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ANALYSIS OF THE ECONOMIC EFFICIENCY OF AGRICULTURAL FARMS IN THE STARA ZAGORA REGION

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ABSTRACT
The farms and cooperatives that are the subject of the present study are the basis of crop production. Traditionally, in the Stara Zagora region, cereal crops and oilseed crops are grown, which is conditioned by the favorable soil and climate conditions. The influence of labor, workforce and capital on the economic result of farms in the district has been analyzed. The dynamics of the indicators efficiency coefficient from the use of the factors equity capital and labor, measured by personnel costs, were monitored. The RESULTS of the analysis show that for producers who diversify their production, the economic result of production is more favorable.

Key words: profitability, capital, work force, crop production

INTRODUCTION

The agrarian reform at the end of the 20th century led to an organizational and managerial restructuring of agriculture, which in turn affected the efficiency and competitiveness of production structures. Despite some comparative advantages - lower prices for land and labor, and the presence of unique conditions for the production of some agricultural products, in the medium term the problems regarding the competitiveness and efficiency of production structures in Bulgaria are serious. They come both from the structural weaknesses following the fragmentation of land ownership and the lack of stable land use, and from the lower support for production compared to the old low EU member states (direct payments and national support).

Grain production is the main subsector of Bulgarian agriculture. For many years, it has been the most profitable, with the largest amount of production and with the largest share in the country's exports. Grain production is traditional for Bulgaria, which is justified by the geographical location and climatic factors, which are expressed in good natural conditions for the cultivation of field crops.

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In recent years, there has been a steady increase in the production costs of farmers cultivating areas related to grain production. Although grain production is one of the sub-sectors in Bulgarian agriculture with high levels of subsidies due to the large size of farms, difficulties remain and every year Bulgarian producers of grain and technical crops are exposed to risks related to climatic instability, crop diseases, and international exchange prices of agricultural production.

Grain production is one of the main branches of world agriculture and occupies an important place in the economy of individual countries. Cereals are a primary factor for solving the problem of feeding humanity. Grain also plays a major role in supplying the world industry with raw materials (1). World grain production shows a trend of continuous growth. Almost half of the world's arable land is occupied by cereals. Also in our country, cereal crops are the most preferred for cultivation among agricultural producers and occupy the largest percentage.

Agriculture is an important sector for the Stara Zagora region as well, which benefits from a number of favorable geostrategic, climatic and natural conditions that have contributed to the development of centuries-old traditions in plant and animal husbandry. However, productivity

on farms is highly variable, which in turn limits their competitiveness.

A decisive factor for the successful development of Bulgarian agriculture is the sustainable increase in its productivity and efficiency. Economic efficiency is the indicator that accurately identifies the extent to which agricultural holdings efficiently use production resources. A detailed analysis of the influence of production factors on the final result would be useful for the proper targeting of farmers to production needs to increase efficiency in applying and absorbing the financial resources provided to them by national and European programs.

In the most general aspect, the economic category of efficiency expresses relations in production to the costs incurred and the results obtained. Economic efficiency is a general term describing how well a given production system manages to generate the maximum desired volume of finished product given limited and predetermined amounts of production factors and technology used. Production (technical) efficiency is realized when the individual producer creates his production with the best available technology with an optimal combination of factors and a minimum level of costs.

The economic system needs to serve the wants and needs of the people, and if the resources in the system can be reallocated to improve the satisfaction of individuals, they should be reallocated. This is how the understanding of allocative efficiency is reached. Allocative efficiency includes the concept of production efficiency, but it also requires production structures to produce the output most preferred by consumers. The concept of this type of efficiency was originally developed by the Italian economist Vilfredo Pareto and is therefore often referred to in the literature as "Pareto efficiency" or "Pareto optimality". According to Pareto, if a change in the distribution of resources improves the condition of some members of society without worsening the condition of others, it is defined as efficient. Efficiency is generally about preventing waste of resources. We have efficient use of resources when it is possible to use them in different ways to improve the condition of at least one household without worsening the condition of another (2). All production is a process of combining and transforming resources and turning them into a useful result. Link between factors (resources) and the production result, which reflects the way of transformation, is the technology of production. A given production is considered efficient if, with a given volume of factors and the existing technological level, it is not possible to obtain a greater production result.

According to the theory of X-efficiency, created by Lebenstein H. in 1966, the main factors of production do not fully determine its result. In addition to the main factors, there are other factors, among which individual, internal and external motivation are particularly important. According to Lebenstein H., the efficiency of production is mostly determined by the attitude of people to work, by their degree of interest and company empathy to the best possible way of using the resources provided to them.

Farrel believes that firm efficiency consists of technical and allocative efficiency. Technical efficiency determines the firm's ability to produce a given amount of product with a minimum amount of input resources and using a given technology, and allocative efficiency reflects its ability to choose the optimal price levels of the resources used in production. Economic or general efficiency is a combination of technical and allocative efficiency.

From the point of view of the economy of the enterprise, capital is a source of resources for financing it’s assets. The result of the functioning of capital are the products of labor that are offered on the market. After their realization, the invested capital is recovered in monetary form and in an increased amount, which creates an opportunity to expand the production and economic activity.

The capital of the enterprise can be classified according to various signs, but one of the most important is its distinction according to the ownership of own and raised. The basis and necessary condition for the existence and implementation of the enterprise's activity is it’s own capital. Equity is the cash that the partners provide to the enterprise to carry out its activities. In the research - in the form of capital, the own capital of farms is taken.

The agricultural sector differs from other sectors in the economy by the type of assets and

the sources of their financing. The possibilities for external financing are limited by the type of assets with which enterprises operate. In many cases, pledges of produce, machinery, live animals or farm buildings are not acceptable to financing institutions or are accepted but at significantly reduced valuations. Good practices require that funding be justified on the basis of the expected income from the activity, but in the case of agricultural holdings, the income is associated with a number of risks - both with climate and weather, and with market conditions (3).

Human resources are the people with their professional qualifications and personal qualities that make possible the normal running of the work process in agriculture. They are a factor that multiplies all other factors for the development and improvement of agricultural production and for increasing its efficiency. The competitiveness of the industry depends on their qualities and on the extent to which they realize their potential opportunities and abilities in the production process.

"A relatively lower specialization of the labor force, respectively lower labor productivity, is observed in agriculture. As a rule, agricultural labor is applied on the move, and not stationary, which is typical for other industries. When producers have sufficient capital, investment in durable tangible and intangible assets makes it possible for fewer and fewer people to cultivate ever larger areas of land. Thus, higher capital equipment is a prerequisite for higher labor productivity, and on this basis, production becomes competitive on the domestic and foreign markets" (1).

Various resources such as land, human and material are needed to carry out the reproduction process in agriculture. The main factor for carrying out production in agriculture, without which it cannot be done, is the land. "Together with the labor force and the means of labor, in the process of production that interaction is realized that ensures human progress, a maximum volume of products to satisfy the needs of society at minimum costs"(4).

Efficiency is such effectiveness that ensures satisfaction of the current and prospective needs of society. The need to increase economic efficiency is determined by the ever-increasing needs of society. This goal can be achieved by using all the possibilities of scientific and technical progress (4).

METHODS

The object of scientific research is the agricultural holding, which is defined as a separate unit, both technically and economically, which has a single management and produces agricultural products or maintains in good agricultural and ecological condition agricultural lands that are no longer used for production purposes, and other activities within the meaning of Art. 2, letter "a" of Regulation (EU) 2018/1091, according to the Additional provisions of the Law on the census of agricultural holdings in the Republic of Bulgaria (promulgated SG No. 17 of 21.02.2003).

It is also stated there that "farmer" is a individual or legal person on whose behalf and/or on whose account the agricultural holding carries out its activities and who bears the legal and economic responsibility and assumes the economic risk. Data of six agricultural holdings - individuals, legal entities and cooperatives for the period 2017-2021, provided by Ciela, were analyzed. All of them have KID according to NSI - 0111 - Cultivation of cereals (without rice) and legumes and oilseeds.

In the present study, an analysis of the efficiency indicators - equity efficiency ratio (Ke) was made. Through it, we understand 100 BGN equity capital, how much BGN profit bring to the enterprise. The payback period (T) was also analyzed - for how many years the value of the equity capital will be recovered through the amount of profit. As well as an increase in the equity efficiency ratio - we receive information on how much extra profit the enterprise brings to the enterprise for every 1 BGN additional invested equity capital. The efficiency of the use of the labor factor was also calculated, measured by personnel costs, which include remuneration costs and insurance costs - 100 BGN personnel costs, how many profit do they bring to the enterprise.

The object of the research are: Cooperative "Avgandira", Cooperative "Madrost", Company "Biviem", Company ET "Venat - Yordan Tanev", ET "Toshko Nedev" and the company "Koreli-Peter Trendafilov". Depending on their economic efficiency, the researched farms are divided into efficient

farms with potential for development and unviable production structures, unable to participate competitively in the market environment.

RESULTS

From **Table 1** Equity efficiency, it can be seen that for the Cooperative "Avgandira" in 2020, the efficiency ratio of equity is 2%. The redemption period (T) for the same year is too high - 55. And the growth of the equity efficiency ratio is a negative number, i.e. the additional invested equity not only does not bring additional profit to the enterprise, but is also at a serious loss. Overall, the results for 2020 are unsatisfactory. For 2021, the results are slightly better - the equity efficiency ratio is 4%. The redemption period (T) for the same year falls to 22 years. And the growth of the equity efficiency ratio is already positive - 0.6. For ZK "Madrost" in 2021, the equity efficiency ratio is a negative number - -4%. I.e. the enterprise is operating at a loss. The redemption term (T) for the same year also has a negative sign – -28 years. And the increase in the equity efficiency ratio is zero, i.e. additional invested equity does not bring additional profit to the enterprise. Overall, the results for 2021 are unsatisfactory.

For ET "Biviem" the data are much better. For 2017, the enterprise has Ke 54%, T – 2 years and positive △Ke – 0.5. For 2018, a decrease is reported as the Equity efficiency ratio is 31%, the payback period is 3 years, and the increase in the equity efficiency ratio is a negative number - -1.5. I.e. the enterprise is at a serious loss. In 2019, there is an increase in the results again - Ke is 100%, T is only 1 year, and △Ke is slightly below zero - -0.2. In 2020, this farm also saw a slight decline - its equity efficiency ratio was 63%, the payback period was 2 years, but the increase in the efficiency ratio was positive - 0.4. 2021 is emerging as the most favorable year for ET "Biviem" - Ke is 100%, T is only 1 year, and △Ke - 2.5.

The data of ET "Venat" for 2017 show the following - 25% efficiency ratio, 4-year redemption period and growth of the equity efficiency ratio - slightly below zero, namely -0.3. For 2018, the results are worse – Ke is 10%, T jumps at 10 years and △Ke is -1. In 2019, the efficiency ratio is 6%, the payback period is 18 years, and the increase in the efficiency ratio of equity capital is again a negative number - -0.7. And in this agricultural holding in 2020, the results deteriorate sharply - Ke is 0, T is as many as 24 years, and △Ke is well below zero - -17. In 2021, stabilization is observed - the efficiency ratio remains 0, the redemption period is also 0, and the increase in the efficiency ratio is now -0.1.

For ET "Toshko Nedev" the results achieved for 2017 are good - Ke is 100%, T is only 1 year and positive △Ke - 1. For 2018, a slight decrease is reported as the equity efficiency ratio is 88%, the redemption period is again 1 year, and the increase in the equity efficiency ratio is a negative number - -6.3. In 2019, the results are as follows - Ke is 71%, T - 1 year, and △Ke is slightly above zero - 0.4. In 2020, the equity efficiency ratio is 89%, the redemption period is 1 year, and the increase in the efficiency ratio has a negative sign - -0.4. The year 2021 is shaping up to be the most favorable for ET "Toshko Nedev" - Ke is 100%, T is only 1 year, and △Ke - 1.2.

For ET "Koreli" in 2017, the equity efficiency ratio was only 16%, the payback period was 6 years, and the increase in the efficiency ratio was slightly above zero - 0.2. In 2018, there is a slight decrease - Ke is 14%, T - 7 years and △Ke is 0. For 2019, the results are even worse as the Equity efficiency ratio is 12%, the redemption period is again rises at 8 years, and the increase in the equity efficiency ratio is again zero. In 2020, the data is almost identical - Ke is 12%, T is again 8 years, and the increase in the efficiency factor is slightly above zero - 0.1. For 2021, the equity efficiency ratio of ET "Koreli" is 18%, the redemption period is 6 years, and the growth of the equity ratio is 0.5. It can be concluded that in 2020 the results of the analyzed farms are identically bad. The company with the highest equity capital efficiency is ET “Toshko Nedev” from Stara Zagora.

From **Table 2** Efficiency of the use of the labor factor, it can be seen that for the Cooperative "Avgandira" in 2020, the efficiency ratio of the use of the labor factor, measured by personnel costs, which include remuneration costs and insurance costs, is 2.05. For 2021, however, the results are even higher – as many as 5.84. 100 BGN personnel costs bring the company 105.84 BGN in revenue. For ZK "Madrost" we only have data for 2021, which show an efficiency ratio of 12.00.

For ET "Biviem", the best efficiency of the use of the labor factor was observed in 2017 - 0.82. For the following years, the data are as follows - 2018 -0.42, 2019 it decreases to 0.21, in 2020 it rises to 0.38, and in 2021 it is already 0.67. The data of ET "Venat" for 2017 show the following - 3.44 efficiency of the use of the labor factor. For 2018, however, the results are worse – 1.94. In 2019, a sharp increase was observed - 100 BGN personnel costs bring the enterprise 15.71 BGN profit. For the next two investigated years, the values are zero.

At ET "Toshko Nedev" the results are good in all five observed years - for 2017 -1.21, for 2018 - 1.04, for 2019 - 1.33, 2020 - 1.34. The year 2021 is shaping up to be the most favorable for ET "Toshko Nedev" - the efficiency of using the labor factor is 2.66.

Of the six monitored farms, the study indicates that the efficiency of using the labor factor is the highest in the farm of ET "Koreli". In 2017 it was 7.77, in 2018 – 7.39. For 2019, a decrease was observed - to 6.40. But in 2020, the values rise sharply to 13.39. The highest results are reported in 2021 – per 100 BGN personnel costs, the enterprise realizes 13.77 BGN profit. This means that the personnel costs incurred are lower than the revenues received. The production activity carried out by the enterprise is efficient, which is due to the lower levels of the costs invested in the production to obtain finished products.

Table 1. *Equity efficiency*

Company name		**КЕ (%)**	**T (years)**	**∆Ке**
1. Cooperative "Avgandira" Stara Zagora	**2017 y**	0	0	0
	2018 y	0	0	0
	2019 y	0	0	0
	2020 y	2	55	0
	2021 y	4	22	0.6
2. Cooperative "Madrost" Julievo, Stara Zagora	**2017 y**	0	0	0
	2018 y	0	0	0
	2019 y	0	0	0
	2020 y	0	0	0
	2021 y	-4	28	0
3. Company ET "Biviem" Stara Zagora	**2017 y**	54	2	0.5
	2018 y	31	3	-1.5
	2019 y	100	1	-0.2
	2020 y	63	2	0.4
	2021 y	100	1	2.5
4. Company ET "Venat - Yordan Tanev" Stara Zagora	**2017 y**	25	4	-0.3
	2018 y	10	10	-1
	2019 y	6	18	-0.7
	2020 y	0	242	-17
	2021 y	0	0	-0.1
5. ET "Toshko Nedev" Stara Zagora	**2017 y**	100	1	1
	2018 y	88	1	-6.3
	2019 y	71	1	0.4
	2020 y	89	1	-0.4
	2021 y	100	1	1.2
6. ET "Koreli - Peter Trendafilov" Chirpan	**2017 y**	16	6	0.2
	2018 y	14	7	0
	2019 y	12	8	0
	2020 y	12	8	0.1
	2021 y	18	6	0.5

Table 2. *Efficiency of the use of the labor factor*

Company name		**Labor utilization efficiency**
1. Cooperative "Avgandira" Stara Zagora	**2017 y**	0
	2018 y	0
	2019 y	0
	2020 y	2,05
	2021 y	5,84
2. Cooperative "Madrost" Julievo, Stara Zagora	**2017 y**	0
	2018 y	0
	2019 y	0
	2020 y	0
	2021 y	12
3. Company ET "Biviem" Stara Zagora	**2017 y**	0,82
	2018 y	0,42
	2019 y	0,21
	2020 y	0,38
	2021 y	0,67
4. Company ET "Venat - Yordan Tanev" Stara Zagora	**2017 y**	3,44
	2018 y	1,94
	2019 y	15,71
	2020 y	0
	2021 y	0
5. ET "Toshko Nedev" Stara Zagora	**2017 y**	1,21
	2018 y	1,04
	2019 y	1,33
	2020 y	1,34
	2021 y	2,66
6. ET "Koreli - Peter Trendafilov" Chirpan	**2017 y**	7,77
	2018 y	7,39
	2019 y	6,40
	2020 y	13,39
	2021 y	13,77

CONCLUSION

From the analysis of the six farms, we can draw the following conclusions: The most efficient production activity is carried out by ET "Toshko Nedev", with completely positive values of all four investigated indicators of the effectiveness of equity capital. ET "Koreli" ranks after him, also with very good results. The best values for all six farms are observed in 2021. The production activity they carry out is efficient, which means that the enterprises have a return on the costs and resources invested in production. As for the efficiency of the use of the labor factor, of the six observed farms, the study indicates that it is the highest in the farm of ET "Koreli".

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