

FOOD SECURITY: PROBLEMS AND SOLUTIONS

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Abstract

This article analyzes the concept of food security, its importance at global and national levels, and its main problems and solutions. The roles of state policy, activities of international organizations, innovative technologies, and environmental factors in ensuring food security are examined. In addition, national experience is evaluated using measures implemented in Uzbekistan to strengthen food security.

Keywords: Food security, sustainable development, food policy, ecology, agriculture, innovation.

Introduction

Food security is one of the most important issues facing humanity in the modern era. According to the United Nations (UN) and the World Health Organization (WHO), rapid population growth is sharply increasing demand for food products. At the same time, climate change, water scarcity, land degradation, economic crises, and military conflicts are causing food shortages.

Food security is the condition in which the population is continuously supplied with quality and sufficient amounts of food products. It is directly related not only to the volume of food production, but also to its distribution, price stability, environmental safety, and the population's income.

Main Body

1. Theoretical foundations of food security

The concept of food security began to be widely discussed from the second half of the 20th century. At the 1974 UN Food Conference held in Rome, this concept was first recorded in official documents. At the 1996 Rome summit, food security was divided into four main criteria:

1. Availability – sufficient quantities of food are produced;
2. Access – the population can reach food economically and physically;
3. Quality and safety – food products are harmless to human health;
4. Stability – the guarantee of food supply over a long period.

2. Global problems

- One in five people worldwide does not have enough to eat. This problem is even more acute in Africa and South Asia. Factors affecting food security include:
- Climate change: drought and scarcity of water resources reduce yields;

- Geopolitical tensions: wars and sanctions hinder food trade;
 - Inflation and economic crises: reduce the purchasing power of the population;
- Technological imbalance: developed countries use advanced technologies while developing countries lag behind due to resource shortages.

3. Food security in Uzbekistan

Uzbekistan's rising population is increasing demand for food products. Since independence, the country has focused on modernizing agriculture, conserving water resources, developing seed production and breeding, and expanding the food industry. In recent years, state strategies such as the "Food Program" and "Policy of Supporting Farmer Households" have been implemented to meet the population's demand for quality and affordable products. In addition, exports of environmentally friendly products have been launched.

4. Innovations and solutions

- The following directions are important to ensure food security:
 - Digital technologies – use of "smart" irrigation systems, drones, and satellite monitoring in agrotechnical processes;
 - Biotechnologies – development of high-yield, disease-resistant varieties;
 - Environmental balance – development of organic farming and limiting the use of pesticides;
- Logistics and storage systems – preventing food waste.

5. Chemical composition of food products and their importance

Food products are sources of chemical elements necessary for the vital activity of the human body. They consist of the following:

Proteins: Main function – building cells, ensuring formation of enzymes and hormones. One gram of protein provides 4 kcal. Sources: meat, fish, dairy products, legumes.

Fats (lipids): Main energy source; one gram of fat provides 9 kcal. Fatty acids (omega-3, omega-6) are important for the cardiovascular system. Sources: vegetable oils, nuts, fish.

Carbohydrates: The primary energy source. One gram of carbohydrate provides 4 Kcal. They appear as monosaccharides (glucose, fructose) and polysaccharides (starch, fiber). Sources: bread, potatoes, fruits, cereals.

Vitamins: Fat-soluble: A, D, E, K. Water-soluble: B-group vitamins, vitamin C. They are important for immunity, nervous system, blood circulation, and bone health.

Minerals: Calcium, phosphorus, magnesium – for bones and teeth; Iron – for hemoglobin formation; Zinc, iodine, selenium – for hormonal balance and immunity.

Water: Makes up 60–80% of food composition. Ensures metabolic processes and helps remove toxins from the body.

6. Numerical values for the chemical composition of food products

1. 100 g of wheat bread (approx.): 7–9 g protein, 0.7–1.0 g fat, 40–45 g carbohydrates, 210–220 kcal energy.
2. 100 g of beef (approx.): 18–20 g protein, 15–17 g fat, 200–220 kcal energy.
3. 100 g of milk (approx.): 3.2 g protein, 3.6 g fat, 4.7 g lactose (carbohydrate), 120 mg calcium, 60–65 kcal energy.
4. 100 g of apple (approx.): 0.4 g protein, 0.4 g fat, 11–12 g carbohydrates, 9 mg vitamin C, 45–50 kcal energy.

Conclusion

Food security is not only an economic issue but also a fundamental factor of social and political stability. To solve this problem globally, it is necessary to strengthen interstate cooperation, make use of scientific achievements, and enhance environmental protection measures. Uzbekistan's experience demonstrates that through reforms, innovations, and international cooperation, there is a high potential to strengthen food security.

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