

A.A. Antonov, A.M. Koptev, N.O. Bryzatiuk,
L.V. Savchenko, PhD
(National Aviation University, Ukraine)

Key features of development agro-logistics in Ukraine

The article is devoted to the definition of the peculiarities of the development of agro-logistics in Ukraine. The article deals with the stages of development of agro-logistics in the territory of Ukraine, its strengths and weaknesses, possible solutions to the problems of this field of logistics.

After agrarian and industrial revolution Ukraine faces with a lot of difficulties. All European countries have a better agro-logistics and logistics at all, so Ukraine couldn't compete with strong logistician players as Germany, Great Britain and neighbor Poland. Nowadays Ukraine is more suitable for logistician tasks than five-ten years ago, because Ukraine has a huge capacity stock of cereals and wants to export it, but it's still quite a difficult task for global companies to choose Ukraine instead of, for example, Poland.

Commodity turnover of rural products occupies a large part of Ukraine's logistics. This is due to the fact that Ukraine is one of the leading agrarian countries. But the imperfection of the logistics system, technology, inhibits the development of commodity flows in agriculture.

Logistics is a new scientific and practical direction with high efficiency, developed in the world and in Ukraine at the end of the 20th century. Logistics is divided into many branch functional areas, among which one of the most promising is agrology, which provides for the application of logistics theory and practice to the field of agribusiness. The latter, as is known, includes such sectors as production (agrarian), processing (food industry), consumer (trade). They are closely connected with various types of internal connections - industrial, technological, economic, information, financial, labor, etc.

Agro-logistics is the science and practice of managing material flows in the production, distribution, exchange and consumption of agricultural products, including the provision of resources and the sale of the finished products of the complex in order to most fully meet the needs of the population and the national economy in agricultural raw materials and products of its processing. The main fields of application of logistics in agriculture are stocks and transport.

Since these types of connections and related flows are the subject of study of logistics, agrology also has the task of investigating and optimizing all types of internal and external links production, including also supply and marketing relations, which apply to both agrarian production in general and to its individual units. In conditions of market restructuring of the agro-industrial complex of Ukraine, agro-holdings, that is, powerful vertically integrated corporate structures in agribusiness, play a special role.

In Ukraine, agrarian logistics began to develop actively recently. But business has already fully appreciated the role and high efficiency of logistics.

Accordingly, it is time to develop the scientific foundations, methods, models for planning, controlling and managing the processes that arise in providing agricultural enterprises with raw materials and materials, organizing the production process, supplying agrarian products to the consumer.

One of the largest agricultural holdings of Ukraine, "Myronivsky Hliboprodukt" also has its own logistics companies in its structure. The group includes 19 enterprises, which are united in the production capacities of the entire technological chain of poultry farming, crop production and other types of agricultural activities. Holding occupies about 40% of the broiler meat market, owns four broiler poultry farms, two livestock and egg production farms, has three feed mill and several elevators for storage of sunflower seeds, cereals and oilseeds. Each of the poultry farms operates a processing plant. 11 distribution centers and 2,600 brand franchised outlets are provided in time with products due to the presence in the agricultural holding of 500 trucks with refrigerators.

It is also worth mentioning such a company as "Agro Invest Ukraine". In just five years of presence in Ukraine, this company managed to increase the land bank to 40 thousand hectares. All the company's earnings now work for the future result - in the future it intends to increase the land bank to 120 thousand hectares and build a network of elevators in Ukraine. The company also produces fodder crops, and also owns two livestock farms.

"Nibulon" is a producer (21 agricultural enterprises) and an exporter of grain and oilseeds, i.e., the only vertically integrated company in Ukraine that provides control of all links in the field-port technological agro-scheme - and harvesting, transportation using own equipment, storage and processing of products (has elevator capacities with a total capacity of 453.5 thousand tons), shipment via own transshipment terminal, creation of own fleet for the transportation of the crop (the company's fleet consists of 28 self-propelled vessels and 5 tug boats). The main strategic objective of NIBULON is to create an efficient agro-industrial logistics cycle, starting from the production of products and processing it, to the implementation of the final consumer, including foreign, through the implementation of vertical integration in agribusiness.

Another company that is active in the agro-business market of Ukraine - AMAKO (American Machinery Company) - is part of a large international network of companies operating in the US, Europe, Africa and the Middle East. The main activities of AMACO are technological solutions in the field of agriculture, construction machinery and commercial vehicles. The AMACO affiliate network has 33 dealer and 29 regional centers in the CIS countries.

The major operators in the market of agrarian logistics also include such companies as TM Stozhar, Chumak, Generous Gift, Lubonka LLC Ukrainian Agrarian Investments (Russian company Renaissance Capital), ZAO Rise etc.

In recent years, Ukraine has gained considerable experience in logistics management of stocks in agribusiness, in particular, it concerns the construction of metal storage facilities.

Different types of equipment are used in agrarian logistics, which makes it possible to make product care more effective.

Air and soil sensors are important additions to the automated economy. Systems of remote diagnostics of the equipment warn the mechanics that there will soon be a malfunction.

Collars with GPS, RFID and biometrics transmit biological information about livestock in real time.

With the use of crop sensors you do not need to set the fertilizer scheme blindly. They transmit information about the amount of fertilizer required directly to the fertilizer equipment. With infrared sensors, drone or optical sensors monitor the health of crops.

Sensors of the infrastructure will monitor the vibration and material condition of buildings, bridges, farms, etc. When connected to a network, they provide important information to technical support teams.

Managing variable speed rollers, using geolocation technology, saves seeds, minerals, fertilizers and herbicides, reducing costs for them. Tractors or agrarian works pre-calculate the shape of the field and make the necessary materials in such a way as to adjust their number to the productivity of different sites.

The selective breeding of the accelerated cycle uses a quantitative analysis to predict the end result, and algorithms suggest possible improvements to the genome.

Agrarian works or agrobots automate fruit harvesting, plowing, soil care, germination, planting, irrigation, etc.

The management of agricultural processes in precision farming is based on observing and responding to changes in the field conditions.

Combining dozens or hundreds of agbots together with thousands of sensors into a robotic farm complex will track, predict, process and harvest almost without human intervention. The appearance of small-scale embodiments of this model is expected shortly.

Over the past two years, AgTech has been actively developing agrarian technology in Ukraine. In the country there is at least one farm for 5 thousand hectares, completely subordinate to technologies. In the automatic mode there are treated fields, fertilizers and plant protection products are introduced. The autopilot works only in those places where it is needed - they are determined by drone and apparatuses for studying the unevenness of the surface. This allows you to attract only 12 workers in the most loaded season. In addition, it saves a significant amount of sowing material, fertilizers, plant protection products, etc [2].

The changes caused by globalization processes in the scope of economic activity and the strengthening of interrelationships in the management of material and cash flows, formulated new methods of production management, based on the rational organization of all processes of resource transfer, high level of their use, improvement of product quality and full satisfaction of demand.

The use of foreign experience of grain storage in bags-sleeves has been started. The technology of storage of grain in bags-sleeves was developed by the Argentine firm "Akron". This technology in the processes of storage of grain use the world's leading countries, among which are the USA and Canada. The experience of storing grain on this technology is available in Ukraine (in the Kirovograd, Kherson and Khmelnytsky regions).

It should be noted that in Ukraine in recent years, construction of high-quality warehouses has been actively implemented, and projects for the construction of modern storage facilities for the storage of agricultural products with the participation of foreign technologies and investors are being introduced. So, for example, "Group Bereg" invested in a new logistics complex built in the Kiev region, offering storage services for products that require a certain.

The Belgian company Agro-Maas NV plans to build in Kremenchug a terminal for grain storage with a capacity of 30 thousand tons with unloading to river transport in the volume of 700-800 tons per hour. It should also be noted the construction of elevators in the cities of Globino and Romodan in the Poltava region, equipment for which comes from Denmark and the United States.

However, the capacities of modern storage facilities for grain storage in Ukraine are insufficient, which leads to a loss of grain yields of about 8 million tons of grain a year, with production of 30-40 million tons per year (20% of gross harvest). In Western Europe and North America, these losses are only 1-2%.

Significant losses are observed in the storage of other agricultural products, so in the potato and horticultural subcomplexes they constitute 40-50% of production, in sugar beet - more than 30%, which, in our opinion, is a testament to the inadequacy of the AIC of Ukraine with capacities in general and, in particular, those warehouses that create the proper conditions for storage of agricultural products in a chilled and frozen condition. To ensure the best quality of agricultural products when stored in Japan, for example, create logistics centers that coordinate the storage of frozen stocks, namely, first pre-cooling the stocks of finished products, and then freezing this product and delivering it to the end user.

As for the means of delivery, only a few large companies can afford to purchase the latest means of transportation with GPS navigators, modern refrigeration equipment, as well as machines for transportation of bulky goods, etc. Since Ukrainian enterprises do not produce the necessary equipment for various needs of agro-logistics, it has to be bought abroad; as a result, in addition to the high cost of such equipment, high import duties also fall on the company.

The mutually complementary cooperation of enterprises of different industries leads to optimization of the supply of materials and semi-finished products and, consequently, to a reduction in the volume of stocks. Ukraine also has borrowed this world logistical experience: in the country there is a managing company TERRA FOOD which is engaged in manufacture and processing of grain and a sugar beet, animal industries and manufacture of food stuffs. In this company, suppliers of raw materials and materials determine the remaining stocks and offer optimal schemes for their supply, which are satisfied with processing enterprises.

It should also be noted that transport operators are trying not only to develop their competitive advantages, but also to cooperate. This is the stage of active exchange of experience to obtain a synergistic effect for each participant. In an effort to optimize the corresponding costs of business, increase customer loyalty, gain strategic advantages over competitors, agribusiness managers are increasingly resorting to increasing logistics efficiency throughout the supply chain.

One of the main problems of agrarian logistics is the problem of auto and railway transportation. Since 2010, at least 40% of agricultural products in Ukraine

are transported by road. Moreover, the share of vehicles has increased significantly since 1995, when carriage of grain was practically not carried out by car. As a result, transportation for a distance up to 400 km by rail is unprofitable compared with road transport.

There are known situations when the management of "Ukrzaliznytsya" imposed restrictions on the issuance of grain carriers for the transportation of barley and cake, which resulted in only 50% of applications satisfied. As a result, a significant part of the Ukrainian oil extraction factories were forced to reduce production volumes as a result of the accumulation of critical amounts of barley and husks [1].

In fact, the only way for manufacturers in such a situation is to re-focus on road transport, resulting in a cost of transportation grows by 10-15%.

Analysis of the current state of agrarian logistics in Ukraine allows us to conclude that the main obstacles in the development of agro-logistics at Ukrainian agricultural enterprises are currently:

- 1) the lack of a government program to develop agro-logistics;
- 2) lack of qualified logistics personnel in agricultural enterprises;
- 3) poor quality of the road surface, imperfect digital GPS software of Ukrainian roads and lack of a network of communication systems for large vehicles;
- 4) low investment attractiveness of agricultural branches in Ukraine, which is mainly explained by imperfect legal base and unstable political situation in the country;
- 5) the shortage of transport in the peak season of agricultural campaigns, the timeliness of delivery of products, significant fluctuations in tariffs and disruptions of motor vehicles in agreed dates for shipment.

The main ways to improve the agro-logistics system at Ukrainian enterprises, in our opinion, are:

- 1) the reform of the agricultural sector and the development of an appropriate regulatory and legal framework governing the work of agro;
- 2) the adoption of a national agro-development program, following the example of the world's leading countries;
- 3) development and implementation of an appropriate agro-logistics financing system - improving the investment attractiveness of the logistics sector by introducing special taxation regimes and preferential customs tariffs for enterprises for certain periods (1-3 years);
- 4) provision of agro-logistics companies with highly qualified personnel;
- 5) provision of agro-logistics companies with the necessary digital cartographic database, programs for them, etc.

References

1. Проблеми аграрної логістики в Україні на прикладі доставки шроту і висівку. [Електронний ресурс]. - Режим доступу: <http://agravery.com/uk/posts/show/neviizni-ak-logistika-ne-dae-rozvivatisa-virobnictvu-pevnih-produktiv>

2. Як інноваційні технології змінюють сільське господарство. [Електронний ресурс]. - Режим доступу: <https://agrodovidka.info/post/10326>