Chapter 3

Economic and Environmental Aspects of Controlled Vegetable Production within the Region of Danube Basin

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ABSTRACT

In their struggle for survival on the international market and to increase their own competitiveness, agricultural producers in the Republic of Serbia are faced with the demands of modern society. Such requirements are reflected through the measures and actions that have to be taken in order to achieve economic and environmental efficiency, in other words profitability of production with minimal risk of environmental degradation. In this research, focus is on economic and environmental aspects of vegetable production with known origin and controlled quality within the region of Danube Basin (or in the Metropolitan area Belgrade - Novi Sad that also includes the administrative territory of the Pančevo city). In particular, research activities are concentrated on the ecological and economic aspects in production of safe food on family farms in Glogonj village, a village that is one of the most famous locations for vegetable production within the Pančevo city (Južnobanatski District, region of AP Vojvodina). Consequently, in this chapter examples of analytical calculations based on variable costs in the vegetable production (production of cucumbers and tomatoes in greenhouse) are presented.

INTRODUCTION

The pursuit of conventional agriculture to preserve the planned yields and to improve products quality imposed the specialization of production and intensive use of mechanization, energy, pesticides, fertilizers, concentrated feed and newly created plant hybrids and animal breeds. Use of pesticides and fertilizers significantly prevents the loss, or decrease of yields, while on the other hand makes serious adverse effects on the environment and agro-biodiversity. The uncontrolled, unreasonable use of pesticides and mineral fertilizers usually means pollution of water, soil, and food through the presence of pesticides and fertilizers residues within the final products.
From the standpoint of ecology and environmental preservation, more and more prominent is negative effect of use of agro-technical measures on which are based conventional agriculture. As a response, model of sustainable agriculture is developing. It implies preservation of land, water, plant and animal resources, does not dispute application of technical progress, economically is viable, environmentally clean and socially acceptable. Although they mutually differ, depending on the regional specifics of the production area, for all environmentally sustainable production systems and techniques in agriculture common is that they take care about maintenance and improvement of soil fertility, as well as they apply pesticides and mineral fertilizers more rational.

In order to appear successfully on international market (primarily on the EU market) with products of much higher quality, sustainable agriculture and rural development in Republic of Serbia have to represent a component of one strategy that will encourage the systems and techniques of sustainable production in agriculture. Expecting the codex of good agricultural practice, national agriculturists need an orientation to local species, varieties and hybrids; combining of number of crops that are simultaneously or successively grown in an environment of wild plant communities; combined plant-animal production, etc.

Sustainable food production is suitable for soil biodiversity conservation, genetic, species and ecosystem biodiversity in agriculture, provides pollination and biological protection from diseases and pests, enables inputs recycling (increases the efficiency of agro-ecosystems\(^1\) and contributes to the protection of water, air, and climate).

Despite the fact that the vegetables production has passed great changes during the past two decades, it represents one of the most intensive branches of agricultural production in Serbia. Family agricultural husbandries mainly deal with vegetable production. It is organized on smaller surfaces with the use of intensive production technology. Having in mind possible profitability of this production, certain producers in the race for the higher yields are completely neglected the segment of quality (safety of products).

Relying only on very modest information from promotional brochures and TV commercials, under-educated and under-trained vegetable producers believe that all problems could be solved only by using of chemicals and mineral fertilizers. Because of that on the market are goods of very suspicious quality, with potentially large quantity of pesticide (disrespect of waiting time of applied preparation) and mineral fertilizers (disrespect of soil analysis) residues.

In order to achieve a safe and continuous sale of vegetables on the market, it is necessary to provide products diversity and quality. It could be noted that is not only enough morphological, technological and nutritional quality, but also healthy, without residues of pesticides and other pollutants (such as: heavy metals, nitrates, nitrites, etc.). Accordingly, Serbian vegetable producers need contemporary techniques and methods of vegetable growing (that are related to adequate selection of sorts and hybrids; disease and pests suppression; proper plant nutrition).

Starting from developmental priorities of the European Union (EU) Strategy for the region of Danube Basin, the realization of strategic goals of sustainable agriculture and rural development in Serbia depends on results that will be achieved in terms of new, improved solutions in this area, new final products and services, as well as from improved technologies and methodological procedures. In order to obtain greater profit, more intensified production and expansion of production surfaces, the controlled vegetables production within the Danube Basin (agriculture and rural development in environmentally sensitive plain-wetland area of Upper Danube; urban and peri-urban agriculture in Metropolitan area of Belgrade - Novi Sad; traditional mountainous agriculture and rural development in the Carpathians) have to be economically justified and financially viable.