

ANALYSIS OF THE STATE OF DRYERS AND STORAGES FOR GRAIN AGRICULTURAL PRODUCTS IN THE REPUBLIC OF SRPSKA

ANALIZA STANJA SUŠARA I SKLADIŠTA ZA ZRNO U REPUBLICI SRPSKOJ

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ABSTRACT

This paper presents the analysis of the current state of grain dryers and storages in the Republic of Srpska in terms of their age structure, installed capacities, working order and geographical distribution. The current state of grain dryers and storages which have storage capacities over 1000 t was determined through a survey conducted in all centres in the Republic of Serbia. The survey results showed that the total installed capacities for storing grain in the Republic of Srpska are 317,917 t of wheat, while the total installed capacities of grain dryers are 207.4 t/h.

Key words: storages, dryers, installed capacities.

REZIME

U radu je prikazana analiza postojećeg stanja sušara i skladišta za zrno u Republici Srpskoj sa aspekta starosne strukture, instaliranih kapaciteta, tehničke ispravnosti i geografskog rasporeda. Osnovni cilj ovog rada je da se utvrdi postojeće stanje objekata za skladištenje i sušenje merkantilnog zrna u centrima za skladištenje poljoprivrednih proizvoda u Republici Srpskoj, kako bi se na osnovu dobijenih podataka moglo utvrditi u kojoj mjeri ti centri mogu da zadovolje potrebe u skladištenju i sušenju zrna. Utvrđivanje postojećeg stanja sušara i skladišta za zrno izvršeno je putem ankete, koja je sprovedena na svim centrima u Republici Srpskoj, čiji su skladišni kapaciteti preko 1.000 t. Anketom je uvrđeno da su ukupni instalirani kapaciteti za skladištenje zrna u Republici Srpskoj 317.917 t pšenice, a ukupni instalirani kapaciteti sušara za zrno su 207,4 t/h. Ukupni instalirani kapaciteti za skladištenje zrna u Republici Srpskoj mogu da zadovolje potrebe u 1/3 skladištenja merkantilnog zrna.

Ključne reči: skladišta, sušare, instalirani kapaciteti.

INTRODUCTION

The Republic of Srpska has significantly large agricultural land occupying the area of 1,250,000 hectares. If this area is compared to the number of inhabitants of the Republic of Srpska, there is approximately one hectare of agricultural land per capita, which is above the world average (Statistical Yearbook of the Republic of Srpska 2009). According to the data of the Republic of Srpska Institute of Statistics, the total annual production of maize in 2008 was 744,338t, while the total annual production of wheat was 150,904t. The data for 2007 and 2006 are approximate the same as the data for 2008. Within the Strategy for Agricultural Development of the Republic of Srpska by 2015, the current production is planned to be increased to 300,000t of wheat and 900,000t of maize on the annual basis by 2015 (Strategy for Agricultural Development of the Republic of Srpska by 2015, 2006). This means that the current need for storing wheat and maize, which is approximately 900,000t, should be increased to 1,200,000 t by 2015. It can be said that storing maize and wheat in the Republic of Srpska is a strategic issue, since these field crops are the most common field crops in the Republic of Srpska. The data used today for the installed capacities of storages and dryers for grain in the Republic of Srpska are not reliable and they do not reflect the actual state of these facilities. This is because the important storage centres used to be state-owned companies which have gone through different processes of ownership transformations and they have not delivered the relevant data for their storage centres (*Information on the State and Conditions of the Food Industry in the Republic of Srpska for 2008, 2009*). The lack of the reliable data hinders business activities related to serious analyses and long-term

plans. Therefore, it was necessary to determine the capacities of grain storages and dryers in the Republic of Srpska as well as their working order.

MATERIAL AND METHOD

Determination of the actual state of grain storages and dryers in the Republic of Srpska was conducted through a survey which included storage centres which have capacities to store over 1000 t of mercantile grain. The centres with capacities to store below 1000t of mercantile grain were not included in the study because those capacities are used exclusively for the needs of individual farms, and – in terms of storing market surpluses of mercantile grain – these capacities are negligible. The data on the storage centres with installed capacities for storing mercantile grain over 1000 t were obtained from the relevant departments of the units of local self-government. In the Republic of Srpska there are 63 municipalities, which provided the data on the storage centres. The survey included all the necessary elements required for establishing the existing state of the storages in terms of the storage structure (concrete silos, steel silos and warehouses), age structure, capacities, working order, territorial distribution, as well as installed equipment for drying and handling grain in storages, etc. Surveying of the storage centres in the Republic of Srpska was carried out from February to April 2010. It should be noted that the managers of the centres responded very well and provided the data on the actual state of their equipment. On the basis of the provided data, an analysis of the storage facilities and equipment for storing grain agricultural products was conducted. The obtained results for the installed capacities of the storages and dryers are presented in the Table 1.

Table 1. Data on the grain storages and dryers and installed capacities in the republic of Srpska

No.	Name of the centre	Municipality	Storage capacity (t)	Dryer per-for.(t/h)
1	AD "Žitopromet"	Prijedor	20,000	/
2	AD "Žitoprerađiva"	Prijedor	5,300	10.0
3	AD "Žitopromet"	Bijeljina	29,500	8.0
4	SZR "Mlin Zlatni klas"	Bijeljina	1,000	/
5	DOO "Mlin Tomić"	Bijeljina	3,880	5.2
6	DOO "BN - Dukat" (Mlin)	Bijeljina	2,500	5.0
7	DOO "Mlin Pavlović"	Bijeljina	7,100	5.2
8	SZR "Mlin Vidić"	Bijeljina	1,520	2.5
9	DOO "Stojanović i sin"	Bijeljina	3,000	/
10	DOO "Blagoleks" RJ "Mlin Blagojević"	Bijeljina	1,700	/
11	PD "Semberija" AD	Bijeljina	4,800	20.0
12	DOO "Intergaj"	Bijeljina	7,000	5.0
13	PSZ "Agrosembereja"	Bijeljina	9,000	/
14	DOO "Produkt"	Bijeljina	3,400	/
15	PD "Napredak" AD	Pelagićevo	10,000	20.0
16	DOO "Gold MG"	Donji Žabar	8,000	5.0
17	AD "Žitopromet-Drina"	Zvornik	14,000	3.0
18	DOO "Trio"	Zvornik	3,050	/
19	DOO "Farmland Foods"	Gradiška	30,200	20.0
20	DOO "Prodeks Agro" "Mlin Nova Topola"	Gradiška	13,820	12.5
21	DOO "Zelen Gaj"	Gradiška	1,500	2.0
22	DOO "Mlin Zlatno zrno"	Gradiška	2,000	/
23	DOO "Jelena"	Kozarska Dubica	2,000	/
24	DOO "Poljoprivreda Raistarstvo"	Kozarska Dubica	4,800	/
25	AD "HPK" Hemijska pre- rada kukuruza	Kozarska Dubica	42,156	35.0
26	Poljoprivredno domaćinstvo "Lujčić"	Šamac	1,050	/
27	DOO "MMB - Inexcoop"	Šamac	1,600	5.0
28	AD "PIK" Šamac	Šamac	20,000	15.0
29	AD "MPI" Modriča	Modriča	24,000	/
30	AD "Mlinpek"	Prnjavor	7,000	6.0
31	DOO "Živanić DS"	Prnjavor	4,000	8.0
32	DOO "EU Farma Natur- produkt - DD"	Prnjavor	1,100	5.0
33	DOO "Braća Marjanović"	Derventa	2,000	/
34	AD "Industrijska pekara"	Trebinje	6,000	/
35	AD "Vita" (DOO "Pro- deks Agro")	Knezevo	10,000	/
36	PD "Motajica" Srbac (DOO "Poljotemik" Srbac)	Srbac	5,000	/
37	DOO "Agrounija" Srbac	Srbac	5,000	10.0
T O T A L			317,976	207.4

AD – Joint-stock company; SZR – Sole proprietorship business;
DOO – Ltd; PD – Agricultural estate; PSZ – Agricultural coop-
erative; Poljoprivredno domaćinstvo – Agricultural household.

RESULTS AND DISCUSSION

The survey reported that in the Republic of Srpska there are 37 centres which are used for storing grain agricultural products and which have the capacity over 1000 t. In these 37 centres there are 56 installed storages, with the following structure:

22 storages are concrete silos (39%), with the total storage capacity of 158,470 t

21 storages are steel silos (38%), with the total storage capacity of 123,626 t

13 storages are warehouses (23%), with the total storage capacity of 35,880 t

The total installed capacities of the storages in the Republic of Srpska amount to 317,976 t. Table 2 shows the time of construction of the storages in the Republic of Srpska and their storage capacities (t):

Table 2 The time of construction of the storages in the Republic of Srpska and their capacities (t)

Time of storage construction	Type of storage space and its storage capacities (t)			T O T A L
	Concrete silos	Steel silos	Warehouses	
1941-1950	6000	0	3000	9000
1951-1960	2720	0	800	3520
1961-1970	7000	14800	3600	25400
1971-1980	105900	32020	11800	149720
1981-1990	33000	30156	9600	72756
1991-2000	1200	2100	1000	4300
2001-2010	2650	44550	6080	53280
T O T A L	158470	123626	35880	317976

On the basis of the data presented in Table 2 it can be concluded that the largest storage capacities of concrete silos were constructed in the period 1971-1980, providing the capacity of 105,900t. The largest storage capacities of steel silos were constructed in the period from 2001 and 2010, providing the capacity of 44,550t. The largest capacities of warehouses were constructed from 1871 to 1980, providing the capacity of 11,800t. It can also be concluded that construction of concrete silos and warehouses was at the time when these storages were state-owned, while in the last ten years a significant number of steel silos were constructed in the private sector, which can be considered as a positive development in construction of storage capacities in the Republic of Srpska.

The centre with the largest installed storage capacities for grain agricultural products in the Republic of Srpska is the company AD "HPK" – Chemical Maize Processing from Kozarska Dubica. Its total storage capacity is 42,156t, out of which steel silos storages account for 30,156t of the storage capacity, while concrete silos account for 12,000t.

In 37 centres for storing grain agricultural products in the Republic of Srpska there are 21 installed dryers for drying grain agricultural products, which means that 57% of the centres have grain dryers installed, while 43% of the centres do not have installed dryers.

In order to gain better insight into the age structure of grain dryers, Figure 2 provides a graphical representation of the age structure, showing the time when grain dryers were constructed and the total number of the constructed dryers.



Fig. 1. Centre for storing grain agricultural products AD "HPK" – Chemical Maize Processing Kozarska Dubica

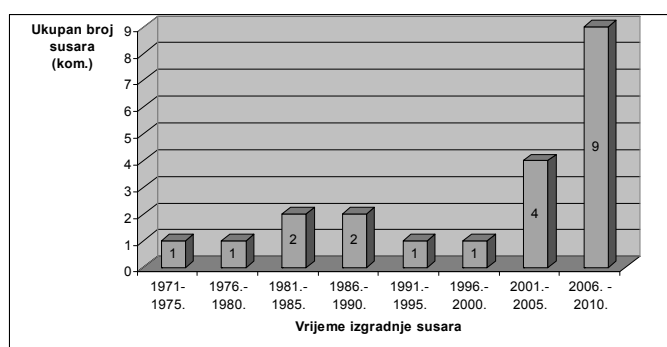


Fig. 2. Age structure of grain dryers

On the basis of the graphical presentation in Figure 2, it can be concluded that in the last ten years 13 dryers were constructed in the Republic of Srpska, which is 62% of the total number of the installed dryers. This fact indicates that these dryers are new, and in terms of working order they are most probably in good working order.

According to the survey, in the last ten years the existing dryers for grain agricultural products were revitalised in five centres, which means that out of 21 installed dryers in the centres for storing grain agricultural products in the last ten years 13 centres constructed new dryers and five centres revitalised the existing ones. This indicates that the period of exploitation of these dryers is highly favourable and that they are reliable in terms of working order (Babić, Ljiljana and Babić M, 2002).

In order to gain better insight into the installed capacities of grain driers, Figure 3 graphically presents the installed capacities of dryers by years.

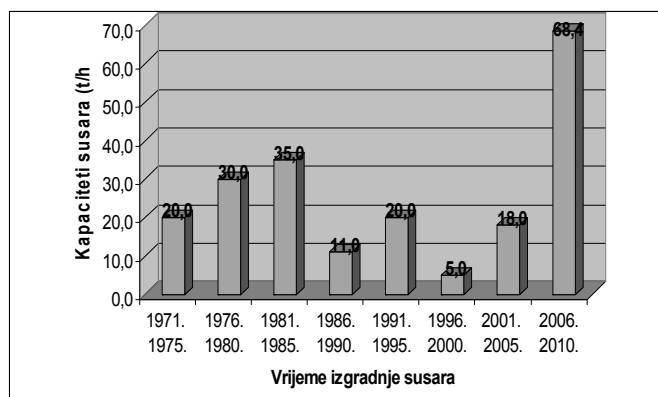


Fig. 3. Installed capacities of grain dryers by years

On the basis of the data presented in Figure 3, it can be concluded that the largest capacities of the dryers were constructed in the period from 2006 to 2010, providing the capacity of 68.4 t/h. Another important period of constructing dryers was in the period from 1976 to 1985, with the total provided capacity of 65.0 t/h. The latter was the period when the former state-owned companies built the storage centres.

The data presented in Table 1 indicate that these dryers have smaller capacities ranging from 2.0 to 3.5 t/h. Larger installed capacities are found in formerly state-owned companies ranging from 8.0 to 35.0 t/h, while smaller storage capacities are in the private sector ranging from 2.0 to 10.0 t/h. The total installed capacities of grain dryers are 207.4 t/h and they are insufficient to meet the existing demands for drying grain agricultural products.

In the Republic of Srpska there are 63 municipalities, and the 37 existing centres for storing grain agricultural products are distributed in 14 municipalities. The grain dryers are geographically distributed in 21 centres, which territorially belong to 10 municipalities. Figure 4 shows a GIS map of geographical distribution of storages and dryers in the municipalities of the Republic of Srpska.



Fig. 4. Geographical distribution of storages and dryers in the Republic of Srpska

Figure 4 indicates that the storages and dryers for grain agricultural products are territorially distributed on the areas where the land is of the highest quality and where the volume of maize and wheat production is the highest in the Republic of Srpska. This means that the storages and dryers in the Republic of Srpska are territorially well distributed.

CONCLUSION

The total installed capacities for storing grain in the Republic of Srpska amount to 317,917 t, while the total installed capacities of grain dryers are 207.4 t/h. These facilities are insufficient for meeting the existing needs for storing and drying of grain agricultural products. The current needs for storing grain agricultural products in the Republic of Srpska amount to 895,242 t

(744,338 t for maize and 150,904 t for wheat), and the installed storage capacities meet the needs of storing maize and wheat in the amount of 35.5%. Due to insufficient storage capacities, market surplus of maize and wheat are kept in storages for a short period of time, in order to enable continuous reception of these products. On the other hand, because of this situation the centres have to process or sell maize and wheat in order to have sufficient space for storage.

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