

## ORGANIZATION OF TRANSPORTATION OF AGRICULTURAL PRODUCTION

In the article features of the organization of transportation of agricultural cargoes are considered. A comparative analysis of the conditions for the movement of agricultural products from producers to consumers is presented.

**Key words:** *transportation, agricultural products, transport, storage, consumer.*

There are industries, including agriculture, where transport not only fulfills a significant part of the production process, but is also an integral part of it. The process of production of agricultural products is accompanied by a number of transport works, conditioned by technology (transportation of seeds, fuel, fertilizers, pesticides, forages, people, etc.). The harvested crop, livestock products are transported to the place of primary processing or storage, etc.

In agriculture it is necessary to move huge amounts of fertilizers, seeds, grown crops, fuel, lubricants and other goods to large areas, which requires the organization of work of vehicles in field roads, and often off-road. Therefore, agriculture can not be limited to any one, even a highly efficient mode of transport. Agricultural enterprises need a complex of vehicles that meet the operating conditions, taking into account the technological maintenance of sowing, harvesting and other aggregates.

A technological feature of agricultural production is that the delivery of goods to farms on a calendar basis does not coincide with the timing of the removal of agricultural products. So, during the transportation of crops from fields, the flow of goods is usually one-sided [1].

There is absolutely no possibility of passing loads of cars when transporting fuel and lubricants, ammonia water, when exporting to fields of manure, mineral fertilizers, pesticides, seeds, etc. Consequently, vehicles in agriculture are mainly loaded in one direction, and the mileage utilization factor is not exceeds 0.5.

The downtimes in transport on technological transportation are largely due to the downtime of agricultural machinery due to weather conditions, and also because of the lower operational reliability of harvesting units. This leads to large intra-shift downtime of cars and tractor trains, since in the field it is not always possible to switch them to other transportation.

When improving the transport economy and developing measures to improve the operation of vehicles in agricultural enterprises, one should take into account the unevenness of freight turnover during the year and the technological features of agricultural production.

From the point of view of the interests of the entire national economy in agricultural enterprises, it is advisable to have such a number of cars that would provide technological needs and various intra-economic transportation. It is expedient to satisfy the needs of agricultural enterprises in export and import of various cargoes mainly

at the expense of large specialized motor transport organizations. The rational correlation between own and attracted motor vehicles is economically most justified, since it allows more efficient use of vehicles.

From the rational organization of transportation, the availability of modern vehicles and their correct use of agriculture, the timeliness of the performance of agricultural work, its quality, labor productivity and the level of the cost of production depend to a large extent.

Agriculture is one of the industries that have a significant range of goods. The structure of goods determines the requirements for the composition of the transport fleet. Depending on the zonal features and productive specialization, it can vary significantly in individual farms, but for all farms a significant proportion of goods transported in bulk or shaft is characteristic.

One of the important factors characterizing agricultural goods is the variability of their mechanical properties under the influence of humidity, pressure, temperature, and storage time.

The seasonal nature of agricultural production causes considerable fluctuations in the volume of transport operations during the year, mostly in grain-farming enterprises, and, to a lesser extent, in meat and dairy farming enterprises. In a number of cases, it becomes necessary to repeatedly transport the same goods, which should be taken into account when planning the operation of agricultural vehicles.

The peculiarity of agricultural products is that during the time in them complex biological processes take place, on which their quality and safety depend. The physico-mechanical and agrobiological features of agricultural cargo determine the requirements for rolling stock, loading and unloading equipment and the organization of transportation.

Optimum from the point of view of economic interests and, accordingly, interests of consumers there will be such condition of motor transport which will provide the greatest safety of agricultural production. Thus, a comparative analysis of the conditions for the movement of goods in relation to their losses gave the following results in Fig. 1.

According to variant I-Ia, the products from the field go directly to stores, without additional work. Then standard products are mixed with non-standard, roots are taken out with adherent soil. In this case, from the poor quality of the products, the buyer suffers, mainly, the shopper, less often (in case the products are not sold).

The greatest losses are caused by variant I-IIb. Here, unprocessed products (standard and non-standard) are stored and graded.

Variant I-IIIa gives a minimum of losses while providing the population with fresh vegetables and fruits, but the realization takes place only during the harvesting period. The extension of the maturation of different cultures widens the possibilities of using this option.

Storage of products at the place of consumption (according to variant I-IIIb) allows to reduce losses, since only standard products are stored. However, the conditions of transportation may be decisive in the safety of the products [2].

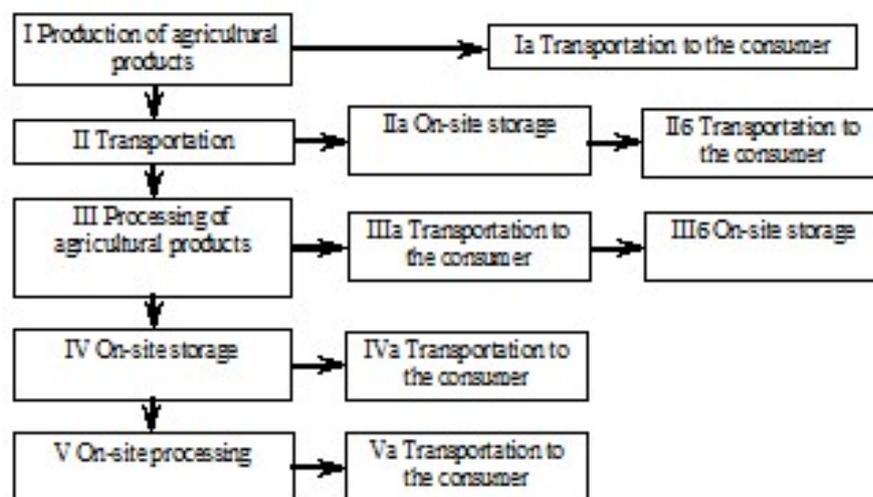


Fig. 1. Variants of schemes for the movement of agricultural products of plant origin from producers to consumers

In all considered variants the manufacturer is not interested in safety of production in a place of consumption. The best option is I-IVa and IVa. Subject to reimbursement of costs and profit, the producer is directly interested in preserving his own products. The main benefit of this option is that it stimulates the production of agricultural products, suitable for long-term storage and processing with minimal losses. At the same time, the conditions for the use of waste products during the storage and processing of products are significantly improved.

Thus, the problem of choosing an efficient way to organize the transportation of agricultural products (container, package, container and bulk, mass and small-lot, direct and mixed) and the structure of the fleet of vehicles is a complex problem, it must be solved using system analysis methods.

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**Тухтамишев Ш.К.**  
ассистент

Ташкентский государственный аграрный университет  
Узбекистан, г. Ташкент

## ОРГАНИЗАЦИЯ ТРАНСПОРТИРОВКИ СЕЛЬСКОХОЗЯЙСТВЕННОЙ ПРОДУКЦИИ

В статье рассматриваются особенности организации перевозок сельскохозяйственных грузов. Представлен сравнительный анализ условий для перемещения сельскохозяйственной продукции от производителей к потребителям.

**Ключевые слова:** транспорт, сельскохозяйственные продукты, транспорт, хранение, потребитель.