

Piznyak T.I.

Ph.D. of Economics, Associate Professor
Sumy National Agrarian University, Ukraine

**PERMANENT AGRARIAN MANAGEMENT AND FOOD SAFETY: A
METHODOLOGY OF FORMING OF THE ECONOMIC AND SOCIO-
ECOLOGICAL PARAMETERS**

Пізняк Т.І.

к.е.н., доцент

Сумський національний аграрний університет, Україна

**СТАЛЕ АГРОГОСПОДАРИВАННЯ ТА ПРОДОВОЛЬЧА
БЕЗПЕКА: МЕТОДОЛОГІЯ ФОРМУВАННЯ ЕКОНОМІЧНИХ ТА
СОЦІАЛЬНО-ЕКОЛОГІЧНИХ ПАРАМЕТРІВ**

The article discusses a food safety system based on improving the ecological awareness of the agriculture and improving the (agricultural) quality of the agricultural production; the main principles of the development of sustainable agriculture strategy have been developed as well as strategical directions of their implementation

Keywords: *foodsafety, sustainable agriculture, sustainable agricultural management*

В статті розглянута система продовольчої безпеки, яка ґрунтується на екологізації агропромислового виробництва і підвищення якості (екологічності) продуктів харчування, розроблені основні принципи стратегії розвитку усталеного сільського господарства і стратегічні напрямки їх реалізації.

Ключові слова: *продовольча безпека, стале сільське господарство, стале агрогосподарювання*

The new processes of European integration are directed towards forming of the ecologically safe environment and sustainable economy. In this context steering the national agricultural complex in the direction of ecologically safe and sustainable development as well as providing food safety becomes the strategical goal [1-2].

A conceptual idea of reliance of the further development of the agricultural complex on its ecology-friendliness and food quality improvement problems as well as creating proper organizational, technological, legal, and managerial prerequisites

must be positioned at the base of the new economical paradigm of the forming of national food safety strategy for Ukraine in XXI century

The relevance of this research is based on the assumption that at the present time the food safety is not limited to the satisfactory quantities of available food supplies but also as the base for improving the population standards of living.

The article's goal is to conduct an ecological and economic analysis of the food safety at different hierarchical levels of management based on the study of economical, ecological, organizational, and social mechanisms of securing the food safety.

The problems of sustainable development of agriculture has been the focus of P.T.Sabluk, V.V.Iurchyshyn, I.I. Lukinov, O.V.Krysalny, V.I.Vlasov as well as many foreign scientists attention, for example, World Bank, Food and Agriculture Organization of the United Nations, Economic Research Service of the United States Department of Agriculture to name a few. Despite of these a lot of issues need to be addressed in the area of ecological aspects of food safety.

At present time the problem of food supplies became global, a country food safety is a part of the national security defining the level of the country independence.

It is worth noticing that Ukraine does not define the necessary legal acts determining the parameters of food security aligned with the euro-integration processes [3]. Food security is usually meant as providing adequate food supply for the population. However, a developed society needs to have an ability to consume safe and inexpensive food. Therefore the ecological safety of the agriculture and ecological quality of the food become even more relevant for improving the quality of life at present time [4].

Solving the ecological problems of the agriculture requires additional investments, which is problematic in conditions of unprofitable agriculture due to the prices disparity, high transactional costs of agricultural production distribution, low productivity, etc. All these factors are the reason of low competitive power of domestic agricultural complex.

As the result the agricultural sector of the economy requires solving the following problems: improving the food supply of the population (food safety), improving the competitiveness of the agricultural complex, and efficient use of the natural resources in agriculture.

The main elements of the food safety and security may be represented as follows:

Ecological improvement (or “ecologization”) of the food safety is natural process directed at more efficient agricultural use of natural resources by means of reducing the negative impact on environment as well as avoiding inducing ecological imbalance with renewable processes. The main goal of the agriculture ecologization is achieving an economic and ecological balance in the relations between the society needs and the nature through transformation of existing agricultural technologies in the direction of maximization of high quality and ecological agricultural production output combined with preservation of the environment.

We consider the ecologically-oriented food security as such a state of a competitive, ecologically-balanced, and ecologically safe agriculture that provides – based on the system of legal, organizational, technological, innovational, economical, informational, social, and other mechanisms –an optimal level of the amount and quality of food supply according to the accepted socio-ecological criteria (or parameters) of the quality of life [5, p.79].

Today a lot of scholars consider modern approach to agriculture that increased its productivity and efficiency exhaust the ecosystem of agriculture, which lead to the search for more sustainable agricultural approaches. Concerns of using pesticides and biotechnologies, other problems focused the society awareness of the food quality and safety drawing its interest to alternative agricultural approaches.

In order to solve the problem of adequate food supply the agricultural businesses uses new technologies based on genetic engineering and other means that are posed to revolutionize agriculture. Some scholars are confident that the fertility of the soil can be increased only by implementing highly productive and mechanized technologies based on the application of mineral resources, inorganic fertilizers and

pesticides (*an industrial model*). According to this model productivity and economic efficiency are the only criteria of the success. The opposite side of the spectrum is occupied by the proponents of the *ecological model*, they support the development of more efficient low-resource agricultural systems based on biological energy and chemical elements circulation that rely on the natural mechanisms of the control and protection of the crops.

This model criteria consists of sustainability and energy efficiency. Proposals of some scholars to completely abandon the industrial model are – in fact – a call for a disaster. Such model is more suitable for economic, social, and ecological conditions of the developed countries because very often that high efficiency is achievable only by the means of subsidized energy or by exhausting the soil, water or other important resources. Constantly increasing demand in efficient and sustainable agriculture calls for a new vision of agriculture development on the principles of reducing the use of resources and lowering the risks.

Although the goal of sustainable progress is widely accepted, there is a variety of opinions on to what extent the sustainability of the world agriculture is jeopardized and the weights of the sustainability factors. Regardless of the accent, the concept of a sustainable agriculture encompasses a wide range of goals and interests and its implementation will demand approaches that would satisfy the needs of entire agricultural system. In our opinion, sustainable agricultural system should adhere to the following criteria: economical soundness; satisfying the society need for safe and nutritional food; improving the natural resources availability and the environment for the future generations [6, p.22].

Solutions to the agriculture sustainability also includes realization that agricultural systems are inseparable from the nature. Understanding of the principles on which the agricultural systems function is required to make them more dependent on the solar energy and less dependent on the mineral resources. Agricultural ecologists should strive to provide efficient energy circulation inside the agricultural system. This involves implementing a complex approach that includes studies of the agricultural enterprise at a farm or ecosystem level, complete analysis of its resources

and their movement, overall biological stability of the farm, and changes in the soil over time. Such approach allows for incorporation of the complex natural relationships into agriculture. Instead of improving a single strain at a time a complex ecological perspective allows for the selection of such combination of plants and livestock that in combination yield high ecological and economical results.

Take the genetic engineering, which is not a precise science or rather it is very unpredictable. An ability to move a gene does not equal to a knowledge of the resulting organisms behaviors. The genetic code alterations may cause unpredicted results as the plants and animals are constantly changing. For example, a genetically modified bacterial called *Klebsiella planticola* designed to process the agricultural waste into ethanol might have caused destruction of the crops and livestock as well as soil degradation therefore endangering the very basis of the agriculture [7]. The genetic engineering also may endanger the life of millions of rural families of the third world as it may enable production of many tropical crops such as sugar cane, coconuts, vanilla, or cocoa in virtually any place on Earth.

The ecological future of the agricultural sector of economy will be primarily determined by the socio-economic factors, in particular by the world food demand, its prices, government programs, international trade treaties, technology, and the agricultural research results.

Based on our analysis we had developed basic principles of the sustainable agricultural development: *partnership* – an active cooperation between various groups to achieve the sustainable agriculture; *integration* – injection of the ecological awareness into the business process and decisions; *ecosystem approach, ecologic and resource-aware management* – focus on preventing the ecological problems instead of solving them; *generationequality* – a just distribution of the expenses and gains among the generations to stimulate ecologically-responsible approaches to minimize the impact on future generations; *competitiveness* – support for market mechanisms requiring the most ecological means and determining the relationships between the ecological sustainability, economic efficiency, and competitiveness.

The following ideas should become the strategic directions of the implementation of these principles: *improved understanding* – improved ability of the decision makers to integrate ecology in the process; *implementation of the ecological and resource management* – provisions for management and sustainable use of resources in agriculture; *development of innovative solutions* – focus of the research, development, and technology on ecological problems to achieve the sustainability of agriculture; *market opportunities discovery* – providing better conditions for the ecologically-friendly and sustainable market offerings.

We think that for the low income population the increase in the food demand and supply are parts of the same equation: the restrains in food production slow down both demand and supply. In the countries with high dependence on the agriculture the food security progress depends on the efficiency of the agriculture. And here is the paradox: the food security depends on the food affordability, which in turn depends on the income. The increase in income level causes more food production. However, for many people the growth of income depends on the improvement of the agriculture.

Therefore agriculture has a dual role of producing the food supplies and creating work places for the households that will consume that food. Since agriculture is the largest employer in the world [8], its increased productivity may create additional income for the rural population, which – in turn – will use this additional income for purchasing more food and other basic goods. Increase in agricultural productivity will also require creating a wide spectrum of industries based on agriculture creating even more businesses and workplaces.

Improvement of the agricultural productivity by the means of sustainable technologies will induce: increase of the real income and savings; creation of new workplaces and job variety; reduction of the dependence on the credit availability; increase in land value and investment amounts; creation of new markets and improvement of their availability; improving affordability of the services for the population; increase of the population confidence in their land and own abilities. The

relationships between the sustainable agriculture and food security is depicted on Fig. 1.

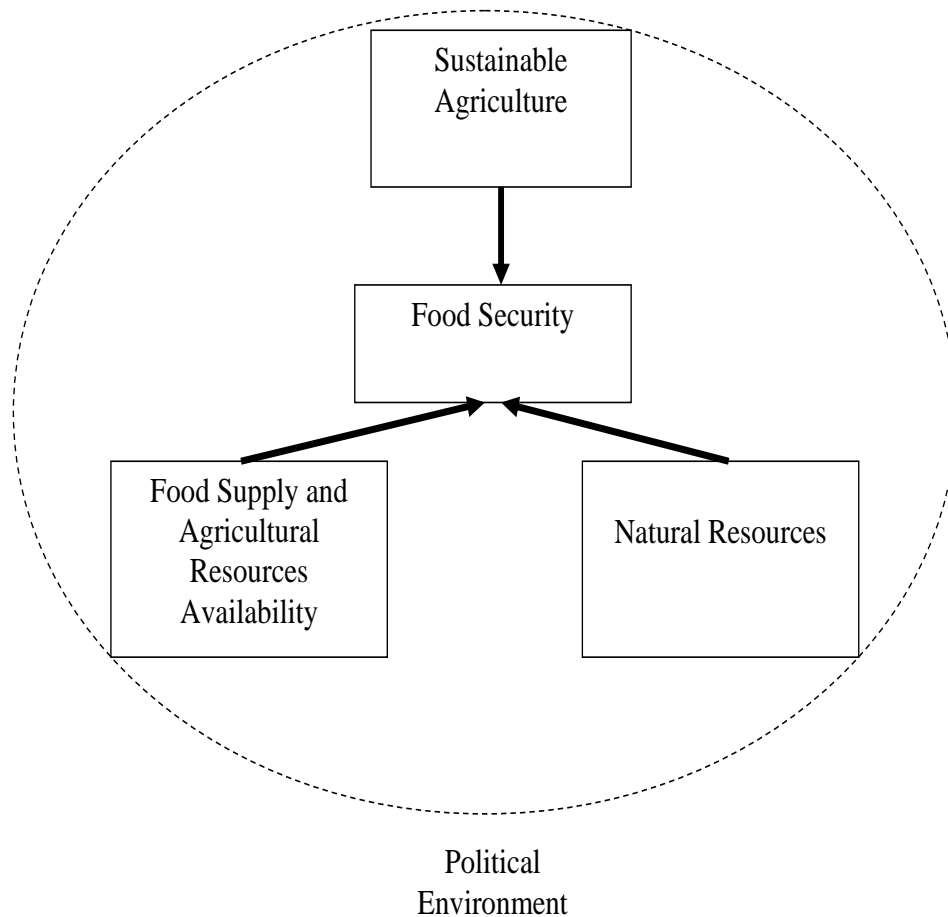


Fig 1. Relations between the sustainable agriculture and food security

To summarize, the sustainable agriculture itself is not a solution for the complete food security. Even in the places with adequate food supply unemployment may cause malnutrition problems. Therefore the sustainable agriculture must be a part of a wider political discussion as a source of increasing the role of other areas of employment such as small enterprises or civil engineering as well as a mean of reducing the land demand. Therefore achieving food security depends on the three key pre-conditions: sustainability of the food production; availability of the food and agricultural resources; preservation of natural resources (or ecosystems). The preservation and efficient use of natural resources requires ecologization of the agriculture.

Literature:

1. Економічний розвиток України: інституціональне та ресурсне забезпечення / [О.М. Алімов, А.І.Даниленко, В.М. Трегобчук та ін.] – К.: Об'єднаний інститут економіки НАН України, 2005. – 540с.
2. Данилишин Б.М. Наукові нариси з економіки природокористування: монографія. / Данилишин Б.М. – К.: РВПС України НАН України, 2008. – 280с.
3. Зінавчук Н. В. Екологічна політика в АПК: економічний аспект .- Львів: Львівський державний аграрний університет, ННВ „АТБ”, 2007.-394 с.
4. Власов В.І. Глобальна продовольча проблема / Власов В.І. – К.: ДОД Інститут аграрної економіки УААН, 2001. - 506с.
5. Мішенін Є.В. Економічні та соціально-екологічні основи забезпечення продовольчої безпеки в Україні: стратегії і механізми в контексті євро інтеграційних процесів / Мішенін Є.В., Мішеніна Н.В. // Вісник Сумського національного аграрного університету. – 2008. – Вип..12/1 (33). – С.79-83.
6. Трегобчук В. Необходимость эколого-экономической модели рыночных реформ/ Трегобчук В., Ваклич О.- Экономика Украины.-1997.-№4.-с.12-23.
7. Pretty, J.N. and Thompson, J. 1996. *Sustainable Agriculture and the Overseas Development Administration*. Report for Natural Resources Policy Advisory Department, ODA, London.
8. Leach, G. 1995. *Global Land and food in the 21st century. Poles tar Series Report, #5*. Stockholm Environment Institute, Stockholm.