

## Chapter 46

# New Approaches to Agricultural Production Management in the Arctic: Organic Farming and Food Security

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### **ABSTRACT**

*Organic agriculture is a promising form of management in which the preservation of the natural foundations of life and natural processes is the determining factor in ensuring food security and sustainable development. Until recently, organic farming has been considered as something related to the traditional regions of agricultural production. However, raising food security issues make people look for new opportunities even in the severe conditions of the polar regions. In the High North, food security issues are complemented by specific challenges: climate, fragile environment, remoteness, and way of life of indigenous people. In the chapter, the author discusses the potential of organic farming as a solution to the food insecurity problem in the northern areas. The approaches to organic production management and establishment and running of an organic farm are studied. The author concludes that a green turn to more organic farming is a promising step towards food security and sustainable development of rural areas in the Arctic.*

### **INTRODUCTION**

The technology of organic farming is rapidly spreading throughout the world. The arguments that may affect the increase of organic production include profitability of organic farming and effective demand for organic products. The first argument is purely economic, which may encourage businesses to implement organic farming. The latter one is considered as a socio-economic factor that depends on the general economic development of a country (Guz & Ivolga, 2015). Until recently, organic farming has been considered as something related to the traditional regions of agricultural production. However, raising

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food security issues make people look for new opportunities (Erokhin, 2017b) even in the severe conditions of northern part of the planet.

In the harsh environment of the Arctic, hunting and fishing have always been an important part of human existence (Sonne et al., 2017). However, in the recent decades, intensive exploration of natural resources of the Arctic and development of other kinds of economic activities have resulted in a substantial increase of Arctic population. Along with food availability issues, the inclusion of Nordic territories to the global production chains has brought along increased anthropogenic stressors on the ecosystems, environmental pollution (Muir & de Wit, 2010), and safety and quality of food.

In the High North, food security issues are complemented by specific challenges: climate, fragile environment, remoteness, and way of life of indigenous people. Food security brings together concerns over a range of interacting environmental, social, economic, political and cultural changes. These include food and water-borne diseases; increasing incidence of lifestyle diseases; high costs of healthy foods; contamination; changing ecosystems that impede access to food; high fuel costs; and loss of traditional knowledge (Nilsson, Nilsson, Quinlan, & Evengard, 2013). Exposure to long-range transported industrial chemicals (Zetterstrom, 2003), climate change, and diseases is posing a risk to the overall health and populations of Arctic wildlife (Sonne et al., 2017) and human health in the Arctic region. Arctic ecosystems, however, are being stressed by not only contaminants. Two major additional aspects to consider in the study of Arctic health are climate change and infectious diseases. Climate change acts through alteration of food web pathways for contaminants (McKinney et al., 2013), while pollution increases the risk of disease transfer from animals to humans as a large volume of marine and terrestrial wildlife is consumed by humans in the Arctic, often raw and inadequately frozen (Jenssen et al., 2015).

Arctic food security involves access by local residents to store-bought and traditional foods (Duhaime & Bernard, 2008). Access to food requires a steady income in order to ensure a consistent, year-round supply of high-quality goods in the stores and a ready supply of healthy wildlife to be harvested (Erokhin, 2017b). In terms of availability of food products, rural towns in the North can be difficult to reach, especially in winter, that is why even those communities which traditionally rely on subsistence have become increasingly dependent on costly imports of unhealthy frozen food with extended shelf life. The poor nutritional quality of many retail foods that are available in the North increases the risk of nutritional deficiencies (Kuhnlein, Receveur, Soueida, & Egeland, 2004; Gao, Erokhin, & Ivolga, 2018); furthermore, the high cost of these foods, mainly due to their transport (Beaumier & Ford, 2010; Fergusson, 2011), can impact households' food security status, particularly when local foods are not readily available (Huet et al., 2017; Gao, Ivolga, & Erokhin, 2018).

There are various drivers which may be used to ensure food security in the High North. Economic ones include changes in food prices and in people's ability to pay (Erokhin, 2017c). Social ones include changes in dietary preference and shifts in the social context in which food is produced and shared (Erokhin, Ivolga, & Lisova, 2016; Erokhin, 2018). Technological drivers include changes to infrastructure and technologies connected with both traditional and new ways of food production (Nilsson et al., 2013). Commercialization of country foods could increase accessibility of available foods in the Arctic. One of the potential solutions to the food security problem in the circumpolar territories is the development of agricultural production locally (Erokhin & Gao, 2018).

Organic agriculture is a system composed of various factors. The aim of economic science is to discover its multifold problems, analyze the current situation, elaborate scenarios of development, and search for the bifurcation points for decision making, which are efficient by Pareto optimality (distribution of resources which cannot be improved at least for one person, without having worsened thus welfare of

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