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CENTRALIZED AND DECENTRALIZED DATA COLLECTION SYSTEMS TO PROVIDE  
OBJECTIVE STATISTICAL INFORMATION ON THE STATUS OF AGRICULTURE 1/

With the development of the non-State sector of the economy in the Russian Federation during the transitional period, ministries and departments lost a function that was specific to the planned system - namely, the allocation of material, technical and financial resources - and this entailed a weakening of the reporting discipline of economic entities. As a result, there was a clear trend towards greater centralization within the State statistical bodies of statistical information relating to the main areas of activity of enterprises.

However, the economy during this period has not been marked by stability and the country's food dependency on external markets has increased, a situation that recently prompted tighter State regulation of domestic economic processes. In this context, there emerged an opposite trend towards decentralized reporting. The Ministry of Agricultural Production of the Russian Federation has been supplied regularly with information on production processes in agriculture throughout the year.

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The main functions of the Russian Federation's State Statistical Committee (Goskomstat) in the field of agricultural statistics are coordination of the statistical activities of the federal executive bodies, methodological and informational support for calculations of macroeconomic indicators in the SNA, compilation of food balance sheets and organization of statistical observation of the status and main directions of reform of agriculture under the new conditions.

## **Outline**

Section 1 of this document looks at the organizational structure of agricultural statistics in the Russian Federation, the relationship between centralized and decentralized data collection under the Federal Programme of Statistical Work, and developments in the centralized system of agricultural statistics during the period of transition to a market economy.

Section 2 illustrates the methodological approaches to statistical observation using decentralized information sources (data from the committees on land resources and land management, rural administrations, etc.), taking the sample survey of agricultural activities of households as an example.

### **1. Organization of agricultural statistics in the Russian Federation**

1.1 In the Russian Federation the process of collecting and processing data on agriculture is largely centralized within the Goskomstat system and only specialized information is handled by ministries and departments.

**The main directions of statistical observation of socio-economic processes** in the Russian economy, including agriculture, **are defined each year by the Federal Programme of Statistical Work** agreed with the Government of the Russian Federation.

With a view to eliminating the diffusiveness of the information supplied to or by ministries and departments, providing a common methodology and common principles for the compilation of statistical information and creating a single statistical information space at the federal level, the Programme includes a special section outlining the statistical work to be performed by the federal executive bodies on matters falling within their sphere of competence.

1.2 The **Goskomstat system** provides for the compilation of statistical information on the status of agriculture under the following main headings:

- Employment in agriculture;
- Investment expenditures;
- Agricultural production, intermediate consumption, value added;
- Status of crop production;
- Status of animal production;

- Average prices and producer price indexes;
- Financial situation of agricultural producers;
- Food balance sheets.

The Federal Programme of Statistical Work also sets out the main directions of decentralized statistical data collection and processing within the system of the Ministry of Agricultural Production, the Ministry of Finance, the State Committee on Land and other federal executive bodies.

**1.3 The programme of observation, centralized within the system of State statistics, has been transformed in connection with the transition to a market economy.** Priority in improving the system of indicators was attached to informational support for characterizing the economic situation of agricultural producers, production efficiency, entrepreneurship, marketization, institutional changes, etc. During the transitional period, there has been a decentralization (transfer to the system of the Ministry of Agricultural Production) of the operational information specific to the planned economy.

As part of the process of revising statistical data collection and processing methods, in early 1998 Goskomstat introduced four new forms for current statistical observation of the activities of enterprises to obtain information on the numbers and earnings of employees, on the output of goods and services, on investment and on the financial situation.

These forms are standardized to the extent that the indicators they provide for are applicable to any enterprise or organization, including large and medium-sized agricultural organizations.

The new forms for federal State statistical observation of the activities of enterprises and organizations needed to be introduced for several reasons.

The primary reason was the move among many economic entities towards several kinds of economic activity. The form for federal State statistical observation of the output of goods and services calls for data on the volume of output to be totalled for all kinds of economic activity. This is an important departure from the earlier forms, which usually called for data on output relating to the principal activity.

A second reason for introducing standardized forms was the need to employ new indicators to reflect the emergence of a market economy in Russia. In particular, the programme of observation provides for services to be distinguished from the total volume of production.

With a view to systematizing and ordering information flows in agricultural statistics, an integrated form was developed and introduced for agricultural enterprises, incorporating indicators of stocks, output and sales of crop and animal products.

This approach to organizing statistical observation of the status of agriculture helps to enhance the analytical nature and comprehensiveness of the information, as well as to reduce costs.

## **2. Methodological approaches to the organization of a sample survey of the agricultural activities of households**

It is becoming increasingly important for Goskomstat to coordinate work not only on data interchange, but also in respect of interaction with ministries for the organization of statistical inquiries. In national statistical practice, efforts have already been made in the past together with the Ministry of Agricultural Production to conduct censuses of livestock and areas planted for crops, including fruits and berries, on private holdings, as well as to set up an **interagency system of sample surveys**.

2.1 This approach may be exemplified by the **survey of agricultural activities of households**, the methodology for which was developed through a project undertaken jointly by Goskomstat, the Statistical Research Institute and the National Agricultural Statistics Service (NASS) of the United States Department of Agriculture.

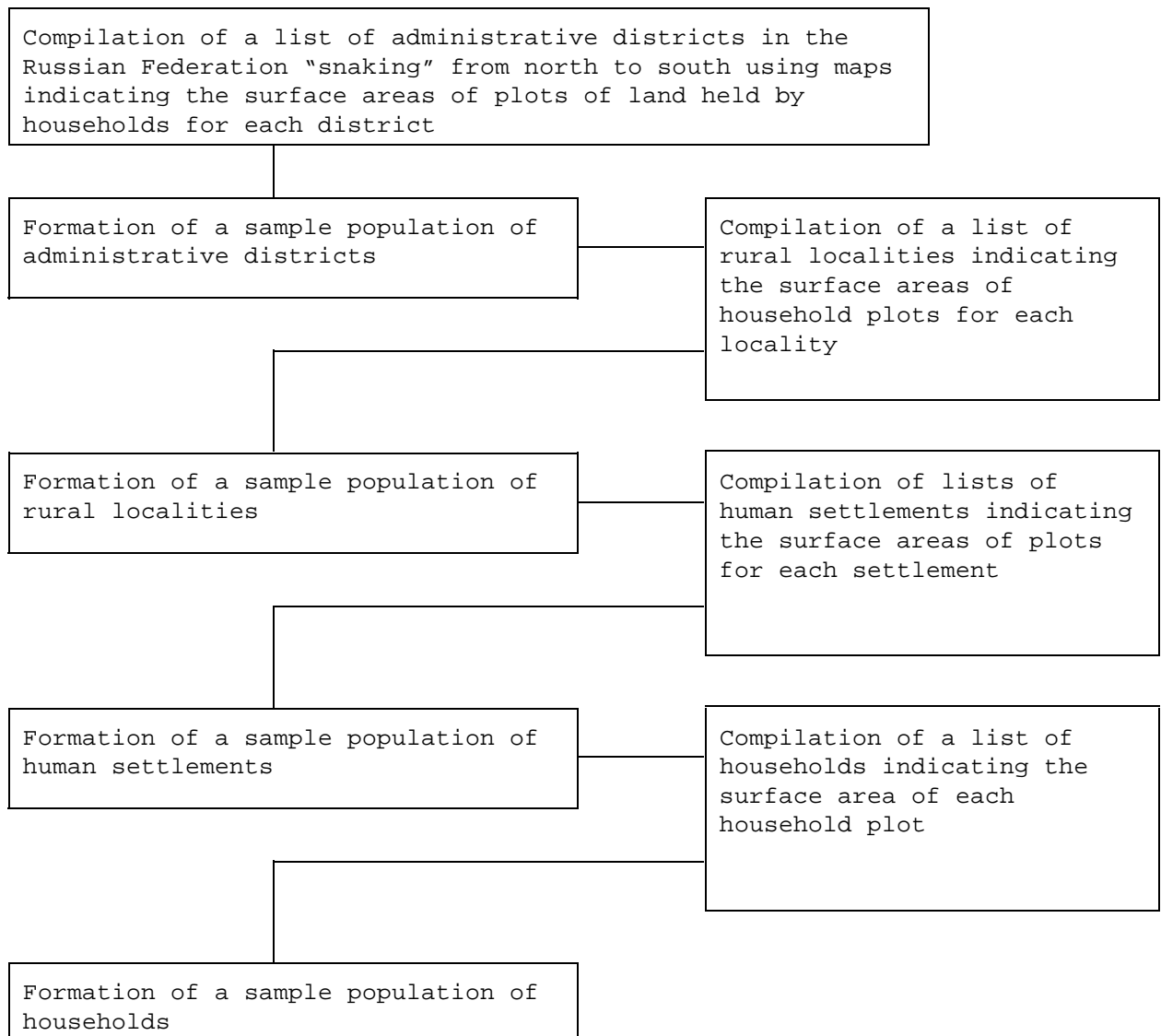
In recent years, as a result of land reform, there has been a considerable increase in the numbers of citizens holding plots of land for private subsidiary farms, gardens and orchards. It is estimated that last year the public at large accounted for more than half of all agricultural production, including 91% of potatoes, 80 of vegetables, 56% of meat, 48% of milk and 30% of eggs.

Statistical information on crop and livestock production, consumption of feeds for cattle and poultry, and sales of own produce by private holdings is at present obtained from estimates based on the data of the sample survey of households, drawing on the **information sources of the committees on land resources and land management, and of rural administrations**.

2.2 In order to improve statistical coverage of agricultural production in the private sector and to provide full and objective information, a **new sample of private subsidiary holdings of the public** in rural areas has been formed.

**Lists of land-tax payers** were used as the sampling frame for private holdings. These lists are kept, pursuant to a decision of the Government of the Russian Federation, by district and municipal committees on land resources and land management in respect of land coming under local government authority at the relevant rural village, municipal or district level. The lists include citizens who have plots of land that they possess, use and can keep for life and bequeath.

To form a sample network of private holdings, use was made of the **method of four-stage area probability sampling** as follows:



The **general population** is defined for the four sampling stages:

Stage I - population of administrative districts;

Stage II - population of rural localities in the administrative districts selected;

Stage III - population of human settlements in the rural localities selected;

Stage IV - population of private holdings in the human settlements selected.

**Sampling unit:**

Stage I - administrative district;

Stage II - rural locality;

Stage III - human settlement;

Stage IV - private holding.

**Unit of observation** (unit subject to statistical observation) - private holding.

A **sampling frame** is constructed for each of the four general populations:

Stage I - list of administrative districts compiled from a geographical or topographical map of the administrative subdivision by "snaking" from north to south and indicating the number of private subsidiary holdings in each district and their total land area. Where there are significant differences in natural or climatic conditions within a particular region, it was recommended that the area of the region should be divided into separate parts with samples being taken separately for each of them;

Stage II - list of rural localities set out in the usual way for each district, indicating the number of private subsidiary holdings in each rural locality and their total land area;

Stage III - list of human settlements set out in the usual way for each locality, indicating the number of private subsidiary holdings and their total land area;

Stage IV - list of private holdings compiled in the usual way for each human settlement selected, indicating their land area.

At the first stage, 25% of the administrative districts of the region are selected, at the second stage 15% of the rural localities in the regions selected are chosen, at the third stage 10% of the human settlements in the localities selected are chosen, and at the fourth stage the number of private holdings to be selected is determined according to the preassigned overall sample size, which is equal to 0.1% of the total number of private holdings in the region.

In 1998 a survey of the agricultural output of households was organized in all regions of the country on the basis of the sampling network formed by the new methodology described above.

2.3 During the elaboration of the methodological approaches to **applying the sample data to the general population**, six methods of evaluating the data were examined, together with American experts, as part of a pilot project in two regions of the Russian Federation. These studies led to the selection of three methods of applying the sample data to the general population, namely:

- according to the overall probability of the private holding selected (ratio of the land area of the holding selected to the total land area of holdings in the region);
- according to the estimated probability at each of the four stages (at each stage of selection a calculation is made of the ratio of the area of the units selected to the total land area of the corresponding sampling unit at the previous stage);
- by the ratio method (ratio of the land area of the holdings selected in the district to the total land area of the region).

The optimal solution for applying the sample data is determined by computer from a comparison of the econometric results of each method.

The first overall data employing the new methodology were obtained for livestock raising for 1998. In their analysis, use was made of information from the latest census of livestock held by households as at 1 January 1996, as well as data from rural administrations.

2.4 The results of applying the data concerning numbers of livestock and output of livestock products in households for the Russian Federation are presented in the following table:

	Overall total	Relative sampling error, %
A	1	2
Numbers of livestock, thousands:		
Cattle	9 113	6.27
of which: cows	5 127	2.96
Pigs	6 255	3.60
Sheep	7 243	9.97
Poultry	117 671	1.34
Production, thousand tonnes:		
Meat		
Beef	571	5.44
Pork	594	5.46
Mutton	49	11.61
Poultry meat	94	3.42
Milk	13 115	3.10
Eggs (hens), millions	7 890	3.39

**Analysis of the results** of applying the sample survey data to the general population of private subsidiary holdings at regional level **has revealed the need to address some methodological issues:**

- differentiation of the sample sizes for some areas according to the totality of private subsidiary holdings in the region, since in certain regions with small populations of households engaged in agricultural production, a sample constituting 0.1% of the overall number of holdings does not ensure an acceptable degree of accuracy;
- conduct of special sample surveys on the raising of certain kinds of domestic animals and output of agricultural produce, where such practices are not widespread.

The holding of the sample survey of households engaged in agricultural activities was made possible thanks to the use of non-centralized sources of information, in particular lists of land-tax payers provided through the Russian Federation's State Committee on Land. Information not prepared within the system of State statistical bodies was, moreover, used to analyse the data obtained.

It has thus been shown in practice that effective use of information not centralized within the Goskomstat system can be made when arranging coverage of certain items in order to enhance the objectivity of the statistical data.

#### **Conclusions**

In the Russian Federation the degree of centralization in the collection and processing of information on agriculture has varied according to the economic situation in the country. In the planned economy system, when ministries had the function of allocating material and technical resources, enterprises engaged in so-called "illegal reporting" on a wide range of indicators when requested by the ministries. With the transition to a market economy, the ministries have lost their allocative function and thus ceased to exercise a direct influence on economic entities. As a result, there was a marked tendency towards greater centralization of statistical reporting in the State statistical bodies, not only for agriculture but also for other kinds of activity.

Both the centralized and the non-centralized system of statistics obviously each have their own advantages and drawbacks. The use to be made of one or another system of data collection depends considerably on the specific economic situation in the country.

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