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**Conference Paper**

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**Provided in Cooperation with:**

The Research Institute for Agriculture Economy and Rural Development (ICEADR), Bucharest

*Suggested Citation:* Pop, Ruxandra-Eugenia (2016) : Determinant factors for the level and valorification of wheat production in the European Union, In: Agrarian Economy and Rural Development - Realities and Perspectives for Romania. 7th Edition of the International Symposium, November 2016, Bucharest, The Research Institute for Agricultural Economy and Rural Development (ICEADR), Bucharest, pp. 150-156

This Version is available at:

<https://hdl.handle.net/10419/163366>

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# DETERMINANT FACTORS FOR THE LEVEL AND VALORIFICATION OF WHEAT PRODUCTION IN THE EUROPEAN UNION

RUXANDRA – EUGENIA POP<sup>1</sup>

**Abstract:** *The wheat crop is very important worldwide and the wheat demand is expected to increase in the future, as a result of the population number growth and dietary changes. So, the wheat production growth represents a significant challenge that the agriculture must face with, in order to ensure the food security at the global level. In the European Union there are important concerns to identify and assess the current factors that influence and determine the wheat production level and its efficient valorification.*

*In this paper are presented such significant factors, of different types, as follows: environmental, technological, management, market, taken into consideration producers and farmers current points of view.*

*The personal contribution of the author includes graphical representations, which are useful for technological factors modeling and assessment, realized using adequate software tools.*

**Key words:** wheat production, technological factors representation

## INTRODUCTION

The European Union is the main actor in the wheat market, the producer and the main supplier of wheat worldwide, recording yields above the world average. However, in many Member States wheat production is steady and the lack of improvements in this area can endanger the wheat consumption in the future. One of the main challenges that agriculture has faced in the last 20 years is to increase the production of wheat, due to the dramatic increase in demand for wheat as a result of population growth worldwide and how changes the population diet. According to the statistical database of the Food and Agriculture Organization of the United Nations (FAOSTAT 3), world wheat production recorded in 2015, 936.2 million tons.

Wheat crop productivity may involve all inputs or just some of them. Agricultural productivity is influenced by a number of factors, important as both inputs, crop biology, environmental conditions and characteristics of the agricultural market and agricultural policies. Such a classification can shape the determinants of productivity at the farm level crop: farmers and farm characteristics; management practices and innovation; climatic changes; political reforms and market fluctuations; risks facing farmers, and technological factors macroecological.

Farmers and farm characteristics are primarily concerned with their social characteristics (age, education, etc.) that influence agricultural activity on the farm and the farm sizes, ownership of it, etc.

Management practices and innovation have particularly contributed to increasing agricultural productivity, registered in the last century, innovations emerging in fertilizers, protection products (pesticides, fungicides, herbicides), machinery mechanization (tractors equipped with GPS), that compensating resource constraints.

Climate change include changes in exogenous nature (rainfall, temperature, carbon dioxide levels, variability in heat), these long-term have a direct impact on crop yields of wheat and indirectly through changes at ground level.

Political factors influencing a relative measure agricultural productivity, particularly through reform to support farmers by providing subsidies and reducing commodity prices in the European Union.

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Farmers may also face risks, some of which derive from market uncertainties regarding the level of production, price, political factors.

## **MATERIALS AND METHODS**

In this paper I will analyze how factors stated in the introduction affecting wheat production and farming to farmers at European level, following documentation using international literature by using a SWOT (Strength, Weaknesses, Opportunities, Threats).

SWOT analysis is a tool commonly used to analyze and assess the status of an organization or project. By SWOT analysis we can identify key issues that determine the performance of a project and facilitate the adoption of effective strategies within it. Can be monitored important factors that may influence the project:

- strengths and weaknesses of the organization (areas of value and vulnerability), inherent in the development project;
- external opportunities that can have a positive impact on the project, which may help developing strategies to exploit them;
- external threats, risks that may have a negative impact on the project, which may help develop strategies to remove or minimize them;

The purpose of this analysis is to maximize the potential of strengths and opportunities, while minimizing the impact of risks and weaknesses of the project / activity.

## **RESULTS AND DISCUSSIONS**

From the farmers point of view, taking as reference their age and level of education, we can say that older farmers are more conservative and less oriented to technology than the young farmers. In turn, farmers with a young age can be more productive because they are willing to use innovative practices and modern technological factors in their work. However, we can say that the larger experience of farmers with higher age can compensate the lack of experience in the field of modern technology appeared novelty.

It is noted that the specialization of farmers, especially graduating higher education institutions agriculture may be the consequence of an inclination higher to innovation, they adapt more easily to market changes brought by new technology trends, resulting in an increase in productivity by adopting new practices and / or technologies.

Also, the level of education influences farmers decision to join or to join agricultural associations, cooperatives or unions. The higher the level of education is, more they understand the importance of linking groups mentioned. So, they can accumulate technical knowledge, by organizing specialized training sessions for farmers. Also they can attend classes from which to acquire the ability to use new equipment, to acquire information on practices and innovative services. Being in an agricultural association, farmers can enter into partnerships which benefit from contracts for the purchase of plant protection products for more advantageous than individual farms. Such costs are lower, resulting in higher revenues. As can be seen in Table 1, the number of graduates in agriculture is quite small, occupying the penultimate position in the ranking that dropped from year to year, gradually.

Among the innovative practices that improve management in the wheat crop adaptation to macroecological factors it is particularly important. They represent the natural conditions that allow and affects plant growth and development of wheat, of which the most important are the geographical position and sunlight, climate, soil water, all of which are favorable wheat crop.

Chart 1

<b>GRADUATES IN ROMANIA STATE + PRIVATE</b>									
<b>DOMENIUL</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>TOTAL GRADUATES IN AREAS</b>
Technic	24.605	24.758	23,949	49,342	30,287	25,493	27,190	25,317	230,941
Agricol	3.200	3.750	2,087	3,336	2,228	2,453	2,499	2,396	21,949
Medical and pharma	6.292	6.633	6,596	8,122	7,763	9,729	9,434	9,437	64,006
Economics	32.098	37.211	91,884	67,420	72,641	62,685	34,415	25,724	424,078
Legal sciences	10.175	12.568	14,458	21,418	17,954	26,404	19,215	12,521	134,713
Pedagogical university	36.502	42.093	92,118	66,140	60,198	57,507	41,514	33,430	429,502
Artistic and journalistic	2.572	2.236	3,880	2,384	2,448	2,629	2,404	2,203	20,756
<b>TOTAL GRADUATES /YEAR</b>	<b>112.244</b>	<b>125,499</b>	<b>232,885</b>	<b>214,826</b>	<b>191,291</b>	<b>186,900</b>	<b>136,671</b>	<b>111,028</b>	<b>1,311,344</b>

Marin A. – *Agricultural economics and rural development*, Ed. ASE, 2014

There are a variety of technological factors and, of these, crop density has particular importance for achieving superior and consistent yields of wheat. Theoretically, to capture as much solar energy transformed into grain production, the ideal would be that the entire surface is covered sown with wheat ears, thick, the same height and of similar size.

The fertilization and fine wheat is also very important technological factors, wheat treatment with appropriate fertilizers at the right time can lead to a significant increase in wheat production. From this point of view, to wheat fertilizer requirements are very high. This stems from the fact that on an average production of 4000 kg and 8000 kg grain per hectare straw, wheat plants extract from the soil 100 kg nitrogen, 50 kg phosphorus and 92 kg potassium, which must be supplemented by fertilization.

Nitrogen is necessary for plant growth, development and improvement of grain production composition (quality) of their structure favors plant phosphorus and potassium helps to strengthen the supporting tissues especially in the basal part of the plant.

Nitrogen fertilization should be done at the right time and in appropriate amounts, excess nitrogen result in pollution of groundwater, which promotes overgrowth fall, extending the growing season and raising the plant pathogenic fungi.

The experiments carried out show that plants absorb from the soil of wheat small amounts of nitrogen in the period from the germination to twinning, most of the nitrogen is absorbed during the twinning until flowering (Fig. 1). In Fig. 2 presents the recommended rate of nitrogen in the SC 25 (SC = "growth stage") for fertilizer, depending on the number of siblings of wheat plants. (After Alley 2009).

Therefore it is recommended doses of nitrogen in the nitrogen absorption curve of the wheat plants, shown in Fig. 1 and Fig. 2. In so doing, the flow of nitrogen administered in various stages of development of the plants are completely absorbed relatively quickly by them in the ground nemairămânând large quantities of nitrogen that is leached into ground water or causing pollution thereof.

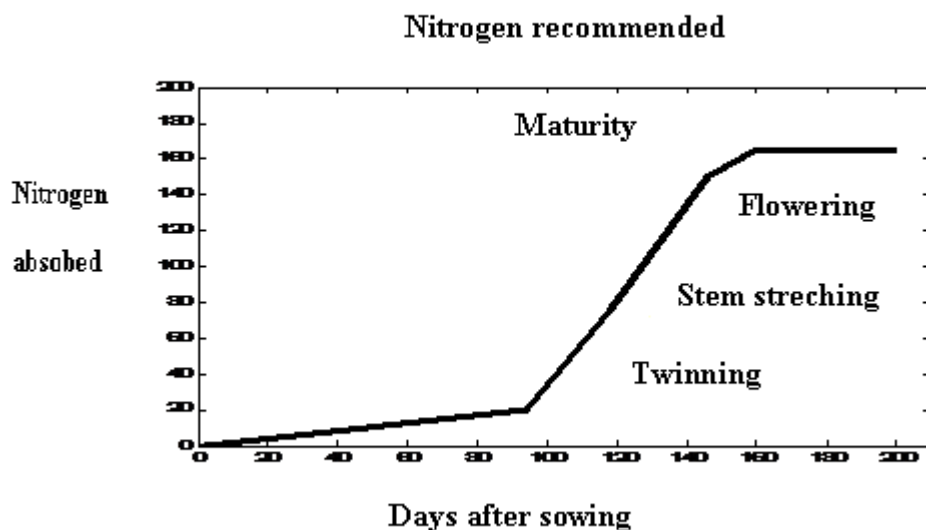


Fig. 1 Curve of the nitrogen plant wheat (McGuire, 1998)

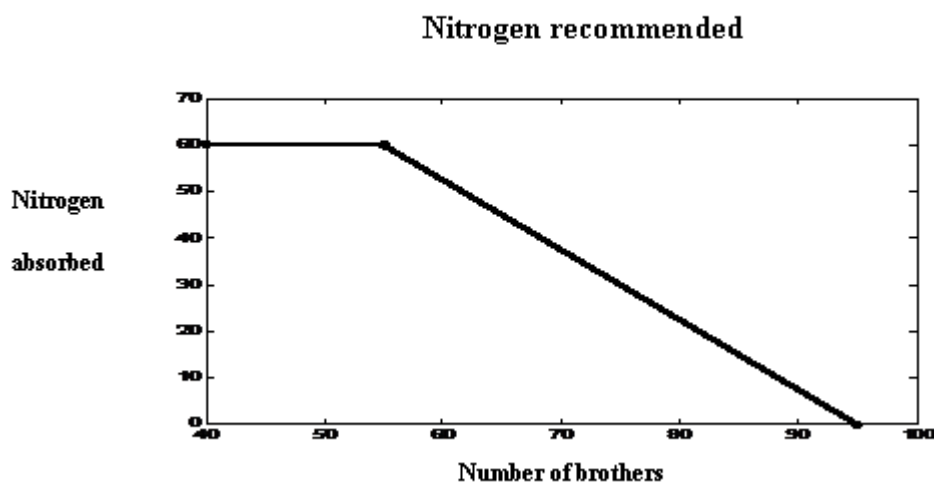


Fig.2 Recommended N rate in SC 25 based on the number of brothers (Alley, 2009)

Technological factors affecting wheat production in the sense that, since farmers are more open to innovative practices, the more productivity wins. Availability for innovation, however, is influenced by the level of implementation results from conduct programs of Research and Development and Innovation in the public sector or the private sector. Average spending in developed countries decreased compared to the period 1960 - 1970, from 9% to 1% in the period 2013 - 2014. It is estimated that in the future, increasing crop productivity of wheat would see a slowdown due failures in developing innovative tools for major issues (eg development of new pesticides to combat new pests or diseases).

SWOT analysis (Chart 1) of the determinants for the level of wheat production and exploitation is necessary for agricultural activity takes place, in terms of efficiency and performance in an organization or wheat producing farms.

As shown in Chart2, determinants that influence wheat production, both at national and European level, can be evaluated through the SWOT analysis so that farmers can gain an overview of the conditions of culture they have to defend their strengths, improve their weaknesses and to know the threats they may encounter in their work. The most important aspect is that they know the existing market opportunities and to exploit the work that it carries.

Chart 2

Determinant factors	Strenght	Wekness	Opportunities	Threas
<b>Socio-demographic</b>	<p><b>Age:</b> young farmers have a greater inclination to technology</p> <p><b>Education:</b> specialization in agriculture affects the initiative of farmers to associate</p>	<p><b>Age:</b> High age is associated with lack of innovation</p> <p><b>Education:</b> lack of specialization in agriculture</p>	<p><b>Education:</b> farmers can participate in sessions specialized in agriculture</p>	
<b>Macroecological</b>	Owing to geographic and solar radiation in Romania, climate, soil and water are favorable wheat crop.	Water scarcity; Heavy rain; Global warming; Drought; Pollution;	Farmers can apply for European funds meant to support farmers who operate in areas that are faced with this kind (climate change, floods, droughts etc.). Farmers can receive direct support for commodity wheat production	Forecasts specialists on macro ecological factors throughout the European continental waters.
<b>Technological</b>	Tools, treatments and innovative practices emerging in wheat crop (eg pests or other diseases, different types of fertilization)	It is possible that the cost of innovative treatments have a higher price in direct proportion to the effects they produce.	Progress in agriculture, following steps taken in Research - Innovation	Diseases commonly found in wheat (powdery mildew, brown rust, yellow rust, black rust, fusarium, septoria)
<b>Political</b>			Subventions to farmers by the	Approval, publication of

			state; european funds for farmers may apply;	new laws, implementation of policies that could adversely affect wheat sector;
<b>Market fluctuations</b>	Wheat production market is very dynamic and the demand for wheat is in constant growth	Input costs are quite high, which is reflected in the prices in our country, which is above the European average	Diversification of crops in the light of new emerging markets and developing	Difficulties in adjusting to the European Union and integration of farming in the PAC. Existing market uncertainties about production, price and political factors.

## CONCLUSIONS

Wheat is one of the most cultivated cereal, especially in the European area, the European Union give productions above the world average. In recent decades, globally, we have made great progress in various sectors of wheat production, thereby achieving: varieties and hybrids of wheat with new features, improved administration schedules of fertilizers, correlating the number grains sown in m<sup>2</sup> capacity twinning soil, progress in identification of pathogens and pests and to combat them. Thus, using advanced technologies at European level are achieved average yields of 6,000 kg / ha, but the biological potential of these soils is over 10,000 kg / ha. Due segmentation agricultural areas in our country there are areas which during 2015 achieved only 2000-3000 kg per hectare, and also areas where the average production recorded 7000-8000 kg per hectare.

To improve wheat production per hectare, farmers should exploit the opportunity currently available primarily in terms of technological innovations emerging on the plan. Secondly, you should have access to all information on rural development programs and in respect of subsidies granted by the state. Currently, they can apply for numerous grants, being able to obtain significant support from a financial standpoint. On the other hand, most farmers still have reservations about the agricultural cooperative associations or unions, although it could benefit in this way, many advantages. It is also desirable that they should seek the advice of a specialist when applying treatment against diseases or pests, for it to give the best results and to be administered in a fair and economically.

Last but not least, an important aspect is that farmers to document on innovations emerging technology wheat to carrying out their farming in an environmentally and economically, in order to use environmental elements macroecologic in an efficient manner.

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