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THE PROCESS OF FORMING ECONOMICALLY SUSTAINABLE FARM PRODUCTIVE CAPACITY

Abstract. The theoretical reconsideration of views on the nature of the production capacity in the system of modern economic relations correct its scientific significance, focusing on the role it should play. In the study are substantiated the organizational and economic features of formation economically resistant productive capacity of agricultural enterprises and methodological foundations of research.

In the article are researched the industry features formation and use of productive capacity in the agricultural enterprises of Kiev region and evaluated the current state of resource potential of the region and provided a system of economic evaluation of production potential in enterprises.

In the research are grounded strategic directions of formation and use of production potential of agricultural enterprises; developed proposals for improving the mechanism for stimulating efficient use of production potential in agriculture and ensure economic security of the production capacity of farms; implemented optimization of production potential of agricultural enterprises.

Keywords: economically sustainable production capacity, agricultural enterprises, employment potential, land potential strategic directions, economic security, optimization

Formulas: 1, fig.: 3, tabl.: 4, bibl.: 14

JEL Classification: F14, J43, N50, O13

Introduction. With the development of different forms of ownership in the domestic agricultural sector and its reforming the priority becomes to solve the problem of reproduction and efficient use of production capacity, especially the resource part. Insufficient development of the legal framework reduces the efficiency and limits the scope of instruments for general system of measures of economic performance playback and preserves productive capacity.

Literature review and the problem statement. Studying of the formation and use of production potential of agricultural enterprises are dedicated the works of scientists: V. Andriychuk, Z.Gerasimchuk, V. Galushko, O. Gudzinsky, M. Gladiy O. Ermakov, Kaletnik, N. Krasnokutsky, P. Layko, M. Lendel, M. Malik, P. S. Makarenko, V. Mesel - Veselyak, Moroz, B. Paskhaver, P. Sabluk, V. Tregobchuka, I. Fedonin, O. Shkilyov, A. Yuzefovich, etc.

However from a scientific and practical point of view, the theoretical basis

for the formation and effective utilization of productive capacities of agricultural enterprises are not investigated that served the purpose of our research and writing.

Research results. The change of theoretical views on the nature of the production capacity in the system of modern economic relations corrects its scientific value and focuses on the role that it should play. Land, labor and material resources are elements of the production potential of the enterprise. On the other hand the production potential of the company acts as system of resources and competence of the company, able to solve certain goals. On the other hand the production potential of the company acts as a system of resources and competence of the company, able to solve certain goals. Therefore, patterns of production potential of the enterprise should be investigated as a combination of their individual patterns of its components. The elements of the production potential of the enterprise to be specifically adapted to the requirements of production and therefore the production potential of the company are formed economic system.

A result of research proved that the main role in the formation and use of productive capacity of agricultural enterprises play its components, and its systematization represented in Figure 1.

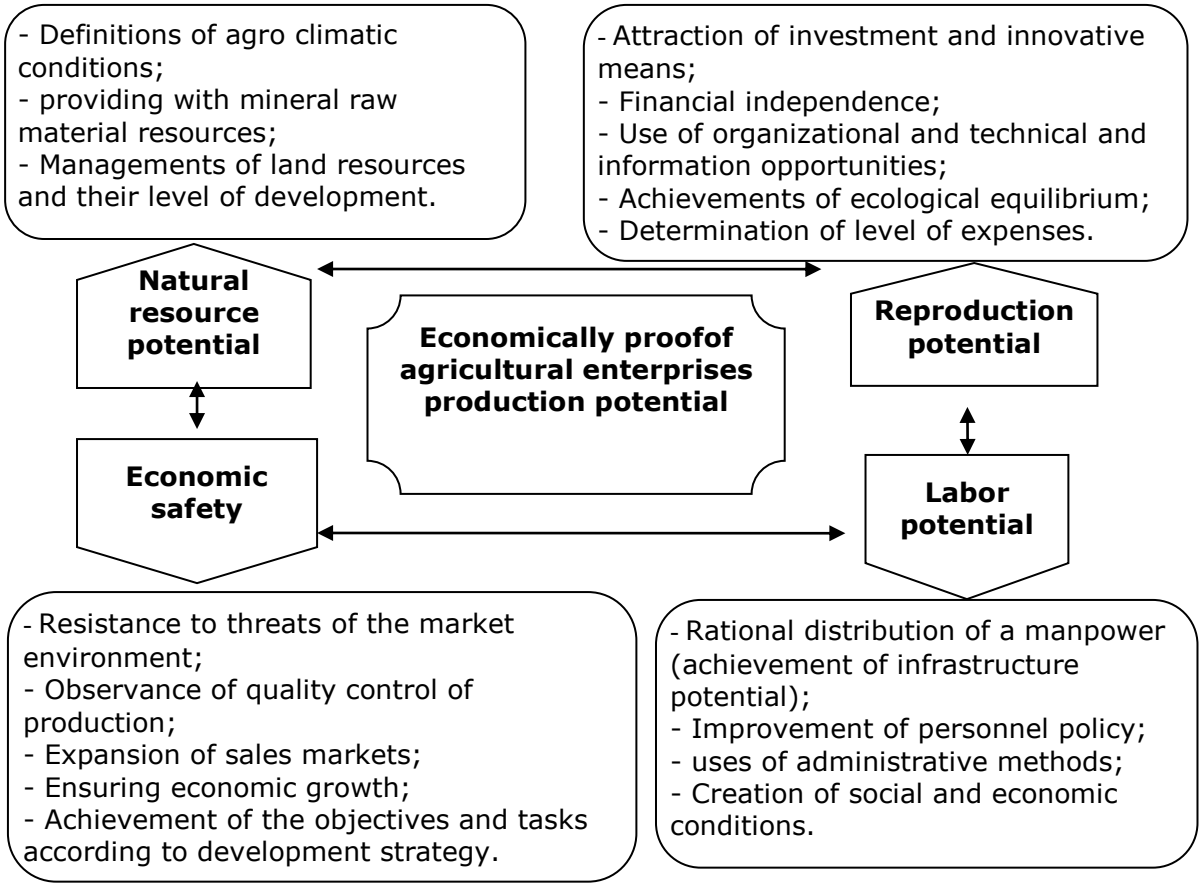

Figure 1 – The structure of economically sustainable production potential in the agricultural enterprise

Source: own researches

From the scientific point of view a rational formation and effective use of economically steady production capacity of the agricultural enterprises can be

provided only in that case when in practice take place: first, large-scale application progressive, highly productive and ecologically safe of technologies; secondly, expanded reproduction and updating of all components of elements of land and resource potential of agro-industrial production; thirdly, rational use and comprehensive protection of natural resources of agricultural purpose.

The constituent elements of economically sustainable production potential of the agricultural enterprises should operate in accordance with the specific features and patterns of development, from identifying which depends on the formation, increasing the capacity of existing entities in the region.

Methodological approaches to promote economically sustainable production potential should be based on trending the relationship of the individual components such as the formation, development and effective use. It will allow with the help of elasticity coefficients set optimum proportion cost of reproduction of the structural elements of the production capacity.

Agriculture is one of the leading branches of economy in Kiev region. On the volume of agricultural production, the capital region traditionally takes 1 - 2 place in Ukraine. In 2014 farms of Kyiv region produced 15874,3 millions UAH of gross output of agriculture, including 10210,6 millions UAH was made by production of plant growing and 5663,7 millions UAH was the production of animal husbandry. The share of production of plant growing in the total amount of agricultural production of the region exceeds 64,0%. The conducted researches convince that increase in production of crop and livestock production by the agricultural enterprises of capital area can be possible on condition of strengthening of their production potential.

Table 1 – Calculation of cost of production capacity of the agricultural enterprises of Kiev region

Indicator	2009	2010	2011	2012	2013
The area of agricultural land, hectares , including:	984,5	960,5	959,0	941,6	924,1
arable	901,8	883,2	882,4	868,6	854,6
haymaking's	7,0	7,1	6,9	7,0	6,7
pastures	39,6	36,2	36,3	34,3	32,3
Monetary assessment of 1 hectare of agricultural grounds, UAH including	35,3	33,2	32,6	31	29,6
Arable	9861	11366	12035	12035	20037
haymaking's	9953	11472	12147	12147	21330
pastures	52464	60467	64029	64029	64029
Monetary assessment of agricultural grounds, millions UAH	5907	6809	7210	7210	7210
including:	3694	4258	4509	4509	4509
Arable	9707	10949	11569	11386	19024
haymaking's	8976	10132	10719	10551	18229
pastures	367	429	442	448	429
Assessment of production potential, mill. UAH.	172,1	191,2	218,4	259,8	292,0
Production potential per 1 hectare of agricultural grounds, thousands UAH	10480	10399	10549	11925	13751
Structure of production potential, %	28572	32099	33853	37454	49468
agricultural grounds	29021	33419	35301	39777	53531
work force	34,0	34,1	34,2	30,4	38,5

Source: Derzhavna sluzhba statystyky Ukrainy 2014; Gholovne upravlinnja statystyky u Kyjivsjkij oblasti 2014

Gross agricultural production enterprises and farms changed their proportion in comparison with 2000 as the share of agricultural products by agricultural enterprises has increased significantly and constitute 64.0%.

Based on the valuation of the main components of the productive potential of agricultural enterprises of Kyiv region listed in Table 1 and Fig. 2, it was found that during 2009-2013 there was growth in the region of total production capacity, which amounted to 20,4%.

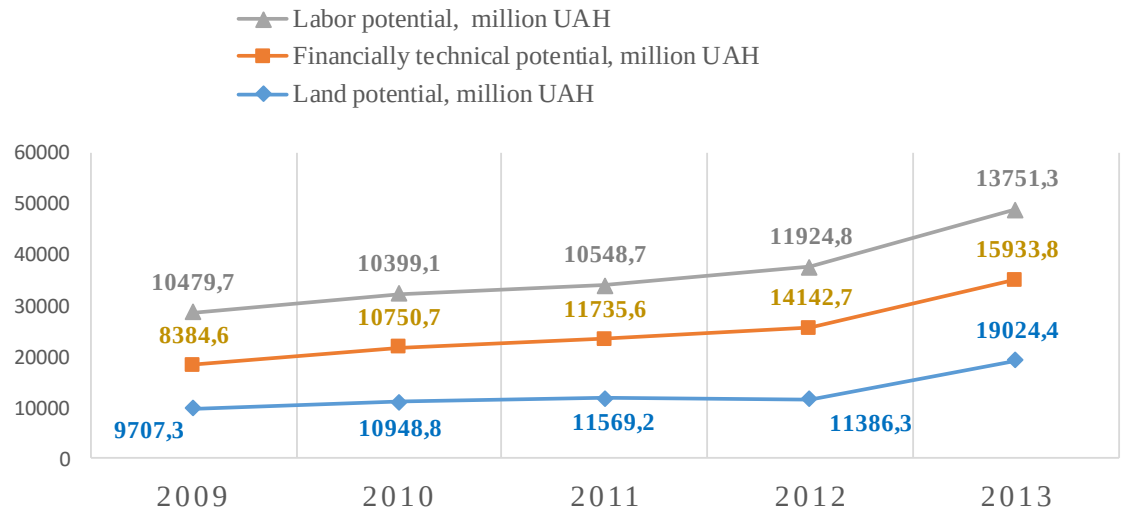

Figure 2 – Components of production capacity of the agricultural enterprises of Kiev region

Source: own development

As for the individual components of production capacity of agro producers of the region, the way we see from this fig. 2, they have some specifics on it formation. For example, the valuation of labor potential of the agricultural enterprises of Kiev region is much less than the logistics and land potentials. In 2013 in Kiev region were employed 724.3 thousand people, including in agriculture, hunting and forestry employed more than 45.8 thousand people. The average number of hired workers at the enterprises, institutions, the organizations and their separate divisions with number of hired workers 10 and more people engaged in for agriculture and providing the related services was 45,4 thousand people. The analysis shows that while the monthly average nominal salary of one full-time employee in agricultural enterprises in 2013 rose to 15.7% in 2010, but it remained one of the lowest among all economic activities and amounted to only 1861 UAH. It in turn complicates process of formation of effective labor potential in the agricultural enterprises due to the lack of the due level of motivation of work.

As is known, the complex of organizational and economic measures envisaged by the agrarian reform on land as the main means of production and aimed at radical changes in agriculture had not found their effective implementation. Therefore, the implementation of effective land use potential of agricultural enterprises in the country continues. One of the main reasons for it is the material support of farming, which does not meet modern technology requirements of sustainable farming. It should be noted that the machine-tractor park in the agricultural enterprises of Kyiv region for 2010-2014 years (Table. 2) decreases and today the number of vehicles in them is 50-65% of the

technological requirements. Features about the volume of production and sales of crop and livestock production determine the development and features material-technical base of the agricultural enterprises.

Table 2 – Statistical information on the number of vehicles in the farms of Kyiv region *(On the end of the year; units)*

Type of equipment	Years					
	2010	2011	2012	2013	2014	2014 in% 2010
Tractors of all brands	8554	7993	8279	8383	7908	92,4
combine harvesters	1643	1537	1612	1549	1458	88,7
corn harvesters	125	105	114	97	89	71,2
forage harvesters	580	540	478	456	395	68,1
Flax harvesting	12	5	5	5	4	33,3
Potato harvesters	59	57	56	57	51	86,4
harvesters are roll	765	761	733	748	822	107,8
Machines for sowing and planting	3673	3446	3695	3753	3896	106,1
mowing machines are tractor	707	662	677	698	710	100,4
Milking machines and units	891	925	1026	1003	950	106,6
Distributors of forages for:	441	416	391	379	346	78,5
cattle						
pigs	57	59	51	65	67	117,5

Source: Derzhavna sluzhba statystyky Ukrainy 2014; Gholovne upravlinnja statystyky u Kyjivsjkij oblasti 2014

Increase and improvement of ways of production will provide increase of equipment of a certain agricultural enterprise and represent a material basis of its production capacity on defined crop and livestock branches.

Estimation of a current state of production capacity of the agricultural enterprises points to negative tendencies which were shown in development of agrarian sector, namely: decrease in economic fertility of lands; insufficiency financial and technical ensuring and mechanization of productions; essential decrease in motivation of work, low level of a salary; falling of production and technological discipline; lack of innovative strategy of economic growth and so forth.

At the same time, the carried-out analysis demonstrates also a positive tendency at the present stage of development of agrarian branch that production of mineral fertilizers and other agrochemical products in Ukraine has grown in comparison with previous years.

For careful studying of a problem of formation of economically steady production capacity of the agricultural enterprises with attraction of methods of group and the multiple-factor correlation and regression analysis was investigated the influence of a resource of security on production of gross output with 1 hectare of agricultural grounds.

The correlation and regression model of interrelation between productions of gross output of plant growing on 1 hectare of agricultural grounds (Y), from factorial signs (X) has an appearance of a formula (1):

$$Y=-65,52+13,99\ X1+1,38X2+1,40X3+3,04X4+1,36X5+0,61X6, \quad (1)$$

where X1 - the earth security of 1 worker in plant growing, hectare; X2 – expenses on compensation on 1 hectare of agricultural grounds, UAH; X3 – costs of fertilizers of 1 hectare of agricultural grounds, UAH; X4 – expenses on oil products on 1 hectare of agricultural grounds, UAH; X5 – expenses on

depreciation on 1 hectare, UAH; X6 – expenses on fee of the third-party organizations on 1 hectare of agricultural grounds, UAH.

The results of the analysis determined that the degree of distress communications between the studied traits is high because the coefficient of multiple correlations is 0.8155. Thus, we can conclude that each factor variable significantly affects to the results. According the calculated elasticity we can draw the following conclusions: with the increasing availability of land employee wage costs, fertilizer, petroleum, depreciation, labor activities and collaborating institutions per 1 ha of agricultural land by 1% compared to the average values in the sample gross output of crop production per unit area increases respectively 0.172 ; 0,088; 0.223; 0.366; 0,068 and 0,61%.

Partial correlation coefficient is = 0.3848, the correlation coefficient of gross crop production per 1 ha of agricultural land with coverage of workers in the excluded land impact factor X2, X3, X4, X5 and X6. Similarly, the partial correlation coefficients equal = 0.1997, 0.3863 =, = 0.3969, 0.2414 =, = 0.2021.

On private in coefficients of correlation it is possible to draw a conclusion that the most important factors of influence on production of gross output of plant growing from among the studied factors is to the earth of providing workers, expenses on fertilizers and oil products.

In the process of justification for the optimum utilization of the production capacity of farms should be defined optimal parameters of sustainable development of industries in the enterprises, their specialization and economic assessment of other sectors, the conditions for sustainable use of land and labor resources, introduction of zonal farming systems, innovative technologies of growing crops etc.

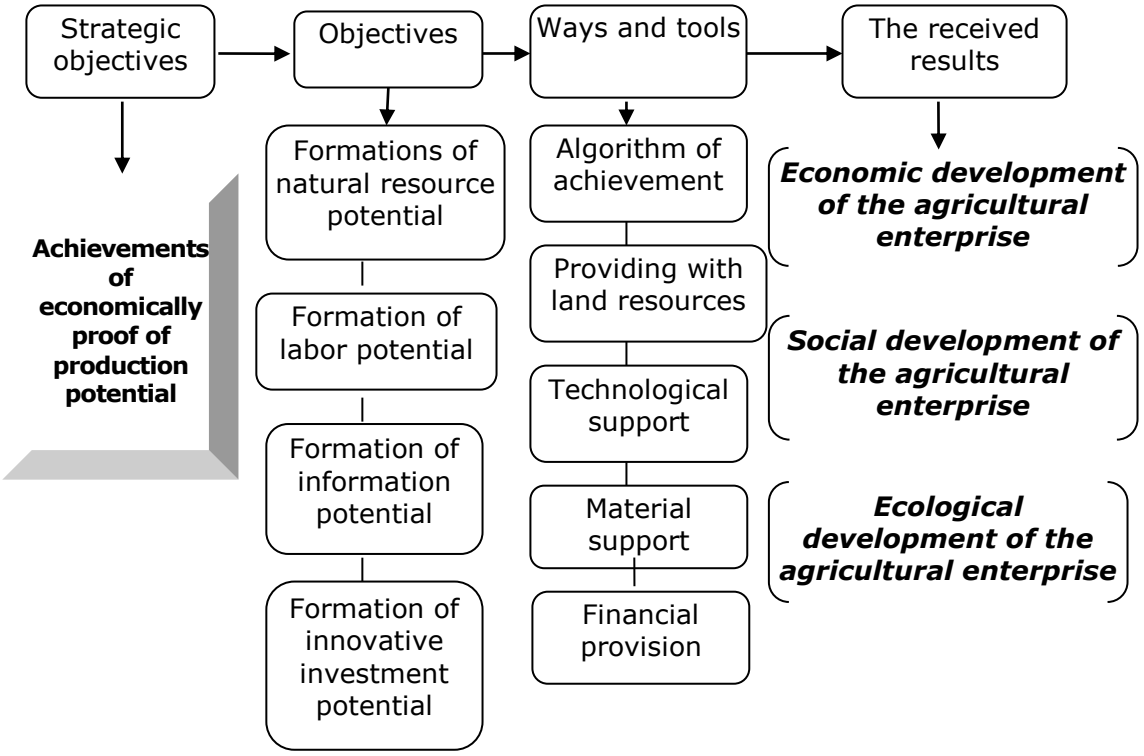

Figure 3 – Algorithm of achievement of economically steady production capacity of the agricultural enterprises of Kiev region

Source: own researches

During the research process was identified the negative trends in the use of inputs and this causes advisability developing strategic directions of economic sustainability of production potential of agricultural producers to ensure ecologically safe and efficient use of existing capacity.

It, in turn, provides for the development algorithms achieve economically sustainable productive capacity farms (Fig. 3), which includes information and innovative - investment processes.

Building of economically resistant productive capacity of agricultural enterprises should first of all be focused on efficient use, which will increase total production of agricultural products.

Estimation of economic security of productive capacity of agricultural enterprises depends on the accurate identification of threats from certain selection parameters (indicators) of manifestation, and the complex measures necessary to prevent danger, appropriate scale and nature of threats. In this regard, it is necessary to develop the system of quantitative and quality indicators of economic security of the enterprise (tab. 3) in which the main classification groups of indicators are presented.

Table 3 – Main classification groups of indicators of economic security of the agricultural enterprises

Production indicators
- Dynamics of production (growth, recession, etc.); - actual level of utilization of capacity; - Share of research works (R & D) in a total amount of works; - share of research works in the total amount of "Research & Development"; - Rate of updating of fixed assets; - Stability of production; - Specific weight of production in GDP (for especially large enterprises monopolists); - Assessment of competitiveness of production; - Age structure and technical resource of machine tractor park
Financial indicators
- Volume of "portfolio" of orders; - the actual and necessary volume of investment (for maintenance and development of the available potential); - level of innovative activity (volume of investment into innovations); - level of profitability of production; - capital productivity (capital intensity) of production; - Arrears (debit and creditor); - Share of security with own sources of financing.
Social indicators
- compensation level in relation to an average value in agriculture or economy in general; - level of debt on a salary; - losses of working hours; - structure of personnel potential (age, qualification)

Source: own development

As a result of research we have formulated a definition of "economic security of productive capacity of agricultural enterprises" as a set of industrial components which ensure high and sustainable economic growth of the entity in which the company is able to effectively counteract possible threats internal and external environment, and achieve their goals and objectives through the implementation of chosen strategy.

Substantiation of optimal structure of productive capacity of agricultural enterprises should be based on multivariate calculations of needs of the enterprise in land, labor, material and financial resources in view of the further intensification and specialization of production complications inter-economic relations and so on.

Table 4 – Optimization of indicators of industrial and economic activity of "Pereselenske" of the Kagarlik region of Kiev region for 2017

Indicators	2012p. fact	Results of optimizing calculations of use of agricultural grounds on options					
		I	II	III	IV	V	VI
Production, t							
grain	9198,5	10159,6	10228,0	9565,9	10159,6	10206,4	11470,9
sunflower seeds	890,0	655,5	660,2	655,5	655,5	655,5	725,3
soy seeds	243,0	347,4	370,2	3,3	203,9	398,9	358,4
milk	1029,9	1311,8	1311,8	1944,1	1620,0	1391,2	1621,0
Meat (live weight)	48,6	74,2	59,9	88,8	59,9	51,5	60,0
Gross output in the comparable prices of 2010, Thousand. UAH	17335,0	19132,1	19090,7	20025,8	19568,8	19206,6	21554,1
including on 1 hectare of agricultural grounds, UAH	6163,9	6823,5	6744,6	7123,7	7018,0	6787,5	6994,2
The number of the workers occupied in agricultural production, the person	96,0	81,2	79,7	108,2	85,5	76,5	87,7
Need for mineral fertilizers, centers of active ingredient	1421,0	1637,4	1651,6	1533,9	1618,7	1652,9	1804,6
Cash operating costs, thousand UAH.	13994,9	17850,0	17850,0	17850,0	17850,0	17850,0	17850,0
The attracted loans, thousand. UAH	0,0	0,0	0,0	0,0	0,0	0,0	2000,0
Product sales, t							
grain	7423,7	8211,5	8343,7	7533,0	8218,8	8339,5	9342,8
sunflower seeds	876,0	604,9	609,3	604,9	604,9	604,9	669,4
soy seeds	218,7	312,7	333,2	3,0	183,5	359,0	322,6
milk	892,6	1220,0	1220,0	1808,0	1506,6	1293,9	1507,5
Meat (live weight)	49,1	69,9	56,9	84,4	56,9	48,9	57,0
Revenue, thousand UAH.	15463,7	25718,0	25799,8	25799,9	26279,8	26206,0	29184,3
Full prime cost of real production, thousand UAH.	15051,3	20585,9	20499,5	20924,1	20704,6	20550,7	22921,2
Profit, thousand. UAH	412,4	5132,1	5288,3	4875,9	5575,2	5643,9	5685,8
Level of profitability, %	2,74	24,9	25,8	23,3	26,9	27,5	24,8

Source: own development

On the basis of economic and mathematical modeling established that in practice of managing CAP "Pereselenske" of the Kagarlik region of Kiev region of economically appropriate use of the fifth version of the optimization of industrial structure.

Implementation of the model that was carried on a personal computer by means of a package of applications Microsoft Excel, provided an opportunity to get the dissertation are projected performance industrial and economic activities of agricultural enterprises investigated (tab. 4).

Achievement of the plan indicators of productivity of crops, animal productivity and optimize the structure of sown areas and livestock feed rations makes it possible to increase production and sales and receive in 2017 to 5.2 million profit compared with 2012, which is recommended other farms in the region.

Conclusions and prospects of further researches. On the basis of the research we proposed the concept of «economically sustainable production potential of agricultural enterprises». It is considered as a set of favorable organizational and economic capabilities and optimization of industrial enterprise resources to ensure its flexible response to the threat of internal and external market environment. In this way a high profitability achieved in production and economic activity for sustainable economic growth and creation of favorable socio-economic conditions for workers.

The balanced formation of resources is an important precondition for their effective use. Assessment of the means of production in the farms of the region is a key issue in this regard Formation of the resource potential of agricultural enterprises it makes the existence of such principles, based on the potential response to the impact of science and technology in production, that would cover quantitative and qualitative characteristics of resources and production outcomes.

The development of all components of production capacity, especially land, is a prerequisite for the competitiveness of agriculture. We suggest strategic directions for the formation of economically sustainable production potential of farms that takes into account the interaction of land, labor, material and technical potential of agricultural enterprises. It allows us to calculate the best options for combining various elements of the production capacity of farms to produce output set. And also it allows evaluating internal reserves to increase production, reduce costs and increase the income of agricultural commodity and equity of the company.

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