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EQUIPMENT AND USAGE OF TRACTORS IN THE AGRICULTURAL COOPERATIVE "AGROPROM"

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Abstract: Cooperatives as a form of economic activity have become increasingly important in our country in recent years, largely influenced by government incentives in the form of financial aid for the purchase of equipment and machinery and subsidies for the purchase of livestock. In this study, using data on the activity of the agricultural cooperative "Agroprom" from Stara Pazova, the prospects and significance of joining this form of enterprise and functioning according to cooperative principles were analyzed, focusing on the equipment with tractors and their use in primary agricultural production.

Keywords: agricultural cooperatives, agricultural production, mechanization, tractor use.

Introduction

The economic sectors most represented among the 100 largest cooperative enterprises in the world are agriculture and agri-food, trade, and banking. The 100 largest cooperative enterprises in the world employ nearly 3 million people (2,987,372 employees), with just over 2.5 million in Europe.) (www.enterprises.coop).

Most agricultural producers in Serbia could not compete in terms of quantity and quality of their products, but with the help of joining cooperatives they found their place in the market. By joining cooperatives, they also received

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a number of benefits such as cheaper procurement of raw materials and machinery, as well as help in bookkeeping (Koprivica et al., 2013; Gulan, 2019).

The agricultural cooperative "Agroprom" from Stara Pazova is a legal entity established according to cooperative principles. It was established in 2000. The cooperative is engaged in the production, purchase and sale of agricultural products such as corn, wheat, soybean, sunflower, rapeseed and sugar beet. Currently, the cooperative occupies a very important place in the field of agriculture in the territory of the Srem district and, together with some agricultural companies and private individuals, plays a dominant role in the purchase of agricultural products.

Materials and methods

Data collection on the agricultural cooperative was conducted using the interview method. Questions were asked and answers with concrete data were obtained from the professional service of the cooperative. Analytical synthetic methods were used in analyzing the business activities of the agricultural cooperative, and the obtained data were used to calculate the production dynamics and business performance.

The data sources were national and international literature, laws and other legislation, annual reports of the organization, various internal documents of the cooperative, as well as data obtained from the official websites of relevant organizations. The main data source used was the documentation of the specialized service of the cooperative "Agroprom" Stara Pazova.

Results and discussion

The best picture of the situation of cooperatives in Serbia comes from the analysis of all financial reports received, with over 1,500 cooperatives having submitted financial reports to the Agency for Business Registers at the end of 2015
(Zakić and Nikolić, 2018; Veljković et al., 2020). From July 2017, when the action "500 Cooperatives in 500 Villages" was launched, until the end of 2020, about 830 new cooperatives were established in Serbia. Under the "500 Cooperatives in 500 Villages" campaign launched in mid-2017, by the beginning of 2021, 1.7 billion dinars will be invested in the reconstruction of cooperatives in Serbia. The money was used to improve the lives of 6,120 rural families or about 30,000

inhabitants in the villages. Most of the cooperatives are engaged in agricultural production – 62.51% (www.zssrbije.org).

The cooperative "Agroprom" Stara Pazova has been operating without interruption since its establishment on July 17, 2000. Most of the subcontractors with whom the cooperative cooperates are located in the territory of the municipality of Stara Pazova, but it also has subcontractors in other municipalities of the Srem region. The production is based exclusively on the production of field crops. Besides the production of agricultural products, the cooperative also deals with the purchase, storage and sale of agricultural products. The cooperative operates according to cooperative principles.

From the very beginning, the cooperative has been one of the largest sugar beet producers in Vojvodina. Today, the cooperative has a total of 340 ha of its own and leased agricultural land, while it produces with subcontractors on about 3,800 ha. The sowing structure in 2019 is shown in Table 1.

Table 1. Sowing structure in 2019.

Crop	Area (ha)	Average yield (t ha^{-1})	Total production (t)
Wheat	135	11.99	1618
Corn	1835	12.54	23007
Soybean	132	8.68	1146
Sunflower	282	7.32	2063
Rapeseed	208	1.15	240
Sugar beet	302	84.00	25368
Total	2592		

Production on owned and leased agricultural land is unthinkable without appropriate tools and mechanization of agriculture. It is important to mention that the cooperative owns a silo with a capacity of 16,000 t, and it is planned to build another silo with a capacity of 8,000 t, as the current facility is not sufficient for storing the quantities produced. In addition, the cooperative owns a farm with a total area of 2 ha, where, in addition to the silos, machinery and part of the raw materials needed for production (seeds, fertilizers, pesticides) are stored. The cooperative is fully equipped with the machinery necessary for agricultural production. The list of machines owned by the cooperative and their number are shown in Table 2.

This table gives a complete overview of the mechanization means that the cooperative has at its disposal and that are necessary for the execution of all agrotechnical works in agricultural production, from basic and complementary tillage to sowing, maintenance, protection, harvesting, transport and storage.

Table 2. Specification of mechanization

Means of mechanization	Number
Tractors (all categories)	35
Combine harvesters (grain)	14
Combine harvester (tail)	5
Beet cleaners	2
Trucks	6
Set-top boxes	8
Planters (maize, sugar beet, sunflower)	8
Universal seed drill Horse(wheat, soybean, rapeseed)	1
Multi-furrow plows	12
Sprayer 3000 l - trailed	8
Self-propelled sprayer - high spacing	1
12-furrow inter-row cultivator	5
Heavy plows with packer rollers	7
Subversive	4
Heavy harrows	4
Mineral fertilizer spreader	4
Watering can	1
Corn adapter	10
Tarup	2

The degree of labor productivity, the efficiency of production, and the profitability of the farm also depends on the equipment of the farm with means of production (Zimmer, 2019). Production costs, of course, include the cost of maintaining machinery, repairs and spare parts (Koprivica et al., 2020). It is particularly important to mention the number of tractors, whose types and percentage representation by manufacturer name are presented in Table 3.

In order for agricultural production to run smoothly and for all agro-technical work to be carried out on time and to a high standard, tractors of varying power are needed, which in this case was fulfilled. Among agricultural cooperatives in Vojvodina, tractors with medium power are the most common, accounting for 55%. 25% are low power tractors and 20% are high power machines (www.zssrbije.org)

Table 3. Numerical condition of tractors

No.	Type of tractor	Number	Category	Share (%)
1.	IMT-542	1	LP*	2.86
2.	Lamborghini Premium 1060	2	MP**	5.71
3.	Lamborghini Premium 950	2	MP	5.71
4.	Belarus MTZ-892	1	MP	2.86
5.	Belarus MTZ-1025	8	MP	22.86
6.	John Deere 6620	6	MP	17.14
7.	John Deere 6630	3	MP	8.57
8.	John Deere 6530	2	MP	5.71
9.	Telehandler JCB 531-70	1	MP	2.86
10.	Landini Ghibli 100	1	MP	2.86
11.	Case IH Maxxum 115 A	2	MP	5.71
12.	John Deere 8330	3	HP***	8.57
13.	John Deere 8420	1	HP	2.86
14.	Fendt 930	2	HP	5.71
Total		35		100

*LP-low power tractor; **MP-medium power tractor; ***HP-high power tractor.

With the help of adequate and modern mechanization, tractors and equipment, the cooperative realizes a significant source of income by providing services to other agricultural producers. The income from services in the period from 2017 to 2019 amounted to RSD 90,846,463, RSD 86,520,241 and RSD 50,558,104, respectively, indicating that other producers should also equip themselves with their own machinery and reorient towards greater investment in production in relation to service activities.

Conclusion

Cooperatives have great potential for sustainable economic and social development in Serbia. Taking into account international experience, it is clear that cooperatives have various economic, economic and social advantages compared to other forms of enterprises and organizations. Cooperatives have great potential for creating safer and more sustainable enterprises, they function according to a democratic management model, where cooperative members participate equally in the management and have equal rights.

Agricultural cooperatives are key factors in the process of renewing agricultural mechanization, but they are underutilized. A large number of cooperatives in Serbia are relatively well equipped with machinery, but due to their long-time use, the need for renewal is always obvious. On the other hand,

there are cooperatives that still need to be mechanized, so every third cooperative needs a new tractor or new equipment. In cooperative mechanization, it is crucial that farmers can more easily access high-quality machinery through the cooperatives, as it is difficult to obtain it independently. With the help of the cooperative, cooperative members can acquire higher quality and more diverse farm machinery that is sufficient for all their needs. In most cases it is not rational for the farmer to buy all the necessary machinery himself, but it is more economically justified and logical to do so with common means. This is exactly the experience in the agricultural cooperative Agroprom, where there is no lack of good business results.

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