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Enhancing food security through increased labor productivity of AIC workers

The article presents the challenges of AIC development in the regions of the Republic of Kazakhstan based on the growth in labor productivity of workers in the agrarian sector, which will raise competitiveness of the agrarian enterprises and enhance the country's food security. Joining the ranks of the most developed countries necessitates development of regions through new technologies involved. The article notes a significant decrease in the population employed in agriculture, forestry and fisheries, the continuing migration from rural areas to cities, which causes a decline in agricultural production. Increasingly urgent is to develop agrarian entrepreneurship, so the priority task is the growth of labor productivity. The author mentions as an example the foreign experience of the developed countries of Germany, France, etc. EAEU membership ensures free migration of labor within the states of this commonwealth, which allows individual countries to reduce unemployment and achieve GDP growth. The study emphasizes the need to increase the role of knowledge-based, resource-saving technologies and industries, as evidenced in the message to the people of Kazakhstan by the President N.Nazarbayev «New Opportunities for Development in the context of the Fourth Industrial Revolution». In Kazakhstan, the material and technical base of agriculture is characterized by diversity due to its diversified structure, since each of the AIC branches is characterized by a different ratio of basic and circulating assets, especially in such sectors as harvesting, storage and processing of agricultural products. It is therefore necessary to raise the innovation and technological level of developing AIC sectors and sub-sectors by introducing new technologies and equipment, and improving the skills of rural workers through an effective investment policy, state support, agricultural cooperatives, which should unite the efforts of peasant farms, private subsidiary farms, etc.

Keywords: food security, agro-industrial complex (AIC), labor productivity, agroproduction, agricultural enterprises, rural employment, cooperatives.

Neoclassical concepts, like traditional ones, failed to explain the reason for long-term economic growth considering that the GNP per capita growth is viewed as a temporary phenomenon caused by changes in technology or adaptation to external factors.

Overreliance on the theories of structural transformations led on the one hand to transforming the agrarian economy of some countries to a more developed sectoral economy. On the other hand, according to Nobel laureate Arthur Lewis, the process of self-sustaining growth and increase in employment continue until all surplus rural labor force is absorbed by new industries, and its further withdrawal may lead to decrease in food production [1].

Unlike traditional theorists, supporters of approaches of neocolonial dependence, a false paradigm for promoting dual development reject the exclusive role the traditional economic theory in the West assigns to the GNP growth rate. The new concept of endogenous growth (the new growth theory) aims at a constant increase in GNP as a natural product of the long-term equilibrium.

One has to agree with the well-known scientists Prof. Todaro that the state policy that gives preference to the urban development (as evidenced by the huge gap in the incomes of the city and village, the disparity of the economic opportunities formed there) gave rise to mass migration from rural areas, and this continuing flow into cities represents a net loss for society, causing a fall in agricultural production and increasing overall cost of living environment for new citizens [2].

Issues related to the study of the methodology of regulating the employment of the population, reducing unemployment, factors of increasing the welfare of society, are reflected in the theories of employment that can be divided into classical, Marxist, Keynesian, neoclassical, monetarist, institutional. The desire for full employment will address the issue of the growth of the national income and the welfare of society, which as emphasized by J. Keynes remains an indispensable condition today.

This issue is especially acute in the agrarian sector. According to the Kazakh scientist, there are fears that the tendency of growth of latent agrarization and a return to primitive technologies in order to support rural employment actually leads to a further decline in labor productivity and this problem may become more acute with time, since, according to predicted estimates, taking into account the demographic, migration and regional characteristics, the number of rural population in 2020 will reach 9 million people, that is, in comparison with 2009 will increase by 21,2 % [3].

Kazakhstan's joining the ranks of 30 most developed countries in the world necessitates the development of the regions in accordance with the needs of an economy with high technologies, meeting its need for competitive strength. In the economy of the world's leading countries, there is a steady trend of increasing the role of knowledge-based, resource-saving technologies and industries, and this is evidenced by the fact that the most expensive companies specialize in intellectual, science-intensive, high-tech products [4].

In the Message to the people of Kazakhstan «New Opportunities for Development in the context of the Fourth Industrial Revolution», the President of the Republic of Kazakhstan N.A. Nazarbayev stressed that the agrarian policy should aim at dramatically increasing labor productivity and exports of processed agricultural products. In modern conditions, in order to increase the agricultural production volume and reduce the import dependence of Kazakhstan on basic food products, it is necessary to increase labor productivity in agriculture through the use of modern agro-technologies to achieve target crop yields and animal productivity.

In modern conditions, the economy of Kazakhstan faces certain changes in the sectoral structure of employment of the population, as well as in the regional aspect, as evidenced by Tables 1 and 2.

Table 1

Employed population of the Republic of Kazakhstan by sectors in 2010-2016, thousand people

Sectors	Total			Including					
	2010	2016	Deviation of 2016 to 2010 in %, +, -	Employees			Self-employed		
				2010	2016	Deviation of 2016 to 2010 in %, +, -	2010	2016	Deviation of 2016 to 2010 in %, +, -
Employed Population	8114,2	8553,4	5,4	5409,4	6342,8	17,3	2704,8	2210,5	-18,3
Agriculture, forestry and fisheries	2294,9	1385,5	-39,6	618,1	440,4	-28,8	1 676,8	945,1	-43,6
Industry	948,8	1087,2	14,5	914,5	1 041,5	13,9	34,3	45,7	33,2
Construction	567,8	679,1	19,6	458,9	493,5	7,5	110,9	185,5	67,3
Service Industry	4300,6	5401,5	25,6	3 417,8	4 367,3	27,8	882,7	1 034,2	17,2

Note. Based on the data of the Committee on Statistics of the Ministry of National Economy of Kazakhstan.

In general, in the Republic of Kazakhstan, 2016, there was an increase of the employed population by 5,4 compared with 2010. Among sectors, over these years, there was an increase in industry by 14,5 %, in construction – 19,6 %, in services – 25,6 %, and in agriculture, forestry and fisheries there was a decrease of 39,6 %.

It should be noted that in the agriculture, forestry and fisheries, the number of both employees and self-employed decreased by 28,8 % and 43,6 % respectively.

In the regional context, agriculture, forestry and fisheries faced the greatest decline in Aktobe, Karaganda, North Kazakhstan regions, and in the suburbs of Astana and Almaty.

Table 2

Rural employed population of Kazakhstan in 2010-2016, thousand people

Region	Total			Including					
	2010	2016	Deviation of 2016 to 2010 in %, +, -	Employees			Self-employed		
				2010	2016	Deviation of 2016 to 2010 in %, +, -	2010	2016	Deviation of 2016 to 2010 in %, +, -
1	2	3	4	5	6	7	8	9	10
Republic of Kazakhstan	2,295	1 386	-39,6	618,1	440,5	-28,7	1,676,8	945,0	-43,6
Akmola Region	158	135	-14,6	44,3	42,5	-4,1	113,9	93,0	-18,7

1	2	3	4	5	6	7	8	9	10
Aktobe Region	112	46	-58,9	24,9	12,8	-48,6	86,9	33,1	-61,9
Almaty Region	394	280	-28,9	148,3	128,3	-13,5	245,6	151,9	-38,2
Atyrau Region	20	11	-45,0	6,9	4,7	-31,9	13,5	6,1	-54,8
West Kazakh- stan region	101	73	-27,7	11,5	13,3	15,7	89,8	59,7	-33,5
Zhambyl Re- gion	188	126	-33,0	37,8	28,8	-23,8	150,3	97,5	-35,1
Karaganda Re- gion	118	33	-70,0	30,4	14,4	-52,7	87,8	18,3	-79,2
Kostanay Re- gion	198	173	-15,6	50,3	54,8	8,9	147,8	118,5	-19,8
Kyzylorda Re- gion	51	40	-21,6	11,1	8,3	-25,2	40,2	31,3	-20,1
Mangystau Re- gion	5	3	-40,0	3,8	1	-73,7	1	2,3	2,3 times
South Kazakh- stan Region	450	176	-60,9	111,9	32,7	-70,8	338,3	143,0	-57,7
Pavlodar Re- gion	99	74	-25,3	17,9	30,2	68,7	80,6	43,4	-46,2
North Kazakh- stan Region	177	102	-42,4	55,1	38,9	-29,7	121,5	63,3	-47,9
East Kazakh- stan Region	219	107	-51,1	59,4	24,5	-58,1	159,2	82,4	-48,2
Astana	2	5	2,5 times	1,9	3,8	2 times	-	1,0	-
Almaty	3	2	-33,0	2,4	1,8	-25	1	0	-

Note. Based on the date of the Committee on Statistics of the Ministry of National Economy of Kazakhstan.

In our view, unemployment rates are not in line with reality, since it is still not clear to whom the owners of personal subsidiary plots relate. Despite the shifts appeared, the emerging rural labor market is characterized by ineffective use of available labor resources in rural areas, underemployment, non-balanced supply and demand for labor. According to the scientists, the determining factor for productivity is knowledge, qualifications, information, innovations, human capital assets, new technologies, motivation, etc. in a competitive environment [5].

We should agree with the scientists that an important strategic task for ensuring food security, innovative development of the economy is reproduction and consolidation of skilled agricultural personnel in rural areas.

Kazakhstani scientists note that membership in the EAEU provides for a free migration of labor within the EAEU states, which allows individual countries to reduce unemployment within the country, but at the same time contributes to GDP growth in other countries as participants in the foreign production process [6].

It should be noted that there is no well-established mechanism to determine the needs of the agricultural sector in the foreign labor force, adjusting and determining the new quota of the need for foreign workers. Unfortunately, the programs adopted at both the republican and regional levels cannot stop negative trends in the rural areas, reduce their number, reduce peasant (farm) households and agricultural organizations. Russian scientists believe that any increase in labor productivity in the rural areas now is due to the cruelest exploitation of agricultural labor, since the work load of one remaining worker has increased by 2-3 times (according to the area of land, in particular, the acreage and the number of animals per one worker, and for machine milking operators, for example, the load became 4,5 times higher [7]).

Despite the fact that the EAEU member states have different volumes of production, one can observe in 2011-2014 the growth of national economies, but in 2015-2016 the GDP of all countries has significantly decreased, which is related to a fall in world prices for the main export commodities of these countries, a reduction in the consumption of hydrocarbons and metals in importing countries, and negative dynamics of the exchange rate of national currencies against USD and EURO. As Table 3 shows, the downward is customary for agriculture during this period, although its specific weight remained unchanged.

Gross agricultural production of the EAEU member countries, mln. USD

Indicator	2010	2011	2012	2013	2014	2015	2016
EAEU							
Gross domestic product	1 744 362	2 323 683	2 484 536	2 628 213	2 404 881	1 631 601	1 486 153
Agriculture, forestry and fisheries	65 156	87 105	87 449	91 513	92 317	71 659	65 950
Percentage share, %	3,7	3,7	3,5	3,5	3,8	4,4	4,4
Armenia							
Gross domestic product	9 260	10 142	10 619	11 121	11 610	10 553	10 572
Agriculture, forestry and fisheries	1574	2 061	1 902	2 050	2 098	1 818	1 685
Percentage share, %	16,9	20,3	17,9	18,4	18,1	17,2	15,9
Belarus							
Gross domestic product	56 941	60 795	65 428	74 761	78 536	55 317	47 478
Agriculture, forestry and fisheries	5 063	4 865	5 320	5 091	5 736	3 476	3 274
Percentage share, %	8,9	8,0	8,1	6,8	7,3	6,2	6,9
Kazakhstan							
Gross domestic product	148 052	192 628	208 002	236 633	221 418	184 387	137 278
Agriculture, forestry and fisheries	6 678	9 610	8 920	10 657	9 586	8 686	6 254
Percentage share, %	4,5	4,9	4,2	4,5	4,3	4,7	4,6
Kyrgyzstan							
Gross domestic product	4 795	6 198	6 606	7 335	7 469	6 678	6 552
Agriculture, forestry and fisheries	836	1 027	1 100	1 074	1 099	939	867
Percentage share, %	17,4	16,6	16,7	14,6	14,7	14,1	13,2
Russia							
Gross domestic product	1 525 314	2 053 920	2 193 881	2 298 363	2 085 848	1 374 665	1 284 272
Agriculture, forestry and fisheries	47 811	66 252	66 736	68 931	70 210	53 437	50 527
Percentage share, %	3,1	3,2	3,0	2,9	3,4	3,9	3,9

Note. Based on data of Social Economic Statistics of the EEC // EEC website.

According to Table 4, the gross output of agricultural product (services) in January-December 2017 totaled 4097,4 billion tenge nationwide, including the share of crop production – 55,6 %, and livestock production – 44,6 %.

Table 4

Gross Agricultural Production of the Republic of Kazakhstan in 2017, million tenge

Region	Gross output	Including:	
		Crop production	Livestock production
1	2	3	4
Republic of Kazakhstan	4 097 455,3	2 278 340,9	1 807 142,5
Akmola Region	382 976,7	258 525,0	122 980,2
Aktobe Region	200 841,7	78 527,1	121 865,8
Almaty Region	647 554,1	344 135,1	301 950,8
Atyrau Region	62 660,6	26 651,0	35 519,8
West Kazakhstan Region	143 137,7	60 647,9	81 766,1
Zhambyl Region	255 580,2	138 011,1	116 627,1

1	2	3	4
Karaganda Region	246 471,5	102 232,3	143 671,3
Kostanay Region	362 242,8	253 319,8	106 212,0
Kyzylorda Region	86 070,6	52 751,8	32 765,7
Mangystau Region	13 689,5	2 788,5	10 874,7
South Kazakhstan Region	522 397,4	289 959,8	231 176,8
Pavlodar Region	196 357,2	95 205,3	101 052,9
North Kazakhstan Region	510 594,8	373 836,4	136 088,3
East Kazakhstan Region	459 989,5	196 666,4	262 883,9
Astana	962,2	618,8	243,0
Almaty	5 928,8	4 464,6	1 464,1

Note. Source: «Kazakh-Zerno» News Agency.

The state and dynamics of agricultural production determine the country's food security, ultimately its economic freedom, therefore the state is interested in implementing an effective agrarian policy aimed at solving the social and economic problems of the village. In rural areas, the development of small business is one of the most important factors for increasing the employment of the population, which will help to increase food production. It is necessary to ensure the growth of production through the introduction of technological equipment.

For example, among the priorities of state agricultural regulation in Germany are labor productivity, competitiveness, improvement of state support, and these directions in the country changed depending on the problems of a particular period, if prior to 1960 the priorities were food security, labor productivity, market stabilization, protection of profitability, since 2003 there are market orientation, consumer demand orientation, development of federal lands, protection of the environment [8].

Today in Kazakhstan the problem of increasing labor productivity in the countryside through the introduction of new technologies and equipment, and upgrading of skills of rural workers is more urgent than ever. The material and technical basis of the agricultural sector as a set of material elements of productive forces is characterized by great diversity due to its multi-branch structure. Production basic means of agricultural production make up the bulk of the value of all material elements of the AIC productive forces. Each of the branches of the agro-industrial complex is characterized by a different ratio of basic and circulating assets.

At the present time, the material and technical equipment of such industries as logging, storage, processing of agricultural products lags behind. The available capacities of storage facilities and warehouses, the capacity of processing enterprises are lagging behind the needs for them and do not always meet the requirements. The effectiveness of the agricultural sector depends on establishing an optimal balance between the level of development of material and technical support for each of the interrelated branches of the agroindustrial complex.

Alignment of the intersectoral innovation and technological level of development of the AIC sectors and sub-sectors should base on identifying and pulling the least backward due to the priority investments there. When implementing investment policy, one should proceed from the specific features of agricultural and processing enterprises, that is, take into account that investments are directed to the construction of small plants that are optimal from the point of view of labor costs for production, taking into account the orientation toward new technological changes.

It is necessary to develop industrial and social infrastructure in the countryside, to increase the employment of the rural population, and to equip personnel with new knowledge. The aim of the «Agrobusiness 2020» new state program is to overcome the existing imbalances in the agricultural sectors, to upgrade the machinery fleet 1.5-2 times, to expand the area using mineral fertilizers, to increase the production of mixed fodders, to increase the proportion of breeding animals in the total livestock, to increase the area of watered pastures and etc. The solution of the issues of machinery renewal is connected with the enlargement of farms through the formation of agricultural cooperatives: it is planned to unite 670,000 farms across the country, to ensure in the regions the construction of trade and logistics centers on the basis of which a system for marketing and processing products is planned to be created [9].

According to the famous Kazakh scientist, the number of large-scale agricultural enterprises will grow, but because of poverty of the population and growth of rural unemployment in the short term there is a need for effective state support of small and medium-sized peasant farms and personal farms of villagers, garden-

ing and vegetable growing of citizens, which will allow not only to increase yields and productivity of livestock, but also provide the food for a large part of households, will absorb the surplus rural labor force [10].

To characterize the activity of cooperatives, we use an integral indicator by analogy with the one proposed by the Kazakh scientist, with an adjustment [11] :

$$T = T1 + 1,3 \cdot T2 + 2,0 \cdot T3 + 2,0 \cdot T4 ,$$

where T — the volume of gross turnover; $1,0 \cdot T1$ — the volume of procuring turnover; $1,3 \cdot T2$ — the volume of products purchased from the population; $2,0 \cdot T3$ — the volume of production of subsidiary agricultural, industrial and other production divisions; $2,0 \cdot T4$ — the volume of products of own production of public catering.

Thus, the priorities for the development of agriproduction should solve strategic tasks that can be realized by intensifying the agrarian sector, developing own technologies and introducing foreign innovations; establishing the optimal ratio between large, medium and small enterprises; creating cooperatives; reducing dependence on imports of food products, agricultural machinery and equipment for agro-production enterprises.

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АӨК қызметкерлерінің еңбек өнімділігін жоғарлату арқылы азық-түлік қауіпсіздігін қамтамасыз етуін арттыру

Мақалада аграрлық сектор кәсіпорындарының бәсекелестік қабілеттігін жоғарлатуға әрекет ететін, елдің азық-түлік қауіпсіздігін қамтамасыз ететін, аграрлық сектор жұмыскерлерінің еңбек өнімділігінің өсуі негізінде Қазақстан Республикасының өңірлерінде агроөнеркісіп кешені (АӨК) дамыту мәселелері қаралды. Қазақстан Республикасының дүниежүзінің ең дамыған елдерінің қатарына кіруі жаңа технологияларды қолдана отырып, өңірлерді дамыту қажеттілігін негіздейді. Мақалада ауыл, орман және балық шаруашылығында еңбек ететін халықтың айтарлықтай төмендеуі, ауылшаруашылық өндірісінің құлауын тудыратын елді мекеннен қалаға көші-қонның жалғасуы туралы атап өтіледі. Аграрлық секторда кәсіпкерліктің дамуы өзекті мәселеге айналуға, сондықтан басым міндет еңбек өнімділігінің өсуі. Автор мысал ретінде Германия, Франция және басқа дамыған елдердің шетелдік тәжірибесін келтіреді. ЕурАзЭЖ мүшелігі осы қауымдастықтың мемлекеттері ішінде жұмыс күшінің еркін көші-қонын қамтамасыз етеді, бұл жеке елдерге жұмыссыздықты

төмендетуге, ЖІӨ-нің өсуіне қолжеткізуге мүмкіндік береді. Зерттеуде ғылымды қажетсінетін, ресурстарды үнемдейтін технологиялар мен өндірістердің рөлін өсіру қажеттілігі туралы ерекше айтылады, осыған «Төртінші өнеркәсіптік революция жағдайындағы дамудың жаңа мүмкіндіктері» Қазақстан Республикасының Президенті Н. Назарбаевтың Қазақстан халқына Жолдауы куә. Қазақстанда аграрлық сектордың материалдық-техникалық базасы көп салалық құрылымына байланысты әртүрлілігімен сипатталады, себебі АӨК әрбір саласы негізгі және материалдық айналым құралдарының әртүрлі арақатынасымен ерекшеленеді, әсіресе бұл дайындама, сақтау және ауылшаруашылық өнімдерін қайта өңдеуге қатысты. Сондықтан жаңа технологиялар мен жабдықтарды енгізу, сондай-ақ тиімді инвестициялық саясат, шаруақожалық фермалары, өзіндік қосалқы шаруашылықтар және т.б. күштерін біріктіруі тиіс ауылшаруашылық кооперативтеріне мемлекеттік қолдау есебінен АӨК салалары мен кіші салалардың инновациялық-технологиялық деңгейін жоғарлату қажет.

Кілт сөздер: агроөнеркәсіп кешен, еңбек өнімділігі, агроөндіріс, ауылшаруашылық кәсіпорындары, ауылдық жерлерде жұмыс істеу, кооперативтер.

С.А. Сагинова

Повышение обеспечения продовольственной безопасности за счет роста производительности труда работников АПК

В статье рассматриваются проблемы развития агропромышленного комплекса (АПК) в регионах Республики Казахстан на основе роста производительности труда работников аграрного сектора, что будет способствовать повышению конкурентоспособности предприятий аграрного сектора, обеспечению продовольственной безопасности страны. Вхождение Республики Казахстан в число наиболее развитых стран мира обуславливает необходимость развития регионов с использованием новых технологий. В статье отмечается, что существенно снижается занятое население в сельском, лесном и рыбном хозяйстве, продолжается миграция из сельской местности в города, что вызывает падение сельскохозяйственного производства. Актуальным становится развитие предпринимательства в аграрном секторе, поэтому приоритетной задачей становится рост производительности труда. Автор приводит в качестве примера зарубежный опыт развитых стран Германии, Франции и др. Членство ЕАЭС обеспечивает свободную миграцию рабочей силы внутри государств данного содружества, что позволяет отдельным странам снизить безработицу, добиваться роста ВВП. В исследовании подчеркивается необходимость возрастания роли наукоемких, ресурсосберегающих технологий и производств, о чем свидетельствует Послание народу Казахстана Президента Н.А. Назарбаева «Новые возможности развития в условиях четвертой промышленной революции». В Казахстане материально-техническая база аграрного сектора отличается разнообразием из-за его многоотраслевой структуры, так как каждая из отраслей АПК имеет различные соотношения основных и оборотных материальных средств, особенно это касается таких отраслей, как заготовка, хранение и переработка сельскохозяйственной продукции. Поэтому необходимо повысить инновационно-технологический уровень развития отраслей и подотраслей АПК за счет внедрения новых технологий и оборудования, а также повышения квалификации сельских тружеников на основе эффективной инвестиционной политики, государственной поддержки сельскохозяйственных кооперативов, которые должны объединить усилия крестьянских фермерских хозяйств, личных подсобных хозяйств и т.д.

Ключевые слова: продовольственная безопасность, агропромышленный комплекс, производительность труда, агропроизводство, сельхозпредприятия, сельская занятость, кооперативы.

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