Chapter 8

Intensification of Agricultural Production vs. Environmental Management: Russia’s Approaches to Green Economics

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ABSTRACT

The chapter includes analysis of the current state of agricultural production in Russia, addresses the major problems and limitations of its efficiency and substantiates the perspective ways of growing intensification of agricultural production in Russia on the basis of integration of agricultural producers, growing scales of agricultural production, rational management of natural resources and effective utilization of existing resource and environmental potential.

INTRODUCTION

Current state of Russia’s agriculture is significantly different from the one in the developed countries. Agricultural potential and resources are misused. Productivity of main agricultural crops is lower, than in the developed countries. There are no farming technologies adaptive to transient environmental and climatic factors. Value added per worker in agriculture in Russia is higher than the world average, but again essentially lower than in the developed countries. Thus, in Canada, which environmental conditions are similar to Russia, value added per worker in agriculture is almost fifteen times as much as in Russia (in USA – sixteen times higher, in EU-27 – sixfold higher in comparison to Russia). Those figures confirm that Russia’s agriculture is low effective for a variety of objective and subjective reasons.

One of the reasons of existing situation is low level of intensification in agriculture. According to the Institute of Agricultural Problems of the Russia’s Academy of Sciences, innovation potential of agriculture is utilized only on 15-35%. The major-
It is evident that agricultural producers in Russia have limited capabilities for self-maintained implementation of the newest scientific and technical achievements into production, since they are both restricted in financial resources and poorly informed.

In the course of reforms in Russia agricultural lands had been shrunk. Part of agricultural producers due to outdated technological infrastructure and loss of labour resources were not able to cultivate those lands in a proper manner and either withdrew arable lands from circulation or did not cultivate them at all. Essential part of immersed lands is not utilized in agricultural production nowadays. Level of chemicalization in agriculture is lower than necessary for maintenance of soil fertility. The majority of agricultural machineries have low operating characteristics, are unreliable in service and low productive. Only one third of agricultural machineries may be considered as modern and resource efficient.

Current level of chemicalization and melioration measures and underutilization of irrigated lands restrain expand of agricultural production and decrease its sustainability. Change of existing situation is possible only based on essential increase of effectiveness of agricultural production by means of intensification of utilization of all available resources. Progressive development of agricultural production is conditioned by its resource base, objective environmental and climatic conditions and opportunities of full utilization of existing resources under modern techniques, technologies, level of organization and management of production.

BACKGROUND

Achievement of sustainable economic growth, increase of living standards of population, and ensurance of food safety of the country are the macro problems of the Russia’s economy. Their solution is possible on the basis on innovation of national agri-industrial complex.

Such an objective is set by the national priority project “Development of Agri-Industrial Complex”, “Strategy of Innovation Development of Agri-Industrial Complex until 2020”, and State Program “Development of Agriculture and Regulation of Markets of Agricultural Commodities, Raw Materials and Food on 2013-2010”. Those documents emphasize the necessity to re-orient national agriculture on innovation way, which lets to increase effectiveness of production, decrease dependency on import deliveries, develop competitiveness, and ensure sustainability of agriculture.

Peculiarities of intensification of agricultural production and issues of environmental management in agriculture have been investigated by a number of foreign and Russian researchers. For the purposes of our research we have addressed works of Foley et al. (2011), Foley et al. (2007) and Goulding, Trewavas and Giller (2011), related to effective utilization of available natural resources for agricultural production; researches of Garnett and Godfray (2012), Garnett et al. (2013), Kassam (2008), Kassam et al. (2009), and Kassam and Friedrich (2012) in the sphere of sustainability of agricultural production. Many researches paid special attention to environmental issues of agricultural intensification. Matson et al. (1997) investigated influences of intensification on ecosystems; Tilman (1999) and Tilman et al. (2011) studied global impacts of agricultural expansion, while Jepson (2014), Sawadogo (2011), Vandermeer and Perfecto (2005), and Wheeler and Braun (2013) addressed specific environmental impact of agricultural intensification on soils, waters, and air.

Since the current research addresses Russia and particular regions of the country, we have also considered the works, performed by Russian researchers. Semenov, Barashova, and Ivanchenko (2009) investigated reserves of innovation, investment and integration development of agricultural production. Kharitonov (2011; 2013) paid special attention to the development of organic agriculture in Russia, while Gataulina (2012) considered bio-