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HUMAN POTENTIAL IN AGRICULTURE OF THE REPUBLIC OF MOLDOVA

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Abstract

After approval of the Declaration of Independence (August 27th 1991), Moldova lives hoping to consolidate their place among the democratic nations of the world and to build its new socioeconomic system. Agriculture has been and remains the strongest factor of balance in harmonizing economic development of any country, including our country. Moreover, for us agriculture has a significant contribution to the gross domestic product, which even if reduced from 36.14% to 15.23% in 1990 to 2014, remains the backbone of the national economy. The level of agricultural development of our country undoubtedly is dependent on natural resources and materials that are emphasized by the available human potential. Sure, all those involved in the agri-food sector must increase its effort to gain new generation of products, to develop and apply appropriate technologies for their production would exclude or, at least, limit risk and uncertainty. It is natural to manifest constantly awake curiosity and also hard to available human potential for national agriculture, creativity farmers achieve the desired result. The article reflects on human potential evolution of the number of people employed in national agriculture, knowledge and skills, professionalism and creativity of farmers. The authors come up with some proposals that would help ensure agriculture with the necessary human resources, in order to enhance professionalism and creativity of those working in this sector of national economy

Key words**:** *agriculture, efficiency, human resources, professionalism, creativity*

INTRODUCTION

Changes in the national economy were initiated by the decision of the Moldovan Parliament on 25 July 1990 described "... transition to a market economy as a model of management .... The core concept of agrarian reform and socio-economic development of the village (still conception), adopted by the Moldovan Parliament decision of 15 February 1991, was focused on land relations reform. The main focus of land reform was and remains de-monopolization of State ownership of land and, as a result, the occurrence homestead (farm type), based on a real economic independence.

In such circumstances the role of the peasant farmer increase considerably, which obliges us, no doubt, to amplify and intensify scientific research that contributes to the formation of appropriate human potential. Interest for such studies is explained as organic production, in contrast to other segments of the agricultural activity, is growing.

MATERIALS AND METHODS

The materials used in research are part of the normative acts of the EU and Moldova, textbooks, monographs and other publications specific to issue that allowed us to identify factors influences human potential impact on agriculture.

Quantitative analysis is performed on selected and processed by the authors data based on statistical yearbooks of Moldova and other official sources of the institutions of our country and the European Union.

Empirical study, analysis of the links provided us meanings and explanations relevant to the phenomena or processes of human potential impact on agriculture in Moldova.

RESULTS AND DISCUSSIONS

A. Smith's statement [4] that human activity creates real weight applies to the man working in agriculture, labor, over time according to need an application to accomplish that goal "is to defend the social and economic peasant ".

The total population in our country is decreasing slightly to 4.3616 million people in 1990 to 4.3479 million due to changes in natural increase from 8.0 to 0.8 percent per year and in 2000 to 3.6441 million as since 1996 statistics excludes residents from Dniester left bank districts.

After 2000 the population continues to shrink reaching 3.5552 million in 2015 or by 2.44 percent as a result of reduction in natural growth and migration.

The rural population dominates. Share of rural population increased from 52.6% in 1990 to 57.6% of the total population in 2015.

The natural growth in rural areas decreases from 6.6 in 1990 to -1.8 in 2000 and subsequently registered only negative values. The aging coefficient reached 16.2%, including males - 15.9% to 16.4% female and exceeds the indicated Gamier G. Bojio scale value of 12%.

Human potential is part of the resources flowing freely throughout space Survey. It is natural that our country join the free movement area of human resources. In our country dominates those who goes abroad in search for a job. In 2008 309.700 people were declared left to work abroad, in 2010-311.000 and in 2013 – 332,500, which form respectively 24.7%, 27.2% and 28.4% out of total employed in the country. Note that the number of people who left the country annually increased from 5,432 people in 1995 to 9,128 in 2000, then steadily decreases reaching 2374 people in 2014. Today, according to expert estimation, our country loose every day about one hundred people. Is increasing (from 68.6% in 2008 to 70.9% in 2010 and 71.5% in 2013) the proportion of persons leaving the countryside in search of better paid job. The total number of people who went abroad to work in rural areas dominates and is increasing (28% in 2008, 32% in 2010 and 47% in 2013) the group of people aged 25-34 years. Given that more than half of those who leave the country for “adventure” of searching of better payed employment are aged between 15 and 35 years and that fact will worsen considerably demographic situation and in the future will become extremely difficult to ensure the economy, particularly agriculture, with those who must produce goods and provide services. Economic and social measures are needed to motivate human resources to work in the national economy. The economically active population remaining in the country is reduced from 1.696 million in 1995 (Table 1) from 1.266 million in 2015, or 27.13 percent. More pronounced activity rate decreases from 47.1% in 1995 to 34.7% in 2013 or by 12.4 percentage points.

Table 1. Population by participation in economic activity in the Republic of Moldova (thousand persons)

	1995	2000	2005	2010	2011	2012	2013	2014	2015
Population, total	3,604	3,639	3,595	3,582	3,560	3,560	3,558	3,557	3,555
of which economic active	1,696	1,655	1,422	1,235	1,258	1,215	1,236	1,232	1,266
share, %	47.1	45.4	39.5	34.7	36.3	34.1	34.7	34.6	35.6
of which employed	1,673	1,515	1,319	1,143	1,173	0,1147	1,173	1,184	1,203
share, %	46.5	41.2	36.6	32.1	33.0	32.2	32.9	33.3	33.8
of which employed in agriculture	711	765	537	315	323	303	338	361	382
share, %	42.8	50.5	40.7	27.5	27.5	26.4	28.8	30.5	32.0

Source: authors calculations based on Statistical Yearbook of the Republic Moldova [5]

Number of labor force declined from 1.673 million in 1995 to 1.203 million in 2015 or by 28.1 percent. If in 1995 the employment in our economy as 98.6% of those active, then in 2015 - 95.0 percent or 3.6 percentage points less. Number of people employed in agriculture has decreased and emphatically from 711 thousand in 1995 to 382 thousand in

2015 or by 1.86 times. The employment rate in agriculture was reduced from 42.8% in 1995 to 32.0% in 2015 or by 10.8 percentage points less. Very few (3.09% in 2005 and 4.52% of those employed in 2015) were employed in the total number of works in industry. If the total number of employed population decreased by 29.97 percent, then the active population aged 15 to 34 years, practically remains the same level of 425 thousand people (29.88% of total) in 2005 and 427 thousand people (33.73% of total) in 2015 (Table 2).

Table 2. Population by age in economic activity in Moldova (thousand persons)

	Total		**Age range, years**											
			15-24		**25-34**		**35-44**		**45-54**		**55-64**		**65 and over**	
	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015
Active population	1,422	1,266	152	107	273	320	367	307	407	299	164	195	60.6	36.9
Employed population	1,319	1,204	124	93.6	252	300	341	293	384	290	158	190	60.2	37
Of which: rural space	745	648	71.9	56.2	121	138	184	159	222	161	93.4	108	52.8	42972
Agriculture	512.5	358.4	39.0	30.9	74.1	62.7	119	81.6	155	87.4	73.9	71.8	51.3	23.9
Industry	40.8	54.5	9.5	5.7	9.6	16.0	10.6	13.9	8.8	12.8	2.4	5.8	0.0	0.2

Source: authors calculations based on selected information from http / www.statistica.md [11]

The most pronounced decrease of 25.4% in those years, was registered within active population aged 15-24 years. However, the share of young workers who come in agriculture increased from 22.07% in 2005 to 26.1%, but even in 2015 it remains insufficient. Active population aged 35-54 in 2005 made up 54.5% or 774 thousands of people while in 2015 - only 606 thousands or 47.9% out of them. In other words the number of those who are in the prime of life and work in the last ten years was reduced by 21.7 percent. Population aged 35-54 employed in the national economy in 2005 stood at 725 thousand people and made up 93.66% and in 2015-583 thousand people or 96.2 percent of the number of active ones. The number of people aged 35-54 employed in agriculture decreased from 274 thousand (37.8% of those employed) in 2005 to 169.0 thousand (29.0%) in 2015. At the same time in 2005 total number of employed people aged 65 and over was 69.2 thousand out of which in agriculture 51.3 thousand or 74.1%, and in 2015 it constitutes 37 thousand and 23.9 thousand or 64.6 percent respectively. The population employed in the private sector increased from 871.1 thousand persons or 69.8% out of total employed in 2007 to 876.9 thousand persons or 74.0% in 2014 (Table 3).

Table 3. Population distribution by ownership (thousands)

	2007			**2014**		
	total	private	public	total	private	public
Total employed population	1,247.2	871.1	326.5	1,184.9	876.9	307.9
of which: Rural space	698.6	530.9	153.0	646.9	504.5	142.4
Agriculture	392.1	384.8	3.8	344.6	341.4	3.2

Source: author's calculations based on Workforce in Moldova. Employment and Unemployment, National Bureau of Statistics of the Republic of Moldova [7]

Number of people employed in the private sector in rural areas increased from 530.9 thousand persons (76.0% of total) in 2007 to 504.5 thousand persons (78.0% of total) in 2014. The most of the people in the rural areas working in the private sector are engaged in agriculture, forming 72.5% in 2007 and 67.7% in 2014 respectively. In the public sector dominates only those trained in public administration, education, health and social assistance. The market economy produces spectacular changes in the ratio of employees, self-employed, unpaid family workers and other categories of persons

employed in all types of economic activities. In total people employed in the national economy dominates employees even if their number is reduced from 830.6 thousand (63% of total) in 2005 to 787.6 thousand people (65% of total) in four employment categories in 2015 (Table 4).

Table 4 Population distribution by the main types of economic activity, thousands

	Total		**employees**		**self-employed**		**family workers**		**owners**	
	2005	2015	2005	2015	2005	2015	2005	2015	2005	2015
Persons	1,318.7	1,203.6	830.6	787.6	464.7	362.8	14.6	45.9	8.7	7.2
of which in Rural space	745.1	648.3	339.6	308.8	391.3	291.3	13.1	45.3	7.0	2.9
Agriculture	512.5	358.4	127.6	54.8	372.0	258.6	12.8	44.6	1.69	2.88

Source: authors' calculations based on information http / www.statistica.md [11]

The number of people employed in the national economy decreased from 1.3187 million in 2005 2015 to 1.2036 million people, or by 8.7%, and the number of employees decreased respectively from 830.6 thousand to 787.6 thousand or by 5.2%, self-employment - from 464.7 thousand to 362.8 thousand or by 11.93%. In those years the number of unpaid family workers increased only from 14.6 thousand in 2005 to 45.9 thousand or 3.14 times. Basically all we paid family workers engaged in agriculture in the national economy. The significant number of self-employed workers in agriculture, expansion of private ownership of land, organizing farms (farms) contributed to a significant increase in the number of people who take decisions by giving them more freedom, safety and, of course, greater responsibility. Effectiveness and efficiency of their work is dependent on the competence, professionalism and creativity. Abilities shall be acquired through education, which ultimately helps to ensure the state, including our country, people productive and efficient. A-productive makes people through education - Peter Drucker argues [1, 4] - is "the first of the challenges of our time." Population with higher and specialized secondary employment in the national economy is growing at 418.1 thousand persons (31.7% of total) in 2005 to 443.0 thousand persons (38.7% of total) in 2010 and 464.6 thousand (38.6% of total) in 2015 or by 11.1% more (Table 5).

Table 5. Employed population by educational level (thousands)

	Total	**Year**	**Studies**					
			High	coleague	secundary	liceum	gimnazium	primary
Population employed total	2005	1,318.7	223.8	194.3	331.2	294.9	235.0	39.5
	2010	1,143.4	262.8	180.2	277.2	236.8	178.1	8.3
	2015	1,203.6	294.0	170.6	268.1	239.1	224.8	7.0
Population employed in rural space	2005	745.1	47.5	72.8	187.3	199.8	200.5	37.1
	2010	605.0	64.2	81.0	170.3	138.8	143.5	7.3
	2015	648.3	72.4	78.0	169.8	143.2	184.1	6.3
Self-employed	2005	391.3	8.3	22.7	88.5	113.6	125.1	33.5
	2010	242.1	6.6	16.8	73.1	66.9	74.7	4.1
	2015	291.3	9.6	24.1	76.8	73.1	104.1	3.1
Agriculture	2005	512.5	11.5	29.4	119.2	154.7	161.7	36.1
	2010	295.9	9.1	22.0	81.6	80.8	95.8	6.5
	2015	358.4	12.7	29.4	87.3	90.6	132.6	5.8

Source: Authors' calculations based http / www.statistica.md [11]

Population with higher and specialized secondary education in rural areas in 2005 formed 120.3 thousand (16.1% of its total) in 2010 -145.2 thousand people (24.0% of its total) in the year 2015-150.4 thousand persons (23.2% of its total). If the self-employed in rural areas with higher and specialized secondary in 2005 numbered 31.0 thousand

(7.4% of those with such studies), then in 2010 – 23.4 thousand (5.3% of those with such studies) and in 2015-33.7 thousand (7.25% of those with such studies) population with higher and specialized secondary employment in agriculture, hunting and forestry in 2005 as 40.9 thousand persons or 9.8% of those with higher and specialized secondary in 2010-31.1 thousand people or 7.0% and in 2015 - 42.1 thousand or 9.1 % of those with higher and secondary special. Competence, professionalism and creativity of those involved in the national economy, including agriculture increased in the third cycle - PhD. The number of doctoral students increased from 1,248 in 2000 to1,685 in 2006 or about a third. Then followed a decline, forming in 2013 less than 91 percent comparing to 2005. The number of post-doctoral increase from 20 in 2000 to 28 in 2005 and 51 in 2010, then steadily decreases reaching 35 in 2013 (Table 6).

Table 6. Number of graduates doctoral and post-doctoral

	2000	2005	2010	2011	2012	2013
Number of doctoral students	1,248	1,667	1,55	1,556	1,485	1,522
Graduated doctorands	261	311	422	318	380	349
Sustained thesis	22	9	14	10	24	13
Number of post-doctoral students	20	28	51	40	39	35
Graduated post-doctorands	4	4	25	30	17	19
Sustained thesis	-	1	3	1	1	6

Source: authors calculations based on statistical Yearbooks of the Republic of Moldova [5]

Even if the number of graduates of doctoral increase from 261 in 2000 to 349 in 2013 or 33.7 per cent share in total doctoral candidates is reduced from 20.9% in 2000 to 18.7% in 2005 and then grow by 27.2% in 2010 and again reduced to 22.9 percent. The number of post-doctoral graduates increased from 4 in 2000 to 30 in 2011 and then reduced to 19 in 2013 while doctorate and post-doctorate theses were finished o as only 8.4% of doctoral graduates have defended the thesis in 2000, decreasing to 3.7 percent in 2013. The number of graduates should note that in those years the agricultural sciences were held only 28 theses forming 0.0175% of the total and 2 thesis in veterinary medicine as an agrarian country is catastrophic for the least and obviously determined activity-oriented development of market relations, the process of innovation, renewal of varieties, biological plant protection etc. Scientific research value, including agriculture is measured by patents inventions, plant varieties, securities trade mark protection. The number of patent applications for inventions increase from 246 in 2000 to 401 in 2005, and has a tendency to reduce to 96 in 2013 or 4.18 times of tremendous growth from 139 in 2014. The share of patents issued report of applications is declining which is confirmed by reducing from 76% in 1995 to 67% in 2005 to 63% in 2013 and 38.8% in 2014. Patent applications filed for plant varieties grow from 12 in 2000 22 in 2005 and 43 in 2013, but was decreased to 34 in 2014 reached unacceptably low levels for an agrarian country like Moldova. Total securities patent for plant varieties increased from 13 in 2005 to 131 in 2014, or about 10 times, but remains too poorly constituted only 34% of all titles of patent in our country. Number of units issued for trademark protection fluctuate increased from 3,827 in 1995 to 4,742 in 2005 or by 34.9% then reduced to 4,250 in 2012 or about 10.4% and increased to 5,220 in 2013 or by 22.8% decreasing in 4,939 or by 5.4 percent.

The large number of titles released for trademark protection is due to increase small and medium businesses who want to affirm in market.

Republic of Moldova ranks last, with a very low number of patents obtained abroad is explained, in addition quality of research and the high costs of patenting in these offices, which varies from 12 thousand euros (USPTO) to 30 thousand euros (EPO) (Fig. 1).

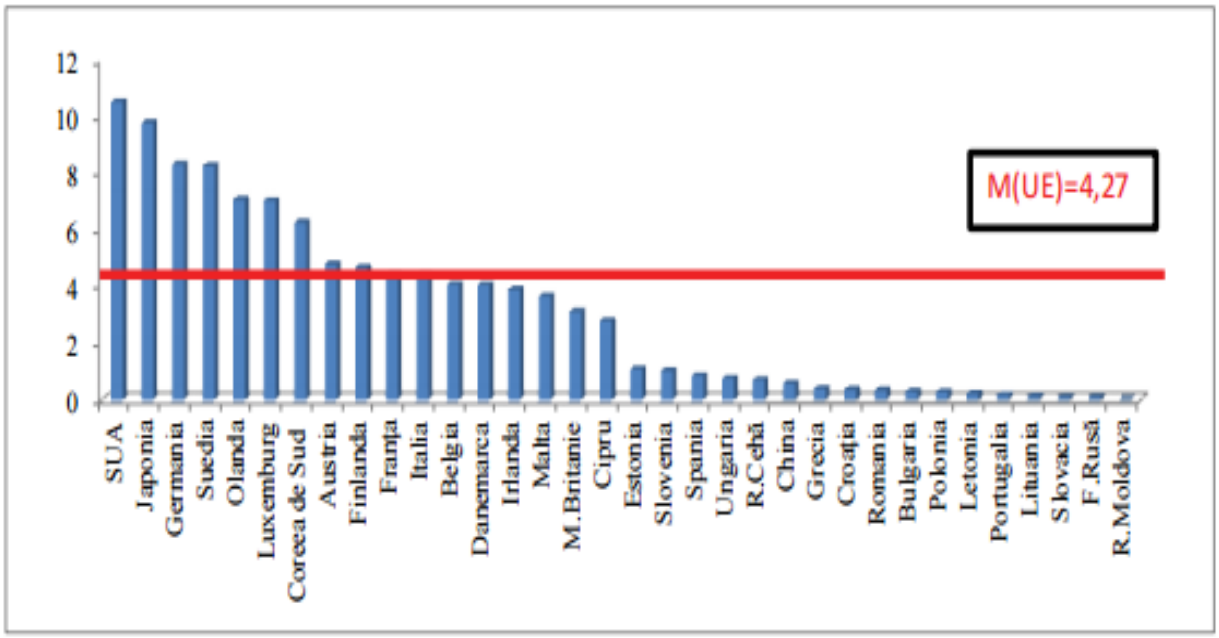

Fig. 1. EPO and USPTO Patent issued by 100 scholars opposed to cost-ENÎ.
Source: Akademos 3/2015, p. 30-38 [3]

As for publications included in the international circuit after the Republic of Moldova ranks among the top countries (most reduced costs), the cost of patents we are among the last every 10 million euro allowances are issued only 0.02 brevets.

CONCLUSIONS

Human potential national working in agriculture is declining. But their overall number is reduced from 512.5 thousand (68.8% of those employed) 2005 to 358.4 thousand persons (55.3% of total) in 2015. Among those engaged in agriculture, hunting and forestry stands freelancers the number of which in 2005 stood at 372.0 thousand (72.6% of total) and in 2015 - to 258.6 thousand people (72.4 percent of total).

Competence, professionalism and creativity of people employed in agriculture does not meet national day. Population with higher and specialized secondary employment in agriculture, hunting and forestry in 2005 as 40.9 thousand or 9.8% of those with higher and specialized secondary in 2010- 31,100 or 7.0% of those with higher and secondary special and in 2015 -42,100 or 9.1% of those with higher and secondary special. Developing scientific research, exploitation of results is poor science. What to do? In order to develop sustainable national agriculture and adjust it to the requirements of the Association Agreement between the Republic of Moldova, on the one hand, and the European Union and the European Atomic Energy Community and its Member States, on the other hand consider appropriate - to change the structure of national agriculture branches corresponding EU Common market demand; - To implement effective and efficient technologies; - Streamline everything related to human potential working in agriculture.

To this end we propose to:

(i)develop and apply mechanisms and economic instruments that can ensure natural growth of the population of our country in general and the rural in special.

(ii)stop, or at least to slow the emigration of our citizens, particularly the youth through the development and implementation of ways that it will encourage everyone to achieve in national agriculture.

(iii)starting from the reality that many of those involved in national agriculture are the generation that comes from the 50s USSR where they had a patriarchal childhood caught in the school, where the laws of physics in the 60s and acted as directed party studying in the

university in the 70s how happy will live under communism, falling into the 80s in employment during the "light" of stagnation where the roots caught stealing and corruption, and in the 90s was entrusted reform national agriculture is required to step in changing the mentality of occupation endowing agriculture with innovative qualities, performance and competence to make decisions, take appropriate action based economy incidentally markets. Article 123 of the Association Agreement between the European Union and the republic of Moldova recorded cooperation will focus, inter alia, the following areas:

a.Promoting lifelong learning, which is the key to growth and jobs and allow citizens to participate in society in full measure;

b.Modernizing education and training, enhancing the quality, relevance and access;

c.Promoting convergence in higher education, based on the Bologna Process and the EU modernization agenda for higher education;

d.Strengthening international academic cooperation, participation in EU cooperation programs, to increase mobility of students and teachers;

e.Creating a national qualifications framework to improve transparency and recognition of qualifications and competences; f. promoting the goals set in the Copenhagen process on European cooperation in vocational education and technical training.

4. Innovative activity, promoting creativity, scientific research development, exploitation of the results of science and new ideas in agriculture entering our country will change for the better through the implementation of the Association Agreement between the EU and Moldova.

From our country it is required:

a. increase domestic spending on research and development in our country, when they rose from 317.6 million lei in 2009 to 415.2 million in 2014 or 30.7 percent, their share in the national GDP decreased from 0.526% in 2009-0371 percent in 2014. for comparison in 2012, according to information presented by Ion Holban [2], the United States has allocated nearly $ 434.5 billion for research and development, which form 2.77% of GDP, Member States of European Union - 337.8 billion $ (2.03%), Japan - 194.4 billion $ (3.26%), China - 151.4 billion $ (1.84%), South Korea - 43.2 billion $ (3.74%), CIS countries - 25.1 billion $ (0.95%). Moldova domestic expenditure in research - development in 2012 formed 0.42 percent of gross domestic product.

b. by stimulating economic motivation of the material involved in educational activities and scientific research.

Average monthly nominal earnings of an employee in our country has increased from 408 lei in 2001 to 4,090 lei in 2014 or by 10 times. If in 2001 the average monthly nominal earnings made up 87 percent of the monthly subsistence minimum, then in 2014 the average monthly nominal earnings was higher than the minimum monthly nominal wage being 2.5 times. Earning in higher education increased from 830 lei in October 2001 to 5,450 lei in October 2014, or only by 6.57 times.

Earning rated national university teacher education was increased from 1,294 lei in October 2001 to 7,732 in October 2014, or by 5.98 times the lecturer and university lecturer increased respectively by 5.92 times and 5.68 times. In 2001, nominal earnings in higher education who surpassed the average of 2.03 times, and in 2014 - 1.33 times. Insignificant changes occurred in earnings ratio of teacher, lecturer and lecturer of the university. So in 2001 this ratio was at 0.5085/1.0865 and 2014 - respectively 1.0857 and 0.483.

Thus scientific work, creativity and inventiveness can be more effective by increasing the level of motivation by appealing to increased financial allocations in this area and ensuring decent wages for those involved in scientific research.

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