- осуществлять диагностику оборудования согласно нормативным показателям для выявления состояния работоспособности машин с учетом требований по ресурсосбережению, эффективному использованию животных, охране окружающей среды, техники безопасности.

ISSUES OF TRACTORS AND AGRICULTURAL MACHINERY COST OF SERVICE IN THE TERMS OF POLISH FARMS

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В статье рассмотрена проблематика, связанная с финансовыми издержками на механизацию сельского хозяйства в Польше

Introduction

Important role in the cost of agricultural production in Polish farms play mechanization costs (ie, tractors, machinery operating costs, or lease of mechanization services) [Wojcicki, 1992, Olszewski 1999].

These costs as evidenced by numerous studies, are a significant share of the total production cost and have a direct impact on the competitive potential of agricultural holdings on the market [Wojcicki, 1992, Tomaszewski and Lorencowicz 1992, Olszewski 1999]. In Western countries, the share of operating costs in the direct cost of production amounts to 40% (average 25-30%) depending on the direction of crop production, while in our country, this proportion is 30-70% [Karwowski 1998]. The costs of mechanization in Polish agriculture are structurally relatively high. It is a factor characteristic of the fragmented Polish agriculture, what will not change in the near future [Muzalewski 2007].

High costs of mechanization of Polish farms are mainly due to low annual use, and thus high maintenance costs of machinery [Muzalewski 2007]. High costs of mechanization in the Polish farms is also detrimentally affected by badly-functioning system of mechanization services [Michalek et al. 2000], the lack of specialization and simplification of the production [Kowalski 1996], and operation of used machines and tractors that require from one year to another getting more funding for their maintenance and repair [Tabor 2004]. Another factor adversely affecting the costs of mechanization is VAT [Muzalewski 2005].

The structure of the operating costs of agricultural machinery in Poland constitute a significant share of maintenance costs (depreciation, storage and insurance) [Muzalewski and Olszewski 2000], which in holdings over machined can rise up to 70-73% of the cost of operation of machines [Kochan 1996]. The share of depreciation in the cost structure of mechanization is estimated by some scholars to be between 39% to 56% [Kocira and Sawa 2005, Tabor 2004]. Other researchers find that the largest share in the costs of mechanization are fuel (70%) and electricity costs [Kowalik and Grześ 2006, Wojcicki, 2007].

The issue of optimal annual use of tractors and machinery on farms in Poland

Annual Usage is an important factor in the size of the cost of mechanization. However, as Muzalewski sates (2007). in Polish conditions to obtain the level of annual use of machines similar to normative values set out by research institutes is possible only in few cases. A significant problem associated with annual use below normative values takes place in a small area farms where individual use of the machines often does not allow the farmer to obtain the unit cost of operating the machine near to the market prices of similar services [Kowalik and Grześ 2006]. Detrimental to the annual use of machines in Poland, was the reduction in agricultural area and sown area of most crops, while increasing the number of tractors used in agriculture (in 1996-2002 about 62 thousand. i.e. 4.7%) and combine harvesters and other machines, reducing the area of the

country and the participation of labor-intensive cultivation of potatoes (40%) and sugar beet (33%), and the gradual increase in average power of tractors [Muzalewski 2007]. Thus, as noted in the period 1996-2004 the average use of tractors decreased by as much as 20.8% and the combine harvesters by 20.2%. the use of self-propelled forage harvester increased, which can be explained by the increase in maize production acreage for silage [Pawlak 2005].

While in the 90s of last century the annual use of statistical tractor was 350-400 hours / year in 2004, it was only 285 hours per year [Pawlak 2005]. In the group of farms with an area of 5 ha annual use of tractors is just 275 hours [Tabor 2008].

In the opinion of Muzalewski (2007) such a low use of tractors does not guarantee full use of their operational capacity, even at 25-30 years of their duration. So, to fully exploit the potential capacity of tractors it is required to ensure that they are operated on average for nearly 34 years, while in holdings of 5 hectares up to a period of 46 years [Tabor 2008].

Actions to lower costs of mechanization and the problems associated with them

The main action to lower the costs of mechanization is to reduce the costs associated with depreciation. The most common way to reduce machines amortization costs is to extend their use and distribution of these costs over a longer period, which is currently observed in the vast majority of farms in Poland [Muzalewski and Olszewski, 2000]. According to IBMER study in Polish agriculture, the average duration of machinery and agricultural tractors is 30-35 years, and sometimes it is longer [Muzalewski 2007].

Such action is not conducive to the modernization of Polish agriculture and the introduction of modern and efficient production technologies. According to Morgan (1993) machine 15 years old, and often 10-year machines are already obsolete in terms of design solutions and agronomic and economic requirements put before them. In comparison to modern machines, machines with a very long lifetime are generally characterized by lower productivity, resulting from the technical parameters of the machine or the lack of equipment supporting its work, lower quality of work, higher fuel consumption, etc. [Morgan 1993]. Also, older machines require more frequent inspections and repairs, which over the years come down to replacement of their subsequent working groups [Hozjajev 2000]. Ultimately, it appears that due the high cost of repairs the exploitation of the old machines is usually more expensive than new machines. For other ways to reduce the costs of mechanization one can include alternative forms of use of agricultural equipment, such as the use of collaborative engineering. These forms are widespread in Western Europe. However, as research suggests placing them in Polish conditions faces the basic problem which is the reluctance of Polish farmers to use other forms of use than individual use [Search 2006]. Those reluctant to joint use of machinery, farmers need to have machines for personal use mainly explain that by the possibility of timely implementation of procedures, improved operation and maintenance of equipment and their likelihood of conflicts with the common use of machines [Search 2006]. Services provided by specialized companies are more likely to succeed. In the period between 1993-2005 in Poland one could see an increase in demand for services by 40% while the number of outlets providing mechanization services increased in this period by 58% [Pawlak 2006]. However, as noted the intensity of the use of the mechanization decreases with farm size. This phenomenon is explained by the fact that small agricultural producers, particularly deprived of tractive force, require a wide range of services, whereas those better equipped with machinery and equipment wait for specialized services usually rendered by expensive equipment, [Radwan and Wadoń 2009].

Summary

The costs of mechanization in Poland constitute a significant share of the costs of agricultural production. Thus, their reduction has a significant impact on the profitability of agricultural production. Lowering the cost of mechanization, by the use of alternative forms such as joint use of machinery has difficulties arising from the mindset of farmers, while mechanization services in

spite of their growth are not widely popularized.

One way to cut the costs of mechanization is the proper selection of tractors and machinery in terms of parameters that enable their efficient work on farms.

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