



UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM
TIMISOARA
"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH
IN APPLIED LIFE SCIENCES"



"Young people and multidisciplinary
research in applied life sciences"

16-17 November 2023

**STUDIES ON THE HARVESTING OF GRASSY CEREALS WITHIN THE S.C. FARM.
ANDREAS AGRO BRIKETS S.R.L. FROM THE TOWN OF BOBDA, TIMIȘ COUNTY**

Florian, MLADIN, Grațian VĂCĂRESCU, Anișoara DUMA COPCEA, Casiana MIHUȚ
University of Life Sciences "King Mihai I" from Timisoara, 300645, 119 Calea Aradului,
Romania, Phone: +40256277001, Fax: +40256200296
Corresponding author: anisoaradumacopcea@usvt.ro casiana_mihut@usvt.ro

Abstract: The purpose of this work is to harvest grassy cereals under optimal conditions from the researched area. The harvesting of grassy cereals is a particularly important work that must be carried out on time and with minimal losses. The dynamics of equipping agriculture with mechanical means is continuously increasing, current concerns being directed towards increasing the number of agricultural machines and equipment as well as their improvement. The modern technical endowment of agriculture requires thorough training and a high professional level of all those who use this endowment. The harvesting of agricultural products constitutes the completion and conclusion of the agricultural production process, it is the point of convergence of all human actions, of all the material and spiritual efforts invested by society in the agricultural work process in order to produce material goods so necessary for its existence and development. The modern systems adapted to grain harvesters are materialized through the intensive use of calculation techniques and electro-hydraulic systems for the command and execution of various operations, resulting in optimal parameters in the work process. The sensors installed in the combine, at different working organs, transmit the signals to the on-board computer that processes these signals, displays them on the monitor advising the combine or activates the automatic system, which controls the optimal operating parameters of the work process of the combine within the limits imposed by the user. In conclusion, from what was previously reported, it can be observed that worldwide the companies producing self-propelled combines for grain harvesting have adopted new, viable and high-performance solutions in their construction, which give these combines reliability, productivity and superior quality, comfort and safety in operation their.

• Introduction

- The harvesting of agricultural products constitutes the completion and conclusion of the agricultural production process, it is the point of convergence of all human actions, of all the material and spiritual efforts invested by society in the agricultural work process in order to produce material goods so necessary for its existence and development.
- From a historical point of view, the action of harvesting and gathering the fruits of the earth has a long and rich past, it appeared in the stone age, many thousands of years before the beginning of the practice of agriculture and is one of the primordial activities of man.
- In its long, but glorious evolution, the act of harvesting knew the glorification and the apotheosis, it was and is still celebrated with pomp and glorification, it lost some of its luster with the emergence and development of industry, but it still remained the balance moment, "the moment of the truth" for the global activity of a particularly important production branch of the world economy. In the last thirty years, the evolution of grain harvesting machines has experienced a spectacular leap

• Material and method

• The farm SC Andreas Agro Brikets SRL is located in the town of Bobda, Cenai commune, Timis county, at a distance of approx. 24 km from Timisoara and a distance of approx. 20 km from Jimbolia. The farm has approx. 100 ha of agricultural land (property + lease). Regarding agricultural machinery, we have the entire fleet necessary for all agricultural works, as follows: 4 tractors (from 65 to 200 hp); (UTB 650, Same Titan 190, Fendt 614LSA, Renault 110-54); 2 reversible plows with 4 bodies (Rabewerk & Gregoire Besson); 2 harrows with heavy discs (Quivogne); 2 combinators for preparing the primavera germination bed (Quivogne); 1 Kongskilde combine harvester for stubble seeders; 1 Amazone D8-40 straw seeder; 1 Monosem NG+ weeding plant seeder; 1 roller Cambridge type Kverneland brand 7m wide; 1 towed Berthoud Alba Volux 24m; 1 Lely brand granulated chemical fertilizer distributor 18-36m wide; 1 Solmax AGCO seed drill 7 sections with fertilization hopper; 6 agricultural trailers from 5 to 10 tons; 1 water tank of 4200 liters; 2 Case IH 1680 E Axial Flow agricultural combines equipped with straw headers, respectively sunflower and corn headers with the related transport carts.

• The existing crops in 2023 are the following: corn in an area of 40 ha; wheat in an area of 35 ha; sunflower in an area of 20 ha; fodder peas in an area of 5 ha.

• The empty movements of the cars result mostly from their returns at the ends of the plots. The hoppers of the combines will unload on the go, otherwise the daily productivity decreases due to stopping the harvest during unloading.

• It is recommended that during work the engine operates at maximum speed in order to properly work the organs of the baton.

• Results and discussions

• The agricultural work of harvesting the grass grain crop in the researched area, more precisely common autumn wheat, was carried out in the summer of 2022 on an area of 40 ha.

• Regarding the harvesting period, it was executed from 28.06.2022 to 07.07.2022.

• The machines used were the following: - two Case IH combines, model Axial Flow 1680 E, year of manufacture 1993 and 1994 respectively; - two Case IH 1030 straw headers of 5.5m width and 6.5m width, respectively, together with the related transport carts; - a 165 hp tractor with a reversible plow with 4 bodies; - a 65 hp tractor together with a 4200 liter tank equipped with a motor pump and fire hoses.

• As average consumption per hectare at an average production of 5-6 tons as it was in 2022 due to the extreme pedological drought and due to unfavorable weather phenomena (hail), these agricultural combines consume approx. 20/hectare.

• Total consumption on an area of 40 ha = 800 liters.

• The organization in good conditions of the harvesting of grassy cereals, by making full use of the working time, by avoiding unnecessary parking and empty trips, by using the machines at their maximum work flow and falling within the specific fuel consumption, requires work correctly on the parcels, choosing the most appropriate method.

• To ensure continuous operation, technical assistance will be provided through a mobile maintenance and repair workshop equipped with the necessary equipment. It is very important to carry out daily maintenance to avoid breakdowns and thus the parking of the combines. Any defects that occur during work will be repaired as soon as possible.

• Conclusions

• The difference between the agricultural harvesting work carried out in 2021 and that of 2022 is that, due to the extremely serious pedological drought and unfavorable weather phenomena (hail after the wheat grain was formed) in 2022 the production was significantly lower the face of the year 2021, and implicitly the consumption of diesel for the harvesting work decreased, due to the fact that the load on the engines of the combines was not as high as in 2022, working below its beating capacity.

• Another difference would be the fuel price, which in 2021 was approximately 6 lei and in 2022 approximately 8.5 lei.

• Diesel cost per hectare harvested in 2021 at an average production of 7-8 tons: 25 liters/ha x 6.5 lei/liter = 162.5 lei.

• Diesel cost per hectare harvested in 2022 at an average production of 5-6 tons: 20 liters/ha x 8.5 lei/liter = 170 lei.

•