

**Research Article**

**Horse breeding in Russia – state, trends, prospects**

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[Received: 20/01/2019; Accepted: 15/04/2019; Published: 16/04/2019]

**ABSTRACT**

The current state of the horse breeding industry in the system of the agro-industrial complex of the Russian Federation under conditions of structural reorganization of economic management mechanisms in the countryside, the formation of new challenges in the manufacturing sector and in the rural social sphere has been studied using methods of economic and zootechnical analysis; analysis of industry trends, including deterministic dynamics of the number of horses in different categories of farms and production specialization, downsizing of enterprises in the horse breeding segment, accelerated development of the herd horse breeding, population distribution in the federal districts, taking into account optimization tasks in the period of the recovery in the horse breeding industry. The main factors are revealed and the degree of their influence on the development of different areas of specialization in the functional use of horses is evaluated. A high degree of regulatory influence of state support mechanisms on the formation of stable trends of positive dynamics in the sub-sector of herd horse breeding was noted. To date, in this segment of domestic horse breeding, the number of livestock of horses, exceeding the levels of 1990 has been reached, opportunities have emerged for mobilizing export potential. Based on the research, the main parameters of the forecast for the functioning of the industry in the medium term until 2025 have been identified and scientifically substantiated positive trends and focused on further positive dynamics.

**Key words:** number of horses, regions, type of use, trends, prospects, forecast.

**INTRODUCTION.**

During the period of market reforms horse breeding industry of the country has undergone large quantitative and qualitative changes.

First of all horse breeding began a process of sustainable reduction of livestock, which lasted during 15 years (1991 – 2005 years). The number of horses in all categories of farms has decreased during these years from 2618,4 до 1304,4 thousands of heads, that is more than 2 times. Since 2006 the number of horses in the country has stabilized and even began to

increase a few: the year 2006 – 1304,4, the year 2010 г. – 1340,6 and the year 2018 г. – 1403,8 thousands of heads; the increase for 12 years was 99,4 thousands of horses, 7,6 %. (1, 2, 3).

We investigated the factors and conditions that determined the high degree of decline in the number of livestock in the horse breeding industry in the first decade of economic reforms. First of all, the negative course of processes in horse breeding was affected by dramatic

changes in the whole of agricultural production, of which the industry is an integral part. Due to the specific functional purpose of the horse, its main products - work - quickly lost relevance in the vast majority of disintegrating agricultural enterprises. On the other hand, the negative processes in the industry, which had a living commodity content, were aggravated as other types of farm animals in fixed and circulating assets melted in the course of reforming the organizational forms of enterprises. It is known that during this period natural a live animals were often used in calculations. Working horses during this period were “lucky” to a greater extent, since a significant number of them “migrated” from public to private ownership, fulfilling the desires of the numerous lovers of this species of animals, especially those who had a farm or a rural household. Thus, the fate of the industry was influenced and continues to be influenced, besides direct general economic mechanisms, by very specific motives generated in various spheres of the society, including intangible, reflecting traditions, cultural and national ways of different segments of the population in the regional, economic and social aspects.

#### Goal and tasks.

It was studied the course of economic and organizational-technical reforms in horse breeding in the Russian Federation in connection with the processes of changing the socio-economic structure, which caused negative consequences in the state of the

**Table 1** The change in number of horses of main categories of owners (thousands of heads at the beginning of the year)

Categories of farms	2007.		2018		2018 . in % to 2007 .	
	All horses	Mares 3 y.o. and older	All horses	Mares 3 y.o. and older	All horses	Mares 3 y.o. and older
Farms of all categories	1304,4	611,0	1403,8	641,9	107,6	105,1
Agricultural organizations	425,6	148,0	288,3	109,4	67,7	73,9
Private owners	743,0	389,0	728,4	361,3	98,0	92,9
Farms and individual entrepreneur	135,8	74,0	387,1	171,2	285,0	231,4

The positive dynamics of number of horses after 2006 is directly related to the inclusion of the horse breeding in the number of livestock industries that are supported by the state in the format of State program of the development of agriculture.

industry. In order to reliably assess the results of their influence, we investigated the trends in the number of horses, the structural changes in the directions and types of their use in material production, the agro-industrial complex, in private households, in sports and leisure activities in order to identify the determinants of key conditions and positive development of the horse industry in the future. The objectives of the study included the study of the dynamics of the number of livestock of horses of various functional specialization by periods, regions, categories of economic entities, the assessment of trends and the development of industry forecasts for the future.

#### METHODS AND MATERIALS.

It were used methods of economic analysis, including factor analysis, extrapolation of trends, comparisons, groupings, forecasting. The classification of horses by use (production specialization) was applied generally accepted (4,1,5,3). As a material for research, the data of Rosstat, the Ministry of Agriculture of the Russian Federation, the Research Institute of Horse Breeding were used. The material was processed using spreadsheets.

**Results and discussion.** As shown by the studies of the dynamics of the number of horses in Russia after stopping its decline in 2006, the trends of this process were radically different for various business entities.

The change in number of categories of owners is given in Table 1.

With an overall increase in livestock on 99,4 thousands of heads in analyzing period, it continued to decrease in agricultural organizations on 137,3 thousands of heads.

Dynamics of the number of horses in the regional aspect from 2007 to 2017 is characterized in Table 2.

**Table 2** The change of total number of horse on Federal districts

Federal districts	Number of horses thousands of heads on 1.01.		Change of number from 2007 to 2017	
	2007 г.	2018 г.	+, - Thousands of heads	%
Central	117,9	40,8	- 77,1	- 65,4
Northwest	24,6	11,2	- 13,4	- 54,5
South	90,3	103,6	13,3	14,7
North Caucasus	69,9	92,9	23,0	32,9
Privolzhsky	319,7	229,7	- 90,0	- 28,2
Ural	72,2	68,5	- 3,7	- 5,1
Siberian	467,4	655,2	187,8	40,2
Far Eastern	142,4	201,9	59,5	41,9
<b>Total on Russian Federation</b>	<b>1304,4</b>	<b>1403,8</b>	<b>99,4</b>	<b>7,6</b>

During the 11-year period, the increase of livestock occurred in 4 Federal districts. The number of horses in horse owners of Siberian Federal district increased on 187,8 thousands of heads (40,2%), Far Eastern – on 59,5 thousands of heads (41,9%), North Caucasus – on 23,0 thousands of heads (32,9%), and South – on 13,3 thousands of heads (14,7%).

In Central and Northwest Federal districts there was the most significant reduction of the number of horses in 2,9 and 2,2 times.

In Privolzhsky district the number of horses decreased in 90,0 thousands of heads (28,2%) and in Ural – on 3,7 thousands of heads (5,1%). By the nature of the placement of horse population, the changes of the ranks of regions in terms in the number of horses are especially significant for Central Federal district which moved from the fourth place to the seventh. North Caucasus district raised from the seventh place to the fifth, and South district moved from the fifth place to the fourth.

The first – third places are kept by Siberian, Privolzhsky and Far Eastern regions.

The changes in number of horses of categories of owners and Federal districts mentioned above are mainly due to changes in the nature of the horse use in the period of market formation, the development regional, national traditions of horse breeding, and objective natural and economic conditions, reforming agricultural sector in the country.

At the same time in branch four main directions of economic use of horses are remained: working -use, productive, sport and leisure and breeding. (1,3,6,7,8). The number of horse on the directions is given in table 3.

**Table 3** The number of horses on the directions of their use

Main directions of use of horses	2018 г. (fact)	
	Thousands of heads	% to total
Working - use	676,0	48,1
Meat herd	654,0	46,6
Milk	11,3	0,8
Sport-leisure	14,0	1,0
<b>Total mass horse breeding</b>	<b>1355,3</b>	<b>96,5</b>
Breeding	48,5	3,5
<b>Total of the brunch</b>	<b>1403,8</b>	<b>100,0</b>

The leading trend in number of horses, up to the present time, was a working use direction. Special studies have established that the following factors influence the state and perspectives of working – use horse breeding – the intensity level, especially the mechanization of agriculture, the development of productive livestock and provision of the production by labour force.

In large agricultural enterprises, especially in Central districts of the country due to the multiple reduction in the main types of productive livestock and a significant decrease in the level of labour supply, the number of

working horses has decreased many times, more than in 17 times.

As a result, the horses began to perform mainly auxiliary and transport work, as well as grazing, mechanization of which is difficult and inefficient.

However, the total number of horse in the population increased from 274,4 thousands in 1990 to 809,6 thousands in 2000, that is in 3 times.

If you consider that a ten-year period is insufficient for such a radical increase in the number of horses by means of their own reproduction it becomes apparent that this growth is provided by the descending order of the corresponding number of horses in the public sector.

In the first decade of economic reforms the population actively began to develop private farms in order to produce crop and livestock products. For this purpose for economic reasons the population began to use working horses more widely as acquisition and use of tractor and automobile equipment, expensive spare parts and fuels and lubricants did not pay off with production. Besides, the working mares give foals, some of which are used for meat for personal consumption and sale.

In farms and individual entrepreneurs during 2008 – 2016 the number of cattle increased from 1193,2 to 2379,8 thousands of heads (in 2 times), sheep and goats from 6041,7 to 8893,3 thousands of heads (47,2%), what caused the growth the number of working horses with progeny from 55,2 to 87,2 thousands of heads (58,0%).

In the medium term (2025) as established in the forecasting studies the number of working horses with some decrease in Federal districts in the European part of the country and their growth in Siberia and Far East will be stabilized on the level of 667 thousands of heads.

The second direction in mass horse breeding is productive horse breeding, including two independent branches – meat herd and dairy.

During the years of market reforms in the number of regions of the country with traditionally developed pasture cattle breeding by the method of meat cattle breeding the

specialized meat industry was formed - herd horse breeding.

The official number of meat herd horses for the ten year period of their statistical accounting (2008-2017) increased from 252,6 thousands of heads to 444,0 thousands of heads (75,8%). The main increase occurred in farms and individual entrepreneurs – from 98,0 thousands of heads to 291,1 thousand of heads, almost in three times. At the beginning of 2018 65,8% of horses from the total counted population of meat herd horses belonged to this category.

Besides, it was found that 210,0 thousands of horses in the eastern regions are contained in order to obtain meat. So the total number of horses of meat direction is 654 thousands of heads – it is very essential resource for production of diet horse meat .

Mentioned in the analysis the extended development of meat herd breeding is caused by number of the objective factors. Horse meat is characterized by high nutritional and taste qualities, and it is historically formed the significant needs in horse meat in the population of various nationalities of our country (4,9,10). It is known that in Saha Republic (Yakutiya) the share of horse meat accounts for 20% for the meat diet of the population.

The development of the industry is dictated by the feasibility of productive use of the natural pastures unsuitable for other types of livestock. Only in Siberia there are 1,5 million hectares such pastures. To develop meat herd horse breeding it may be used fodder resources in the taiga territories, which area is about 3 million hectares.

An important factor contributing the development of the industry is its economic efficiency. The cost of commercial meat of herd horses is 2 – 2,2 times lower than meat of cattle and 1,5 – 1,8 times lower than meat of sheep. Production and sale of horse meat provide farms with high and sustainable profitability. (4,13).

A significant reserve in the industry is the increase the number of livestock created in recent years new highly productive breeds (Novoaltayskaya, Megezhekskaya, Prilenskaya) and inner breed types (Kolymskiy, Yanskiy, Tselinniy). (11,12).

It should be noted that live weight of 1,5 years old foals of Novoaltaiskaya breed is 380-400 kg while keeping in the pasture all year round, which is close to that of specialized beef cattle during intensive fattening.

In the study of forecasting it is established that number of meat herd horses in agricultural organizations, farms and individual entrepreneurs will be 560,0 thousand heads in 2025.

With the stabilization of livestock of meat horse in traditional regions the total livestock of horses of meat direction will be 770 thousand of heads in 2025.

As a result by the nature of the use meat horse breeding steadily goes to the first place in the sectorial structure of horse use.

From this herd it is possible to receive 63-70 thousand tons of meat in live weight (35-39 thousands tons in slaughter mass).

The priority task in the meat herd horse breeding is to increase the level of marketability, as the main economic component of the expanded development of the industry.

Today the bulk of the meat produced by small farms goes for the internal use except little sales on the small markets.

Russia, which previously supplied to Europe up to 25 thousands meat horses a year, fell out of the exported countries and now the country imports about 12 thousands tons of horse meat a year. (13).

To increase the marketability of the industry in regions with low number of meat horses (Saha Republic (Yakutiya), Altai and Bashkortostan) slaughtering and processing plants should be created for consumption and export. In this perspective (2025 year) only these three regions will be able to produce 17-18 thousand tons of horse meat of high quality a year.

The second subindustry of the productive direction is milk horse breeding, which has the important social significance. Its development has long history is due to the high therapeutic, nutritional and dietary qualities of milk and koumiss. (14). But, despite this, the annual production of natural koumiss in the country is insignificant, about 4,0 thousand tons. The development of dairy horse breeding may be

stimulated by taking state actions on motivation of the increase of milk and koumiss production for specialized medical and children's institutions, as substitute of breast milk in nutrition of young children. Moreover the highest value of mare's milk in the composition of proteins, fats and carbohydrates can make it attractive to use as the main ingredient of nutrient mixtures for baby food. While the initiative of business structures in the development of this direction is poorly expressed. Insufficient awareness of business about the effectiveness of financial investments in the organization of industrial production of koumiss in non-traditional regions, close to major cities and centers.

Calculations carried out on the basis of the actual regulatory frame work in relation to the conditions of Central Federal district showed that the annual koumiss production on the farm containing 40 forage (28 milking) mares will be 49,0 thousands liters in the amount of 8,8 million rubles with annual profit 3,7 million rubles, the level of profitability will be about 70 per cent.

In 2025 the number of milk horses is expected to increase to 40,0 thousands of heads, with annual koumiss production 20 thousands tons.

**Sport and leisure horse breeding** includes the use of horses in classic and national types of equestrian sport, in equestrian tourism, horse driving and other leisure and health activities. Now an approximate number of horses in this direction is 14,0 thousands of horses.

In private sport – leisure organizations, acting as clubs, sections, schools, complexes and farms there are more than 400 types of paid services to people.

Foreign experience and our calculations show that with increasing economic status of our population the livestock of horses of sport-leisure direction will be increased to 45 thousands of heads in 2025. (15,16,17,18).

Despite a small percentage in the structure of the horse population the strategically main direction is horse breeding. It gives horses for the improvement of mass horse breeding (working –

use and productive) and sport – leisure horse for different purposes. (1,5,11,19,20,21)

Now on the territory of Russian Federation there are 67 breeding studs, among them 55 studs breeding stud breeds; 119 breeding farms, among them 51 breed horses of stud breeds and 8 genofond farms which keep local breeds of horses. Besides the studs and farms mentioned above there are about 1500 private owns are engaged breeding horses.

In the country there are 20 organizations on the breeding records and control of breeding value of animals (racecourses).

During the period of market relations in the functioning of horse breeding some negative trends are appeared.

Thus, per 100 mares exit of foals in studs decreased from 72 heads to 55-58 heads, sale of breeding young stock decreased from 70 heads to 39-40 heads. The industry has become unprofitable, the approximate size of the loss in recent years was 300-400 million rubles.

Privatization of the majority of studs against the background of loss – making of breeding horse breeding aggravated processes of reduction of nucleus of high breeding quality up to its complete elimination in some farms.

In this regard, a number of studs, which had a long history and had previously valuable livestock, now fell out of the breeding process.

Moreover, the existence of a number of valuable stud breeds of horses is now threatened – Don, Tersk, Soviet Draft, Vladimirskaya Draft and others – due to the critical reduction in the number of high-value stallions and dams.

The established state support of horse breeding from the Federal and regional budget in the amount of 14 thousands rubles per mare a year for prize breeds and 10 thousands rubles for other breeds reimburses only 7 – 10 per cent annual production costs for the maintenance of stallion and dams. The support is paid without taking into account the actual output of foals, which does not provide the motivation for the expanded reproduction of the livestock.

Unsystematic import of a significant number of riding horses and trotters, the reproductive livestock of which has domestic breeding farms, does not pursue the goals of improving domestic

genetic horse resources. A significant part of the imported livestock is sold in transit to third countries and is competitive with the export products of our studs and breeding farms.

Currently in all categories of horse owners in our country there are 48,5 thousands of heads of breeding horses, among them there are 25,3 thousands of heads of stud breeds.

In horse breeding of stud breeds there is a process of deconcentration mares' stock and other groups of horses. A significant part of the livestock belong to individual owners, having from 5 to 20 mares with the total livestock 4,3 thousands of mares and about 840 stallions, 46,8 and 62,2 per cent from the total breeding stock. This is 46,8 and 62,2 per cent accordingly from the total number of breeding livestock. The given data show that the value of individual owners in the system of horse breeding will increase in future. This necessitates the assignment of the status of breeding organizations to majority of them, as well as the creation of new organizational and technological units for reproduction, pre-racecourse and sport training. During the period of economic reforms the main production and economic indices of racecourses have significantly decreased.

Racecourses despite the number of decisions of the Supreme bodies of state power still do not use the economic opportunities of the main source of cash income – the functioning of the totalizator.

While in 1990 revenues from the betting and entrance fees at 34 racecourses of our country amounted to 52,2% of the total revenue share, in recent years it is about 10,0 per cent.

Thus, the main obstacles to the sustainable development and increase of competitiveness are:

- underdevelopment of the domestic market of breeding horses due to the lack of a segment of the economy (national horse totalizator), providing full reimbursement of production costs,
- reduction of number and quality of breeding horses,
- mass, unjustified import of horses of prize and sport breeds,

- insufficient technical equipment and low organizational and technological level of conduct breeding records in studs and farms,
- weak forage base and low availability of cultural pastures (levades).
- insufficient application of economic mechanisms in the coordination of work to improve stud breeds of horses,
- shortage of qualified personnel.

The stated problems of a systemic nature are aggravated by the lack of demand for scientific developments of selection and genetic, biotechnological, organizational and technological directions, which hinders the innovative development of horse breeding and racecourse sphere.

By 2025 it is planned to increase the number of breeding horses from 48,5 thousand of heads to 60,0 thousands of heads, and the number of breeding horses of stud breeds to 30,3 thousands of heads. Based on the projected level of the development of the above directions of horse breeding in the medium term perspective, the structure of livestock will be characterized by the data of Table 4.

**Table 4** Forecast of the structure of horse breeding on the directions of the use of horses

Main directions of use of horses	2025 г. (forecast)	
	Thousand of heads	% to total
Working - use	676,0	42,2
Meat herd	782,0	48,8
Milk	40,0	2,5
Sport-leisure	45,0	2,8
<b>Total mass horse breeding</b>	<b>1543,0</b>	<b>96,3</b>
Breeding	60,0	3,7
<b>Total of the brunch</b>	<b>1603,0</b>	<b>100,0</b>

In general, to 2025 the number of horses in our country will increase to 1603,0 thousand of heads, that is more than 199,2 thousands of heads (14,2%) in comparison with the level of 2018.

To improve the horse breeding industry the Ministry of Agriculture of the Russian Federation is currently developing a Strategy for the development of horse breeding of the

Russian Federation on the period to 2025 with the participation of scientific institutions and non0profit associations.

Main priorities of Strategy are:

- creation and functioning prize horse breeding industry with the system of the national totalizer capable to provide economically stable and deficit-free functioning of the industry;
- target state support for studs and farms to increase the quality and quantity of breeding horses;
- the import of breeding horses should be strictly controlled and justified from the point of view of the progress of domestic selection;
- organizational and technological measures to increase productivity and reduce production costs for receiving and breeding horses of all types of use.

## CONCLUSIONS.

The study showed that domestic horse breeding underwent significant structural changes during the period of economic reforms. In the initial period (1991-2006), they had pronounced depressive nature, accompanied by a sharp reduction in the number of horses, a decrease in their role and importance in the national economy, and the destruction of the infrastructure of large specialized commodity and breeding enterprises. Subsequently, the process of deconcentration of livestock in the segment of pedigree horse breeding strengthened, the sector of private ownership of horses became stronger, large farms breeding herd horses in traditional regions of productive horse breeding, as well as farm enterprises, developed significantly. To date, the economically efficient format of the meat herd horse breeding industry, which received substantial state support, has largely taken shape; the direction of private ownership of inexpensive horses for personal use has stabilized: work, leisure, and productive goals; the livestock of horses continues to grow in farmers. This segment also has prerequisites for strengthening stability in the future. At present, the positions of domestic pedigree horse breeding are most vulnerable, having lost

financial sources for their successful functioning in the previous period. This study shows the ways and methods of restoring lost positions of domestic horse breeding and its successful functioning and development in the future, indicated, inter alia, in the Strategy for the Development of Horse Breeding in the Country until 2025.

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