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## **Integration of Ukraine's grain market logistics into the international institutional environment**

### **Integracja logistyki rynku zbożowego Ukrainy z międzynarodowym środowiskiem instytucjonalnym**

**Abstract.** The purpose of the article is to present the main research results on the possibility of defining and substantiating effective areas for the further integration of Ukraine's cereal logistics into the international institutional environment on the basis of assessment and ensuring the degree of mutual compliance of national and international grain standardization systems. During the conducted researches it has been proved that unification of logistic standards of the world economy puts qualitatively new demands on the functioning of the grain market of Ukraine and conditions of its integration in global logistics. Standardization of grain ensures compliance with national and international parameters. It has been found that the national and European grain estimation parameters have significant differences in the evaluation criteria. In Europe the basic indicator of grain is the protein content, while in Ukraine the basic indicator of grain is the content of gluten. Existing grain standards of different countries do not provide complete unification and naturally, these standards are different. It goes without question that the grain purity is a key indicator for sale and purchase operations on the world grain market. It is determined, that the availability of appropriate technical equipment for elevators, especially laboratories for quality control of grain, which meets world standards, is a significant factor in successful integration of Ukraine's grain market into the international environment. It is proved, that the quality of Ukrainian wheat meets the prevailing requirements of world standards, but the problem of implementing the breeding potential in the conditions of farms is complicated by the failure to comply with the technology of growing crops, their significant damage, diseases as well as saving on quality seed material due to lack of financial resources from agricultural producers, etc. According to the results of the research of the Association of Grain and Food Trade (GAFTA) activity, which provides 80% of world trade in the grain market, it is established, that the principle of the Association's systemic approach to the regulation of contractual relations among the participants in the organization is implemented in the system of trade security (GTAS). Certification according to GTAS requirements will enable the integration of Ukraine's grain market into the international institutional environment.

**Key words:** logistics, grain market, integration, international institutional environment

**Synopsis.** W artykule przedstawiono wyniki badań dotyczące możliwości określenia i uzasadnienia skutecznych działań na rzecz dalszej integracji ukraińskiej logistyki zbożowej z międzynarodowym środowiskiem instytucjonalnym na podstawie oceny i zapewnienia stopnia wzajemnej zgodności krajowych i międzynarodowych systemów normalizacji ziarna. Podczas przeprowadzonych badań udowodniono, że unifikacja standardów logistycznych gospodarki światowej stawia jakościowo nowe wymagania w zakresie funkcjonowania ukraińskiego rynku zbóż i warunków jego integracji z globalną logistyką. Standaryzacja ziarna zapewnia zgodność z parametrami krajowymi i międzynarodowymi. Stwierdzono, że krajowe i europejskie parametry oceny ziarna wykazują znaczne różnice w kryteriach oceny. W Europie podstawowym wskaźnikiem jakości ziarna jest zawartość białka, a na Ukrainie zawartość glutenu. Istniejące standardy zbożowe w poszczególnych krajach są różne i nie zapewniają pełnej unifikacji. Bez wątpienia czystość ziarna jest kluczowym wskaźnikiem dla operacji sprzedaży i zakupu na światowym rynku zbóż. Stwierdzono, że dostępność odpowiedniego sprzętu technicznego dla elewatorów (w szczególności laboratoriów do kontroli jakości ziarna), spełniającego światowe standardy, jest ważnym czynnikiem udanej integracji ukraińskiego rynku zbóż ze środowiskiem międzynarodowym. Udowodniono, że jakość ukraińskiej pszenicy spełnia obowiązujące wymagania światowych standardów, ale problem wdrażania potencjału hodowlanego w warunkach fermowych jest skomplikowany z powodu braku zgodności z technologią uprawy roślin, znacznego uszkodzenia ziarna zbóż, pojawiających się chorób, a także dlatego, że producenci rolni nie chcą „przeplacać” za wysokiej jakości materiały siewne. Według wyników badań Stowarzyszenia Handlu Zbożami i Handlu Żywnością (GAFTA), które zapewnia 80% światowego handlu zbożem na rynku, ustalono, że zasada systemowego podejścia do regulacji stosunków umownych między uczestnikami organizacji jest wdrażana w systemie bezpieczeństwa handlu (GTAS). Certyfikacja zgodnie z wymaganiami GTAS umożliwi integrację ukraińskiego rynku zbóż z międzynarodowym środowiskiem instytucjonalnym.

**Słowa kluczowe:** logistyka, rynek zboża, integracja, międzynarodowe środowisko instytucjonalne

## Introduction

The global economic environment requires unified approaches to the standardization of goods and services, and the condition of integration of Ukraine's grain market into global logistics systems. In the world of trade, new methods for assessing goods based on compromise solutions that eliminate barriers to the movement of goods in the context of international trade relations has been searching for a long period of time. As a rule, the initiators of these standards are economically successful countries that determine the requirements for imported products, which potentially meet the internal quality standards. The consequence was the emergence of ISO 9000 international quality standards adopted by the International Organization for Standardization in 1987, which were developed using Soviet-free (Lviv, Saratov, Yaroslavl etc.) systems of defective work, as well as Japanese experience in product quality management. In Austria, Germany, Finland,

France, Great Britain and other countries more than 50 countries accepted ISO 9000 series standards as national [Kruglov et al. 1997]. In fact, the standards of ISO 9000 series have become an indicator of the rapid recognition of the enterprise and the quality of its products. ISO standards also have other series, as they are in the process of continuous development and improvement.

In order to unify the qualitative indicators in the sectoral terms, in 1878, the Association for the Trade of Corn was established, which is now known as the Association of Grain and Feed Trade (GAFTA), which defined international rules and principles of grain trade, which helped to protect the interests of all participants in trade operations. The standard regulation are acceptable to both sellers and buyers and do not require discussion during each transaction. Today, 80% of the world's grain and feed trade takes place using the standard forms of contracts GAFTA. The Association brings together 1,400 members out of 86 countries of the world<sup>1</sup>. A good integration of the national grain producers of Ukraine into the world grain market is impossible in case of ignoring the international institutional environment and the current rules, which requires the bringing of national assessment criteria for the quality of the grain to the international standards.

### **The purpose and methodology of the study**

The purpose of the article is to present the main features of the study of the possibility of effective directions for further integration of Ukraine's cereal logistics into international institutional environment on the basis of assessment and ensuring the degree of compliance of national and international standardization of grain.

To achieve this goal, we solved the following tasks: on the basis of the dialectical method of knowing the objective reality and using the method of comparison, give an assessment of mutual degree compatibility of national and international grain standardization systems in terms of unification of the logistics standards of the world economy. On the basis monographic method, the structure and directions of GAFTA activity and the possibilities and prospects of membership in national grain market are investigated.

### **The main results of the study**

The food supply in grain production in Ukraine is at most 50–60% and varies depending on the weather conditions of a particular year, which causes the predominance of fodder grain in the structure of its exports. The price difference between food and feed grain is about USD 50 per tonne, at the same logistic costs. It causes significant losses of potential profit of Ukraine. The discrepancy between national and European standards for quality grain assessment creates additional difficulties for integration processes as well.

By comparing national and European grain valuation parameters, the essential differences in the evaluation criteria become apparent, since the basic indicator of grain in Europe is protein content while in Ukraine it is the content of gluten.

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<sup>1</sup> <http://gaftakyiv.com> [access: 10.03.2018].

In Ukraine, State Standard of Ukraine 3768:2010 “Wheat. Specifications” are in force on wheat. This standard regulates the requirements for six classes of soft wheat and for five classes for hard wheat [ISO 7970:2011]. It is a standard for domestic use, and it fully satisfies producers and grain processors. If we use the current standard for wheat exports, then there are contradictions since six of the existing classes of wheat 1–4 classes are considered to be dairy products, while in Europe and the USA Ukrainian wheat of the fourth class is recognized only as feed. Therefore, for export operations, this standard divides wheat into two classes: food and feed.

The current international standards for grain quality are the following standard ISO 7970:2011 for soft wheat (*Triticum aestivum* L.) and ISO 11051:1994 for hard wheat (*Triticum durum* Desf.), as well as the supply of batches of grain to the European market is governed by the EU Directive 824-2000.

According to the specified standards, for soft wheat the permissible humidity is 15.5%, the weight per hectoliter (nature) is not less than 70 kg/hl, the activity of  $\alpha$ -amylase determined by the number of fall<sup>2</sup> – not less than 160 s and the maximum content of damaged grains and other cereals it is allowed not more than 15%, and harmful or toxic grain and grain damaged by black sugar – not more than 0.5% [ISO 7970:2011].

On the hard wheat [ISO 11051:1994] the total number of incompletely glassy grains (at most 40%) is additionally regulated, the moisture content must not exceed 14.5%, the mass is 75 kg/hl, and the maximum content of the damaged grains and the number the fall is 15% and 160 s respectively [ISO 11051:1994].

Even more stringent conditions are regulated by EU Directive 824-2000 to interventional parties – quality indicators for soft and hard wheat: humidity not more than 14.5%, mass – 73 and 78 kg/hl, falling number – 220 s, protein in dry matter – 10.3 and 11.5%, admixture of other grains – 7 and 5%, germinated seeds – 6%, fusarium grains<sup>3</sup> for hard wheat – at most 1.5%, harmful impurity – 0.1%, beet corn 5 and 6% suction and crushed grain for solid wheat – 3% and grains damaged by heat – 0.5%. In addition, for soft wheat, the minimum value of the green index (sedimentation index) is regulated – 22 ml.

For export batches of wheat (within the tariff quota for WTO member countries), very high requirements are set for. Its protein content must not be less than 14.6%, nature – not less than 780 g/l, low-quality grain – no more than 10%, humidity – no more than 13%.

In the world market, the main indicators of wheat quality are the protein content. According to the EU requirements, it is the number of fall, protein content and sedimentation rate.

Existing standards for the grain of different countries do not provide for complete unification among themselves and, naturally, these standards are different. For example, in the US, wheat is divided into five classes, and in Canada – up to eight. Moreover, Canadian standardization is the most complex in the world and involves the division of each of the eight classes into 2–3 varieties and feed wheat. In addition, the standard is separately regulating the requirements for export and for internal use. The key indicators, as appropriate in Ukrainian standardization, are nature and transparent which are set at the level

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<sup>2</sup> The number of falls is the time required for mixing the water-flour suspension and falling in it for a certain distance of the mixer rod during the heating process.

<sup>3</sup> Fizaurosia is a fungal disease of the grain.

of 630–774 g/l and 35–80% respectively. At the same time, the Canadian standards, in contrast to the Ukrainian ones, pay particular attention to the purity of the grain.

In general, grain purity is a key indicator for the operations of purchase and sale on the world grain market. Dependence of this indicator on the state of the technical component of logistics systems actualizes the need for technical and technological upgrading of processes that ensure the purification of the grain mass in the conditions of post-harvest treatment, and at the stage of acceptance by elevators to storage or processing (food or industrial). The technical equipment of elevators, as well as laboratory quality control of grain complying with world standards, is an integral part of the integration grain-product sub complex of Ukrainian agro-industrial complex in the global grain market.

Objectively assessing Ukrainian grain, it should be noted high potential quality indicators of domestic varieties of winter and spring soft and hard wheat, as evidenced by a study of the Center for Certification Testing Ukrainian Institute of Plant Varieties Examination. On the basis of the comparative analysis of the quality indices, the quality of Ukrainian wheat has been shown to satisfy the requirements of world standards. The problem of implementing the breeding potential in the conditions of farms is complicated due to non-compliance with the technology of growing, their significant damage to pests and diseases, as well as storing quality of seed material due to lack of financial resources from agricultural producers, etc.

With the acquisition of membership in the World Trade Organization for Ukraine, a new stage of multilateral cooperation on the way of integration into the world economy and the management of domestic enterprises have been objectively interested in participating the international institutions, which, in addition to new requirements, opens up perspective markets for the products of these enterprises. For example, the most powerful state operator Public Joint Stock Company “State Food and Grain Corporation of Ukraine” became the official participant of the World Food Program of the United Nations, a member of the International Grain and Feed Trade Association (GAFTA) only in the first half of 2013–2014 marketing year, as well as has received a certificate from the International RBSA System as a supplier of raw materials to the EU markets for biofuels production.

The GAFTA has been successfully operating for years since its creation in 1878. The developed system of standards is the basis for the activities of traders, brokers, logisticians, as well as quality laboratories and other participants in the grain market. Time-tested system of standard forms of contracts has proved its reliability, but the terms of contracts were adjusted in accordance with trends in international trade. In commercial relations, in addition to legal aspects, ethical standards, as well as the level of trust between participants, are fundamental principles of GAFTA.

The Department of Trade Policy represents the interests of GAFTA members in government and executive bodies around the world. Although the Association itself has a non-governmental status. The relevant instruments of influence for lobbying the interests of its members are the WTO, the Food and Agriculture Organization of the United Nations (FAO), and the World Health Organization (WHO). The Department also constantly monitors international law, sanitary requirements, customs regulation and agrarian policy, and, summarizing current trends, informs the members of the Association through periodic newsletters.

GAFTA was funded at the expense of annual contributions of Association members. The leadership of board is formed on an electoral basis of 22 people. Membership involves five categories: “A” – traders; “C” – superintendents; surveyors; “F” – labs; “G” – professional companies; “J” – fumigation company.

Thus, membership in the Association gives participants of the grain market the following advantages<sup>4</sup>:

- regular reports on changes in trade policy;
- access to standard forms of GAFTA contracts on association websites;
- assistance to the Association in disputes;
- participation in the GAFTA training courses (International Conference Computers, Privacy and Data Protection – CPDP) according to the membership fee and participation in the distance learning program (DLP);
- access to the Association’s contacts, the presentation of the company in the GAFTA Yearbook, the mention of its name and contact details on the official website [www.gafta.com](http://www.gafta.com) in the section Contacts;
- obtaining information from newspaper Gaftaworld;
- for the surveyor company – mention of its name in the list of registered superintendents on the official site;
- for laboratories – mention of the company’s name in the list of registered laboratories on the official site;
- participation of Association members in the system of GAFTA Trade Assurance Scheme (GTAS).

GTAS is a trade security system developed by GAFTA in 2012 based on the Hazard Analysis and Critical Control Point (HACCP) system<sup>5</sup>. The trade security system covers the entire supply chain – from an agricultural enterprise in the country of origin to the final consumer in the destination country – and establishes common rules and principles for the professional practice of international trade in grain and feed. Based on a unified product evaluation system, GTAS provides a common international platform for stakeholder cooperation and exchange of knowledge and experience. Tracking the entire supply chain allows GAFTA member to collaborate with accredited certified bodies and qualified auditors, which reduces transaction costs in the logistics system.

The GTAS document structure covers five separate modules<sup>6</sup>, that is, all stages of the logistics that are to be verified (certification). This document contains a detailed description of the current standards in the storage of grain and forage, starting with the agricultural manufacturer and further on the functional areas of logistics.

1. Laboratory program GAFTA and laboratory equipment. It consists of two parts, where the first relates to the quality assessment within the GAFTA contracts, with a detailed reference to the analysis methods of the latter and its laboratory program. The second part is devoted to the Code of Good Practice and is intended for workers of laboratories and operators of laboratory equipment used on elevators.

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<sup>4</sup> <http://gaftakyiv.com> [access: 10.03.2018].

<sup>5</sup> Ibidem.

<sup>6</sup> Ibidem.

2. Loading, unloading, control, processing and weighing. The following is a description of best practice in the implementation of each of the above-mentioned cargo handling operations with a detailed reference to the relevant rules and programs of the GAFTA.

3. Carriage by road, rail, river and sea transport. Description of the best practice of all transport operations in the logistics system – from the primary source of raw materials to the consumer of final products – with separate sections devoted to various types of transport.

4. Brokerage services. A code of conduct for brokers working in the field of trade is presented.

5. Trade. The code of professional conduct of traders in the process of signing contracts and settling disputes is presented.

The GTAF Trade Security System developed by GAFTA has significant benefits that will facilitate the integration of logistics systems, namely:

- the unification of requirements promotes the globalization of the grain market and the trade without barriers and the growth of the export potential of Ukraine with the prospect of entering new markets;
- grain certification according to GTAS scheme, unlike other systems, does not require capital investments;
- flexible modular system allows the enterprise to be certified not fully, as in the case of international ISO standards, but only in one or more modules, which is, respectively, at times cheaper for it;
- the duration of the typical audit (from 2–3 days in other systems) is reduced to one day (+0.5 days for the preparation of the report), as well as the number of audits;
- reduction of the risks related to the safety of grain and its products for the protection of consumers;
- increasing consumer confidence and image of the company;
- the market value of the company increases and the level of profitability due to the optimization of the use of internal resources.

Now in Ukraine there is a regional representation of GAFTA, which promotes the GTAS system and conducts appropriate certification of enterprises. Unfortunately, monopolization of grain exports in our country and outdated internal grain trade standards do not contribute to the quality standardization and integration processes of the national grain and agricultural sub complex of agro-industrial complexes into the world grain market. GTAS certification in Ukraine, in our opinion, is an objective process of evolution of qualitative transformations of logistics systems in the grain market.

## **Conclusions**

Exceptional integration of Ukrainian grain market logistics into the world grain market is impossible in the case of ignoring the international institutional environment and existing rules, which requires bringing the national standards for grain quality assessment to the European standards. As the Grain and Feed Trade Association (GAFTA) in the global grain flow system plays an important regulatory and supportive role for its participants, joining this organization will give national traders a qualitatively new level of foreign economic relations. The principle of the GAFTA system approach to the organiza-

tion and operation of logistics systems is implemented by the Trade Security System (GTAS), covering the entire supply chain – from the agricultural enterprise to the final consumer in any country of the world and establishes common rules, thus providing a common international platform for international trade in grain and feeds.

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