ECONOMICAL EFFICIENCY OF THE OENOTHERA BIENNIS L. CULTIVATION IN THE BIOLOGICAL SYSTEM

ADINA HORABLAGA, NICOLAE MARINEL HORABLAGA
TIBISCUS UNIVERSITY OF TIMISOARA, FACULTY OF ECONOMICS
1/A DALIEI STREET, TIMISOARA, ROMANIA, 300558
USAMVB TIMISOARA, 119 CALEA ARADULUI STREET, TIMISOARA, 300645, ROMANIA
ahorablaga@yahoo.com, hnm75@yahoo.com

Abstract:
Ecological production is a global system of agricultural administration and alimentary production which combine the best environmental practices, a high level of biodiversity, natural resources conservation and a production method which respect the preferences of some consumer for products obtained from natural substances and process help. The ecological production method play a double role: provide public goods and give ecological products for consumers. Oenothera biennis L. (Evening primrose) is a spontaneous plant, known in Central America like "king`s cure all". The plant grows in Romania especially on sandy and salty soils.

Key words: *ecological, production, efficiency*

JEL classification *Q56*

The *Oenothera biennis L.* (Evening primrose) is a plant which beginns its existence 70.000 years ago, in Central America. Frequently it was called "natural curer". It became known as the "king that cures all" and it represented after 1619 a very important part of the popular medicine, after it was brought in Europe.

The fluid extracts from leaves and steams were used i9n the treatment of the hoarseness. There was mentioned effects in "blood cleaning".

The leaves and roots have purge, emollient, antidiarrhoea properties.

The leaves are preparated and served as green vegetable and the roots are sweet, juicy and delicious as potatoes when are boild.

The plant represents the main food for many native american tribes. At the beginning they were cultivated for roots (which are nourishing and edible), after that, for the oil obtained from seeds. This is a valuable oil, thanks to its content in gamma-linolenic acids, a very important acid, which is not found in many plants and which has numerous vital functions in the human body. It is an acid which is not produced by the human body.

The bark and the leaves are used in gastro-intestinal disorder treatment, asthma, whooping-cough. The syrup obtained from flowers is used in the treatment of the whooping cough (fig. no. 1).

The seeds were used in Germany as coffee substitute. Also in some regions from Germany, the roots are taken as salad, with having boiled ham taste. The leaves and roots are used sometimes in popular medicine as purge and emollient and in homeopathy are used against diarrhoea.

The roots have a red colours and are tasty in autumn. They are taken from soil, cleaned, are cut in small round disks and made as salad with oil and vinegar. Also taken as vegetable, boiled in meat tomato sauce. The root is called "ham salad".

The paper presents the study of the economical efficiency of this species in the biological system cultivation. In Romania Oenothera biennis L. species is less known and uncultivated at the present in our country.

Figure no. 1. Oenothera biennis L. - Flower
(www.floralimages.co.uk)

The researches were made in the Western Part of Romania, in two counties: Timis and Bihor.

The researches are made in specific conditions for ecologic agriculture scheduled in European and Romanian legislation.

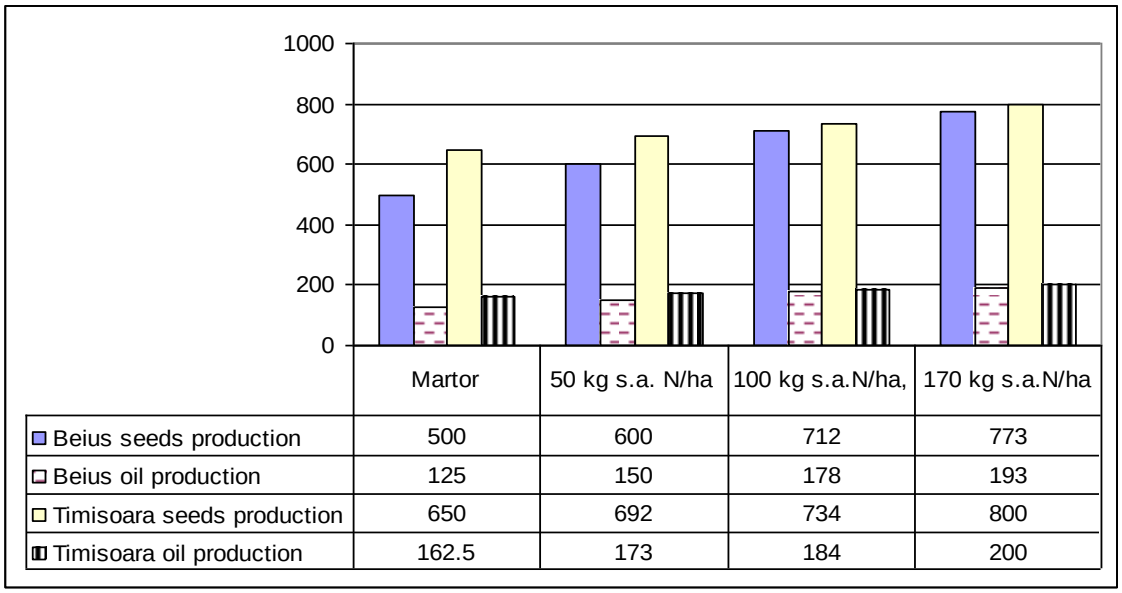
The base of the ecological vegetable production is the plant sustenance in principal through soil ecosystem. Therefore is necessary interdiction of the hidroponic culture where the plant grow with roots in a inactive substrate and there are feed with minerals and soluble nourishing elements.

The ecological vegetable production involve utilization and cultivation practices limited by the fertilsations with low solubility.

In principal, must preform the utilization conditions of some unsyntetic products.

In the ecological agriculture interest, utilization of some products of plant protection, fertilizations, additive for animals feed was permitted by the European Regulation no. 2092/91.

Fertilisation level factor was made by the three different natural fertilisation doses (50kg s.a. N/ha, 100 kg s.a.N/ha, şi 170 s.a.N/ha). I specify that the dose 170 s.a.N/ha is maximum amount of organic nitrium allaw by the european and national legislation for the biological culture.



	Martor	50 kg s.a. N/ha	100 kg s.a.N/ha,	170 kg s.a.N/ha
Beius seeds production	500	600	712	773
Beius oil production	125	150	178	193
Timisoara seeds production	650	692	734	800
Timisoara oil production	162.5	173	184	200

Figure no. 2. Graphic representation of the average production of seeds and oil in the Timisoara and Beius areas

Average productions of seeds range between 500 kg seeds at hectare for control variant and 800 kg at hectare for the variant with 170 kg s.a./ha. Also, from the same graphic it could be notice that the oil percent range unsignificant, only the oil amount grow up direct proportional with seeds production (fig. no 2).

Making an analysis between those two regions it could be notice that the seeds production and also oil production is bigger in Timisoara but the economical efficiencies of this culture is justify in Beius also.

The oil production is correlate positive with the seeds production in the experimental fields from Timisoara and Beius (fig. no 3-4).

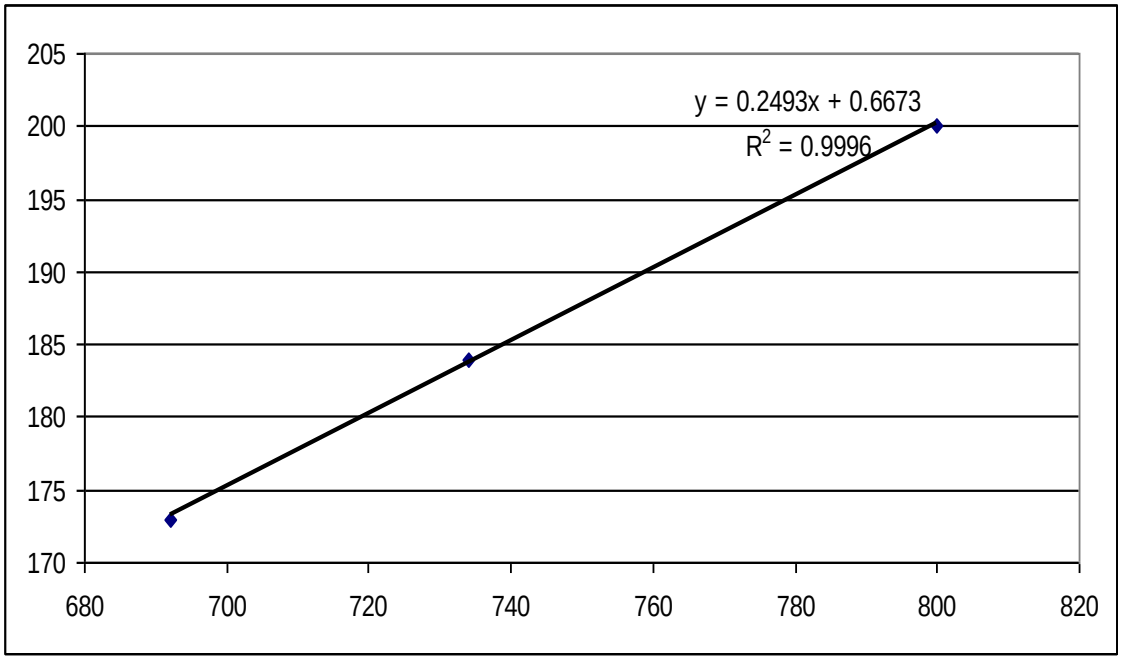


Figure no. 3. Graphic representation of the correlation between oil production and seeds production in the experimental field from Timisoara

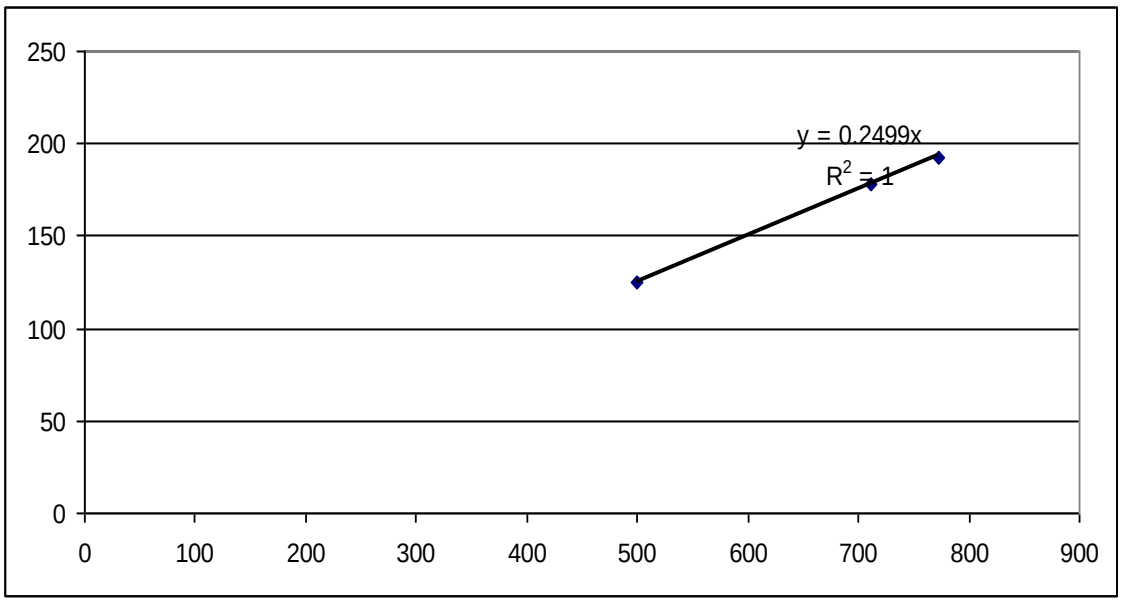


Figure no. 4. Graphic representation of the correlation between oil production and seeds production in the experimental field from Beius

Related on the price of 50 dollars on the oil quart of Oenothera biennis L. it could be tell that the incomes on the hectare of Oenothera biennis L. range between 6250 dollars/ha and 10.000 dollars/ha, in conditions which the price of the maintenance and establishment culture are approximate equal with any weeding plant (which can bring an income of 2.000 dollars/ha in the best conditions.)

Along the vegetation period there were not made treatments for diseases and pests.

The harvesting was made manually, on different plots, when the seeds from caspsules became brown coloured.

The crop was recalculated at the humidity of 11%. The data calculation was made according to the setting ground experience methods.

The Oenothera biennis L. finds good pedoclimatic conditions in the Romanian Western Plain.

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