## ABSTRACT

The ecological agriculture appeared as an alternative to intensive industrialized agriculture, being an accomplishment of agriculturists affectionate by nature, based on efficient methods and meanings for production, especially from the economic perspective.

According to 2092/1991 regulation revised and completed through 834/2007 regulation, approved by Economic European Community Council, the community countries use with the same meaning the following terms: ***organic agriculture*** (England), ***biological agriculture*** (Greece, France, Italy, Netherland and Portugal) and ***ecological agriculture*** (Denmark, Germany, Spain and Romania).

Each of these terms are criticised; it is said (more or less with justification) that the entire agriculture is biological or organic and that there is no unecological agriculture.

The science or art of managing or controlling the agricultural living creatures and their habitat represents the ecological agriculture.

The ecological agriculture follows to harmonize the dynamic interactions between soil, plants, animal and human beings or, in other words, between ecological, economic and social offering of agroecosystems and human beings needs for food, cloths and inhabitation.

The studies accomplished worldwide (especially after 1972) in this domain underline that this form of farming represents a necessity for agricultural ecosystem sustainability.

The ecological (organic, biological) agriculture represents until the present moment the ideal form of sustainable agriculture. Practicing this vegetable system has as an aim the obtaining of healthy, fresh products, preserving the environment in the conditions of economic efficiency. The "actors" which assume this part are the producers, on one hand, and the consumers, on the other hand, governed by environment protection principles.

Ecological agriculture represents a sustainable form of agricultural ecosystem but some practices of the sustainable system are not accepted for obtaining ecological products.

Ecological agriculture includes all scientific (observations, mensurations and experiments) and applicative (analysis, design and management) activities from agriculture and other economic branches which process and market agricultural and agroindustrial products; this agriculture emphasize the capitalization and preservation or renew the natural, technical, financial and human resources which are specific to local and regional agroecosystems.

As a profession, ecological agriculture is the assemblage activity of theoretical knowledge about nature and agriculture in sustainable technological systems based on material, energetic and informational agricultural systems. Also, the ecological agriculture is based on wisdom and, therefore, implies a detailed knowing of the soil, living creatures and other economic and social

realities; it is also based on intuition, temperance in the selection and applying of measures in practice.

The present thesis joins the general preoccupations for optimising the use of organic fertilisers in the ecological vegetables exploitations; the production interests from different perspectives: from quantitative and economic point of view (on one hand) and minimising the energetic input costs, using the available resources, preserving the habitat and avoiding the pollution.

Studying the soils' fertilisation concept in ecological agriculture presume the organic integration in the crop technology with benefic involvements that reflects on economic sustainable productions without the risk of polluting the yield and degrading the soil.

One of the ecological agriculture principle is to maintain and improve soil's fertility through unconventional methods and techniques. This aspect assume the identification of some equilibrium techniques in the vegetable ecosystem which include (without risks and by mainting the biodiversity) all involved trophic chains.

The aim of the present thesis was the accomplishment of a study regarding the possibilities of obtaining vegetables by applying the ecological practices in the conditions of north-eastern part of Romania and it was centred on the following objectives:

a) Objective 1. Knowing the consumers attitude and prefference in relation with ecological vegetable production;

b) Objective 2. The settlement of organic fertiliser influence on the characteristics of the soil cultivated with vegetables in polytunnels in ecological system;

c) Objective 3. The settlement of cultivar, fertiliser type and its quantity influence on early and total tomatoes production obtained in the polytunnel during conversion and ecological (organic) exploitation period;

d) Objective 4. The establishment of cultivar, fertiliser type and its quantity influence on early and total production for sweet pepper grown in polytunnel during conversion period and ecological (organic) exploitation.

The results will represent theoretical and practical solutions for production specialists regarding some maintenance elements of the principles connected by the possibilities of obtaining healthy vegetable products.

**Objective 1. Knowing the consumers attitude and prefference in relation with ecological vegetable production**

The objective got an insight into relevant answers from consumers regarding the possibility in which the market as a volume accepts ecological vegetable production (depending on some subjective or objective involved factors).

At consumers attitude and prefference measurement were studied the answers frequency analysis and the correlations between different variable types (depending on socio professional grouping of questioned persons).

The results from this chapter underline the following aspects regarding the consumers attitude and prefference for ecological vegetable production:

- over 85 % of respondents (without distinction of profession) consider that pesticides level from vegetables is high (especially in the imported ones);
- one third of questioned persons had knowledge about ecological vegetable growing and know the differences between conventional and ecological vegetables;
- 80% of questioned persons agreed that the introduction of certified vegetables is a necessity;
- two thirds of the respondents persons believe that vegetable products are healthier for organism;
- the aspects of ecological vegetables on the market is also an important element because only 63 % responded affirmatively;
- the price of ecological vegetable products is a decisive factor because for 32 % of the consumers is an impediment.

**Objective 2. The settlement of organic fertiliser influence on the characteristics of the soil cultivated with vegetables in polytunnels in ecological system**

In order to achieve this goal the following aim-objectives were settled:

a) The establishment of organic fertiliser influence on some soil morphological characteristics;

b) The establishment of organic fertiliser influence on some soil physical characteristics;

c) The establishment of organic fertiliser influence on some soil agrochemical characteristics;

The results from this chapter underline the fact that applying different types of organic fertiliser had a favourable effect on soil physical properties, on organic matter content and on phosphorus and potassium content. This aspect emerges from the following results:

- soil's apparent density registered lower values in the superior part of the soil profile (0,9 – 1,37 g/cm$^3$) comparing with witness variant (1,44 – 1,53 g/cm$^3$).

- the organic matter content increased from in the first polytunnel from 3,84 % to 4,82 %, in the second polytunnel from 3,24 % to 4,93 %, in the third polytunnel from 5,85 % to 8,79 % and in the last polytunnel from 6,45 % (2002) to 8,82 % (2005).

- applying compost and sawdust determined the decrease of soil acidity in polytunnels from 5,8 la 6,7 (the third and fourth polytunnels) and from 6,0-6,7 to 7,2 in the first and second polytunnel.

**Objective 3. The settlement of cultivar, fertiliser type and its quantity influence on early and total tomatoes production obtained in the polytunnel during conversion and ecological (organic) exploitation period**

In order to achieve this goal the following aim-objectives were settled:

a) The establishment of cultivar on early and total tomatoes production in the polytunnels during conversion and organic exploitation period;

d) The establishment of organic fertiliser type influence on early and total tomatoes production in polytunnels during conversion and organic exploitation period;

e) The establishment of organic fertiliser dose influence on early and total tomatoes production in polytunnels during conversion and organic exploitation period;

f) The establishment of influence of cultivar x organic fertiliser type interaction on early and total tomatoes production in polytunnels during conversion and organic exploitation period;

g) The establishment of influence of cultivar x organic fertiliser dose interaction on early and total tomatoes production in polytunnels during conversion and organic exploitation period;

h) The establishment of influence of organic fertiliser type x dose interaction on early and total tomatoes production in polytunnels during conversion and organic exploitation period.

Bakony F1 and Belle F1 cultivars obtained the best results fro early production comparing with Arletta, the production increases being at least 95 % statistically assured. Higher early productions (Belle F1 = 21,6 t/ha and Bakony F1 = 20,7 t/ha than Arletta F1 = 18,7 t/ha) were achieved in the first year of certification.

The total production increased from 58,4 t/ha in 2003 (Arletta F1) to 64,2 t/ha in 2005 (Belle F1).

The type of organic fertiliser used for fertilising the tomato crop influenced differently the early and total production increase.

The early production varied from 16,6 t/ha (2003) by fertilising with animal manure from extensive farms to 2,9 t/ha (2005) by fertilising with mature compost. Total production varied from 59,9 t/ha (2003) by fertilising with animal manure from extensive farms to 63,7 t/ha (2005) fertilising with compost.

The organic fertiliser quantity used for base fertilising assured the best results for 40 t/ha (without distinction of cultivar and fertiliser type); the statistically assured increase for early and total production was of 99,9 %.

**Objective 4. The establishment of cultivar, fertiliser type and its quantity influence on early and total production for sweet pepper grown in polytunnel during conversion period and ecological (organic) exploitation**

In order to achieve this major objective I planned the following goal objectives:

a) The establishment of cultivar influence on sweet pepper production;

b) The establishment of organic fertiliser type on sweet pepper production;

c) The establishment of organic fertiliser dose influence on sweet pepper production;

d) The determination of influence of cultivar x organic fertiliser type on sweet pepper production;

e) The determination of influence of cultivar x organic fertiliser dose on sweet pepper production;

f) The establishment of influence of organic fertiliser type x dose on sweet pepper production interaction.

The best results during conversion period for early production have been obtained by Bianca and Ceres cultivar; the production increase (comparing with Export cultivar) was distinctive significant.

Total production obtained in the first two years of conversion by Bianca and Ceres cultivar is 99,9% statistically assured.

The type of fertiliser (used for fertilising the sweet pepper cultivar from polytunnels) have an influence on early and total production increase.

The 99 % statistically assured differences can be obtained (for early yields) by using the compost instead of semi fermented cow manure.

Total production in 2003 (without distinction of fertiliser type) assures very significant increases. The best results have been obtained for compost (39,4 t/ha) and animal manure from extensive farms (38,5 t/ha).

The quantity of organic fertiliser used for base fertilisation assured the best results for 40 t/ha, without distinction of cultivar and fertiliser type). Statistically assured increase for early and total production was 99,9 %.

The general conclusions of the research are presented in the last chapter; these conclusions draw clearly the recommendations for production.

Analysing the research results, we can affirm that the ecological vegetable production represents the result of interaction of all factors which are necessary in the technological process of obtaining these vegetables and represents especially a reality of agricultural production.