

## INFORAMTICS IN AGRICULTURAL PRODUCTION

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### ABSTRACT

*Modern information technology found its place in agricultural production. This paper was presented to the mobile application to run, economic problems can be divided into two main areas: production and consumption area. Economic theory is based on the principles maximizing and minimizing or business with minimum investment required in the production of factors which are the scope and structure of production can be achieved with the lowest costs in relation to the need resources production and responses very important current issues, as a condition for people normal existence, it is important to seek solutions for the establishment of economic-ecological balance between the performance of agricultural production and preservation of the environment, solving the problems of yield depending on the investment variable factors of production, features the above, or below aspect ratio input-output relationships, production functions varying fertilization one factor and other factors unchanged amounts of the different levels use and yield without the use of nutrients from the soil.*

**Keywords:** agricultural production, mobile, consumption, investment

### 1. INTRODUCTION

Modern developments have increased the scope of a man of action are caused not only useful but also harmful effects for humans and all living creatures and the whole nature. Achievement of techniques and technology escaped the control of human and humanity began to be suffocating your own products and poisons of modern production.

The irresponsible use of natural resources is causing more and more influence on air pollution of soil water, and in addition to human health is endangered flora and fauna and natural ecosystems degraded, damaged the ozone layer, resulting in climate change at the global level, disturbed biological balance, are contaminated flows of rivers and oceans and forests destroyed. Such economic development based on uncontrolled irrational exploitation of natural resources is unsustainable.

In recent years, numerous efforts have been made, particularly in the organization of protection of the use of economic instruments, economic theory, and statistics in the field of international relations environment.

On a theoretical level gradually emerged the concept of Sustainable Development is defined as an integral, economic, technological, social and cultural, which are harmonized with the needs of protection and improvement of the environment that will enable current and future generations meet their needs and improve quality of life

The concept of sustainable development created the legislation in the field of environmental protection, which includes

- protection of soil, water and air
- removal of waste
- protection from radiation
- protection of natural resources.

The basic legislative framework is to protect the health of populations and biodiversity. The bombing of our country in 1999 reflected both directly on living organisms, and indirectly through

contaminated natural resources harmful and dangerous substances on the health of the population with the increased number of patients with cancer.

## 2. MATERIAL AND WORK METHOD

Agricultural production is done by combining natural factors, manpower and technical means of production. At the level of enterprises or farms manufacturers industry as a whole is a difference between a fixed production capacity, which can increase and variable factors, whose scope and investment can be freely determined.

To determine the economic efficiency of production is necessary to compare the used amount of a variable factor of production and quantity of products obtained.

For the purposes of the experiment, implemented Windows Mobile applications tools for application development are Visual Studio 2008 Professional Edition and the corresponding SDK (Software Development Kit).

Volume production depends on the amount of input of production factors in the economy is expressed input + output relations, and it is formulated the principle of economy of production scale dependence obtained by the production of amounts of input factors of production is the basis of agricultural production.

The relationship between the realized returns of scale and quantity of spent or engaged in productive factors are based on the concept of efficiency - intensity, extension of production. The relationship between the amount spent productive factors and quantity of products obtained, i.e. there are certain laws of investment between production factors and production volume, i.e. the input-output relations, it can be expressed using mathematical functions the following equation

$$Y = f(x_1 x_2 x_3 \dots x_n)$$

Amount received product (y) is functionally dependent on the amount of variable factors of production ( $x_1 x_2 x_3$ ), the term production factors are included as means of production, raw materials and resources that indirectly in the form of certain forms of participation in the production process of the products of human work of arable land, buildings, machines ...

Thus the production function formulated in the natural units express the technical relations between production factors and investment return that is the natural input - output relations. And it cannot be subject to economic considerations, but provides data for economic analysis which consists in determining the relationship between incurred costs and earned value, i.e. the production units of the expression of input - output relations.

This is an important issue of relations between investment variable production factors and the realized yield. The amount of product obtained amount of the realized returns, the created level of intensity of production is the result of investment variable and fixed production factors.

If the continuous investment variable production factors, then the production function can be seen in the following way:



$$Y = f(x_1, x_2, x_3 \dots x_n)$$

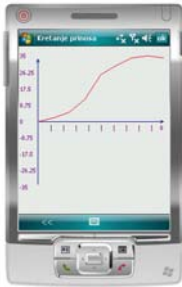
$$Y = f(x)$$

In a different investment of productive factors that affect the volume of production can appear different input - output, different costs of production functions.

With increasing an unlimited quantity of production factors can be shared in proportion basis to assume, under the proportional - digressive and above proportion - progressively increasing the yield, if the production volume change proportional amount of production factors, then spent the affair production function with proportional input - output Figure 1

Figure 1 - Moving the yield depending on the volume of investment variable factors.

This type of production is represented in industrial production, and in agricultural production only occurs in crop production with increasing and decreasing the proportion of arable land changes in size, provided that does not change the other factors of production as production capacity of soil, extent of mechanization, and other climatic conditions.



By declining balance yield increase comes under the influence of so-called Law declining to increase yield in plant production in a certain level of investment variable production factors *ceteris paribus* (all else being equal) total yield reaches its maximum and thus increasing their consumption of production factors, above the quantity  $x_n$  and influenced the reduction in yield. Production function with above the proportional, under the proportional expresses the dependence of yield increase of agricultural products (Figure 2)

Figure 2 - Moving the yield depending on the volume of investment variable factors (functions of the above, or under the proportional input-output relations).

Theoretically, the economic point of view, the optimal investment of a production factor is reached when the increased costs incurred by changing a very small investment that production factors and can increase the cash income.

$$\Delta y \cdot c = \Delta x_1 \cdot c_1$$

$c$  - cost of products obtained

$c_1$  - the price of variable factors of production  $x_1$ .

Based on the derived form of the previous equation can be defined as the maximum intensity difference of cash income (between the value of goods and factors of production costs spent) will be reached when the boundary yield achieved an additional unit of production factors become equal to its purchase price.

In other words, if the manufacturer wishes to manufacture a product to achieve the maximum profit on the sea for the optimal combination of utility production factors determine the optimal amount of time that is a combination of minimal costs reach optimal intensity of production.

Production factors can be in certain limits of each substitute or replaced.

Consideration of the situation served factor-factor relationships in agricultural production in the production of certain products in addition to economic may have great importance for environmental protection. With different amounts of mineral fertilizers and the quality of unchanged quantities of other production factors to achieve different yields per hectare sowed area.

Among the many issues important to the economic justification is given and answer the following questions:

1. Whether the achieved level of organic products will be able to compensate for lost benefits created by reducing the volume of production?

2. Does the level of demand obtained organic products will be able to provide the appropriate level of profit agricultural producers or will be faster for her to divert organic mode of production will be necessary incentive measures of agricultural policy, additional subsidies, etc. ...?

To achieve economic results as the conventional mode of production, farmers would organically derived products needed to realize the higher selling prices. Low selling prices of agricultural products can be achieved by the same amount of margin, as the cover of the conventional production and present the following equation:

$$P_1 c_1 - VT_1 = MP_1$$

$$P_2 c_2 - VT_2 = MP_1$$

$P_1$  - amount of product and yield conditions of conventional production

$P_2$  - amount of product yield and the conditions of organic production

$c_1$  - price of products in terms of conventional methods of production

$c_2$  - price of products in terms of organic methods of production

$VT_1$  - extreme direct variable costs of conventional methods of production

$VT_2$  - direct variable costs of extreme organic methods of production

$MP_1$  - margin coverage in terms of conventional methods of production.

Applying these patterns to prepare calculations, determined the lowest selling price, according to the manufacturer should implement their products.

Based on the calculations, consisting, at the level of variable costs for individual lines of production during the transition from conventional to organic production method are determined by the lowest selling prices of products.

According to these data yields some crops in terms of organic methods of production are reduced in the amount of 8% in alfalfa to over 30% in some crops (wheat, corn, sunflower). The consequences of

reduced yield is certainly due to the exclusion of chemicals and fertilizers for conventional production, without the use of pesticides, weed and the like.

Here are managed from the assumption that the nourishing elements to be compensated from pure manure and risks of damage to biological agents relieve crop rotation.

The calculation assumed that the prices of final products in terms of field of conventional methods of production are equal.

In this way, determine the lowest cost in terms of organic production methods on the basis of which will achieve the same gain as in terms of conventional methods of production.

These prices can be determined by solving equations and graph as shown in Figure 3

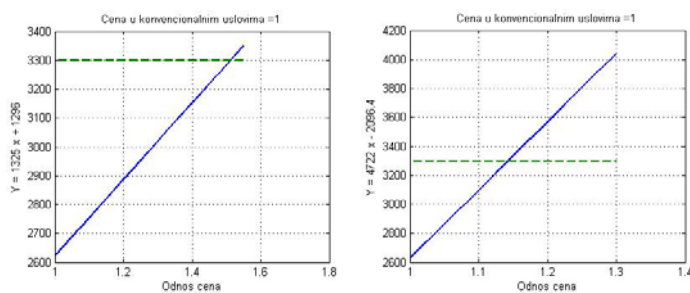


Figure 3.

Increasing production and reducing the intensity-based reduction and the use of chemicals for the production of a significant measure for the protection of the environment to eliminate the harmful consequences of environmental pollution and the point of its destruction. From the standpoint of ecological measures of agricultural policy in the countries of the Union may be considered acceptable as a result of changes in agricultural policy can be expected significantly increase the organization of organic production and thus bids obtained organic products on the world market.

To this was stimulating the production of the manufacturer should take appropriate measures in agricultural policy. This process of diverting agricultural producers to organic production method it will be a radical change in agricultural policy in order osetnog reduce yield and production volume in a short period of time. Diverting conventional to organic production could be realistic to expect market disruption in relation to supply and demand of organic products from the organized production and thus the level of prices of products thus obtained.

### 3. CONCLUSION

The conventional way of production is based on the compulsory application of chemicals - pesticides and fertilizers in the developed part of the world are seeking alternative ways of production, which will significantly reduce pollution and environmental destruction. Organic production is therefore looking more and complex as the economic and biological-ecological perspective.

The performance of organic methods of production on the farm starts from the following important assumptions specified in the law on organic agriculture. Research opportunities based on organic methods of agricultural production in our country are still insufficient. Therefore, in determining the conditions used organic methods of production standards for organic-based agricultural production from European Union (adopted by the International Federation of Organic Agriculture Movement - IFOAM) and the provisions of the law on organic agriculture in Serbia, adopted in 2001-2005.

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