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O.O. TOLBATOVA, T.I. MARENKOVA

Sumy National Agrarian University

I.A. SHEKHOVTSOVA

National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute», Kyiv

## ANALYSIS OF THE RELEVANT PROBLEMS OF FOOD PRODUCTION SPHERE

**Annotation.** The article analyzes the relevant problems in the sphere of food production, taking into account regional peculiarities, and focuses on the development of innovative activities in the domestic food industry.

Since a good and safe food is one of the high priority and critical needs for human life and activities, it is obvious that the development of the food production requires special attention.

Modern production of food products is impossible without involving enterprises of other industries that are not directly related either to the food industry or to the agrarian field. As a result, in our opinion, it is reasonable to introduce and prove the concept of a new inter-sectoral complex – sphere of food production (SFP). It can include a set of industries (enterprises), which activities are focused on organizing the production of food products and providing the population with them.

The following key functional elements in the structure of the food production are worth mentioning: raw materials supply (being a part of a number of agro-industrial complex industries and other inter-sectoral industrial complexes), primary processing and storage of raw materials, recycling, packaging, finished products storage, transportation and realization on the domestic and foreign markets.

The sphere of food production with its complex structure, close links with various industries, a significant potential for innovative development, the problems of which are both global and specific (local), has been analyzed. Taking into account the strategic value of the researched sphere of food technology and engineering for providing the national security of the state, in general, and food security, in particular, there is a clear need to justify programs and measures of state regulation in the field of food security and food technologies.

**Key words:** sphere of food production, food technologies and engineering, agro-industrial complex, innovative activity, primary processing, storage of raw materials, recycling, packaging, finished products storage.

O.O. ТОЛБАТОВА, Т.І. МАРЕНКОВА

Сумський національний аграрний університет, м. Суми

І.А. Шеховцова

НТУ КІП ім. І. Сікорського, м. Київ

## АНАЛІЗ АКТУАЛЬНИХ ПИТАНЬ СФЕРИ ВИРОБНИЦТВА ПРОДУКТІВ ХАРЧУВАННЯ

**Анотація.** У статті проведено аналіз актуальних питань сфери виробництва продуктів харчування (СВПХ) з урахуванням регіональних особливостей, акцентовано увагу на розвитку інноваційної діяльності у вітчизняній харчовій промисловості.

З урахуванням того, що потреба у повноцінному та безпечному для здоров'я харчуванні є однією із першочергових та лежить в основі життєдіяльності людини, очевидно, що саме розвиток СВПХ потребує особливої уваги.

Сучасне виробництво продуктів харчування неможливе без залучення підприємств інших галузей, що прямо не пов'язані ні з харчовою промисловістю, ні з аграрною сферою. З урахуванням цього, на наш погляд, доцільно ввести у вжиток і обґрунтувати поняття нового міжгалузевого комплексу – СВПХ. До цієї сфери можна включити сукупність галузей (підприємств), основною функцією яких є організація виробництва продовольчих товарів і забезпечення ними населення.

У структурі СВПХ варто виділити кілька ключових функціональних частин: сировинне забезпечення (у складі низки галузей АПК та ін. міжгалузових промислових комплексів), первинна переробка і зберігання сировини, вторинна переробка, пакування, зберігання готової продукції, її транспортування та реалізація на внутрішньому та зовнішніх ринках.

Проаналізована СВПХ яка має складну структуру, тісні взаємозв'язки із багатьма галузями, а також характеризується значним потенціалом для інноваційного розвитку, проблеми якого мають загальносвітовий, так і специфічний (локальний) характер. З урахуванням стратегічного значення досліджуваної сфери харчових технологій та інженерії для забезпечення національної безпеки держави, загалом, та продовольчої, зокрема, очевидною є необхідність обґрунтування програм та заходів державного регулювання у сфері продовольчої безпеки та харчових технологій.

**Ключові слова:** сфера виробництва продуктів харчування, харчові технології та інженерія, агропромисловий комплекс, інноваційна діяльність, первинна переробка, зберігання сировини, вторинна переробка, пакування, зберігання готової продукції.

**Introduction.** Providing one of the basic human needs – the need for food at the current stage of development of society becomes impossible without using the achievements of scientific and technological progress, in particular, in agriculture and food industry. As a result, the degree of food security, especially in the context of a

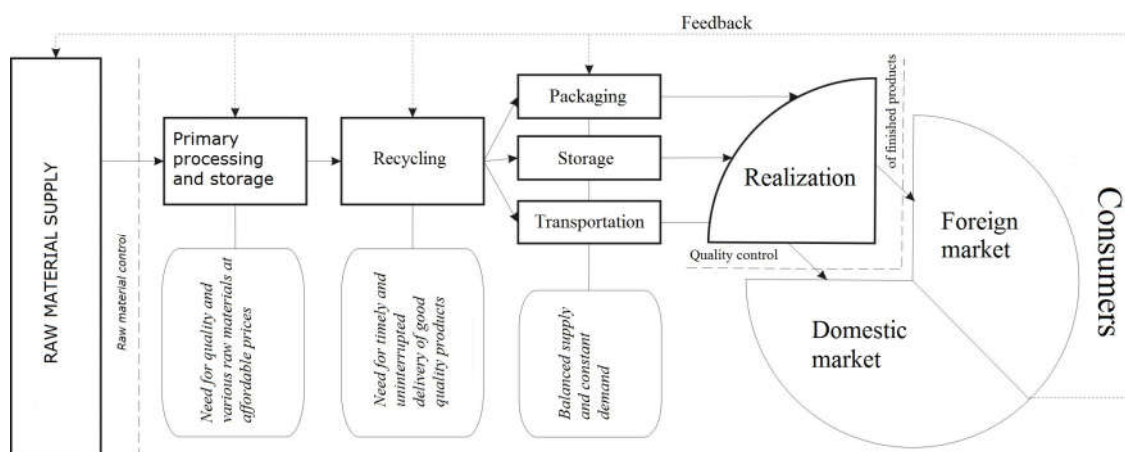
postindustrial society, directly depends on the introduction of innovation on the enterprises of the agro-industrial complex and in the sphere of state regulation of the corresponding types of economic activity.

Since a good and safe food is one of the high priority and critical needs for human life and activities, it is obvious that the development of the food production requires special attention.

**Main points.** In the domestic and foreign scientific literature there are two approaches to analyzing the problems of innovative development of the sphere of food production. The first one focuses on the role of innovative factors in ensuring food security of the state. It is represented by the works of such scientists as L. Daineko, Y. Melnik, and others. The second one focuses on studying the influence of innovative technologies on improving the quality of food products and, as a consequence, the level of nutrition in the population and public health, and combines the scientific achievements of such scientists as T. Wallington, P. Laiko, K. Lyons, J. Lawrence, M. Marenich, I. Ozimek, O. Kudyenko etc [1, 2].

Modern production of food products is impossible without involving enterprises of other industries that are not directly related either to the food industry or to the agrarian field. As a result, in our opinion, it is reasonable to introduce and prove the concept of a new inter-sectoral complex – sphere of food production (SFP). It can include a set of industries (enterprises), which activities are focused on organizing the production of food products and providing the population with them.

The following key functional elements in the structure of the food production sphere are worth mentioning: raw materials supply (being a part of a number of agro-industrial complex industries and other inter-sectoral industrial complexes), primary processing and storage of raw materials, recycling, packaging, finished products storage, transportation and realization (fig.1)



**Fig. 1. Elements and basic functional relations of the sphere of food production**

The target function of the system of the above mentioned elements is meeting the needs of consumers both in the domestic and foreign markets. At the same time, each of the system elements also has its organizational, economic and technological needs that are transmitted to the previous stages of the production process through the feedback.

We assume that the formation of the sphere of food production is caused, first of all, by the key integrative function of this sphere - providing food security of the population. Since a good and safe food is one of the high priority and critical needs for human life and activities, it is obvious that the development of the food production requires special attention in terms of its strategic planning.

The specific characteristics of territorial differentiation in the sphere of food production are worth mentioning. The generally accepted approaches state that the territorial organization of the economy includes the existence and functioning of certain territorial entities - individual (enterprise, center, node, core, etc.) and areal (zone, sub-region, district, region, etc.). Taking into account high differentiation of the food production sphere at the sectoral level, it is clear that its territorial structure should also have more complex forms of organization.

It should be noted that the innovative activity in the domestic food industry, as the core of the food production sector, is actually in its very beginnings. A few enterprises of certain processing industries apply it. This situation requires a deep analysis of the problems and factors that slow the innovative development of food industry enterprises. It encourages to search and prove the priority directions to transfer it to the innovative technological model, to introduce effective tools and mechanisms to speed up the fundamental changes in the processing sector of the agro-industrial complex at all stages of innovation lifecycle.

It is worth noting that, according to expert opinion, a low level of innovation is characteristic not only for the food industry of Ukraine, but for the industry as a whole. This is caused by a range of various problems, the most important of which are:

- incomplete legal, economic means and mechanisms of the state to support and fuel innovation and to speed up the transition of enterprises to the innovative technological model of development;
- lack of effective system of economic motivation and institutional and information infrastructure

that can enable and stimulate involving modern achievements of scientific and technical progress in the development of prototypes, introduce technological innovations in production and create a competitive innovation environment;

– disagreement between different elements of the technological chain "innovation life cycle" and lack of development and implementation of measures aimed to improve the relationship between them;

– substantial deficit of modern innovation and technological equipment, science-intensive new technologies for processing agricultural raw materials, immaturity of the technological innovation market, lack of specialized banking institutions for financial support of innovation activities;

– outdated norms and quality standards for agricultural raw materials and food products, a significant lag in meeting the requirements of WTO and EU [1].

Considering this, it is the innovative development of the sphere of food production that is the long-term direction requiring the development of organizational and economic mechanisms and strategic directions for development of the relevant sector of the national economy.

It is proved that the successful functioning of domestic food enterprises requires the development of a set of measures for the product, pricing, distributive and advertising policies [1].

When developing the assortment policy in the sphere of food production, it is necessary to segment the market and differentiate the product range to commodity groups. Their production will be carried out taking into account the best process utilizations and distribution of raw materials. The innovative direction of increasing the competitiveness of food products is the introduction of new non-traditional types and the creation of environmentally friendly products. The key aspects that influence the implementation of innovative solutions in the marketing policy of food enterprises include the regional consumption patterns, national traditions, focus on meeting the food requirements of the various segments of the population and matching actual demand, the profitability of products [1 – 22].

O. Kudyрко suggests the creation of an information resource center as one of the measures for the development of the information component of the innovation business infrastructure in the food industry. It will be focused on providing information to food and agricultural enterprises that form the resource base of the food technology and engineering industry [1].

In this context, according to the authors, the following measures should be regarded as the main measures of state regulation of innovative activity in the sphere of food technology and engineering: development of modern innovation infrastructure; state insurance of possible innovation risks; protection of intellectual property rights; creation of special investment banks; wider relations in the technological sphere with foreign countries in order to implement the technological opportunities and obtain investment and further development of the food industry in Ukraine with the implementation of domestic food products for local and foreign consumers (Fig. 1).

It is clear that the food industry is central in the sphere of food production. Its main function is providing the population with quality, safe and budget-friendly food.

Unlike the concept of the agro-industrial complex, widespread in the national science, which traditionally focuses on agriculture, the sphere of food production, proposed by us, is focused not so much on the production processes and inter-branch relations, but more on the providing food security for the population, the state, and the region [5, 12, 13, 18 – 22]. In the context of the current trends of the world economy development related to the formation of the economy of knowledge, the spread of the information society, permanent humanization and socialization of economic processes, the social significance of this element of the national economy comes on line while analyzing the sphere of food production. The main means of its achievement is the innovative development in the field of food technology and engineering.

**Conclusion.** The sphere of food production with its complex structure, close links with many industries, a significant potential for innovative development, the problems of which are both global and specific (local), has been analyzed. Taking into account the strategic value of the researched sphere of food technology and engineering for providing the national security of the state, in general, and food security, in particular, there is a clear need to justify programs and measures of state regulation in the field of food security and food technologies and engineering.

#### References

1. Kudyрко O.M. Formuvannya ekonomichnoyi stratehii innovatsiynoho rozvytku pidpryyemstv kharchovoyi promyslovosti [Elektronnyy resurs] / O.M. Kudyрко. – Rezhym dostupu : <http://nbuv.gov.ua/ard/2005/05komphp.zip>
2. Mel'nyk Yu.F. Ahropromyslove vyrobnytstvo Ukrainy: uroky 2008 roku i shlyakhy zabezpechennya innovatsiynoho rozvytku / Mel'nyk Yu.F., Sabluk P.T. // Ekonomika APK [zbirnyk naukovykh prats']. – 2009. – № 1. – S. 3 – 15.
3. Tolbatov A.V. Metody'ka pobudovy' integrovanoogo informacijnogo seredovy'shha suchasnogo promy'slovogo pidpr'yemstva / A.V. Tolbatov, V.A. Tolbatov / Perspektivnyie trendyi razvitiya nauki: tehnika i tehnologii. – Odessa: KUPRIENKO SV, 2016. – S.82–96.
4. Tolbatov V.A. Models and methods of construction of the automated integrated systems' product life cycle: avtoref. dys ... kand. tekhn. nauk / V.A. Tolbatov. – Kyiv, 2007. – 12 s.
5. Tolbatov O.O. Perspektivnyie dostizheniya sovremennyih uchenyih: tehnika i tehnologii: Analiz ta rozrobka kontseptsiyi modelyuvannya biznes-protsesiv promyslovoho pidpryyemstva z tochky zoru suchasnoyi metodolohiyi analizu ta proektuvannya skladnykh system / [avt.kol.Tolbatov A.V, Tolbatov V.A, Tolbatov S.V, V'yunenکو O.B., Tolbatova O.O.]. – Odessa: KUPRYENKO SV, 2017 – 219s.
6. Tolbatov V.A. Orhanizatsiya system enerhoberezhennya na promyslovykh pidpryyemstvakh / V.A. Tolbatov, I.L. Lebedyn'skyy, A.V. Tolbatov / – Sumy : SumDU, 2009. – 195 s.

7. Tolbatov V.A. Texniko-ekonomichne obrgruntuvannya pobudovy` sy`stem upravlinnya pidvy`shhenoyi nadijnosti // V.A. Tolbatov, A.V. Tolbatov, S.V. Tolbatov // *Visnyk SumDU. Seriya tekhnichni nauky`*. -2012.-№3.-S.68-71.
8. Tolbatov A.V. Metodolohiya stvorennya avtomatyzovanykh system keruvannya / A.V. Tolbatov, V.D. Cherv"yakov, T.L. Shcherbak // *Visnyk SumDU. Seriya tekhnichni nauky`* №9(81)' 2005, Sumy, SumDU, 2005. – S. 124–130.
9. Tolbatov A.V. Peredumovy stvorennya intehrovanooho informatsiynoho seredovyscha dlya promyslovykh pidpryyemstv / A.V. Tolbatov, V.A. Tolbatov, S.V. Tolbatov // *Materialy NTK fakul'tetu EIIT*. – Sumy: Vyd-vo SumDU, 2010. – S.42–43.
10. Tolbatov V.A. Otsinka povnoty zakhystu tekhnolohichnoho obladnannya vid vidmov u systemi upravlinnya / V.A. Tolbatov, A.V. Tolbatov, O.B. V'yunenko, O.A. Dobrorodnov, S.V. Tolbatov // *Vymiryuval'na ta obchyslyuval'na tekhnika v tekhnolohichnykh protsesakh*. – Khmel'nyts'kyy, 2015. – № 3(52). – S. 30–33.
11. Tolbatov V.A. Osnovni pryntsyppy orhanizatsiyi zakhystu tekhnolohichnoho obladnannya vid vidmov u systemi upravlinnya / V.A. Tolbatov, A.V. Tolbatov, O.B. V'yunenko, O.A. Dobrorodnov // *Visnyk Khmel'nyts'koho nats. un-tu. Seriya: "Tekhnichni nauky"*. – Khmel'nyts'kyy, 2015. – № 3(225). – S. 46–50.
12. Tolbatova O.O. Functional modeling – methodological basis for invertigation of business processes at indusrtial enterprises / A.V. Tolbatov, S.V. Tolbatov, O.O. Tolbatova, S.V. V.A. Tolbatov // *International scientific-technical magazine Measuring and computing devicesin technological processes*. – Khmel'nyts'kyy, 2017. – №3 –P.186–189.
13. Tolbatov A.V. Development concept modeling of business processes of modern industrial enterprises in terms of theoretical and legal approaches to the analysis information security / A.V. Tolbatov, V.A. Tolbatov // *International scientific-technical magazine Measuring and computing devicesin technological processes*. – Khmel'nyts'kyy, 2017. – №1 –S.196–199.
14. Tolbatov A. Mathematical models for the distribution of functions between the operators of the computer-integrated flexible manufacturing systems / Evgeniy Lavrov, Nadiia Pasko, Anna Krivodub, Andrii Tolbatov // *TCSET 2016 – Lviv-Slavske, 2016*. – P. 72–75.
15. Tolbatova O. Theoretical bases, methods and technologies of development of the professional activity analytical estimation intellectual systems / O. Zaritskiy, P. Pavlenko, V. Sudic, S. Tolbatov, A. Tolbatov, O Viunenko, O. Tolbatova, V. Tolbatov // *2 International Conference on Advanced Information and communication Technologies–2017 (AICT–2017)*, Lviv, Ukraine, July 4–7, 2017. – P. 101–104.
16. Tolbatov A.V. Information technology for data exchange between production purpose integrated automated systems / P.M. Pavlenko, A.V. Tolbatov, V.V. Tretiak, S.V. Tolbatov, V.A. Tolbatov, H.A. Smolyarov, O.B. Viunetko // *International scientific-technical magazine Measuring and computing devicesin technological processes*. – Khmel'nyts'kyy, 2016. – №1 –P. 86–89.
17. Tolbatov A. Cybersecurity of distributed information systems. The minimization of damage caused by errors of operators during group activity / Lavrov, E., Tolbatov, A., Pasko, N., Tolbatov, V. / *2017 2nd International Conference on Advanced Information and Communication Technologies, AICT 2017 – Proceedings – Lviv, 2017*. – P. 83–87.
18. Tolbatov A.V. Innovatsiyini pidkhody informatsiyoi pidtrymky diyal'nosti ahropromyslovooho kompleksu rehionu / A.V. Tolbatov, V.A. Tolbatov, A.B. Viunenko, S.N. Vyhanyaylo, Ya.V. Dolhykh, M.N. Ruban, H.A. Smolyarov, Yu.H. Smolyarov // *Innovatsionnyie podhodyi k razvitiyu selskogo hozyaystva*. – Odessa: KUPRIENKO SV, 2015. Glava 1. – S. 7–26.
19. Tolbatov A.V. Pobudova system monitorynhu, analizu ta otsinky pryynyattya rishen' rehional'noho rivnya dlya sytuatsiynykh tsentriv APK / O.B. V'yunenko, A.V. Tolbatov, Ahadzhanova S.V., V.A. Tolbatov, O.B. Shandyba, S.V. Tolbatov // *Vymiryuval'na ta obchyslyuval'na tekhnika v tekhnolohichnykh protsesakh*. – Khmel'nyts'kyy, 2015. – №4 –S.194–201.
20. Tolbatov A.V. Pidtrymka pryynyattya rishen' pry investuvanni v innovatsiyi ahropromyslovooho kompleksu rehionu / A.V. Tolbatov, H.A. Smolyarov, Yu.H. Smolyarov, V.A. Efanov, M.N. Ruban, V.A. Tolbatov, S.V. Tolbatov / *Nauchnyie otvety na vyzovyi sovremennosti: menedzhment, yurisprudentsiya*. – Odessa: KUPRIENKO SV, 2016. – Glava 5. S.129–140.
21. Tolbatov A.V. Aktual'ni problemy zabezpechennya informatsiyoi bezpeky yak funktsiyi suchasnoyi derzhavy / A.V. Tolbatov, V.A. Tolbatov, O.B. V'yunenko, H.A. Smolyarov, V.A. Efanov / *Perspektivnyie trendyi razvitiya nauki: menedzhment, yurisprudentsiya*. – Odessa: KUPRIENKO SV, 2016. – Glava 8. S.170–180.
22. Tolbatov A.V. Improving the infomation support of management of agricultural enterprises through innovations / O.B. Viunenko, M.M. Ruban, H.A. Smoliarov, I.H. Smoliarov, A.V. Tolbatov, V.A. Tolbatov, S.V. Tolbatov // *SW Journal Agriculture*. – Volume J21509 (9). (November 2015). – P. 8-13. – URL: <http://www.sworld.com.ua/e-journal/j21509.pdf>

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