

## Overall status and evaluation of the small farms. An overview of the District Cahul of Republic Moldova.

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**ABSTRACT :** The distribution of agricultural lands destined for annual crops from the land fund of Cahul district constitutes 65.54%, and the multiannual plantations 14.52%. The forest fund registers 11.97%, 364.09 ha and the one destined for pastures constitutes only 0.36% of the total land fund of the Cahul district of 154,529.31 ha. In 2019, approximately 47.55% of crops were cereals and legumes, and the sunflower crop accounted for 21.92%. The research also analyzes the financial results of small farms, with areas under 10 ha. Small farms exploit 23.61% of the total agricultural land in the analyzed area. Specific to the region to which the Cahul district belongs, due to the favorable climate, is the presence of vineyards, with a total of 11378 ha, of which approximately 48.87% belong to small farmers. The study demonstrates the fact that the investment made by the farms in agricultural equipment and the irrigation system of one million Lei MDL will be recovered over 4.5 years. The study shows that small farmers have allocated significant areas for certain vegetable crops, such as vineyards, but have lower production indicators than large producers. The evaluation of the local agricultural potential is part of the doctoral research.

**KEYWORDS** - small farms, crops, Moldova, Cahul.

### I. INTRODUCTION

Agriculture in the Republic of Moldova is the most important branch of the national economy considering that the other branches of the economy derive from agriculture. The demographic growth and the increase of the food led to food shortages and new approaches of the food security (Rabonțu and Niculescu, 2011). The governmental policies of agriculture currently in the Republic of Moldova require a new approach to the role of agriculture in poverty reduction and special attention of the rural economy. From the market economy to the private property after the Soviet Union had split, national agriculture has undergone several changes in all production chains. To ensure food security, it is necessary to take into account all aspects related to the growing chain, the production, until the release of the food towards the market as a whole continuous process (Brădățan and Enciu, 2007). The liberalization of foreign trade has radically changed the production process. In the soviet period the food production chain that was concentrated on the country territory was changed and distributed among foreign trade partners. Since 1990 changes throughout the production chain led to the inability of the food industry to ensure the processing of agricultural production at certain stages.

This phenomenon has increased the external trade of agricultural raw materials of Moldova with industrialized countries. Processed products capture an increasing share of value in global agricultural production and trade, at the expense of bulk goods (Regmi and Dyck, 2001). Small farmers in the South-East region, with steppe climatic characteristics, who also capitalize from the high potential of fertile soil, have traditionally focused on plant production. To the question, “What is a small farm?” We can respond by analyzing the structures of farms and comparing them in different countries, regions, or times, with the possibility of using physical measures such as ha, although these measures depend largely on the type of agriculture (FAO, 2011). At the national level, a family farm is defined as a “peasant household” which can be understood as an individual enterprise, based on private ownership of agricultural land and other goods, to obtain agricultural products, their primary processing, and the commercialization of their agricultural production.

### II. MATERIALS AND METHODS

For documentation were used official information obtained from the Directorate of Agriculture Food industry and Economy of Cahul region, and the National Bureau of Statistics. The bibliographic documentation was carried out through the databases Web of Science Clarvete Analytics, SCOPUS, Google Scholar, and Research Gate. Statistical analysis of farm size indicators according to physical surfaces was processed, interpreted, and presented graphically. The obtained results were compared and validated with specialty literature data. The sizes of small farms, from the point of view of fixed and financial assets, that influence the production factors and

producers' ability to access financing, are represented in the form of small farms that are specialized in the production of table grapes.

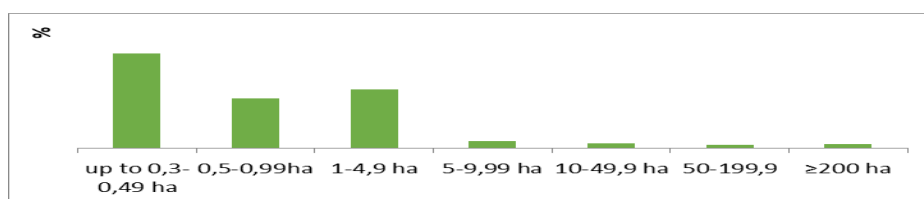
All the costs of the factors of production were interpreted for these types of farms, presented in a tabular manner, and compared with each other to determine the capacity of the interfaces and their vulnerability.

### III. LITERATURE REVIEW

The Republic of Moldova is our country covered by the FAO Regional Initiative, regarding the development of family farms and the empowerment of small farmers for improving living standards. In the opinion of the authors, Tcaci and Bulgac, (2012) the low share of agriculture in the national economy is explained by the fact that the processing plants purchase agricultural production at very low prices, which do not cover the consumption incurred by agricultural producers while they are forced to pay excessive prices for fertilizers, spare parts, agricultural equipment, etc. The reorganization of large agricultural state enterprises has led to the emergence of small enterprises in agriculture transformed over the last two decades into small family businesses in rural areas. A realized study by M. Munteanu and S. Stanciu (2020), shows that analyzing the available data on economic developments or food security of R. Moldova, the information obtained is short, incomplete, or outdated compared to those of other European countries. These arguments are motivated not least by the large share of the number of small agricultural producers, whose land is physically fragmented into areas of up to 5 ha. Foreign direct investments, performed in a transparent manner and for long enough periods of time, represent a factor in the development of national economies, but in Eastern Europe, they are still relatively small (Stanciu, 2016). Even at the expense of certain government programs to support small producers in applying association models at certain stages of the production chain, this form of the organization remains a major problem for the entire branch of agriculture.

### IV. RESULTS AND DISCUSSION

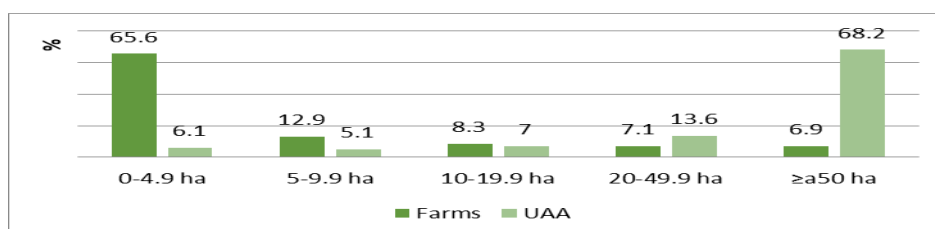
**Distribution of farms and farmland area by land size class for Republic of Moldova:** The reform of the privatization implemented since the period 1990 led to the impossibility of managing all the factors of production, processing, which directly re-directed agricultural producers to plant production. This phenomenon is also characteristic of the South East region of R. Moldova. According to the data presented by the National Bureau of Statistics, (2011), depending on the area of agricultural land, the largest share of the number of agricultural holdings in the proportion of 50.97% belong to farms of up to 0.5 ha.



**Figure 1. Distribution of agricultural holdings by size class of total area R. Moldova 2011.**

Source: Authors, based on the data of the National Bureau of Statistics, (2011).

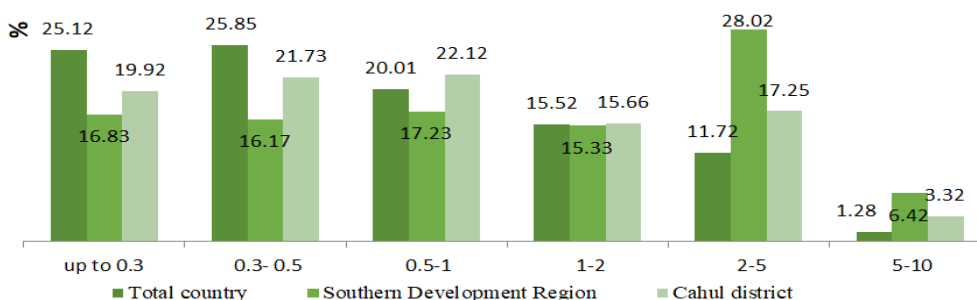
The data presented in Figure 1, according to the agricultural recession of 2011, we notice that most farms (71%) are included in the total area size classes of up to 1 hectare, 27.6% in size class 1-5 ha, 1.28% in size class 5-10 ha. Only 0.04% of farms are larger than 1000 ha. If we compare it with EU Member States, according to the European Commission, (2018), most farms in the EU-28 can be characterized as physically small, because 66% of them had less than 5 ha of agricultural land and only 7% had over 50 ha of agricultural land in 2013. Over half of the very small farms, with an area of less than 5 ha, are located in Romania (47%) and Poland (11%).



**Figure 2. Distribution of agricultural holdings, by size class of the total area in the EU, 2016.**

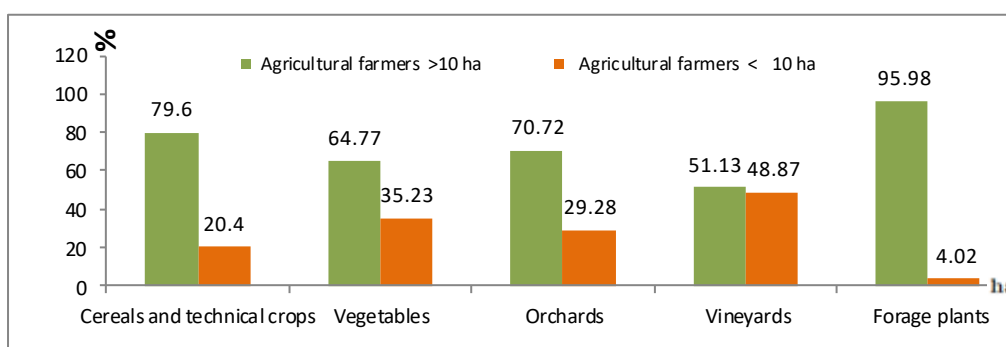
Source: Authors, based on Eurostat, 2020.

The shown data in figure 2, show that at the European level, in 2016, about two-thirds of the total number of farms in the EU was characterized by an area of fewer than 5 hectares (ha). At the other end of the production scale, 6.9% of EU farms had an area of 50 ha or more and worked about 68.2% of the agricultural area. The average size of an agricultural holding in the EU was 16.6 ha in 2016, with only around 15% of farms of this size or larger. The presented data show, in comparison with the EU, that R.. Moldova is mainly positioned toward small farms with areas of up to 5 ha of the number of agricultural holdings, compared to the EU with 66%. If we look at the used agricultural surface, the average size of a holding in 2011 is 2.15 ha, compared to EU Member States where the average size is 16.6 ha in 2016.



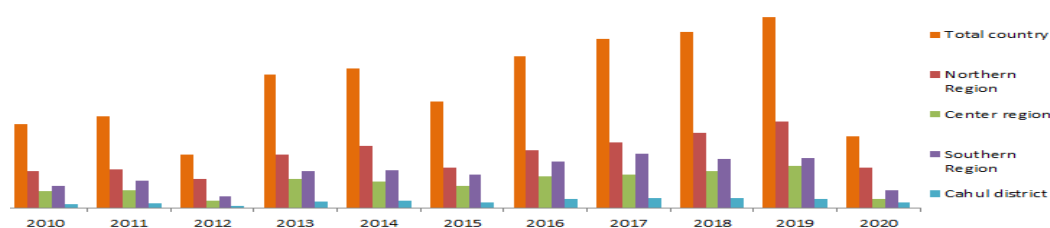
**Figure 3: Distribution of agricultural holding by area size class in Cahul district.**  
 Source: The authors, based on the data of the National Bureau of Statistics (2011).

The largest share of agricultural holdings that uses land up to 10 ha in Cahul district is held up to 1 ha of land. Holdings from 5 to 10 ha constitute 3.32% compared to the average rate of 1.28% per Republic.



**Figure 4. Agricultural land use, according to crops and farm size in the Cahul district for the year 2020.**  
 Source: The authors, based on the data of the Department for Agriculture and Food Industry of Cahul district, 2020.

From the total of 85,793.5 ha, 76.9% of grain and technical crops were inseminated by farmers exceeding use areas of more than 10 ha for the 2020 harvest. The field of vegetable plantations is dominated by large farmers about 64.77% only the vineyards hold a balance between small farmers up to 10 ha, whose plantations makeup 48.87% of the total 1170 ha. The 1743.5 ha orchards belong to 70.72% of producers.



**Figure 4. Production of cereals and vegetables, by development areas for the years 2010-2020.**  
 Source: The authors, based on the data of the National Bureau of Statistics, (2020).

In 2010, Cahul district production accounted for 4.5% of global agricultural production per country. In 2017, the share of grain production in global production increased by 6.01%. The value of the share of production within

Cahul district in the development region south is 19.49%.in 2020 at the country level and in Cahul district there is a decrease in production, these are due to the drought in that year. The model of small farms in the Cahul district is often characterized by small physical areas of land. These characteristics over the past 20 years have created substantial barriers to the development of these types of farms.

**Production costs for the model of small farms, producing table grapes:** Currently, a major challenge of the characteristics of small farms is the economic and financial dimension, which directly contributes to the investment and viable development capacity of these types of agricultural farms. For agricultural households with constraints related to fixed and financial assets, they may not be able to overcome obstacles to access finance to invest in production activities (E. McCullough, et.al, 2008).

Further, two types of family farms classified in physical parameters up to 10 ha were analyzed. The farms selected as a model are specialized in the production of table grapes. This analysis was carried out taking into account the production indicators and the capacity of the farmers' investment in the farm's assets. These two farm models mostly characterize small producers in the southern area.

**Table 1. Cost of means for production and income „Botosanu Mihail” for the aria of 3 ha, 2020.**

| Specification   | Unit price, Lei MDL /ha | Total Lei MDL     |
|---|-------------------------|-------------------|
| Fertilizers and chemicals x 7 (works)<br>Herbicides x 2 (works) | 22.480,00               | 67.440,00         |
| -Mechanized services x 11                                       | 6600,00                 | 19.800,00         |
| Manual operations   | 19.350,00               | 58.050,00         |
| <b>Total</b>  | <b>48.430,00</b>        | <b>145.290,00</b> |
| <b>Sales</b>  | <b>100.000,00</b>       | <b>300.000,00</b> |
| <b>Income</b>   | <b>51.570,00</b>        | <b>154.710,00</b> |

Source: The authors, based on GT „Botosanu Mihail”, 2021.

The model of the farmer whose costs and income are shown in Table 1 is a household whose work is carried out by contracting mechanized services. The data demonstrate that the farmer concentrates his manual processing capacity on his source of human capital. The expenses incurred by the farmer for the most part are in the procurement of plant protection products, about 46% of the cost of the means of production. The productivity of the grapes, at 1 ha, taken into account is 10 tons, and the selling price per kg was 10 Lei MDL. On average, the farmer model according to the data presented and processed in Table 1 is 51,570.00 Lei MDL, equivalent to 2441.00 euros per ha.

Table 2 reflects the income and expenses of a model farmer whose investments in the means of production constituted during the last 5 years 1064850.00 Lei MDL. The household is specialized in the production of mass grapes Moldova variety, the average fruit per ha constituting 14 tons, and the cost per kg of grapes is 8.5 lei MDL.

**Table 2. Cost of means for production and income GT „Perjeru Aculina” for the area of 7 ha, 2020.**

| Specification   | Unit price, Lei MDL /ha | Total, Lei MDL    |
|---|-------------------------|-------------------|
| Fertilizers and chemicals x 7 (works)<br>Herbicides x 2 (works)                       | 19.440,00               | 136.080,00        |
| -Mechanized services (combustible costs)<br>-Irrigation costs x 2 (works/combustible) | 1553,00                 | 10.871,00         |
| Manual operations   | 24.800,00               | 173.600,00        |
| <b>Total</b>  | <b>45.793</b>           | <b>320.551,00</b> |
| <b>Sales</b>  | <b>119.000,00</b>       | <b>833.000,00</b> |
| <b>Income</b>   | <b>73.207,00</b>        | <b>512.449,00</b> |

Source: The authors, based on, GT „Perjeru Aculina”, 2021.

The data presented in Table 2 demonstrate economic efficiency, favorable. The net income from sales per hectare constitutes 73,207.00 lei MDL. The elbows of mechanization services, on average per ha. The costs and revenues of an enterprise of this type equipped with agricultural equipment and equipment, as well as the existence of an irrigation system at the plantation, show that the economic results register a relative increase of 53.57%.

**Table 3. Investments in assets of GT "Perjeru Aculina" in 2014-2019.**

| Specification.                       | Own investments,<br>lei MDL | Subsidies,<br>lei<br>MDL | Total, own<br>investments, Lei<br>MDL |
|--------------------------------------|-----------------------------|--------------------------|---------------------------------------|
| Agricultural machinery and equipment | 700.350,00                  | 139.500,00               | 560.850,00                            |
| Irrigation system                    | 504.000,00                  | -                        | 504.000,00                            |
| <b>Total</b>                         | <b>1204350,00</b>           | <b>139.500,00</b>        | <b>1064850,00</b>                     |

Source: The authors, based on, GT "Perjeru Aculina", 2021.

The data presented in Table 3 we offer that out of the total investment value of 1204350.00 Lei MDL, The state-subsidized through post-investment programs only 11.6% of the total investment was made by the farmer. The calculations demonstrate the fact that the investment made by the producer in agricultural equipment and the irrigation system will be regained in about 5, 5 years.

## V. CONCLUSIONS

In the work, data on the costs incurred for the production of table grapes by small farmers were processed and modeled. The resulting economic model is useful for a scientific basis, useful for substantiating the optimal use of resources, preparing financing projects, and applying appropriate technologies to achieve a high yield of harvest and income. The lack of reliable statistics for small producers up to 10 ha leads to the impossibility of producing forecasts with a higher probability for investments. To develop family enterprises, a new vision of government policies is needed in obtaining financial support. Small family-sized agricultural holdings in the Cahul district constitute a rather important element of the agricultural sector and can be considered the basis of a viable segment of agricultural holding that is still to be developed. Ensuring equitable access in terms of financial capacity for family-type farms will certainly contribute to increased productivity. Government producer support programs characterized by post-investment subsidy principles classify producers into high-risk groups. The goal that small farms will be developed as medium-sized family farms has not been reached.

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