

AGRICULTURAL SCIENCE

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LOGISTICS - LIFE SUPPORT OF AGRICULTURE

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Abstract

Agriculture is a large network structure, which includes companies that produce the means of production, agriculture, processing industry, transport and information support of the flow of material. Sousing the concept of logistics improves efficiency activity of enterprises and macro-logistic systems in agriculture. The main areas of application of logistics in agriculture are stocks and transport. Management of reserves and transport people involved with the beginnings of civilized relations. Thus, the use of logistics in the economy agricultural allows one parties to streamline the processes of physical distribution, to eliminate the "narrow designated" transportation and warehousing all industries agriculture, and with the other hand directs producers to the formation of optimal channels of distribution of finished products, including agricultural products economy.

Keywords: agriculture, logistic system, transport, food security, economy

Historically proved that the agricultural sector is one of the leading places in the economy of the country. It employs more than a third of all workers in the sphere of material production, generated

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28 per cent of the country's GDP. Agriculture provides more than 70 per cent of consumer goods to the population.

Agricultural production is carrying the sphere of the economic sector. Its status and economic efficiency have a decisive influence on the level of food security and welfare of the people, largely determine the state of the whole economy. Here is the food, agricultural raw materials for 60 of the manufacturing sector, almost 80 industries supplies products here.

Agriculture refers to risky activities. Our country is mostly located in the zone of risky agriculture. Due the short time of harvest, adverse weather conditions, the factors of time and place play a very significant role. In addition, the products of agriculture affects the different phases of the life cycle of production. Products can be as raw material for industrial products and food. In addition, it can be implemented as a ready-to-use product that directly adjoins the wholesale and retail trade, i.e. it is in the pre implementation stage. Moreover, if we consider the fact that the crop is produced only in a certain period of years, great importance should be given to issues of storage, processing, transportation, inventory management that can effectively be solved exclusively through logistics. In recent years, the agriculture of the country there is a tendency of transition from stagnation to sustained development, thanks to the attention of the industry by the Supreme bodies of state power. Given that the cost of agricultural products to a significant proportion (20 per cent or more), the cost of handling and transport becomes a problem of increase of efficiency of the transport security industry. Reducing the cost of handling and transport may be primarily based on the development of efficient transport technologies and high technology.

Literary review: The economic component of production is closely adjacent the demographic situation in the industry in which to produce the required volumes of competitive products is only possible by a significant increase productivity, including on transport operations. However, to solve these problems, the available technical and scientific resources is not possible. The most promising research direction for a radical solution to the problems of increasing the effectiveness of the system of transport security of agricultural production is the use of methods of transport logistics as a division of scientific direction "logistics" - the science of planning, management, control and regulation of the movement of material and information flows in space and time from its original source to the final consumer. World experience shows that the application of methods of logistics allows us to reduce inventory levels by 30...50 per cent, reduce the time of product movement at 25...45 per cent and to minimize costs. Therefore, the problem of optimal building

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technologies and creation of technical means of transport logistics in the technological processes of production of agricultural products are quite popular in agricultural science and agricultural practice and is consistent with the objectives of the reform of the food industry. In the production of grain transport take place in almost all operations - from basic soil cultivation, sowing and plant protection from weeds, diseases and pests before harvest, when the field is removed the bulk cargo grain and straw. The greatest intensity and the cost is the flow of goods in the cleaning process cycle. Therefore, the efficiency of technology and competitiveness largely depends on build quality cleaning transport system.

Given the characteristics of agricultural transport logistics model-the harvest-transport system are made at the sample average (virtual) grain company with the size of arable land 2400 ha For calculation purposes is two options for handling grain from combine harvesters Don-1500 on talk: straight-through and relay under the following restrictions: the system of harvesting combines are a priority and stall cleaning conveyor for transport the reason is not valid. Based on the analysis of statistical data found that 1/3 of the park harvesters for the harvest period threshes almost 3/4 of all products, so for the shearer park virtual economy adopted the following parameters daily output: combines K1=70 t, K2=100 t and K3= 130 so

On the basis of the equations of motion of a vehicle, the optimality criterion chosen for the park virtual farms TC (KAMAZ, ZIL, GAZ - amount cost per unit (tons) transported grain is determined by the formula:

$$\Delta C = \frac{LKI\Gamma}{\Delta P} + \frac{3_y + A_c + 3_m + 3_{np}}{P}, \text{man./t}$$

where: L – is the path traversed vehicle for the transportation of grain per cycle "harvester – current - the harvester", km;

K – the cost of 1 kg of fuel, man;

Γ – fuel consumption per 100 km, kg;

ΔP – is the mass of grain transported TC per cycle t;

P – weight of cargo transported vehicle for the season, t;

A_{mc} – depreciation TC for the harvesting period, man;

3_m – maintenance costs vehicle for the harvesting period, man;

3_{np} – other costs on the vehicle.

Thus, it is established that the maintenance of combine harvesters working in the fields of typical crop rotation, strictly assigned vehicles, the cost of transportation of grain decreases with

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increasing unit capacity of the vehicle. When impersonal service combines running on the same box (each in its spin), costs are reduced up to 10 per cent. However, at the expense of some reduction in the waiting time of loading, daily output TC increases, so the group harvesters use more effectively. Logistics as a new scientific direction of the management, covering a system management flow processes in the economy has its own characteristics in the agro industrial trade-industrial complex (AIC). This is due, primarily, a specific function the complex dependence of the results of management from a variety of unpredictable climatic factors, land use conditions and seasonality of agricultural production.

Logistic organization of production requires that the necessary resources (materials, labor, Finance, information, institutions, etc) in the corresponding if-operation, the desired qualities were at a certain time in the right place with minimal cost. Often the logistics associated with shipping, logistics feared micro logistic the essence of an integrated, systemic approach. Logistics is the sore spot of the entire agricultural industry, and abdomen and livestock production in particular. In the country, unfortunately, there is no current logistics system bringing chilled meat products to the consumer. Small farms are not able to invest in the purchase of specialized transport. Large agricultural holdings if they purchase refrigerated transport use form it is not effective due to the lack of qualified logistics personnel, which would have sufficient experience in building effective logistics service of the Azerbaijan agro-industrial enterprises. The output of this situation is the state information, material and human resources (vocational guidance and training) support for a national network of specially logistics companies that serve businesses-breeding complex for the entire supply chain: from the transportation of raw materials, feed to delivery of finished product in the trade network. Just as important, government support for primary processing of animal raw materials directly next to the farms, where it is growing[2].

This is vital both for producers and for the state, because the transportation of meat in carcasses for many kilometers for processing (as an example of the illiterate and poor logistics solutions), eventually, the cost will kill any livestock complex and will have a negative impact on the entire agricultural industry. Because of these logistical illiterate decisions have been made in other branches of agriculture. Such decisions will not leave any chances to domestic meat producers in competition with foreign producers. On micro logistic level, there are two methods of material management - pulling and pushing. The majority of agricultural enterprises immanent push option. Pulling system ("just in time",

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"Kanban") can be used only at high discipline of production and supply. Variable weather can adjust the plans of agricultural production, and subsequently in the plans of the processing enterprises. However, this does not mean that agricultural producers are not able to use logistics or can do without it. Agricultural production for the incoming flows the following elements: earth, water, livestock, machinery, seed, fertilizer, chemicals, labor, finance, information, etc. If any item fails to arrive at the appointed place at a fixed time, the production will be under question. This causes the application in agriculture metrological the concept of "planning needs/resources (MRP and other modifications). Based on the planned production and processing chain sequence of operations and their duration is calculated resource requirements concerning specific period of time. Next task is to ensure the availability of optimal reserves the required resources and their receipt at the specified time. The application of logistics concepts within a single enterprise will lead to the application of this concept in enterprises with which it has horizontal economic ties for the supply of materials and sales of products. Formed logistics grocery chain "producer - consumer" with the inclusion of such links, as the manufacture, transportation, storage, processing and consumption of agricultural products. Micro-logical develops to a certain limit; however, to enhance the application of logistics concepts will need to go on the macro-level [1].

Logistics in agriculture is the science and practice of managing material flows in the sphere of production, distribution, exchange and consumption of agricultural products, including the provision of resources for agribusiness and marketing of finished products complex in order to satisfy the needs of the population and the national economy in agricultural raw materials and processed products. The main areas of application of logistics in agriculture are stocks and transport. Management of reserves and transport people involved with the beginnings of civilized relations. An important object of study in logistics is the concept of "flow" (news, information, financial flows and other), which determines the universality responsibilities principles. Agriculture is a large network structure, which includes companies that produce the means of production, agriculture, processing industry, transport and information support of the flow of material. Sousing the concept of logistics improves efficiency activity of enterprises and macro-logistic systems in agriculture [2].

Agricultural production and processing industry are the two most important subsystems of the agro-industrial complex. Complementing each other, they combine to form an integrated sys-

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tem with new qualitative characteristics, focused on meeting the demand for food. The need for integration arises from the moment of the social division of labor between them. We can distinguish three levels macro-logistical integration of agricultural production and processing industry: inter (inter-firm), sectorial and regional (fig. 1).

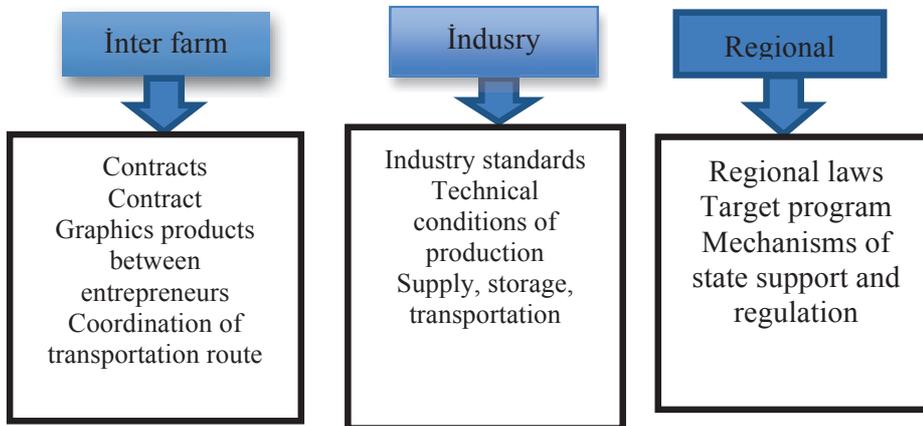


Fig. 1. Levels and institutions macro-logistical integration of agriculture in the region

At different levels of logistics integration, the need for logistic optimization of economic agents, respectively, tools, capabilities and experience, scale and complexity of the issues, institutions are formed, which must ensure the functioning of the logistics system.

At the inter-level integration is the optimization of logistics flows between farmers and processing enterprises with the help of such institution, as the contract of supply of agricultural products. The contractual relationship between them form the basis of informal logistics of institutional relations. The frequent repetition of such informal relations between the participants of the food chain contributes to the emergence of formal rules of relationships at the level of industry, region and beyond. However, formal institutions, such as laws, standards, regulations standards - it is the prerogative of the government. The state should create an institutional environment conducive logistics integration of all parts of the food chain, including production and processing. At the macro level requires mechanisms of state regulation on the balanced use of limited resources and socio-economic development of territories.

The development of the processing industry is hampered by the typical small-scale agriculture production type (tab. 1). Only 11.1 per cent of all products of agriculture of the republic accounted for by agricultural organizations, and the share of households is 75.8 per cent (the rest is the share of peasant farms).

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Table 1

**Production and structure of main types of agricultural products
by types of farms in the Republic of Azerbaijan**

	Total production, thousand tons	Structure of production (percent of total production)		
		Agricultural organization	Households	Peasant farms
Potatoe	352,1	0,6	99,0	0,3
Vegetable	1062,6	1,0	98,5	0,5
The fruit and berries	120,5	7,0	90,0	3,0
Grapes	59,5	38,3	59,3	2,4
Cattle and poultry for slaughter (slaughter weight)	101,5	15,9	67,2	16,9
Milk	732,6	15,7	65,4	18,9
Egg , milln.p..	175,6	8,4	79,7	11,9

In the structure of production of vegetables, fruits and potatoes more than 95 per cent are small entities (individual farms and smallholdings). This means, even if today will be large enterprises for processing and storage, their power will not be loaded due to the lack of supply of raw materials. Here is the paradox - the production is, and no supplies. For a large supply of the processing plant should be involved hundreds or more individual farms and smallholdings. Processing enterprise is difficult to have relationships with so many contractors. At the same time, households and private farms need help marketing their products.

The rural population of the mountainous part of the republic traditionally engaged belly-livestock leads subsistence farming, making homemade way, all the necessary food: national cheese and cheese; butter and cheese; dried meat and Gorski dried sausage. Cattle for grazing Argonauts in the mountains for summer pasture. The problem of food and heavy physical labor is an obstacle to development of livestock in the mountains. Until there is a qualitative development of rural infrastructure (roads, transport, electricity, gas etc) to expect an increase in the marketability of

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agricultural products and should not be. In the logistic integration of territories and sectors of the economy crucial to the development of the transport subsystem. "Transport revolve around the logistics chain of production and consumption, storage and distribution, consignees and shippers. In the plains of the republic of large farmers can use advanced technologies of production, storage and processing, and small need to cooperate. The state should encourage the creation of cooperatives of farmers, providing them with soft loans for the purchase of agricultural machinery and equipment for storage and processing of raw materials. For industrial processing receives no more than 10 per cent of the products livestock-breeding. Given production, emphasis should be placed on the construction of small enterprises and the creation of an institutional environment for business development.

This raises the need for target-oriented approach to solving problems of modernization of technological equipment, production and introduction of modern packaging and packaging materials, the use of storage and transportation throughout the supply chain in agriculture. "Sometimes it is necessary to increase costs in a separate chain for lower total cost. Therefore, increasing the cost of reconstruction of the processing industry, the introduction of advanced technologies of production, transportation and storage, can significantly reduce the need for resources and to increase the results.

In order to strengthen integration processes between farmers and processing industry should:

- for agricultural enterprises to apply micro-locations the concept of "planning needs/resources (MRP);
- to develop social infrastructure in rural areas;
- to provide state support forms of cooperation in agricultural production and processing industry;
- enhance the impact of the institutions of state regulation (the target program, budget subsidies) on technical modernization and logistical agricultural region.

Conclusion. The most important results obtained during the study, you must include the following:

- The market environment wholesale and retail company is divided into external and internal environment. Elements of the internal environment are the staff, resources, organizational structure, corporate culture and management. The external environment consists of the micro environment, including consumers, suppliers, competitors and intermediaries, and the environment, presents sociological, technological, economic, political and environmental

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factors. Logistics system consists of elements of the internal environment and must adapt to environmental factors.

- The main purpose of the logistics system of wholesale and retail companies operating on the market of materials and equipment agricultural purposes is the delivery of the required materials at the right place and time, in the right quantity and with minimum costs and maximum service. Delivery of materials and equipment is carried out through the creation and management of the logistics chain.

- The main objective of marketing is to create demand and the changing external environment in accordance with the interests of the company, the main objective of logistics is to implement demand at the least cost and the company's adaptation to the external environment. The logistics system is responsible for the last two components of the formula marketing cost, time, and place. The logistics system must ensure the availability of the goods immediately, when and where it is necessary for the consumers.

- The pace of development and financial stability of the company largely depend on how different types of cash flows are synchronized with each other and with material flows in volume and in time. The high level of this synchronization provides a significant acceleration of the implementation of the strategic development goals of the company.

- Relatively effective are 30...40 per cent of the federal budget expenditures on agriculture (Federal target program, subsidizing interest rates on loans, crop insurance, as well as a small portion of the costs of subordinated structures). Therefore, we propose the reallocation of costs to improve the logistics infrastructure for the movement of materials and equipment agricultural purposes from producers to consumers.

- Grouping of items will help managers to focus appropriate strategic efforts on each selected product segment. So, for products with large sales volumes necessary to set higher service standards (SLAs) and create a larger insurance stocks. Conversely, products with low sales do not require large stocks, and in relation to them quite assume a lower level of service. In addition, the necessary means of increasing the efficiency of the logistics system of the company are: assessment of suppliers, implementation, budgeting, assortment optimization on the basis of profitability.

- Assessment of the costs and logistics service system allows management of trading companies to evaluate how the increase or decrease logistics costs affects the overall level of logistics service. In turn, the level of logistics service directly affects the revenue of a trading company, as well as its marketing image.

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Ultimately, the increase in logistics costs is justified only if the subsequent increase in logistics service would increase revenue by an amount exceeding the amount of increase in logistics costs, i.e. if it increases the efficiency of the logistics system and the value of the company as a whole.

Thus, the use of logistics in the economy agricultural allows one parties to streamline the processes of physical distribution, to eliminate the "narrow designated" transportation and warehousing all industries agriculture, and with the other hand directs producers to the formation of optimal channels of distribution of finished products, including agricultural products economy. The formation of the logistics concept in the agricultural sector of the country means a reasonable combination of centralization and decentralization in the management of material flows and sales of finished products, and creating circuits supplies and formation of network forms of interaction between participants distribution.

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