

Production of Organic Agricultural Products is an Important Area of “Green” Economy

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Abstract

Background/Objectives: Purpose of the work is to analyze scientific research concerning organic agriculture and greening of agricultural production and develop recommendations on appropriate legal regulation in the Sverdlovsk region and the Russian Federation. **Methods:** The legal engineering, including general scientific methods of cognition: Analysis and synthesis, induction and deduction, etc., were used as the main methods of research. **Findings:** Currently in Russia about 50 million hectares of 122 million ha of arable land are derived from agricultural production and synthetic chemical fertilizers are not applied on these arable lands for 20 years or more. This factor allows using unoccupied land areas for the production of organic agricultural produce of both vegetable and animal origin. To organize organic agriculture in the Russian Federation it is required to adopt an appropriate federal law, which has been done in some regions. This federal law should provide rules governing the production of organic agricultural products, develop a national standard for this type of agricultural production; determine the level of public financial support for producers of such products; stipulate pricing guidelines; identify state control and supervision over the quality of organic agricultural products; legal responsibility for violation of legislation on production and marketing of organic products. Some other tasks in the sphere of organic agricultural production should also be solved: the formation of a new philosophy of healthy nutrition, as well as the organization of agricultural production. **Applications/Improvements:** Legislative regulation considering the aforementioned principles is the basis for development of organic agriculture in the country. This trend will be most important in the field of Russian exports of food products to the world agricultural market.

Keywords: Agricultural Production, Agricultural Biotechnology, Greening Agriculture, “Green” Economy, Legislation, Organic Agricultural Products

1. Introduction

Agriculture is a sphere of closenature-society interaction combining natural resources exploitation with environmental protection. Federal Law No. 7-FZ On Environmental Protection dd. 10 January 2002 set out the requirements to environmental protection in agriculture (Art. 42, 43, 44)¹. Pursuant to the Law, agricultural production shall be based on the methods and techniques ensuring the rational use of natural resources and preservation of the environment. Green farming is one of the major environmental trends in modern agriculture.

According to² the analysis of the works of major economists and economic experts shows that green

economy can stimulate economic growth and create jobs while reducing such global threats as climate change, decline of ecosystem services and water deficit. Economic, social and environmental considerations are to be closely aligned for sustainable growth and development.

Production of organic agricultural products, foodstuffs and raw materials is becoming one of the major sectors of the green economy both from the social and environmental points of view. The issue has been addressed by many well-known scientists and experts^{3,4}. Among the authors of the scientific works on organic agriculture and green economy there are⁵⁻⁷. The issue is also considered in the United Nations Environment Programme.

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Much attention is paid to the problem by foreign researchers. According to⁸ are studying the complexities of the sustainable green economy from the advertising and consumer psychology perspective. Authors in⁹ have prepared a comprehensive review of the literature in ecological economics considering ethical, social and organizational aspects of the problem.

In¹⁰ the experts from Yale, are looking into the issues of corporate environmental responsibility. Author in¹¹ has written a general guide to starting a green business.

According to¹² green farming in the UK has a number of economic and social advantages. In particular, it helps prevent the decline in the agricultural employment that has fallen by nearly 80% in the last fifty years. Moreover, organic farmers promote such business innovations as direct marketing and intra farm processing making it possible to generate additional funds for farm operations.

2. Research Objective and Methodology

This research aims at analyzing the scientific works on green economy and organic agriculture and developing recommendations for the legal regulation of the organic agricultural production in Sverdlovsk Oblast and the Russian Federation. To accomplish the above objective, the following tasks shall be completed:

- The term 'organic agricultural products' shall be defined.
- The adoption of the Law on Organic Agricultural Production in the Russian Federation shall be justified.
- The principles that may underlie the respective law shall be determined.

The main research methods included legal engineering methods, in particular, general cognitive methods: Analysis and synthesis, induction and deduction, etc.

3. Results

For a deeper insight into the issue, the term 'organic agricultural products' shall be defined. It can be done using the already existing definitions provided in the rules and regulations of the Voronezh and Ulyanovsk regions and Krasnodar Krai.

Organic agricultural products are natural products produced in farming areas from raw materials of plant

and animal origin, as well as fish farming, bee keeping and forestry products grown, produced, processed, certified, marked, handled and sold under the organic production rules, having biological properties and therapeutic effects and used by consumers in processed and unprocessed states.

Eighty-four countries have already adopted the laws on organic agricultural production. The world's total area under organic production is estimated at 140 million hectares.

Organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources and the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes¹³.

Let us consider the results of the research on the quality of organic agricultural products. Compared to conventionally grown vegetables, organic vegetables contain less nitrates, cadmium and pesticides. Organic potato, beat, carrot, green and red cabbage and red pepper have about 1.5-2 times lower levels of nitrates and cadmium than their conventionally grown equivalents¹⁴.

Pesticide concentrations in organic fruits and vegetables are 14–24 times lower than in their conventional counterparts. The levels of contamination by some of the pesticides have been found to be 28 times lower when grown organically as compared to conventionally¹⁵.

A few studies have suggested organic foods must be higher in nutrients than their traditional counterparts¹⁶.

Compared to foods grown with conventional farming methods, organic foods have:

- A 10–20 % higher content levels of vitamins and antioxidants (C, bioflavonoids, carotinoids) (potatoes, tomatoes, lettuce, cabbage and other vegetables)¹⁷.
- A 30 % higher content level of polyunsaturated fatty acids mainly due to the pool of omega 3 fatty acids (milk)¹⁸.

The studies of organic red pepper have clearly demonstrated higher levels of vitamin C, sugar and flavonoids compared to conventionally grown pepper¹⁹.

The studies of organic carrots have revealed higher levels of vitamin C, organic acids and carotinoids compared to conventional carrots²⁰.

The studies of organic potatoes have shown lower concentrations of nitrates and cadmium and higher

vitamin C levels compared to their inorganic equivalents²¹.

The contents of such mineral substances as phosphorus, potassium, calcium and magnesium in organic products are almost two times higher than in the products grown using conventional farming techniques²².

Such findings can be explained by less exposure to nitrogen fertilizers, higher solid content (or lower water content), more efficient immune system of organic plants, as well as the use of disease-resistant wild plants in green farming.

There is a significant difference between organic and conventional production. Organic plant production forbids the use of industrially hydrogenated fats. Hence, organic products contain no trans isomers of fatty acids and most of the food additives posing a high risk of heart disease, cancer, etc¹³.

In the Russian Federation, 40 out of 122 million hectares of arable land have not been cultivated and therefore fertilized with synthetic chemical fertilizers for over 20-25 years. Presumably, these areas can be used for organic plant production.

In Sverdlovsk Oblast, approximately 600 thousand out of 1.5 million hectares of arable land is indicated as idle. This land is potentially suitable for organic farming. However, while planning organic agricultural production in Sverdlovsk Oblast, it should be borne in mind that not all of this arable land may be used for organic farming due to the technogenic and radiation pollution of the area. It primarily refers to the agricultural lands of Kamensk-Uralsky Municipal Okrug affected by East-Ural Radioactive Trace after the accident at Mayak plant and the heavily contaminated territories of Revdinsk-Pervouralsky Industrial Hub; Kirovgradsky, Krasnouralsky; Verkhne-Pyshminsky, Nizhne-Tagilsky and Rezhevsky Urban Okrugs.

4. Discussion

Organic farmers and growers shall:

- Ensure rational utilization and restoration of natural resources.
- Deploy crop production technologies preventing soil erosion and degradation.
- Produce organic crops having biological properties and therapeutic effects.
- Use certified seeds and planting material.
- Avoid genetically modified seeds and planting

material and other gene engineering products.

- Use plant species and varieties adapted to local soil and climate and resistant to pests and diseases.
- Avoid synthetic pesticides, agricultural chemicals and colorants.
- Use fertilizers of microbiological, plant and animal origin subject to microbial decomposition after added to the soil.
- Implement fertilization programs ensuring no nutrient losses and soil contamination with heavy metals and other substances negatively impacting soil biota.
- Use mineral fertilizers as specified in the respective regulations foreseeing supplementation rather than replacement of biogenic fertilizers.
- Use biological materials from local plants or animals, thermal and physical methods, as well as mechanical removal of pests and damaged parts of plants to ensure an adequate pest, weed and disease control.
- Increase populations of beneficial insects, microorganisms and natural parasites as biological control agents of insect pests and plant diseases.
- Restrict soil steam sterilization used to increase plant resistance against diseases and pests in case it reduces crop yields or deteriorates crop quality.
- Meet the organic livestock production requirements.
- Produce organic livestock products having biological properties and therapeutic effects.
- Ensure that the physiological and behavioral needs of organic livestock are met, including that animals are fed with high-quality organic feed and appropriate stocking densities are maintained.
- Introduce livestock breeding systems meeting animal's species-specific needs.
- Apply husbandry practices and housing conditions minimizing stress from the holding, promoting animal health and welfare, preventing diseases and the use of chemically synthesized allopathic veterinary medicinal products, including antibiotics.
- Achieve a high level of animal health, welfare and productivity.
- Ensure that poultry, rabbits and pigs are kept cage-free.
- Ensure that animals have permanent access to open-air areas.
- Ensure that social animals are kept together.
- Ensure that all organic livestock is born and raised on organic holding.

- Use artificial insemination.
- Ensure that the main criteria for choosing a livestock treatment method are animal health and welfare.
- Ensure that conventional methods of veterinary therapeutic treatment are used unless there is no alternative.

There may be some other methods and techniques of organic agricultural production. Worldwide experience shows that organic agriculture is actively developed by farmers and supported by the government.

5. Conclusion

Organic farming is a recent and growing trend in the domestic agriculture requiring new approaches to the development of an adequate agricultural policy based on the philosophy of green economy and healthy diet.

The Government shall adopt the laws governing the national policy in the sphere of organic agriculture, as well as setting the requirements to organic plant and livestock production. The principles of green economy and organic agriculture mentioned above can be used as a basis for the respective law regulating the relationships in this sphere.

The law shall also stipulate a mechanism for certification of agricultural lands (soils) for organic plant production, as well as a mechanism for certification of organic agricultural products, foodstuffs and raw materials. Certification shall apply to foodstuffs produced under the brand names 'organic product', 'eco product' or 'bio product'.

Pricing of organic products is another important aspect to take into consideration while developing the respective law.

Beyond that, scientific substantiation of organic agricultural production appears to be of no less importance than practical application of green farming methods.

Our country can obtain significant economic and social benefits from the transformation of the agricultural sector within the context of a green economy. Domestic producers could get new opportunities for entering the global agricultural market and gaining high revenues from the exports of organic agricultural products, foodstuffs and raw materials.

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