

Chapter 6

Technical Equipment of Agricultural Production: The Effects for Food Security

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ABSTRACT

The guarantee of a sufficient food supply is one of the challenges in both international and national economic security. Development of world agriculture is impossible without using advanced technologies. Their application in agriculture depends on the security of agricultural producers with highly effective agricultural machinery for which agricultural engineering serves. Agricultural engineering is an important element of the agro-industrial complex of any state providing it with necessary machinery and equipment. One of the important directions of the establishment of food security is the development of agricultural engineering. In this regard, the chapter analyses the current state of the world market of agricultural machinery; develops the methodology of assessment of the competitiveness of agricultural machinery in the domestic market; and elaborates the definition of effective methods of management of logistics costs at the operation of agricultural machinery.

INTRODUCTION

Ensuring a sufficient food supply is one of the most critical challenges in establishing both international and national economic security. In this context, it is important to make a differentiation between food security and food self-sufficiency.

Food self-sufficiency is defined as the ability of a state to meet domestic food needs. The level of food self-sufficiency, calculated as the ratio of its national production to domestic consumption, var-

DOI: 10.4018/978-1-7998-1042-1.ch006

ies for different countries. It is determined by the effective public demand for food, development of the agro-industrial complex, size of its commodity resources, degree of profitability, and reliability of international food relations (Ibragimov & Dokholyan, 2010).

The concept of food security is not limited to direct provision of food to the population, although this task is its ultimate goal. The food security system also includes the establishment of strategic food stocks; formation of the optimal ratio of food for the country by means of domestic production and import; development of food base of agriculture and the network of enterprises for the processing of raw materials, as well as trade in these raw materials and foodstuffs; expansion of transport networks for the supply of raw materials to food industry and food to consumers (Shapkina, 2012).

The term “food security” is widely used in the literature. In a general sense, it includes various aspects of activities related to the development of agricultural and agro-industrial production, food supply, and provision of targeted social food aid to population. Narrowly defined, food security of a country is the level of dependence on imports of basic types of food. Anisimov, Gapov, Rodionova, and Saurenko (2019) generalized an approach to understanding food security as a state of the global economy which provided physical access to food and economic opportunity to purchase it in the required quantity for all social groups.

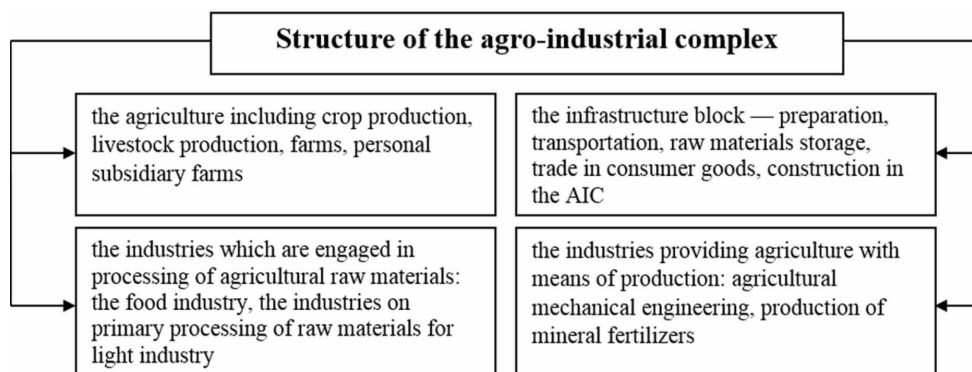
Food security is provided by a set of economic and social conditions associated with the development of food production and general state of the national and global economy. Food security level is ensured both by domestic food products and the availability of financial resources to import the required volume of food. Every government in the pursuance of national security interests strives minimizing the degree of potential vulnerability of food security parameters (Khudzhatov, 2018a) and stabilizing food supply amid any external fluctuations (inflation, currency deficit, violations of food imports, embargo on supplies, etc.).

Establishment of food security includes the stability of both internal (preferably) and external food sources, as well as the availability of reserve funds.

The rational level of food security involves optimal use of the agricultural potential of a country for the needs of the domestic market and intensification of foreign economic activity in the terms of import of food and raw materials (in the volume required to close food supply gaps taking into account international division of labor and situation on the global market).

Figure 1. Structure of the agro-industrial complex

Source: Authors' development based on Khudzhatov (2018b)



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