FARM STRUCTURE SURVEY 1999/2000

NATIONAL METHODOLOGICAL REPORT

Member State: GERMANY

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KEY WORDS

Key words: **1999 agricultural census as an "Integrated Survey":**

Legal base

After eight years, the agricultural statistics law[1] ordered an agricultural census in the Federal Republic of Germany again for May 1999. Thus the requests of the European Communities to organise a survey on the structure of agricultural holdings for the reference years 1999/2000[2] were met. This was also in line, therefore, with the recommendations of the Food and Agriculture Organisation of the United Nations (FAO) to carry out agricultural censuses worldwide approximately every ten years.

Frequency

The eight to twelve year rotation of agricultural censuses hitherto which have long been a firmly established part of the programme of tasks of the German Statistical Office is thus guaranteed. Censuses of this type took place in the Federal Republic of Germany in 1949, 1960, 1971, 1979 and 1991, for the first time too in the new *Länder*, although in a modified, standard form to cover the whole country.

Agricultural censuses mainly serve the purpose, by way of statistical stocktaking, of providing basic data for observing the medium and long-term changes in the holding and production structures as well as the ownership, working and socio-economic conditions in agriculture. With the further development of routine agricultural statistics (land use surveys, livestock censuses, labour force surveys) to a unified and harmonised system of agricultural holding and production statistics, the objective of the agricultural survey has changed. This development contributed to the introduction of the two-yearly agricultural report in 1975 (also known as a "small agricultural census"), with the aid of which it was possible to bring together the information obtained from separate surveys on land use, animal husbandry and the labour force in agriculture without additional time being spent on surveys and use it as a basic survey for structural statistics for drawing up the

[1] *Agricultural Statistics Law (Agrarstatistikgesetz-AgrStatG) in the version of the notification of 25 June 1998 (Federal Gazette I p 1635).*

[2] *Council Regulation (EEC) No 571/88 of 29 February 1988, as last amended by Council Regulation (EC) No 2467/96 of 17 December 1996*

agricultural report (the new name as from 1999: Agricultural structure survey). Because of this further development, the scope of the survey of subsequent agricultural censuses could be considerably reduced.

Considerable further savings were made as from the agricultural structure survey / agricultural census of 1999 with the introduction of an “Integrated Survey” which rationalises the agricultural statistics system and reduces the burden on those with an obligation to disclose information. Due to surveys being amalgamated, tightening up of the lists of characteristics as well as due to the transition from total to representative recording of certain characteristics, the time and effort spent on agricultural statistics surveys was reduced for approximately 500 000 agricultural and forestry holdings. Furthermore the obligation to provide information lapsed for approximately 300 000 survey units because of the raising of and standardisation of lower recording limits.

Parts of the census

The agricultural census is structured into a main survey (for all agricultural and forestry holdings) and into special surveys for wine growing, market gardening and inland water fishing.

Census dates

The main survey – as the central element of the agricultural census – was carried out in May 1999. The wine-growing survey was also carried out in 1999, in which primarily administrative data from the vineyard register were used for the first time.

The legal base for the next market gardening survey and the next inland water fishing survey is being created with the amendment of the law on agricultural statistics.

List of characteristics

In the agricultural census (main survey) in May 1999 all agricultural and forestry holdings were asked fundamental questions on the use of their land as well as on livestock, property and ownership, labour, the farm succession for the holder of a sole proprietorship, the determination of income and sales tax and the letting of accommodation to holiday or health cure guests. In a representative selection of agricultural holdings (approximately 100 000 out of a total of approx. 500 000), information about social security and previous training as well as about natural fertilisers of animal origin was also obtained. The labour force working in the agricultural holdings were indicated in a detailed classification.

Organisation concept of the "Integrated Survey"	The agricultural census in 1999 was a coordinated effort providing information for the Federal Statistical Office. The methodical preparation and processing of the *Länder* results to the Federal result, according to the usual division of work, lay with the Federal Statistical Office. The Statistical Offices of the *Länder* were responsible for the survey and for processing the data from the *Länder* result and these offices relied on the support of the municipalities. The term "Integrated Survey" stood for the new organisation concept of the simultaneous surveying of all production and structure characteristics of the holdings.
People conducting the census/survey	The survey agents were primarily voluntary workers from agriculture and administration who were specially trained for these tasks by the Statistical Offices of the *Länder*. Upon request they helped those obliged to give the information to fill in the survey forms correctly.
Obligation to provide information	There was a legal obligation to provide information for the agricultural census. Approximately ½ million farmers, or holdings, were affected by the survey, of which around 100 000 for the representative survey programme; that corresponded to a selection of approx. 20%.
Secrecy/data protection	All information from the census is subject to statistical secrecy. According to § 98 of the agricultural statistics law and § 16 of the Federal statistics law, the Statistical Offices are to forward information to the highest competent Bund and Land authorities for planning purposes but not for settling individual cases, in the form of tables with statistical results, even if table fields show only one individual case. It was guaranteed that no unauthorised person would receive the information
Preparation of the results	Due to intensive professional and organisational preparation, the conditions were such that the results of the census were rapidly available. The first results on the cultivation structure of arable land and on livestock were published as early as July 1999. By the end of 2000 most of the results were available in provisional form.

1. INTRODUCTION

1.1. Background, scope

Agricultural censuses in Germany have always been the most important and the most comprehensive sources of information for observing and assessing medium and long-term changes in the production capacities and structures of both the economic and the social conditions of agricultural and forestry holdings. The characteristics and the scope of the survey programme reflect the need for information specific to each holding arising from current policy, social, economic and organisational requirements.

The agricultural censuses complement the agricultural structure surveys that since the mid 1970s have been carried out every two years, hitherto under the name of the "agricultural report". In the census year in question, the agricultural structure surveys form the basis of, or an integral part of, the agricultural censuses and between the agricultural censuses provide up-to-date information on the changes in the structure of agriculture, albeit with a list of characteristics that is not as comprehensive.

The two-year agricultural structure surveys and the agricultural censuses that take place every 8 to 12 years are summarised under the general term of "structure surveys of agricultural and forestry holdings". The amended agricultural statistics law [3] takes the new terminology into account.

The agricultural census is subdivided into the main survey, in which all agricultural and forestry holdings are included (including market gardening and wine-growing holdings), and the surveys by area of activity (special surveys).

- market gardening survey,
- wine-growing survey,
- inland water fishing survey
- (see Overview 1).

It should be noted that all the holdings included in the market gardening survey and the wine-growing survey are also included in the agricultural census (main survey). However, separate surveys are required for these types of holding in order to describe the conditions that are specific to market gardening and wine growing.

The main survey of the agricultural census[3] was carried out at the beginning of May 1999, eight years after the first comprehensive survey in the unified Germany. In view of the increasing structural changes in the former Federal territory and the adapting to new circumstances in the new *Länder*, this survey was of particular importance, but with the comprehensive and detailed breakdown of results by region, a reliable source of data for investigating the causes of these structural changes was required for policy, research and administrative purposes.

[3] *For simplicity, hereinafter referred to in the text as the "1999 agricultural census"*

At the same time the 1999 agricultural census also covered the general census (basic survey) planned for 1999/2000 in accordance with the EC regulation on the structure of agricultural holdings referred to above. When establishing the methods for the 1999/2000 Community survey, the recommendations of the FAO[4] regarding the world agricultural censuses were also taken into consideration. Agricultural censuses are carried out worldwide at intervals of about ten years.

1.1.1. Concept of the survey / survey programme

In terms of the **concept of the survey**, the 1999 agricultural census consists of the basic and of the supplementary programme of the agricultural structure survey and it is supplemented by specific characteristics of the main survey of the agricultural census itself. Only about 100 000 holdings selected on a representative basis receive a survey form with all the characteristics to be surveyed, i.e. one holding in five.

With the other approximately 400 000 holdings, on the other hand, a number of characteristics of the supplementary programme of the agricultural structure survey are not included. For these holdings, a shortened version of the questionnaire applies in relation to the survey programme. And for these holdings by no means all the characteristics apply to each holding.

The sample holdings, for which always the survey programme of the total and representative part of the agricultural census is to be asked, were selected from the last general (total) agricultural structure survey in 1995. With the careful setting up of two additional strata in the stratification concept a method was created for classifying new holdings that had been established. While new admissions are assigned to one stratum, which are only determined after the selection or within the framework of the survey (these are then included in the overall result), to the other stratum are assigned all the new admissions that had already become known before the selection of the sample holdings which because of a lack of information could not be assigned to any of the stratum groups.

The survey programme of the 1999 agricultural census in Germany consists of a representative survey part and a general (total) survey part. Every holding has to answer the general survey part, while only about 20% of all holdings have to answer the more detailed representative part of the survey.

With the amendment of the agricultural statistics law in 1998 - above all to reduce the burden on those with an obligation to disclose - a large number of characteristics from the previous structure surveys (agricultural structure survey and agricultural census) were dropped.

The burden on forestry holdings was greatly reduced, with the supplementary programme of the agricultural structure survey being dropped completely - except for evidence of the labour force by groups of people.

[4] *Food and Agriculture Organization of the United Nations*

1.1.2. Survey units

The survey programme of the 1999 agricultural census is based on that of the agricultural structure survey. Since 1999, all the surveys and survey characteristics included in the basic and supplementary programme of the agricultural structure surveys have been organised jointly as an "Integrated Survey". It was therefore in the interests both of the structural statistics and of the production statistics to raise the lower recording limits at least to the level of the structural statistics (namely to holdings) and to harmonise, as an essential requirement, the cut-off limits which hitherto had been different in the various specialist statistics (the main survey on land use and the livestock census). The very principle of an "Integrated Survey" requires not only that the survey be carried out at one and the same time, but also that the scope of the survey be uniform. Above all, because of the higher recording limits with regard to utilised agricultural area and wooded land, many smaller holdings and units with small stocks of animals and/or a small area of utilised agricultural area that hitherto had an obligation to disclose information for the structural statistics are now completely exempted from the obligation to disclose. The lower recording limits for livestock that now apply, that are clearly above the previous cut-off limits of the livestock censuses, ensure that the loss of information with regard to animal production does not exceed acceptable limits.

According to the amended agricultural statistics law, survey units for the 1999 agricultural structure survey/agricultural census in Germany are agricultural holdings and forestry holdings.

Holdings within the meaning of the law are economic units that are managed in a uniform way and produce agricultural, forestry or fish products.

The following groups of holdings are included in the general (total) survey:

1. Holdings with an area used for agriculture of two hectares or more or with minimum animal stocks or special crops,
2. Holdings with a wooded area of at least ten hectares, (see Overview 2).

Only holdings of group 1 are included in the representative part of the survey. Also, all holdings are included in the selection population which have an area used for agriculture of 2 ha or more, but which corresponds to at least ten percent of the wooded area. They are classified in group 1.

1.2. Legal base for the 1999 agricultural census

- Council Regulation (EEC) No 571/88 of 29 February 1988 on the organisation of Community surveys on the structure of agricultural holdings, in the version of Council Regulation (EC) No 2467/96 of 17 December 1996, as last amended by Commission Decision 98/377/EC of 18 May 1998 adapting Annex I to Council Regulation (EEC) No 571/88

- Federal Statistics Law (Bundesstatistikgesetz – BStatG) of 22 January 1987 (Federal Gazette I pp 462, 565), as last amended by Article 2 of the law of 16 June 1998 (Federal Gazette I p 1300)
- Law on agricultural statistics (Agrarstatistikgesetz – AgrStatG) in the version of the notification of 25 June 1998 (Federal Gazette I p 1635)

The national legal base contains provisions on the:

- scope and areas to be included,
- frequency of the census and the reference period,
- responsibility for conducting the census,
- administrative and financial aspects,
- obligations of the persons providing information with regard to the census,
- selection, protection and obligations of the people conducting the census,
- right of access to administrative data.

The questions in the 1999 agricultural census were coordinated at the level of the European Communities and designed, among others, to meet the needs of the common agricultural policy. They also correspond to the recommendations of the United Nations regarding a world agricultural census around the year 2000. With the national agricultural statistics law, the requirements arising from Regulation (EEC) No 571/88 rev. are satisfied.

Changes to the national legal base are planned for 2002.

With the agricultural statistics law, created in 1989 and extended in its scope in 1992, Germany has what is largely a statutory legal base for this area of Federal statistics. The amendment to the law in 1998 served mainly to reduce the burden on enterprises with an obligation to disclose.

Important elements were:

- the bringing together of important surveys (main survey on land use, the survey on labour force and the livestock census) under the umbrella of an “Integrated Survey”
- the raising and harmonising of the lower recording limits in the agricultural statistics,
- the cutting out of a number of surveys,
- the tightening up of the list of characteristics of various surveys,
- in certain areas moving from general surveys to representative surveys and allowing estimates,
- the creation of a legal base for the greater use of administrative data for statistical purposes.

The purpose of amending the agricultural statistics law in 2002 is essentially to simplify and tighten up existing surveys.

1.3. Organisation of the survey on the structure of holdings

In respect of the development of the current agricultural statistics into a harmonised system of statistics on agricultural holdings and production that has been achieved in recent years, the concept of the 1999 agricultural census has been modified considerably compared with the previous survey. With the Integrated Survey, a new concept is being used for surveying production and structural characteristics at the same time.

The introduction of the agricultural report in the mid 1970s already represented a new way of using agricultural statistics that were already available.

The aim was not to set up any new separate structure surveys, but to bring together data from existing individual surveys on a holding-by-holding basis. On this basis the subsequent agricultural censuses in 1979 and 1991 were already prepared and conducted more efficiently: agricultural reporting and the main survey of the agricultural census were harmonised in such a way that they largely complemented each other in terms of their survey programmes, the distinctions between the areas being surveyed and the processing programs (building-block principle). The use of data for each holding from the production statistics did, however, require a great degree of coordination effort, particularly in the Statistical Offices of the *Länder*. This effort was mainly due to the different purposes of the agristatistical surveys. For the purposes of the structure surveys they did not extend to survey units and survey areas that had been uniformly defined; in the case of specific areas they were defined differently in terms of content. While the production statistics of the livestock census and land use were aimed at showing production capacities - including many quite small survey units - with the holding-specific records the holding was the unit being described. So for the livestock census any holder of for example just one bovine animal or one breeding pig or three other pigs was a survey unit, while for the structure survey the unit was holdings with eight bovine animals or eight pigs.

With the figures from the general December livestock census of the previous year, which were used for the agricultural report in May of the following year, the Statistical Offices of the *Länder* also had available to them at a very early stage information about the agricultural holdings. But the clear and definitive description and characterisation of the holdings could only be carried out with the main survey on land use in May of the following year (the year of the agricultural report) on the basis of the respective vegetable and animal production units (determination of the holding units). It is this very bringing together of data collected at different times, particularly the very extensive testing for plausibility, that caused and still causes to this day the Statistical Offices of the *Länder* a great deal of effort in terms of personnel and resources.

While up to 1997 the main survey on land use, the livestock census and the census on the labour force formed the basic programme for the agricultural statistics, since 1999 this still applies only for the main survey on land use and the livestock census. They are still carried out as separate statistics in the years between the agricultural structure surveys. By integrating their survey

characteristics in the supplementary programme of the agricultural structure survey, the survey on the labour force was discontinued as a separate survey.

What is new in the organisation of the 1999 agricultural census in Germany is that the surveys on the basic programme (land use and livestock) and on the supplementary programme (including the labour force) of the agricultural structure survey, supplemented by the specific characteristics of the agricultural census itself, are conducted with a common survey form. This new type of organisation of the Integrated Survey is therefore essentially a close meshing of the production and structural statistics in a uniform group of holdings. This new type of organisation has been made possible above all by the fact that at EU level the time for the December livestock census (of the year previous to the agricultural structure survey) was moved to the May of the year of the agricultural structure survey. The burden on those with an obligation to disclose was also relieved further in that the interim census of bovine animals and sheep carried out until then could be dropped in June. What was important for the introduction of the Integrated Survey was the arranging of a standard definition of the holding that had an obligation to disclose. While up until 1998 it was not just holdings but also farmers of land of together at least one hectare, which were used either fully or in part for farming or forestry, that were included in the main survey on land use, since 1999 it has generally only been holdings. In the case of the livestock census, since 1999 holders of very small stocks of animals have also been exempt from the obligation to provide information, so in future here too only holdings will be surveyed about their stocks of animals. The idea of the Integrated Survey is on the one hand to achieve a balance in agricultural surveys, and on the other is the result of endeavours to obtain as much information as possible while at the same time reducing the burden on those being surveyed.

The new way of organising the agricultural statistics already proved itself in practice in the 1991 agricultural census in the new *Länder*. At that time only holdings were taken into account.

For the agricultural census in 1999 the holdings that had an obligation to disclose were provided with the survey forms by the Statistical Offices of the *Länder*. The addressing was also carried out by the Statistical Offices of the *Länder*, using the Farm Register. Nevertheless, it remained an important task for the municipalities and the census-takers (survey agents) to ensure that all the holdings were recorded. This applied in particular to newly created holdings, above all in the new *Länder*. As the agristatistical surveys - unless otherwise regulated - are conducted on the basis of holdings, for cases in which several parts of the holding are located at a distance from each other, the information given by the person with an obligation to disclose is to be given for the complete holding. If a number of holdings belong to one enterprise and it is not determined otherwise, then the enterprises report separately for each of their domestic holdings. In order to distinguish between the results by region, enterprises that are active in a number of different regions must report separately for each Land.

The 1999 agricultural census provided up-to-date structural data on agriculture and forestry and thus covered, among other things, the urgent need for figures required for policy (agricultural, social and regional policy),

administration and science purposes. In view of the far-reaching changes in holding and production structures, ownership and working conditions and the socio-economic classification of the holdings, the results of the last agricultural census in 1991 are already out-of-date for these purposes. For example, in 1991 there were about 632 100 holdings in the former Federal territory, a figure that by 1998 fell by 122 100 holdings – almost a fifth. In 1991 there were some 21 700 holdings that were successors to the former Agricultural Producer Cooperatives or were new and re-setup holdings. By 1999 there were about 30 000 holdings. In 1991, in the former Federal territory the number of employees in agriculture carrying out farm work was about 1.5 million; in 1997 there were 1.2 million. The fall in the labour force in agriculture in the new *Länder* was more dramatic. While in 1991 362 000 people were employed in agriculture, by 1997 this figure fell to 150 000. With the 1999 agricultural census - taking up the recommendations of the European Union and the United Nations - the rotation of these surveys about every ten years has been ensured.

Since the agricultural structure survey / agricultural census in 1999, all the characteristics have been surveyed at the same time (Integrated Survey). This development was to a great extent associated with the change-over to representative survey methods whereby, using the advantages of modern sampling techniques, only a selection of holdings are surveyed.

This resulted, among other things, in a considerably reduced burden on those with an obligation to disclose, substantial savings and a reduction in the time needed to process the statistics.

Nevertheless, representative surveys cannot provide the detailed results broken down by subject matter and region that are, however, essential for solving structural problems in agriculture. Therefore - as in any other area of the economy - comprehensive statistical stocktaking (total surveys) carried out at longer-term intervals remain essential in agriculture as well. The urgent need for basic data on the continuing changes in the structure of agriculture therefore persuaded the legislative body to order another agricultural census to be carried out in 1999. In agreement with international recommendations, this therefore ensures that the rotation of the agricultural censuses about every ten years is maintained.

The census was arranged such that it would not place an excessive burden on those with an obligation to disclose. Only the most important information was collected from all agricultural holdings, while with respect to certain subject areas additional questions were asked only of a selection of 20% of farmers.

The national agricultural statistics law now in force contains an obligation to provide information, but at the same time guarantees the statistical confidentiality of the data that are collected. This guarantees, therefore, that no unauthorised person obtains the information.

1.4. Use of administrative data

The reform of the EU's common agricultural policy decided in May 1992 resulted in completely new assistance measures for agriculture. While up to

this time individual aid schemes were aimed at assisting agricultural products, with the reform of the existing market support instruments the introduction of area-specific producer subsidies for vegetable and animal products became the key feature. With this fundamental intervention in direct income transfers the time and effort increased for farmers and the agricultural administration.

To implement the assistance measures the EC prescribes the setting-up of an integrated administrative procedure[5]. With the extension of EU subsidy measures within the framework of EU agricultural reform, a considerable amount of work has been created with regard to administration and control. For those with an obligation to provide information, the future requirements of national official agricultural statistics come together with the new requirements arising from the EU regulations. As a result, on the same matters the applicants often have to give the same or similar information both to the agricultural administration and also to the official statistical office. Therefore in the statistical offices at an early stage already the differences between the requirements that arise from the legal bases for agricultural statistics for official agricultural statistics, and the findings from the EC regulations on the Integrated Administration and Control System (InVeKoS-IACS) have been carefully analysed. Starting with the aim of maintaining the current system for agricultural statistics in the Federal Republic of Germany, but at the same time seeking to avoid a double burden on the farmers concerned, there arose in the first place the question of the extent to which the legal conditions exist or must be created for making InVeKoS usable for statistical purposes.

As an act of the European Communities, Council Regulation (EEC) No 3508/92[6] is binding in all its parts and is immediately applicable in all Member States. It is laid down in Article 1(3) subpara 2, point 2 of the regulation that the Member States may use for statistical purposes the data gathered under the Integrated System. Correspondingly, regarding the statistical use of the data collected, the regulation forms a legal framework that still needed to be supplemented by amending national regulations. With the 3rd statistics adjustment law of 19 December 1997[7] the agricultural statistics law was amended such that the use of existing administrative data in the area of agriculture is permitted for purposes of agricultural statistics. The information given to the agricultural authorities within the framework of administrative measures can be used for the main survey on land use and the livestock census, provided that the information is in agreement with characteristics of these statistics and refer to the same survey periods. With the amendment to the agricultural statistics law, the taking over of administrative data for the livestock census with a fixed survey period (reference date rule) was established. Agricultural administration and official agricultural statistics serve different objectives. If targets of agricultural policy

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[5] Council Regulation (EEC) No 3508/92 of 27 November 1992 introducing an integrated administration and control system for certain Community aid arrangements (OJ. EC No L 335, p 1)

[6] See Footnote 5

[7] Third law amending statistical legal provisions

(3rd Statistics Adjustment Law) (3. Statistikbereinigungsgesetz – 3. StatBerG) of 19 December 1997 (Federal Gazette I p 3158)

are changed over the course of time (e.g. modified, made more precise), the agricultural administration must adapt accordingly. This means that the administrative measures (e.g. lists of characteristics, contents of characteristics, survey units) and when they are fixed must be structured according to the requirements of agricultural policy. This requires considerable flexibility in the system. Therefore the confirmation of the proposals of the European Commission for the future agricultural policy of the Community within the framework of Agenda 2000, which are aimed essentially at a further lowering of agricultural prices and as a countermove result in further direct compensatory payments to farmers, could re-awaken the question of the use of administrative data for the official agricultural statistics.

1.5. EC survey on the structure of agricultural holdings

In order to be able to assess the position of agriculture in the Community and follow the development in the agricultural holdings, the EU prescribes regular structure surveys to be carried out by the national statistical offices. In view of the great variety of statistical offices in the Member States, the efficiency of the methods of surveying samples and the need to obtain reliable information at sensible costs, the Member States are given the choice as to the extent to which they survey the holdings in the form of an overall survey or partly on a random sample basis. The condition is that the results of the sample surveys on the respective aggregation levels necessary are reliable. Similarly, in the opinion of the EU it is necessary to carry out a census (basic survey) of all agricultural holdings at least every ten years in order to update the basic information about the holdings and the other details that are required for the stratification. The next basic survey as a general census (complete survey) of all agricultural holdings should be carried out by the Member States between 1 December 1998 and 1 March 2001[8]. It should refer to the crop year that corresponds to the harvest in 1999 or 2000. In Germany the EU requirements are met by the agricultural census in 1999. The survey programme referred to in section 1.1.1 is based on the characteristics of the EC list.

On request and on the basis of suitable documentation, within the framework of the determining of the list of characteristics for the basic survey in 1999/2000, for certain characteristics the Member States were authorised to use random sample surveys or information already available from sources other than statistical surveys (administrative data). This latter arrangement has been applicable since the 1997 EC survey on the structure of agriculture.

With the list of characteristics for the basic survey in 1999/2000, for the first time the EC laid down for each individual survey characteristic whether it be taken generally (in total) or representatively or come from sources other than statistical surveys. There is also the designation whether survey characteristics for the individual Member State do not exist (e.g. citrus/olive plantations for Germany), are non-significant (e.g. nuts as a permanent crop for Germany) or optional (e.g. tractors, cultivators, machinery and equipment

[8] *Council Regulation (EEC) No 571/88 of 29 February 1988 on the structure of agricultural holdings, as last amended by Regulation (EC) No 2467/96 of 17 December 1996 (OJ. EC No L 335, p 3)*

for Germany). The EC's list of characteristics can therefore be more extensive than that of the national survey. On completion of the agricultural census of 1999, the national data on individual holdings are sent to the Statistical Office of the European Communities (Eurostat), which in the context of the EUROFARM project is responsible for processing the final results and producing them in the form of tables.

The EUROFARM project is a system of databases that enables the evaluation of the Community surveys on the structure of agricultural holdings to be used for the purposes of the agricultural policy of the individual states and those of the common agricultural policy. The databases contain individual data that do not, however, enable holdings to be identified directly. The database is linked to a Commission data-processing centre such that access and administration is solely and only under the responsibility of Eurostat. Access to the individual data is restricted to persons who within Eurostat are familiar with the use of the regulation. Eurostat is obliged to use the individual data provided by the Member States only for statistical purposes; they may not be used for administrative purposes.

1.6. Plausibility and processing of the results

The Statistical Offices of the *Länder* generally use survey offices for collecting the data. In the municipalities the survey was carried out in accordance with regulations of the Land concerned by municipalities and administrative collectivities, usually by representative agents of the survey. These made the contact with those responsible for providing information, issued the survey forms, helped those responsible for providing information in the event of problems and questions and monitored the returns. Before the survey these agents were introduced to their tasks. The survey documents were examined for their subject matter and checked in the Statistical Offices of the Länder by appropriately trained personnel. The survey on the structure of agriculture in the EC was, for example, organised by and to a great extent also carried out by the permanent staff of the agricultural statistics office.

Staff of the survey offices of the municipalities were introduced to the survey by officials of the Statistical Offices of the *Länder*.

The work was stored in the Statistical Offices of the *Länder* with the Dialog application "AGRA" that had been specially developed by the Statistical Offices of the Bund and of the *Länder*.

The "AGRA" concept was developed independently of the existing processing, tabulation and publication programmes of the agricultural structure survey. The survey programme was unaffected with regard to the legal position and the effect on those surveyed and was only adjusted after the amendment to the agricultural statistics law.

The "AGRA project" required a fundamental reworking of all specialist defaults and complete re-programming. This ambitious project could be realised in the short time available only together with the Statistical Offices of the *Länder* and the Federal Statistical Office.

The statistics group is an amalgamation of the Statistical Offices of the *Länder* and the Federal Statistical Office for the purpose of the joint planning and

uniform organisation of statistics by means of modern electronic data processing and also for the creating of the programs needed for this.

The AGRA processing concept was created by this group in just 1½ years. The Statistical Offices of the *Länder* of *Hessen* and Thuringia programmed the tabulation and print programs. The Statistical Office of *Schleswig-Holstein* and the Federal Statistical Office produced the on-line application. The Statistical Office of the Land *Sachsen-Anhalt* took on the producing of the programs for putting in table form the results of the 1999 agricultural census. Quality assurance, namely checking the specification and testing the programs provided, is carried out by the Statistical Offices of the *Länder* of *Brandenburg* and *North Rhine-Westphalia* in the context of the further development of AGRA.

The requirements made of the AGRA processing system arise through the national agricultural statistics law as a statutory requirement on the one hand, and on the other through the expectations of a modern processing system. While the objectives of the legislative body, namely the survey characteristics, were clear, the AGRA processing system was required to show the results on time, specially aimed at the main consumers and broken down correctly in terms of content. The system was also to be transparent, easy to control and uniform across the country, as well as being extremely reliable. When producing the results the system did of course also have to be secure. In order to meet these requirements, all the survey forms had to be re-coded so that when recording the data and in the on-line application there would be no duplication of fields of characteristics. For drawing up the error-free, characterised and classified individual material there is the on-line AGRA application. With this, advance results from material that is not yet final and error-free can also be produced. To show these results, a conventional batch processing system was chosen, the programs of which are created with the statistical problem solving system (SPLV).

The Dialog application includes:

- the checking of plausibility,
- the drawing up of important benchmark figures to test the results,
- the drawing up of tables (provisional table) for preparing the provisional results

from the land use survey and in future also from the livestock census,

- the classification of the holdings,
- the calculation of the livestock units,
- the supplement with size class classifications for the subsequent tabulation,
- the determining of the projection factors and
- the issuing of the final, error-free, complete individual material.

The second important component, the tabulation of the national results, consists essentially of two parts. The first part includes the fixed, permanently recurring part of the table program. The second part consists of the variable

part of the table program, which can vary from survey to survey. The purpose of this is to enable programming effort to be reduced and to guarantee comparability between the tables from survey to survey.

Other factors taken into consideration are the area of “Preparation of the survey” with the selecting of samples and the special arrangements for converting the data files. Another important component is the preparing of the data set for delivering the individual data within the framework of the EUROFARM project to Eurostat.

1.7. Course of the work

(taking the example of the Statistical Office of the Land *Mecklenburg-Vorpommern*)

The main activities were:

- sending out the survey documents (end of March/beginning of April 1999)
- checking of receipt (May to November 1999)
- checking the numbers were complete (May to November 1999)
- control of the subject matter and visual check (May to November 1999)
- numerical check (May to November 1999)
- dealing with queries from the holdings (May to November 1999)
- sending surveys to new holdings (May to November 1999)
- reminders (May to November 1999)
- processing the holdings with the Dialog application “AGRA” (May to November 1999)
- drawing up and checking tables of results (July 1999 to October 2000)
- preparing various publications (July 1999 to September 2001)
- storing in the database (January to February 2001)

Consideration of the organisation of the work, drafting and printing of the survey forms, selecting the samples, addressing, preparing and sending out the survey forms, checking receipt and visual control of returns of the survey forms (including reminders), recording the data, checking for plausibility and drawing up the tables all took place in the period from May 1998 to about November 2000. Completion of work in the matter of publications and preparation of the data in other forms, about the end of 2002.

(For the schedule and timetable of the Statistical Offices of the Bund and of the *Länder*, see Annex 1)

1.8. Publicity campaign

In June 1998, with the participation of Eurostat, other countries of the Community and accession countries, the Federal Statistical Office held a

forum “Agricultural statistics on new paths”, at which the main characteristics of the 1999 agricultural census were presented. In the run-up to the survey, the survey was referred to in press releases and a short article in the specialist press.

The farmers were also asked for assistance in the survey by the trade.

At the “International Green Week” in January 1999 the Federal Statistical Office held a press conference with the participation of the Ministry of Agriculture and the Land Office for Agricultural Statistics of *Schleswig-Holstein*, which is responsible for all the Statistical Offices of the *Länder*, in preparation for the 1999 agricultural census and a year later at the same place with the results of the 1999 agricultural census.

1.9. The main changes in the 1990s

With the amendment of the agricultural statistics law in 1998, the structure surveys in agricultural and forestry holdings (agricultural structure survey / agricultural census) were for the first time regulated in a common section and they include the following individual surveys:

- Agricultural structure survey consisting of the
  - basic programme and the
  - supplementary programme.
- The possibility of carrying out an additional programme was dropped.
- The agricultural census itself consists of the
  - main survey,
  - wine-growing survey,
  - market gardening survey,
  - inland water fishing survey.

- The basic and supplementary programmes of the agricultural structure survey are carried out jointly.

This new form of organisation of the “Integrated Survey” is essentially the close meshing of the production and structure statistics of a common group of holdings.

- The agricultural structure survey is carried out every two years, beginning in 1999, alternately generally and representatively.

- The main survey of the agricultural census is carried out jointly with the agricultural structure survey in the first half of 1999.

- The basic programme of the agricultural structure survey consists of the survey characteristics of the
  - main survey on land use and the
  - livestock census,

    the “so-called” production statistics.

- Survey characteristics of the supplementary programme are
    - labour force (until 1997 carried out as survey in its own right),
    - ownership and tenancy conditions,
    - socio-economic conditions,
    - determination of income and sales tax,
    - return and yield from natural fertilisers of animal origin

      the "so-called" structural characteristics.
- The 1999 agricultural census consists of the
    - main survey

      (it includes the agricultural structure survey with its basic and supplementary programme and other specific characteristics of the agricultural survey itself such as farm succession, training, letting of accommodation and social insurance),
    - wine-growing survey.

- The scope of the survey of the production and structural statistics was unified (a necessity of the Integrated Survey) and the lower recording limits of the area used for agriculture and the wooded area forming the basis for an obligation to provide information were raised. At the same time, the minimum animal stocks and the minimum areas under cultivation (up to 1998 natural production units) also forming the basis for an obligation to provide information were specified.

- A new element included was that holdings that either because of the area used for agriculture or their wooded area or because of established minimum animal stocks must give all characteristics of the surveys concerned, irrespective of whether they achieve individual limits laid down in the agricultural statistics law.

- With the 3rd statistics adjustment law of 19 December 1997, the use of administrative data in the area of agriculture was already permitted for purposes of agricultural statistics. As a result, the information given to the agricultural authorities for the main survey on land use in the context of administrative measures could be used, provided that the information corresponds to the characteristics of these statistics and refer to the same survey periods.

- With the amendment of the agricultural statistics law in 1998, for the first time it was also possible to use selected characteristics of the data available with the agricultural associations for updating the farm register in the Statistical Offices of the *Länder* necessary for preparing and organising the agricultural statistics.

2. CHARACTERISTICS

2.1. Survey characteristics

- General (total) survey programme in the agricultural holdings

Land use is investigated on the basis of a programme of questions on the use of the total area by main uses and types of crop grown, on cultivation on arable land, on set-aside and on the growing of catch crops. It includes all the main categories of land that are important for assessing the farming of the land. A new element recorded was the “type of farming”. It serves to distinguish between holdings that are “conventional” and those that use organic methods. With the aid of this additional question, characteristics that are important in economic terms can be assessed separately for both groups of holdings.

The information on livestock on the holdings corresponds to that of the general (total) livestock census. Livestock in combination with land use is used to classify the holding and to calculate the standard income of the holding. In the matter of the legal status of the holder of the farm, information is obtained about individuals, group holdings or legal persons, which enable the holdings to be classified by legal form.

Compared with the last agricultural census in 1991 the evidence for holdings whose holders are natural persons has changed. Holdings that are run in the legal form of sole proprietorship (sole holder) and those that are group holdings are now shown separately.

In the agricultural census of 1999, for the first time the labour force of non-sample survey holdings is no longer recorded according to the concept of individual persons (evidence of each employee permanently employed on the holding). Instead of this, the number of workers is now shown according to two groups of persons, a) family labour and b) permanent and non-permanent workers including seasonal workers (without family workers). Both groups of persons are then classified in four working time groups according to the hours or days worked in the year.

Only these survey characteristics referred to above are recorded in the 1999 agricultural census also in forestry holdings.

With regard to the socio-economic conditions on the holdings, characteristics are recorded which in combination with the information about the labour force of the holdings enable conclusions to be made about their character as being the major occupation or a subsidiary occupation (in the case of sole proprietorships). This socio-economic typing of the holdings has changed compared with the agricultural census in 1991. In 1991 the official statistics made a distinction between the holdings, whose holders were legal persons, as being main or part-time holdings only according to the size of the holding’s income. Now the actual time spent and the relationship between the income from the holding and the total income of the holder of the holding and/or his spouse are used. A full-time holding is now defined as a holding that – irrespective of the income of the couple owning the holding – has 1.5 manpower units (MPU) (full-time) or more. But full-time holdings also

include farms that are run with fewer than 1.5 manpower units (0.75 MPU to less than 1.5 MPU), and in which the proportion of the income of the holder and/or his spouse to their total income is at least 50%.

The questions on the ownership and tenancy conditions on the area used for agriculture reflect the extent to which the area of the holding used for agriculture is farmed as land that is owned or leased or is farmed as area used for agriculture at no cost for farming and what rent is to be paid to the lessor for the agricultural land that is leased. Also, the utilised agricultural area that is leased and given at no cost for farming is to be shown.

Matters of accounting were organised in a new way with the amendment to the agricultural statistics law and aimed at the determination of income for tax purposes.

The special questions in the 1999 agricultural census about the further management of the holding (farm succession) and the letting of accommodation to holiday or health cure guests ("Farm holidays") were also asked in the agricultural census of 1991. With letting, the number of beds is to be given by type of accommodation (room, holiday apartment, holiday house). The succession to the holding is asked about from holders of farms with the legal form of sole proprietorship who are 45 years old or more.

- Representative survey programme in the agricultural holdings

In addition to the contents of the general (total) survey, further survey characteristics are enquired about in the sample holdings. An exception to this is the recording of the workers by groups of persons; instead, in the case of the random sample holdings, the details on the workers relating to individual persons are surveyed which in the agricultural census in 1999, unlike in 1991, are only to be shown representatively.

In the questions about workers, the details that are important for the assessment about the extent of the employment in the areas of the holding (for all workers), housework of the holder of the holding (for himself and for the spouse) and any activity outside the holding (only for family workers living on the holding and occupied with tasks on the holding) are surveyed. Unlike the 1991 agricultural census (and the agricultural structure surveys carried out up to and including 1997), from 1999 in holdings with the legal form of sole proprietorship, only those persons are shown who are employed in the holding. The picture of the whole family of the sole holder (family members living on the holding) shown up to that point by the official agricultural statistics was discontinued. The main consideration now is those engaged in work on the holding. Family members who only live on the holding, but do not work there, are no longer recorded. As a result, the evidence of workers in the holdings with the legal form of sole proprietorship has largely been made the same as that of the legal forms of partnership and legal persons. For evidence of workers that are not permanently employed on the holding (workers with an employment relationship that is limited in time, agreed as being less than three months, or without a contract of employment), from 1999 it is provided for that the report period will no longer be the month of April - as for the other workers - , but the twelve months before the survey month of May. This is necessary because the previous report period of four weeks was not enough

to be able to project satisfactorily the amount of work done over the year by these seasonal workers, nor the number of such workers. The increasing specialisation and the growth in size of holdings with a simultaneous decline in the number of those permanently employed suggests that the importance of seasonal workers will continue to increase in future. The questions regarding the sources of employment and income outside the holding in holdings with the legal form of sole proprietorship extend to the income of the holder of the holding, his spouse and family members working on the holding by type or origin (income from other employment, old-age pension, capital income, etc.). In the matter of social insurance for these holdings, questions are provided for on membership/payment contributions to the agricultural retirement fund and on statutory and voluntary pension insurance.

The questions on training (successfully completed agricultural and non-agricultural training) extend to the holder of the holding, his spouse and, if used as well, also to the farm manager on holdings with the legal form of sole proprietorship and also to the managers on holdings with other legal forms. The type and the final examinations of the vocational training are surveyed.

The matter of natural fertilisers of animal origin is of particular interest from the environmental point of view.

2.2. Questionnaire

Only paper questionnaires were used (see Annex 2 Survey sheets “S” for sample survey holdings and instructions). In addition to the survey forms, the survey documents included an explanatory sheet, a letter and a sheet with legal references and information for people with a duty to disclose information, which under national law must be sent to everyone having a duty to disclose information. On request, additional information forms were made available for certain characteristics.

Two versions of the survey forms were used. First an extended questionnaire for the sample holdings and also the survey form for the overwhelming majority of holdings (not sample holdings).

For example, in the Land Statistical Office for statistics and data processing in Bavaria, paper questionnaires were used, but particularly in *Bavaria* – as far as possible – the data were taken from InVeKoS (IACS).

3. SURVEY METHOD

3.1. Preparations for conducting the survey

3.1.1. Selection basis

To form the basic population, in the office for data processing and statistics of the Land *North Rhine-Westphalia*, for example, the holdings from the last general agricultural structure survey from the year 1995 were used. This initial mass was reduced by holdings that no longer existed in subsequent surveys. To this were added units that after 1995 were registered as new admissions.

Duplication could virtually be ruled out, as new admissions were checked carefully when they were included in the Farm Register. – For a long time already there has been the problem of a certain under-estimation of holdings. With their current size, many towns and districts are no longer able to identify farms that are new or have come into being again. But this problem has largely been solved since 2000, as now the addresses from the agricultural associations are used to complete the register.

3.1.2. General description of the survey plan

The 1999 EC agricultural structure survey consisted of a combination of a general (total) and sample survey. Because of the different basic population compared with 1995, a new sample was taken. Even if the selection basis remains unchanged, every year the Statistical Offices of the *Länder* take a new sample in order to relieve the burden on the farmers. Pre-selection, or not taking into consideration holdings that were part of the sample in the previous year, is not carried out by the sample program that is uniform for the country.

3.1.3. Pilot survey

The survey characteristics of the agricultural census in 1999 had already been enquired about overwhelmingly in the structure surveys of previous years. A pilot survey was therefore not necessary.

3.2. Sample surveys, obtaining data and inputting data

Sample plan

3.2.1. Bases

Beginning in 1975, every two years (report year) a survey is carried out on the structure in agricultural and forestry holdings; up to and including 1997 under the name of the “agricultural report”, and from 1999 as the “agricultural structure survey”. In the representative part of this survey about 100 000 agricultural holdings are surveyed. The sample is designed as a multi-purpose random sample, as up to 1997 it served as the basis for various surveys, namely the

- agricultural report (EC agricultural structure survey),
- statistics on the labour force in agriculture,
- main survey on land use.

To improve the quality of the results, in 1985 the principle of “controlled sample selection” was also introduced (see point 2.1 – Selection).

With the agricultural statistics law of 1998 new terminology was introduced for the “structure surveys in agricultural and forestry holdings”. Under this description, the agricultural structure surveys that take place every two years and the agricultural censuses carried out at intervals of eight to twelve years are combined. The basic programme of the agricultural structure survey (land use, livestock census) and the supplementary programme (labour force, additional structural characteristics) are recorded in part totally and in part representatively. The survey of the basic and supplementary programme of

the structure surveys was set from what had been different survey times to a common survey time (3 May of the year of the survey year). With the simultaneous raising of the lower recording limits from 1 ha of land used for farming to 2 ha, as well as from 1 ha to 10 ha of wooded area and adapting the minimum size of animal stocks and special crops which are the basis for an obligation to provide information, the conditions were created for the introduction of the "Integrated Survey". The way the "Integrated Survey" is organised makes it possible for all production and structural characteristics of the holdings to be surveyed at the same time. The selection method used hitherto for the sample survey was retained in its main features, only the precision of livestock characteristics was improved in that the corresponding strata were supplemented.

3.2.2. Selection plan

Since the introduction of the agricultural report in 1975, the stratum limits of the representative agricultural structure survey have been fixed on the basis of the results of the total census part of the previous period (selection basis).

The selection intervals of the strata delineated according to subject and method principles have been obtained separately by Land on the basis of the subject and regional distribution *as well as* from the mean values and variances calculated from the details of each farm of the general (total) census part.

For the 1999 agricultural structure survey/agricultural census, the individual material on land use and livestock from the general (total) part of the 1995 agricultural report was used.

- **Selection**

The sample survey is designed as a single-stage (stratified) selection method. In ascending order of the 20 strata, each holding *is assigned to the first stratum* the criteria of which apply to that holding, irrespective of whether it also satisfies criteria of other strata.

The sample holdings are selected by an automatic standard selection program in the Statistical Offices of the *Länder*, in which up until 1983 systematic selection and random selection were combined together.

Since 1985 a new method has been used for the random selection of the sample holdings, the method of "Controlled selection". The aim is to mitigate any break in the series of results that may be due to chance that can arise with a new selection of holdings. In each Land, five samples independent of each other are taken, and for each of these samples a "shadow processing" of selected important survey characteristics (control characteristics) is carried out, which are then compared with the corresponding total values of the selection basis. The sample is selected which represents the fewest deviations between the sum of the absolute values of the relative deviations and the estimated values of the sample per Land and the corresponding total values of the control characteristics. In order for this to be truly representative, before selection, the holdings are assigned per stratum in accordance with regional organisational characteristics (districts, municipalities).

- **Stratification**

In terms of region, since 1975 this stratification has been carried out by Land. In terms of content, there is no organisation system for the processing tables that could immediately serve as a stratification system. Therefore the stratification characteristics and the stratification limits were determined solely by sampling methods. Here, the stratification by size of the area used for agriculture serves as a starting point for a grouping of the farms before the selection which experience has shown to be stable and effective. Also, to increase the accuracy of the results, additional strata have been created. They include the relatively small number of holdings that stand out in particular from the mass of agricultural holdings because of the single nature of their production or because of the special importance of their production. This approach guaranteed that the holdings are recorded with sufficient reliability, and on the other hand it ensures that the holdings within the size classes of the area used for agriculture form largely homogenous groups in terms of survey characteristics.

The strata existing since 1975 were adjusted in the years 1985 and 1999. This took into account structural developments and improved the accuracy of survey characteristics (livestock characteristics).

In 1985 the following strata were created compared with previous years:

Stratum 1	▪ Holdings with a large stock of poultry
Stratum 2	▪ Holdings with a large stock of breeding sows or fattening pigs
Stratum 3	▪ Holdings with 200 ha of area used for agriculture or more or 10 ha of vineyards or more
Stratum 4	▪ Holdings with hops and tobacco
Stratum 5 and 6	▪ Holdings with vineyards (by size of the vineyards)
Stratum 7 to 11	▪ Holdings with market gardening (by size of the area used for agriculture)
Stratum 12 to 20	▪ Other holdings (by size of the area used for agriculture).

This achieved the following:

- the total recording of large holdings was reduced to the minimum required by the sample method,
- the stratum limits for large livestock holdings were adjusted to the specific conditions of the *Länder*,
- the characteristics “broilers” and “laying hens” were included in the definition of the stratum,
- the size breakdown of the area used for agriculture for the special crops tobacco and hops was dispensed with,
- the stratum limits for the area used for agriculture were in general set as being uniform across the country.

In the 1999 agricultural structure survey/agricultural census, in particular selection stratum 2 (100 or more breeding sows or 1 000 or more fattening pigs) was changed compared with the surveys in previous years on the structure of agricultural holdings in order to improve the accuracy of the livestock characteristics. In this stratum, in the *Länder* of the former Federal territory dairy cows, bovine animals and sheep were added, while in the new *Länder* sheep as well as nurse cows and suckler cows were included.

The two strata set up in 1975 as a precaution for new admissions – determined separately for new admissions or within the framework of the survey and new admissions that were known before the selection but could not be classified in any of the existing strata – are as before part of the selection plan.

■ **Selection intervals**

The division of the planned scope of the sample survey of a maximum of 100 000 agricultural holdings among the Bundesländer was organised in such a way that both the results of the Bundesländer overall as well as those for "survey districts" are sufficiently comparable in terms of their reliability. The selection intervals for the different strata per Land in terms of subject matter are determined according to the principle of comparable accuracy with an exponent of 0.25. This division method is based on the standard of a grading of the relative standard errors of a standard characteristic as a function of the total values of this characteristic in the result positions. The division among the Bundesländer is orientated towards the different stocking numbers.

After the calculation of the stratum stocking numbers and the scatter parameters (the standard income of the holding was used for this), as the division method first the method of attenuated proportionality to the number of holdings per stratum and also the Neyman-Tschuprow optimum method with the standard income of the holding as the division characteristic was used. The combination with the approach based on the number of holdings was introduced in order to improve above all the accuracy of the results for the evidence of the number of holdings, particularly in tables broken down by area used for agriculture. The final selection sets were then determined by calculating a weighted average from the results of both methods (here the solution obtained from the optimum method was weighted three times as much as that of the root-proportional approach). Very high selection sets (90% or more, also sometimes more than 80% in the new *Länder*) were raised to 100%.

For forestry holdings, for each Land the smallest selection set occurring in the strata 1-20 was used.

3.3. Projection

The results are formed by the free projection of the details determined for the individual sample survey holdings. They are given in 1 000 to one decimal place. Differences due to rounding were not compensated for in the results because the figures are rounded up or rounded down without regard to the final total.

3.4. Accuracy

The results obtained with a sample survey on a population of units (e.g. holdings) are generally affected by random errors. These arise because not all units of the population being investigated are questioned and the sample elements that are selected randomly only very rarely represent “in miniature” the situation in the population. In order for the quality of the results to be evaluated, results obtained from samples therefore need to be assessed statistically by a calculation of errors.

The calculation of errors is based on the standard error as a quantitative measure for the size of the random error (which in the concrete individual case is unknown). Theoretically, of 1 000 sample results obtained in the same way, on average, the random error of

- 683 results (about 2/3 of the results) is smaller than the simple standard error,
- 955 results is smaller than twice the standard error,
- 997 results is smaller than three times the standard error.

As the standard error of the estimated value of a statistical characteristic has this dimension and is dependent on the measurement unit, for comparative purposes it is necessary and appropriate to relativise the standard error, namely to give it a percent of the value to be estimated. Therefore random error estimates for the individual table fields are carried out by means of an error calculation integrated in the processing (calculation of the simple relative standard error).

3.5. Drawing the sample

The sample survey holdings were selected purely at random by mathematical and statistical principles. The samples were drawn automatically with the aid of the sample selection program that is standard across the country.

3.6. Data acquisition methods

The data were obtained in very different ways in the Statistical Offices of the former Federal territory and in those of the new *Länder*.

For example, in the former Federal territory personal questioning by survey agents was the main method. In the new *Länder*, questioning by post was the main method. In the case of the Statistical Office of the Land of Saxony, for example, the survey forms were sent directly to those with an obligation to disclose. The municipalities, or survey agents, were therefore not involved. The data were only obtained by telephone in the event of discrepancies where it was necessary to consult with those with an obligation to disclose. But there were also cases in which those with an obligation to disclose provided by telephone information that was missing. There were only few cases in which the data were provided by FAX. In the 1999 agricultural census, in *Saxony* no data were registered via the internet.

There is no exact information about the time taken to fill in the survey forms.

The Statistical Offices of the *Länder* estimate that it needed about half an hour to an hour to fill in the form for the sample survey holdings and about 20 to 40 minutes for the form for the non-sample survey holdings. For the larger agricultural holdings in the new *Länder* or on special holdings with a large labour force, up to two hours can be needed to fill in the forms.

3.7. Activities in the field

- **Planning of the activities in the field (short description)**

The Statistical Offices of the *Länder* are responsible for these tasks. In *Rhineland-Palatinate*, for example, so-called survey offices were set up in the local authorities. These are units that are separate from normal administrative tasks and deal exclusively with statistical matters. Data protection should be ensured better with this separation in terms of organisation. The tasks of the survey offices consisted mainly of:

- appointing survey agents, introducing them to the work and remaining in contact with these people
- issuing the survey forms
- checking that all the forms were completed
- checking the information in the survey forms for completeness and if necessary completing the survey forms
- dealing with queries.

The survey offices were provided with the survey documents by the Statistical Office of the Land. The survey offices themselves were responsible for carrying out the survey in the area for which they are responsible. They were informed by the Statistical Office of the Land only of the date by which the survey forms had to be returned.

- **Introduction to the work and experience of the interviewers**

The staff of the survey offices were introduced to their tasks by officials of the Statistical Office of the Land by way of a training session. They were also give detailed instructions in writing. The survey offices then either carried out the survey themselves or used survey agents.

Where agents (interviewers) were used, these were also introduced to their tasks beforehand. The interviewers are generally experienced people who have already conducted surveys on many occasions and normally are familiar with the conditions in agriculture.

- **Data input methods**

The data were entered into the processing and plausibility program (AGRA) either directly on-line or after the data had been recorded automatically (OCR reading).

3.8. Data control

The data were checked for completeness and coherence with the aid of an extensive test program standard throughout the country that contains about 600 different plausibility checks. In the case of incorrect additions and data that logically were contradictory, the data had to be adjusted (must-errors).

Data or figures that deviated greatly from the norm were also checked, but only adjusted if the data had been recorded incorrectly or an entry had been made that was clearly incorrect (can-error).

A PC system was used to check that all the survey forms had been completed. These were processed with the processing and plausibility program AGRA, which is programmed and administered centrally by the Statistical Office of the *Land Schleswig-Holstein* for the whole of the country. The on-line AGRA system contains a great many plausibility checks. For details, please refer to the manual.

A numerical check of the survey forms was carried out by the staff of the department before the data were recorded. This included, for example, checking the completeness and truthfulness of the information, checking the totals, agreement between the individual sections and a comparison with the previous survey. This also included checking whether all the information was clear and legible and whether the information had been entered in the correct lines and columns.

3.9. Non response

A survey form is only considered to be a 'non response' if it was not returned until after processing had been completed or was not returned at all.

In the Statistical Office of the Land *Mecklenburg-Vorpommern*, by the due date (14 May 1999) completed survey forms had been received from some 60 percent of those with an obligation to disclose. For the holdings that were overdue, a very time-consuming reminder procedure was carried out in cooperation with the department of the Statistical Office of the Land that is responsible for legal matters and with the aid of a PC program (final notice, reminder, hearing, notice of a fine).

This process requires a great deal of time and does not permit the holdings concerned to be surveyed by telephone.

- a questionnaire that was only partly completed;

  Information that was missing was completed by questioning the person concerned by telephone or in writing or could be taken from the previous survey.

- a questionnaire that was completed either in full or in part by staff on the spot;

  Survey agents only filled in the survey form according to the details provided by the person obliged to disclose if he wanted this. It was not permitted for agents or officials of the survey offices to answer the survey

form themselves. Such cases were regarded as being people refusing to provide information.

- a questionnaire that was not returned until after the expiry of the time set for processing;

  Because of the long processing period, virtually all the questionnaires that were received could be taken into consideration. The survey forms that were then still missing were extrapolated on the basis of the details available from previous surveys or administrative information.

- a questionnaire that was not returned at all:

  In the case of surveys that were not returned, first a reminder was sent and then the legal steps were instigated to force the person concerned to supply the information. In *Mecklenburg-Vorpommern*, in total fewer than 0.5% failed to respond. Frequent reasons for refusing to provide information were: holdings had to give the same information to government bodies repeatedly, e.g. InVeKoS (IACS). Surveys from official statistics departments on the same survey characteristics are increasingly being refused.

3.10. Processing and analysing the data

3.10.1. Methods for dealing with items that are missing or display discrepancies

First of all it should be pointed out that the willingness of farmers to provide information has become noticeably less since the agricultural reform in 1992. The reason for their annoyance has been in particular their falling revenues and economic difficulties in the form of conditions imposed under legislation on the protection of nature and the environment. If the information is not refused completely, questionnaires that are filled in incompletely or incorrectly can hardly be punished.

It is mainly the structure characteristics of the holding surveys that are affected by the poor willingness of the farmers to provide information, which are regarded by the farmers as being delicate to a greater or lesser extent. What is particularly clear, because it is quite apparent, are the problems with the characteristics of land under tenancy. In the agricultural structure surveys since 1995 this attitude of the farmers has led to there being less land held under tenancy being entered in the survey forms than in the previous survey. As a result of the continuing structural changes it is unlikely however that there has been a reduction in the land that is held under tenancy. In order to adjust the data that are at variance, in the case of holdings in pairs, tenancy data from previous surveys have been used and then discussions have been held with the farmers. It was generally confirmed that the information recorded was less than it should have been or had not been recorded at all, but the fault was attributed to the municipalities or the survey agents.

With the agricultural structure surveys before 1999, in conversations with farmers it became clear that they did not want the municipalities to see their information about land held under tenancy. As most municipalities own land

that they lease to farmers, these farmers were afraid that their municipality would use this tenancy information for their own purposes, i.e. for tenancy negotiations. For the first time with the 1999 EC agricultural structure survey, the office for data processing and statistics of the Land *North Rhine-Westphalia*, for example, took this as a reason for providing for the possibility that the section with the characteristics about land held under tenancy could be sent by the farmers directly to the Land Office. An additional form was produced for this which contained this section again and which could be separated from the complete survey document. In general, if the information was missing or was clearly incorrect, as far as possible it was sought to obtain the information from the farmers by telephone or from previous surveys.

Officials of the statistical offices completed values that were missing or inconsistent by contacting the person concerned either in writing or by telephone.

3.10.2. Analysis using data from other sources

The survey is conducted according to the concept of an Integrated Survey, i.e. surveys that used to be surveys in their own right are brought together in a single survey. The advantage is that all the information regarding the holding can be examined together in context.

On a micro level, data about the individual holdings are obtained using administrative practices of particularly high quality. Details about the administrative practices used are subject to random testing by the agricultural administration and because of the substantiality of subsidy attract serious penalties in the event of false information being given – extending as far as the complete loss of the assistance.

On a macro level, comparison with the sum data in administrative practices.

3.11. Sampling errors

(see Point 3.2)

3.12. Non-sampling errors

According to the Statistical Office of the Land *Thuringia* there were no errors in recording, as in this office the data were recorded on-line with integrated plausibility checks. There were few errors due to answers missing, as answers that were missing were taken either from InVeKoS (IACS) for this holding or from details from the previous survey.

System errors are essentially ruled out due to the way in which the EC agricultural structure survey was organised.

4. PUBLICATION AND DISSEMINATION

4.1. The information provided by the 1999 agricultural census

In view of the far-reaching and continuous changes in the structure of agriculture that have been taking place for decades, there is a particularly urgent need for up-to-date figures about the agricultural sector that cannot be completely covered by the statistical surveys that are currently being carried out. With the introduction of the two-yearly agricultural reports in 1975 it is true that the conditions were created for bringing together data about land use, livestock and the labour force in agriculture on a holding-specific basis, and as a result the statistics on the structure of agricultural holdings and their production bases were significantly improved; nevertheless, agricultural censuses remain essential as a comprehensive stocktaking carried out at longer intervals. Therefore the legislative body – in agreement with international recommendations – ordered that an agricultural census be carried out again in Germany in 1999, which in terms of content takes up from the previous agricultural censuses.

The results of the agricultural census, broken down in detail by subject matter and region, are available to everyone after they have been processed in the Statistical Offices of the *Länder* and after the results for the country have been published by the Federal Statistical Office. In the first place the results are important starting material for agripolicy decisions nationally and within the framework of the common agricultural policy of the European Union. This also meets the requirements of sectoral and regional structural policy. The results are also important for many other purposes. Important non-government users are, among others, interest groups (farmers associations, unions), cooperatives, agricultural advisory services and scientific institutes. Furthermore, from the comparative material from the agricultural census, the agricultural holdings as well can measure and check their situation against the developments in general.

The first results of the 1999 agricultural census were published, for example, in the Statistical Office of the Land *Baden-Württemberg* in the form of press releases and leaflets as from December 1999. Further publications followed in the first half of 2000. Work on publications finished in January 2001 (see Annex 3).

4.2. Agriculture as it is reflected in the official statistics

The agricultural statistics reflect the changes in the area of agriculture and forestry, their production bases, structures and results observed over time. In the system of the German agricultural statistics the current holding and production statistics complement each other in a well-balanced system that at longer-term intervals (latterly 1979 and 1991) is supplemented by agricultural censuses as stocktaking measures.

From these sources there is a great deal of information available about structural changes in the area of agriculture. According to the results of the agricultural censuses, for example, between 1979 and 1991 the number of agricultural holdings in the former Federal territory fell by 26% from about

852 400 to about 632 100. Up to and including 1999 there was a further fall to about 500 000 holdings. In the new *Länder* in 1991 there were about 21 700 holdings as successors to the former Agricultural Producer Cooperatives or as new and new set-up holdings. By 1999 the number had increased to about 30 000 holdings. In 1991 the number of people employed in agriculture in the former Federal Republic was about 2.0 million, about ½ million less than in 1979. This trend has continued - as shown by the latest figures. After this in 1999 there were only about 1.3 million people employed in agriculture. The fall in the number of people employed in agriculture in the new *Länder* was more dramatic. While in 1991 there were still 362 000 people employed in agriculture, in the few years up to 1999 this figure fell to 168 500.

As these few selected examples show, the process of restructuring in the area of agriculture continues undiminished along with considerable socio-economic changes. It remains essential therefore that a statistical stocktaking is carried out that provides results about the production conditions and the position with regard to holdings and socio-economic conditions that is up-to-date, accurate in terms of content and broken down in detail by region.

In view of this varied and wide-ranging need, official statistics have paid particular attention to processing and publishing as quickly as possible the information obtained from the agricultural census. The concept of an “Integrated Survey” and the on-line processing system ”AGRA”, which was introduced in the Statistical Offices of the *Länder* in 1997/98 and was met with a very positive response, was important in this respect. Key figures from the main survey on the 1999 agricultural census were already available on land use and livestock in July 1999 in the form of press releases from the Federal Statistical Office.

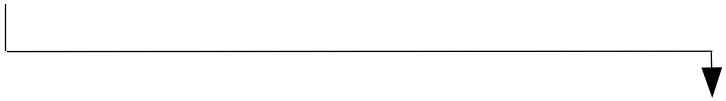
5. SUGGESTIONS FOR FURTHER PROJECTS

In view of the very strained economic situation in a large majority of agricultural holdings, it is likely that willingness to provide information for agricultural statistics will continue to decline. Consideration should therefore be given to whether delicate questions, such as that of land held under tenancy, should be dispensed with. Furthermore, many farmers no longer see why they should be questioned repeatedly about characteristics (agricultural administration and official statistics). Therefore the EC should investigate whether, for example, the list of characteristics on land use used in the official agricultural statistics and the list of characteristics of InVeKoS (IACS) can be brought into line with each other. The list of characteristics is also too detailed and should be made much shorter. The taking of data from the agricultural administration should be encouraged more by Eurostat. It is only in this way that acceptance of the survey can be markedly improved in the agricultural sector.

OVERVIEW 1

Individual surveys and programmes of the 1999 agricultural census

Agricultural census			
Main survey	**Wine-growing survey**	**Market gardening survey**	**Inland water fishing survey**
May 1999	**1999** **For this, details from the main survey and in particular administrative data from the vineyard register are assessed.**	**The legal base has still to be created for conducting these specific surveys. Market gardening holdings have an obligation to disclose on the characteristics of the main survey in 1999.**	



Main survey				
Agricultural structure survey			**Specific characteristics of the agricultural census** **Main survey**	
Basic programme	**Supplementary programme**			
general (total)	**general (total)**	**representative**	**general (total)**	**representative**
- **Main survey on land use** including · Total area by main uses and types of crop · Main types of use by purpose of use - **Livestock census** Stocks of · Bovine animals · Pigs · Sheep · Horses · Poultry	- **Method of determination of income/ sales tax** - **Socio-economic conditions of the holdings** - **Labour force by - groups of persons** - **Ownership and-tenancy conditions**[1)] [1)] Only in the year of the main survey of the agricultural census generally.	- **Non-holding sources of activity and income** - **Natural fertilisers of animal origin** - **Labour force according to the individual person concept**	- **Letting of accommodation to holiday or health cure guests** - **Farm succession for holders aged 45 years or more**	- **Vocational training of the holder, his spouse and of the farm manager** - **Social insurance of the holder and of his family members**

OVERVIEW 2

Determination of the lower recording limits for agricultural and forestry holdings in the agricultural censuses of 1991 and 1999

Area (area used for agriculture or wooded area) **or** livestock **or** special crops	1991	1999
Minimum size of the area used for agriculture **or**	1 ha	2 ha
Animal stocks: [1)]		
Bovine animals	8 bovine animals of any age	
Pigs	8 pigs of any weight	
Sheep	50 sheep of any age	20 sheep of any age
Laying hens	200 laying hens and young hens	
Geese, ducks, turkeys	200 geese, ducks, turkeys	
Broilers and other chickens	200 broilers and other chickens	
or **Special crops:** [1)]		
Stocked vineyards	0.3 ha vineyards	0.3 ha stocked vineyards
Fruit and berry orchards	0.3 ha fruit and berry orchards (yielding or not yielding)	
Hops	0.3 ha hops	
Tobacco	0.3 ha tobacco	
Tree nurseries	0.3 ha tree nurseries	
Outdoor vegetables	0.3 ha outdoor vegetables	
Outdoor flowers and ornamental plants	0.1 ha outdoor flowers and ornamental plants	0.3 ha outdoor flowers and ornamental plants
Vegetables or flowers and ornamental plants under glass for market gardening purposes	0.01 ha growing under glass of vegetables or flowers and ornamental plants for market gardening purposes	0.03 ha growing under glass of vegetables or flowers and ornamental plants for market gardening purposes
Medicinal plants and culinary plants	0.01 ha medicinal plants and culinary plants	0.3 ha medicinal plants and culinary plants or seeds for market gardening purposes
Minimum size of wooded area	1 ha	10 ha

[1)] Each of the animal stocks or special crops listed is reason for an obligation to disclose as a holding.