

Lessons Learned From the 2002 - General Agricultural Census in Romania

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1. Overview

1.1. Geographic Location and Administrative Structure

Romania is located in the Southeast of Europe, along the lower course of Danube and on the Black Sea coast. Its territory covers 238,391 sq. km. The main shapes of relief, that are disposed concentrically, cover a fairly equal proportion: 31% mountains, 36% hills and plateaux, 33% plains and lowlands. Its climate is temperate-continental, with oceanic influences on the Western part, Mediterranean in the Southwest and excessively continental in the Northeast. The capital of the country is **Bucharest**.

The administrative structure of the country is organized by counties (42, including Bucharest municipality), towns (265) and communes (2,686).

The 41 counties have an average area of about 6,000 sq. km and an average population of about 500,000 inhabitants. Out of the 265 towns, 93 are municipalities. The 2,686 communes may consist of one or more villages (13,092 in total), grouped according to economic, social, geographical or cultural criteria. The average population of a commune is of 3,780 inhabitants, but there is a great variety of communes in Romania under the aspect of demographic dimension.

1.2. Romanian Agriculture

Agricultural sector in Romania is, after industry, the second largest sector in the economy, accounting about 11% of GDP and about one third of the entire labor force. Out of the total area of the country, approx. 63% is used for agricultural production and approx. 27% for forestry.

Total agricultural area covers 14,7 millions hectares, out of which arable land covers 9,3 millions hectares (63% of total agricultural area), being the most important farming sector. Main arable crops in Romania, with regard to planted area, are maize, wheat and barley. In addition to arable sector, vineyards cover about 270 thou hectares, orchards about 253 thou hectares and almost 3,4 million hectares are covered by pastures.

Significant economic changes affected the Romanian agriculture after the reform program that started in the 90's. The transition from the centralized planned economy to the market economy, accompanied by the privatization of the land resources, that

started with the 1991 land reform, emerged into an important shift in the structures of the Romanian agriculture. New configuration of property and new approach in running the farms, were the main two factors that affected the agricultural production system. Consequently, from a planned, centralized farming system, practiced on large agricultural areas, the whole system shifted to a shattered one. At present, small-scale farming prevails on most of agricultural area, accompanied by a widespread land fragmentation.

1.3. Agricultural Censuses – Historical Outline

The last general agricultural census in Romania took place in **late 2002**. It has to be mentioned that from the organization and methodological points of view census operations entirely followed the FAO recommendations regarding 2000 round for agricultural censuses.

Before the 2002 general agricultural census, there was a major gap of interruption as far as the census organization is concerned. Thus, the lag of time between the census before (1948) and the 2002 one lasted almost 55 years.

As, before the 90's, land was mainly under state property and the farming system was highly centralized, *no important structural changes affected the farming system*. Monthly, each agricultural state unit was to provide a detailed statistical report on the activity developed on the farm. Information on agricultural households was obtained, regularly, from up-dated administrative agricultural registers, kept, very detailed, at the level of each lower administrative level (commune).

Therefore, it may be assumed that there was no need for a General Census of Agriculture, as land structures were rather stable and regularly measured. With regard to livestock, specialized censuses were conducted almost yearly because this was practically the only sector where the private property was relatively higher.

Consequently after 1948, there were conducted only **specialized** censuses, as follows:

- livestock censuses:
 - yearly, between 1951-1954;
 - every 4 years, between 1954-1962 and 1973-1977;
 - yearly between 1979-1989;
- vineyards and orchards censuses (1964, 1979).

1.4. Need for a General Census of Agriculture

After 1990, in the context of the on-going structural changes in agriculture, the request for accurate and relevant data, for assessing the key trends in farming practices and structures, highly increased. Romania faced new challenges to meet the growing demands for up-dated information, both coming from national and international level. Moreover preparing and organizing the General Agricultural Census become an

absolute necessity for implementing at a large scale the main surveys and other methodologies provided by the statistical Acquis Communautaire.

The need for conducting a General Census of Agriculture became imperative!

The Romanian National Institute of Statistics set up, in 1993, within its organizational scheme a unit for developing agricultural censuses.

Concerns for identifying appropriate methodological and organizational principles for conducting the general census in agriculture were closely linked to the awareness of providing comparable and harmonized indicators at national and international levels.

The General Census of Agriculture was planned for being carried out in the beginning of 1996. Census main tools were developed and a pilot survey was conducted in 1995, for testing the census tools. Due to budgetary constraints, the census of agriculture planned for 1996 was postponed.

Further to this, attempts for conducting an agricultural census were repeated also in 1998 and 2000. Again, because of budgetary constraints the census was postponed.

1.5. Legal Basis

According to the Government Ordinance No. 9/1992 on the organization of official statistics (Statistical Law) republished based on article IV of Law no 311/2002, censuses and other statistical surveys of national interest, have to be accordingly approved by the corresponding national authority, depending on the importance of the statistical inquiry.

The Romanian Government issued the Emergency Ordinance no. 70/2002 dated 13 June 2002, approved by the Law No. 558/2002, with regard to the Romanian General Census of Agriculture (published in the Official Journal). It covers the aims of the General Census of Agriculture, the definition of the observation units and the tasks and responsibilities of the bodies involved and other responsible for carrying out the Census.

On July 2002, it was issued the Government Decree, No. 704/2002, regarding the organization and implementation of the Romanian General Census of Agriculture (Official Journal). It stipulates the period for the implementation of the Census, defines the Census organization at territorial level, and provides the budget for Census operations.

Based on the above mentioned legal basis, the General Census of Agriculture- 2002 was carried out on the entire territory of Romania, with a registration period (data collections) lasting from 2.12.2002 – 31.01.2003.

1.6. Organization

The former Romanian Ministry of Agriculture, Food and Forestry (MAFF) that meanwhile became since March 2004 the Ministry of Agriculture, Forestry and Rural Development (MAFRD), the Romanian National Institute of Statistics (INS) and the Romanian Ministry of Public Administration (MPA) that merged together with the Ministry of Interior since March 2004 (currently named Ministry of Administration and Interior), were entrusted, through the Prime-Minister Decision, to co-jointly conduct the Romanian General Census of Agriculture. As a result, a Census Central Commission, with advisory functions, composed of representatives from public bodies and associations, was created. At the same time, for preparation, organization and co-ordination of census activities at regional administrative level, local census commissions were set up, as well. Furthermore, at the headquarters of the National Institute of Statistics a Central Technical Secretariat was established, and correspondingly territorial technical secretariats were organized.

Central Commission for the General Census of Agriculture had the following responsibilities:

- approving the general work plan of Census operations;
- setting tasks and responsibilities for territorial census commissions;
- approving the methodology of Pilot Census (carried out between 15 – 20 August 2002), for testing census organizational and methodological approach;
- approving the General Census of Agriculture questionnaire, enumerator's handbook, and other relevant registration forms needed for census activities and field operations;
- deciding on the number of the enumerators, chief enumerators and local coordinators;
- coordination of the recruitment and training process of the census staff and enumerators;
- approving the methodology of Control Survey (carried out between 5 – 18 February 2003), for checking census results;
- approving the advertising program for the General Census of Agriculture;
- submitting to Government the preliminary results of General Census of Agriculture;

The further operations regarding data processing and dissemination were entrusted to the National Statistical Institute.

1.7. Registration Program

The General Census of Agriculture marks the reinstatement of a regular cycle of censuses and surveys as part of the agricultural production statistics program.

The main objectives of the General Census of Agriculture were as follows:

- to obtain an exhaustive picture of the structural characteristics of the Romanian agriculture and particularly of the agricultural holdings;
- to build a complex and diverse set of data, comparable at international level, regarding the following information: legal status of the farms and other general information, details on land use (by main categories), livestock (by species, age groups), application of fertilizers, area of irrigated land, general information on organic farming practices and information regarding the main factors of production (labor force in agriculture and detailed information on managing of the farm, agricultural equipment and machinery, farm constructions, main destination of production, etc);
- to provide a sampling frame for the agricultural sample surveys conducted between censuses.

To meet these requirements an extensive registration program was set up, program that gathered:

- FAO recommendations, provided in the Program for the World Census of Agriculture 2000 stipulating for:
 - conducting a general censuses of agriculture between 1996 - 2005;
 - applying, for harmonization criteria, the international definitions, concepts and characteristics.
- The list of characteristics recommended by Eurostat for the Farm Structure Survey 2003;
- National needs other than the ones already mentioned above.

1.8. Enumeration Period

Data collection was done in two months (26 working days), from 2 December 2002 to 31 January 2003.

1.9. Reference Moment and Reference Period

- Data on tenure, land use, fertilizers and irrigation, non-agricultural activities, organic agriculture refer to **agricultural year** (1 October 2001 – 30 September 2002);
- Data on legal status, livestock, agricultural constructions refer to **1 December 2002**, hour 0:00, considered as **moment of reference** of the census;
- Data on farm labor force (for agricultural activities), utilized agricultural equipment and machinery, other information regarding the activities carried on within the observation unit (sales from own production) refer to **the last 12 months** (30 November 2001 – 1 December 2002);

- Data on employment of the holder and holder's family members refer to ***the week preceding the moment of reference*** of the census.

1.10. Survey Unit

At defining the survey unit, specific elements, that are characterizing the Romanian agriculture, have been taken into account, such as:

- practically no accurate information on the changes occurred in the structure of the agricultural households, after the 90's, was available;
- lots of individual agricultural households operates some small agricultural areas, that couldn't be neglected at the General Census of Agriculture;
- one of the main census objective is to set up a statistical farm register, based on a specific threshold that is to be decided after data collection.

Taking into consideration the above mentioned and the fact that no General Agricultural Census was carried out since 1948, for the benefit of the quality of the census results, the **survey unit** was defined as follows: *"a technical-economic unit of agricultural production, consisting of one or more plots of land, even non-contiguous or located in different municipalities, utilized entirely or partially for agriculture production, operated by a holder (head of the household, physical person, company or public body), that carries out the activity under unique administration and is assuming the risk of management, alone or together with others regardless the size of the land, the number of animals or the contribution to agricultural production."*

By implementing in the national practice as statistical observation unit of the **agricultural holding** a crucial shift towards meeting the international standards in the fields of agricultural statistics has been ensured.

1.11. Coverage

The General Census of Agriculture had been carried out on the entire territory of Romania, both in rural and urban area. Almost five millions agricultural holdings (private farms and legal entities) were provided to be observed.

1.12. Frame

Each local authority was provided by the National Institute of Statistics (INS) with the list of survey units located in its area of responsibility, based on the information contained in the Agricultural Registers kept at the level of each commune, town and municipality.

1.13. Census questionnaire

The questionnaire as a main methodological tool has been designed to cover as much as possible questions regarding the status of agricultural holding in Romania. Normally the observation program followed FAO recommendations for the 2000 Agricultural Census and the provisions regarding Farms Structure Surveys (FSS) provided by the

statistical Acquis Communautaire besides same information were requested for national needs as well. Thus, the questionnaire comprised a total number of approximately 450 questions shared in 11 chapters framed in a form of 16 pages.

It was estimated that the duration of the interview is allowing to fill in the questionnaire by enumerator in about 24 minutes, as an average.

The structure of the questionnaires was the following:

- Chapter I - General information on the observation unit
- Chapter II – Utilization of land
- Chapter III - Fertilizers and irrigation (agrarian year 2001-2002)
- Chapter IV - Livestock (at 1st of December 2002)
- Chapter V – Labor force in agriculture, in the last 12 months
- Chapter VI– Utilized agricultural machinery and equipment (in the last 12 months)
- Chapter VII - Agricultural structures, at 1st of December 2002
- Chapter VIII - Non-agricultural activities, (agrarian year 2001-2002)
- Chapter IX – Other information regarding the activities carried out in the observation unit (in the last 12 months)
- Chapter X - Location of the areas and livestock
- Chapter XI - Other information

1.14. Data Collection Methods

The General Census of Agriculture had been conducted through complete enumeration. After completing preparatory operations, the Territorial Census Commissions divided the territory of each municipality into census sections. The number of farms (physical persons) in each section was not to exceed 200 units/enumerator. Separate census sections, for the survey units with legal status, were set up at the level of each locality; the chief enumerator was responsible for their enumeration.

1.15. Pilot Survey

A pilot survey on a sample of 3150 units, located at the level of each county (42) preceded the main census (during 15-20 August 2002). In each county there were selected, randomly, 3 sections, two sections in two different communes and one in a municipality. Each section comprised 25 units that were to be enumerated in 5 days.

1.16. Registration Procedure

Registration of data in the census forms was made as follows:

- by direct interview (face to face), conducted by enumerators for holdings/individual agricultural households (physical persons) within the corresponding sector;
- by self-registering, for the units with legal status, under the direct supervision of the chief enumerators.

1.17. Control Survey

In order to check the quality and the completeness of the information collected at the census, in five days after the census registration period, it was conducted, during 5 - 20 February 2003, a Control Survey, on a national representative sample, covering about 20,000 survey units. For ensuring the comparability, it was considered the same moment of reference and the same reference periods, with the one foreseen at the General Census of Agriculture. The results of the Control Survey confirmed the quality of the census, since the error limits showed a rather low level +/- 0.3 against the expected one anticipated at +/- 2%.

1.18. Census Data Processing

Special attention has been paid to develop all processing programs. Data processing was done on a decentralized basis, at territorial level, at each County Statistical Division (42). The data entry application has two modules: one at county level and the other one at central level. The data entry procedures were completed by the end of 2003. The files, validated at county level, were sent monthly to INS headquarters for processing, control and populating the global database.

The validation procedures covered the main types of controls including imputations and automatic data corrections, covering approximately 400-500 operations.

1.19. Data Dissemination Methods

A tabular data base will be set up and used as a central repository of all tabular data. Table data from this database will be extracted to respond to ad-hoc requests for dissemination requirements or for paper publication.

Also it was foreseen the conceiving of a query system in order to disseminate the census results by internet, compliant with the statistical disclosure control rules.

Prior to the final results a set of preliminary data for the main 18 indicators were made available already in two months after the end of data collection, i.e. by the end April 2003 and new edition of preliminary results for the same indicators in a more detail breakdown was issued in July 2003.

A large dissemination program started in 2004. The program provides data dissemination through the following means:

- 12 publications on paper;
- the publications of the results in CD Rom and through web site;

The publications of the census results will cover:

- A volume with general results regarding the structure characteristics of holdings comprising all indicators obtained through census with data at national level;

- The second and the third volumes are dedicated to indicators of agricultural area and livestock, respectively with detailed data up to the level of communes (NUTS 5 level);
- The fourth volume provides for detailed data on agricultural constructions, machinery and other agricultural equipment;
- Eight publications will cover the main indicators obtained through the census with a territorial breakdown by regions (NUTS 2 level), by judets (NUTS 3) and communes (NUTS 5 level).
- Same set of data will be available on CDs while a selected set of data will be available free of charge on WEB Site.

2. Lessons Learnt (Swot Analysis)

2.1. Strengths

- Determined actions, at institutional level, focused on building up, on new basis, the national agricultural statistical system, in compliance with the statistical requirements of Eurostat.
- INS experience in the methodological approach of an agricultural census, emerged both from the regular livestock censuses conducted before the 90's and from the preparatory works of the agricultural census that started since 1993. The census methodological and organizational principles were developed and tested in the pilot census conducted in 1995, before the envisaged 1996 census, that was postponed.
- On-going improvement of the competence and accumulation of know-how of the INS census staff through participating in several international working groups and seminars on census methodology development and harmonization supported by Phare multi-country programs.
- Special expertise acquired through the training provided during the first half of June 2002, at INS headquarters, by a FAO expert, during a three weeks period, for the regional top management staff (directors from the 8 statistical regions) and for experts from the INS census office and IT department (8 persons).
- Bilateral technical assistance provided by high professional experts and financial support through the Twinning Program, under the National Phare 2000 Program, aimed to specific transfer of know-how in regard to all EU requirements in the field of Farm Structure Surveys.
- High skilled top managers, at county level, in conducting and co-ordinating statistical surveys at territorial level.
- The three training sessions conducted
 - before the Pilot census,
 - for evaluation the results of the Pilot census, aiming to improve the census tools and organizational matters,

- for carrying out the full scope census, gave the opportunity of several debates on the census tools and registering program, between INS and all the directors from territorial level (belonging both to INS and MAFF). This facilitated the overall improvement of the census materials, tagging along, also, with the relatively tight timetable.
- Efficient utilization of limited staff and financial resources.
- Young persons, skilled in IT and foreign languages, were hired at INS central level from the very beginning of census preparatory works, for guaranteeing the know-how transfer.
- The Pilot Census conducted in August 2002, aiming the testing of the census tools and the organizational issues, concluded in the improvement of census methodology and field organization, ensuring the quality of census data collection.
- The Control Survey, conducted in February 2003, certified the census coverage and the data quality.
- Cost advantages and good skills in census specific activities, emerged from the fact that the General Census of Agriculture was conducted in the same year with the Population Census (carried out in March 2002):
 - cartographic materials used for partition of the territory in sectors in the Population Census, that could easily be converted for the aims of the General Census of Agriculture;
 - census auxiliary materials: norms and forms for sector delineation, list of localities, others(notifications, addresses, etc.);
 - responsible staff for organizational matters and field work skilled in specific census tasks, acquired during the Population Census;
 - selection of data entry personnel (420 persons) was done from the more skilled personnel hired for Population Census.
- E-mail facility as, at each territorial level, improved the quality of communication with the territorial census commissions.
- The overall census quality was raised:
 - by developing a special guide for filling in the census questionnaire, attached to the enumerator's handbook, that optimized the methodological understandings and provided a good feedback from enumerators;
 - by setting up a centralized system for answering to several questions regarding the problems encountered i field work; the answers were provided in "Operative Bulletins" and, for a common approach and internal coherence all around the country, were disseminated, by e-mail, to all territorial census commissions;
 - by the census advertising program (on radio and TV; by local announcements and posters, at communal level and popularization brochures).

- Institutional effort for a proper IT endowment.

2.2. Weaknesses

- Lack of structural information on Romanian agriculture did not make possible to assess a threshold before census operations and, consequently, a large number of units had to be covered for an accurate picture at country level.
- Lack of clear definition of the agricultural holding, *as a statistical observation unit*, plagued with the national methodological approach.
- The extended land fragmentation, characterizing the new features of the Romanian parceled agriculture, increased the number of census units that had to be enumerated. According to the preliminary results of the census, there were surveyed 4,760 thou. units, of which 4,737 thou. agricultural individual holdings/ households.
- The above mentioned conveyed to:
 - an increased number of enumerators;
 - an increased registration period;
 - higher costs of the census.
- Lack of harmonization between the methodological approach used in the census and the one used in the current statistical surveys, was a burden in the development of census tools and training delivery. Indicators as: utilized agricultural area, kitchen garden, non-utilized agricultural area were used for the first time in census data collection.
- Lack of a Statistical Farm Register, imposed the increase of human resources and time needed for building the census registering lists.
- Lack of an accurate Cadastre register, as land restitution process was not ended yet.
- Lack of a national network of specialized enumerators plagued with training delivery.
- A challenge for the census was the registering of the agricultural individual holdings/ households conducted by persons living in other locality than the location of the holding. After land restitution process, increased the number of persons living in urban area that became agricultural land owners.
- Existence of three levels of census co-ordination (MAFF, INS, and MPA) split the organizational responsibilities and also the management of human and financial resources (the total budget of the census was split among these bodies: 76.6% MAFF, 21.69% INS, 1.7% MPA).

- Short time intervals between census milestones (designing, printing and delivering of census tools).
- Overlapping of census activities with other projects envisaging the development of the Romanian agricultural statistical system.
- Limited time for the census know-how implementation.
- Limited staff, both in term of quantity and skills, should be considered a crucial issue, calling for proper remedial actions.

2.3. Opportunities

- Experience gained by the Romanian staff involved in census activities in designing and implementation an agricultural census.
- Know-how transfer coming from the Twinning Project, on-going under the National Phare 2000 Program, for compliance of Romanian agricultural statistical system with the EU norms and standards, that has among its main components the development of the methodology of the Farm Structure Survey.
- Harmonization of national census methodology with EU requirements and FAO recommendations.
- Set up the sampling frame needed for the development of the statistical system of surveys in agriculture, that set on solid basis the continuation of the activities developed under the ongoing Twinning Project that comprises almost all the agricultural statistical domains.
- Set up the basis for defining a proper threshold, in order to define the Romanian agricultural holding, as statistical observation unit, according to EU requirements and national constraints.
- Set up the Statistical Farm Register.
- Set up of the global database for the development of the system of agricultural statistics.
- Obtaining comparable indicators, at international level, regarding the main agricultural indicators.
- Develop new statistical approach for conducting agricultural surveys.
- Selection of the best staff from the census trainers and enumerators and set up a national network of specialized trainers and enumerators needed for the further statistical surveys in agriculture.

- Awareness of other Romanian institutional bodies, involved in agricultural policy and research, for the need of using the new set of indicators developed under the agricultural census.
- Create the basis for a new institutional building frame by assessing responsibilities and tasks of different bodies involved in agricultural statistical system, particularly INS and MoAFRD.
- Get the interest of the users in the census results and increase their trust in agricultural statistical data.

2.4. Threats

- Overlapping of projects timetables, as the census was carried out simultaneously with the National Phare 2000 Program.
- Changing the statistical system is a great challenge as new requirements are to be implemented at once in all the agricultural statistical domains.
- Insufficient human resources for developing on new foundations all the agricultural statistical system, considering the milestones imposed by the constraints established for speeding the accession process.
- The structural changing affecting on-going the Romanian agriculture, generates an important issue when the Statistical Farm Register will have to be updated, as it will include a large number of units and, consequently, a consistent sample for the Farm Structure Survey is foreseen to be drawn.
- Update of time series, as other methodological approach was in place up to present.
- Difficulties in reconciliation historical statistical data based on administrative sources with the one obtained from the census

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Romanian institutions and people involved in census operations were making a great effort to successfully accomplish this difficult task. The overall activity was supported by solid organizational links between central and local units, careful planning of activities and continuous evaluation of the obstacles and factors in play, aimed to the individuation of proper organizational and working solutions. Carrying out a General Census of Agriculture was a large and complex project, in particular when several decades have passed since the last experience in this field. The first preliminary results,

show that data obtained are consistent and, consequently, it may be considered that the census was a success. In the future INS and MAAP will be in charge for the development of the Romanian agricultural statistical system - a general challenge that impacts the long-term possibility to properly develop the statistical system in this domain.

It may be assessed that the work done for designing the General Census of Agriculture is an important chapter in the field of agricultural statistics, but it represents only the beginning of a new long run way in the development of the Romanian agricultural statistical system on new foundations.