

The main economic aspects of completing and use of agricultural machinery in the conditions of plant growing of Kazakhstan

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Abstract: One of the main problems for development of agriculture of the Republic of Kazakhstan (RK) is inefficient use of machine and tractor fleet. Now a significant amount of the agricultural enterprises owing to shortage of money are compelled to use outdated equipment that is accompanied by increase of expenses for repair, performance of agro technical works not in established periods and with considerable losses of agricultural production. And those enterprises which have necessary means for updating of the machine and tractor fleet, often acquire equipment, without paying attention to already available branded structure of machine and tractor fleet and its fitness to local natural and economic conditions. As a result because of no optimality of structure of machine and tractor fleet (MTF) of the enterprise of the technician it is used inefficiently and also it is accompanied by serious losses of agricultural production. As the result, owing to big losses, prime cost of agricultural production constantly grows that is negatively reflected in financial results of the enterprise.

Key-Words: system of machinery, machine and tractor fleet, agro-industrial complex, economical efficiency, productivity

1. Introduction

Globalization of the economic relations and the ever-increasing competition in the world food market has impact on mankind developments. In these conditions, the special role will be played by the branches having export-oriented character. In agro-industrial complex of Kazakhstan such role belongs first of all, to grain production of the republic.

The geographical position and natural and economic conditions determined to Kazakhstan a role of one of main regions of Central Asia by production and processing of agricultural production.

Further development of agriculture is one of the main tasks facing now the government of RK. The modern agriculture represents power-intensive branch which demands mechanization and automation at all production stages.

In production of grain and in increase of its efficiency the great value has level of the organization of system of machinery.

It is necessary to understand system of machinery of the technical means used in technological process of plant growing as system of machinery, and providing necessary level of mechanization, for the purpose of decrease in power consumption of production[1].

2. Problem Formulation

At the present stage of development the system of machinery RK has a lot of problems which agricultural producers at various stages of production outputs.

The first problem is that the level of security available at present by equipment and technologies of agricultural production of the Republic of Kazakhstan do not completely satisfy needs of agricultural producers. Over the last ten years the qualitative structure of the machine and tractor fleet (MTF) has changed significantly.

Table 1: Existence of the main agricultural machinery in the agricultural enterprises for 2001-2012, pieces

Name	2001	2006	2012
Tractor of all brands	48864	43715	36958
C o m b i n e harvesters	21428	20199	17285
Seeders	42674	42535	33664

Today in the republic are about 36 thousand tractors, 17 thousand combine harvesters and more than 200 thousand units of agricultural machinery. Thus, for example, only 7% of tractors, 27% of

combines and 10% of seeders have age till 10 years. Annual level of updating on tractors makes about 1%, to combines of 2,2%, soil-cultivating tools of 0,1%, at demanded 5-8% taking into account acquisition of high-performance agricultural machinery.

Because of a lack of high-performance equipment and its physical and obsolescence in many farms technologies of cultivation and cleaning of grain aren't observed, there are crop losses, outputs and quality of production decrease. Besides, it is the negative a consequence is to reduction of workplaces, unemployment growth in the village, to reduction of the income of country people.

And it leads to impossibility of acquisition of new equipment agricultural enterprises in sufficient volume. Updating of machine and tractor fleet occurs not in full[2].

However, in the last some years the tendency to increase in quantity of all types of agricultural machinery that is generally connected with increase in acquisition of equipment in leasing is traced.

The market of leasing is the most demanded and perspective instrument of updating of agricultural machinery in Kazakhstan to that promotes considerable wear of fixed assets.

MTF of Kazakhstan is generally completed with import and Russian equipment.

From total of the acquired combines «Yenisei», «Niva», «Don» prevail the Russian machinery, in particular the «MTZ» tractor.

Together that, in the last some years delivery of import equipment considerably increased that approximately makes 10% from total number agricultural machinery.

It is caused by that the foreign machinery differs more high efficiency of production in comparison with the Russian brands.

The main and most important problem is that agriculture in Kazakhstan has sharp contrast, here it is necessary to consider zone specifics when discrepancy of system of a machine using to application natural working conditions takes place. Discrepancy of system of a machine using to natural working conditions of operation of the machine and tractor fleet (MTF) at all stages of time and on all technologies of processing of the soil of crops, cleaning, postharvest processing it increased a share of losses, reduced productivity and quality of production. And in these conditions it is necessary to fulfill the new differentiated zone techniques of completing of MTF taking into account natural and production features.

3. Problem Solution

The problem of a choice of effective agricultural machinery gets importance for agricultural divisions of the Republic of Kazakhstan.

MTF of the republic consists of various brands, categories of cars.

The economic assessment of agricultural machinery and technique of their comparison shows that in medium-term prospect of the technician of the Russian production competes only low purchase price. At increase of its price, at the expense of the smaller volume of the performed works and on losses, it concedes technicians of foreign production.

For example, on basic parameters many foreign combine harvesters are similar to the «DON-1500» combine, nevertheless they have more perfect technical and operational indicators, high reliability and technical readiness. In particular, for foreign combine harvesters the time between failures on the average makes 100-120 h. For comparison: at «DON-1500» combines this indicator doesn't exceed 12 h. High technical parameters of foreign combines give the chance to reduce losses of a crop by 2-3 times and for 15-20% to cut fuel expenses

It is known that each technological process has from 20 to 45 operations. Separate operations can be carried out various brands of tractors and agricultural machinery and tools owing to their universality.

Now among agricultural producers the sowing complexes «Jon Deer», «Fentd» which can carry out some technological processes at the same time use great popularity. For today the given complexes are highly productive and easily adapted that can make them demanded among agricultural producers of Kazakhstan. For example, development of these complexes makes 60 hectares for change, and the norm on the Russian «K-700» and «T-4» brands respectively makes 32 hectares, and 25 hectares. These calculations say that sowing complexes of foreign production are more competitive and highly productive.

However it is necessary to consider that import of new brands of foreign equipment, mainly American and German production have to have system character. One only combine harvesters of various firms and the countries now more than ten brands work at fields. Meanwhile the excessive wide range of groups of equipment is unacceptable for agriculture of Kazakhstan with the weakened infrastructure and a transport network in the market of machinery.

Besides check of new equipment on compliance to national system of technologies and machinery isn't made properly, adaptability to

local conditions, quality of the applied oil products, existing repair serving base isn't estimated it. There is no reliable information on offered machineries, there are no data on results of tests under our conditions[3].

One of perspective the direction of agricultural production of Kazakhstan who partially solves a problem of completing of MTF, and also its deficiency are various forms of cooperation.

Experience of the leading agrarian countries of the world testifies to expediency of cooperation in an agricultural machinery of use. For example in such developed countries as the USA, Germany, France, Great Britain and Canada, from 20 to 70% of farms are captured by various forms of cooperation in acquisition, joint using and equipment service.

The simplest organizational form of use of machinery – neighbors' mutual aid – the oral arrangement between several farmers about joint using the agricultural machinery bought new or already being in using and the equipment.

One more form of use of equipment are machine rings. Machine rings represent a form of association of farms for sharing of agricultural machinery and providing the mechanized services to the third-party organizations. Usually machine ring has no own cars, they belong to certain members. The ring mediates in the organization of use of cars it members. Machine rings got the greatest distribution in Germany and Austria.

Main goal of such association – improvement of use of cars, instead of receiving profit.

Organizational form of sharing of equipment also are machine pools – associations of farmers for joint acquisition of cars. In the large machine pools including of 50-100 members, employ experts for management of pools, service and the maintenance of equipment.

In a number of countries of Western Europe, in particular to France and Poland, sufficient development was got by such form as cooperatives for sharing of agricultural machinery. The equipment and the cars being at the disposal of cooperatives, as a rule, are collective property and according to demands of farmers carry out in their farms by means of the hired personnel necessary works. Financing of cooperatives is carried out from three sources: loans, grants and own capital. Such cooperatives quite strong contenders to the enterprises providing mechanized services.

In the USA, Canada and countries of Western Europe there is a large number of the independent enterprises providing mechanized services on performance of concrete highly

specialized works (the main processing of the soil, harvesting, etc.).

In the conditions of a considerable rise in price of agricultural machinery in many developed countries hire and equipment rent widely are used. Points of hire or rent give the chance to use rationally difficult and expensive technique and more stoutly to satisfy the order of consumers, to save means and material resources[4].

Having carefully studied a situation in each case and having correctly defined this or that form of use of equipment at works on cultivation and harvesting for each economy irrespective of form of ownership, it is possible to find that optimum decision which will give the chance to perform with the minimum expense of means all technological operations from soil preparation before harvesting.

In various agricultural zones, and also farms with various specialization of production by priority activity creation of the system of machinery which corresponds to local conditions of production.

Researches of level of efficiency of use of potential of Kazakhstan conducted still weren't complex, and developed recommendations didn't consider specific features of the region. In researches much attention was paid to specialization of farms, organizational economic factor of production. Thus the signs having direct impact on operational indicators of cars, remained out of sight of scientists.

Different natural working conditions of maintaining agricultural production resulted in need of the differentiated formation of system of machinery. The differentiated formation of system of machinery in this case is understood as creation of zone system of machineries interconnected with the natural and production environment.

According to the accepted approach, it is necessary to understand the signs having directly impact on level of use of equipment as natural working conditions. Them treat: type and mechanical structure of soils, quantity of humidity and precipitation, and also the characteristic of fields and other conditions in which operation of machineries proceeds[3].

For example, in steppe areas the most productive are wide range working cars. In the mountain areas, being characterized difficult conditions of production (dissociation of the land plots, the marshiness, a difficult relief), the best results are yielded by cars with a smaller width of capture and bigger maneuverability.

Natural and production features make solving impact on the end result of maintaining agricultural production – quantity and quality of production.

Value of the end result coordinates with risks in environment.

Value of a quantitative and quality indicator of risk causes development of a new technique of formation of system of machinery taking into account zone specifics of the Republic of Kazakhstan. For increase of the end result the formation technique with correction efficiency of agricultural machinery will simplify procedure of completing of MTF, it will allow to create conditional and zone highly effective system of machinery for various regions of the Republic of Kazakhstan.

Techniques of formation of system of machinery taking into account the zone standards, coordinated to risks, which are given by the new status of compliance to natural working conditions of operation of MTF, lowers losses and estimates the quantitative and qualitative party of structure of MTF. Conditional division on zones of a machinery of use and development of new standards of compliance of natural and production and technology factors is for this purpose offered. In the conditions of market relationship factors of interrelation of equipment and technology, environment and qualification of shots play a crucial role in increase of system effectiveness of cars and further this problem is supposed to deal with more deeply and comprehensively[5].

4. Conclusion

Specifics and complexity of agriculture causes need for various systems of machinery, and also need of improvement of use of machine and tractor fleet on the basis of its effective completing. Thus a basis of complex mechanization is the system of machineries developed for specific zone conditions; it allows to realize possibilities of scientifically reasonable systems of agriculture and the farming, the new progressive technologies providing increase of productivity, labor productivity, decrease in material and other resources, safety of a crop.

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