

УДК 664.696 (088.2):504
JEL: Q55, Q56, M11

Yevgen Dankevych, Vitalii Dankevych, Oleksandr Chaikin

Zhytomyr National Agroecological University
Ukraine

ECOLOGICALLY CERTIFIED AGRICULTURAL PRODUCTION MANAGEMENT SYSTEM DEVELOPMENT

Ecologically certified production management system formation and implementation is the necessary condition for the economy at the sustainable development basis efficient functioning, providing high life quality and environmental public safety. Actual raises the question of businesses involvement to the production that contains ecological component as well their stimulation for going through the environmental certification procedure. The aim of the research is to study the possibility of ecologically certified agricultural production management systems development stimulating factors use stimulation of ecologically oriented innovative entrepreneurship. Have been analysed the results of experts interviews to obtain the information about the validity of ecological and social risks of agricultural enterprises – debtors for the domestic creditors. Factors of certified agricultural production that can influence the decision-making about loans in the assessment and environmental risk banking institutions management have been determined. With the help of abstract logical method individual consumer`s ecological needs in ecologically certified agricultural products satisfaction scenarios matrix designed. Ukrainian ecologically certified agricultural production development stimulating factors were determined.

Key words: *ecological certification, production certification, ecological needs, loans*

Introduction and review of literature. The modern agricultural products market formed under the world economic relations globalization influence, which occur on the one hand in the natural capital extensive use, and on the other – in the society environmental needs and demands growth. Under these conditions, can succeed those producers that work in accordance with international standards and also pay attention to the innovative market trends. The problem of companies to the production that contains an environmental component attraction and stimulating ecological certification procedure implementation becomes the most relevant. That is why it is necessary to identify the domestic agricultural production ecologically certified intensification factors.

Conceptual provisions and domestic enterprises ecological certification implementation economic expediency were studied by P. Skrypchuk [16]. T. Galushkina, E. Gordiychuk [11] and K. Whitelaw [7] determined the role of ecological certification in the environmental management systems. Innovative activities motivation development mechanism in the Ukraine agricultural sector were analysed by P. Muzyka [15], A. Rodríguez [5], P. Shil [6], T. Yeroshy`na [18]. Sustainability through environmental production innovations achievement was suggested by V. Biondi, F. Iraldo, S. Meredith [1], P. Hohnen [3] and P. Kotler [4].

Environmental and socioeconomic impacts of ecological certification were determined by A. Blackman and J. Rivera [2]. However, some research aspects of ecologically certified domestic agricultural production management systems development demand additional study.

Methodological support for the research is based on the principle of theory and practice unity and the system and synergetic approach. The scientific research in the direction of research the possibility of the agricultural production ecologically certified intensification factors to promote ecologically oriented innovation entrepreneurship use has been made during last three years (since 2012). This research is conducted involving methodology: abstract logical to design the ecologically certified products meet needs matrix; expert interviews to obtain the information about the validity of ecological and social risks of agricultural enterprises – debtors for the domestic creditors; graphical to analyse the expert views about the economic, ecological and social debtors risk indicators validity; systematic approach to analyse the possibilities of ecologically certified production development use as ecological production implementation motivation; analysis and synthesis to determine the Ukrainian ecologically certified agricultural production development stimulating factors.

The purpose of the article. The aim of the research is to study the possibility of ecologically certified agricultural production management systems development stimulating factors use stimulation of ecologically oriented innovative entrepreneurship. Study object is the process of ecologically certified agricultural production stimulating factors, as ecologically oriented innovative production implementation motivation, use.

Results and discussions. Under the conditions of the agrarian markets globalization and high-commodity production, the processes of capital concentration and foreign investment attraction have started in Ukraine's farming. But, investors do not always observe the scientifically grounded economic activity management standards and, as a result, the substantial negative effect on the environment is produced. The current characteristic trends are the extensive method of farming, increase in cultivated lands, inobservance of crop rotations, application of insufficient quantity of mineral fertilizers and failure to carry out environmental protection measures.

The essential condition of agricultural production activity is the observance of scientifically based business functions management standards. However, there are cases of violating agrotechnical requirements of growing grain corn, soya, rape as the monoculture and sunflower with the comeback to the previous place prior to the specified time. The above trends result the deterioration of the soil cover quality indicators. The livestock husbandry branch is practically absent in each of the enterprises studied which causes the deficiency of organic fertilizers. Stubble remains that are plowed in the soil cannot make up for the fertilizer organics deficiency, the more so that there are facts of straw burning. The unbalanced application of mineral fertilizers when their nitrogen-bearing forms prevail causes the acidification of soils.

The absence of the animal husbandry branch substantially complicates, the feasibility of the production structure optimization and does not give the opportunity to use organic fertilizers.

Within 2011-2015 grain corn, soya and sunflower started to occupy considerable areas. A lot of marginal degraded lands were engaged in cultivation. The pressing problem is the optimization of the country's land fund, reduction in its agricultural development and plowing up which gives the opportunity to improve the ecological state of cultivated lands.

Despite the ecologically certified agricultural production development stimulating factors there are several reasons which causes the necessity of ecologically certified production by the domestic enterprises implementation, namely: urgent need of the agricultural production efficiency and profitability of increase; acute need of the rural development, living standards improvement and rural areas depopulation termination; the growing population demand for products containing ecological component need meet. That is why ecologically certified production plays a major role especially agricultural production that is the basis of national food security.

The modern ecologically certified agricultural production system formation determines the need of funding sources diversification, including the loans. The domestic enterprises credit resources access can provide the opportunity to implement the production processes that will meet the sustainable development, go through the according to international standards certification process, to establish innovative energy efficient technologies that are necessary to achieve the proper competitiveness level which will allow in the long term perspective to increase production and processing volumes, get extra benefits, create new working places for the rural population.

It should be noted that we could anticipate the popularity of ecologically certified products increase in Ukraine because of these products demand rapid world growth. In the agricultural production sector is set course for shift from technogenic consumer approach to the innovative ecologically oriented development model that implies rational natural agricultural production capital use, the bioenergy technology principles use, and ecologically safe products production. That why, research and prediction of individual consumers ecological needs in ecologically certified agricultural products satisfaction scenarios are reasonable (Table 1).

Ecologically oriented entrepreneurship is represented by small and medium businesses that requires special support and equal rights with big business especially in credit and finance resources access (Kotler, 2010). The main purpose of ecologically certified agricultural production implementation in Ukraine is the domestic small and medium enterprises into the global trade integration stimulation. Nowadays more than ever producers have to answer question whether they are ready to take risks and be the first among competitors who will offer the market agricultural products that will conform the international ecological standards and modern consumers ecological needs.

Table 1

Individual consumers ecological needs in ecologically certified agricultural products satisfaction scenarios matrix

		Existential categories of needs			
		<i>Being</i>	<i>Having</i>	<i>Action</i>	<i>Interaction</i>
Axiological categories of needs	<i>Existence</i>	Health	Ecologically safe food	Ecologically certified products consumption	Environment, agricultural producers, consumers
	<i>Safety</i>	Ecologically safe environment	Protection from low-quality and ecologically hazardous products	Ecologically certified products demand	Environment, habitat, society, state
	<i>Belonging</i>	Social and ecological responsibility	Ecologically safe products and services	Ecologically conscious consumption	Ecologically responsible consumers social groups
	<i>Understanding</i>	Ecological conscience and responsibility	Ecologically oriented consumption philosophy	Ecologically friendly products demand	Family, educational institutions of all levels, public
	<i>Participation</i>	«Ecological» style of life and consumption	Ecologically safe products and services	Ecologically conscious consumption, ecologically certified producers support	Consumers, public, producers, state
	<i>Leisure</i>	Green rural tourism	Villas, farms, parks, forest and water recreational areas	Respect to existing recreational natural resources	Rural population, farmers, consumers
	<i>Creation</i>	Fairs, eco festivals, presentations etc.	Creativity items, music, movies, videos, etc.	Ecologically oriented art	Consumers, creative intellectuals, producers
	<i>Self-determination</i>	Self-esteem, a sense of status group belonging	«Green» lifestyle, the demand for ecologically certified products and services	Consumption of products that meet the principles of sustainable development	Consumers, social groups
	<i>Freedom</i>	Right for consumption of ecologically friendly products realization	Equality and justice considering the interests future generations	Implementation of constitutional rights and freedoms	Environment, consumers and the state

Source: authors' research.

Those enterprises that most profoundly realize the need and prospects of specified direction will be able to receive agricultural products, which quality will be significantly different from traditional products available on the market, will increase the enterprise management production processes efficiency, will become more attractive for foreign investors who pay much attention to production ecological parameters, will represent themselves as ecological and social conscious producers.

Nevertheless, despite all the advantages of ecologically certified production domestic agricultural producers need extra motivation and activation of factors that intensify the ecological innovations in production implementation. During the research, a number of factors that stimulate the development of ecologically certified agricultural production have been identified (Fig. 1).

At the present stage, Ukraine need the creation of the measures set regarding to agricultural loans in the context of reform and the transition from subsidized to the market agribusiness support and funding system. However, the vast majority of commercial creditor institutions are not interested in agricultural producers crediting because of their seasonal business activities, lack of their modern international requirements and standards conformity, lack of liquid ensuring etc. The existing agricultural land mortgage moratorium also slows down the agricultural sector enterprises credit ensuring development (Biondi, 2002). Thus in 2015 domestic agricultural enterprises attracted 32 % less credit funds then in 2014 (Kuchyns`ka, 2015). Thus, the agricultural production specifics makes the domestic agricultural producers uncompetitive at the credit market and causes the necessity of ecologically certified production state support. Considering the agricultural enterprises at the market economy conditions, business activities are impossible without the periodic various attracted external funds forms use, especially in the loans form. The state needs to create the favourable economic environment for the agricultural industry lending stimulation where in the priority should be those enterprises that correspond sustainable development requirements and implemented the ecologically certified production system.

It should be noted that the majority of domestic agricultural enterprises confine their production activities only by legal ecological responsibility, which means that they organize their activities in accordance with national ecological legislation. But to meet the increasing competitive social and ecological responsibility demands company should promote their internal and external business environment development over the stipulated legislation requirements. The ecologically certified production system assumes all economic, ecological and social risks management, which could affect the future generation`s interests. That is why it should become more attractive for creditors and receive state support priority.

Considering that, ecologically certified production is the innovation that causes positive impact on the natural environment safety by the harmful effects elimination and minimizing the possibility of emergency situations occurrence, the elimination of which may require significant investment from both the enterprise and the state, ecologically certified production could be considered as one of the environmental

protection measures. That is why a part of the funds that are allocated for the environmental protection in Ukraine should be used for support of those enterprises which production activities meet the sustainable development requirements.

Ukrainian ecologically certified agricultural production development stimulating factors	
Socio - psychological	<ul style="list-style-type: none"> • state programs and grants aimed at supporting producers that decided to implement the Ecological Management Systems creation; • information about the benefits of products which contains ecological component and benefits of ecologically certified production distribution; • ecologically conscious behaviour through the media popularization; • ecological education at all levels, free access to current information about the environment; rural employment in labour-intensive production increase
Organizational and legal	<ul style="list-style-type: none"> • practical implementation of «On Basic Principles (strategy) of the Ukraine State Environmental Policy till 2020» Law of Ukraine; • international standards and norms of ecological certification to the national legislation implementation; • intensification factors that positively effect on the ecologically certified products promotion intensification (ecological advertising, eco- labeling, etc.); • land market reform and transparent land market formation; • social investments in necessary infrastructure creation and development
Financial - economical	<ul style="list-style-type: none"> • subsidized target loans on machine and tractor fleet update; • tax holidays for the conversion period; • effective ecological risks in agricultural production insurance system implementation; • giving preference of public procurement to those enterprises that are on the path of ecologically certified production; • providing preferences while dealing with land issues to those enterprises that passed the certification procedure based on international standards
Technical - technological	<ul style="list-style-type: none"> • scientific - research and inventive support of production activities; • design and manufacture of domestic agricultural machinery; • effective waste management promotion; • active introduction of innovative, resource-and energy saving technologies of agricultural products growing and processing; • water purification alternative technologies implementation

Fig. 1. Ukrainian ecologically certified agricultural production development stimulating factors

Source: authors' research.

The table 2 shows that The National Ukraine Environmental Protection Action Plan in 2011–2015 funding dynamics has negative nature, especially due to the other funding sources loss in in 2011–2015 and the State Environment Protection Fund expenditures significant reduce (to 65.7 % in 2015, compared with 2011). It should be noted that a part of these funds could be directed to innovative ecologically oriented business activities and ecologically certified agricultural production support

but was traditionally spent on negative impacts elimination.

Table 2

**The National Ukraine Environmental Protection Action Plan in 2011–2015
funding dynamics, thsd. UAH**

Financing Source	Years					Deviation, 2015 to 2011	
	2011	2012	2013	2014	2015	+/-	%
The state budget	537925	501760	502140	501840	501640	-36285	93.3
The state Environment Protection Fund	461363	402374	192620	196075	204165	-257198	44.3
Other funding	147954	117701	117760	-	-	-147954	-
Total	1147242	1021835	812520	697915	705805	-441437	61.5

Source: ukrstat.gov.ua.

In order to obtain the information about the agricultural enterprises - borrowers ecological and social risks for the domestic creditors validity, optimum, according to the experts views, credit sum, term and provision a special questionnaire has been designed. Experts- representatives of Zhytomyr region systemically important banks were interviewed. It should be noted that according to the National Bank of Ukraine resolution № 863 as of 01.12.2014 only 8 banks were identified as systemically important banks: Privat Bank, Oschad Bank, Ukrexim Bank, Delta Bank, Raiffeisen Bank Aval, Ukrsots Bank, Prominvest Bank and Sberbank of Russia. That is why the leading experts of these banks were interviewed, with the exception of the Delta Bank representative, because at the research period this institution was in the liquidation process according to the National Bank of Ukraine decision (Table 3).

Table 3

**Creditor risks in agriculture economic and environmental experts validity
valuation**

Expert	Indicator				
	Ecological and social risks	Loan sum	Loan term	Credit provision	Ecological certificate presence
Privat Bank	6.00	8.00	10.00	10.00	7.00
Oschad Bank	9.00	9.00	9.00	9.00	9.00
Ukrexim Bank	8.00	10.00	7.00	10.00	8.00
Raiffeisen Bank Aval	10.00	9.00	9.00	10.00	10.00
Ukrsots Bank	6.00	8.00	10.00	10.00	7.00
Prominvest Bank	7.00	10.00	10.00	9.00	7.00
Sberbank of Russia	7.00	10.00	10.00	9.00	7.00

Source: ukrstat.gov.ua

It should be noted that agricultural enterprises do not have enough incentives to invest in to the lands protection and renewal:

- 1) most of farm lands are not the property of agricultural enterprises;
- 2) the considerable amount of enterprises are unprofitable or do not get enough profit to make long-term investment;

3) the lack of preferential crediting system of those economic entities who are willing to take money on credit and invest it in environmental project.

According to the survey results economic, ecological and social agricultural enterprises-borrowers risks factors were determined. After analyzing the experts views their validity`s were defined (Fig. 2).

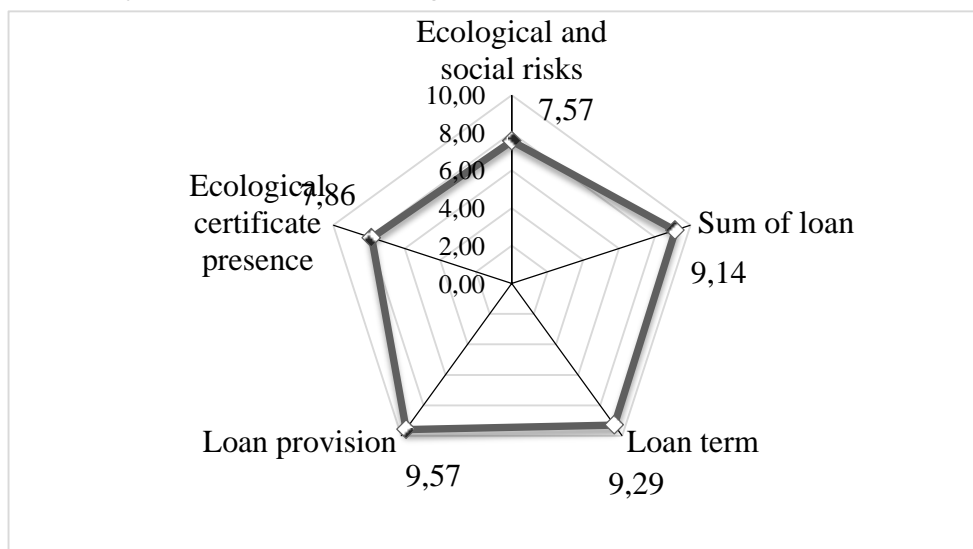


Fig. 2. Economic, ecological and social agricultural enterprises-borrowers risks factors validity expert view

Source: authors' research.

The expert view analysis proves that agricultural enterprise-borrower ecological certificate presence is not determinative but rather significant that proves the creditors interest in cooperation with innovatively active, ecologically and socially responsible producers (Table 4).

Table 4

Factors that influence the about loan decision making

Factors	Rating	Aggregate factor share	Validity ratio (W)
Loan provision	1	22.04	0.22
Loan term	2	21.38	0.21
Sum of loan	3	21.05	0.21
Ecological certificate presence	4	18.10	0.18
Ecological and social risks	5	17.43	0.17
Total	-	100.00	1.00

Source: authors' research.

It should be noted that under the modern world economy globalization conditions that caused the unification and universalization of the agricultural production ecological quality requirements, ecological certification could be used as both ecological and social producer`s responsibility confirmation. According to the survey results certified agricultural production factors that can influence the lending decision- making during the banking institutions ecological risks assessment and management were determined (Table 5).

Table 5

Certified production factors that can influence the lending decision-making

Standard	Total score evaluation	Factor rating	The aggregate factors share	Validity ratio (W)	Expert view, %
Hazard Analysis and Critical Control Point (HACCP)	41	1	20.81	0.21	29
Environmental Management System (ISO 14001)	37	2	18.78	0.19	43
Quality Management System (ISO 9001)	36	3	18.27	0.18	43
Total Quality Management (TQM)	27	4	13.71	0.14	43
Organic production standards	27	5	13.71	0.14	*
Occupational Health and Safety Assessment Series (OHSAS 18001)	22	6	11.17	0.11	43
None certificate	7	7	3.55	0.04	100

* None of the experts.

Source: authors' research.

Consequently, the results of conducted research proves that the presence of exactly ecologically certificate – Environmental Management System (ISO 14001) is one of the priorities for experts-creditors. The first place is occupied by the presence of Hazard Analysis and Critical Control Point (HACCP) certificate standard compliance, which minimizes the production accidents probability, thereby ensuring the production activities stability and minimizing the producers bankruptcy risk caused by accident consequences liquidation or the environment damage. Expert views coincide in negative attitude to the lack of enterprise compliance to any international quality and ecologically safe production standard.

If the natural environment quality can be interpreted as public commodity consumed by all society members the ecologically certified production systems should obtain the state financial and credit support in the state guarantee form while crediting ecologically certified agricultural enterprises by banking institutions, target loans for modernization and innovations in production implementation, certification procedure passage. The priority of ecologically certified agricultural producers loans should be established by law, it is needed to develop and implement the real, not nominal consideration of ecological risks while domestic enterprises crediting procedures.

It should be noted that ecologically certified enterprises along with traditional companies are more attractive for investments because of their economic activity specificity, corporate ecological and social responsibility. Compliance of production processes to the modern international norms and standards contributes to that by the risk related to agriculture seasonal features through production ecologization diversification becomes significantly lower. At the same time ecologically certified enterprise reduce the difficulties related to the manufactured products realization

because consumers demonstrate for such products demand increase, own stable certified products sales network is created, relations with local communities and government are improving. Therefore, ecologically certified agricultural enterprises should get more loans and funding opportunities than enterprise that conduct extensive production.

Conclusions.

1. Despite the ecologically certified agricultural production advantages domestic agricultural producers require additional motivation and activation of socio-psychological, organizational and legal, financial-economical and technical-technological factors, which intensify the ecological innovations in production implementation.

2. At the modern conditions it is necessary to create a set of measures regarding to agricultural loans in the context of reform and the transition from subsidized to the market agribusiness support and funding system

3. The results of conducted research proves that the presence of exactly ecologically certificate – Environmental Management System (ISO 14001) is one of the priorities for domestic agricultural enterprises implementation.

4. Conducted research analysis proves that agricultural enterprise-borrower ecological certificate presence is not determinative but rather significant that proves the creditors interest in cooperation with innovatively active, ecologically and socially responsible producers.

5. The domestic enterprises access to credit funds can provide an opportunity to pass the certification according to international standards procedure, implement innovative energy efficient technologies, that will allow in the long term perspective to increase production and processing volumes, get extra benefits, create new working places for the rural population.

6. The unsettledness of some issues in the sphere of land relations, land tenure, land utilization and land protection complicates the agrarian sector development. Of high priority are such problematic issues as the government management of land resources inefficiency, corruption reduce, absence of measures concerning long-term planning of the territory's development, absence of optimal models of agricultural land use resulting in the appearing of singular latifundia mainly with foreign investment. The solution of the above problems will contribute to the enhancement of the farm land efficient use under conditions of high-commodity production.

References

1. Biondi, V., Iraldo, F. and Meredith, S. (2002), Achieving sustainability through environmental innovation: the role of SMEs. *International Journal of Technology Management*, vol. 24, pp. 612–626.

2. Blackman A. and Rivera, J. (2010), The Evidence Base for Environmental and Socioeconomic Impacts of “Sustainable” Certification. *Resources for the Future (USA)*, № 10(17), pp. 20–34.

3. Hohnen, P. (2007), *Corporate Social Responsibility: An Implementation Guide for Business*, International Institute for Sustainable Development, Winnipeg,

Canada.

4. Kotler, P., Kartajaya, H. and Setiawan, I. (2010), *Marketing 3.0: From Products to Customers to the Human Spirit*, John Wiley & Sons, New Jersey, USA.

5. Rodríguez, A., Alonso-Almeida, M., Celemín, M. and Rubio, M. (2012), Use of different sustainability management systems in the hospitality industry. The case of Spanish hotels. *Journal of Cleaner Production*, vol. 22(1), pp. 76–84.

6. Shil, P. (2012), Evolution and Future of Environmental Marketing. *Asia Pacific Journal of Marketing & Management Review*, [Online], vol. 1, no. 3, pp. 74–81, available at: <http://indianresearchjournals.com/pdf/APJMMR/2012/November/7.pdf>

7. Whitelaw, K. (2004), *ISO 14001 Environmental Systems Handbook (Second Edition)*, Elsevier, Butterworth Heinemann, Oxford, UK.

8. Yazdanifard, R. and Igbazua, M. (2012), The Impact of Green Marketing on Consumer Satisfaction and Environmental Safety. *International Conference on Computer Communications and Management*, vol. 5, pp. 637–641.

9. Chaikin, O. (2015), Specific features of analysis of consumers perception towards ecologically certified agricultural products. *Ekonomika APK*, no. 10, pp. 83–88.

10. Galushkina, T. and Gordijchuk, E. (2010), *Ekologichna sertyfikaciya v sy`stemi derzhavnogo ekologichnogo upravlinnya* [The ecological certification in the system of state ecological management], Burun Kny`ga, Kharkiv, Ukraine.

11. Gordijchuk, E. (2010), Pidvyshennya yakisnyh harakterystyk produkciyi ta dovkillya yak krok do stijkogo rozvytku. *Ekonomika ta menedzhment*, vol. 1, no. 7(26), pp. 259–266.

12. Hodakivs`kyj, E. and Sokal`s`kyj, S. (2015), The Gestalt of acquired leadership in the greening of agricultural production. *Organichne vyrobnyctvo i prodovol'cha bezpeka* [Organic production and food security], III Mizhnarodna naukovo-praktychna konferentsia [III International scientific-practical conference], Zhytomyr National Agroecological University, Zhytomyr, Ukraine, pp. 63–67.

13. Kuchyns`ka, V. (2015), Environmental certification system functions environmental management. *Scientific Bulletin of National University of Life and Environmental Sciences of Ukraine, Series: Right*, vol. 213(1), pp. 79–87.

14. Muzyka, P. (2001), Motivation mechanism of innovation activity in the agricultural sector of Ukraine. *Ekonomika APK*, no. 12, pp. 3–5.

15. Skrypchuk, P. (2010), Environmental certification of environmental management in Ukraine: conceptual position, economic feasibility, model and mechanism of implementation. *Ekonomika ta derzhava*, no. 10, pp. 81–85.

16. Skrypchuk, P. (2011), *Teoretyko-metodychni osnovy formuvanja systemy ekologichoj standartyzacyi i sertyfikacij* [Theoretical and methodological bases of formation system of ecological standards and certification], NUVGP, Rivne, Ukraine.

17. Yeroshyina, T. (2012), Environmentally friendly products APC: core concepts of social and geographical approaches to the study. *Ukrainian Geographical Journal*, no. 2, pp. 33–37.

How to cite this article? Як цитувати цю статтю?

Стиль – ДСТУ:

Dankevych Y. Ecologically certified agricultural production management system development [Electronic resource] / Y. Dankevych, V. Dankevych, O. Chaikin // *Agricultural and Resource Economics: International Scientific E-Journal*. – 2016. – Vol. 2. – No. 4. – pp. 5–16. – Mode of access: www.are-journal.com.

Style – Harvard:

Dankevych, Y., Dankevych, V. and Chaikin, O. (2016), Ecologically certified agricultural production management system development. *Agricultural and Resource Economics: International Scientific E-Journal*, [Online], vol. 2, no. 4, pp. 5–16, available at: www.are-journal.com.