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Original research paper

EFFECTS OF SUSTAINABLE AGRICULTURE THROUGH AN INTEGRATED SYSTEM OF PLANT AND ANIMAL HUSBANDRY PRODUCTION

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ABSTRACT: Due to the trend of ecological vulnerability of the entire life system on one hand, and sociological on the other, the need for implementation of sustainable agriculture production appears. The paper presents the state, needs and significance of sustainable agricultural production as well as the general importance in achieving the ecological, economic and social goals of every society. Sustainable agriculture relies on agricultural production with the effects of improving the quality of the environment, improving the quality of life of farmers and livestock farmers in the first place as well as of all inhabitants on a global scale. Increasing the stated qualities, a profit is made that is reflected in the health and economic aspect.

Key words: *sustainable agricultural production, resources, ecology, rationality*

INTRODUCTION

Sustainable agricultural production is a subsystem of sustainable agriculture that is a subsystem of sustainable development.

Sustainable development refers to the development of society in order to meet basic needs, taking into account the overall diversity that practically means that it is based on raising the quality of life.

Martinez-Castillo (2016) concludes that sustainable development is based on ethical principles such as respect and harmony of nature with political values such as participatory democracy and social equality as well as moral norms in the form of ecological rationality.

Sustainable agricultural production is based on Latin words sus-under, and tenere-to hold, and together, essentially meaning maintenance over long period of time.

Sustainable agricultural production includes organic production, or good agricultural practice.

Otherwise, according to Fischer (2002), the challenge of agriculture in the 21st century requires systemic integration of ecological, social and economic pillars of development in order to meet the needs of present generations without sacrificing resources for the lives of future generations.

If we are to return to the general segment of sustainable agricultural production, practically all activities are related to the reduction of the negative impact on nature on the one hand, and the increase of agricultural production on the other. This means that the goal to maintain agricultural production and to resist all negative factors, in the first place natural, i.e. time, then economic, technical, political, social, etc. Even though the defense strategy includes identical steps, the responses consist of all activities based on the ecological production process and include the management of soil quality, irrigation, fertilization while preserving the biodiversity.

MATERIAL AND METHODS

A review of the overall literature, the use of internet as a data source, the collection of valid data and information were primary activities. The second step was the analysis of the economy of both the Republic of Serbia and the entire world, primary regarding the maturity of the need for implementing sustainable agricultural production. The third step was observing and comparing, then proposing measures, activates and improving access to sustainable agricultural production. Next is the discussion with the final description of the state of needs and the effects of sustainable agricultural production. In the content of the work in addition to the analysis, synthesis, induction, deduction, and globalization of the main factors and elements of the theme are recognized.

RESULTS AND DISCUSSION

In Rio de Janeiro from 3rd to 14th June in 1992, the United Nations Environment and Development Summit took place. 178 countries took part in the summit, which speaks about the seriousness of the topic. According to Rigby et al., 2001, the aim of the Summit was to develop indicators for monitoring progress towards sustainable development, which includes indicators of sustainable land management, soil quality indicators and indicators of sustainable agriculture, examining some technical issues and choices related to the construction of indicators, as well as to discuss the relationship between organic production and sustainability of agriculture.
The approach to the mentioned topic, that is, production, was based on the synthesis of the economic and ecological aspect.
The effect of the summit was as it follows:

- The Declaration on Environment and Sustainable Development
- Action Plan on Sustainable Development-Agenda 21
- Principles of forests
- Biodiversity Convention
- Framework Convention on Climate Change
- United Nations Convention on Combat Land Degradation

Basically, a large part of the analysis and conclusions relies on natural resources and ecology, sustainable agricultural production, or everything that satisfies and improves human needs.
Sustainable agricultural production is a response to the current negative ecological situation with the tendency of continuing and endangering both human and animal species. These signals require the need for reengineering of all processes that have an impact on it, with the effect of eliminating or reducing ecologically unacceptable

activities. Practically, activities based on such principles represent a good practice, or in this case, good agricultural practice. In the case of global agriculture, even the domestic before mentioned principles are not met, which requires radical changes. Agriculture is characterized by a largely insufficient production quantity, but also in the quality that is reflected in the irrational use of existing resources and the resulting effects.

It is necessary to improve the conventional agricultural production process and take into account wider effects and their poor impact. Conscious of the fact that sustainable agricultural production, which cannot be called an idea, but the already provoked response to the moves of large organizations, originated from small agricultural entrepreneurs, and because of their vital need for survival in the market. It can be seen that the idea is not simple by the levels that have supported it and developed it with the effort to improve the level of contribution on a daily basis. These levels include scientists, experts, ecological organizations, as well as all levels of government, local, provincial and supreme.

When it is said that sustainable farming is a good practice, it means that it is supported by many years of experience, or centuries old experience. Experience represents an important segment of knowledge, i.e. the way of achieving high yields with low inputs and not degradation of land, water and resources, but their improvement. Sustainable agricultural production is a multidisciplinary and integrated approach to sowing series of plant species as well as breeding animal species in order to achieve economic goals. On this occasion efforts are made to respect natural laws. Still, the ultimate goal is to raise the quality of life of the human and animal community. Previously implied implies a reliance on people's needs for raising the level of life quality, which is, by raising the level of food, water and the environment quality in general.

Is a requirement for a sustainable agricultural production system older, or is it realization? Precisely, as is the order in question, so is the answer, the demand of consumers is in first place. Their awareness and values are those that determine the characteristics of the product. The attitude of the management of mature economies is based on sustainable agricultural production, which is why it has a marketing influence and it gives financial incentives to achieve these values.

However, can sustainable agricultural production survive only through marketing and one-off government incentives? Of course it cannot, the basic condition of survival is the amount of viable profit and the accompanying effects. The accompanying effects include ecology, a high standard of living and sustainable economic result.

In order to achieve sustainable agriculture, the management must be developed, that is the applied management and its processes-functions: planning, organizing, managing and controlling. Contemporary management includes an inevitable, essential process, which is recruitment. Those processes were neglected in *traditional agriculture.*

According to recent history there are three types of agricultural production:

1. Classical conventional agriculture with intensive use of pesticides and artificial fertilizers;
2. Organic agricultural production;
3. Sustainable organic agricultural production.

According to Lazić and Malešević (2004), the introduction of very strict criteria for conventional products, especially after the problem of "crazy cows" and the found residues of herbicides even in food from organic agriculture, led to the development of methods of integral production as a transitional form towards organic and further development, towards sustainable agriculture.

In our economy, an extensible type of agriculture has always been applied, which is characterized by intensive use of human factors with relatively low yields compared to other developed countries.
Sustainable agricultural production is based on the harmony of the organization of ecological and economic principles, the work process relying on the upgrading of technical and technological factors and the efficient use of available resources. The result is social and ecological sustainability with a good agricultural practice characteristic.
Nevertheless, in the market despite the achievements of 21st century, the price of food is rising. The reason for the negative facts lies in the fact that the eco-system, the characteristics and the quality of the foods have been violated. Of course, the high price does not apply to all foods but "only" to those that contribute to the eco-system and meet the general health criteria.
A complete overview of the agricultural systems from is followed by the production subsystem is shown in Figure 1.

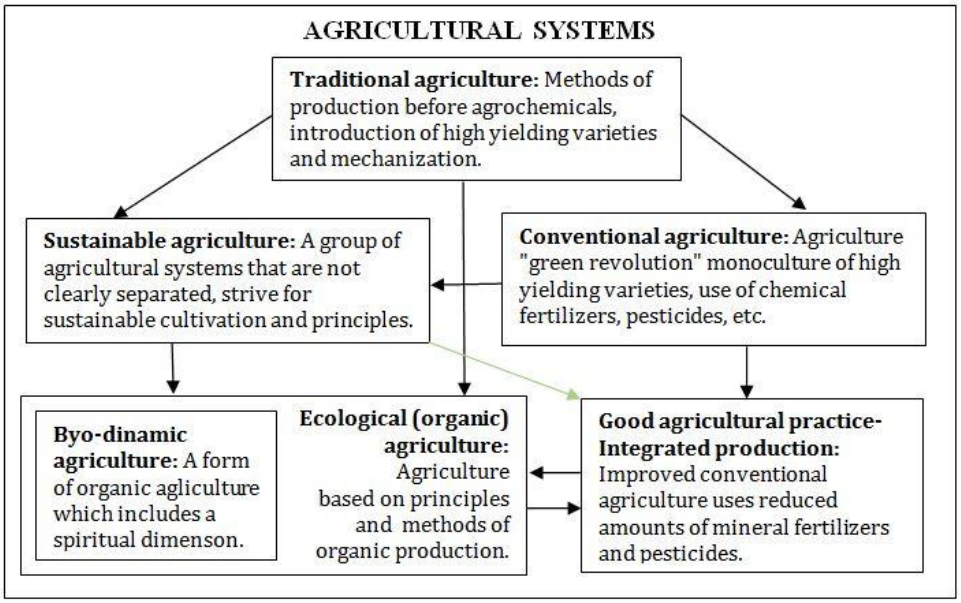

Figure 1. Agricultural systems (Pavlović, 2017)

Sustainable agricultural production includes the use of organic fertilizers, and not pesticides, hormones, antibiotics and GMOs, eng. Genetically modified organism-genetically modified organisms. In addition, sustainable agricultural production involves the use of natural ingredients for the control of diseases and insects as well compost, that is, manure that is natural and organic. Such organic waste continues to become humus, which represents an excellent fertilizer for all types of plants, and the agricultural production system in crop and livestock farming is thus rounded up.

Timan at al. (2002), state that farmers are head managers of globally useful areas that will shape, perhaps irreversibly, the surface of the Earth in the coming decades, so new incentives and policies to ensure sustainability of agriculture and ecosystem services will be crucial if we are to meet the requirements improving yields without compromising the integrity of the environment or public health.

Later Timan et al. (2011) point out that global demand for food and crops is rising rapidly, from 100-110% to 2050, as well as the impact of agricultural expansion on the environment, which is why achieving high yields on existing agrarian lands with minimal environmental impact is of great importance.

It can be said that sustainable agricultural production provides an answer to three set of requirements:

1. Social welfare requirements
2. Ecological requirements
3. Economic requirements

Social welfare requirements do not apply to agricultural workers-producers, i.e. villagers/peasants, but to all users of agricultural products, or the human community as a whole.

Ecological requirements are a general need today due to environmental threats with a tendency of further negative trend.

In order for each idea, in case, to survive, it is necessary to exist not only social or environmental, which cannot survive on its own, but also the economic interest, which is the maximization of profit. Otherwise, requests cannot survive alone because of the human way of reasoning, which in most cases is incomplete and short-term, which means that some technologies and practices should be ejected and some have to be retained.

Pudjak and Bokan (2011) state that the idea of sustainable agriculture does not mean the total removal of technologies and known practices, because if some technology contributes to productivity improvement and does not cause irreparable damage to the environment, this means that this technology carries some sustainable advantages. In his works, he quoted and later confirmed Ruttan (2013) that the sustainability of agricultural production is influenced by the intensification of the use of industrial and transport systems.

Sustainable agricultural production is the agricultural production of tomorrow because the positive effects are intended for everyone, the farmer, the local, the provincial, the state and the entire economy, that is, the entire life system.

CONCLUSIONS

The result of facts that include irrationality, ineffectiveness and inefficiency has negative effects on human civilization, which entails improving process of agricultural production or its radical change, or reengineering. Thus, the system of conventional products methods results in pollution of nature and a relatively lower price of food. For a lower price of food it is stated that it is relative because this way of production with its destructive influence on the quality of soil and water, forms an increasing price of organic food, whose consumption is increasingly intensified.

The process of developing organic agricultural production is continuous, practically every day it is being developed to develop the yields that are characteristic of this kind of production, small. The result of achieving this goal is reflected in the enrichment, not degradation of natural resources, maximization of profits on these principles and

sustainable agricultural production. In this way, the optimal use of basic factors of production, land and water will be achieved, the quality of the environment and the survival on the market will be improved, i.e. the economic viability of agricultural production, which is fairly relativized today in our region.

Sustainable agricultural production aims to bring to the fore all the above mentioned not only for the current situation but for future generations. If agricultural production does not become sustainable, that is, with all the previous characteristics that include the conservation of natural resources, ecology as a whole system, agriculture will not exist and the human species will not be able to adapt to the new circumstances that will be catastrophic. So, sustainable agricultural production brings only positive effects on the environment, quality of life and currently primary value, profit.

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