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DOCTORAL THESIS

„RESEARCHES REGARDING THE TECHNICAL OPPORTUNITIES FOR THE IMPLEMENTATION OF ECOLOGIC AGRICULTURE SYSTEM IN THE VEGETABLE ENTERPRISES FROM IAŞI COUNTY"

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SUMMARY

Key words: ecological vegetable growing, promotion, implementation, attitude and preferences.

Ecological agriculture is a first step towards a safer future and represents a special potential for Romania. It is also an insufficiently exploited field from the theoretical viewpoint and especially the practical viewpoint.

The practice of ecological agriculture is considered one of the safest ways of preservation of the environmental resources, avoiding pollution and obtaining some healthy agricultural crop and agroalimentary products.

The consumption of ecological products may not be considered in fashion. Out of all the environmental, biological, behavioral and pollution (stress) factors, factors influencing the human health, the one leaving its strongest mark is the alimentary habit. This way, two of the most spread diseases (heart diseases and cancer) might be spectacularly reduced by correcting the alimentary habit.

Taking into account these considerations, the promotion and practicing of ecological vegetable growing must not be regarded as a whim or as a business, since this represents in fact a need (because it is a secure way of sustainable development), but also a special opportunity (given the increasing interest of consumers for ecological products). The practice of ecological agriculture at the level of vegetable farms is extremely propitious (due to the small areas) and also useful, due to the level of consumers' awareness of the benefic effects that the consumption of vegetable products has on their body, obtained in conditions of less polluting culture methods. Both producers and consumers must focus on quality of products and the compliance with the principles of the environment.

For this purpose, different types of analyses highlighted that from the viewpoint of natural, social-human, technical and professional resources in our country there are favorable conditions for the promotion of ecological/biological/organic agriculture and vegetable growing. Despite all these, as it has been shown in different papers, projects or publications having a scientific character, the results are much below the possibilities or the development level from other countries.

In tight concordance with the previous observations, the researches carried out to elaborate this thesis focused on the evaluation of the existing potential at the level of Iasi county for the conversion of vegetable farms into the ecologic culture system from the viewpoint of favorableness of the natural, social-economic, technical-organizational environment conditions combined with an analysis of the consumer's attitude and preference towards the purchase and

consumption of ecological products.

The structure of the thesis included two major parts, the first part refers to the current stage of researches afferent to the theme approached whereas the second part represents a synthesis of the observations, analyses and documentations carried out in accordance with the requirements of this doctoral thesis.

- I-st part – Current stage of knowledge related to the ecologic vegetable growing. This part includes the following chapters:
  - I-st chapter – General considerations regarding the ecological agriculture/ vegetable growing;
  - II-nd chapter – Decisive factors in ecologic vegetable growing.
- II-nd part – Results of the own studies and researches. This part includes the following six chapters:
  - III-rd chapter – Goal, objectives, biological material and general research methodology;
  - IV-th chapter – Study of environmental and technical- organizational conditions for the carrying out of researches;
  - V-th chapter – Evaluation of vegetable yield resources in relation with the exigencies of ecologic farming;
  - VI-th chapter – Study of consumers' attitude and preferences in terms of the ecologic vegetable production;
  - VII-th chapter – Analysis of suitability of four localities having a vegetable growing tradition to the ecologic vegetable production. Case study;
  - VIII-th chapter – General conclusions.

Bibliography comprises a number of 160 specialized titles from the country and abroad by making reference at the same time to internet addresses and links.

The doctoral thesis comprises 231 pages which include 106 tables and 42 colour diagrams, figures and photos.

The 1st Chapter presents the evolution of the concept of ecological agriculture from the moment of its emergence until today, the situation of the surfaces exploited in ecologic system both at world and national levels and the importance, the goal and the need to practice the ecological vegetable growing.

The dynamics of the ecologic surfaces at world level shows us a significant increase since 2000 up to 2009, this phenomenon being noticed at European level too. In Romania, we may notice the interest for ecological agriculture from the angle of the evolution of surfaces cultivated in this system which almost doubled in 2010 as compared to 2006.

Despite all these, though the general trend goes for increase and development of ecologic practices, in our country the lands cultivated with vegetable species occupy very small surfaces being thus necessary to find solutions and means by which we might augment the activity and interest for this culture system.

Thus, we must appreciate the promotion activities by different practices of the ecological agriculture system, in general and of the vegetable growing one, in particular, with a special regard on the environmental protection, the conservation of biodiversity, the safety of resulted products, economic efficiency etc.

The 2nd chapter makes a general presentation of the factors involved in the practice and development of ecologic vegetable growing grouped in three categories: natural environment factors (physical-geographical, pedological, climatic and biological factors), social-economic and technological factors and risk factors.

Knowing the natural environment conditions and using them judiciously present important implications in the choice of the species and varieties that must be cultivated, in the structure of the applicable cultures and technologies, but also obvious interferences in the production increase, the improvement of its quality and, in parallel, the decrease of the related expenses.

The socio-economic factors have an obvious impact on the development of an alternative vegetable system, namely a measure of the economic potential and of the standard of life which can be identified in a certain area.

The specialty literature shows that the number, the diversity and the nature of the risk factors are quite large and they lead to topics of discussion, according to each culture and, generally speaking, according to the great diversity of the cultivation technologies.

The 3rd chapter refers to the general goal of the thesis and the major objectives involved in attaining it.

The goal of the doctoral thesis is represented by the evaluation of the current stage of the vegetable production from Iasi County and, in principal, the establishing of technical opportunities of implementation of the ecological agriculture system in the vegetable farms from the county. The attaining of the proposed goal was made on the basis of a coherent working plan sustained by a modern and adequate interdisciplinary research methodology.

The objectives afferent to the proposed goal are presented in the following lines.

1. Evaluation of natural environment, economic and social framework in concordance with the exigencies of ecological vegetable growing.

2. Study of consumers' attitude and preferences in relation with the ecological vegetable production.

3. Making some case studies in four localities with vegetable growing tradition within Iasi territory, considered as promising from the viewpoint of promotion and implementation of the ecologic vegetable growing system.

More precisely, the objectives proposed, somehow inedited for vegetable growing research, give a high relevance to the thesis in the context of the research in this field in our country.

The 4th chapter is dedicated to the general presentation of the environment condition and technical-organizational framework existing at the level of Iasi County.

The county territory falls into a highly various and complex geographical landscape being made up of three large subunits (Podişul Sucevei, Podişul Central Moldovenesc and Câmpia Moldovei), thus having various conditions for the cultivation of different vegetable species.

The weather conditions from the experimental period allowed for the cultivation in relatively good conditions of the vegetable species and ecological ones, except for year 2007 when the weather was very dry and very draughty and the annual average temperature being 12.8°C, whereas precipitations registered the value of 463.2 mm. Along the same line, in recent years the situation of precipitations has not abided by the multiannual averages which oscillated from one year to another from excessive draught to heavy rains.

The technical-organizational conditions showed a county occupying the 5th place at national level for the surfaces cultivated with vegetables, occupying at the same time the 6th place in terms of the afferent vegetable production.

In the 5th chapter, we make a complex analysis of the pedoclimatic and social-economic resources in correlation with a study of the main risk factors existing in an ecological vegetable growing system.

18 types of soil have been delimited on the territory of the county, grouped in seven pedological classes, out of which chernozem, phaeziom and alluvial soils stand out preponderantly and we noticed a high adaptability of these three soil types for the purpose of cultivating vegetables and, implicitly, the ecological ones.

The climate of the county has a temperate-continental character, the multiannual average temperature being 9.5°C and the precipitations registering multiannual average values of 585.6 mm; thus, from the viewpoint of environmental conditions, Iasi County is a favorable environment for the implementation and development of an ecologic vegetable growing system.

From the economic viewpoint, the county focuses on agriculture since this preponderantly takes place on the arable lands that occupy 66.88% from the total agricultural surface.

With regard to the area cultivated with vegetables (11240 hectares), it is distributed over the entire area of Iasi County and it represents 4.4% of the entire arable area.

Within the county territory, 12 localities (representative ones, some of them being located in traditional basins and micro-basins) that were assessed and studied are highlighted for the compliance of the natural environment conditions with the conditions of the ecological vegetables culture and for the areas cultivated with vegetables (each of the respective localities detains an area larger than 200 hectares).

Iasi County detains a small area in which ecological vegetables are cultivated, namely 60.08 hectares in 2011, this value showing however its progressive dynamics, compared to 2009, with a 17.63 hectares area.

The present chapter showed the fact that the ecologic vegetable production is under the incidence of a diversity of risk factors along the technological flows. The respective factors were classified in pedoclimatic risk factors (climatic, orographic, pedological, agrochemical), biological risk factors (diseases, pests) and economic risk factors.

In the 6th chapter we detail an analysis of the determining conditions in the promotion of ecologic vegetable production represented by the consumers' perception, attractiveness and interest.

The analysis imposed the making of a sociological study that involved the survey method, and for this purpose we used questionnaires characteristic to the social-professional studies.

Knowing that attitude and preference depend on a number of objective and subjective factors, the questionnaire was made in such a way to include questions from which the influence of these factors may result. In concordance with the previous observation, the standard questionnaire comprises a number of 51 questions, out of which 16 refer to the social-professional grouping, namely age, sex, residence (rural/urban), education level, income per family, marital status, the number of members per family etc. and 35 questions focus on attitudes and preferences.

The attitude towards the ecologic vegetable production is highlighted by questions referring to the opinion related to the Romanian vegetables, foreign vegetables, the vegetables obtained in industrial or familial system, ecologic vegetables, the vegetables obtained by genetic engineering, the packing and presentation etc.

The main questions that define preferences are related to the rhythm of consuming vegetables (daily, weekly etc.), to the vegetables production by private firms and/or by farmers, to the type of vegetables (ecological or industrial, Romanian or imported ones) etc.

Consumers generally have a favorable attitude regarding the production and consumption of ecologic vegetables that must be promoted and helped by adequate agricultural policies. Most

population prefers the ecologic vegetables (obtained without fertilizers, synthesis pesticides and the genetically modified organisms), but with a guaranteed origin and quality.

The 7th chapter reflects the results obtained following the application of four case studies, case studies carried out in localities having a vegetable growing tradition within Iasi territory so as to establish the suitability of the outlined areas for the implementation and development of an ecologic vegetable growing system.

The researches carried out in these localities were elaborated under the form of pedological studies with a focus on the administrative-territorial organization, the physical-geographical and the social-economic conditions of the selected areas.

Due to their geographical position, the four localities under study (Belceşti, Ungheni, Răducăneni and Tg. Frumos) have a propitious climate for the cultivation of vegetable species and, implicitly, of the ecologic ones. At the same time, they fall into the category of potentially adequate areas for conversion to a non-conventional vegetable growing system by constituting areas with tradition in the cultivation of vegetables, a fact demonstrated by the registered surfaces and productions (Belceşti-512 ha, Ungheni-274 ha, Răducăneni-338 ha, Tg. Frumos-200 ha).

In the 8th chapter, we present the general conclusions resulted from the documentation, researches, analyses and processing of statistical data afferent to the goal and objectives imposed through the work protocol of this doctoral thesis. These conclusions totally answer both the theme approached and the planned objectives in accordance with the requirements of the research programme.

The ideas, hypotheses and conceptions formulated will constitute guidelines for the future specialists or users of the ecologic vegetable growing system and allow the formulation of some solutions that may promote this non-conventional type of vegetable growing in Iasi County, what will contribute to the progress of agriculture and the increase of the life standard in the rural communities.

The researches carried out for the production of ecologic vegetables will ensure to us and our children a life in which foodstuffs will lack toxic substances that poison us morally and physically.

We consider that ecologic vegetable growing signifies the vegetable growing of the future and we want to bring our small scientific contribution, through this thesis, to the achievement of such a desideratum. We also hope that, by the elaboration of this paper, we will make people aware of the fact that they have all the things necessary, all the forces, capacities and means to live a life deserving its name.