2. Маннапов А.Г. 145 лет учебно-опытной пасеке / А.Г. Маннапов // Пчеловодство. - 2013, № 5. - с.3-4.

3. Маннапов, А.Г., Хоружий, Л.И., Симоганов, Н.А., Редькова, Л.А. Технология производства продукции пчеловодства по законам природного стандарта. Монография. М.: Изд-во «Проспект», 2015. - с. 11

УДК 311.2 – 338.001.36

STUDYING THE EXPERIENCE OF THE UNITED STATES OF AMERICA IN CONDUCTING THE AGRICULTURAL CENSUS

Mahdi Suleiman, phd student of the Department of Statistics and Cybernetics, K. A. Timiryazev Russian State Agrarian University-Moscow State Agricultural Academy, mahdisulieman92@gmail.com

Abstract. *The All-Russian agricultural census is still a large-scale government project, and the results of the agricultural census are important and necessary for the development of the agricultural sector and increasing its productivity. Thus, it is necessary to study the experience of countries with developed market economies (for example, America) in conducting an agricultural census that has a wide range of indicators in order to fill in the gaps in the Russian agricultural census program.*

Keywords: *agricultural census, land, agricultural production, farms typology.*

To develop proposals for improving the program of statistical observation, summary, analysis and presentation of research results in the field of studying the structure of agricultural production according to census data, it is necessary to take into account not only Russian and domestic experience and expertise. in conducting statistical surveys, but also advanced foreign experience. The study of the experience of the USA and the experience of the EU countries in conducting agricultural censuses is of particular value.

The Census of Agriculture is a complete count of U.S. farms and ranches and the people who operate them. Even small plots of land - whether rural or urban - growing fruit, vegetables or some food animals count if $1,000 or more of such products were raised and sold, or normally would have been sold, during the Census year. The Census of Agriculture, taken only once every five years, looks at land use and ownership, operator characteristics, production practices, income and expenditures. For America's farmers and ranchers, the Census of Agriculture is their voice, their future, and their opportunity.

The Census of Agriculture provides the only source of uniform, comprehensive, and impartial agriculture data for every county in the nation. Through the Census of Agriculture, producers can show the nation the value and importance of agriculture and can influence decisions that will shape the future of U.S. agriculture.

The typology of the agricultural census is based on the typology of the Economic Research Service of the US Department of Agriculture (ERS), which was last updated in 2013, and uses information about the main occupation of the producer to divide small farms into groups [1]. Due to changes in the way demographic data is collected during the agricultural Census, the subcategories for small farms have been revised for this publication; the classification of small farms is based only on the gross monetary income of the farm (GCFI) and does not include the employment component. The data is comparable with previous reports on typology for medium and large family farms, as well as non-family farms.

• Small family farms – less than $350,000 ;
• Medium–sized family farms - from $350,000 to $999,999;
• Large–scale family farms - $1,000,000 or more;
• Non-family farms - Any farm on which the producer and persons associated with the producer do not own most of the business [3].

Thus, each group of farms distributed by revenue is characterized by: sales volume (including and excluding subsidies), production costs, net profit, size of loans, type of organization, specialization of farms, amounts of income from agricultural activities, land use, cost of land and structures, machinery and equipment, size of land use (including taking into account the categories of land and harvested areas), livestock and poultry, the area of crops (by type, indicating the gross collection and distribution of reclaimed land).

To characterize each of the identified classes of agricultural producers, indicators are usually taken into account, a wide list of which is contained in the census forms. They include issues related to land area, irrigation, cultivated field crops, land use methods, energy resources, machinery and equipment, sales volumes, production costs, labor resources, loans, leases, government programs, fertilizers and chemicals used, etc. In addition, many other performance indicators can be calculated based on the available data.

Such a wide range of indicators allows us to obtain a detailed, almost exhaustive description of US farms in all possible sections. All information is publicly available both for the country as a whole and for the states. The study of the state of the types of farms allows the US government to pursue a differentiated agricultural policy, plan the types and volumes of state support, which ensures a high level of efficiency of agricultural production, preservation and development of rural areas [2].

The system of conducting agricultural censuses in the United States of America is one of the best systems in the world, because it contains an exhaustive set of statistical indicators that give an exhaustive description of American farms.

Dynamics of the availability and composition of US production resources according to agricultural censuses (table 1).

Table 1

Indicator	2002	2007	2012	2017
Number of farms, million	2.13	2.20	2.11	2.04

Total land area, million acres.	938.28	922.10	914.53	900.22
agricultural land, million acres.	434.16	406.42	389.69	396.43
Main types of machines, thousand units				
Trucks	-	3512.5	3297.9	3343.5
Tractors	4592.5	4389.8	4178.3	4038.1
Combine harvesters	409.4	346.9	346.6	323.3
The number of productive animals, million heads.				
cattle and calves	95.50	96.35	89.99	93.65
pigs	60.41	67.79	66.03	72.38
birds	334.44	349.77	350.72	368.24
Employed in agricultural production, million people:				
farmers, total	3.12	3.34	3.23	3.45
employees, total	3.04	2.64	2.74	2.41
the cost of fixed assets (land and buildings, machinery and equipment), million dollars.	1417.33	1988.26	2463.32	2815.63
Per 1 farm:				
agricultural land, acres	203.9	184.3	184.7	194.1
irrigated land, acres	26.0	25.7	26.5	28.4
number of tractors, pcs	2.2	2.0	2.0	2.0
livestock cattle and calves	44.9	43.7	42.7	45.9
pigs	28.4	30.7	31.3	35.4
Birds	157.1	158.6	166.3	180.3
farmers, people	1.46	1.5	1.5	1.7
employees, people	5.5	5.5	4.8	4.7

According to the data of the last four agricultural censuses in the USA for the period 2002-2017 [4, 5], the total number of farms decreased by 4.2% (Table 1). The total land area decreased by 4.1%. The area of agricultural land decreased by 8.7%, and by 9.8 acres per farm. There was also a decrease in the number of all machines, for example, the number of tractors decreased by 12.1%. The number of cattle and calves decreased by 1.85 million. at the same time, the number of pigs and poultry increased significantly, as the number of pigs increased by 7 pigs per farm, and the number of poultry increased by 23.2 birds per farm. This testifies to the growth of animal husbandry in the USA. The number of farmers engaged in agricultural production increased by 330 thousand, and the number of employees decreased by 630 thousand. The cost of fixed assets (land and buildings, machinery and equipment) has increased by 2 times.

Indicators of the availability and composition of production resources by types of farms in the United States according to the 2017 agricultural census (table 2)

Table 2

Indicator	Total	Small family farms		Midsize family farms	Large family farms		Non-family farms
		GCFI less than $150,000	GCFI $150,000 to	GCFI	GCFI $1,000,000 to	GCFI $5,000,000 and more	

552

			$349,999	$350,000 to $999,999	$4,999,999		
Number of farms, thousand	2042.2	1668.8	129.7	108.3	47.1	5.5	82.9
Per 1 farm:							
total land area, acres	440.8	172.5	1003.7	1755.5	3219.1	4430.5	1399.7
of agricultural land, acres	194.1	48.9	404.9	976.6	2143.9	2893.2	478.7
of pasture	196.2	87.9	519	690.5	938.5	1262.4	733.8
number of trucks, pcs	1.6	1.2	2.7	3.8	5.9	12.7	2.4
number of tractors, pcs	2	1.5	3.4	4.5	6	11	2.6
number of combine harvesters, pcs	0.2	0.1	0.5	0.8	0.9	0.6	0.3
livestock	45.9	15.7	84.2	141.1	304.7	2534.7	155.9
cattle and calves	35.4	3.1	58.2	118.2	329.8	3141.5	168.8
pigs	180.3	12.6	252.5	239.9	517.4	33778	931.1
Birds	1.7	1.6	1.7	1.8	2	2.7	2.1
farmers,	1.2	0.4	1.7	3	8.5	66.8	4.7
employees, people	1445.1	595.8	2717.2	5550.2	12017.2	24322	3662.3
the cost of fixed assets (land, buildings, machinery, equipment),thousanddollars.	159.8	24.8	254.4	537.1	1480.4	11738.9	713.6

According to 2017 data, almost 96% of all farms are family farms, while the smallest part of production resources per farm is concentrated in them compared to other categories of farms (Table 2). Small family farms occupy a significant share – 88.1%, and mainly (81.7%) are farms with gross cash income up to 150 thousand dollars. Only 2.6% of their total number belong to large family farms with a gross monetary income of $ 1 million, while the largest part of the production resources of each farm is concentrated in it compared to other categories of farms.

With the increase in the size of farms by gross cash income, the cost of fixed assets and production costs per 1 farm also increases. If in the lowest group of "farms with low sales" the cost of fixed assets is 595.8 thousand dollars per 1 farm, and production costs are 159.8 thousand dollars, then in the highest group of "very large farms" 24322 and 11738.9 thousand dollars.

Conclusions:

Agricultural census data is regularly used by agricultural organizations, enterprises, government departments of agriculture, elected representatives and legislative bodies at all levels of government, public and private sector analysts, the media, as well as colleges and universities. A wide range of statistical indicators of the US agricultural Census allows, unlike the Russian one, to give a detailed, almost exhaustive description of US farms in all possible sections. All information is publicly available both for the country as a whole and for the states. The study of the state of the types of farms allows the US government to pursue a differentiated agricultural policy, plan the types and volumes of state support, which ensures a high level of efficiency of agricultural production, preservation and development of rural areas. We believe that the US experience of conducting agricultural censuses can be useful to the state authorities of the Russian Federation.

References

1.   Hoppe, Robert A. and MacDonald, James M., Updating the ERS Farm Typology (April 2013).

2.   Census of agriculture [Электронный ресурс]. Режим доступа: hups:/vww.agcensus.usda.gov/

3.   Farm typology [Электронный ресурс]. Режим доступа: hups:/vww.agcensus.usda.gov/

4.   2012 Census of agriculture: United States Summary and State Data Volume 1, Geographic Area Series, Part 51. Issued May 2014. – URL: http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_ US/usv1.pdf (дата обращения: 16.09.2020). – Текст: электронный

5.   2017 Census of agriculture: United States Summary and State Data Volume 1, Geographic Area Series, Part 51. Issued April 2019. – URL: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapt er_1_US/usv1.pdf (дата обращения: 14.09.2021) – Текст: электронный.

УДК 633.192

QUINOA - A NEW AGRICULTURAL CROP FOR RUSSIA

Vorsheva Alexandra Vladimirovna, *PhD student, Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, vorsheva@rgau-msha.ru*
Academic advisors: Fomina Tatiana Nikolaevna, *senior lecturer, Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, t.fomina@rgau-msha.ru*
Kucharenkova Olga Vladimirovna, *Candidate of Agricultural Sciences, docent, Russian State Agrarian University - Moscow Timiryazev Agricultural Academy, okuharenkova@rgau-msha.ru*

Abstract. *The article presents the results of studies on the effect of nitrogen nutrition on quinoa grain yield and quality.*

Keywords: *quinoa, nitrogen, yield, protein.*

Quinoa (*Chenopodium quinoa* Willd.) is a new crop, presently being tested in Northern Europe, where its close relative fat hen (C. *album*) is already a well-known weed species. Although it may seem trendy and fashionable quinoa is certainly not a new food. It was grown and eaten thousands of years ago by the ancient Incas and revered as the "mother of all grains." In the Iron Age, the European fathen had the status of a secondary crop, either collected or cultivated [1].

Therefore, the present-day introduction of quinoa to Northern Europe is based on the utilization of a closely related species in ancient times. Quinoa is one of the oldest, existing crops, which was first detected by Europeans when Columbus discovered South America in 1492 [1, 2, 5].