CONSTITUIREA BAZEI DE DATE PRIVIND COSPODĂRIILE AGRICOLE DIN AZERBAIJAN

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Informaţiile limitate privind costurile de producţie şi rentabilitatea fermelor, de rînd cu lipsa de coordonare instituţională adecvată ce ţine de colectarea, prelucrarea şi analiza informaţiilor de către insituţiile vizate, reprezintă nişte obstacole majore întru elaborarea unor analize relevante. În acest sens, FDMS va examina profund aceste probleme şi pentru a permite colectarea, prelucrarea şi analiza informaţiilor la nivel de ferme mici şi mijlocii, care produc mai mult de 90 la suta din produse agricole în Republica Azerbaidjan. Acest proces complex de abordare, rezidă şi în analiza şi elaborarea recomandărilor de îmbunătăţiren care sunt prezentate în acest articol. Acest lucru fiind, de asemenea, în interesul şi a Republicii Moldova, care a semnat Acordul de asociere cu UE şi va intra în această comunitate în viitor. Deoarece, stabilirea RICA este una dintre cele mai importanţi termeni obligatorii pentru statele membre ale UE.

Cuvinte cheie: *Agricultură, fermă, evaluarea impactului, informare, RICA, FDM-uri, subvenţii.*

THE ESTABLISHMENT OF FARM DATA SYSTEM IN AZERBAIJAN

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Scarce information on production costs and farms profitability, in line with the lack of adequate institutional arrangements between the institutions collecting, processing and analyzing information are serious obstacles to the preparation of relevant analyses. The establishment of FDMS will address these problems and allow to collect, process and analyze information on small and medium farms level, which produce more than 90 percent of agricultural products in Azerbaijan Republic. Establishment process of FDMS is analysed and recommendations for improvement are put forward in this article. This can also be in interest of Republic of Moldova which has signed the association agreement with EU and is going to enter this organisation in future. Because, establishment of FADN is one of the most important terms obligatory for EU member states.

Keywords: *Agriculture, farm, impact assessment, information, FADN, FDMS, subsidy.*

Introduction. Government of Azerbaijan is now giving priority to non-oil sectors, including agriculture, to diversify economy and provide food security. Agriculture is a meaningful component of Azerbaijan's non-oil economy and has significant potential for boosting export revenues, and at the same time increasing food security and economic diversification.

Agriculture is the traditional production field of Azerbaijan. Vine-growing silkwarm-breeding and fruit-growing fields are widely spread here since ancient times. As the great part of the country territory has mountanious relief, cattle breeding always play important role in the life of people living here [1].

As a result of agrarian reforms, In the result of agrarian reforms, 2239 collective farms, state farms and other agricultural enterprises were closed down and liquidated and instead of them different economies of organizational-legal forms. 1525 agricultural enterprises, including 219 state agricultural enterprises, 331 collective (joint) enterprises as well as 73 agricultural production cooperatives (LTD, JSC and etc.) and 902 agricultural enterprises were available at the end of 2010. Besidesthat, 41 agro service enterprises, 437 irrigation company, 33 service enterprises for plant cultivation and livestock [2].

The farm privatization reform in the mid-1990s led to the redistribution of land to some 843,200 small private farms of 2.02 ha on average, a large share of which (96%) have between 1 and 5 hectares.

Agriculture is 99.9 percent private, out of which 66.8 percent of specialized agricultural producers consist of family-villager, 32.8 percent housekeeping and only 0.2 percent farming. And it should be noted that more than 90% of agricultural production is produced on these small farms.

At the moment The State Statistical Committee of Azerbaijan Republic doesn't collect the data from household and family farms, which are the main producers in agriculture. And this doesn't allow to implement impact assessment of agrarian policy in an effective way.

Of course many transition countries are in need for accurate farm-level information for policy-making. Previous information systems are not applicable and statistics are not sufficient and adequate for design and evaluation of support policies and programmes. Thus, there is a critical gap with regard to access to information, characterized by lack of ICT infrastructure, inadequate institutional and support arrangements, and limited human resources and capacity.

This results in inadequate capacity to use and analyze existing information to support the formulation of effective policies and interventions and insufficient understanding of the enabling conditions for value chain development.

Farm Data System in EU and Azerbaijan

Currently there are two major farm support related data systems on the EU level, the Integrated Administration and Control System (IACS) and the Farm Accounting Data Network (FADN).

FADN launched in 1965 is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy. It consists of an annual survey carried out by the Member States of the European Union.

- The aim of the network is to gather accountancy data from farms for the determination of incomes and business analysis of agricultural holdings.

- The annual sample 80.000 holdings.

- population of more than 6.400.000 farms in the 28 Member States,

- 90% of the total utilized agricultural area

- 90% of the total agricultural production of the EU [3].

For the analysis of the incomes and economic activities of farms and in this way for the support of the Common Agricultural Policy, in 1965 the European Commission (EC) established a representative information system, named the FADN. EU Member States are obliged to provide data for the system. In the EU27 data are collected from approximately 80 000 farms, partly to fulfil the obligation towards the EC and partly for internal purposes. Sample farms represent a statistical population of 6.4 million farms. The farms, selected according to well-defined criteria, join the system on a voluntary basis and provide accountancy data.

In Azerbaijan The Institute of Economy and Organization of Agriculture (IEOA) under Ministry of Agriculture (MoA) has piloted the introduction of a Farm Data Monitoring System (FDMS). Azerbaijanian Farm Data Monitoring System can be accepted as a simplified version of FADN of EU [4].

The Ministry of Agriculture and the Ministry of Economy and Industry (MEI) are determined to implement new reforms in agriculture and rural sectors, so as to improve rural livelihoods and make agricultural activities and related investments more competitive in an open market scenario. However, current information available on farm and rural enterprises performance in Azerbaijan is limited and does not provide necessary information for well informed policy decisions.

At present there are no readily available comprehensive farm and regional level data sets. Institutional arrangements, and human resources needed to provide a basis for such a complex information and decision support system are also lacking. Available reports and studies show that information on economic characteristics of farms is limited and there is an acute lack of data and analyses on economic efficiency and profitability of farming.

FDMS to be developed will provide the information needed for analysis and assessment of profitability and production efficiency at farm level with the possibility to also serve in provision of advice on improvement of productivity and profitability of production. Furthermore, based on the analyses of collected data, decision makers and policy analysts will have the possibility to assess the competitiveness of Azerbaijani farm products on international markets, as well as the effectiveness of implemented policy measures. This will provide the base for making informed decisions on appropriate incentives and measures to improve food security and the use of agricultural resources and assets. In addition to that, the system will provide data for research related to long term perspectives of socio-economic development of Azerbaijani agriculture.

As we know collecting micro-economic data from farmers is always based on samples as the cost of data collection is relatively high. If there is a well-defined sample, the data of FDMS farms will represent the agricultural production of whole Azerbaijan. The proportion of corporate farms (companies and cooperatives) that provide financial data to SSC is small. For that reason FDMS concentrates only on individual farms, for which there is no reliable data about production and socio-economic characteristics.

Based on the census data, the approach of FADN was used to determine the sample size and distribution of sample farms among regions and farm type categories.
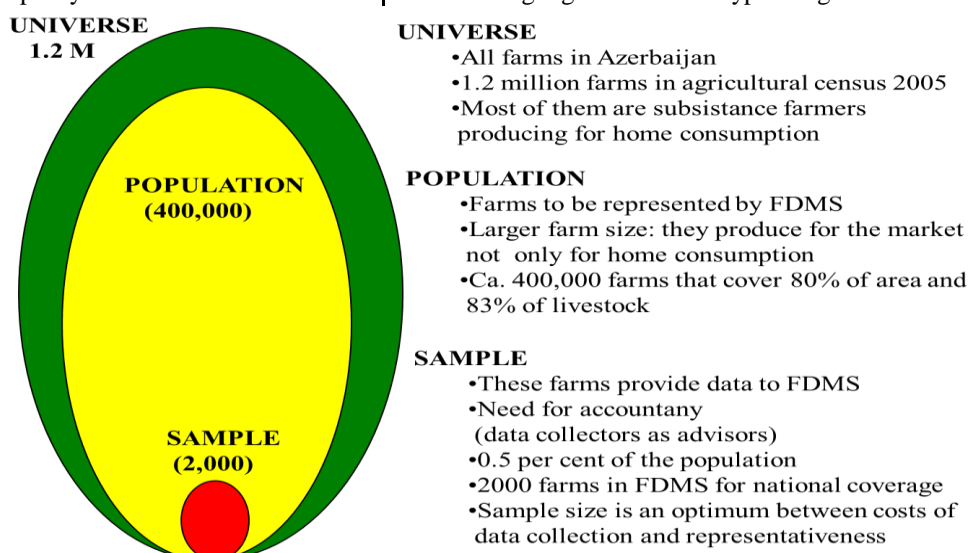

UNIVERSE
- All farms in Azerbaijan
- 1.2 million farms in agricultural census 2005
- Most of them are subsistance farmers producing for home consumption

POPULATION
- Farms to be represented by FDMS
- Larger farm size: they produce for the market not only for home consumption
- Ca. 400,000 farms that cover 80% of area and 83% of livestock

SAMPLE
- These farms provide data to FDMS
- Need for accountany (data collectors as advisors)
- 0.5 per cent of the population
- 2000 farms in FDMS for national coverage
- Sample size is an optimum between costs of data collection and representativeness

Fig. 1. Population and Sample in FDMS

Source: Developed by the author.

Most of the 1.2 million farmers in census are subsistence farmers who are not. The 1.2 million farms in the census are called Universe. The Universe of farms is not aimed to be represented by FDMS, as the purpose of farm monitoring systems is to provide information about market production that is strongly linked to food security. Agricultural households which produce for home consumption are monitored by other statistical surveys. FMDS collects data from farms that sell a part of their products to the market. The farms represented by the FDMS Sample are called Population. Their minimum farm size or lower threshold is used to exclude agricultural households which produce exclusively for home consumption from the Population of farms.

The farm size expressed in Standard Output (SO) was calculated for all farms in census(Average potential output in Azerbaijan of one hectare crop or one head of livestock. Standard Output was calculated on the basis of statistical data of five years (2006-2010) and is expressed in AZN). Table 1 shows the population represented by FDMS sample with different lower threshold values.

Together with all concerned experts, the IEOA has decided to use 1000 AZN SO farm size as lower threshold. As a result, FDMS covers 80 percent of agricultural area and 83 percent of livestock production in Azerbaijan.

Table 1

Number of farms in the population based on different levels of lower threshold

Lower threshold	Farm number	Utilized agricultural area			Arable land		Livestock Unit	
		ha	ha/farm	%	ha	ha/farm	head	%
>2000 AZN SO	224 744	1 148 142	5.1	60.3	836 377	3.7	1 839 396	61.9
>1500 AZN SO	306 195	1 320 556	4.3	69.4	960 015	3.1	2 164 631	72.9
>1000 AZN SO	419 152	1 511 264	3.6	79.4	1 091 605	2.6	2 474 466	83.3
>750 AZN SO	500 536	1 614 835	3.2	84.8	1 158 859	2.3	2 627 449	88.5
>500 AZN SO	588 536	1 707 668	2.9	89.7	1 221 709	2.1	2 728 857	91.9
>250 AZN SO	722 810	1 795 597	2.5	94.3	1 270 041	1.8	2 833 196	95.4
>100 AZN SO	903 378	1 841 544	2.0	96.8	1 284 439	1.4	2 878 777	96.9
All individual farms	1 266 297	1 903 254	1.5	100.0	1 293 520	1.0	2 970 521	100.0

Source: Own calculations based on Agricultural Census, 2005.

To assure full relevance and reliability of the results generated by FDMS, it is essential to define a representative set of sample farms covering all regions in Azerbaijan.

Farm type (crop farms, dairy farms, vegetable farms etc.) and farm size were determined for all farms in agricultural census on the basis of EU typology algorithm. SO coefficients were calculated per hectare and per livestock head as average values for Azerbaijan (For example,SO for one ha of wheat equals to 548 AZN, SO for one dairy cow equals to 664 AZN). Total SO calculated for all farms and farm type was determined according to the proportions of SO. Table 3 demonstrates the farm typology of two farms from agricultural census. Farm size and farm type are calculated for both farms.

Table 2

Two examples for farm typology

Farm 1		
Wheat	1	hectare
Fruits temperate climate	0.014	hectare
Nuts	0.02	hectare
Standard Output=1*482AZN+0.014*2183AZN+0.02*885AZN=530		
Standard output of cereals >66%		
Farm type: field crop farm		
Farm 2		
Vegetables under shelter	0.02	hectare
Fruits temperate climate	0.026	hectare
Fruits tropical climate	0.044	hectare
Nuts	0.014	hectare
Chicken	10	head
Hens	3	head
Standard Output=0.02*36766AZN+0.026*2183AZN+0.044*3502AZN +0.014*885AZN+10*3.4AZN+3*5.4AZN=1009 AZN		
Standard output of vegetables indoor 66%		
Farm type: vegatable farm		

Source: Own calculations based on Agricultural Census, 2005.

Sample size is always a trade-off between representatives and costs of data collection. More farms in FDMS sample represent the population better but cost higher. For FDMS, a sample of 2,000 farms was determined to represent 400,000 farms over 1,000 AZN farm size. It is a sample of 0.482 percent. As Azerbaijan's agricultural area varies a lot according to geographic location, first sampling criteria is **rayon**.

Second sampling criteria is **farm type**. There are almost 50 particular farm types in EU farm typology, but they cannot be adapted directly to Azerbaijan agriculture.

Five main farm types were used for sample plan: field crop farms, vegetable producers, perennial producers, livestock farms and mixed farms.

For the distribution of 2,000 sample farms to rayon and farm type combinations proportional allocation was used. It means that 0.482 percent of the population farms in each rayon/farm type will be selected in the sample. The sample size has been optimized taking into account the costs associated with data collection on the one hand and the accuracy required on the other hand.

Table 3

Sample plan at rayon level

POPULATION						
Rayons	Crop farms	Vegetable farms	Perennial farms	Livestock farms	Mixed farms	Total
Khachmaz ray.	3600	501	1194	2017	4514	11826
Guba ray.	1914	263	3258	4145	2428	12008
Lankaran ray.	369	1936	1630	2907	1374	8216
….						
Total	106353	27233	12867	136642	131845	414940

Source: Own calculations based on Agricultural Census, 2005.

So, as we see from the table 3, the number of farms in population is 414940 and data collection from all of these

farms needs lots of finance and time. That's why only 0.5% of the population was included into sample plan.

Table 4

Sample plan at rayon level

SAMPLE(co.0.5%)						
Rayons	Crop farms	Vegetable farms	Perennial farms	Livestock farms	Mixed farms	Total
Khachmaz ray.	17	2	6	10	22	57
Guba ray.	9	1	16	20	12	58
Lankaran ray.	2	9	8	17	7	40
….						
Total	513	131	62	659	635	2000

Source: Own calculations based on Agricultural Census, 2005.

According to table 4 countrywide sample plan by economic regions was prepared. We'd like to note that there

are 10 economic regions in Azerbaijan. Each of these economic regions consists of several rayons.

Table 5

Sample plan for the countrywide FDMS

Regions	Crop farms	Vegetable farms	Perennial farms	Livestock farms	Mixed farms	Total
Absheron ER	0	4	0	11	4	19
Aran ER	179	42	20	256	279	776
Dakhlik Shirvan ER	40	0	0	32	53	125
Ganja-Gazakh ER	110	27	5	105	63	310
Guba-Khachmaz ER	52	6	22	45	63	188
Lankaran ER	46	16	13	82	63	220
Shaki-Zagatala ER	59	21	0	70	74	224
Yukhari Garabagh ER	13	5	0	13	18	49
Nakhchivan ER	12	14	0	41	22	89
						2 000

Source: Own calculations based on Agricultural Census, 2005.

In 2012 1176 farms from 4 economic regions (ER) were involved to the system and these farms amount 59% of the total number of farms (2000 farms), which should be attracted to FDMS to reach the countrywide scale.

In 2013 1520 farms from 6 economic regions have been included into the system according to the sample plan.

In 2013 data from 1520 farms (representative for 76% of farms of the country) in Absheron, Aran, Guba-Khachmaz, Lankaran, Daglih Shirvan and Sheki-Zagatala economic regions was collected. In 2014 the coverage will grow further to 95.5% and by 2015 it is planned to cover the whole country with a representative sample of 2000 farms.

Hungarian experience played a big role in establishment of FDMS and its successful operation. While establishing FDMS in Azerbaijan, according to proposals from FAO experts from different countries (Poland, Holland, Croatia and others), Hungarian practice was taken as the most appropriate one. In Hungary Research Institute of Agricultural Economics (AKI) is responsible for running Hungarian FADN [5]. Having this in account, experts from FDMS visited AKI twice in order to increase the knowledge and professional abilities.

First results of FDMS data

In 2013 the first results of FDMS were presented, the first yearbook of FDMS, 5 policy briefs and other documents as leaflets and brochures were prepared. This results were very important for implementation of assessment of state policy implemented in agrarian sector. Let's see some of the results.

Table 6

Price of some products 2012

	Azerbaijan				Hungary	Poland	İtaly	Spain
	Absheron ER	Aran ER	Lankaran ER	Guba-Khachmaz ER				
Wheat Price, 2012 AZN /ton	-	286	245	267	209	214	246	-
Tomato price 2012 AZN /ton	-	250	120	223	630	-	720	540
Patato price 2012 AZN/ton	-	201	187	400	159	108	367	-
Milk price, 2012 AZN per tons	721	341	286	470	304	286	423	-
Meat price, 2012 AZN/ton	8 942	8 808	8 844	8 769	5 375	-	-	6 293

Source: FDMS Year Book 2013.

As we can see, in 2012 wheat price in Azerbaijan was 25-30% higher than in world market. The high level of wheat prices are connected to high cost prices of the product. Of course we know that the level of productivity is one of the key factors influencing the cost prices. It means, as higher is the productivity as lower is the cost price and relatively the market prices are lower.

In Lankaran the price was 50% lower, but the productivity was higher for 25%. 74% of the product is produced in commercial farms in Lankaran (approximately 3.3 hectares of tomato arable lands). From the table we can see the prices of tomato in Azerbaijan are much more lower than in Europe countries. This factor can be accepted and used as one of the comparative advantages of this product.

In Guba-Khachmaz region the prices of potato are quite high compared to Aran and Lankaran ER. Suitable climatic and natural environment allows to get additional advantagers in Lankaran and that's why in Lankaran region 78% of production comes from commmercial farms (2.8 hectares per farm).

In Absheron the prices are higher than in other regions, as the main part of production is directly sold in Baku city. But generally milk prices are low. Due to low productivity of animals it is hard to make profits from milk production.

As we can see from the data, in Azerbaijan meat prices are higher than in EU for 40-50%. According to the results of analyses of FDMS data we can note that, Azerbaijan has comparative advantages by vegetables (especially Lankaran ER). Wheat and barley production is not so efficient. The prices of meat and milk are high compared to EU. Big differences in production cost by regions, show the low efficiency of the market.

Conclusions and recommendations

The establishment of Farm Data Monitoring System will address these problems and allow to collect, process and analyze information on small and medium farms, which produce more than 90 percent of agricultural products in the country.

As the final note we can stress that, there are deep gaps in availability of reliable information about land use, the structure of agricultural lands, number of animals and their movement in Azerbaijan. And factually, it's a problem to implement the impact assesment of current subsidy system. We can surely stress that, there's no appropriate source of information to be used for decision making and formation of agricultural policy for food security.

As it was noted before, scarce information on production costs and farms profitability, together with the lack of adequate institutional arrangements between the institutions collecting, processing and analyzing information are serious obstacles to the preparation of relevant analyses. In this regard, FDMS analyses will:

▪ support decision-making for agricultural development and improvement of food security;

▪ formulate and monitor the impact of state support policies and programmes for the development of agriculture;

▪ serve as a basis for the development of agricultural economics research programmes.

In the end we would like to note that, establishment of FDMS can help to reduce the difference among above mentioned fields, create eligibility with international standards and best EU practicies in Azerbaijan. With the country-wide FDMS the decision makers will be able to assess the impacts of implemented measures more definitly, assess the efficiency of the ploicy based on the analyses of collected data. FDMS can also be useful in atraction of investores to agriculture by menas of evidence based results.

We should also note that, this kind of system can be in interest of Republic of Moldova which has signed the association agreement with EU and is going to enter this organisation in future. Because, establishment of FADN is one of the most important terms obligatory for EU member states.

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