FACTORS OF LABOUR PRODUCTIVITY GROWTH IN AGRICULTURE OF THE AGRARIAN REGION

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Abstract. *The aim* of the article is to study the conceptual provisions of the essence of labour productivity in agriculture in order to determine the factors and conditions for its growth at the present stage of economic development. *Methods*. The theoretical and methodological bases of research are the works of classical and modern economic science concerning labour productivity and human capital. With the aim of concretizing the conceptual and categorical apparatus, the dialectical and abstract-logical methods were used; a monographic method was used during covering the views of scientists on the investigated problem; for the analysis of labour productivity trends, the method of comparative analysis and the graphical method were used. *Results*. The conditions of agricultural production management in an agrarian region are characterized. Factors of labour productivity growth in agriculture are determined. It is established that the main reserves of increasing labour productivity consist of reducing labour costs for the production of agricultural products. In turn, the reduction of labour costs is caused by the use of new equipment and new technologies, progressive forms of labour organization, improvement of the system of material incentives for labour. *Practical significance*. The realization of proposals and recommendations concerning the formation and development of human capital for agricultural production, optimization of production resources, strengthening of labour motivation will provide an opportunity to increase the labour activity of personnel, the volume of agricultural production. *Relevance/originality*. Further development of research results allows us to collect an empirical, multifactorial model of labour productivity growth in agricultural production.

Key words: labour, labour productivity, factors, workforce, compensation, agriculture.

JEL Classification: D24, E24, J43, R23

1. Introduction

Development of agriculture is especially relevant today as the increase in output of agricultural products ensures socio-economic progress of society, poverty reduction, solution for the food security problem both at the regional and global levels. Favourable climatic conditions for the agriculture, fertile soils, geographic position of Ukraine, considerable agroindustrial potential open wide prospects for the sustainable economic development of the country, which can be achieved at the expense of increasing efficiency of agricultural production based on the increase of labour efficiency. One of the important issues of the economy of agriculture is production ramp-up at the expense of effective use of labour. Labour productivity in agriculture is a multicomponent system that is influenced by a number of factors and is an integral indicator of the degree of development of technology, labour organization, and a high level of labour productivity provides an improvement in the quality of life of the rural population and an increase in wages. It is a human factor, which is associated with categories "labour" and "human capital" that serves as deciding factor in the economic growth. Despite the considerable amount of scientific research on increasing the efficiency of labour use in agriculture, the identification of reserves of labour productivity growth in the conditions of the interaction of technological and economic-organizational peculiarities of agricultural production with natural-biological laws of nature remains relevant. Issues of labour productivity are considered in works of D. Boginya, V. Vitvitskii, V. Gorkavyi, V. Diesperov, E. Libanova, P. Makarenko, T. Oleinik, M. Proka, D. Sink, S. Strumilin, and many others, however, in terms of the ever-changing political and economic environment of the agrarian sector, many problems remain unresolved.

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2. The theoretical basis of labour productivity management in agriculture

The main source of social wealth in the production of material goods is labour. The category of "labour" has been studied by many economists both in the classical economic school and in modernity. K. Marx wrote: "Labour is, first of all, a process between man and nature, a process by which man by his own activity mediates, regulates, and controls the metabolism between himself and nature" (Marks, 1960). A fairly detailed definition of the category "labour", in our opinion, is quoted in the economic dictionary by Professor S.V. Mochernyiy: labour is considered as "the process of conscious expedient activity of people, in which they modify the external nature, mediate, regulate, and control the metabolism between themselves and simultaneously change their own nature" (Mochernyiy, 1995). In the monograph edited by D.P. Boginya, the labour process is seen as a means of creating material and spiritual goods, and increasing the welfare of the population is determined by the effectiveness of the aggregate labour of representatives of material production and non-productive sphere (Boginya, 1990). In the process of labour, man creates various products: both for personal consumption, and as raw materials for the production of other products, means of labour. Thus, the more fruitful, more efficiently labour is used, the higher the productivity, the more the aggregate social product is created (Aydamirov, 2016).

Labour in the field of agriculture has a specific feature: the objects of labour are living organisms (plants and animals) under the influence of natural and climatic conditions; the operation of labour on them is limited by certain biological laws. The work of the same qualification and capital-labour ratio can lead to different results depending on the natural conditions. Thus, the results of labour in agriculture are determined both by natural (soil-climatic and biological) and economic processes. Working time is a measure of the costs of labour, the amount of the product created is the result of the labour process.

Economic category "labour productivity" determines the degree of fruitfulness, the ability of a particular labour force to produce use values, and perform useful work. Labour productivity in the economy, which can be compared with the efficiency in technology (reflects the perfection of machines, the degree of energy use), characterizes the ability of labour to produce the necessary products, this is a kind of coefficient of efficiency of labour. The essence of labour productivity lies in the ability of a particular labour to produce a certain quantity of output per unit of time. Labour productivity is the ratio of the labour results to its costs per employee per unit of working time, as calculated by the system of indicators. Mathematically, this can be described as the ratio of the volume of output or work in kind to the cost of working time per unit of output or unit of work. In accordance with this ratio, an increase in labour productivity is possible either on condition of an increase in the volume of output or work or under the condition of a reduction in the expenditure of working time. The effect is multiplied if both conditions simultaneously act, and the calculation of labour productivity takes into account both the amount of output produced and labour costs. Labour productivity is organically linked to important economic categories: the volume of production, cost, price, profitability, payment and motivation of work, technical equipment of labour, working day duration, labour organization, the efficiency of the use of productive assets.

In agriculture, a significant role is played by the natural factor: more favourable soil and climatic conditions not only ensure the cultivation of various crops and breeding of certain types of livestock but also determine the so-called "natural labour productivity" (Aydamirov, 2016). The growth of the capital-labour ratio of labour has a significant impact on increasing labour productivity: an increase in basic production assets raises the level of mechanization and automation of production, leads to a reduction in manual labour and an increase in the qualification level of workers. Important criteria for technical progress in agricultural production are an effective use of land and livestock, since living labour and the means of production are applied to land and livestock, and their rational use raises the importance of all factors of production. It is technological progress that increases the productivity of living labour, leads to a saving of working time and growth in agricultural production, an increase in net and gross income.

3. Modern trends and objective conditions for the development of agriculture in the agro-oriented region

One of the most important branches of the economy of the Zaporizhzhia region is agriculture, which forms the bulk of food resources and nearly three-quarters of retail commodity turnover. The level of development of the region's agriculture determines the provision of the population of the region with food and industry – with raw materials. Zaporizhzhia region occupies a favourable economic and geographical position: it is located in the south of the East European Plain. The territory of the region is 4.5% of the territory of Ukraine, favourable for the development of the agricultural sector in the region is the presence of chernozem soils (75% of the total area of the region).

Sown areas of agricultural crops in the Zaporizhzhia region make up 6% of the sown areas of Ukraine. In 2016, in the Zaporizhzhia region, wheat was produced 6.6% of all volumes of Ukraine. Labour productivity in the agricultural sector in the region in 2016 was only 78% of

the average for Ukraine. The existing resource potential of the region's agriculture, based on high-productive agricultural lands, favourable climatic conditions, opens prospects for increasing the volume of agricultural production, increasing production efficiency on the basis of productivity growth. The dynamics of the land and resource potential of the Zaporizhzhia region is presented in Table 1.

Analysis of the dynamics of the region's land and resource potential indicates its strengthening over the past five years: the sown area has increased, positive dynamics of gross agricultural output can be observed, and labour productivity has increased.

Reform of property relations and transformation of economic relations in the agrarian sphere of Ukraine led to the emergence of new forms of management based on private ownership of the means of production. On the territory of the region in 2016, there are 2790 enterprises engaged in agricultural production, which are mainly represented by farms – 73.3% (Table 2).

Over the past five years, the structure of business entities in the agricultural sector has practically not changed, and their number has slightly decreased – by 5.6%. In other words, in the agrarian sector, the processes of reforming production relations are continuing, as well as the search for the most competitive and effective organizational and legal forms of management. The transition of agricultural land to private ownership led to small-scale production and inefficient use of land. Among agricultural enterprises, there is a significant stratification in terms of land use. The majority of operating agricultural enterprises mainly occupied an insignificant area: 48.6% of enterprises – up to 50 hectares, 19.0% – from 101 to 500 hectares, only 0.2% of enterprises had a land area of more than 10,000 hectares (Vasilyeva, 2016).

The level of agricultural production, the yield of agricultural crops, and the productivity of arable land are determined by the optimal scientifically grounded structure of cultivated areas. Agriculture in the agrarian-oriented region of the steppe zone of Ukraine specializes in growing grain and oilseeds. In the structure of sown areas, in the last years, it is occupied mainly by cereals, the specific weight of which varies within the limits of 58%; sunflower occupies 33% on average. For the "black fallow", which ensures the accumulation of moisture in the soil before the sowing of winter wheat in the steppe zone, it is advisable to allot 15–20% of the land, but this rate has not been maintained recently, and is about 6%, while in 2000 the area of naked fallows of the region occupied 19.5%.

The main reserve for increasing the yield and production volumes is the rational use of mineral and

Table 1

The dynamics of the land and resource potential of the Zaporizhzhia region

Indicators	2012	2013	2014	2015	2016	Deviation of 2016 to 2012 (+,-)
Area of agricultural land, thousand hectares	2133,0	2242,1	2241,8	2129,5	2127,1	-5,9
including arable land	1886,0	1904,0	1882,2	1881,9	1880,9	-5,1
Sown area, thousand hectares	1589,8	1625,7	1625,2	1623,9	1630,2	40,4
Gross agricultural output, million UAH	7083,2	9523,3	9203,9	10055,7	9928,0	2844,8
Index of plough-disturbance	0,88	0,85	0,85	0,88	0,88	0
Gross output per 100 hectares of land, thousand UAH	332,1	424,7	410,6	472,2	466,7	134,6
Productivity per employee, thousand UAH	102,8	147,4	145,1	172,0	215,7	112,9

Table 2

Operating entities in agriculture in the Zaporizhzhia region

Business entities	2012		2013		2014		2015		2016	
	Number	% of the total	Number	% of the total	Number	% of the total	Number	% of the total	Number	% of the total
Total	2957	100,0	2930	100,0	2912	100,0	2745	100,0	2790	100,0
Companies	463	15,7	477	16,3	493	16,9	418	15,2	458	16,4
Private companies	246	8,3	243	8,3	240	8,2	208	7,6	210	7,5
Production cooperatives	38	1,3	37	1,2	35	1,2	35	1,3	34	1,2
Farms	2088	70,6	2091	71,4	2067	71,0	2041	74,4	2046	73,3
State-owned enterprises	24	0,8	21	0,7	23	0,8	17	0,6	17	0,6
Enterprises of other forms of management	98	3,3	61	2,1	54	1,9	26	0,9	25	0,9

organic fertilizers, which contributes to the creation of a fertile soil layer, provides a balance of humus in the soil, and improves the quality of products. Over the financial difficulties for many agricultural producers, mineral fertilizers became difficult to access, and the reduction in the output of livestock products limited the use of organic fertilizers (Table 3).

Table 3
Dynamics of the use of fertilizers for crops in the Zaporizhzhia region

Years	Mineral fertilizers (nutrients)		Organic fertilizers, t/ha
	kg/ha	% by 2012	
2012	49	100,0	0,7
2013	46	93,9	0,6
2014	48	98,0	0,4
2015	44	89,8	0,4
2016	63	128,6	0,3

Organic fertilizers are introduced in scanty doses, while at least 10 tons of organic fertilizers per 1 hectare of the sown area are needed annually to suspend dehumidification processes.

Analysis of the positive dynamics of agricultural production per capita indicates that the region's natural and resource potential allows satisfying the population's needs for basic food products through local production, but the low level of income of the region's population has led to a decrease in consumption of the most important food products (Table 4).

One of the factors of the efficiency of agricultural production is the technical potential. Specificity of agricultural production in the Zaporizhzhia region, specializing in grain production, involves the use of tractors and combine harvesters, the number of which per 1000 hectares of arable land is decreasing, which leads to an increase in the load per unit of machinery and may adversely affect the harvesting time (Table 5).

The main reasons for the crisis in the material and technical base are a decrease in solvent demand for agricultural machinery, insufficient investment in agriculture, unfavourable credit conditions, and a minimum level of state support for the agro-industrial complex.

In our opinion, an increase in the load per unit of technology presupposes an organization of agricultural production, in which it is used as efficiently as possible. One of the ways to overcome these problems is to use financial leasing or partial compensation of interest rates on loans for the purchase of equipment.

4. Factors of labour productivity growth

An important task of studying the problems of labour productivity is to determine and analyse the causes of its changes, determine the factors and reserves for its growth.

The term "factor" reflects the most general definition that affects labour productivity. The authors of the monograph "Povyshenie proizvoditelnosti selskohoziaistvennogo truda" ("Increase in Agricultural

Table 4
Consumption of the most important food products (per capita per year, kg)

Foodstuffs	2012	2013	2014	2015	2016	Deviation of 2016 to 2012, (+,-)
Meat and meat products	54,4	54,6	54,9	51,6	51,0	-3,4
Milk and dairy products	185,1	190,1	194,6	186,4	181,9	-3,2
Eggs (pieces)	311	309	309	291	265	-46
Bread products	102,9	104,2	103,0	101,8	96,2	-6,7
Potato	112,3	101,1	110,1	104,1	107,2	-5,1
Vegetables and cucurbits crops	172,4	174,5	174,8	173,7	167,7	-4,7
Fruits, berries and grapes	50,6	52,0	47,9	46,5	46,1	-4,5
Fish and fish products	14,1	14,4	11,5	9,3	10,3	-3,8
Sugar	67,8	63,1	63,8	65,3	61,8	-6
Sunflower oil	12,3	12,5	12,5	11,7	11,6	-0,7

Table 5
Availability of basic types of agricultural machinery

Type of material and technical resource	2012	2013	2014	2015	2016	Deviation of 2016 to 2012, (+,-)
Tractors, units	8276	8191	8089	7901	8160	-116
per 1000 ha of arable land	6,6	6,6	6,5	4,2	4,3	-2,3
load per tractor, ha	151,6	152,6	153,8	238,1	232,6	81
Combine harvesters, units	1998	1928	1912	1930	2034	36
per 1000 ha of crop area of cereals (without corn)	2,85	2,3	2,3	2,1	2,3	-0,55
load per 1 harvester, ha	350,4	434,8	437,7	476,2	434,8	84,4

Labour Productivity") provide a fairly comprehensive definition of labour productivity factors. They include "material and technical, organizational and socio-economic characteristics of social production, which actively influence the labour process and determine its effectiveness" (Mashenkov, 1983).

Complexity and intensity of factors on the dynamics of labour productivity are caused by social incentives, numerous forms of social and labour relations: the system of labour remuneration, economic incentives, moral encouragement, and administrative influence. Thus, in relation to the factors, the stimuli act as control levers (Gilitskiy, 1982).

K. Marx in his work "Value, Price and Profit" describes in detail the factors of growth in labour productivity and the conditions for their action: "Apart from the different natural energies and acquired working abilities of different peoples, the productive powers of labour must principally depend: 1) upon the natural conditions of labour, such as fertility of soil, availability of necessary resources; 2) upon the progressive improvement of the social powers of labour, such as are derived from production on a grand scale, concentration of capital and combination of labour, subdivision of labour, machinery, improved methods, appliance of chemical and other natural agencies, shortening of time and space by means of communication and transport, and every other contrivance by which science presses natural agencies into the service of labour, and by which the social or co-operative character of labour is developed" (Mashenkov, 1983).

K.I. Gurtskaya (Gurtskaya, 1986) distinguishes three groups of factors: 1) increasing the level of production industrialization based on the achievements of scientific and technological advance; 2) improvement of technology, social organization of agricultural production and remuneration of labour; 3) increasing the culture of farming, economic fertility of soils, improving plant varieties and animal breeds, increasing their productivity, and intensive use of all natural conditions of agricultural production.

In our opinion, the grouping of factors for increasing labour productivity in agriculture requires the definition of clear criteria for attributes of belonging to a particular group of factors. Thus, the classification of A.P. Vorontsov combines the factors into three groups, characterizing: the technical level of production, the efficiency of land use, and the efficiency of the use of labour resources (Vorontsov, 1973).

Ya. Maryahin unites the factors in the following three groups: the first group describes the technical re-equipment and the achievements of scientific and technical progress, the second – reflects the state of the organization of production and labour, the third one – personal reasons (Maryahin, 1983).

To identify factors that directly affect the level of labour productivity, it is first of all necessary to find the phenomena determining the quality and degree of using individual elements of the production process (means of production and labour), as well as phenomena characterizing the effectiveness of their interaction (Gilitskiy, 1982).

One of the important factors for the expanded reproduction in agriculture is an increase in the motivation of agricultural labour. The wages of agricultural workers during the last several decades remain the lowest in the sphere of material production. Effective reproduction of the labour resources of the agrarian sector requires effective measures of the state to support agricultural producers, pricing regulation, resuscitation and development of the social infrastructure of the village.

5. Conclusion

Strategic management of labour productivity increase in market conditions requires the development and implementation of targeted programs for managing labour productivity, which provides for increasing the level of labour use, stimulating labour, and reducing production losses. We believe that when studying the factors of labour productivity growth in the region, it is necessary to use an integrated system approach that takes into account the degree of connection between them. This will allow most fully reflect the nature of the impact of all circumstances that cause changes in labour productivity, minimizing negative factors, and finding the most optimal ways to increase it.

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Анатолий БАБЕНКО, Елена ВАСИЛЬЕВА

ФАКТОРЫ РОСТА ПРОИЗВОДИТЕЛЬНОСТИ ТРУДА В СЕЛЬСКОМ ХОЗЯЙСТВЕ АГРООРИЕНТИРОВАННОГО РЕГИОНА

Аннотация. *Целью работы* является исследование концептуальных положений сути производительности труда в сельском хозяйстве для определения факторов и условий её роста на современном этапе развития экономики. *Методика*. Теоретическую и методологическую базы исследования составляют труды классической и современной экономической науки, касающиеся производительности труда и человеческого капитала. С целью конкретизации понятийно-категориального аппарата использованы диалектический и абстрактно-логический методы, при освещении взглядов ученых на исследуемую проблему применялся монографический метод, для анализа тенденций производительности труда – метод сравнительного анализа и графический метод. *Результаты*. Охарактеризованы условия ведения сельскохозяйственного производства в агроориентированном регионе. Определены факторы роста производительности труда в сельском хозяйстве. Установлено, что основные резервы повышения производительности труда состоят в сокращении затрат труда на производство сельскохозяйственной продукции. В свою очередь, сокращение затрат труда обусловлено применением новой техники и новейших технологий, прогрессивных форм организации труда, усовершенствованием системы материального стимулирования труда. *Практическое значение*. Реализация предложений и рекомендаций, касающихся формирования и развития человеческого капитала для аграрного производства, оптимизации производственных ресурсов, усиления трудовой мотивации даст возможность повысить трудовую активность персонала, объемы производства сельскохозяйственной продукции. *Значение/оригинальность*. Дальнейшее развитие результатов исследования позволит построить эмпирическую многофакторную модель роста производительности труда в сельскохозяйственном производстве.