

## FOOD SECURITY OF UKRAINE: PROBLEMS AND AREAS OF PROVIDING

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**ABSTRACT**

The article is devoted to the substantiation of the necessity of providing food security as an integral part of the national security of the state, the main approaches to the definition of the essence of “food safety” concerning the peculiarities of the interpretation of this concept are analyzed. The factors that determine the level of food security of the state are determined. By analyzing the indicators of the domestic agro-industrial complex development the state of national food security has been investigated. In particular, the dynamics of production of main crops by all categories of farms during the period of 1990—2015, as well as the yield of the main crops from 1 ha of the collected area, was analyzed. The article presents the dynamics of the livestock and poultry population in Ukraine in all categories of farms, as well as the production of the main types of livestock products. It was determined that mentioned tendencies directly influenced on the level of main food types consumption by the population of Ukraine. The consumption dynamics of the main food products’ types by the population of Ukraine according to the rational consumption norms and level of consumption in the EU countries, consumption dynamics of the basic trace elements in the composition of food products by the population, as well as the level of food self-sufficiency are analyzed. The article emphasizes the limited possibilities of the population of Ukraine in the consumption of food in the required volumes and assortment. It has been determined that in spite of the rather high level of self-sufficiency, the consumption of the main types of food products by the population of Ukraine, as well as the main trace elements in the composition of food products as a whole, remains rather low.

In addition, it is noted that the population of Ukraine in recent years is not approaching, but is getting away about the consumption of the main types of food products, both from rational consumption norms, and from the level of consumption in the EU countries. Modern nutrition of the population is characterized by an unbalanced diet at a lower level than scientifically substantiated. While in the majority of countries the quality of food supply has improved significantly, there are reverse trends in Ukraine.

The article proposes series of measures that will allow Ukraine not only to provide its own food security, but also to become an active player in the global food market.

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## ПРОДОВОЛЬЧА БЕЗПЕКА УКРАЇНИ: ПРОБЛЕМИ ТА НАПРЯМИ ЗАБЕЗПЕЧЕННЯ

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У статті обґрунтовано необхідність забезпечення продовольчої безпеки як складової національної безпеки держави, проаналізовано основні підходи до визначення сутності «продовольча безпека» з огляду на особливості трактування цього поняття. Визначено фактори, від яких залежить рівень продовольчої безпеки держави. На основі аналізу показників розвитку вітчизняного агропромислового комплексу досліджено стан національної продовольчої безпеки. Зокрема, проаналізовано динаміку виробництва основних сільськогосподарських культур усіма категоріями господарств протягом 1990—2015 років, а також урожайність основних сільськогосподарських культур з 1 га зібраної площі. Наведено динаміку поголів'я худоби та птиці в Україні в усіх категоріях господарств, а також динаміку виробництва основних видів продукції тваринництва. З'ясовано, що зазначені тенденції безпосередньо вплинули на рівень споживання населенням України основних видів продуктів харчування. Проаналізовано динаміку споживання населенням України основних видів продуктів харчування відповідно до раціональних норм споживання та рівня споживання в країнах Євросоюзу, динаміку споживання населенням основних мікроелементів у складі продуктів харчування, а також рівень продовольчої самозабезпеченості. Наголошено на обмежених можливостях населення України в споживанні продуктів харчування в необхідних обсягах і асортименті. Визначено, що, незважаючи на досить високий рівень продовольчої самозабезпеченості, споживання населенням України основних видів продуктів харчування, а також основних мікроелементів у складі продуктів харчування в цілому залишається досить низьким.

Крім того, зазначено, що населення України протягом останніх років не наближається, а віддаляється при споживанні основних видів харчових продуктів (як від раціональних норм споживання, так і від рівня споживання в країнах ЄС). Сучасне харчування населення характеризується розбалансованістю раціону на рівні нижчому за науково обґрунтований. У той час, коли у більшості країн світу забезпечення населення якісними продуктами харчування значно покращилось, в Україні спостерігаються зворотні тенденції.

Запропоновано низку заходів, які дають змогу Україні не лише забезпечити власну продовольчу безпеку, а й стати активним гравцем на світовому ринку продовольства.

**Ключові слова:** продовольча безпека, сільське господарство, продовольча незалежність, структура харчування, сталий розвиток, аграрний сектор, харчова промисловість.

**Formulation of the problem.** Nowadays, protection of vital interests of man and citizen, society and the state, which ensured the sustainable development of society, early detection, prevention and neutralization of real and potential threats

to national interests in all areas of public administration, is a leading indicator of the modern state, forming the essence of the concept “National security”. This concept was firmly established in the middle of the twentieth century and is covering a number of problematic tasks due to risks and uncertainties in different areas of the state. National security of any state is based on economic security, a major component of which is food safety, which is achieved through sustainable economic and social development of society, its demographic reproduction.

First studies of food security in economic theory were held by British economist T. Malthus, who pointed the necessity for human food as the main means of existence. Various aspects of food security were seen in the works of such classical economists, as A. Smith, D. Ricardo, K. Marx, J. Keynes, J. Galbraith, P. Ehrlich, A. Maslow, V. Pareto, M. Lowe, S. Podolynsky, N. Kondratyev and others.

**Analysis of recent research and publications.** The new surge of research on the problems first of the world, and then the national food security began in the 70-ies. Nowadays, to the problem of food security are dedicated works of domestic and foreign scientists as O. Bilorus, A. Boyko, V. Borschevsky, P. Vlasov, Z. Illin, O. Korbut, O. Hoychuk, B. Pashaver, M. Petrovich, P. Sabluk, A. Sen, V. Topihy, I. Ushachova and many others. However some scientists consider it in terms of the state, including here both the level of households and the region, others analyze food safety primarily on a global or regional level.

**Setting objectives.** The aim is to study the nature of the category of “food security” to determine its status, problems and areas of support in Ukraine.

**The main material of research.** The problem of food security has always occupied a leading position in the overall national security of each country, as a prerequisite and a precondition for social and economic stability of the state. Its experts explore different branches of agricultural production, linking with the national economic security. In this context, food security depends on many factors:

- the level of development of the agricultural sector, including private land owners;

- development of the food industry;

- the level of export-import operations;

- the level of purchasing power and culture of the population;

- the possibility of using innovative technologies;

- the financial capacity of enterprises;

- logistics and investment attractiveness of agricultural enterprises;

- state support, providing agribusiness benefits of effective fiscal policy.

The above shows that food safety is a complex economic and historical category, and therefore there are many approaches to determine its nature.

Some authors argue that food security is the level of food security of the population, guaranteeing socio-political stability in society, survival and development of the nation, individuals, families, sustainable economic development of the country [4, p. 4].

Other experts expressed the view according to which food security — “a degree of security of the population environmentally friendly and healthy food production for domestic scientifically based standards and affordable prices while maintaining

and improving the environment” [7, p. 237 ]. Experts believe that for the life of the current generation the food problem could turn into a deep international crisis.

In international agreements define food security as following: “the state of the economy in which everything and everyone is guaranteed access to food, drinking water and other products in quality, variety and volume sufficient for the physical and social development of the individual, providing health and expanded reproduction of the population” [5, p. 180].

However, multifaceted and sometimes contradictory views on the nature of domestic food security experts are reduced to a common position on which the foundation of food security should be considered to stabilize the situation in agriculture, the revival of agricultural production and social living conditions in rural areas [7, p. 237].

Thus, the state of food security depends largely on the agricultural development of the state, its ability to supply appropriate materials for food production, the timeliness of its receipt, quality and other indicators.

Production of major crops during the 1990—2015 years are presented in table 1.

*Table 1. Production of major crops (all categories of farms) in the 1990—2015 years*

Name of agricultural crop	In fact							2015 in % to 1990
	1990	2000	2006	2012	2013	2014	2015	
Cereal, m tons	51.0	24.5	34.3	46.2	63.0	63.8	60.1	117.8
Sugar beet (factory), m tons	44.3	13.2	22.4	18.4	10.8	15.7	10.3	23.3
Sunflower, m tons	2.6	3.4	5.3	8.4	11.1	10.1	11.2	430.8
Potatoes, m tons	16.7	19.8	19.5	23.3	22.2	23.7	20.8	124.6

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 74.

Analysis of the data in table 1 shows that from 1990 to 2000 cereal production has decreased in almost 2 times, sugar beet — 3.4 times. Beginning in 2006 compared to 2000 dynamics of production of major crops has a positive trend, with the exception in 2015. Thus, from 2006 to 2014 grain production (all categories of farms) increased from 34.3 m tons in 2006 to 63.8 m tons in 2014, sunflower (grain in weight after processing) from 5.3 m tons to 10.1 m tons. According to these years, the situation with sugar beet was slightly different, so in 2010 sugar beet production decreased significantly compared to 2006, in 1.6 times in 2012 — an increase of sugar beet production to 18.4 m tons in 2013 — there was a decline in production to 10.8 m tons again. The results of 2014 indicate a positive trend — 15.7 m tons and in 2015 a decline in production to 10.3 m tons again. The production of potatoes increased in 2015 compared to 1990 by 24.6%.

An important indicator of the efficiency of agriculture are crop yield (table 2).

*Table 2. Yields of major crops quintals per 1 hectare of harvesting area*

Name of agricultural crop	In fact					Difference 2015 to 1990, +,-
	1990	2000	2013	2014	2015	
1	2	3	4	5	6	7
Cereals and legumes	35.1	19.4	39.9	43.7	41.1	+6.0

*Continuation of Table 2*

1	2	3	4	5	6	7
Sugar beet (factory)	275.7	176.7	398.9	476.5	435.8	+160.1
Sunflower	15.8	12.2	21.7	19.4	21.6	+5.8
Potatoes	116.8	121.6	159.7	176.4	161.4	+44.6
Vegetables	149.0	112.3	199.9	207.8	206.1	+57.1
Fruits and berries	42.7	38.4	103.5	95.2	104.5	+61.8

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 75.

Analysis of the data table 2 shows the growth of productivity of major crops for the period of 1990—2015 which is the evidence of increased efficiency of agricultural production for this indicator.

It should be noted that the output of major crops, except yields affect change in the structure of production. During 1990—2015 yearsthe structure of sown areas of major crops was changed (table 3).

**Table 3. The structure acreage of major crops Ukraine (percent)**

Name of agricultural crop	In fact					Difference 2015 to 1990, +, -
	1990	2000	2013	2014	2015	
Entire cultivated area	100	100	100	100	100	-
Cereals and legumes	45	50.2	57.2	54.3	54.8	+9.8
Industrial crops	11.6	15.4	27.8	31.0	31.0	+19.4
Potatoes, vegetables, melons	6.4	8.4	6.9	7.0	6.8	+0.4
Forage crops	37.0	26.0	8.1	7.7	7.4	-29.6

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 70.

Analysis of the data table 3 shows a significant increase in acreage over the period 1990—2015 for grain and leguminous crops, industrial crops, as well as a slight increase in potato and vegetable and melon crops. Analysis of statistical data indicates the redistribution of cereals and legumes acreage. Most notably increased sowing area occupied by grain corn. A significant reduction of crops like buckwheat and legumes is important for the food security. Increased acreage crops share of the total acreage of the country primarily affected the increase in crops of sunflower, soybean and rapeseed. This reduced crops of sugar beet and flax. During this period area occupied by forage crops was reduced by 5 times. This in turn affected the livestock and forage availability for livestock and poultry (table 4).

**Table 4. Livestock and poultry in Ukraine (of all categories) on January 1, thous. Heads**

Name	In fact				Difference 2015 to 1991, +, -	
	1991	2001	2015	2016	+, -	y %
1	2	3	4	5	6	7
Cattle total. incl.:	24 623.4	8 423.7	3 884.0	3 750.3	-20 873.1	15.2
Cows	8 378.2	4 958.3	2 262.7	2 166.6	-6 211.6	25.9

*Continuation of Table 4*

1	2	3	4	5	6	7
Pigs	19 426.9	7 962.3	7 350.7	7 079.0	-12 347.9	36.4
Sheeps and goats	8 418.7	1 875.0	1 371.1	1 325.3	-7 093.4	15.7
Horses	738.4	701.2	316.8	305.8	-432.6	41.4
Birds of all kinds	246 104.2	123 722.0	213 335.7	203 986.2	-42 118.0	82.9

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 105.

As on January 1, 2016 in all categories of cattle amounted to 3 750.3 ths. heads (15.2% compared to 1991), including cows — 2 166.6 ths. heads (25.9% compared to 1991), pigs — 7 079.0 thousand heads (36.4% compared to 1991), sheep and goats — 1 325.3 ths. heads (15.7% compared to 1991), poultry — 204.0 m heads (82.9% compared to 1991). Thus, the negative trend in comparison with 1991 is characteristic of all the above items.

As at the beginning of 2016 in all categories of farms the number of cattle and poultry has decreased, respectively, there was a reduction of major livestock production, especially production of wool and milk. Positive dynamics is characteristic only for the production of eggs (table 5).

*Table 5. Production of major livestock products (of all categories) in the 1990—2015 years*

Name of products	In fact						Difference 2015 to 1990, +, -
	1990	2000	2006	2013	2014	2015	
Milk, mm tons	24.5	12.7	13.3	11.5	11.1	10.6	43.3
Eggs, mm pcs	16.3	8.8	14.2	19.6	19.6	16.8	103.1
Meat (in slaughter weight), ths. tons	4 358	1 663	1 723	2 389	2 360	2 323	53.3
Wool, ths. tons	29.8	3.4	3.3	3.5	2.6	2.3	7.7

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 112.

This situation of production of agricultural raw materials directly affected the production and consumption of basic foodstuffs.

*Table 6. Consumption of main types of food in Ukraine (per person per year; kg)*

Types of products	Rational consumption rates	Consumption in the EU (25 countries)	In fact in Ukraine				
			1990	2005	2010	2014	2015
1	2	3	4	5	6	7	8
Meat and meat products	83	95	68	39.1	52.0	54.1	50.9
Milk and dairy products	380	363	373	225.6	206.4	222.8	209.9
Eggs, pcs	290	222	272	238	290	310	280
Fish and fish products	20	24	18	14.4	14.5	11.1	8.6
Bread and bakery products	101	91	141	123.5	111.3	108.5	103.2

*Continuation of Table 6*

1	2	3	4	5	6	7	8
Potato	124	81	131	135.6	128.9	141.0	137.5
Vegetables and melons	161	116	103	120.2	143.5	163.2	160.8
Fruits, berries and grapes	90	110	47	37.1	48.0	52.3	50.9
Sugar	38	41	50	38.1	37.1	36.3	35.7
Vegetable oil	13	19	12	13.5	14.8	13.1	12.3

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 147.

Data in table 6 confirm the limited capacity of Ukraine's population in the consumption of food in required quantities and stock. In particular, there was a decrease in 2015 compared to the prior year in consumption of all major types of food per one person. Thus, the population of Ukraine is far from consumption of basic food products as rational norms of consumption and the level of consumption in the EU. Rational consumption rates approaching domestic households only for products such as eggs, vegetables and melons, sugar and vegetable oil. A slight increase in rational norms was observed only in foods such as potatoes and bread products and it can't be viewed as a positive phenomenon. It is through these products domestic consumers under consumption of important products in the diet such as meat and meat products, milk and dairy products, fish and fish products as well as fruit, berries and grapes is covered.

Consumption of major minerals in the composition of foods are presented in table 7.

*Table 7. Consumption of major minerals in the composition of food (per person per day)*

Name of microelements	1990	2005	2010	2014	2015
Calories, kcal	3 610	2 916	2 933	2 939	2 799
Protein, g	105.0	86.0	87.5	89.2	84.3
Fats, g	124.0	89.7	99.2	97.9	92.0
Calcium, mg	1362	927	893	953	904
Iron, mg	25.0	20.5	20.5	21.1	20.2

\* Farming Ukraine 2015 Statistical Yearbook. — Kyiv : State Statistics Committee of Ukraine, 2016. — P. 148.

Data in table 7 indicate that for calories and key micronutrients to approach the level of consumption in 1990 is not possible yet.

Food security of the state is considered by some experts purely through self-sufficiency rate (the ratio of domestic production to its use), where the data are rather contradictory. As the study indicates some researchers [1, p. 7], as well as acts of national legislation, food safety is ensured major groups of domestic agricultural products at least 80% of the demand of the domestic market (the level of self-sufficiency).

Despite the relatively high level of food self-sufficiency, consumption of the main types of food, and basic minerals in the composition of food in general is very low in Ukraine. Modern nutrition is characterized by imbalance level below

scientifically grounded. At a time when most of the world population to ensure food quality has improved significantly in Ukraine the opposite trend is observed. The bulk of the calories consumed with Ukrainian vegetable production and consumption of animal products 1.5 times lower than the established threshold criteria. Average daily nutritional intake in Ukraine in 2015 compared to 1990 decreased by 21%. The diet consists of more affordable products. Moreover, Ukraine faced the problem of malnutrition. Most of the population is unable to buy the necessary amount of food to ensure active and healthy life, and some may only consume cheap food without getting the required amount of calories.

The availability of food and the level of prices are affecting the livelihoods of the population, the physical and mental state of people, what changes the level of social, political and economic calm in the country, increasing social tensions, or vice versa — is the development of the nation as a whole organic system of social life.

Considering all the above, the food security of our country can be ensured if the following conditions are met:

- population provided with clean, full and healthy food production for domestic scientific and reasonable norms and ration of their consumption, taking into account age, gender, working conditions, climatic conditions and national traditions;

- prices of these foods are available to all large families, retired workers regardless of nationality and occupation;

- renewable strategic food reserves is established in case of natural disasters, wars and other emergencies. These stocks will avoid starvation in the country with the introduction of rationing of food distribution within not less than five years (there are historical confirmation of the necessity and reality of this condition. In particular, the present reserves are created in the United States, Switzerland and other countries);

- agriculture, fisheries and forestry are steadily developing and have reserves, which allow to increase food production to update insurance reserves and increasing reserves for unforeseen situations;

- science and education are at the highest level. All production areas are provided with the latest equipment and technology. National heritage is supported. Gene pool of livestock is breeding and plant cultivation is improved. Science gives credible forecasts and recommendations for the development of all areas of life and society in the future for intelligent control circuit;

- natural policy protection and nature restoration practice the conservation and improvement of environment.

## **Conclusions**

Favorable climatic conditions for growing crops majority and powerful human potential allow Ukraine not only to ensure their own food security but also to become an active player in the global food market. The concept of food security should cover meet the physiological needs of the population in a safe, multifunctional, high-quality food in accordance with medical guidelines, environmental conditions and individual human condition. One way of achieving food security is strict adherence to hygiene requirements, technological instructions, recipes, modes of processing, storage, transportation, sale of raw materials

and finished products. You also need to accelerate the reform of the agricultural sector of Ukraine needs, substantial modernization in the development of entrepreneurship in rural areas, introduction of innovative technologies into production, ensuring the profitability of producers and the development of social infrastructure and rural development.

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