The influence of conventional agriculture to sustainable development of the agricultural sector of economy

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Abstract. The article outlines the need for a new understanding of the world based on moral and ethical ideals of goodness and love. The necessity of development of the agricultural sector of economy is substantiated on the basis of the social-economic-ecological system through identifying the negative aspects of traditional agricultural production for the economy, environment and population. The consequences of usage of GMOs and GM crops in agriculture are shown, what necessitates the development of organic agricultural production on the territory of Ukraine.

Keywords: traditional agricultural production, farming, genetically modified organisms, sustainable development, social-economic-ecological system, organic agricultural production.

JEL Classification: O 13, O 18, Q 20

1. Introduction Convincing success of scientific and technical progress (mostly material) caused the appearance of the exploitative treatment of goods, as a result morals atrophied and it caused a spiritual crisis. A human is pragmatic and cynical, he doubts everything, including moral as a public value. Consequently, there is a requirement in ethics aiming at shaping of the personal and collective responsibility for the biosphere condition to the present and future generations.

Modern ethics takes upon itself the responsibility both for the welfare of people and their future generations and other forms of life. Despite the present global threats it offers a substantial consciousness value re-orientation in terms of cultivating respect and love, abandonment of traditional exploitative treatment of nature.

2. Problem statement. Current attitude towards nature acquires the same moral value, as a relation between humans. By the essence, it is the same attitude and this circumstance is meant while talking about shifting of the moral imperative into ecological [1]. No doubt, the ethical ideals development of good and love is a necessary pre-condition of life upon the Earth. These are the main principles of the new understanding of the world. Its guideline should become the awareness that a human is a part of the unique global ecosystem. He lives not only in a social but also in a natural environment; understanding that humanity is a member of the natural concord with no privileges and not an owner of nature. A coexistence of "nature – human" includes a necessity of cultivating the human unity with an environment and respect giving nature the status of the competent subject in mutual relations with society.

3. Main results of the research. Currently the theory of "sustainable development", which is translated Ukrainian as a proof or permanent development and is close to the concept "ecodevelopment", offers the possible solutions of the problem from the position of natural and humanitarian sciences synthesis. Sustainability is a model of the system with limited options, providing a balanced dynamic equilibrium within a defined period of time between the components of integrated social, economic and ecological systems. It aims at the paradigm of improvement of economy and the standard of life together with the refinement of the environmental condition. The theory of sustainability is based on alternative values, methods, points of view as opposed to the economy enhancement which ignores an ecological danger from development on the extensive and intensive models.

The sustainable development concept largely depends on the rational, careful and respectful attitude towards nature. Due to this, there is an urgent need in the development of organic production in the agricultural sector, which is a basic unit of human activity and an initial condition for effective implementation of sustainable development. Its occurrence is associated with the organic farming as a protest against the development of chemical and technological intensification of agriculture in Central and Western Europe, where country economies were on the rise thanks to the achievements in scientific and technological spheres (table 1)..

Table 1. Disadvantages of the traditional agriculture

Reason	Traditional agriculture practice	Impact
Usage of the agricultural chemistry means	Usage of the quick-dissolving mineral (industrial) fertilizers	Exploitation of nonrecoverable resources and energy is in the process of manufacture
		Failures on factories and plants, situations which arise after the origin of natural disasters, or military conflicts, industrial pollution in the process of manufacture.

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		Contamination of groundwater and surface water (eutrophication).
		Decline of soil fertility and cultural plants viability
	Excessive use of synthetic pesticides in agriculture	The emergence of pest, disease and weed resistance
		Reduction in biodiversity, the environment components pollution and the increase in ecosystem volatility
		Pesticide residues in food, the negative impact on the health of humans and animals
	Production, distribution and usage of agricultural chemistry means	Nonrecoverable resources exploitation
		Poisoning and the possibility of surface and groundwater contamination
		The dependence of farmers on chemical companies (manufacturers, distributors)
	Storage of agricultural chemistry means and the liquidation of old supplies	Old stocks in warehouses and uncontrolled usage of fake stocks
	Undefined impact	New materials of the long-term effect – problems which arise in the course of time (for example, insecticide DDT), disregarding the cumulative and synergistically effects under condition of simultaneous usage of different agricultural chemistry means.
Animals and birds keeping	Animals and poultry industrial keeping	Causing animals and birds suffering, bad keeping conditions, transportation and slaughter. Redundant operations performed on animals (Tail docking, breaking of teeth, beaks shortening). The animals suffering leads to the deterioration of animal products quality. Cage keeping.
		Environmental pollution by the waste of large feeding stations and livestock farms.
	Usage of the industrial feed mixtures (auxesis, synthetic taste seasonings and preservatives, prophylactic application of medications (antibiotics, moderator-coolants), feed made from meat bone flour (herbivores), hormonal means	Contamination of feed mixtures by the materials of non-agricultural origin. Remnants of pesticides in products, decline of body resistance, international conflicts ("cow hydrophobia", PCB, hormones and dioxin in products etc.).
	The guided reproduction, artificial insemination, one-sided selection of species aiming at a high efficiency	A decline of animal life expectancy (for example, dairy cows), decline of body resistance (loosens the holds on medications within the limits of intensive methods of keeping). Due to the hybridization within the limits of selection of species appeared highly tailored, nonviable in ordinary conditions species (for example, broilers).
Storage and processing of products	Decline of direct products purchases at farms, increase of transportation distances, urgent need in the products with the long shelf-life	Insufficient amount of fresh foodstuff for consumers. Sale of low quality unvaried products. Traditional products are processed with chemicals (homogenization – for example, milk; growing of structure shallow – for example, extrusion, microwave heating etc.). Products contain harmful preservatives, flavor additive etc. (additives – "E"). The natural composition of products changes (mineral substances, amino acids, vitamins etc., and their proportions).
Restructuring of agriculture and economic condition of farmers	New equipment, development of breeding and hybridization. New variety of products from other suppliers	Increased dependence on the manufacturers and suppliers of additional means (for example, from the selectionists of sowing materials – hybrids and genetically modified crops cannot be re-sowed). Farming is no longer a self-contained closed system but it depends on the external agencies. Increased cost of external structures.
Farmers depend on economic efficiency	Decline of purchase prices	Farmers pressure in terms of specialization (monoculture, increase of the plots of land) – damage of cultural landscape and worsening of soil quality. Pressure due to the constant raising of the level of crop yield and animals productivity causes overproducing. Subsequent intensification, concentration and specialization is a lack of farmers (development of country: decline of quantity of workers in agriculture from 30% to 4%).
The final results of agriculture industrialization	The role of farmers in society drastically deteriorated (they belong to the group with the lowest standard of life), products quality has became worse, landscape and environment were harmed. Farmers constantly depend on grants, firmness of cultural landscapes is too expensive for the society.	

Source: developed by the author to [2]

Thus, safety of consumption and necessity of natural environmental preservation are becoming very important factors of influence on the method of production and development of his organic constituent. In addition, currently there is no common point of view as to the GMO and GM-plants (transgenesis). Therefore we conducted our own research of their pros and cons in agriculture (table 2) [3].

Table 2. Consequences of GMO and GM-cultures usage in agriculture

Pros	Cons
1. Transgene cultures have the following advantages: higher productivity, better qualities of foodstuff, including the maintenance of greater amount of nutritive, megascopic variety of food products in a diet which positively influences consumer health and causes growth of the standard of living.	1. Possibility of crossbreeding of transgenesises with growing wild plants, that can cause appearance of herbicide resistant weeds.
2. Principles of genetic modification are safer in comparison with the other methods of selection of plants, such as radiation or chemical mutagenesis.	2. Breach of the biological balance: stamping by the transgene plants of natural wild species, which might cause the disappearance of plants, animals and insects which depend on them.
3. Decrease in (volumes) - amount of the usage of herbicides and insecticides for GM-cultures increases the incomes of producers, positively influences environment, and prevents negative impact on health. However, the review "Economic consequences of introduction of GM cultures in 1996 – 2004 years" says: in the USA and Argentina influence of GM- technologies on the productivity in 1996-2004 appeared to be indistinct; cost of seeds of transgenesises is one third higher than ordinary; growing of some types of GM-plants might need more agricultural chemistry because of the insect pest immunity produced in the course of time.	3. The use of GMP causes negative effects on human health: - allergic reactions; - destabilization of a genome which results in congenital diseases and infertility; - activation of the hidden viruses; - oncologic diseases; - overweight; - the hidden threat of heredity due to the presence of new albumens which are unknown to the immune system; - high death rate and sickness rate of newborns; - GMO have a property to stay in the human body for a long time. It is a result of the so-called "horizontal distribution" built into the genotype of microorganisms of intestine negative influence on the psychological state.
4. Transgenesis are resistant to the drought, frosts, salts.	4. Negative influence of transgenesises on animals and insects.
5. Reduction of GMO amount necessary for tillage descreases a greenhouse emission from soils.	5. The problem of uncontrolled ingress into the foodstuff of GM-components, which were not served for this reason, which can harm human health.
	6. Genetic infection and ingress of GMO in environment in 43 countries.
	7. Lack of long-term systematic researches in terms of the influence of the GMO on health and natural environment.
	8. Dependence of producers of agricultural products on the producer companies of GM-cultures, the latter do not give vigorous descendants, which does not allow farmers to use part of the harvest for the next sowing (usually farmers use for this purpose 5-8% harvest of last year).
	9. Intentional introduction of GM-cultures as a humanitarian help for developing countries which creates the threat of food safety of these countries, because the seeds are controlled by a few multinational corporations (Syngenta and Monsanto).
	10. Financial lawsuits by the companies-developers of GM-cultures against farmers in terms of the illegal use of GM-seeds, which in some cases appeared on their fields accidentally due to the cross pollination.
	11. Monopolization of the world market of foodstuff by multinational corporations.

Source: developed by the author

So, 83,4% of population in Ukraine have negative attitude to the GMO. They prefer natural foodstuff. Moreover, in accordance with the information of the public-call questioning "Products from GMO on our table", which was conducted by the Gorshenin Institute in November 2009, 85,6% of respondents know what GMO is, 93,4% consider marking of products with GMO to be a necessary tool and 61,2% will never buy such products [4].

4. Conclusion. To sum up, it is necessary to underline that the role of GMO in the rescue of the world population from hunger is too exaggerated. Such approach does not take into account that the real reason for starvation in such countries is not the mere absence of food and vitamins, but the limited access to them and the general poverty. In 2002 60 million tons of grain was destroyed in India, because population had no money for its acquisition, because of the similar reason in Zambia in 2003 the warehouses buried 300 thousand tons of cassava [5]. Solution of this problem and providing safety foodstuff is in overcoming social and economic barriers, which limit purchasing capacity of poor people. Expensive technologies, such as genetic engineering, which belong to the large corporations, only increase such barriers, leading poor families to greater poverty.

In 2000 a world community for the first time was seriously thoughtful about the suitability of the use of GMO. Scientists brought up a question of possible negative influence of transgene products on human health. Moreover, they doubted its economic value. In 2000 the "The World Statement of Scientists" [6] was published, which was about the danger of the genetic engineering. Then the "The Open Letter of Scientists" [7] followed which addressed to the governments of all countries in terms of safety and suitability of the use of GMO. It was signed by 828 specialists from 84 countries. In 2008 as a result of three-year work of approximately 400 scientists, governments, representatives of civil society and private sector of UN there was presented a lecture, which stated that GMO would not help to prevent starvation and agricultural crisis [8]. According to these experts, it is necessary to pay more attention to traditional breeding and environmentally friendly agricultural production.

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