 1,000. During the war years the number of participating farms naturally decreased. It must be pointed out, however, that all through the war, financial statements were drawn up for some farms and the results for each year were published, even if they

were a couple of years late. After the war, and especially in the '50s, intensive efforts were made to increase the number of farms, and this also proved successful.

Funds are granted through the annual State budgets for agricultural bookkeeping. The funds are allocated to the advisory organizations doing field work to cover the costs incurred by them in connection with these operations. As this financing is often far from sufficient to cover all the costs incurred, the organizations also have to use considerable sums derived from other sources.

## 2. Profitability surveys given over to the Agricultural Economics Research Institute

In the 1962 State budget the profitability survey was transferred from the then Board of Agriculture to the Agricultural Economics Research Institute. The former Research Office for Agricultural Economics was made into a profitability survey office which has since then been working as a separate office under the direct supervision of the Research Institute and in close cooperation with the Department of Farm Management of the Institute. In 1970 the office moved from its premises at Fabianinkatu 32 to the present premises at Iso Roobertinkatu 10. The general agricultural advisory organizations remained in charge of the field work even after the organizational change.

## 3. Scope of the bookkeeping

As mentioned above, the farmers cooperate in the profitability survey on a voluntary basis, so the bookkeeping farms do not constitute a representative sample of all farms. However, various measures have been taken to make the sample more representative of the different regions and farm size categories. More recently, specialization has caused further problems with the representativeness of the sample.

The following table presents some figures illustrating the trend in the number of bookkeeping farms over the years.

Financial period	Number of farms
1912/13	122'
1918/19	84
1920/21	240
1930/31	743
1937/38	1 037
1940/41	566
1944/45	399
1950/51	856
1960/61	1 224
1970	960
1975	841
1980	933

When operations started, there were 122 farms involved, though the number decreased due to World War I. During World War II the number also dropped significantly, the minimum then being less than 400. After the war operations were revived and the number of farms began to increase. At the beginning of the '70s, however, interest in this research bookkeeping slackened. The principal reason for this was the change in the agricultural taxation system. Keeping the books for taxation purposes became obligatory for each farm. Many farmers considered the new taxation bookkeeping to be sufficient for their purposes, and perhaps they did not want to get involved in the additional work caused by bookkeeping for the profitability survey. However, at the end of the '70s, interest in bookkeeping and economic calculations revived. It was found that tax bookkeeping based on the cash principle did not fully satisfy the needs of farmers. Making the profitability calculations and economic plans for each farm called for certain additional information and this is provided by the profitability bookkeeping. Together with work at the time to intensify operations, this contributed to an increase in the number of farms; in 1982 the total is likely to be over 1,200. The agricultural centres and local bookkeeping consultants have made a crucial contribution to this increase.

The size of the bookkeeping farms has varied considerably over the years. During the financial period 1912/13 the arable area (agricultural land) of the farms was 33.20 ha on average; in 1937/38 the corresponding figure was 25.63 ha, in 1961/62 17.37 ha and in 1980 26.70 ha. The bookkeeping farms have thus been much larger than Finnish farms in general on average. At the end of 1979, for example, the average arable area of all Finnish farms of over 2 ha was 11.74 ha.

As the conditions for agriculture vary greatly between the various regions, the material of the profitability surveys has been dealt with separately for each region. The profitability surveys work to a special regional division, even though this is similar to the commonly used division into economic areas. The regional division has varied to some extent over the years.

For the processing of the material, the farms have been categorized in different regions at different times as follows:

Regional division

1912-1938	1939-1965	1966-
southwestern Finland	southern Finland	southern Finland
southeastern Finland		
central Finland	central Finland	central Finland
southern Ostrobothnia	southern Ostrobothnia	southern Ostrobothnia
northern Ostrobothnia	northern Ostrobothnia	
northeastern Finland	northeastern Finland	northern Finland

During the first few decades there were a total of 6 regions. As from 1939/40 the southwestern and southeastern regions were combined to make the region of southern Finland. This was partly due to the ceding of areas as a result of the war. In 1966 northern Ostrobothnia and northeastern Finland were made into the region of northern Finland. In addition, some other minor changes to the boundaries were made, and from then on the borders of the research regions have corresponded to those of the agricultural advisory centres (agricultural associations). This makes it possible to compare the results of the profitability survey with other agricultural statistics.

Agricultural ownership, return, costs and profitability vary considerably between farms of different sizes. It has therefore been considered necessary to classify the farms for the processing of material according to their size. Up to the 1975 financial period the classification was based on 'adjusted area of agricultural land'. This was calculated by adding to the farm's arable area proper its garden area, and uncultivated pasture and meadow land, adjusted to correspond to the arable area on the basis of their monetary value. This method was certainly justified in the earlier years, because uncultivated pastures and meadows were of significance for agricultural production. Since 1976, however, the farms have been divided into the various size categories according to the arable area in use, which also includes fallow.

Classification of the farms by size has varied over the years as follows:

Farm size categories					
1912-1946		1947-1965		1966-	
Category I	- 10 ha	Category I	-10 ha	Category I-II	-10 ha
II	10- 25	II	10-25	III	10-20
III	25- 50	III	25-50	IV	20-30
IV	50-100	IV	50-	V	30-50
V	100-			VI	50-

After World War II the average farm size decreased, due to the intensified resettling of evacuated farmers. For this reason, the size category of over 100 ha was omitted from the profitability surveys. The original category II (10-25 ha) was considered to be too wide and thus inappropriate. Corrections were therefore made to the size classification in 1966.

#### 4. Reforms in the '60s and '70s

##### a. New proposals

The above changes to the regional size and size category divisions were based on the report made in 1963 by the Commission for Agricultural Profitability Surveys, chaired by Professor Antti Mäki and set up by the National Board of Agriculture. The Commission also made other proposals which proved useful. One of the most important was the changing of the financial period to correspond to the calendar year, which was implemented in 1965. Earlier, the financial period had been July 1 - June 30. Following the proposals of the Commission, various points in the bookkeeping system were also changed. For example, in 1966 day-to-day agricultural work was divided into three sub-categories (crop cultivation, animal husbandry, and other work). The value of farm management work was from then on determined on the basis of working time. In 1966 the 'adjusted working hour' was also abandoned, and the amount of work needed was expressed in hours of human labour. Formerly the work done by women was considered to correspond to 0.8 man-hours and children's work to 0.5 man-hours.

The human labour hours currently in use consider men's and women's work to be equal, and a child's working hour corresponds to 0.5 working hours. In accordance with the Commission's proposal, the first stage of computerized applications of the profitability survey was launched. This first stage involved registering the book-keeping results on punch cards. This has greatly facilitated their use.

##### b. Concentrating agricultural advisory work

In 1969 an agreement was made on the concentration of agricultural advisory work, which was implemented the following year. In accordance with the agreement, the operation of the Finnish-speaking agricultural associations and central organizations of small farmers were discontinued and replaced by 15 agricultural centres.

The regions covered by the latter comprised mainly those of the old agricultural associations. However, some were combined to make larger regions. The field work concerning bookkeeping farms then became the responsibility of the agricultural centres. The centres were put in charge of the bookkeeping farms in their regions, regardless of whether the agricultural associations or small farmers' associations or small farmers' organizations had been responsible for them formerly. In practice, operations carried on unchanged. Due to the organizational adjustments, the number of provincial operating centres fell by ten, their present number being 19.

### c. Profitability and tax bookkeeping

The present agricultural taxation system became effective as of the beginning of 1968. The former system, based on the average principle, was replaced, and the taxes of farmers started to be calculated on the basis of net agricultural income determined for each farm. In order to compute this net income, the farmers must keep records of their agricultural income and costs. In other words, tax bookkeeping on a certain scale became obligatory for farmers. This naturally affected the profitability bookkeeping. The entries concerning cash receipts and payments were changed to the effect that the bookkeeping farms started to use two separate cash journals, one for agriculture proper and the other for other income and expenditure. The former thus serves both the taxation and the profitability survey purpose. In this connection, certain regroupings of the income and expenditure had to be made.

Agricultural property values and the calculation of depreciation on this property was a more difficult problem. After discussing the issue, the Board of the Research Institute decided that as for the beginning of 1968, taxation values and depreciations would apply to agricultural machine and equipment, buildings and the subsurface drainage, mainly for practical reasons. This would help avoid any confusion resulting from the various different property values on one farm. This solution was adopted despite knowledge of the disadvantages brought about by the use of taxation values and

depreciations in the profitability surveys. The implementation of the new taxation system and the obligatory bookkeeping resulting from it decreased the interest in research bookkeeping. As pointed out above, it also resulted in a decrease in the number of participating farms.

d. Accelerating data processing

Throughout the years getting the data as quickly as possible into the hands of farmers and the public authorities has been a problem connected with the agricultural profitability surveys. The Research Institute and the advisory organizations have been investigating the potential use of ADP for this purpose. ADP applications in profitability bookkeeping were also discussed at various seminars arranged over the years between the various Nordic countries. Certain of the Scandinavian countries started to use ADP as early as the '50s and '60s. On the basis of their experiences, the transition to ADP was made gradually in Finland, and this has proved to suit Finnish conditions. In autumn 1971 the Board of the Agricultural Economic Research Institute appointed a working group, the function of which was to investigate thoroughly the conditions for a transition to ADP in the profitability studies. On the basis of the working group's proposals preparations for ADP were made, and finally the work itself started. An expert was employed for the ADP planning. The preparatory work turned out to be very extensive. The starting point was to find out which data should be fed into the computer in what form, what results should be computed and what form the output should take. In this connection, many details of current computing methods had to be corrected and all the forms had to be redesigned in order to make them suit the new system. The planning of ADP use had two main objectives: the results of the profitability survey should continue to be published in the traditional annual publication; the other, equally important, objective was to produce basic material for agricultural economic research. This has proved a very large-scale and demanding function, and the need for information is growing and changing all the time.

The actual change-over to the new system took place in the processing of the 1976 bookkeeping material. The new method is a mixture of a manual and a complete ADP system. Traditional methods are now used to make the annual summaries of the various data, which are checked at the same time. Checking the data for each farm continues to be necessary when the final statements are being drawn up. This has been one of the most difficult problems of ADP application. After the preparatory work, the data are recorded on punch cards, from which they are transferred onto magnetic tapes. The computer runs are done by the State Computer Centre. In 1982 the punch cards will be abolished and the data will be transferred onto discettes and further onto magnetic tapes with the aid of input devices. The results for each farm are printed out in three copies; one goes to the relevant farmer, one to the agricultural centre, and one remains with the Research Institute.

e. Special studies and the development of operations

Since the very first years of operation, means for each region and farm size category have regularly been calculated from the annual results. This computing has been carried out by hand with the aid of calculators. By the end of the '60s, punch cards started to be used, and some of the data were calculated on punch card machines, and later using actual ADP methods. However, the statistics have been checked and completed manually right up to the present. It seems that this control continues to be needed. Specialization in agriculture started to become more and more common as early as the '50s and '60s, and obtaining the results from the specialized farms depended on occasional special inquiries. The data from the profitability surveys were then used as the background material for various studies. In addition to the traditional regional size category means, annual reports for different lines of production have been made since 1972. The farms are divided into different production line groups by their main line of agricultural production on the basis of a breakdown of total agricultural output. For example, the farms on which cattle husbandry accounts for no less than 80 % of total output are classified under cattle husbandry

farms I. Individual studies have been made on the following production lines (The categories have changed to some extent over the years).

<u>Production line in use</u>	<u>Degree of specialization</u>
Cattle husbandry farms I	80 %
Cattle husbandry farms II	60-80 %
Beef farms	50 %
Pig farms	35 %
Poultry farms	35 %
Other (diversified) animal husbandry farms	
Grain cultivation farms	45 %
Other crop cultivation farms	

In practice the material shows degrees of specialization which are on average significantly above these lower limits.

The above studies by production line can be regarded as an important extension in the use of the bookkeeping farm material, as they have allowed experimentation with and use of ADP applications. The investigation of specialized farms is being developed further in connection with the profitability surveys.

Looking into other development, it should be pointed out that the Board of the Agricultural Economics Research Institute gave a w o r k i n g g r o u p the job of finding out how the material resulting from the profitability surveys could be better utilized by farmers and the public authorities. The working group, which was chaired by the director of the Institute, Professor Matias Torvela, issued a relatively comprehensive report in 1979 and made a number of proposals. The working group discussed the reports by production line and emphasized that the number of farms should be increased without delay from some 850 to 1200. When the number of farms is increased, farms with various production lines from different regions should be included. This is also important from the point of view of making the special calculations and studies which are now needed more and more. The working group also pointed out that the funds granted to support these activities should be increased.

The working group further proposed that operations should be developed in a way ensuring that the ensuing data would be of real interest to farmers. It would pay them to participate and the data would be useful to them from the point of view of making their tax declarations or economic plans. To this end a comparison leaflet (Appendix 1, pp.41) has been drawn up and sent to the farmers involved. This gives the individual farm's results, printed next to the average results for its reference group. The reference group results consist of data from farms in the same size category, region and production line as the farm in question. This makes it possible for the farmer to compare his own agriculture with other farms in the same line of production. This relatively detailed information leaflet has already been sent to farmers quite often. According to the feedback, farmers have proved very interested in information of this type. Analytical types of information will also be given to farmers in future and in a more extensive form.

#### 5. Bookkeeping awards

The farmers keeping books are not paid for this work. Over the years, however, they have been granted awards for particularly valuable contributions. The following awards have been made to bookkeeping farms for research bookkeeping over a long period:

5 years	diploma
10 "	'Sheaf binder' relief sculpture
20 "	award medal
25 "	honorary plaque

More recently the 15-year-award - i.e. the plaque - has been replaced by a new award: a silver-plated medal on an oak base. The 20-year-award was abolished. In honour of the 50th anniversary of operations, the first 50-year-awards (gold-plated medal on oak base) were also made to three farms which had been involved right through this half-century. They still keep books for research purposes. There are quite a number of bookkeeping farms which have been participating for along time. To date, the new award for 50 years of bookkeeping has been given to 36 farms.

Heikki Järvelä

## II. THE ORGANIZATION OF AGRICULTURAL BOOKKEEPING IN FINLAND

The organization of agricultural bookkeeping has varied over the years. Since 1962 the Agricultural Economics Research Institute, which operates under the auspices of the National Board of Agriculture, has been solely in charge of bookkeeping operations. The profitability survey office of the Institute employs a staff of 14-15, three of whom are researchers with an academic background, one an ADP expert and the rest clerical workers with various kinds of responsibilities. It should be pointed out that the number of staff has remained unchanged since the '20s. The functions of the office are discussed in more detail elsewhere in this publication.

General agricultural advisory organizations are responsible for the bookkeeping field work. There are 15 provincial agricultural centres, 3 Swedish-speaking agricultural associations, and the Provincial Government of Åland, which brings the number of operating points to 19.

In each agricultural centre (or corresponding unit), there is a bookkeeping advisory with post-comprehensive school agricultural training, who keeps in contact with the bookkeeping farms. He provides the farms with bookkeeping guidance, draws up property lists with the farmer, collects and checks the material, and helps the farmer with the various income and other data included in the final accounts (see also appendix 1, pp. 41). The bookkeeping advisory normally visits a bookkeeping farm once or twice a year.

However, every effort is made to visit 'first-time' farms more often. Besides the bookkeeping advisor, most centres also employ one clerical worker, mainly to draw up the annual summaries from the bookkeeping entries. The data on the summary forms are then transferred to discettes at the Institute for further computer processing. The number of farms per agricultural centre varies between 20 and 100. Every year each agricultural centre draws up a 10-15 page result leaflet about the farms in its region. The leaflet contains various kinds of mean values, calculated by farms size categories. This leaflet is sent to each bookkeeping farm and to the centre' employees, to be used by them in their advisory work. Once a year the agricultural centre organizes a one-day meeting for the bookkeeping farms of its region, to discuss bookkeeping matters. Every year, the Institute also arranges a two-day meeting for the bookkeeping advisors.

The regions covered by the agricultural centres (and the corresponding units) make up four research regions for the treatment of material: southern Finland, central Finland, southern Ostrobothnia and northern Finland.

Number of farms by different research region and size category, 1980

	-10 ha	10-20 ha	20-30 ha	30-50 ha	50- ha	Total
Southern Finland	37	113	116	107	64	437
Central Finland	29	89	52	51		212
Southern Ostrobothnia	14	31	25	20		90
Northern Finland	32	90	44	28		194
<hr/>						
Total	103	323	237	270		933

Number of farms by production line in the various research regions, 1980

Region	Production line <sup>1)</sup>							Total
	1	2	3	4	5	6	7	
Southern Finland	127	22	49	60	30	92	57	437
Central Finland	122	24	12	28	12		14	212
Southern Ostrobothnia	38	4	11	23	3		11	90
Northern Finland	141	11	19	6	19		7	194
Total	428	61	91	117	55		181	933

- 1) 1 = dairy farms  
 2 = beef farms  
 3 = other cattle farms  
 4 = pig farms  
 5 = other (sundry) animal husbandry farms  
 6 = grain cultivation farms  
 7 = other crop cultivation farms

The bookkeeping farms are all privately owned. The farms keep the books on a voluntary basis, so the farms cannot be chosen at random; only such farms as are willing to cooperate are involved. However, every effort is made to include farms of different sizes from different areas, also from remote regions, to make the sample as representative as possible. During the last few years, special attention has been paid to including sufficient numbers of farms representing different production lines.

The farms have four different bookkeeping books. There are two cash journals, in which all daily cash receipts and payments are entered: one is for agriculture proper, and also serves taxation purposes. The entries in the other cash journal include the receipts and payments from forestry or any side-line job, and those from any source other than agriculture. The entries in the work book include the daily human labour contribution and the work of tractors, harvesters and horses, calculated in full hours. The work in the work book is classified in the following way:

Classification of work

- A. Actual agricultural work
  - 1. Crop cultivation work
  - 2. Animal husbandry work
  - 3. Other agricultural work
- B. Investment work
- C. Forestry work
- D. Side-line work
- E. Private household work

At the beginning of the year funds and debts are entered in the property list, which is then checked at the end of the year. In continuous bookkeeping, the entries in this book are made only once a year at the turn of the bookkeeping period.

The funds are classified by the sections of the farm's economy: agriculture, forestry, side-line, private household and financial assets. The last item includes cash, bank deposits, and securities and bonds. In calculating the final income, the main emphasis is on agriculture proper. This is why the agricultural property items are recorded as precisely as possible in the property list.

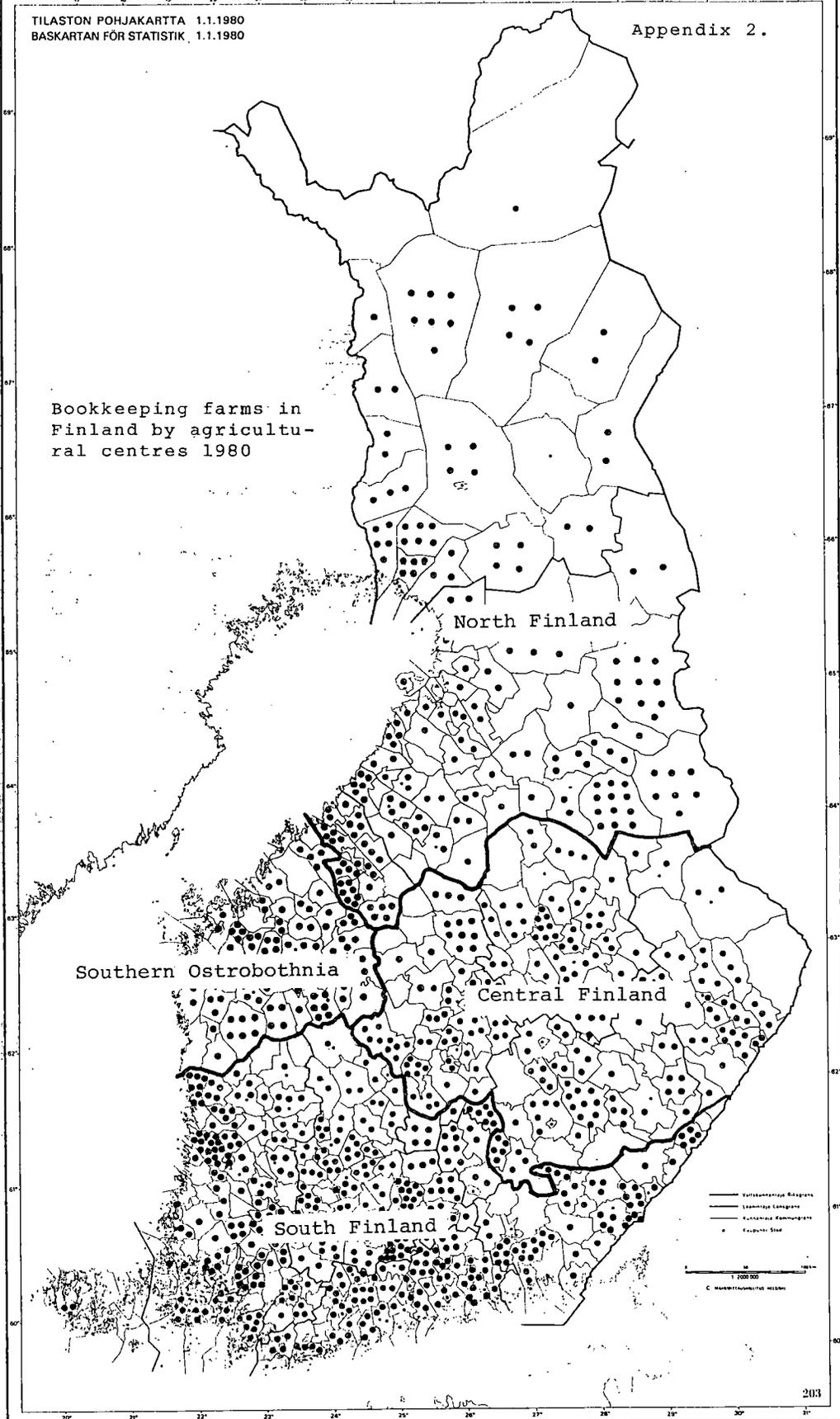
Agricultural property is classified in the list as follows:

<u>Agricultural property</u>	<u>Value</u>
1. Inventories	
- Products	At sales price
- Purchase goods	At purchase price
2. Livestock by animals	
- Slaughter animals	Slaughtering value
- Others	Estimated (minimum = slaughtering value)
3. Machines and equipment	Taxation value
4. Production buildings	"
5. Basic improvements (e.g. subsurface drainage)	"
6. Agricultural land	"

Machines and equipment are further divided into subgroups, e.g. tractors and harvesters are treated as separate groups. Residential buildings also constitute a separate group which is not included in agricultural property. As the garden is normally only of minor importance for the farmer's economy, garden plants are normally not registered separately in the property list.

Besides the above entries, the farms also register data about the areas cultivated and yields of different plants, the agricultural products used by the household, and firewood and building timber taken from the forest. If shortcomings or errors are found in the records of a farm, the agricultural centre contacts the farmer by phone and tries to correct the mistakes. Special attention is paid to matters concerning agriculture proper.

Bookkeeping farms in  
Finland by agricultu-  
ral centres 1980



North Finland

Southern Ostrobothnia

Central Finland

South Finland

- Administrative Regions
- Learning Centres
- Statistical Centres
- Bookkeeping Farm

100 km  
C. H. W. S. T. O. S. T. I. K. A. N. T. I. N. E. N.

Matias Torvela

### III. ASSESSMENT OF FINANCIAL RESULT ON FAMILY FARMS IN FINLAND

#### I. General

Agriculture in Finland is traditionally based on small and medium-sized family farms. The average arable land area is some 11 hectares. The average farm size varies between different parts of the country: 15-20 hectares in the south and southwest and 5-7 hectares in the east and the north. There is also a substantial number of 25-50 hectare farms in southern Finland, but very few in central and northern Finland. There are not many farms larger than 50 hectares, and only a few of which are in eastern and northern Finland.

Usually the farm family does most of the farm work, although the capital invested in agriculture tends to increase through mechanization. Increased investment is also required for buildings and the equipment used in them, and the price of land has also gone up steadily. The general opinion is, however, that the labour input of the farm family is the most important means of production in view of profitability. The central goal of Finnish agriculture has in fact always been maximum pay to the farm family for their labour. Another goal is maximum return on capital invested in agriculture.

The figures indicating the financial result in agriculture should therefore show how economical it is for the farmer to utilize family labour. Apart from this there are grounds for applying figures that permit assessment of the extent to which capital is utilized economically. In Finland, agriculture is a riskprone

sector because of the climate. Therefore, the risks and seasonal fluctuations involved should be taken into account in assessing the financial result.

Forestry is closely linked with agriculture in Finland. The average farm has some 40-45 hectares of productive forest land. In some regions forestry is still more important. There is a lot of variation by farm, too. It is common, particularly on small farms, to have additional income sources. Part-time farming seems to be on the increase. In assessing profitability, the importance of the forest and any additional income sources should thus be taken into account. The calculation and follow-up of profitability figures therefore has priority in all profitability research. The earnings of the farming family must be tracked, which is a complicated task. The problem of calculating the profitability in agriculture is further complicated by the fact that farms put out a number of different products. This was even more common in the past. If a farm puts out one product only, assessment is easier. For some large farms the profitability of animal husbandry and various cultivated plants must be assessed separately. There may be different kinds of livestock products and different plants for sale simultaneously.

## II. Ways of measuring profitability

### 1. The limitations of bookkeeping

This article will concentrate on discussing the ways of measuring profitability on bookkeeping farms. The bookkeeping farms apply a single-entry bookkeeping method for agriculture. Its potential in assessing profitability is limited. In single-entry bookkeeping each farm is a single corporate entity, although operations are divided in between farming, forestry, additional sources of income and the private household of the farming family. Actual farming comprises arable farming, animal husbandry and vegetable farming closely linked with agricultural production. There are not many bookkeeping farms with intensive market garden-type vegetable

farming as the main production line. Some farms specialize in this kind of intensive cultivation, but few of them are book-keeping farms yet.

As regards animal husbandry, there are pork and egg production enterprises in Finland that buy nearly all of their fodder, producing very little of it on the farm. Naturally production units approaching commercial companies in this way are also part of agriculture, but bookkeeping follow-up focuses primarily on the state of and developments in traditional forms of agriculture. Naturally many livestock farms buy some of their fodder. Some large farms employ double-entry bookkeeping. A small number of these farms used to be included in the profitability bookkeeping system. Today there are only a very few such farms, and they are not bookkeeping farms. Naturally it is a disadvantage not to include such farms in bookkeeping operations as more detailed calculation of profitability and economical utilization could be made for various products.

## 2. Ways of measuring profitability

The financial result can be assessed from a number of different viewpoints in agriculture. Each industry, including agriculture, has its own role in the national economy. The national product of agriculture measures the importance of this particular industry from the viewpoint of the country's economy. The national product is calculated by deducting from the gross product all other expenditure except taxes, working costs and the interest claim of total capital. The national product is not usually calculated in agricultural bookkeeping, although this is simple to do.

Farming family income is the actual basis for profitability assessment on bookkeeping farms. The farming family income is the enterprise's return on the investment made and on the labour input of the farm family. Farm family income is calculated by deducting from the gross return all other expenditure except

the interest on the capital and pay estimated for the farm family according to the relevant norm. In calculating the farm family income, interest on debts, rents or interest on equity are not taken into account. Thus the figure is comparable with that for other farms with different debts and similar labour input. The most common way of measuring profitability used to be net return. It is that part of return which is the interest on the capital invested in agriculture. It is difficult to separate the taxation of agriculture from the taxation of the farm and the farmer in agricultural bookkeeping. This is why profitability research has recently begun to calculate the taxable net return, or the net return on total capital plus taxes paid, which shows the profitability in terms of capital input. It is suitable for assessment on larger farms and on farms or production sectors with a relatively high proportion of production investment. Up to 1968 the net return was the basis for taxation in agriculture and the taxation criteria were obtained primarily from the bookkeeping farms. Therefore, the role of the net return was emphasized in profitability research. Today the importance of this method is declining, although it is still used in profitability bookkeeping.

The net return (operating surplus) is closely linked with the percentage return on capital. The figure is obtained calculating the percentage of the capital invested in the agricultural enterprise accounted for by the net return. Technically speaking this percentage is an extremely illustrative measure of profitability, but the limitations are the same as those of net return, and the importance of this method is declining on small and medium-sized farms.

Perhaps the most common method in profitability accounting is the coefficient of profitability. It is the ratio between farm family income and the wage claim on the operator's and family labour added to the interest claim on total capital, i.e.

$$\text{Coefficient of profitability} = \frac{\text{farm family income}}{\text{wage claim on the operator's and family labour} + \text{interest claim on total capital}}$$

The coefficient of profitability looks at profitability in view of both farm family's labour input and utilization of the capital invested in agriculture. If family income equals the sum of the estimated wage claim and the interest claim on total capital, the coefficient is 1. If the coefficient is higher than 1, e.g. 1.10, the farm family has received 10 % more than the pay norm, and the interest on capital is e.g. 5.5 % if the rate of interest applied is 5 %. Correspondingly, if the coefficient is below 1, compensation for work and capital investment is below the norm.

It is possible to derive other financial result measures using the coefficient of profitability. The return on labour (income from work) is obtained by multiplying the wage claim of the operator and his family by the coefficient of profitability. As the wages are estimated for profitability calculation according to the norm for agricultural labourers, the return on labour (income from work) shows the farmer's wages compared with those of agricultural labour in general.

The percentage return on investment is obtained by multiplying the interest rate applied by the coefficient of profitability. The return on labour and the return percentage have not yet been published in profitability accounting. These figures have, however, often been used in research utilizing bookkeeping results and in various publications.

Production costs are not given in published research concerning the profitability of agriculture. It is, however, fairly easy to calculate the production costs for the total production using the bookkeeping results. All expenditure items are taken into account in production costs. The production costs are obtained by adding the interest claim on total capital to the working costs. Usually a production cost percentage is calculated by expressing the production costs as a percentage of total production. If a farm is highly specialized, the production costs can also be calculated per product.

Other profitability indicators can be calculated on the basis of production costs. The net profit is obtained by deducting the production costs from the gross returns. If the costs exceed the returns, the term net loss is applied. The net profit has been given in a number of studies, but it is not given in published research on profitability. However, it is often used in presenting bookkeeping results in other contexts.

Various special calculation methods have been developed to follow up profitability in animal husbandry. The value for processing non-marketable fodder was calculated for some dairy farms in the past. The purpose of the calculations was to determine how much compensation (price) was received for fodder with no commercial value in cattle raising. This value was calculated for hay silage and forage.

In summary: the most common profitability indicators are net return, farm family income and coefficient of profitability. These figures are given in published research on profitability. The rest of the above figures are used in various studies and farm-specific comparisons.

### 3. Some other concepts

The return on fixed costs, i.e. the difference between the return and variable costs, is a concept utilized particularly in agricultural planning. The return can be calculated in terms of a number of different factors, and therefore the definition of variable costs may vary. This return figure is usually calculated on the farm family labour input and on certain investment items.

Productivity is another common measure of profitability. Productivity refers to the return on various means of production. A difference may be made between physical productivity and economic productivity. Some econometric studies also calculate the marginal revenue for various production factors.

In some contexts it may be necessary to calculate product-specific production costs. It is easy to compare production costs with e.g. the price received for the product. In single-entry bookkeeping it is not possible to calculate the production costs direct. Product-specific farm model calculations have been developed by the Agricultural Economics Research Institute for determining and monitoring production costs.

The liquidity of the farmer may suffer, e.g. when major investments are made. The purchase of a farm or additional land and building require loans, and interest and repayment require large amounts of money. The amount of money at the disposal of the farm family tends to decrease. In such a situation, liquidity calculations are needed. In some cases a sufficiently clear picture of income and its disposal is obtained through a comparison of income and expenses.

The private consumption expenses of the farm family also reflect the economic standing of the farm. Agricultural bookkeeping monitors the expenses of the farm family's private household, too.

Additional income sources and income from forestry are quite common for Finnish farmers. Although the profitability bookkeeping system was designed primarily for monitoring agricultural developments the system makes it possible to calculate farmer's total incomes, too.

4. Chart for calculating some financial results in agriculture

Gross return					
Production costs less interest claim				Net return	
Supplies bought and depreciation	Taxes	Wages paid	Farm family pay claim	Interest claim	Net profit
Production costs					
			Farm family income		
National income					
			Return on labour	Return on investment	

The following items are included in the gross agricultural return:

- the income from agricultural production excluding income from sale of property
- the money value of products and horse labour for investment in agriculture and outside agriculture (food management, forestry, private household, additional income, wages and pensions)
- the increase in stocks, livestock, and standing crops and timber derive from agricultural production

The agricultural production costs less interest claim compare the following major items:

- expenditure incurred in farm management (e.g. supplies bought, wages paid) and taxes. Expenses incurred in increasing the property, interests, rents and pensions are not included
- the money value of the labour of the operator and family in agriculture
- agricultural produce from forestry, food management, additional income sources and private household
- depreciation and other decrease in value for farm property

5. Financial result in some farm groups for 1980 bookkeeping farms

	Whole country average	Crop farms southern Finland 20-30 hectares	Dairy farms northern Finland average
Average arable area, hectares/farm	26.70	24.92	20.71
Gross return, marks/hectare	7,771	3,958	8,921
- Return on livestock	5,474	39	8,164
- Return on plant cultivation	1,912	3,479	228
- Other returns	385	440	529
Production costs less			
interest claim, marks/hectare	7,306	3,567	9,403
- Labour costs	2,405	1,009	3,614
- Supplies costs	2,804	1,151	3,491
- Machinery and equipment costs	1,089	732	1,264
- Building costs	371	260	431
- Other costs	637	415	603
Taxable net return, marks/hectare	465	391	-482
Farm family income <sup>1)</sup> , marks/hectare	2,633	1,335	3,004
Coefficient of profitability <sup>2)</sup> ,	0.88	0.81	0.72
Return on labour, marks/family	50,939	19,055	51,980
Return on labour, marks/h <sup>3)</sup>	12.36	17.48	16.06
Return on investment %	4.4	4.1	3.6
Agricultural wages,			
men, marks/h	16.60	16.60	16.60
women, marks/h	13.90	13.90	13.90

1) Farm family income is compensation for the labour of the operator and family and for use of agricultural capital

2) Indicates the wages received by the farm family in relation to a farm labourer's wages

3) The per-hour wages received by the farm family members for agricultural work, calculated per hour of routine work (no management work)

According to avista rates of exchange of the Bank of Finland (May, 1982)

1 USD = 4.564 Fmk

1 Rbl = 6.370 Fmk

### III. Other data systems connected with agricultural bookkeeping

Above we have discussed profitability research and its application based on information obtained almost exclusively from bookkeeping farms. There are also other methods used by various agricultural organizations for monitoring a certain livestock or plant type. The agricultural advisory organizations have already been carrying out a continuous cattle production survey for some time. The survey system compares some 24,400 farms and the cows on these farms account for some 40 % of the total of Finland.

The primary purpose of this production survey is to monitor the trend in milk production and to assist in livestock improvement. Apart from production surveys, the system provides farm-specific feeding plans. Although the farms' bookkeeping is not exhaustive, the production survey data can be used as background information for economic calculations. The production survey system is maintained financially by the advisory organizations, the State, the dairies and the farmers themselves.

The surveys for effectiveness and economy of dairy farms (so called T surveys) are more detailed than the production surveys. Some 170-180 farms have been involved in the system in various parts of Finland in the past few years. The farms are larger than average, like bookkeeping farms. The average arable area is some 28 hectares and the average number of cows is 18. The T surveys calculate the return on cattle raising and the production costs of milk in great detail. Milk production is separated from other agricultural production. Some costs are calculated on a slightly different basis than in profitability research.

The agricultural advisory organizations keep crop yield records by monitoring the cattle on some crop farms. Some 200 large farms with an average size of 70-80 hectares have participated in the system in the past few years. The most important plant-specific cost items and returns are recorded. On the basis of this information it is possible to make calculations on the profitability of different grain crops.

Apart from the methods listed above there are many other surveying and control systems for monitoring various types of livestock and plants. Farm specializing in pork or beef production have local clubs of their own. Club activities include bookkeeping on individual farms. Local agricultural advisory organizations and slaughterhouses often take part in the activities, e.g. by making profitability calculations.

The production and marketing of some plants is based on agreements between the farmers and industrial companies. This contract production includes special plants, such as sugar beet, oil plants, malting barley and potatoes. In this system the product-specific returns, costs and financial results are monitored. Sugar beet cultivation, for example, has a research institute of its own.

Some research institutes and authorities monitor agriculture and the developments in its financial result. The Central Statistical Office of Finland maintains a record of enterprises and returns. The data is obtained from taxation bookkeeping. The sample comprises some 13,500 farms. It is possible on the basis of the taxation data to calculate agricultural return and expenses, farmers' taxable incomes and various other figures pertaining to economical cultivation. The results have been published for various production lines using the same grouping as the bookkeeping farms.

The Central Statistical Office of Finland also produces reports on the utilization of some production input items, e.g. regular labour input studies.

The statistical office of the National Board of Agriculture has a farm register, where the data on all farms are entered in connection with taxation. Some data are gathered annually, others at regular intervals. The farm register provides a good background for agricultural information. The National Board of Agriculture monitors agricultural information in more detail through a number of sample farms.

Heikki Järvelä

#### IV. THE USE OF BOOKKEEPING RESULTS IN FINLAND

##### 1. Advisory work

When the profitability surveys were started, the aim was to obtain material for the advisory work carried out among the farming population. It was already realized that technological and biological advisory work cannot be regarded as sufficient if production is to be furthered. In addition to information about plants and animals, a wide variety of advice about economic matters is also needed to solve the various problems encountered by the farmer. Agricultural bookkeeping provides a variety of basic information for the planning and follow-up of the farmer's entire economy. The need for this kind of data is increasing all the time.

The bookkeeping results have been used for many agricultural advisory purposes during the time they have been available. The data from individual farms and the various means are of vital importance. Means have always been calculated for the various regions, on the onehand, and for farms of different sizes, on the other, and this has made it possible to keep a close eye on the development of agriculture and to use the results in many ways. In addition to the conventional regional and size-category means, mean values calculated for the best quarter of each farm group, or for a few of the best farms, have also been used for the advisory purposes. These have naturally been supplemented with analyses of the final accounts of individual farms. Innumerable lectures and introductory talks given at various kinds of advisory meetings have been based on the bookkeeping results. During the last few years, planning has become an increasingly popular sector of general and special consultation,

and the bookkeeping results are of use in this field, too. The surveys made on the various production lines have mainly been used for this work.

Agricultural planning covers many aspects. Traditionally, the bookkeeping results are used for planning at the level of the individual farm (cf. appendix 1, pp. 41). At the moment, however, plans are made for an entire village or municipality. Agriculture is also a central factor in the more comprehensive regional or district plans. The bookkeeping results are used in various ways at all levels. Both planning and advisory work make use of data from other information systems closely connected with agricultural bookkeeping. These are presented elsewhere in this publication.

## 2. The needs of the authorities

The bookkeeping results have also served the needs of the public authorities for quite a long time. Several committees, commissions and work groups have used them when planning various agricultural policy measures, and studying their eventual effect. The results are used to some extent for the calculation of agricultural income, e.g. when determining profitability trends. In this case the labour input is discussed on the basis of the labour figures given by the bookkeeping farms. During the last few years, attention has also been paid to profitability trends in the different production lines. Production cost calculations for some main products are made to provide a basis for decision-making. However, the number of farms representing different production lines should be increased, if the above calculations are to be more widely applicable.

An important application of booking results has been the determination of agricultural income tax criteria. The results were used for this purpose up to 1968, when the currently valid taxation system was introduced. This system is based on the taxation of agricultural net income, calculated on the basis of the bookkeeping of each farm. Nowadays, the bookkeeping results are used for taxation purposes only to provide background information for

property tax criteria. The bookkeeping results are still used indirectly in research on taxation. From the bookkeeping results, it is possible to follow variations in taxation in the different production lines or regions of the country.

The bookkeeping results are used by many sectors of the public administration. During the last few years, the management of farmers' pensions and the development of pension laws and systems has required extensive research and study, and the bookkeeping results have been used for this purpose, too.

The data obtained through the bookkeeping operations normally also constitute part of the all agricultural statistics produced. The growing body of material from the bookkeeping farms is one of the oldest collections of statistics in Finland. On the basis of these statistics, agricultural economics can be traced back over 70 years, i.e. the lifetime of the bookkeeping operations. Certain farms have been included in the statistics since the beginning of the bookkeeping system.

### 3. Research and teaching

Research and teaching constitute a further application of the bookkeeping results. The data from the bookkeeping farms have been and still are used for studies serving various purposes, and for the needs of research. The material is well suited for this purpose because the data are collected and processed in accordance with the same criteria from year to year. If changes are made in the calculation criteria, every effort is made not to endanger the comparability of the material in the main. As research usually merely means following a trend, the above-average efficiency of the bookkeeping farms does not have any significance. It should also be pointed out that the bookkeeping data provide information about practical operations which is influenced by variations and changes in the production conditions at any given time, and also by the reactions of the farmer to them.

The bookkeeping results represent the basic material for numerous studies and research projects. The following is not a detailed list of all the research that has made use of the results, but merely gives a few examples of large-scale research based to a substantial degree on the bookkeeping results, or important for the development of actual bookkeeping operations.

As head of the general agricultural department at the National Board of Agriculture, Professor Matti Annila developed the bookkeeping system in many ways and applied the results to various studies. One was a study on agricultural profitability trends on bookkeeping farms in 1912-1952. Annila also worked out ways of calculating the additional value of the 'unmarketed' fodder on cattle farms. Data from the bookkeeping farms constituted part of the basic material in Professor Antti Mäki's dissertation 'On inventory assets and their size ratio on certain farms in southern Finland' (Über das Vorrätekapital und dessen Grössenverhältnisse in einigen Landwirtschaftsbetrieben Süd-Finlands). Professor Mäki's expertise has also been used in developing the profitability survey; he chaired the profitability survey commission mentioned elsewhere.

The dissertation by Professor Liisa Sauli on 'The standard of living of farm families on Board of Agriculture bookkeeping farms in the fiscal years 1935/36-1948/49' is based, as the title suggests, on material from the bookkeeping farms. She has also made major use of the bookkeeping results in reports and studies on practical agricultural policy. She was formerly employed as an actuary in the agricultural economics research office, and is thus thoroughly familiar with both the system in use and the material.

The important study by Samuli Suomela 'Development of productivity in Finnish agriculture' is based on material from the bookkeeping farms, as are many other studies carried out during his term as head of the Agricultural Economics Research Institute. Under his direction, significant reforms were also made in the profitability survey. Academician Nils Westermarck is one of the most important

users of the bookkeeping results, and has furthered the operations in many ways. His research deals with many issues, such as labour input, the human factor and the importance of women in agriculture.

It should also be mentioned that Westermarck started and directed the contract farm study, a 4-5-year bookkeeping, planning and follow-up project begun in the middle of the '50s and involving 40-50 farms. The study provided very valuable reference material for the actual profitability study as well.

Professor Matias Torvela has carried out several studies on the basis of the bookkeeping material, including his dissertation, 'On the use of agricultural inputs on bookkeeping farms in southern Finland'. As the head of the Research Institute, he has also contributed to the development of the profitability surveys and paid special attention to information by production line and to the use of the bookkeeping results in various kinds of special calculations. Together with the writer of the present article, Torvela at the end of the '60s compiled the first extensive report on the various production lines. The report laid the foundations for the present production line categories. Professor Risto Ihamuotila studied the farmer's labour incomes in his dissertation, 'Labour income level of farmers on Finnish bookkeeping farms in 1956-1965'. He has also used the bookkeeping material in various other studies. The above shows that the bookkeeping material constitutes the basic material for several dissertations and other extensive studies on agricultural economics.

The bookkeeping results are used at various levels of agricultural teaching. Students at the Faculty of Agriculture and Forestry of the University of Helsinki use the material for their theses, and it is also used by students at other university-level institutes. The bookkeeping results constitute an important part of the material used at both agricultural colleges and schools in the teaching of agricultural business management.

Individual farm data and economic results compared to those of corresponding farms <sup>1)</sup>

Farm: \_\_\_\_\_

198\_

	Per farm		Per hectare	
	Farm	Comparison farms	Farm	Comparison farms
Number of farms				
Arable land in cultivation				
<u>Use of arable land and yields</u>	<u>Per cent of the arable land</u>		<u>Yield kg/ha</u>	
Rye				
Winter wheat				
Spring wheat				
Barley				
Oats				
Mixed grain				
Pea				
Oil plants				
Potato				
Sugar beet				
Other root crops				
Green fodder, etc,				
Hay				
Silage, etc,				
Graizing land				
Other plants				
Fallow				
Average yield fu/ha				
<u>Agricultural property</u>				
<u>January 1 th</u>				
Stores				
Livestock				
Implements				
Production buildings				
Drainage				
Agricultural land				
Total				
January 1 th: Cows				
Piggs				
Livestock units				
Milk kg/cow/year				
Agricultural works, hours of these farm family				
Management work				
Farm family total				

1) Farms of same size, location and production line

	Per farm		Per hectare	
	Farm	Comparison farms	Farm	Comparison farms
<u>Agricultural gross return:</u>				
Dairy products				
Cattle				
Pigs				
Poultry				
Sheep				
Other animals				
Total				
Rye				
Wheat				
Barley				
Oats				
Mixed grain				
Pea				
Oil plants				
Hay				
Root crops				
Other plants				
Total				
Rest				
Gross return total				
<u>Costs:</u>				
Wages paid				
Livestock cost				
Commercial fodder				
Fertilizers				
Commercial seeds				
Plant protection, drying of grain				
Fuels and lubricants				
Electricity				
Cost of implements				
Cost of buildings				
Other cost				
Cost total				
Imputed wage of farm family				
Management work of "-"				
Total				
Farm family income				
Net return				
Coefficient of profitability				
Return to farm family work			mk/h	mk/h
Interest on farm capital	mk	mk	%	%

Matias Torvela

## V. IMPROVING BOOKKEEPING IN FINLAND IN THE NEAR FUTURE

### 1. Number of bookkeeping farms

Agricultural bookkeeping in Finland rests on the shoulders of volunteers and interested farmers. The most actively oriented farmers and owners of above-average-sized farms tend to participate in the bookkeeping systems. There are some 900 bookkeeping farms now, but the number is not sufficient, primarily because the farms are divided unevenly between various production lines and areas. As agricultural production is becoming increasingly specialized, bookkeeping farms are needed in all major production lines. Differences between different parts of the country are also great, and therefore there should be bookkeeping farms throughout the country.

The long-range plan is to increase the number of bookkeeping farms to 1,500. The short-range target is 1,200 farms. The farm quotas have been divided between a number of areas, taking into account the regional representativeness and regional production situation. As joining the scheme is voluntary the bookkeeping farms are not a representative sample, although representativeness increases as more farms join in. On the whole, there is a sufficient number of dairy farms, but more farms specializing in beef production and pig raising are needed. The number of farms producing pork is nearly sufficient, but the pig raising farms should be divided into pork production farms and sow farms.

Profitability research has dealt with crop farms and mixed plant production farms as separate production lines. Crop farming concentrates on the southern parts of Finland and the plan is

to include crop farms located in southern and central Finland only in the future. The goal is to form separate groups for farms producing bread grain and farms producing fodder grain for sale.

Many other production lines are missing in the bookkeeping system. There are far too few farms producing eggs. The number of farms producing sugar beet and oil plants should also be increased. And there is a need for farms concentrating on potato crops. Not all production line alternatives have been mentioned here.

The Institute maintains the bookkeeping system together with the advisory organizations, which is why the advisory organizations and the local advisors play a crucial role in acquiring new bookkeeping farms. Joining the bookkeeping system is a voluntary decision, and, therefore, the system should benefit the farmer. Bookkeeping results should be developed to assist the farmer in completing his tax return and in economic planning for the farm.

The farmer is not paid for the bookkeeping work, although he gets a small memento when he has been in the system for 5, 10, 25 or 50 years. These tokens have proved important in keeping farmers in the system. There have been negotiations with the advisory organizations, and one method proposed for increasing interest in bookkeeping is to make economic plans for the bookkeeping farms free of charge and to provide them with other advice, too, at a lower cost than other farms. So far the idea of paying the farmers for bookkeeping has been rejected.

## 2. Developing the bookkeeping system

The current single-entry bookkeeping will continue. However, some special calculations require more detailed data. In some cases, for example, it would be useful if the agricultural labour could be divided more accurately between various animals and plants. This applies to the use of fodder, machinery and equipment as well.

The distribution of various fertilizers between different plants should also be known in some cases. Although it is not necessary to change the whole bookkeeping system, the current system should be developed so that the relevant information could be obtained from the bookkeeping records.

The assessment of agricultural property and the changes in money value for various parts of property present a problem. Particular attention should be paid to determining the value of buildings and machinery as the value of money keeps decreasing. The value of agricultural land should also be continuously monitored.

The concepts used in expressing the financial result in agriculture should be improved. It has so far been impossible to separate the taxation of actual agriculture from collective taxation of the farm. Debts appear to be increasing on farms. So far only total indebtedness are monitored: the debts may be connected with forestry, private household or additional incomes. Agricultural debts and interests should be separated and presented as categories of their own.

On the whole we might say that the measures of profitability are satisfactory indicators of the profitability of agriculture and the farmers' livelihood. However, the results should be improved so that the compensation to the farmer and his family for agriculture could be calculated more accurately. Farmers are particularly interested in this aspect.

Figures indicating the profitability of agriculture should also be clearer. Farmers hope to be able to get product-specific cost figures. Comparison of production costs with the price of the product is a good way of expressing profitability. So far it is difficult to calculate the production costs, particularly if the farm produces several items.

The total incomes of the farmers come from agriculture, forestry and additional sources. It is possible to calculate the farmer's total income from the farm, but this method could be developed further.

Forestry is an integral part of agriculture in Finland. Forestry incomes and expenses are being monitored today. Economic calculations, however, require more accurate information on e.g. the value of the timber and additional growth. Forest land can be assessed with some accuracy on the basis of tax classifications.

Many calculations on the profitability of various plants and types of livestock must be made on the basis of the information obtained from the bookkeeping farms. These special calculations should be developed together with the bookkeeping system. Methods for assessing the economy of machinery and equipment on a specific farm should be developed. The methods of cultivation and animal husbandry keep changing and advancing. It should be possible to make calculations on the economy of various methods and work procedures on bookkeeping farms. It is already possible to monitor consumption in farm households. Yet more attention must be paid to borrowing and the application of loans and to depositing before accurate information can be obtained.

There are several special sectors on which the bookkeeping farms could provide information. The social conditions of the farm population and their willingness to stay in the countryside are an increasingly acute problem. These issues of social policy are connected with an analysis of the effects of various pension schemes. The bookkeeping system could perhaps be developed so that more information for social policies can be obtained from the farms. This information is needed in planning various measures and systems and in monitoring their impact.

### 3. The utilization of bookkeeping results in advisory functions and in agricultural policy

The data obtained through bookkeeping can be used outside farm-specific planning, too. i.e. in agricultural advisory functions in general. When economic plans are made the experience gained on farms can be utilized by farmers in similar production situa-

tions and sectors. The bookkeeping results can also be used as norm figures in various calculations, e.g. human labour utilization, crop-fertilizer rations, cost of machinery and building, etc.

The use of bookkeeping results in agricultural policy has become increasingly important lately. The traditional application of bookkeeping results was to use them for control purposes in taxation: the income tax on agriculture used to be determined partly on the basis of bookkeeping. The results of the bookkeeping farms are still used in determining the bases for property tax, and in research related to taxation. Agricultural taxation requires continuous monitoring and revision, and bookkeeping data will be needed in future.

Price-policy makers have recently looked at the production costs of various products in deciding on producer prices. Sometimes the production costs have been calculated direct for bookkeeping farms. The results of the bookkeeping farms have also been used in creating farm models which have been applied in calculating production costs. This type of calculation will be needed increasingly, which is a real challenge to the bookkeeping system as a whole.

In Finland regional problems are a serious issue. Therefore, a complex subsidy system has been created. It is possible to monitor regional subsidies through the bookkeeping farms, and the same goes for price subsidies.

The above shows that the bookkeeping information is an important source for agricultural economic research. Research into economic aspects will continue to expand into new problem areas, which again places additional demands on bookkeeping.

Bookkeeping farm results are used as control information for assessing the effects of various measures taken in agricultural policy. The role of the State in agriculture appears to be growing and this means that the bookkeeping information will be needed increasingly often in planning and monitoring economic policy.

The results of bookkeeping farms have been and are used as background information on agriculture by schools of various levels and by university level educational institutions. Some of the results of the bookkeeping farms are public agricultural statistics and can be used as such for general information on agriculture.

In the past few years automatic data processing has been used in the processing and storage of bookkeeping results. The shift-over to ADP applications has been taking place gradually. The ADP applications started a few years ago by transfer of the results (some of them) onto ADP cards (tape) for a number of analyses and for annual publication. The applications have been increased and improved and today it is possible to close the accounts of individual farms by means of the basic data stored in the ADP system. The next phase will be to produce ADP tables, and even today it is fairly easy to obtain various ADP reports on bookkeeping farm results.

The Institute has an ADP systems analyst of its own and the programmes required have been made in collaboration with Institute researchers. This has proved a good system and the planning costs of the bookkeeping system have been reasonable. ADP programming will be carried out by the Institute in future, too. The Institute's staff will punch the data on cards or write them on discs. The actual data processing has been carried out by the State Computer Centre which serves all government agencies. This procedure will continue.

#### 4. Publishing the bookkeeping results

The information obtained from bookkeeping farms is customarily published. The data on return, costs and financial results are given. There is also information on the distribution of property, on labour input and money flow. The results are given for the whole country and by region. For more than ten years now separate information has been given for farms specializing in a given

production line. As specialization will continue to increase, this system should be further advanced. Special analyses and calculations made on the basis of the bookkeeping information can be published together with the other bookkeeping results.

Continuous change occurs in agriculture from year to year. A number of factors fluctuate substantially by year. Therefore, there are grounds for presenting information for longer periods.

Apart from the annual publication mentioned above, the material given to the bookkeeping farms and the advisory organizations must be improved. Today, each farm gets a comparison form which compares the farm's results with those of similar farms in the same region. This has proved a useful system, but it must be developed further if it is to meet the farmer's needs more effectively than before. The principal idea is that the farmer should not be given too many figures or data that is difficult to understand. The bookkeeping farms also get the annual publication dealing with the results of all bookkeeping farms.

Faster communications are a problem. The farmer would like to have his information as soon as possible. i.e. early in the year for his tax return. He also needs the results of the previous year early in spring for making the summer's cultivation plan. It is necessary to increase collaboration between the farmer, the local advisors and the Institute so that the farmer can be given advance information on the previous year's results during the spring months.

The local advisory organizations and authorities expect to get the bookkeeping results at an early stage. Today the data covering the whole country and various areas are obtained a year after the end of the fiscal year. If the farmers sent in their information early in spring, advance information for the whole country and its regions could perhaps be given 2 or 3 months earlier than today. Advance calculations are already being made for part of the material. In the near future we shall see that the advance information can be used in an increasing number of cases before the final information is completed.

Bookkeeping used to be compared to normal statistics, and in some countries it is the statistical authorities that take care of it. Bookkeeping on agricultural profitability has always been and still is closely linked with agricultural economic research. In many respects it is in fact only normal economic research.

In 1962 Finland transferred agricultural profitability research to the Agricultural Economic Research Institute. Profitability bookkeeping in agriculture will be developed as a sector of agricultural economic research. Research and analysis is more and more lined with actual bookkeeping and data production.

Bożena Gulbicka

## I. A HISTORICAL OUTLINE OF THE DEVELOPMENT OF AGRICULTURAL BOOKKEEPING IN POLAND

Agricultural bookkeeping of private peasant farms has already in Poland a 55 year old tradition. The first bookkeeping notes were registered July 1 1926 in 450 peasant farms. The next year bookkeeping was performed already by 1,000 farms. The initiator of agricultural bookkeeping in peasant farms was Professor Franciszek BUJAK - head of the Department of Economics of Small Farms in the State Scientific Institute for Farming / Państwowy Instytut Naukowy Gospodarstwa Wiejskiego w Puławach - PINGW / in Puławy.

One of the most important goals which were placed before agricultural bookkeeping was to supply the information necessary for the analysis of the production and economic situation of small farms. The economics and organization of peasant farms in Poland were for a long time a subject of interest of agricultural societies, various public institutions connected with agriculture, as well as agricultural universities. Their target was recognition of various types of peasant farms in different parts of the country, assessment of the production effects and as result of this the elaboration of programs of improvement of organization and management of farms which would permit better productivity and rationality.

In the history of agricultural bookkeeping in Poland - taking into consideration the historical conditions and the scope of collected information - one may distinguish three

periods in its development:

- the prewar period - from the beginning of agricultural bookkeeping in Poland until the start of World War Two;
- the period under Nazi occupation;
- the period since the end of World War Two until today.

a/ Agricultural Bookkeeping before World War Two

Agricultural Bookkeeping before World War Two was based on the cooperation of the Department of Economics of Small Farms in the State Scientific Institute for Farming / PINGW / in Puławy with farmers' organizations which in the beginning organized a network of farmers doing bookkeeping in the field. At a later period the Department organized its own bookkeeping offices in the field. The number of farms keeping these records before the war was not big and changed from year to year depending on the financial possibilities of the PINGW institute. The number of books accepted for analysis in this period ranged from 450 / 1926/27 year / to 938 in the 1928/29 year.

The farms selected were typically agricultural, no smaller than 2 hectares and no bigger than 50 hectares of area, located throughout the country.

During the first years agricultural bookkeeping was performed using the report method. Basis daily notes the farmer would prepare a weekly report concerning the cash turnover, the turnover in agricultural products and livestock and a record of labor. This was done on special forms in two copies. One of these remained for the farmer, the second was sent to the field bookkeeping office. Beside these reports

general stock of the farm was taken and an overall description prepared. In practice this system was rather expensive and troublesome, difficult for analysis as result of the too numerous reports, delaying the obtaining of outputs. The reports were frequently incorrectly filled out despite the supervision and assistance of inspectors.

At this period in countries of Western Europe a system of single entry bookkeeping was used according to the method of Professor E. LAUR of Switzerland, based on a special accounting book. This method was in 1931 adapted to Polish conditions by J. CURZYTEK, Eng., and with small modifications was employed until the present time.

The prewar bookkeeping book was included entries such as:

- 1/ the stock account divided into farm and household,
- 2/ cash turnover / divided into revenues and outlays /,
- 3/ credit turnover with separate accounts for debtors and creditors,
- 4/ product turnover - grain and grain products, potatoes, sugar beet, hay, concentrate feeds, fruits and vegetables, milk together with quality control and eggs,
- 5/ turnover of livestock,
- 6/ a record of the farmer's own labor, hired labor, permanent and occasional,
- 7/ a record of the days of feeding of the family, of guests and of hired workers,
- 8/ tables of results achieved by the farm / closing tables /.

The prewar agricultural bookkeeping had as its main target research of the rentability of farms and profitability of their production. The research results were published in

a publishing series titled " Research of the Rentability of Peasant Farms " / in Polish /. Just before World War Two figures were published in the form of individual results of farms performing agricultural bookkeeping. These publications included a broad statistical material presenting the rentability of farms, the development of agricultural production and the standard of living of farmer families. The results of research in this period have shown a deteriorating economic situation of peasant farms. For example the agricultural income per one farm in the whole 1930/31 - 1937/38 period did not exceed 50% of the analogical income in the year 1928/29. Especially difficult was the situation in the years 1931/32 - 1934/35, the period of the Depression, when the agricultural income dropped below 35% of that in the year 1928/29. Dramatically - by as much as 1/2 to 1/3 - dropped also the consumption in this period.

The relationship of prices of products sold and purchased were very unfavorable for the countryside, especially in the period of the Great Depression. The countryside was becoming more and more poor, going into growing debt. The incomes obtained did not suffice to cover the requirements of even the dramatically lowered consumption and debt payments. For instance in 1930/31 the total income could cover only 57% of consumption. In 1931/32 this index was 67% and in 1934/35 already 84%. In the last two years before World War Two the income level improved slightly and with very austere consumption peasant farms have achieved a slight surplus of incomes over outlays: in 1936/37 this was 14% and in 1937/38 9%.

b/ Agricultural Bookkeeping Under Nazi Occupation

During World War Two agricultural bookkeeping was conducted illegally. A small number of farmers kept illegal records, noting facts. There were in the year 1939/40 44 such farmers, originating from the group of the most dedicated prewar activists, by the end of the war due to repressions by the occupants there were only 11 of them left.

c/ Agricultural Bookkeeping in the Polish People's Republic

Immediately after the ending of the war the Department of Economics of Small Farms in the State Scientific Institute for Farming / PINGW / in Puławy started to organize again the bookkeeping network. On January 1, 1950 the Institute of Agricultural Economics was called to life which took over the organization of agricultural bookkeeping in Poland from the PINGW institute. In the first years after the war / i.e. 1945-50 / agricultural bookkeeping was done by some few hundred peasant farms / about 500 /. In this number in later years fluctuations were noted; from 1,412 in 1950, to 1,016 in the 1958/59 year, to 1,747 in the 1973/74 year, thus showing a general growth trend. During the recent years this number is approximately 1,700, changing slightly from year to year.

The number of farms conducting agricultural bookkeeping constitutes only 0.6 promille of the total number of farms in Poland. Financial and staff constraints of the Institute of Agricultural Economics do not permit an increase of the number of farms engaged. Also the finding of a greater number

of farmers interested in this task, since it involves voluntary non-remunerated and troublesome noting the bookkeeping books of all activities and operations in the farm and in the household, encounters difficulties. Volunteers for doing agricultural bookkeeping are in general enlightened farmers which understand the importance of economic calculations in farm management. This has without doubt an influence on the economic results obtained by farms conducting agricultural bookkeeping. These results are significantly better than the average for the total farm population.

In the year 1951/52 for the first time farms were divided into area groups: small area, average area medium, average area big, large area medium, large area big. In different parts of the country farms included in the same area group may differ in area size. For example in the south east region farms included in the small area group did not exceed 3 hectares of total area, while in the north east region the figure was 6 hectares. In the year 1955/56 a uniform system was introduced for the whole country dividing the farm population into 5 area groups, these being: up to 3 hectares, 3 to 7 hectares, 7 to 10 hectares, 10 to 14 hectares and 14 hectares and more. In the year 1960/61 the next change in farm grouping by area was introduced. The 10 to 14 hectares group was changed to 10 to 15 hectares, while the 14 and more hectares was changed to 15 and more hectares. This classification is maintained until today. Since 1974/75 grouping of farms according to 8 macro-regions was employed. Before, farms were grouped in classification into 11 agricultural regions, which were determined basis the agricultural conditions, taking into account historical and economic factors, and in the years

1968/69 - 1973/74 into 17 administrative w o j e w ó d z t w o units.

The population of farms conducting agricultural bookkeeping is too small, especially in the group below 3 hectares, thus the data obtained cannot be mechanically transferred to average farms in the country. The data however represents perfectly the change trends apparent in the economics of peasant farms, especially in a longer period of time.

After the war the foundation for data collection remained still the agricultural bookkeeping book which was kept by the farmer under supervision of the field inspectors. At first used were books of prewar origin. In the years 1953 and 1954 the book was significantly changed. It included only cash turnover and inventory stock. Left out was the description of the farm, the materials turnover and the final results tables, these being parts most useful for the farmer. The scientific value of thus curtailed material was not great.

In 1959 the recording of materials turnover was reinstated, in 1960 the concept of personal income / agricultural income plus incomes from outside the farm / was introduced. In 1963 the yields of the principal crops were added to the bookkeeping records.

All the changes in agricultural bookkeeping in the past - war period - except for those introduced in the years 1953 and 1954 - were aimed at permanent perfecting of the research methods and at obtaining more full information about the farm. Thus at the end of the book the section concerning the calculation of the management results was enlarged in order to permit its employment by the farmer to improve the organization of production and to achieve better production results.

In the 1970's decade the system of accounting was not changed but in the recording of events more attention was paid to the farm itself; more exact is the notation of production inputs, in this also those originating on the farm, a calculation is made of the fertilizers used in pure fertilizer content terms, more exactly are feedstuffs accounted for.

The accounts made in the book include:

- A. Cash turnover / incomes and outlays / which are a basic part of the book and are noted daily.
- B. Credit turnover and balance with various institutions / for an instance with the cooperative bank, the sugar processing plant, the dairy plant etc. / and with private persons.
- C. Turnover in livestock and products. In this part of the book evidenced are in detail incomes from the farm itself and from outside sources as well as the use of products within the farm and those leaving it, according to the respective types of animals and products.
- D. Number of days of work and of feeding - recorded separately for the respective members of the family and the total figure for the hired farm workers - by months.
- E. Draft power - that is the work done by horses and by the farmer's own tractors and by hired tractors.
- F. Inventory of the farm - here evidenced are both in quantity and in value terms the respective elements of the fixed assets and the circulating assets as well as, in the opening balance and in the closing, and the changes taking place throughout the year. The opening balance is the state at the beginning of the accounting year, i.e. January first, while the closing balance is the state at the end of the accounting year, i.e. December 31. In the inventory recorded are the assets and the

liabilities of the given farm. In the assets we distinguish constructions, water economy structures, machines and the more important tools, trees and perennial plantations, livestock, stocks, debts, shares, cash on the barrel, durables of personal use such as television sets, washing machines, motorcycles etc./. In the liabilities evidenced are credits which have been extended by state and by cooperative banks according to their respective types and private credits.

The value of buildings and constructions which are not new is estimated at the beginning of the year by the bookkeeping inspector together with the farmer, taking into consideration the local prices in the given year. The value of new buildings is calculated according to the construction costs.

The value of the water economy installations and structures is estimated according to the costs system used in planning the construction work on these installations. The value of old machines and of some more important tools is estimated by the inspectors in cooperation with the farmer basis market prices and the age and use of the tools. On the other hand the value of the fixed assets purchased in the course of the accounting year is calculated according to the purchase price. Forests and fruit trees no longer bearing fruits are valued according to the price of firewood or wood used for construction purposes, depending on its quality. Young fruit trees which have not yet borne fruits are valued according to the prices of nursery material, trees bearing fruits are valued according to rules laid by the Institute of Pomology, taking into consideration the yield level.

The value of livestock except for horses is estimated according to the price list for internal turnover. The value of work horses is estimated by the farmer.

As it is usual with estimated values these and other notations of fixed assets are very subjective and depend very much on the experience and the knowledge of the bookkeeping inspector.

G. Description of the farm includes the personal informations concerning the farmer and the members of the family, the location and origin of the farm, a detailed description of the land use and division, the size and realization of taxes, insurance outlays and payments for social security. The description of the farm includes also a detailed record of the fuels for heating use, of electric energy use and water, excluding the water from a local, free source, for the farm, for the kitchen, for living purposes and for non-farm use. Also the description of the farm includes data concerning the employment of foreign agricultural machinery or the leasing of the farmers equipment.

H. Tables for calculation of the farming results. The results are calculated in the Department of Agricultural Bookkeeping in the Institute and are earmarked for the farmers themselves to make easier for them analysis of the economic and the production situation of the farm and to draw conclusions as to the further improvement of the farm's management. The tables for calculation results of management which are intended to be used by the farmer include annual records concerning:

1. cash turnover,
2. products taken from the farm and from other sources
  - a/ for the kitchen,
  - b/ for the living needs of the farm owner and his family,
  - c/ for non-farming purposes and for gifts,
3. products obtained from hired work and as gifts,
4. the division of some farm costs,

5. the costs of running the kitchen in a year's time,
6. production of the basic agricultural products,
7. feedstuffs use,
8. creation and division of income.

In the course of keeping records by the farmers in the book the inspectors of agricultural bookkeeping perform lustrations of the books at the same time providing instruction for the farmers as to the keeping of books and of course provide professional assistance in the analysis of farming results. After the ending of the calculation year the inspector checks the order of all the records provided by the farmer, makes a preliminary closing of the accounts and sends the book to the Institute. Basis the statistics of agricultural bookkeeping books a number of balances is made and the production and economic results are calculated on special forms for this purpose. Because of the employed method of result calculations for the farms one may determine two periods:

- the time since the starting of agricultural bookkeeping until 1951,
- the period since 1952 until today.

The system of result calculation, that is the closing of the accounting book in the two periods discussed differed considerably, despite the fact that both systems in the final effect aimed at the calculation of the agricultural income. The starting point of the agricultural bookkeeping system in the first period was the calculation of the raw income. This was composed of: cash incomes from crop and livestock production and from other activities and of the value of products used for living purposes of the farmers family, of hired workers, for gifts etc. and of the increase in the stocks of inventory and products. From this income total outlays for purchase

of livestock, seed material etc. plus possible stock differences if they were negative were subtracted. As effect the so called social product / income / was obtained.

In this system there appeared a number of types of incomes, these being:

- the social income, this being the difference between the raw income and the cash and material inputs purchased,
- the income for the farm, including an estimate of the value of the farmer's labor, real estate rent and the received rents and interests,
- the income for the society, which included social benefits / taxes and insurance costs /,
- the net income, which was a total of the real estate rent and of the received rents and interests,
- the farm's total income, this being the agricultural income plus the incomes from outside the farm. This income was subject to division into consumption and accumulation / the difference of real estate values /.

In the new method of calculation of management results used in the second period under discussion the point of the matter was to have such a calculation which would be in accord with the methodics of calculation of the national income. In this system there appears also a number of types of incomes, for instance the total income, the personal income, and as remuneration for running the farm - agricultural income. The starting point in the present system of accounting closings is the total production figure, including the value of the produced crop production and animal and the value of non-agricultural production. After the subtraction of material and cash

inputs / from the farm itself and from outside it / we obtain the product added. This product added is divided into agricultural income and payments made by the farm - these are taxes and insurance costs, rents, interests, payments of hired labor. Agricultural income together with income from outside the farm totals to personal income which is divided into consumption and accumulation. A detailed description of the present method of calculation of the agricultural bookkeeping results is presented in part 3.

At the end of the accounting year basis the books' data balances are made and results calculated which are then published / see part 4 for a detailed description /. As the accounting year until 1979/80 as we have already discussed it an economic year was assumed and since 1980 a calendar year is taken.

The Institute secures that data and information coming from the respective farms are fully confidential. Each farm is coded by a number.

Zygmunt Radon

## II. ORGANIZATION OF AGRICULTURAL BOOKKEEPING IN POLAND

In the period before World War Two agricultural bookkeeping was done by: the Agricultural Chambers at the Central Society of Agricultural Circles / the Agricultural Chambers in Pomorze, in Wielkopolska and in Śląsk /, the Małopolska Agricultural Society and the independent accounting offices of the Department of Economics of Small Farms in the State Scientific Institute for Farming - PINGW in Puławy, these offices located in Lwów, Kraków and Warsaw. Supervision on the keeping of agricultural accounting records was provided by workers of the Department of Economics of Small Farms in the PINGW institute. This Department was located in Warsaw and was subject directly to the PINGW institute the seat of which was in Puławy.

After World War Two the Department of Economics of the PINGW organized its own instructor service / that is a network of field inspectors of agricultural bookkeeping / and anew a network of farmers conducting agricultural bookkeeping. In 1950 the agricultural bookkeeping system was taken over by the just started Institute of Agricultural Economics / Instytut Ekonomiki Rolnej - IER / in Warsaw. It was this institute which took over from the PINGW the Department of Economics of Small Farms.

Farms performing agricultural bookkeeping come from a purposive selection not from a random sample. In the prewar period efforts were made that each p o w i a t administrative unit be represented by at least 3 to 4 farms.

In the 1970's the number of farms performing agricultural bookkeeping was increased to about 1,700. Thus one farm performing agricultural bookkeeping represents almost 2,000 entities.

The selection of bookkeeping farms today remains purposive, based on quantitative criteria / quotas /. The point of the matter is that in each macro-region / of which there are in the whole country 8 / each farm area group should be represented by at least 10 farms for each area group. Today however with 49 w o j e w ó d z t w o administrative units it is impossible to make such a selection for each unit taking into consideration the area groups.

In the choice of bookkeeping farms the Department of Agricultural Bookkeeping aims at elimination of un-typical farms, with marginal characteristics, the goal is that farms undertaking agricultural bookkeeping represent in their economic and production profile the majority of farms in the given village or g m i n a administrative unit.

The selection of farms for keeping the books is done every year, including almost 15% of the total population of farms engaged in this. This is at the same time the annual share of farmers giving up every year the keeping of books. In some cases, such as when the farm has become very un-typical the Department of Agricultural Economics decides to drop the farm.

Inspectors of agricultural bookkeeping are obliged every year to search out a suitable number of new farms and to encourage farmers to keep accounting books - according to a plan determined by the Department. The plan of agricultural bookkeeping books is elaborated on a regional, w o j e w ó d z t w o and area group basis in the macro-regions, using the statistics from

Table 1.

PLAN of Books for 1982 according to macroregions in area groups as compared to the state for 1981.

			Number of farms researched by the Institute					
			Farms with a total area, in hectares					
Macroregion		Total	up to 3	3 - 7	7 - 10	10 - 15	15 and over	
I. Central	A	239	32	52	70	54	31	
	B	310	100	116	52	31	11	
	C	300	75	80	70	45	30	
II. North - East	A	221	20	31	48	64	58	
	B	167	37	38	29	37	26	
	C	220	25	35	40	70	50	
III. North	A	139	18	24	23	37	37	
	B	86	35	12	12	17	10	
	C	160	40	30	30	30	30	
IV. South	A	172	28	40	52	40	12	
	B	231	152	54	15	7	3	
	C	200	60	50	40	40	20	
V. South- East	A	290	53	123	64	44	6	
	B	472	251	175	33	10	3	
	C	380	140	145	55	30	10	
VI. Central- East	A	123	14	33	30	32	14	
	B	268	82	112	44	23	7	
	C	180	35	50	50	30	15	
VII. Central- West	A	238	27	52	39	70	50	
	B	219	81	49	35	34	20	
	C	240	30	60	40	60	50	
VIII. South- West	A	213	30	41	51	55	36	
	B	147	74	29	22	16	6	
	C	220	40	50	60	50	20	
-----								
P o l a n d	A	1,635	222	396	377	396	244	
	B	1,900	812	585	242	175	86	
	C	1,900	445	500	385	345	225	

Notes: A - the state for the year 1981,  
 B - numbers in proportion to Central Statistical Office GUS data, according to the results of the 1978 National General Census performed by the Central Statistical Office GUS.  
 C - the plan for the year 1982.

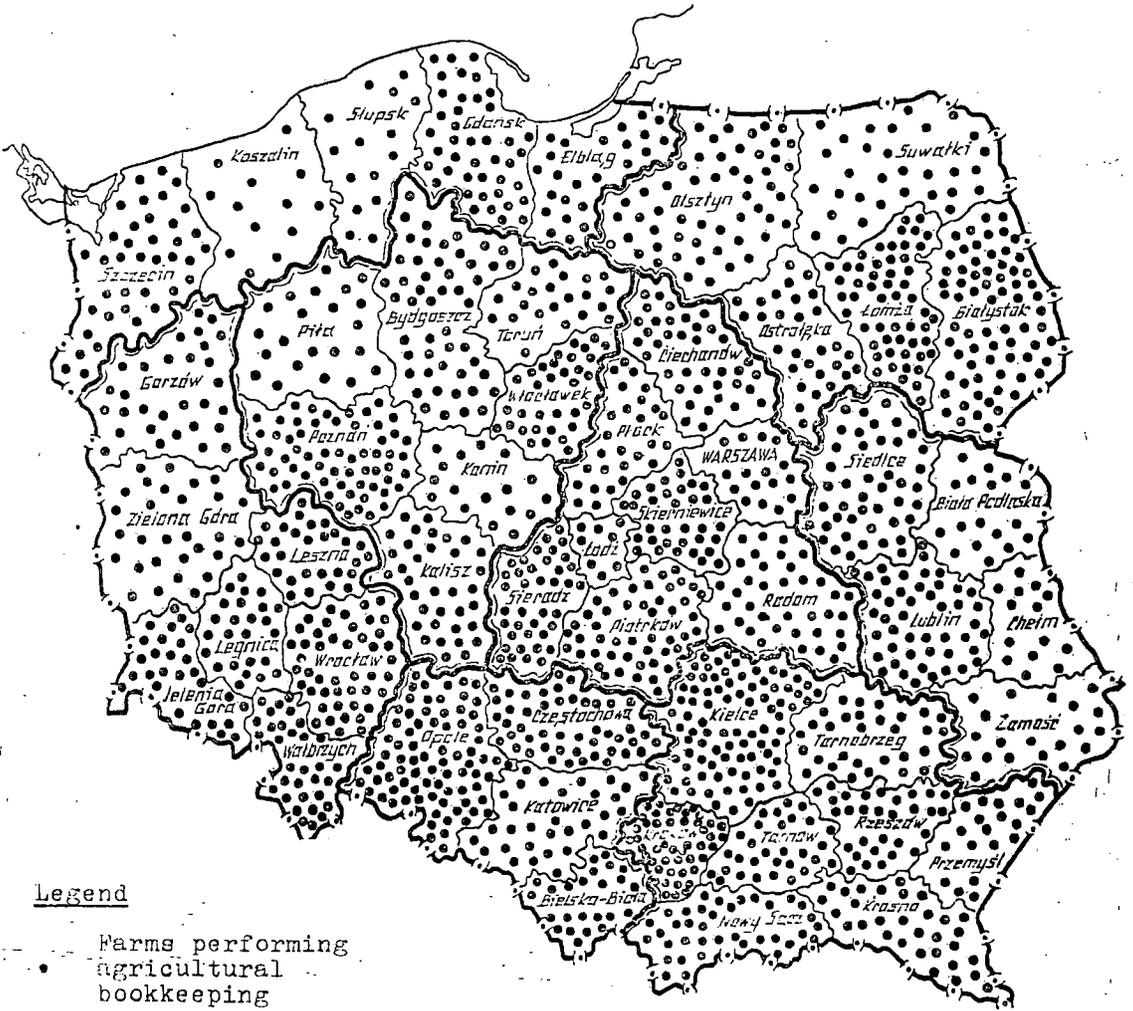
National Census Data provided from such censuses performed by the Central Statistical Office GUS. This plan is a source of information and a guideline for the inspectors of agricultural bookkeeping in which area group and in which w o j e w ó d z t w o administrative unit the search for possible farmers interested in agricultural bookkeeping. This plan however is not very strictly observed. It happens however sometimes that it is difficult to engage a farmer who runs a farm with the desired characteristics or on the other hand a farmer will protest against dropping him from the list of farms doing agricultural bookkeeping for the Institute.

In Table 1 we have presented a plan of the bookkeeping books for 1982 compared to the actual state of accounting books elaborated for 1981 and the number of farms in proportion to the Central Statistical Office mass statistics.

A presentation of the spatial spread of farms performing bookkeeping is found in cartogram 1.

Farms performing agricultural bookkeeping are found in all the 49 w o j e w ó d z t w o units, and in 725 g m i n a administrative units / these being of lower level than the former. This means that farms researched are found in 35% of the basic administrative units in the country, i.e. the g m i n a. One of the reasons for this is the fact that in the choice of farms the inspectors also take into consideration the fact that a certain concentration of farms saves time and communication costs. A rule is however observed that in no village in a given g m i n a administrative unit there should be more than 3 to 4 farmers doing agricultural bookkeeping

The Distribution of Bookkeeping Farms as of August 1, 1982.



Legend

- Farms performing agricultural bookkeeping
- wojewodztwo administrative unit borders
- macroregion dividing lines

and those that are in one village should have farms in different area groups and with different production orientations. Of course the fundamental reason for omitting in the bookkeeping representation 65% of the g m i n a units in the country is the small number of the farms doing agricultural bookkeeping.

Direct supervision on keeping the books by the farmers is realized by inspectors of agricultural bookkeeping who are field workers of the Department of Agricultural Bookkeeping of the IER institute. Presently the Department employs 43 regional inspectors and 8 district inspectors. The regional inspectors are supervised by the district inspectors, receiving instruction from them. The district inspectors are also responsible for organization of work in the district and also supervise themselves a certain number of farms doing bookkeeping. Each regional inspector usually works with 37 farms while a district inspector with 10 to 27 farms, the later number depending on the additional jobs performed by the district inspector. Almost all the inspectors have an agricultural education, in this 24 an education of university school level. During a year an inspector does 4 to 5 lustrations of the bookkeeping book checking if the cash records are correct and the notations of all operations are up to date, so once the accounting year is over the book may be closed preliminarily closed and sent to the Department for further work.

Inspectors of agricultural bookkeeping are in constant contact not only with the farmers but also with various institutions settling accounts with the farmers as effect of sales of animal products and of crops, also checking unclear, doubtful, illegible bills, bank papers etc. without which it would be impossible to execute a current lustration of the accounting book.

An inspector who may wish to check the bank account in the Food Economy Bank must have permission from the farmer concerned, while in other institutions such permissions are not required. The inspectors are also in contact with various agendas of state administration, for instance the g m i n a office, the office of the w o j e w ó d z t w o authorities and with other public and economic institutions, undertaking also various intervention actions in the interest of the farmers with which they cooperate. They also perform advisory functions for the farmers keeping books, especially during the discussion of the production and economic results of the farm, included in the book which is returned to the farmer once it has been analysed in the Institute. As a rule they have no contacts with the agricultural extension services. In general the area of activity of an inspector is one w o j e w ó d z t w o unit. There are some cases however that this would be 2 or 3 w o j e w ó d z t w o units in a given macro-region.

The work of an inspector is independent and very responsible. He must be a very well mannered, tactfull, understanding and sensible person. It is at the same time a very burdensome job as always when a lot of field work is required. Taking into consideration the above there are not too many persons with the qualifications required for work on this position.

The regional inspectors meet once a month in the office of the district inspector to discuss current problems of their work. In addition to this once a year - after the analysis of the books - in the respective districts there are organized 2 or 3 day long meetings of the inspectors during which discussed are the faults and mistakes made by the inspectors.

Once a year, before the ending of the accounting year, the Department organizes a 5 day conference of all the inspectors, during which discussed are all the problems connected with the system of agricultural bookkeeping, as well as lectures and professional seminars take place. During these conferences - beside organizational matters - discussed are also methodics changes in the system of agricultural bookkeeping, the changes in the accounting book and in the accounting forms, changes in the agricultural policy etc. Later the work of bookkeeping inspectors is evaluated and their opinions and remarks concerning possible modifications of the agricultural bookkeeping system are collected. Once every few years, usually once every 5 years the Department organizes a general meeting of the farmers engaged.

The Agricultural Bookkeeping Department also is in contact with the inspectors through mailed communiques concerning current professional matters. These are prepared once a month and during the period when books are closed in the field twice a month. In addition to this the inspectors receive a special bulletin published quarterly by the Institute with information on the important events in the Institute and also receive works and publications of the Institute as well as professional publications.

The elaboration of the results of agricultural bookkeeping basis the books / that is the balances and table closings and the statistical tables - these being data comparisons according to farm groups classified by area, by w o j e w ó d z t w o units, by agricultural regions or by macro-regions / are all done by workers of the Department of Agricultural Bookkeeping of the Institute of Agricultural Economics, until 1950 by the workers of the Department of Economics of the PINGW Institute.

Every year a considerable number of persons from outside the Institute is engaged especially and only for this job. In the Department's register there is about 150 persons cooperating with the Department on a permanent basis in the elaboration of agricultural bookkeeping material. The synthetic results of agricultural bookkeeping are however elaborated only by workers of the Department.

The regional inspectors make only the so called preliminary closings. The time of these closings is 3 to 3.5 months since the end of the accounting year.

A bottleneck in the course of elaboration of the agricultural bookkeeping material and in the preparation of the publication of the results of the farms doing bookkeeping is the making of balances and table closings.

To remedy this the Department has started in three macro-regions the so called balancing centers which are subject directly to the district inspectors. These centers work along the same rules as the balances and statistics workshop of the Department in Warsaw. In the future it is foreseen that such balancing centers will operate in all the macro-regions. The purpose of this is to shorten the time of elaboration of material from bookkeeping.

The elaborated and checked data from agricultural bookkeeping is next introduced into the computer system / tapes /. The calculation of the final results of the farms doing agricultural bookkeeping necessary for the publication of the results is done by computer since 1972/73. So far the computer has calculated only weighed averages for the whole country and in the area groups, averages for the macro-regions and has printed the results. The scope of work performed by the computer may be

significantly increased which we shall discuss later.

During the recent years the Department of Agricultural Bookkeeping has considered the possibility of introducing a report system of agricultural bookkeeping, using computer techniques. This would permit to accelerate the obtaining of data presenting the results of agricultural bookkeeping and the statistics for research of seasonal phenomena in the farms. This would also increase without doubt the usefulness of book-keeping data for the requirements of day to day agricultural policy. Two experiments performed to test this system, using a Polish ZAM-41 computer and using an IBM system have yielded positive results even though many technical and organizational problems remain. For these reasons studies on the feasibility and introduction of the system of report accounting have been suspended.

The agricultural bookkeeping of private farms has been from the very beginning and still is today completely financed by the Ministry of Agriculture. Farmers pay nothing for keeping the books, on the contrary they receive a symbolic financial remuneration.

Teresa Pokrzywa

### III. METHODS OF DETERMINATION OF THE ECONOMIC RESULTS OF THE PRIVATE FARMS IN POLAND

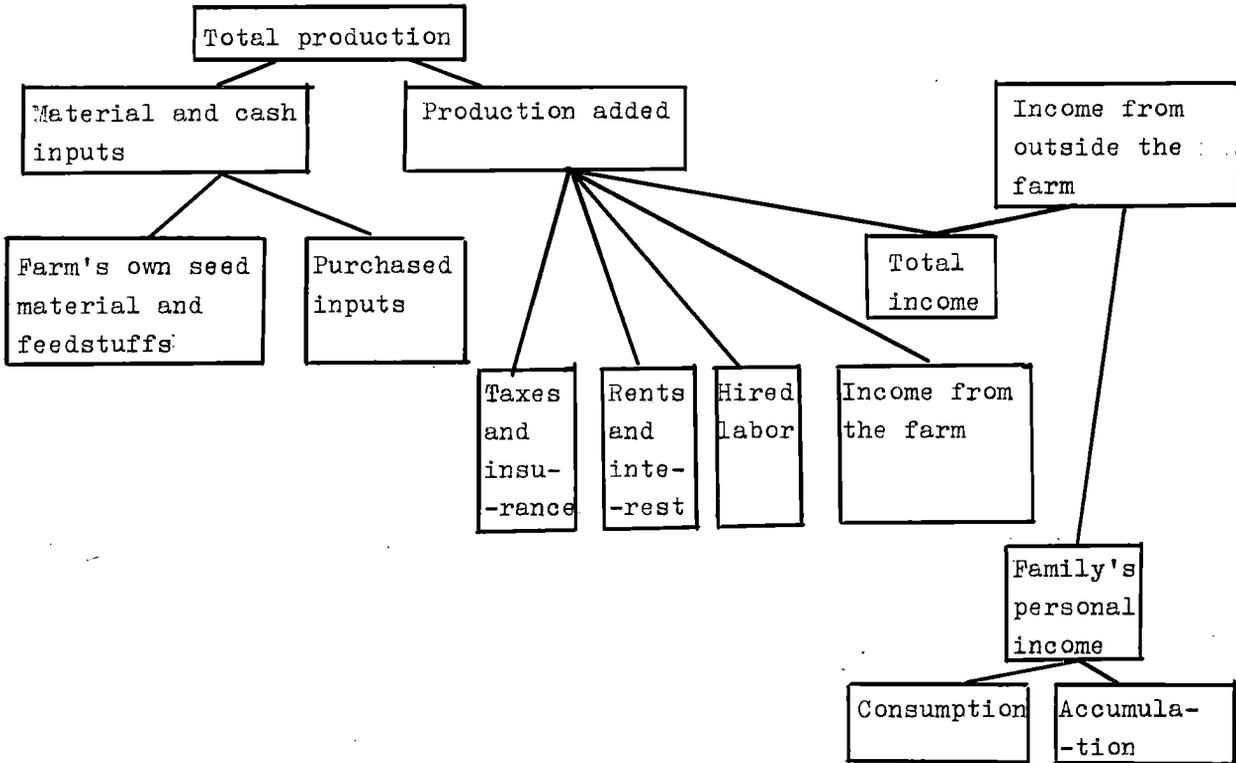
In the Polish agricultural economics we find several production and economic categories. To the most important belong: total production, final production, market production, production added, inputs, agricultural income and others. These categories will be explained in the course of discussion of the method of calculation of the income in the bookkeeping farms.

In the years 1952-1955 in the Institute of Agricultural Economics a synthetic approach has been elaborated for the results of agricultural bookkeeping in which the basic categories of economics and production have been used characteristic for the private farms in the present economic and social system. The principal change of the method was due to the introduction of such fundamental categories as: total production, production added, agricultural income and personal income. In the next years the Institute has introduced certain other small changes, especially as regards the division of the production added and thus was finally shaped the present method of calculation of the agricultural income, which has been recognized as the fundamental economic index describing the farming effects in private farms.

This method used by the Institute of Agricultural Economics to calculate the incomes of the single farms performing agricultural bookkeeping is presented below.

Proceeding according to the presented scheme one may determine all of the fundamental economic categories required for the calculation of the total income, the agricultural and the personal

Scheme of closing of agricultural bookkeeping book



income. How adequately these categories are calculated depends first of all on the correct valuation of the respective elements of the production and economic categories. This valuation is very important since a large part of the agricultural production never takes the form of a commodity, never enters the commodity - cash circulation and has no set price. We will return to this matter later on.

The base of calculations aiming at determining the income produced in a peasant farm is the total production.

The total production of a farm includes the total crop production of a given year as well as animal production, in this

also the growth of the reproduction livestock, agricultural processing and the products which are the subject of internal supply in the form of turnover between the respective sectors of farm production, i.e. the crop sector, animal and processing. It includes also the difference between the finished crop production at the beginning and at the end of the period discussed.

In agricultural bookkeeping it was assumed that the total production includes the value of crop production and of husbandry together with inputs originating from the farm itself, such as feedstuffs, seed material and hatching eggs but without the value of green fodders, silaged and straw and manure. The value of these products is calculated on separate sheets so it is possible to include them in further analysis. They are not however included as a rule in the total production which is the foundation for calculation of the income created in the farm. In this production however is included the value of non-agricultural products such as products from the farm's forest, peat, stone etc. The value of these products in an average farm is usually negligible. On the other hand the value of green fodder, silages, straw and manure is not included in the total production because it is accounted for in the value of animal products. The point is to avoid a double counting of these positions in the total production.

Thus the total production of the farm is the value, in money terms of all the products produced on the farm in a given accounting year.

The physical volume of the production of the respective products are calculated basis the recorded turnover of the products. So, the farmer defines the size of production and checks this figure through records of its circulation in the farm.

In order to correctly evaluate the respective products which constitute the total production of the farm as well as the inputs engaged it is necessary to assume the correct prices. The results of agricultural bookkeeping are calculated in current prices. The prices for market production are available and recorded currently in the accounting book. These may be, depending on the market destination: production contract prices, prices offered by socialized purchasing institutions for non-contract production, free market prices.

The production of the farm is disposed into: internal use /production or consumption/or the increasing of stocks and for sale. The determination of the value of the market production part does not encounter significant difficulties. The problem appears when we try to evaluate correctly the value of products not entering the market but produced on the farm and participating only in the internal turnover. For this purpose a price list of commodities in the internal turnover has been established which is updated every year, including over 300 positions. When setting the prices of products in the internal turnover the IER institute uses statistics from numerous central institutions but the fundamental source of data is the Central Statistical Office.

In the evaluation of the internal use products it would be the best to take into consideration the farm's own costs of obtaining these products. Unfortunately the records done in the books so far do not permit a calculation of the farm's costs of production of the respective products.

The value of production of each agricultural article is calculated basis a balance the elements of which are calculated using different prices. This means that the value of production

of the respective products is calculated as a total of the values of all positions of the product use, these evaluated according to different prices. And so, for the market production part the prices used are sales prices, for the internal use / i.e. stocks, consumption, feeds, sowings and gifts / the prices are those of the internal use price list. The total of so calculated values of the respective products yields the value of the farm's total production.

The material and cash inputs taken into consideration in agricultural accounting include:

- 1/ seeds and seed potatoes either produced on the farm or purchased, mineral fertilizer and purchased manure, pesticides and other protection chemicals. Manure produced on the farm is not included in the inputs.
- 2/ the farm's own input of feedstuffs and feedstuffs purchased, insemination in livestock breeding, hatching eggs produced on the farm and purchased, straw purchased, while straw and green fodders produced on the farm are not included in the inputs, and other breeding costs,
- 3/ repairs and conservation of buildings and water economy installations and agricultural machinery and tools,
- 4/ amortization of fixed assets such as buildings, water economy installations, agricultural machinery and tools.

The amortization of livestock and trees and perennial plantations is not taken into consideration. It has been recognized that the increment of the basic stock / the basic stock is included in the livestock in the fixed assets, while the rotating stock to the circulating assets is assigned / and the increment of the value of the trees and perennial plantations in the period of the biological growth of these assets positions

is equal to the drop of the value of the respective positions in the period of their economic deterioration. Both the basic stock and the trees and the perennial plantations have in their composition old and young units. Thus in most cases singled out and all the more when considered on a mass scale the values transferred and those of the growth tend to be equal.

The rates of amortization of dwelling buildings are assumed from 1 to 3 per cent per year, the respective rates for farm buildings from 1 to 5 per cent, depending on the quality of the construction materials used and the degree of use.

The annual rate of amortization for installations of the farm's water economy is 2 to 3 per cent of their initial value, while for machines this figure is between 3 and 10 per cent depending on the type and quality of these machines.

5/ general costs of keeping the farm such as fuel, light, electricity, machine fuels, grain milling, extra hire of horses, machines outside the farm, mechanized transport etc. Some of these positions, for instance fuel, light, electricity etc. appear not only on the farm but in the household as well, which means that a part of the fuel, light or electricity used is of input character, while a part is an element of consumption. In the inputs we consider of course only the part used for production.

6/ losses in livestock, that is the value of fallen animals which have appeared at the beginning of the year in the " opening balance " or were of purchase origin. If these losses were not accounted for it would not be possible to close the balance. Not taken into account are however the losses suffered in the current breeding operations in the given year.

In this bookkeeping system not included in the material and

cash inputs is the labor remuneration of the hired workers and of the family members as well. Among the inputs are also not included taxes, insurance costs and other payments borne by the farm since they are an element of division of the production added, not inputs for production.

The production added of the farm is this part of the total production which remains after subtracting from the total production the inputs of materials and cash borne for its production. The production added thus constitutes the whole labor provided by the farmer, the members of his family, the hired workers and other persons working in the given farm during the year. It is then the total of value added in a year in the farm discussed.

The presently employed system of peasant farm agricultural bookkeeping does not permit the calculation of the product added for the respective products, since the material inputs used for the production of the respective articles are not recorded. Only a general calculation for the whole production is possible. Thus the production added is only a result category / i.e. total production minus material and cash inputs /.

The final production means the value of only this part of products which are produced on the farm which from the point of view of the production processes in the farm are in their final form and may be earmarked for sale or used for consumption purposes by the owner of the farm and his family, or they increase the stocks or the value of the livestock.

The farm's final production is calculated through subtracting from the value of the total production the value of the material inputs of internal, farm origin.

When the final production is decreased by the value of the inputs originating from outside the farm / purchased /

we obtain the product added. Thus the latter category may be calculated in two ways; directly - through subtracting from the global production the complete material and cash inputs, or indirectly, by determining in a sense " by the way " the final production and by dividing the inputs into those originating outside the farm and those coming from the farm itself.

The production added is the basic part of the income of the private farm. It is not however the only, sole source of income. Depending on the type of farm, its economic and social situation other sources of income play a more or less important role.

Wage earning outside the farm is a characteristic phenomena in farms with a small total area in which there frequently appears a surplus of labor, searching employment outside the farm and outside farming. The total income obtained by peasant farms beside the production added on the farm we call the income from outside the farm.

The principal sources of income from outside the farm are: wages earned in industrial plants both by the farmer and by the members of the family living in the same household, wages earned by artisan work in the farmer's own workshop, wages earned from hiring out as labor or from hiring out horses, as well as income from leasing or hiring out machines and other production inputs, social benefits for the handicapped, insurance payments from insurance companies because of personal loss of health and others.

The total income from the farm is in our method determined by adding the value of the production added and that of incomes from outside the farm. The concept of the total income of the farm is not very frequently used. In agricultural bookkeeping

we use it principally for the reason that basis the relation of the respective elements of this income and its absolute size one may in general determine the social and economic / type of profession / of the farm analysed. For instance if the incomes from outside the farm are bigger than the value of production added - then the farm is included in the category of the so called " wage earning " farms. This concerns mainly farms of small area, up to three hectares.

The division and employment of income in the private farm give in the most general sense a synthetic picture of the economic results presented in money terms.

The production added of the farm is from the point of view of the total social product and the national income a part of this product not yet subject to social division. It is then a part of the national income before division, while the incomes from outside the farm are an element of the already divided national income. Thus one should not perform a division of the total income in a peasant farm without setting aside the division of the production added. In any other case the income transferred to the state budget / for instance land tax, farm insurance / would burden both the production added and the incomes originating from outside the farm. This would not be correct from the theoretical point of view since these payments are a part of the product for the society, produced on the farm and transferred in this form to the state. They are thus a part of the production added in the farm and not of the total income. Incomes from outside the farm are not subject to taxes connected with the peasant farm since they have been taxed previously in the place of their creation.

The product added in the private farm is not completely at the disposal of the farmer and his family. A definite part of the production is taken over by the state in the form of taxes, insurance, rents and other payments within the framework of redistribution of the incomes of farmers. The remaining part of the product added less the remuneration of the hired workers constitutes the agricultural income.

The income of the peasant farmer is thus this part of the production added which is at his disposal after making all the payments to the state / taxes, insurance etc. / and other payments to social institutions and economic enterprises, as well as the remuneration of the hired workers employed in the farm. Then, this is the annual remuneration of the work of the farmer and his family.

Numerous scientists active in agricultural economics believe that the agricultural income is used for expanded reproduction in the production entity and for fulfilment of the living requirements of the farm family; it is divided into two parts, that accumulated and that consumed. They also believe that the personal income is this part of the income produced by the family active in the farm and outside it which is earmarked solely for the fulfilment of the personal needs. Thus it is composed of the part of the agricultural income which is left after the covering of the farm accumulation requirements and from the incomes obtained from activities outside the farm.

In the agricultural bookkeeping system used in the Institute of Agricultural Economics we employ a slightly different concept of these categories. The formerly defined agricultural income plus incomes from outside the farm is known as the personal income which in turn is divided into consumption and

accumulation . We believe that is in accordance in reality as the farmer families do not have two separate budgets in which they would account for incomes obtained from the farm and from activities outside it differently, and in addition the peasant family makes decisions concerning the division into accumulation and for consumption of the whole income obtained, regardless of the source of its origin. There is only a reservation that by joining these two sources of incomes and by dividing their total, not only the agricultural income, into consumption and accumulation we no longer know how the achieved agricultural income influences accumulation and thus the character of the reproduction processes.

The division of the personal income in the peasant farm takes place in a situation of competition of the needs of the farm as a workshop on one hand and those of the working family on the other. Of course it is the decision and competence of the farmer to determine the relation of the personal income earmarked for accumulation and earmarked for consumption.

The consumption fund distinguished from the personal income is composed of two parts, that is the so called natural consumption / in kind /, i.e. consumption of products originating from the farm itself, and of consumption of goods and services purchased outside the farm. The consumption in kind has been considered in the value of the total production, thus also in all the elements of the incomes, in the production added, in the total income, in the agricultural income and in the personal.

One should also remark that a part of the income is transferred as gifts not only to private persons but also to institutions, for example to the Church. In the division of the personal income for the consumption fund and for the accumula-

-tion fund the gifts are accounted for in the consumption fund.

The size of accumulation is calculated as the difference of the values of the respective assets positions at the end and the beginning of the year period used in bookkeeping. As regards livestock / both the basic stock as well as the circulating / and crop stocks taken in the calculation are the differences in the inventory estimates. The respective parts of the accumulation total are calculated in the following manner:

- land accumulation, calculated as the difference in the value of the land in the beginning and at the end of the year is not taken into consideration. Nevertheless in individual cases when we observe purchase of land, we treat the part of income spent on this as accumulation, though we do not record this fact in the form of an increment of the fixed assets in money form. The approach is similar in a case when there appears sale of land.

- accumulation in buildings, water economy installations and other fixed assets. During the year we decrease their value by the amortization rate. Current repairs and conservation are, as we have already earlier explained, accounted for in the material inputs and do not increase the value of buildings and water economy installations. The value of the latter is increased by the full value of the implemented investments. Thus the value of buildings and water economy installations at the end of the year is equal to their beginning of the year value plus the value of investment less the value of amortization rates. Accumulation in the fixed assets is calculated in the same manner. The difference depends principally on the varied amortization rate, which is considerably higher. In addition the value of the fixed assets at the end of the year may be decreased also by the value of sale of some machine during the accounting year.

- accumulation in livestock. This is calculated as the difference between the final value of the livestock and the beginning value without subtracting amortization,
- accumulation in the tree stock and in the perennial plantations which is calculated as a difference of their states without taking into consideration amortization,
- accumulation in the remaining assets and liabilities which is calculated as a difference in their states. Only as regards stocks there may appear a need to calculate the difference in inventory estimates.

As an illustration of how do shape the respective production and economic categories in an average farm and in the farms in the different area groups we present the table below showing statistics describing the creation and the division of income. This data concerns the year 1979/80.

The Creation and Division of Income, in Thousand Zloty, per 1 Farm.

	<u>Farms with a total area, in hectares</u>					15 and over 15
	Total	up to 3	3-7	7-10	10-15	
<u>Creation of income</u>						
<u>Total production</u>	263.6	117.5	233.3	346.3	478.5	633.1
<u>agricultural</u>	263.5	117.4	233.2	346.1	478.3	632.8
crop	121.0	54.4	106.9	163.7	210.8	294.1
livestock	142.5	63.0	126.3	182.4	267.5	338.7
nonagricultural	0.1	0.1	0.1	0.2	0.2	0.3
<u>Cash and material inputs</u>	133.4	58.5	115.7	174.4	247.3	333.7
in this: coming from the farm	72.0	30.7	65.5	95.6	129.5	168.2
Seed material and seed potatoes	9.2	3.5	7.8	12.5	17.2	25.0
in this: coming from the farm	5.0	1.9	4.3	7.1	9.3	12.0
Mineral fertilizer	7.4	2.7	5.9	10.2	14.1	22.7
Plant protection chemicals	0.8	0.3	0.7	1.0	1.4	2.2
Feedstuffs	87.7	37.6	78.3	114.6	164.3	205.1
in this: coming from the farm	66.9	28.8	61.1	88.3	120.1	156.2
Various breeding costs	1.8	0.8	1.7	2.2	3.0	4.2
Repairs and conservation	4.2	1.6	3.3	6.0	8.2	12.9
General farm management costs	11.0	6.6	8.4	13.2	19.1	32.1
Amortization of fixed assets	10.5	5.3	8.8	13.8	18.5	27.1
Losses in livestock	0.8	0.1	0.8	0.9	1.5	2.4
<u>Production added</u>	130.2	59.0	117.6	171.9	231.2	299.4
<u>Income from outside the farm</u>	32.1	46.3	29.2	23.0	21.0	18.6
from work	20.1	29.4	20.0	14.7	9.6	5.1
from hiring machines	0.7	0.2	0.4	1.3	1.2	1.6
other	11.3	16.7	8.8	7.0	10.2	11.9
<u>Total income</u>	162.3	105.3	146.8	194.9	252.2	318.0
<u>Division of the production added</u>						
Taxes	4.9	1.8	4.1	6.9	9.3	13.9
Retirement payments	1.7	0.8	1.6	2.2	2.8	3.7
Insurance costs	3.5	1.7	3.2	4.4	6.0	7.9
Other payments to state budget	0.6	0.2	0.5	0.7	1.2	1.9
Rents for land leased and interest	0.9	0.3	0.8	0.9	2.0	2.4
Remuneration for hired workers	2.1	0.5	1.4	2.6	4.8	9.4
<u>Agricultural income</u>	116.5	53.7	106.0	154.2	205.1	260.2
<u>Division of personal income</u>						
<u>Personal income</u>	148.6	100.0	135.2	177.2	226.1	278.8
Total consumption	112.1	86.6	104.6	127.0	153.8	182.0
in this gifts, dowries	12.2	8.9	11.2	13.0	18.0	23.0
Accumulation	36.5	13.4	30.6	50.2	72.3	96.8

Josef St. Zegar

#### IV. THE USE OF THE RESULTS OF AGRICULTURAL BOOKKEEPING IN POLAND

The scope of agricultural bookkeeping in private farms includes a rather broad area of economic phenomena and operations which take place in the farm. Notes made in the agricultural bookkeeping books include a characteristic of the production potential of the farms and of other economic conditions, of the production process, the reproduction process / i.e. the renewal and expansion of production assets / and of consumption.

The scope of the records presents broad possibilities for the using of agricultural bookkeeping data for various purposes. Without doubt these possibilities are in a large degree connected with the stage of processing of the original data / that is the records kept in the bookkeeping book / in the Department of Agricultural Bookkeeping in the Institute of Agricultural Economics and with the storing on magnetic tapes of the computer. On the average in each book we find about 15 thousand entries. These are later aggregated / according to subject criteria and according to time criteria / and then processed into data describing the farm. Each farm is described by about 1.1 thousand statistical figures, which are introduced into the computer memory. Out of this data today about 800 are processed further by computer and used in publications prepared by the Institute.

The use of agricultural bookkeeping data depends also on how these statistics are made available to the public. Presently the basic publications of material published by

the Agricultural Bookkeeping Department are:

- " Results of Agricultural Bookkeeping of Private Farms ", published annually in about 400 copies <sup>1/</sup>. This publication appears about a year after the book has been closed at the farmer's. It is composed of four parts on a total of 250 pages.

Part one of this publication contains a general characteristic of the farm population which performs agricultural bookkeeping, a short description of the methods used and some methodological and methodics assumptions, as well as a comparative analysis of some selected topics / the population composition, productivity, yields etc. /, as regards the farms doing bookkeeping and the total population of farms in the country - the latter according to Central Statistical Office GUS data.

Part two includes 30 comparative tables describing the shaping of selected data in the farms doing agricultural bookkeeping during the last 11 years. These concern production assets, inputs, production and disposal of agricultural products, of cash incomes, consumption and turnover of the more important agricultural products. These tables describe the changes concerning numerous economic phenomena in time, calculated per each one farm conducting agricultural bookkeeping - in a part of the tables also taking into consideration the area groups and also calculated per one hectare of agricultural land. In the Institute five area groups have been determined / up to 3 hectares, 3 to 7, 7 to 10, 10 to 15 and 15 and more hectares /. The shaping of these phenomena when presented in money values is biased by price changes. For this reason some tables include in addition quantity data and relative indexes describing the composition of the phenomena researched.

Part three includes 39 tables in which described are the populations of farms performing agricultural bookkeeping in the scale of the whole country - according to area groups and in the eight economic macroregions <sup>2/</sup>, this without division into farm area groups. The data in these tables relate to the previous year and concern the farming processes and consumption.

Part four includes 280 tables in which characterized are the populations doing agricultural bookkeeping in the respective macroregions taking into consideration the farm area groups.

- " Abbreviated Results of Agricultural Bookkeeping of Private Farms ", published since 1972/73 in 150 to 200 copies, on about 40 pages.

The purpose of this publication is to make available more rapidly the most important economic and production results for the past calculation year, obtained basis a sample of about 80% of the farms doing agricultural bookkeeping for which the books have been analysed first. The point of the matter is to deliver information on the economic occurrences to the farmers no later than 6 to 7 months after the end of the calculation period.

This publication is composed of two parts: a descriptive part and the tables.

The descriptive part includes a general evaluation of the research material and of the farming results in the calculation year, a comparative analysis of the group of farms doing agricultural bookkeeping and the general, national farm population / according to statistics provided by the Central Statistical Office GUS / and an estimate of yields basis a special poll among farmers performing agricultural bookkeeping.

The tables part includes tables of synthetic results, indexes of farming operations for the whole country and in area groups for the last ten years / for instance as concerns the area, inputs, production, incomes, consumption and accumulation, as well as production and sales of the basic agricultural products during the last 17 years - total per farm and calculated per one hectare of agricultural land /. In the next tables / 36 tables / presented are data for the last calculation year in the farms researched, an average for the whole country and according to farm area groups and by macro-regions / - this all both calculated per one farm as well as per one hectare. This scope of data concerns both the area and the use of agricultural lands, the value of production inputs and assets, the livestock numbers, yields, production and sales of agricultural articles, incomes, accumulation, consumption, liabilities and cash turnover in general.

- "Individual Results of Agricultural Bookkeeping in Peasant Farms ". This publication is in fact composed of framed table computer printouts, describing using about 800 statistics each of the researched farms.

There is for each macroregion a separately framed set of table printouts, the farms being grouped according to administrative regions and according to area groups. These tables of individual results of agricultural bookkeeping are available to persons interested in the Agricultural Bookkeeping Department and the Institute library. Such printouts may also be ordered by persons or institutions interested, especially those engaged in research, either for single farms or some aggregated groups in the Computer Department of the Institute. This form of presentation of the bookkeeping data was started in 1972/73.

In addition to the publications discussed, the more important statistics concerning the private farms doing agricultural bookkeeping are presented every year in the Statistical Yearbook prepared by the Central Statistical Office GUS. The data there is presented in 6 tables. They describe among others the production assets, production, material inputs, creation and division of incomes, cash turnover, consumption for the whole population, taking into consideration the farm area groups.

Much of the data obtained from agricultural bookkeeping is made available to the public through publications of the Institute of Agricultural Economics staff as well as other research institutions, in professional journals, books, reports etc.

In addition to this materials obtained from agricultural bookkeeping - the original and processed - are made directly available by the Department of Agricultural Bookkeeping to persons who will enquire about this, such as students, government agencies staff etc.

The research material obtained from agricultural bookkeeping is used first of all for research purposes, by the extension services and in the decision making in the field of agricultural policy.

On the basis of agricultural bookkeeping statistics a number of research projects is under way both in the Agricultural Bookkeeping Department as well as in other Departments of the Institute and in universities and in other research centers. The Bookkeeping Department conducts a number of research subjects concerning for instance the analysis of the production and the economic situation of peasant agriculture, investment

dynamics, accumulation and consumption in peasant farms.

In the period 1950-1980 the Department of Agricultural Bookkeeping staff has published over 87 works based on material from agricultural bookkeeping. Out of this total number 31 positions have been published in the years 1950-1965, 30 works in the 1966-1974 period and 27 works in the period 1975-1980. The subject scope of these works has been very broad and has concerned for instance production and economic balances of farms, the inputs, costs, profitability, the turnover in agricultural articles, market production ratios, feedstuffs used on the farm itself, contract arrangements, purchase of production inputs, farm household budgets, credits and debt situation, the production and economic situation of different groups of farms, characteristics of model farms, analysis of adjustment phenomena in peasant farms etc.

Presently in the Agricultural Bookkeeping Department the following projects in research are under way:

- The economic and production situation of private farming in the light of the results of agricultural bookkeeping,
- The mechanism of development and operation of private farms,
- The costs of living and consumption in peasant farms doing agricultural bookkeeping basis household budgets,
- Accumulation and investment in farms doing agricultural book-keeping,
- Representation potential of the agricultural bookkeeping farm population,
- Models of private farms for the needs of agricultural extension and advisory services.

Material from agricultural bookkeeping is utilized also in other research projects conducted by the Institute, especially

those concerning the norms and standards and economic and technical indexes for peasant farming, the determination of balances proportions, the turnover in the respective products, estimation of the respective production inputs and costs of production, estimation of incomes, financial obligations, debt, financial means available, as well as self supply in kind and natural consumption. Worth note is the - though not frequently used - potential possibility of using agricultural bookkeeping data to research the reactions of farmers to the impact of agricultural policy instruments / for instance prices / as well as the possibility to employ the network of agricultural bookkeeping inspectors in rapid poll research. An example of the latter may be the rapid research of the opinions of farmers in May 1981 concerning the increased prices of purchase for agricultural products which were introduced by the government in April 1981. These opinions were collected by the inspectors' network from about 2 thousand farmers in 10 days time.

Agricultural bookkeeping material is also the foundation for numerous research projects and reports done in universities and other research centers. Regrettably we have not even an approximate number of these works based on agricultural bookkeeping material. It is however very frequently that in professional publications we find agricultural bookkeeping statistics quoted. Basis this material many M.Sc., Ph.D. and other dissertations have been written. Only in the Economics of Agriculture Department of the SGGW Agricultural University in Warszawa by 1980 12 Ph.D. and over 120 M.Sc. dissertations have been written basis agricultural bookkeeping data. 3/

Agricultural bookkeeping data and the publications based on it are also used for professional training purposes and by the advisory and extension services. One should stress here the great usefulness of agricultural bookkeeping material in didactics - in the teaching of economics and organization of peasant farming - both at agricultural and economic university level schools, as well as in the high schools where required.. They are an indispensable material for showing the faults and the merits of different ways of farm organization, the mechanisms of transformation of the resources and the flowing production inputs into agricultural products, and the inside the farm links, balances etc. This purpose is fulfilled by handbooks prepared by the staff of the Department concerning the economics and organization of the private farms / three / and publications on the method problems / nine /. These publications are used in agricultural advising. For these services also used are other publications concerning for instance the rules of simplified bookkeeping and the extension and popularization of agricultural bookkeeping / twenty three such works /. Also in the advising used are the internal farm price lists for products used within the farm, prepared annually by the Department, periodical elaborations on norms and standards and technical and economic coefficients, on the analysis of model farms and others. These needs are also served by the publication results of farming which are placed after the closing of the calculation year in the bookkeeping book which is returned to the farmer doing agricultural bookkeeping. Nevertheless one should say that so far the results of agricultural bookkeeping are not enough utilized for the needs of the agricultural extension services.

The material obtained from agricultural bookkeeping is also useful, directly or indirectly by the institutions and organizations which are responsible for the creation and making of decisions in matters of agricultural policy. One should stress that this material is the source for the evaluation of the potential production possibilities of peasant farms / through comparative analysis /, for the evaluation of inputs and costs, the use and effectiveness of the various production inputs, the turnover in the respective products, incomes, etc. in the various farm groups. Undoubtedly the fact that the sample researched in agricultural bookkeeping is not a random sample / representative / limits or in some cases makes simply impossible to generalize the results of agricultural bookkeeping for the whole national farm population. One especially cannot obtain the spread of the respective characteristics which could be related to the whole population. Nevertheless, as it appears from many year comparative analysis, the population of farms doing agricultural bookkeeping represents well the dynamics of phenomena in the whole agriculture in private farming and does characterize well the respective types of farms, for instance according to area, production potential, production orientation, costs, incomes etc. and the differences among them.

Among those interested in the results of agricultural bookkeeping are many institutions and organizations. We shall name only a few here such as the State Planning Commission of the Council of Ministers, the Ministry of Agriculture and the Food Economy, the Ministry of Finances, the Central Statistical Office, the Central Union of Agricultural Trade Cooperatives " Samopomoc Chłopska ", the Food Economy Bank,

the Central Union of Agricultural Circles and Organizations and many other central and regional institutions and economic, administrative, political and social organizations.

Notes to Part " The Use of the Results of Agricultural  
Bookkeeping in Poland "

by Assistant Professor Józef St. ZEGAR .

- 1/ This publication appears systematically since 1952/53.  
Before that the results were published for selected economic years.
- 2/ Until 1969/70 the results of agricultural bookkeeping were prepared for 11 agricultural regions, then until 1973/74 for the 17 w o j e w ó d t z t w o administrative regions. Since 1974/75 the results of agricultural bookkeeping are published in a division according to 8 macroregions.
- 3/ Based on: Manetuffel Ryszard: Wykorzystanie rachunkowości gospodarstw indywidualnych IER do badań naukowych i dydaktyki / na przykładzie SGGW /. / The Use of agricultural bookkeeping of private farms in scientific research and in teaching, basis experience of the SGGW Agricultural University /.  
In: Problemy rozwoju rolnictwa polskiego w latach osiemdziesiątych. / The problems of development of Polish agriculture in the 1980's /. published by the Department of Agricultural Bookkeeping, the Agricultural Economics Institute in Warsaw, 1980, pp.91-102.

Josef St. Zegar

V. FORESEEN CHANGES IN THE SYSTEM OF AGRICULTURAL BOOKKEEPING  
IN POLAND

Presently in the Agricultural Bookkeeping Department of the Institute of Agricultural Economics in Warsaw lively discussions are under way concerning the improvement of organization of the system of agricultural bookkeeping, as well as better utilization of the statistical material from these records and the increasing use of agricultural bookkeeping data for economic practice and policy. For a number of the questions discussed the final solution is yet to be found. The implementation of many undertakings will be spread out in time depending on the organizational, staff, technical and financial possibilities of the Department and the Institute in the coming years. Thus, we will limit ourselves to a presentation of the proposed directions of change without going into details of the undertakings.

Already in 1982 the population of farmers doing agricultural bookkeeping will be increased to about 1,900, that is about 200 farms more compared to 1981. We plan to further increase in the coming years this number to about 2,200 - 2,300. This will require increasing the number of inspectors of agricultural bookkeeping to 70, thus exceeding by 19 persons the figure at the end of 1981. The increased number of farms performing agricultural bookkeeping will without any doubt improve the representation potential. Nevertheless, presently we do not foresee the creation of a random sample or a purposive - random sample with full representation characteristics.

Also under consideration is the matter of changing the form of the agricultural bookkeeping book. Thus we plan to prepare a separate inventory book which the farmer would use for five years and a separate accounting book in which there would be three distinct parts concerning the turnover in agricultural products, cash turnover for production purposes and cash turnover for consumption purposes. In addition, it is becoming necessary to elaborate a special " Input section " annex in which the farmer would note the inputs for the respective basic agricultural products. This annex would be filled in by a part of the agricultural bookkeeping population / about 300 to 400 farms /. The point of the matter is that the presently done records permit the calculation of the full costs of production for the whole farm and - approximately - those for crop production and for livestock breeding. They do not however permit to determine the inputs and the calculation of the full costs, following this also the profitability, for the respective agricultural products. Such evaluation should be possible thanks to the records in the inputs annex. We plan to perform a calculation of the per unit costs for the basic crop products, i.e. grains, potatoes, sugar beet, and for livestock products as well, these being slaughter swine and beef and milk. The input section we plan to introduce in 1983. In addition we plan to more extensively employ the possibilities of gathering information - through polls - about the rules, criteria and ways of making production decisions by farmers.

Of considerable importance is the more rapid publication of the agricultural bookkeeping results, because of this data's usefulness in decision-making at the central and at the regional

levels, as well as for organizational reasons - the publication of the data for the last calendar year in the Statistical Yearbook prepared by the Polish Central Statistical Office GUS. This means that the Department must prepare the bookkeeping results within 5 months' time after the ending of the calculation year, which since 1980 is a calendar year. For this reason it is foreseen that the number of field data collection and analysis centers will grow to 8 / presently there are 3 such centers / which will permit to engage more staff in this work and in the closing of books, and thus in the preparation of data for computer processing in a shorter time / as a large share of this work is done by personnel employed by the Department on a temporary basis only for this purpose /. Thus work connected with the elaboration of balances for each farm would now be done by computer. For each farm approximately 100 balances must be computed. This will of course increase the requirements towards and the responsibilities of the farmers and the field inspectors supervising the records in the books. In further perspective, exceeding this quinquennium we plan to introduce a report system of agricultural bookkeeping which will not only help to shorten the results publication time but also permit researching phenomena and developments in time / seasonal spread /.

As regards the publications of the Department important changes are taking place. In the publication " Results of Agricultural Bookkeeping of Private Farms " the number of tables concerning farms in the respective macro-regions will be decreased / those interested may order them in the Institute /. To replace these tables cross analysis tables will be introduced

with improved analytic and information characteristics, describing farms according to various classification criteria / area, stock of fixed assets and draft power resources, level and orientation of production, inputs, outlays, incomes etc. / with an expanded list of characteristics describing the farm.

Next, since the elaboration of the agricultural bookkeeping results will be accelerated the former " Preliminary Abbreviated Results " publication will be dropped. We will instead start in 1981 a new once a year publication under the work title " Analysis of the economic and production situation of peasant farms " prepared principally basis data from agricultural bookkeeping. This edition will describe the economic and production situation of the respective groups of peasant farms / classified according to numerous criteria / and will point to changes in time, in this also those arising from a change of the outside the farm conditions / material and economic / for management in agriculture. Used for this purpose will be a periodically corrected subset of bookkeeping farms.

In the field of assistance of the inspectors to farmers performing agricultural bookkeeping we plan - utilizing by the way Finnish experience - to elaborate a special form presenting the economic results of the respective farms compared to the average results and to the results of the group of farms in the given macro-region and to farms with comparable production assets or in a comparable line of production. This completed form would be given to each farmer instead of the individual farm results so far which do not permit the farmer to make a comparative analysis. This will concern in the first order the group of farmers working on the " Input section " for the needs of the Institute.

The Department also plans to increase the scope and availability of agricultural bookkeeping statistics material to other researchers through increasing the quantity of data introduced into the computer memory. This will permit to obtain a much greater than today number of analytical and other tables according to the needs of research.

