MEXSAI, Cancun 2-4 November 2004

Striving for Continuity and Comparability in Agricultural Statistics - a national experience

Ole Osvald Moss, cand.agric.
Head of Division for Primary Industry Statistics
Statistics Norway
Address: Oterveien 23, N-2225 Kongsvinger
E-mail: ole.osvald.moss@ssb.no

Abstract

During the second half of the 20th century the main features of the Norwegian agri-statistical system remained unchanged; i.e. a regular alternation between full censuses every tenth year and yearly sample surveys for intermediate years. Towards the end of the century, several driving forces called for considerable changes to the old system.

Uniting local, national and international concerns of statistics in the rapidly changing world of agriculture is an interesting, but sometimes daunting task. The point of departure is to maintain a common understanding of "what is agriculture". Furthermore, a new order has to replace the once so simple world of farms and farmers. Today we are confronted with a complex mix of farm owners and holders, professional farms and "hobby farms", group holdings and companies etc. A third challenge is to strike a balance between common features at international level and distinct features at regional and national level.

In Statistics Norway we are in the midst of a transition process where we might end up with a situation where traditional full censuses are no longer a vital part of the system. However, future decoupling of governmental support from production could lead in the opposite direction. Anyway, international and supranational bodies should serve us with clear definitions and guidelines, but at the same time allow for a certain freedom of choice of methods for data collection.

1. Introduction

Until the early 1980-ties, the set-up of the official agro-statistical system in Norway remained quite traditional. The backbone of the system was full censuses every tenth year and yearly sample surveys in between. In addition, a number of more or less detached statistics on input, production, prices etc. from various sources were maintained. Gradually, administrative systems for the management of governmental grants to agricultural holdings where exploited to relieve the respondent burden. Other important reasons were to save money and in some instances to improve quality.

Even if UN-principles were at the core of the system, the statistical product was almost entirely designed to answer to national needs. International co-operation was more or less restricted to the Nordic countries of Europe. As Norway in 1994 entered an economic agreement with EU, European statistical co-operation became much more important. Even though agricultural policy is exempted from the agreement, a considerable part of the EU legal acts in agricultural statistics is still binding to Norway.

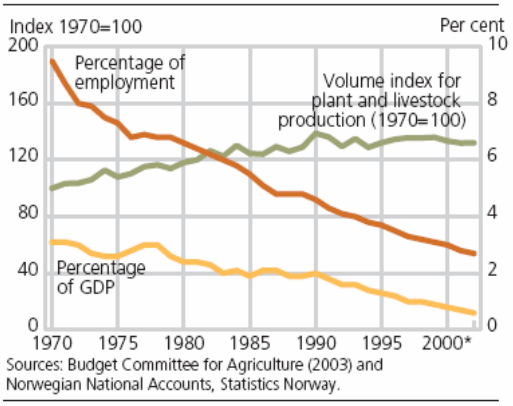
This paper mainly deals with some general aspects of data collection and systems of data management and integration. For those being interested in the statistical products, reference is given to http://www.ssb.no/english/subjects/10/04/10/

2. Some features of the Norwegian agriculture

To be able to put the system of Norwegian agricultural statistics into a perspective, a few facts of Norwegian agriculture could be useful to bear in mind:

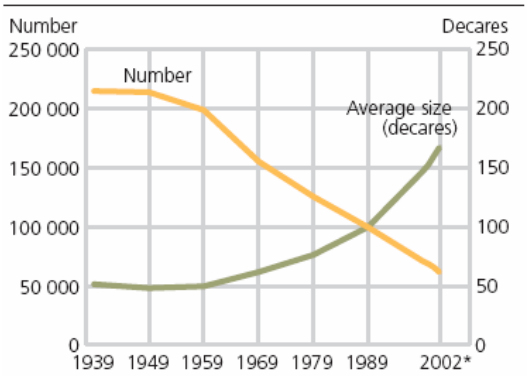
- Agricultural land covers only 3,4 per cent of the total land area, and Norway has the smallest area of agricultural land per capita in Europe
- The total size of the agricultural area remains fairly stable, whereas the speed of structural change is accelerating. In the last 25 years, the total number of holdings has decreased by 50 per cent
- Meadows and pastures cover 63 per cent of the agricultural land in use, whereas grain and oilseeds cover 32 per cent
- Like in other industrialized countries, the importance of agriculture to the national economy is declining. From 1970 to 2002, the agricultural share of GDP fell from 3.1 to 0.6 per cent
- In the same period, the employment in agriculture fell by more than 60 per cent
- Production volume has remained on 1990-level

Figure 1. Trends in agricultural production volume (index 1970=100) and share of employment and GDP. 1970-2002*



Sources: Budget Committee for Agriculture (2003) and Norwegian National Accounts, Statistics Norway.

Figure 2 Number of holdings and their average size (decares[1]). 1939-2002*



[1] 1 decare=0.1 hectare

Source: Agricultural Censuses, Statistics Norway.

Food production in Norway is primarily restricted by the climatic conditions and the availability of land resources suitable for farming. One of the most important objectives of farming is to safeguard the national food supply. Consequently, protecting agricultural land resources has high priority, and the agricultural sector has been effectively shielded against foreign competition. During the last 15 years, the multifunctional role of agriculture has been accentuated. Consequently, agricultural policy has given more weight to these factors, while the focus on production objectives has been toned down.

3. Why do we have to change our statistical systems?
Towards the end of the 20th century, several driving forces called for substantial change in the older systems. In our experience, they may be summarized as follows:

The changing world of agriculture
It is rather obvious that we need systems to reflect the radical changes taking place in agricultural practice. One important challenge is to provide sub-systems adapted to measure both large-scale, modernized agriculture and small-scale "niche production".

New user needs
In a rapidly changing world, we need flexible systems providing statistical information for different types of users *when* they need it the *way* they need it. Some users are perfectly content with standard products, other users demand tailor-made statistics. For example, journalists and researchers have very different requirements. And the role of metadata for navigation, quality management and informative labeling has risen dramatically.

Relieving respondent burden
It is important to make life easier for the data providers. Not just to save their time, but to facilitate better quality on the variables you have to ask for. Preferably, we search for alternative data sources. If they are not at hand, careful and critical design of survey questionnaires is necessary. Today, web-based reporting systems always have to be served as an option for the farmers.

New ICT-tools provide new opportunities
The importance of the so-called IT-revolution is obvious, and it is sufficient to mention better tools for optical reading, GIS and Internet. Improved efficiency, better integration of datasets and more diverse products represent some of the opportunities.

Adaption to EU demands
Since the early 1990-ties, Norway has gradually been adapting to the statistical requirements of Eurostat. In the agricultural domain, Norway is obliged to follow legal acts of structure statistics, crop statistics, statistics on milk and milk products and finally the economic accounts.

Budgetary constraints
The basic government assignment from the Ministry of Finance to official statistics should in principle comprise a core, defined according to what is considered most relevant for the national society and for international binding obligations. In our experience, agriculture has been considered to have gradually less importance. Fortunately, we have to certain degree been able to compensate these constraints by user-funded commissions, particularly from other public institutions.

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Judging from various seminars and working groups, the abovementioned points also seem to be at the forefront in all UNECE- and EU-countries. For the time being, it is particularly interesting to follow planning process for future European agricultural statistics currently taking place in Eurostat.

4. What is agriculture?

Defining the scope of agriculture is perhaps the most obvious task before measuring it. All to often, discussions at national as well as international level are quite confusing because of various perceptions of how agricultural activities should be delineated. Is everything going on on a farm agriculture? When is a supporting industry a bi-product of agriculture and when is it a separate industry?

It could be useful to differentiate between the *core* and the *borderline areas* of agriculture. Some borderline areas are output activities like food processing and sale. If these activities are performed on the farm, they should usually be considered as part of agriculture. Living conditions of farm households are another type of borderline area. And in the recent years interdisciplinary aspects like environment, rurality and food chains/food safety has gained importance. Many environmentally important issues are closely linked to the core of agriculture and should be seen as an integral part of agriculture. In some countries, rural activities are almost synonymous with agriculture and forestry. In other countries, for example in Europe, agriculture is just one of many activities going on in rural areas.

The borderline areas are by no means less important than the core, but they need to be approached in co-operation with statisticians in other domains. And agricultural statisticians are often blamed by colleagues in other statistical areas to be living in a separate world.

5. Reconsidering the basic units of agriculture statistics

A farm is no longer just a farm. On the one hand, many farmers have to supply income from the farm by income from other gainful activities off the farm. On the other hand, some farmers join together to create various corporate arrangements ("group holding"). In Norway this is rapidly gaining ground in dairy farming, and quite often the original holdings still continue as separate farms performing other types of production.

For several analytical purposes, it is more relevant to observe the agricultural household than just the farmer. Consequently, we try hard to identify the household structure also for the years between the censuses.

Whereas the structure of agricultural *holdings* has changed considerably during the last decades, the structure of agricultural *ground properties* remains almost unchanged. The land of the originally active farms have been rented away or left to be overgrown. Some of buildings still serve as residence or just country house, and others are left to decay. These aspects are very important for the development of rural areas, and the Ministry of Food and Agriculture wants us to give higher priority to these issues.

And then, of course, we have the never-ending story of how and where to set threshold values. In Norway, we still cling to an ancient threshold of 0.5 hectars of agricultural area in use as the main threshold for defining an agricultural holding.

6. Choosing efficient methods of data collection

Natural conditions, type of production and type of institutional arrangements vary considerably from country to country. Obligations from supranational institutions to stick to a particular method of data collection will therefore often be considered as awkward. Particularly where alternative data sources are existent or emerging.

In our opinion, method of data provision should in principal be chosen in the following order:

- re-arrange, combine and/or calculate from existing data
- extract data from administrative sources
- surveys (list or area based)
- full censuses

Consequently, the various countries should maintain freedom of choice of data collection method, but be prepared to answer to certain quality prescriptions. International statistical agencies should concentrate on identifying the common features of agriculture in member states and insist on clear definitions and classifications.

Only when urgent needs for rapid results on supranational level are identified, there should be an option to collect data directly to this level from respondents in the various countries.

7. The crucial role of a Farm Register

The Norwegian Farm Register (NFR) was established in the early 1990-ties under the auspices of the Ministry of Agriculture. NFR is a regularly updated list of farm properties, holdings and persons (both holder and owner), with links between these basic units. The purpose of NFR is to have a common reference (through common identification keys) for the units in the various administrative registers in the agricultural sector. Other important users of the register are the farmers' co-operative organizations and Statistics Norway.

NFR is updated from a great number of administrative data sources in several institutions, and the quality has gradually improved, particularly for the holdings. Statistics Norway therefore decided to use this register as a basis for sending out the questionnaires to the Agricultural Census of 1999. Later, NFR has served as a frame for drawing samples to the Yearly Sample Survey of Agriculture and Forestry. In our experience, it is necessary to establish a statistical version of the register.

8. System of integration

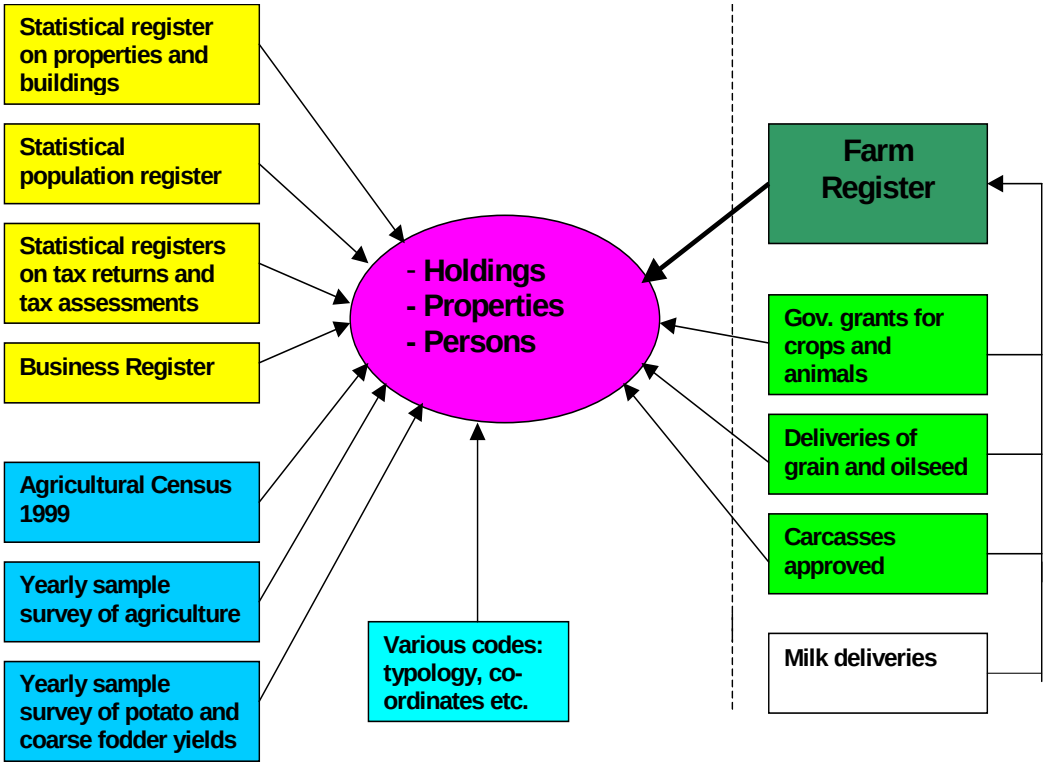
Originally various statistical and administrative datasets on national level lived separate lives. For some years these datasets were only linked together if particular demands came up. In the 1990-ties the idea of a more regular and systematic integration of the datasets matured, but it was not until the aftermath of the Census of Agriculture 1999 that we were able to put some real effort into this action.

The objectives put up for the system were quite ambitious:

1. Yearly creation of complete, statistical populations of all holdings and properties (including forest properties).
2. Links between holding/property and holder/owner and spouse/cohabitant
3. Yearly update of a considerable number of relevant characteristics on unit level
4. Consistency between micro and macro level
5. Due attention to definitions, classification and metadata

Because of limited access to human resources, we have pursued this ambition step by step. The work has been quite tedious and complex and has required considerable statistical and technological skills. Today we are fairly content with the sub-system of agricultural holdings, but still have a way to go on the property side. Some of the horticultural units, particularly greenhouses, are also missing. Nevertheless, the analytical potential of this integrated system is very high. Gradually, this system is used as to produce regular statistics as well as providing data deliveries to Eurostat.

Figure 1. Simplified model of the integrated agro-statistical system of Statistics Norway



One should bear in mind that the Nordic countries are in quite a unique position to utilize administrative sources for statistical purposes. Inhabitants as well as enterprises and establishments are provided by unique identification numbers. All official institutions are obliged to use these id-numbers in their data systems.

One should also bear in mind that the systems are vulnerable to change. Statistics Norway may stake their claims when administrative systems are created or amended. But if a system is radically changed or brought to an end because of policy change, the data for statistical purposes are also lost.

If we succeed in our ambitions for this integrated agro-statistical system, the need for an agricultural census in 2009 will be drastically reduced. But if the agricultural policy is changed in a way that many of the current administrative sources deteriorate, we may have to return to a traditional census.

9. Future challenges

Measuring agriculture in a consistent manner in *one* country over time is in itself quite demanding. To obtain international comparability at the same time is a daunting task. Nevertheless, increasing globalization and trade with agricultural products are very important reasons for striving in this direction.

Challenges on national (Norwegian) level:

- To refine and expand an integrated system of datasets originating from administrative sources and statistical surveys. The hub of the system is a statistical version of the Norwegian Farm Register
- To integrate agricultural statistics more closely to other industrial statistics, e.g by paying more attention to the agricultural units of the Business Register
- To improve co-operation with other national institutes and authorities responsible for data collection in the sphere of agriculture and forestry. One interesting example is bringing together data from area frame surveys and list surveys
- To make better use of advanced ICT-technology:
    - web-based questionnaires should be accompanied by reports going back to the respondent (figures from earlier years, benchmarking etc)
    - the application of GIS-tools for data integration, analysis and graphics should be intensified.
    - intensified use of computer-based system for more targeted checking and edition of data
- To allocate resources for answering to new needs.

In addition, we think that the international institutions should concentrate on the following challenges:

- identify policy needs for agricultural statistics at international level
- clarify the scope of agriculture statistics
- identify areas of "common interest"
- make international statistics available for a broad audience of users
- develop and maintain clear definitions of units, characteristics and classifications
- keep stock of current best methods and provide handbooks
- co-operate among each other (e.g IWG AGRI)
- bring us together !