

## **THE ANALYSIS OF THE POPULATION'S PARTICIPATION AT THE FIELD OF AGRICULTURAL EDUCATIONAL IN ROMANIA AND IN THE OTHER EU COUNTRIES**

**Assoc. researcher Cristina Neculai Ph.D**  
**Institute for Economic Forecasting**  
**Economics and Management of Agricultural and Food**  
**Production, The Bucharest Academy of Economic**  
**Studies**

**Abstract:** The increased of the competitiveness in the agriculture sector, on the market of the European economy is driven by the implementation of the investments, both in the physical capital and in the human capital. In this sense, the education can be considered the most important form of the human capital. We believe that, the training and the achievement of new knowledge, skills and competencies of the population which is employed in the agriculture sector, may become important factors of competitiveness for agriculture. The formal education with the non-formal education and the informal education may be a considerable force to increase the competitiveness of agriculture, especially through the dissemination of knowledge and the providing advice.

**JEL classification:** Q10, I21

**Key words:** vocational education, apprenticeship education, post-high school education, foremen education, tertiary level education, educational field of agricultural profile

### **I. The participation of the population in educational field of agricultural profile (the tertiary ISCED levels) in Romania and in EU countries**

We make the comparative analysis of the population's participation at educational field of agricultural profile in Romania and EU countries expressed by the number of graduates by the tertiary level (ISCED levels 5 to 6), 1998 year and 2007 year. Also, we analyze the participation of the population at educational field of agricultural profile in comparison with the other field of education expressed by the number of graduates - tertiary level, 2007 year.

#### **a) *The participation of the population in the educational field of agricultural profile - the tertiary level***

The participation of the population in the educational field of agricultural profile expressed by number of graduates - tertiary level, is lower in 2007 year compared to 1998 year in all EU countries, excepting France (Table no. 1).

**Table no 1 The graduates of the tertiary level education ( ISCED levels 5 to 6) -  
educational field of agricultural profile, 1998 year and 2007 year•**

as % of all fields

Current number	Countries	1998	2007	Differences
1.	Austria	4.4	2.2	-2.2
2.	Bulgaria	2.1	1.8	-0.3
3.	Czech Republic	5.4	3.9	-1.5
4.	Denmark	2.7	2.2	-0.5
5.	Estonia	4.6	2.1	-2.5
6.	Finland	2.2	2.1	-0.1
7.	France	0.4	1.5	1.1
8.	Germany	2.5	1.8	-0.7
9.	Hungary	3.9	2.6	-1.3
10.	Ireland	1.3	0.7	-0.6
11.	Italy	2	1.8	-0.2
12.	Japan	2.4	2.3	-0.1
13.	Latvia	2.2	0.8	-1.4
14.	Lithuania	2.3	1.7	-0.6
15.	Netherlands	2.4	1.5	-0.9
16.	Norway	1.3	1.1	-0.2
17.	Poland	2.8	1.7	-1.1
18.	Portugal	3.2	1.5	-1.7
19.	Romania	3.6	2.3	-1.3
20.	Slovakia	4.2	3.4	-0.8
21.	Slovenia	2.9	2.4	-0.5
22.	Spain	2.6	1.8	-0.8
23.	Sweden	1.5	1.2	-0.3
24.	United Kingdom	1.4	0.9	-0.5
25.	United States	2	1.1	-0.9

*\* the data for the school year 2006/2007; graduates data refer to 2007 year.*

*Note: own calculations based on the eurostat data*

*Source: Eurostat, Education statistics, UOE (Unesco Institute for Statistics, OECD and Eurostat) data collection (educ\_ilev)*

• ISCED levels and fields of education according to the international standard classification of education (ISCED), 1997 year:

- ISCED level 5: first stage of tertiary education (not leading directly to an advanced research qualification), covering programmes of at least two years duration, divided between;

- ISCED level 6: second stage of tertiary education, covering programmes leading to an advanced research qualification (e.g. PhD or Doctorate), which are devoted to advanced study and original research and not based on course-work only.

In Romania, the participation of the population in educational field of agricultural profile, expressed by the graduates at tertiary level, recorded in 1998 year 3.6%, value which is higher compared to that recorded in many EU countries and lower compared with the other countries: Hungary (3.9%), Slovakia (4.2%), Austria (4.4%), Estonia (4.6%), Czech Republic (5.4%).

In our country, there is a reduction of the graduates, on the period 1998-2007, which registers a decrease of 1.3 percentage points, in 2007 compared to 1998.

**b) The participation of the population in the educational field of agricultural profile\*, compared with other educational fields, 2007 year**

The participation of the population in the educational field of agricultural profile expressed by the graduates of tertiary education level (ISCED levels 5 to 6) registers the lowest level compared to the participation of population in other educational fields in the EU countries and in non EU countries (Table no 2).

**Table no 2 The tertiary education graduates (ISCED levels 5 to 6), by fields of education, 2007 year\***

	% in all fields of education							
	Education and Training field	Humanities and Art field	Social Science, Business and Law field	Science, Mathematics and Computing field	Engineering, Manufacturing and Construction field	Agriculture and Veterinary field	Health and Welfare field	Services field
EU 27	9.9	12.1	35.1	9.7	12.6	1.7	14.8	4
Belgium	15.4	12.1	30.6	7.6	10.8	2.8	18.7	2.1
Bulgaria	7.2	6.9	51.4	4.1	14.8	1.8	6.2	7.8
Czech Republic	16.2	8.4	30.9	8	16.9	3.9	11	4.6
Denmark	7.9	13.4	31.9	7.3	12.6	2.2	21.7	2.9
Germany	9.4	16.2	24.3	12.3	13.3	1.8	19.1	3.6
Estonia	10.7	10.4	35.8	10.5	10.6	2.1	10.9	8.9
Ireland	6.9	25.3	28.5	15.2	8.5	0.7	12.5	2.4
Greece	7.5	15.6	25.5	9.3	12.2	4.2	15.9	9.8
Spain	12.8	8.8	27.5	9.5	17.1	1.8	14.8	7.7
France	2	10.9	40.9	11.1	15.6	1.5	14	4.1
Italy	5.7	16.8	36.3	6.6	15.3	1.8	14.9	2.7
Cyprus	10.5	7.6	47.7	8.6	3.7	0.2	7.5	14.1
Latvia	13.7	6.2	55.7	4.7	7.1	0.8	5.8	6
Lithuania	14.4	7	42.7	5.8	15	1.7	9.8	3.6
Hungary	17.2	7.6	40.7	6.3	7.4	2.6	9.9	8.2
Malta	10.1	16	47.1	8	7.4	0	10.5	0.9
Netherlands	15.3	8.7	38.1	6.5	7.7	1.5	17.3	4.8
Austria	14.2	8.9	30.3	12	19.7	2.2	9.6	3.1
Poland	16.4	8.6	43	8.1	8.7	1.7	8.2	5.4
Portugal	9.3	8.5	28.3	10.7	16.8	1.5	19.1	5.8
Romania	2.3	11	49.2	5.2	14.5	2.3	12	3.4
Slovenia	8.9	5.9	49.7	4.4	12.6	2.4	7.9	8.2
Slovakia	15	5.1	28.1	8.7	14.7	3.4	18.9	6.1
Finland	6.9	14.7	22.7	8.8	19.9	2.1	19.3	5.5
Sweden	17.1	5.9	24.6	7.2	16.7	1.2	25	2.2

\* expressed by the number of graduates - tertiary level

<b>Business Statistics – Economic Informatics</b>								
	Education and Training field	Humanities and Art field	Social Science, Business and Law field	Science, Mathematics and Computing field	Engineering, Manufacturing and Construction field	Agriculture and Veterinary field	Health and Welfare field	Services field
United Kingdom	11.2	16.1	30.7	13.3	8.5	0.9	18.5	0.8
Croatia	7.5	8.1	37.7	7	11.7	3.1	9.5	15.6
Yugoslav Republic of Macedonia	20.9	11.3	31.8	6.5	10.5	3.8	10.7	4.4
Turkey	15.8	6.3	40.2	8	13.6	4.3	6	5.8
Island	23.2	10.8	38.5	6.9	6	0.8	12.7	1.1
Liechtenstein	0	2.7	65.8	0	31.5	0	0	0
Norway	18	9.8	27.6	7.5	7.4	1.1	24.5	4.1
Switzerland	10.5	7	38	8.5	13.3	2.1	14.2	6.4
United States	11.2	13.1	38	8.7	7	1.1	14.2	6.7
Japan	7.6	15.9	28.4	3.2	18.8	2.3	13.7	10.1

*\*the data for the school year 2006/2007; the graduates data refer to 2007 year*

*Note:*

*ISCED level 5: first stage of tertiary education (not leading directly to an advanced research qualification), covering programmes of at least two years duration, divided between.*

*ISCED level 6: second stage of tertiary education, covering programmes leading to an advanced research qualification (e.g. PhD or Doctorate), which are devoted to advanced study and original research and not based on course-work only.*

*Source: Education in Europe – Key statistics 2007, no 37/2009*

In Romania, according to the data from the table above, note that the participation of the population in educational field of agricultural profile – 2007 year, which is expressed by the number of graduates, is the lowest level, respectively 2.3%, compared with the participation of population in other fields of education: 11% Humanities and Art, 49.2% Social Science, Business and Law, 5.2% Science, Mathematics and Computing, 14.5% Engineering, Manufacturing and Construction, 12% Health and Welfare and 3.4% Services.

## **II. The participation of the population at levels of formal education – agricultural profile in Romania, during 1990 - 2009\***

We analyze the participation of the population at the formal education of agricultural profile on educational levels in Romania, as follows:

- high school;
- vocational, apprenticeship, post-high school and foremen;
- tertiary.

### **a) The participation of the population in the formal education of agricultural profile – high school educational level**

At the high school educational level, we analyze the participation of the population in the formal education of agricultural profile based on the resulting

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\* formal education takes place in the National Education System (schools, colleges and universities).

indicators: pupils enrolled per high school, graduates per high school and teachers per high school, which are reflected in Table no 3.

**Table no 3 The participation of the population in the formal education – high school educational level**

Indicators	1990/1991	2008/2009	Differences	
			Absolute	%
Pupils enrolled per high school - agricultural profile	1024	349	-674.4	-65.9
Graduates per high school - agricultural profile *	164	86	-78.1	-47.6
Teachers per high school - agricultural profile	44	37	-6.2	-14.3

\* 2007/2008 year

Own calculations based on the data from Statistical Yearbook of Romania, time series 1990 - 2008, National Statistics Institute

Source: Romanian Statistical Yearbook series for 1990 - 2009, National Statistics Institute

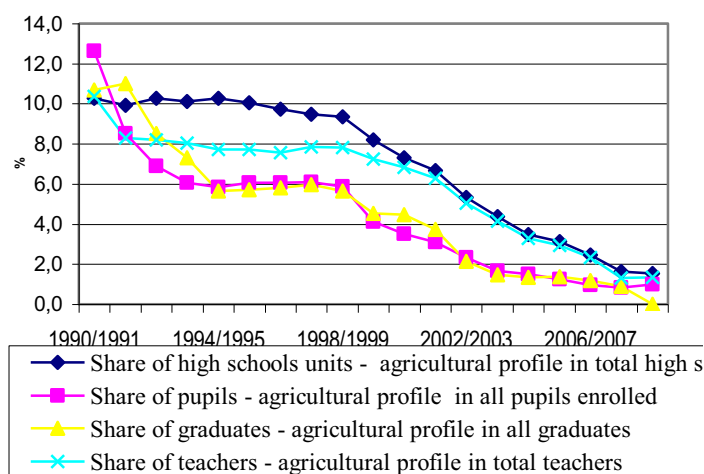
The resulting indicator **pupils enrolled per high school** - agricultural profile, in the reported period, records a 66% reduction trend. This trend occurs because there is a reduction trend of agricultural high schools by 82% and by 94% of the pupils enrolled. As a consequence, there is a trend of reduction by 48% for the indicator **graduates per high school**, in school year 2007/2008 compared to 1990/1991 school year.

Also, the indicator **teachers per high school** records a downward trend on the high schools' and the teachers' reduction background.

We analyze, also, the participation of the population in high school educational level – agricultural profile based on the indicators:

- the share of high school units agricultural profile in total high school units;
- the share of enrolled pupils agricultural profile in total enrolled pupils;
- the share of graduates agricultural profile in total graduates;
- the share of teachers agricultural profile in total teachers.

The trends mentioned above are presented in Figure 1



Source: Romanian Statistical Yearbook series for 1990 - 2009, National Statistics Institute

Own calculations based on the statistical data from Statistical Yearbook of Romania, time series 1990 - 2008, National Statistics Institute.

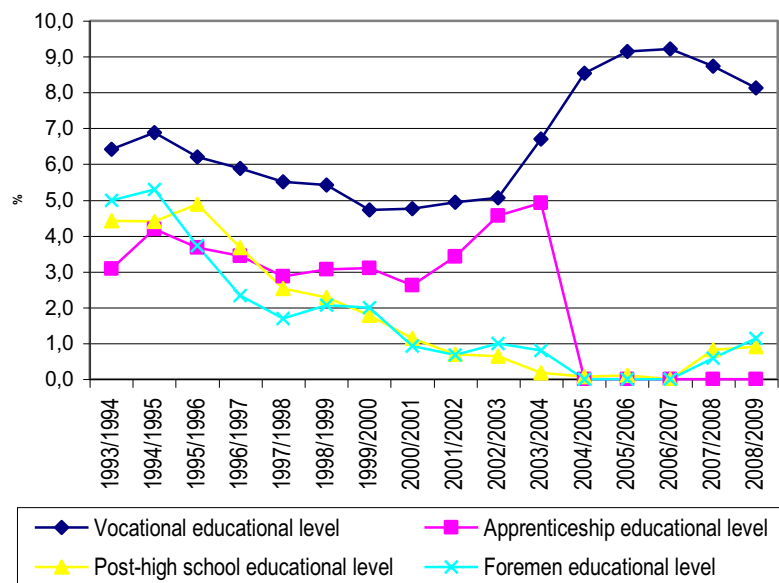
**Figure 1 High school educational level – agricultural profile**

The trends which are presented in Figure no 1 reflect the following: the share of high school units - agricultural profile in total high schools units registers a trend of reduction on the background of the reduction of high schools and the high schools - agricultural profile; also, the share of pupils enrolled at high school educational level - agricultural profile in total pupils enrolled at high school educational level registers a trend of reduction, during the period under review, due to continuous reduction of the pupils enrolled at high schools and of those enrolled at high school educational level - agricultural profile. As a consequence, the share of high school graduates – agricultural profile in total graduates high school registers a downward trend during the period analyzed.

The aspects mentioned above shows that the high school educational level - agricultural profile is characterized by an involution, because of the reduction of the quantitative factors: the number of high schools units, the number of pupils enrolled and the graduates.

**b) The participation of the population in the formal education of agricultural profile – vocational, apprenticeship, post-high school and foremen educational levels**

We analyze the participation of the population in the formal education of agricultural profile – vocational, apprenticeship, post-high school and foremen educational level based on the following indicators: the share of pupils enrolled - agricultural profile in all pupils enrolled on these educational levels. These indicators have different variation trends during the period examined (Figure no 2).



Source: Romanian Statistical Yearbook series for 1990 - 2008, National Statistics Institute  
Own calculations based on the data from Statistical Yearbook of Romania time series 1990 - 2009, National Statistics Institute

**Figure no 2 The pupils enrolled in educational levels (vocational, apprenticeship, post-high school and foremen) – agricultural profile in all pupils enrolled**

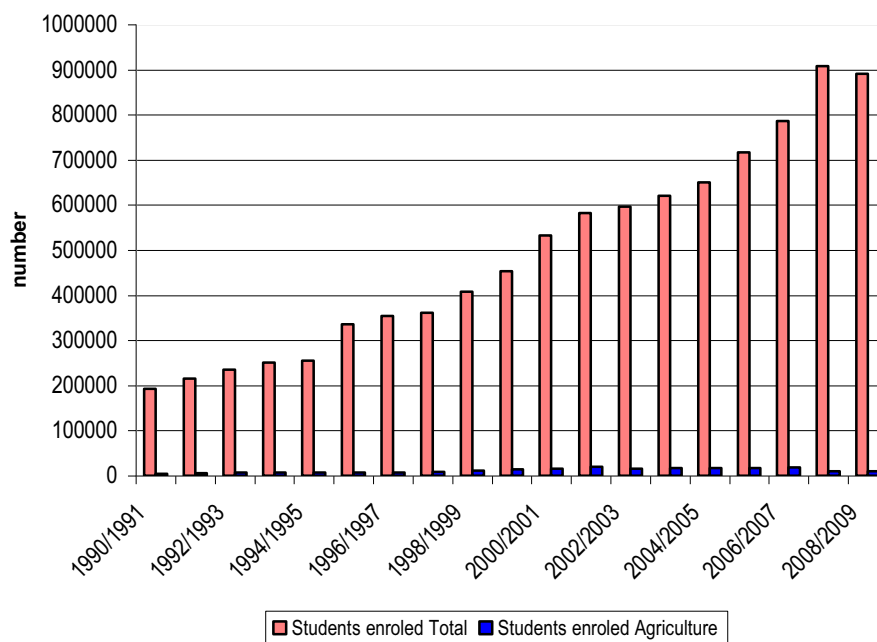
According to the data presented in Figure no 2, we see at the vocational educational level - agricultural profile a different trend of variation compared to that of the high school educational level.

We note a reduction trend registered of the pupils enrolled at the levels of educational apprenticeship, post-high school and foremen – agricultural profile, which has the effect the reducing of the share of the graduates - agricultural profile in all graduates on these educational levels.

The analysis of the above indicators reflects a sensitive participation of the population in vocational educational level and a reduction trend of population's participation at educational levels: apprenticeship, post-high school and foremen, agricultural profile.

**c) The participation of the population in the formal education of agricultural profile - tertiary educational level**

The students enrolled in the tertiary educational level - agricultural profile<sup>\*</sup> record, during 1990/1991 - 2008/2009 period, a trend of weaker growth compared with that of the total. (Figure no 3). Thus, in 2008/2009 year, compared to 1990/1991 year, all students enrolled in the tertiary educational level represent an increase of 362%, while in the agricultural profile, there is a growing with only 97%.



Source: Romanian Statistical Yearbook series for 1990 - 2008, National Statistics Institute  
Own calculations based on data from Statistical Yearbook of Romania time series 1990 - 2008, National Statistics Institute

**Figure no 3 Tertiary educational level**

<sup>\*</sup> without specialized veterinary medicine

At tertiary educational level - agricultural profile, on the base of growing trend of the students enrolled, we observe that there is recorded a maximum of 20.057 in academic year 2001/2002 and a minimum of 4.858 students in the academic year 1990/1991.

In the private university education - agricultural profile, in 2008/2009 year, there is a number of 114 students enrolled, representing a 0.03% share of total students enrolled, and the graduates are in number 10, representing a share 0.02% of total graduates.

### **Conclusions**

The issues examined above indicate that the specialists need - agricultural profile is on a variational trend with reduction tendency. The participation of the population at the education - agricultural profile is low in all educational levels, although the share of employment in agriculture sector has been and remains further at high level.

We believe that, the trend of growth in the number of pupils in vocational educational level and the number of the students may reflect in the dynamic of the economic activities in the rural areas, if this trend is accompanied by participation of population in the training courses in non-formal educational system.

### **REFERENCES**

1. Wallace E. Human Capital: Education in Agriculture, Iowa State University  
Huffman  
(1999)
2. \* \* \* Education in Europe – Key statistics ( 2007), no 37/2009  
[http://epp.eurostat.ec.europa.eu/cache/ITY\\_OFFPUB/KS-QA-09-037/EN/KS-QA-09-037-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-QA-09-037/EN/KS-QA-09-037-EN.PDF)
3. \* \* \* Eurostat, Education Statistics, UOE (Unesco Institute for Statistics, OECD and Eurostat) data collection (educ\_ilev)  
[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ\\_ilev&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ_ilev&lang=en)
4. \* \* \* Statistical Yearbook of Romania - Time Series 1990 – 2009 (2010), National Statistics Institute