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V. A. K O L O D I I C H U K,

Associate Professor, Doctor of Econ. Sci.,

Head of the Department of Management named after Professor E. Khraplyvy,

Kolodiichuk Volodymyr Anatoliiovych, 2017;

e-mail: V-A-K@ukr.net,

I. B. Y A T S I V,

Associate Professor, Doctor of Econ. Sci.,

Vice"rector for Research Lviv National Agrarian University

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e-mail: igyatsiv@ukr.net.

PROSPECTS FOR DEVELOPMENT OF GRAIN PRODUCT BRANCH OF UKRAINIAN AIC UNDER CONDITIONS OF UNIFICATION OF INTERNATIONAL STANDARDS OF LOGISTICS[1]

The work proposes basic parameters of conformity of production of the national grain product branch of AIC to international quality standards, directions of effective integration of technical and technological components of grain logistics of Ukraine into the global systems and ways of structural integration of institutional elements of the grain product branch of the AIC of Ukraine into the international environment.

Keywords: grain product branch of AIC, logistics, quality standards, technical and technological parameters, institutional environment.

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Ukraine has chosen the way to European integration and the way requires from the country application of the principles of a global market and corresponding international standards concerning quality of the products of domestic enterprises. This will support their competitive capacity at the domestic and foreign markets. Grain product branch of AIC [1] is one of the largest branch formations, which determines international specialization of Ukraine as grain producer. In the last marketing year, our country produced 63,9 million tons of grain and 33 million tons were exported by the county. The fact confirms priority of grain branch in establishment of export potential and activates scientific researches in the direction. Raise of yield capacity of cereals and efficient grain logistics can make Ukraine the world leader at the grain market and may supply a substantial inflow of foreign currency into the structure of export transactions. Standardization of goods and services is one of the problem issues of integration of grain product branch of Ukraine's AIC. Ukrainian goods and services must correspond to the national and international parameters of grain and products of its processing under conditions of unification of logistical standards of the world economy.

Theoretical and methodological basis for logistical activity is studied by foreign scientists, particularly D.J. Bowersox, D.J. Closes [2], M.R. Landers [3], and Ukrainian researchers, such as O.P. Velychko [4], Ye. V. Krykavskyi [5], N. I. Chukhrai [6] and others, which have summarized the global experience, adopted it to Ukrainian realities and created appropriate conditions for managerial decision making on the base of logistics concepts. Substantial researches about the problems of development of agrarian sphere and grain market of Ukraine's economy have been carried out by such scientists as V.H. [6]. [7], V.I. Boiko [8], O.M. Shpychak [9], V.V. Yushchyshyn [10] and others. Their works have contributed to creation of a powerful grain branch. However, the issues of responsibility of the national and international standardization of grain to secure integration of the management of export grain flows with recently increased parameters are almost not considered by the scientists.

Thus, the **aim** of the article is to study and argue efficient directions of the further integration of grain product branch of the AIC of Ukraine into the global

logistical systems on the base of assessment of the degree of conformity of the national and international standardization of grain under conditions of unification of logistical standards of the global economy. Efficiency of national enterprises operation mainly depends on the degree of conformity of their products to international standards. Violation of the standards is a technical barrier for performance of export transactions. However, it is not the only condition for integration of Ukrainian producers into the global market. To secure a system approach it is important to consider the mentioned processes in the light of logistical activity, which is an essential component of the process of modern management, and can consolidate all elements into a complete productive and sale system, and secure its structural and functional harmony.

The authors of the article consider that the directions to improve efficiency of the logistics of grain and products of its processing, which are connected with the degree of integration of the grain product branch of Ukraine's AIC into the global logistical systems, include:

1) security of conformity of the branch products to international standards of quality;

2) agreement of the national and international technical and technological parameters of move of the material flows by logistical chains;

3) structural integration of institutional elements of grain product branch of Ukraine's AIC into the international environment.

To solve the described tasks it is necessary to perform a complex of measures of legislative, structural and functional, technical and technological, phytosanitary regulation. Unilateral autonomous trade preferences of the EU could serve as drivers of activation of the Europe-integration processes. According to the declaration of the European Commission of March 11, 2014, the preferences were supplied for Ukraine and temporary opened the European market for Ukrainian commodity producers. Trade preferences were valid until December 2015 until the Agreement about free trade area between Ukraine and EU within the economic part of the Agreement about association between Ukraine and the EU came to force. Unfortunately, our country did not use the granted opportunities for many types of goods.

In Ukraine, food share in grain production constitutes at least 50-60 % and fluctuates depending on weather conditions of a certain year. Consequently, we have domination of forage grain in the structure of its export. Pricing difference between food and forage grain, which constitutes approximately 50 USD for 1 ton of wheat, under the same conditions of logistical expenditures, causes considerable losses of a potential profit of Ukraine. Inconformity of the national and international standards of grain quality estimation forces additional difficulties for integration processes.

Comparing the national and European parameters of grain evaluation, there are essential differences in the criteria of estimation, because in Europe, protein content is the basic indicator of grain, and in Ukraine it is cellulose.

In Ukraine, there is an actual DSTU 3768-2010 for wheat. The standard regulates requirements to 6 classes of soft wheat and to 5 classes of hard wheat[2]. This is the standard of internal use and it completely satisfies producers and processors of grain. In case the standard is used for export of wheat, there are contradictions, because in Ukraine wheat of the 1-4 class is marked as food, while in Europe and the USA, Ukrainian wheat of the 4th class is defined as forage. Thus, for export transactions, the standard divides wheat into two classes, i.e. food and forage.

According to expert [3] estimates, Ukraine mainly produces wheat of the 2nd and 3rd class, but it does not mean its automatic agreement to the international system of quality coordinates. Thus, the requirement of the EU concerning introduction of technical regulations in Ukraine is a very complicated issue, because they are not just standards, but a chain of system control for conditions of grain quality starting from the field and up to an ultimate consumer. In other words, conditions of production, storage, processing, transportation and rating – everything has to be accurately regulated with all the details and should be controlled at all stages of production and sales. Under such conditions, logistical concept of flows management is getting more popular. According to the concept, the function of logistics is considered from the position of security of quality parameters for grain flows. Thus, the authors of the

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[2] Wheat. Technical conditions: DSTU 3768:2010 (active since March 31, 2010). – K.: Derzhspozhyvchstandart Ukraiiny, 2010. – 14 p.

[3] Grain business in Ukraine: realities and prospects [online]. – Available at: http://www.psv.org.ua/arts/Tema/view_2328.html.

article note that a completely new level of organization of logistical activity in Ukraine will contribute to performance of the European norms concerning grain quality by keeping to technological parameters and control for grain flows. Another problem is in legislative and organizational supply for the corresponding international regularities of quality by means of their implementation into the system of structural and functional relations of grain products branch of the AIC of Ukraine.

Actual international standards, regulating grain quality, are ISO 7970:2011[4] standard for soft wheat (Triticum aestivum L.) and ISO 11051:1994[5] – for hard wheat (Triticum durum Desf.), and delivery of lots of grain to the European market is also regulated by the EU Directive № 824_2000 of April 19, 2000[6].

According to the mentioned standards, the allowable humidity for soft wheat is 15,5%, of the weight of 1 hectoliter (hereafter – hl) (grain-unit) – not less than 70 kg/hl, activity of α-amylase, which is measured by the figure of fall (it is the total time, required for mixing and heating of water-flour suspension and fall of a mixer stem in in to a certain depth), - not less than 160 s, the maximum share of defective grain and other breadstuff is not more than 15%, and harmful or toxic grain and smutty grain should not exceed 0,5%[7.]

Hard wheat (ISO 11051:1994 standard) is additionally regulated by such indicators as number of partially glassy grain (at least 40%), humidity (should not exceed 14,5%), weight per 1 hl (75 kg/hl), and a maximum share of defective grain and figure of fall – 15% and 160 s[8] respectively.

Even more rigid requirements are set by the EU Directive № 824_2000[9] for intervention lots, particularly indicators of quality for soft and hard wheat: humidity – not more than 14,5%, weight per 1 hl –73 and 78 kg/hl respectively, figure of fall –

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[4] Wheat (Triticum aestivum L.) Technical conditions: ISO (active since November 1, 2011). – Geneva: International organization and standardization. – 3rd edition. – 2011. – 14 p.

[5] Durum wheat (Triticum durum Desf.). Specification : ISO 11051 (first edition 10.01.1994). – Geneva : International Organization for Standardization. – 1st ed. – 1994. – 12 p.

[6] Establishing procedures for the taking_over of cereals by intervention agencies and laying down methods of analysis for determining of cereals quality. – Commission Regulation (EC). – No 824/2000. – 2000. – 19 April [online]. – Available at : http://eur_lex.europa.eu/legal_content/EN/TXT/PDF/?uri=CELEX:32000R0824&from=EN

[7] Wheat (Triticum aestivum L.). Technical conditions: ISO 7970.

[8] Durum wheat (Triticum durum Desf.). Specification : ISO 11051.

[9] Establishing procedures for the taking_over of cereals by intervention agencies and laying down methods of analysis for determining of cereals quality.

220 s, protein in dry matter – 10,3 and 11,5% respectively, additives of other grains – 7 and 5%, sprouted grain – 6%, grain, infected with fusarium disease[10]– maximum 1,5% for hard wheat, harmful additive components – 0,1%, broken grain – 5 and 6%, fine grain – 3% for hard wheat, and heat-damaged grain – 0,5%. Besides, there is a regulation of a minimum figure of the index of Greenery or sedimentation indicator[11] i.e. 22 mg for soft wheat.

Very high requirements are set to export lots of wheat (with the tariff quota for the member-countries of the WTO) (protein content – not less than 14,6%, grain-unit – not less than 780 hl, low quality grain – not more than 10%, humidity – not more than 13%). At the global market, protein content is the principal indicator of wheat quality, but in the requirements of the EU, the main indicators also include a figure of fall, protein content and sedimentation indicator.

The existing standards for grain in different countries do not expect a complete unification, and apparently, the norms differ. For instance, in the USA, wheat is divided into 5 classes, and in Canada – into 8. However, Canadian standardization is the most complicated in the world and expects subdivision of each of the 8 classes into 2-3 varieties and forage wheat. Besides, the standard separately regulates requirements to export lots of wheat and lots for domestic consumption, and the key indicators, similar to Ukrainian standardization, include grain-units and grain hardness, which are set at the level of 630-774 hl and 35-80% respectively. Nevertheless, Canadian standards, contrary to Ukrainian ones, pay particular attention to grain purity.

Purity of grain is a key estimated indicator for transactions of purchase and sale at the global grain market. Dependence of the indicative index on conditions of a technic component of logistical systems activates the necessity of technic and technological updating of the processes, which supply purification of grain mass both under conditions of post-harvesting processing and at the stage of taking to storage and processing (food or industrial) by elevators. Technical equipment for

[10] Fusarial head blight – mycotic affection of grain.

[11] Sedimentation – is a process of settlement or emersion of the particles of dispersion phase (hard crumbs, drops of liquid, bubbles of gas) in a liquid or gaseous dispersive environment in gravitation field or a centrifugal force field.

elevators and laboratory control for grain quality, which corresponds to the world standards, is a compulsory condition for integration of grain product branch of Ukrainian AIC into the global grain market.

Objective estimates of Ukrainian grain confirms high potential indicators of quality of the national varieties of winter and spring soft and hard wheat, that is grounded by the researches of the Center of certificating testing of Ukrainian Institute of expert estimates of plant varieties. Comparative analysis of the indicators of variety quality proves that Ukrainian wheat meets the high requirements of the world standards. However, there is a problem concerning sale of selection materials because of violation of the technologies of cereals growing, considerable impact of pests and diseases on the plants, as well as retrenchment of costs for keeping of quality of seeding material as agricultural producers feel lack of financial resources, etc.

Efficient integration of grain product branch of the AIC into the world logistical systems expects compatibility of the national and international technical and technological parameters of material flows move. Complicated technical systems accompany grain flows from the field and up to an ultimate consumer and secure dynamic (transportation) and static (storage) conditions and transformation of grain mass during the processing. The opportunity of mechanization and automatization of technological processes in the functional sphere of logistics, starting from harvesting and purification of grain, materials handling, harbor transshipment, keeping to corresponding requirements, technical accompaniment of food and industrial processing, is secured by physical characteristics of grain. An organic relation between the functional spheres of logistics is secured by agreement of technic and technological parameters of fixed assets and integration of automatic management systems.

Technological unity of logistical operations within the country is achieved by accurately regulated internal standards both in the system of production of production means and in the process of their exploitation. It includes agreement of not only physical parameters for manipulation of flows, but also constructive and organizational ones, etc. The article considers importance of the fundamental on the example of a transport and storage process of delivery of a 20-foot container with 23

tons of gross weight with no spreader[12]. Lifting power of a receiving crane constitutes 18 ton. It is obvious that discrepancy of 5 tons between weight of the cargo and capacities of the crane will cause error in the phase of transfer, requiring additional expenditures for manual handling of the cargo of grain out of the container or attraction of a suitable lifting and transporting machine for parceling of the delivered lot.

Task of security of the technological unity is getting more complicated under conditions of global systems of logistics, because a material flow can run through a great number of transport terminals and harbors of different countries at an intercontinental distance. The current mismatch in the national standards substantially slows down the process of international communications. Thus, it makes ground for the conclusion that the process of unification of logistical standards of the world economy is a key requirement for the processes of globalization of national economies.

Efficient integration of technical and technological component of grain logistics of Ukraine into the global systems needs activation in the following directions:

1) acquiring of membership of international economic organizations and different non-state associations for global support;

2) harmonization of the national and international standards of infrastructural support for logistics;

3) adaptation of the program-communicative supply for grain logistics to the global networks (e.g. conformity of the Online trade system of Agrarian Exchange and online trading platform CME GLOBEX and other virtual trading sites);

4) application of global experience of organization of logistic systems at a grain market.

Shipment of grain in containers is a perspective direction of integration of the logistics of grain flows of Ukraine. Technical and technological compatibility is secured by application of 20 or 40-foot containers in through-passing movement of

[12] Spreader – is a special suspension gear for automatic capture of transport containers.

material flows by logistical chains. A 20-foot equivalent (TEU[13] – from "Twenty-foot equivalent unit") is a global standard unit to measure capacity of cargo transport, and the method of container shipment enables unification of the function of materials handling system in the global environment.

Advantages of the container shipment of grain include a total control for its quality, reduction of losses, efficient schedule of shipment and delivery, opportunity to ship small lots of grain and reduction of expenditures for logistics.

Amounts of container shipments continuously grow and, for example, in the USA they have increased by 29% for the land 5 years. In Ukraine, according to calculations[14], a complex fee for shipment of grain under the scheme "car loading at an elevator – delivery to a harbor – reloading into a container" constitutes 53 USD for 1 ton, and in case of the scheme "loading of an automobile at an elevator – delivery to a harbor – loading into a container" – 51,5 USD for 1 ton. The scheme "supply of empty containers for loading at an elevator by railway – loading at an elevator – come-back of the loaded containers to the harbor" costs only 48,1 USD for 1 ton (losses of grain cargo constitute under 0,5%).

In the export of Ukrainian grain, harbor container transshipment continuously grows and exceeds 10% of the total amount. In the first quarter of 2012, Odessa and Illichivsk port made transshipment of only 1102 containers, and a year later the number was 4995, that was four times more than the initial figure. However, use of containers is also perspective for automobile, and particularly for river shipment of grain, where Ukraine has a considerable transit potential.

Another important direction of efficient development of grain logistics is a degree of integration of grain product branch of Ukrainian AIC into the international institutional environment. Having become a member of the WTO, Ukraine starts a new stage of a multilateral cooperation on the way of integration into the world economy. Management of domestic enterprises is objectively interested in participation in the international institutions. Such cooperation sets new requirements

[13] 1 TEU is equivalent to the effective volume of a standard container 20 foot (6,1 m) long, 8 foot (2,44 m) wide and 8,25 foot (2,59 m) high.
[14] Export of grain [online]. – Available at: http://www.agrotimes.net/journals/article/eksport_zerna.

and opens new perspective markets for products of the enterprises. For instance, for the first half of 2013/14 marketing year, the most powerful state operator Public stock company "State food-grain Corporation of Ukraine" became the official participant of the World Food Program of UNO, member of Grain and Forage Trade Association (GAFTA), as well as obtained a certificate of the International system RBSA as a supplier of raw materials to the markets of the EU for biofuel production.

Let us make a more detailed examination of activity and importance of GAFTA in performance of global grain market. Established in 1878, the association of corn trade was focused on setting of common rules and principles of international grain trade. The rules were to be clear and acceptable for all participants of the agreements of grain purchase and sale and could protect their interests. For its long history, GAFTA has proved its efficiency, because 80% of the world grain and forage trade happen with application of standard forms of GAFTA contracts. Nowadays, the association has 1400 members from 86 countries of the world[15]. The developed system of standards is a basis for contract activity of grain traders, conditions and parameters of performance of quality laboratories, as well as standards of activity of brokers, logistics specialists and other participants of grain market. However, among the main principles GAFTA sets ethic norms and degree of confidence between the participants of commercial relations, along with the formal rules.

GAFTA Association has intergovernmental status, but its authority enables lobbying of the interests of its members almost at all international institutions: the WTO, Organization on Food and Agriculture of the UNO (FAO), as well as the World Health Organization (WHO). In 2012, the organization developed a system of trade safety GTAS (Gafta Grade Assurance Scheme)[16] to secure its cooperation. The scheme covers a logistical chain completely, i.e. from agricultural production to an ultimate consumer in any country of the world and sets a common platform for international grain and forage trade. Monitoring of the chain of shipment enables cooperating with qualified auditors and certified authorities for a member of GAFTA. It supports a cut down of the member expenditures for transactions. Thus,

[15] About GAFTA Association [online]. – Available at: http://www. gaftakyiv.com.
[16] The same as the previous.

certification of Ukrainian grain according to GTAS scheme secures conformity to the world norms of assessment of grain quality and supports integration of grain product branch of Ukrainian AIC into the world systems of logistics under conditions of unification of logistical standards of the world economy.

Conclusions

Unification of logistical standards of the world economy sets new requirements to the quality of performance of the national grain market as the largest branch, which defines international specialization of Ukraine as grain producer.

Standardization of goods and services for conformity of the national parameters of grain and products of its processing to the international ones is the first condition for a deeper integration of grain product branch of Ukrainian AIC into the global systems of logistics. The second condition for integration of the national logistics of grain flows into the global logistical systems is to agree technical and technological parameters and equipment, as well as automatic systems of material flows management. It is substantially supported by active application of the progressive method of container shipment of grain.

Ukraine's membership or participation as an observer in numerous international organizations, as well as signing of the Agreement about association between Ukraine and the EU, stimulate quality changes in organization of logistical activity of the country. Thus, the authors of the article defines the third integration direction as the one which will supply conformity of the national grain product branch of AIC to the world norms of estimation of grain quality (certification according to GTAS scheme) by means of keeping to technological parameters and control for grain flows by all participants of the logistical chain.

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