

THE RENEWAL RATES OF THE FLEET OF TRACTORS ON THE FARMS OF LATVIA

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Abstract. The article deals with the statistical indices which characterise the renewal rates of the tractor fleet in Latvia, changes in its structure, the quantity of tractors and their energy intensity. Factors are shown that characterise different rates of the growth of the tractor fleet, the purchasing dynamics of new tractors which have the greatest specific weight among the purchased ones. The perspectives of further formation of the fleet of tractors by reducing the quantity of tractors and increasing the number of energy intensive machines on the farms.

Key words: fleet of tractors, rates of growth, renewal of the fleet of tractors, economic efficiency, subsidies.

Introduction

In order to ensure economic efficiency of the fleet of tractors, great attention should be paid to correct formation of its structure, quantity and energy intensity. The topicality of this issue results also from the fact that the tractors make the main energetic basis on the farmers' homesteads, particularly, during the last few years when their prices and energy intensity has significantly grown. In parallel with this, the structure of the fleet of tractors should be formed to ensure economic efficiency of farms and their competitive ability. The farms of Latvia with the total area under crop from 20 to 50 ha have the following structure of tractor (by the engine power): 20 kW – 13%; 32.5 kW – 19%; 50 kW – 25%; 80 kW – 35%; 100 kW – 5%, the specific energy provision being 2.79 kW/ha. On the farms with the 200 – 300 ha total area under crop the structure of tractors (by the engine power) is the following: 20 kW – 7%; 32.5 kW – 7%; 50 kW – 18%; 80 kW – 41%; 100 kW – 25% (the year 2005) and the specific energy provision is 1.16 kW/ha. Such a difference in the structure of the applied tractors can be explained, to a great extent, by the fact that energy intensive machines are used on the large farms which allow reaching high efficiency of the tractor aggregates.

Object and methods

The object of this investigation is the fleet of tractors of Latvia. The applied methods are analysis and interpretation of the statistical data and the materials provided by other authors, prognostication of the development rates of production, the renewal of the fleet of tractors and the respective fleet of machines. There are used the materials of the Central Statistics Office and National Inspection of Technical Supervision.

Results and discussion

Since 1997 – 2006 the number of the purchased new tractors in the fleet of tractors was 8345 tractors. The average annual absolute increase – the purchase of the tractors in the period mentioned above was 14.3 tractors. The average rate of the growth during this period was 2.7%. This shows how much the level of the new purchased tractors has increased in comparison with the previous year. The highest increase in the number of the purchased tractors (1086 tractors) was in 1998 in contrast to the year 1997. In many respects, this can be explained by the circumstance that more subsidies were allotted for the updating of agricultural technologies; this year they constituted 35% of the total sum in the form of subsidies. With the number of the purchased tractors growing, the value of the 1% of the increase in 1998 was 4.77 tractors but in 2006 – 12.23 tractors, i.e., 2.56 time more. The renewal process of the fleet of tractors is characterised by great variety (fluctuations of absolute increases) caused by annual variations in the value of the allotted subsidies, the priority of purchasing modern energy intensive tractors (120...250 HP) in the recent years 2001...2006 the prices of which are 2...3.5 times higher in comparison with the prices of tractors purchased before the year 2001, as well as the tendency of the farms to increase their areas. It should also be noted that the great fluctuations in the number of the purchased tractors by years have a negative impact on the prices of the supplied tractors. In case the number of (demand for) the supplied tractors is as prognosticated, their prices would fall by 10%, not less.

Figure 1 reflects the renewal dynamics of the fleet of tractors in the years 1997 – 2006 on the basis of analytical levelling as the time function $y = f(t)$, where y – the theoretical value of the number of the tractors purchased, t – the period of time (years), $t = 1...10$.

The cause for the insignificant change of the number of tractors in the fleet of tractors was shown above. Figure 3 reflects the purchasing dynamics of the new priority brands of tractors having the greatest specific weight among the tractors acquired in the given period (years 2000...2006), except the tractors of the MTZ brand.

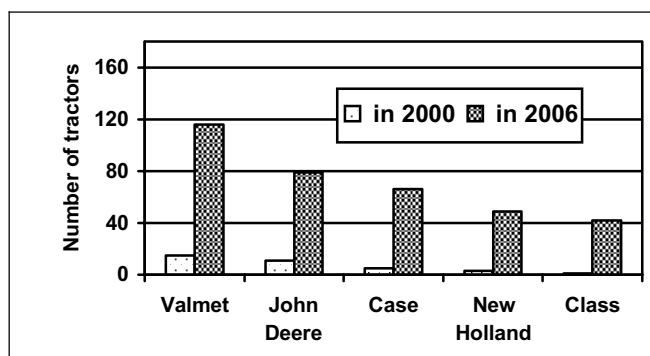


Fig. 3. Purchasing dynamics of the newest priority brands of tractors on the farms

It is obvious from Figure 3 that the number of the purchased priority tractors has a high rate of increase. If the years 2000 and 2006 are contrasted, then the acquisition of the tractors of the Valmet brand increased 7.7 times, John Deere – 7.2 times, and Case – 13.2 times. Besides, tractors Valmet have the highest value of the 1% increase – 1.16 tractors, whereas Case – 0.79 tractors.

Tractors of the brand MTZ have the greatest specific weight among the annually purchased tractors. However the number of the MTZ tractors acquired in the respective years is decreasing with every year in contrast to all the other brands of tractors. Thus, in 2000 their proportion was 72%, in 2005 – already 50%, but in 2006 – 26%. The data show that among the tractors purchased since 2001 ever increasing preference is given to the following brands: Valmet (Valtra), John Deere, Case. This points to the fact that not only the price but also reliability, economy, energy intensity, possibilities of their efficient application, the degree of comfort and other characteristics play certain role in the renewal process of tractors.

The specific energy provision on large farms has fallen by 9% at the expense of the use of energy intensive machinery and the growing labour productivity. Such a trend is promoted by the enlargement process and specialisation of farms. This tendency towards the growth of energy intensive machinery on the farms allows prognostication of the number of tractors which may constitute 26 – 30 thousand in the future. At the present rate of such a renewal of the fleet of tractors it may be completed in every 15 years.

Conclusions

The average growth of the number of the purchased new tractors is 2.7 % (the years 1997...2006).

One of the reasons for the low renewal rate of the fleet of tractors is insufficient state support, its significant fluctuations by years. The priority of the tractors to be purchased has changed during the recent years in favour of the up-to-date and energy intensive ones (120...250 HP).

The tendency in the growth of the number of energy intensive machinery and the renewal rates of the fleet of tractors with the reduction in their number will allow prognostication that in the future the number of tractors will be 26 – 30 thousand.

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