EFFECTIVENESS OF THE EUROPEAN SUBSIDIES FOR SUPPORT OF PROTEIN CROPS IN BULGARIA

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Abstract:*The report briefly analyzed the effectiveness of tied support for protein crops. The objective of state aid policy in the field of Agriculture is to improve the economic efficiency of farms and the standard of living of the employed in the sector. State aids to Agriculture are provided in accordance with EU legislation in this field and according to the capabilities of the state budget. The support scheme for farmers for protein crops is only part of the State payments for the European Union`s Common Agricultural Policy for the 2015-2020 programming period. Entitlements under the scheme are producers in the whole country who cultivate at least 0.5 hectares of eligible crops (together or separately) of protein crops. The analysis reveals a tendency for beneficiaries to increase as opposed to the funds allocated under the scheme. The support rate for protein crops shall be determined for each year, as fixed in the budget plan are divided into eligible for support decars with protein crops for a particular year. The purpose of this article is to determine the extent to which protein crop production has been influenced and what types of protein crops in Bulgaria have been introduced since the introduction of the EU's new scheme of tied protein support. Before the introduction of direct support for protein crops from the CAP, the area under pulses in Bulgaria decreased ten times for the period 2001-2011, the analysis shows increased interest in farmers, due to European subsidies. Protein crops are characterized by high biological and nutritional value. They have a high biological potential in optimizing growing conditions. As a result of irrigation, productivity gains in soybeans and field peas have been found to be over 56% and 27% relative to the yields obtained from natural moisture. In the conditions of limited water resource it is important to how effective the irrigation rate is used to form additional yield.*

Key words: *protein crops, subvention, yield, correlation, efficiency, state aids*

INTRODUCTION

Plant proteins are central to the challenges of food security and sovereignty, the environment, global warming and renewable energy. They are an essential and necessary element for life of all living organisms. Increasing protein crop production globally, the benefits of them are the foundation of long-term strategy for plant proteins in Europe.

State aid in agriculture are provided in accordance with the law of the common agricultural policy (CAP) of the European Union acquis and in accordance with the capabilities of the state budget. Purpose of state aid policy in the Agricultural sector is to improve the economic efficiency of farms and the living standards of people employed in the sector (RE, 2018).

Protein crops have an important environmental impact on arable land and are a key element in a scientifically rotation. They enrich the soil with nitrogen and increase soil fertility, and high protein nutritional value makes them an essential part of food and feed balance. The positive impact on succeeding crops makes them an indispensable part of crop rotation (RYABTSEVA, 2009; KIRILOV, 2016). Experimental results indicate that nitrogen fixation by leguminous provide nitrogen not only for their own development but leave nitrogen to the root system in the soil and subsequent crops (GEORGIEVA ET AL. 2009).

Studies indicate the parameters of the fixed nitrogen under favorable conditions of development in pea (*Pisum sativum L.*) and vetch (*Vicia sativa L.*), respectively, to 150 kg N/ha (UNKOVICH ET AL. 2000) and 125 kg N/ha (BRADY, 2000; HAAS ET AL., 2007). According to KOSTOV ET AL. (2000), broad bean (*Vicia faba L.*) contributes to enrich the soil with nitrogen to 120-180 kg/ha. In recent years a trend towards increasing the areas under chickpeas (*Cicer arietinum L.*), due to the biological potential of culture (PETROVA ET AL., 2013).

Leguminous crops are characterized by a high protein content and are grown primarily for legume seeds, but some of them are also used for animal feed. The main representatives of this group of plants used for

food raw materials are: beans, lentils, chick-peas, peas, soya, beans, peanuts and less known, used for animal feed are: sainfoin, vetch, clover, lupine, burchak, pea and starred. According to data from Faostat (2014) areas in the European Union engaged in white lupine (*Lupinus albus L.)* increased by 130% over 15 years. In Bulgaria the volume of production in all pulses is increased, according to studies of SLAVOVA (2017). The largest jump is in mature bean seeds, chickpeas and soybeans.

Protein crops are characterized by high biological and nutritional value. They have a high biological potential in optimizing growing conditions. As a result of irrigation has been found to increase productivity in soybean and pea field with more than 56% and 27% compared to the yields obtained when natural water supply (JIVKOV ET AL., 2004; ILCHEVA ET AL., 2016). Under conditions of limited water resources is important to the efficiency of irrigation water use realized in varying degrees of intensification in the formation of additional yield.

The purpose of this article is to examine to what extent influenced the production of protein crops by introducing a new system of coupled support protein crops by the EU.

MATERIAL AND METHODS

State aids in agriculture are an additional tool to support the industry and they are directed to priority and sensitive sectors that are not covered by EU funds or emergency. Developing state aids are made based on analysis of the condition of the individual sectors of agriculture. The main points of the policy of state support of agriculture in Bulgaria for the period 2015 - 2020, were priority support traditional for Bulgaria, but vulnerable Agricultural sectors which have considerable potential for development; targeting of state aid policy to reduce disparities between the different agricultural sectors and particular attention to small and medium farmers.

The coupled support protein is a new scheme for direct payments and comprises additional support for the areas under protein, namely beans grain (*Phaseolus spp),* lentil (*Lens culinaris),* chickpeas (*Cicer spp.),* peas (*Pisum spp.),* groundnut (*Arachis Hypogaea*), soybean (*Glycine max*), bean (*Vicia faba*), alfalfa (*Medicago sativa*), sainfoin (*Onobrychis spp*.), vetch (*Vicia spp*.), clover (*Trifolium spp.*) vigna (*Vigna spp*), burchak (*Vicia Ervilia*), lupine (*Lupinus spp*), trefoil (*Lotus corniculatus .L*). To obtain the support, the size of the plot with the protein should be at least 0.1 hectares. The rate to support the areas of protein crops will be decided each year as fixed under the scheme budget split of eligible acres of protein crops for that year.

The analysis of the number of beneficiaries and the amount of funds to be granted under the scheme was based on data published in the Annual Bulletin of Agricultural Statistics Department of the Ministry of Agriculture, Food and Forestry. The rate to support the areas of protein is determined for each year, as fixed by the budget scheme is divided into eligible acres with protein for a particular year.

In Bulgaria the climatic conditions characterized by unsustainable nature of natural moisture especially during the active growing season. Protein crops are responsive to irrigation. Analysis of the water environment shows that there is enough capacity for the irrigation of pulses. Experimental data for certain crops show the effect of hydrologic conditions on the yield of soybeans and beans. Optimizing readily available moisture to the plants ensure stable and optimal yield of the crops.

RESULTS AND DISCUSSION

Analysis of Trends in Protein Crop Production

The stable positive development of Bulgaria's economy in recent years, reducing the relative importance of agriculture in terms of creating its gross value added, however, the Agricultural sector in the future will continue to play an important role, especially given its importance for the development of rural economies.

Cultures that determine the appearance of the Agricultural sector are wheat, sunflower, corn, canola, barley and coriander. Mechanized their production leads to lower cost production and high profitability of production, regardless of differences in purchase price and average yields in recent years.

In the last 2-3 decades have seen a collapse in production of pulses. Before the introduction of direct support for protein crops from the CAP, the area under pulses in Bulgaria decreased ten times for the period 2001-2011

From 2009-2013 there was a decrease in areas under protein crop production. Just over five years growth has decreased by 28.13% (AR, 2015,2016).

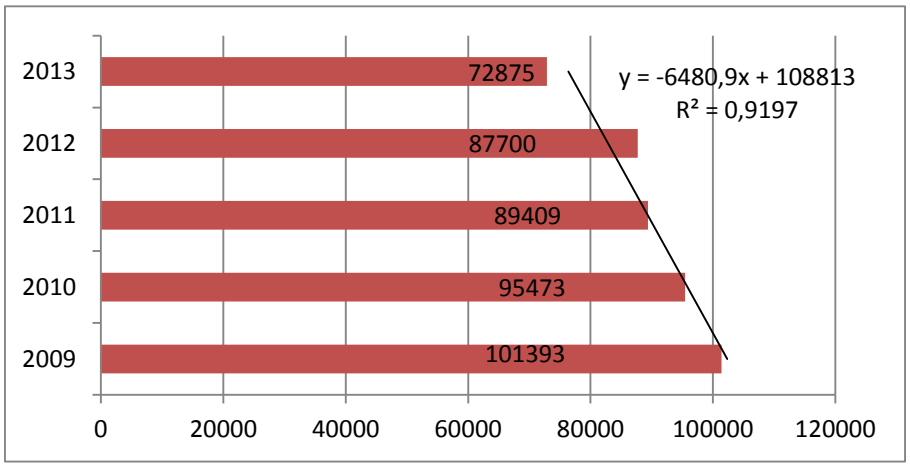

Fig. 1. Dynamics of production areas occupied with protein crops for the period 2009-2013, ha

Low profitability of this production and the high cost of production make this production uncompetitive. The limited market and low prices have made this procedure unattractive and led to a reduction in occupied areas of legumes.

Some protein crops like beans, lentils, chickpeas, peanuts and others are important to ensure nutritional balance in the country. Other crops such as alfalfa, field pea, vetches, sainfoin, etc. occupy an important place in providing balance feed livestock. Reported downward trends in the areas of legumes makes this sector particularly vulnerable. Therefore, it is necessary to support stabilization of the sector.

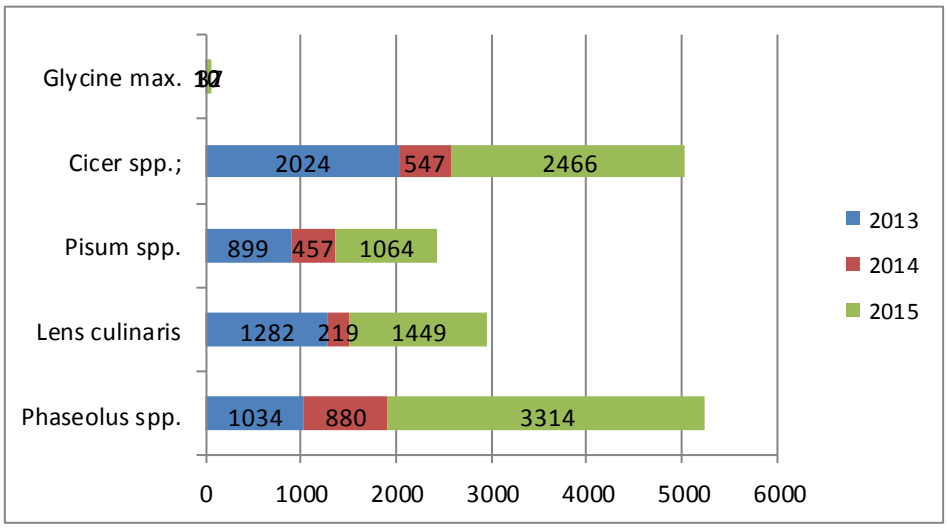

Fig. 2. Harvested areas leguminous crops in Bulgaria between 2013-2015, ha

The efficiency of coupled support for protein crops

The need for state intervention is justified when a production needs of society, but is unprofitable. Then subsidies will mainly take place, covering some of the costs of producers and providing the necessary production of society. The theme for the effective implementation of government support in the country to date from the pre-accession period when mainly operates the SAPARD program in order to prepare the Bulgarian economy, in particular Agricultural sector and build structures for the functioning of the EU`s CAP. Then in the first programming period of EU membership (2007-2013) when the country had to gain experience and to establish the actual results of operation of the CAP second current programming period (2014-2020), where to implement efficient tools CAP to achieve better results in agriculture in the country.It is an indisputable fact that our involvement in the EU benefited the Agricultural sector of the country - the demand for land increased, farmers' incomes have risen, production is restructured, etc., but asymmetrical. The benefits to a greater extent affect large farmers at the expense of small and medium especially in the implementation of SAPS, where the amount of arable land is crucial for support.

Baseline characteristics of the CAP at European level is the decoupling of support from production, the principle underlying the Community policy is allocating direct subsidy to maintain the income of the farmer and the choice of the type of production depends on market demand. Following the reform of the CAP 2014-2020, Bulgaria consistently and motivated insists on increase in the amount of coupled direct support, as these schemes are as clear, understandable and acceptable for the Bulgarian society and the agricultural community. Under the rules of EU legislation with binding support can be supported only sectors that are in crisis.

Thus, in the statutory deadline to August 1, 2014 to the European Commission (EC) created a total of 10 schemes coupled support aimed at helping dairy cattle, meat cattle, buffalo, sheep, goat, fruit growers, field vegetables greenhouse vegetables and protein crops.

As a result of the negotiations on the reform of the CAP received the opportunity of 2015 to be implemented schemes coupled direct support that separates financing amounting to 13% of the budget for direct payments and a further 2% for protein crops (AR, 2017,2018).

Coupled support scheme for protein: Right to assist in the coupled support for protein having manufacturers throughout the country, which grow at least 0.5 hectares eligible areas (together or separately) of

the following protein: beans (grain); lentils; chickpeas; peas; peanuts; soya; beans; alfalfa; esparzeta; vii; clover; vigna; bursa; lupine; star and / or mixtures of the foregoing. The areas should be eligible for support under the Single Area Payment Scheme (SAPS) and the minimum plot size is 0.1 hectares. The size of the budget is 2% of the financial ceiling for direct payments - 15.9 million euros. The payment per hectare is formed by dividing the budget eligible under the scheme for the year in space.

Table 1

Distribution of funds from the national envelopes of direct payments under various schemes to 2020, (EUR)

Year	2015	2016	2017	2018	2019	2020
National Package	790, 909,000	792,449,000	793,226,000	794,759,000	796,292,000	796,292,000
Coupled support - 15% (protein crops, fruits, etc.)	118,636,350	118,867,350	118,983,900	119,213,850	119,443,800	119,443,800
Size of protein crop financing	15 818 180	15 848 980	15864520	15895180	15895840	15925840
Indicative amount of aid per unit (EUR / unit)	156,01	156,31	156,47	156,77	157,07	157,07
Campaign	145,79	110,68	80,37	-	-	-

The analysis shows increased interest in farmers, due to European subsidies. The data show how the influence of the financial incentive for protein crop areas increased. Larger share occupied areas sown with lentils, chickpeas and field pea. According to data from Agrostatistics harvested areas with field pea 1,000 ha in 2014 increased to 30911,6 ha in 2017. The areas under the lens of 21,9 ha in 2014 increased to 4060,3 ha in 2017. Record growth of 96% was observed in chickpeas in 2017. For the period from 2015 to 2016 the producers of protein crops increased from 11 000 to 15 000 and in 2017 already 16 954. Preliminary data for 2018 the areas under chickpeas are about 2 thousand ha. As a result of the growing number of producers support rate changes (AR, 2014, 2015, 2016, 2017, 2018). The positive trend in the number of producers is maintained. The flat-rate financing protein crops, however, reduces the rate of tied aid. This negative trend is due to the fixed amount of related areas of production support and growth in recent years.

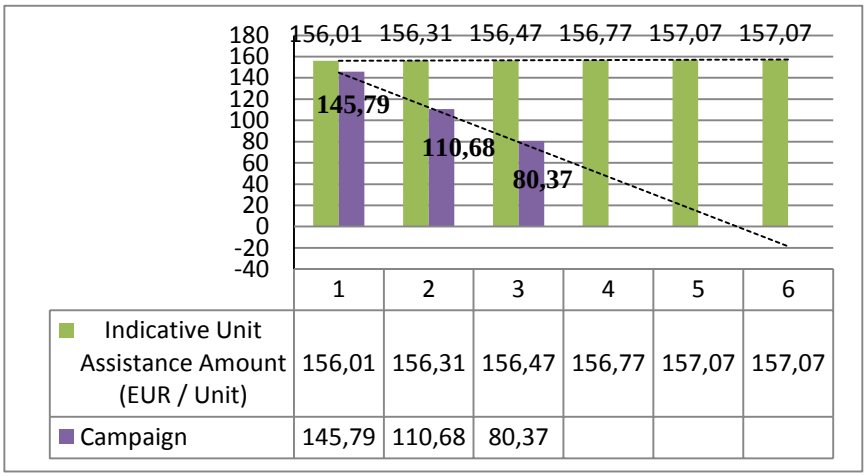

Fig. 3. Dynamics of funds allocated to the indicative amount of support unit and the real means to run campaigns, EUR

Not all protein provoke interest in producers yet. Registered a decrease of areas with peanuts 60.2% for a period of two years, from 2013 to 2015. Despite the favorable climate conditions in the country and their nutritional qualities, yet some of protein crops grown as exotic.

The role of irrigation in some legumes

The livelihood of nearly 1/3 of the population of the country is directly related to agriculture and their future prosperity depends on sustainable management of soil and water resources. An important factor for the future development of the Agricultural sector is to enable the construction and reconstruction of infrastructure for irrigation and drainage, which in turn create favorable conditions for sustainable quality and yields of agricultural crops, regardless of climate change.

Compared to other European countries Bulgaria is characterized by relatively significant fresh water resources, both in absolute volume and per capita. After 1990 abstraction has decreased rapidly due to limited irrigation and overall restructuring of the economy. After 2000 there is a balance, especially in recent years. Our country occupies one of the leading sewage sites, on average per person, and is among the European countries relying mainly on surface water sources. For the period 2000 - 2011, the index of exploitation of water resources at national level e below 10%, ie abstraction in Bulgaria does not cause stress on the aquatic ecosystem.

With the completion of the land reform management of the irrigation process radically changed. Small landowners, tenant farmers and cooperatives are located in an irrigation system and often their interests are intertwined and leads to conflict situations. In the emerging economic environment is passed to the creation of irrigation associations with a view to transferring management of the irrigation process water users themselves. They are responsible for delivering irrigation to the level to which it is possible to assume the obligations under the operation and maintenance of irrigation systems or separate parts thereof. Established irrigation associations face serious difficulties because of destroyed irrigation infrastructure.

According to the survey conducted in 1999 and approved by Decision of Council of Ministers № 512/19.07.2000, the last census, the state hydro-meliorative fund on the territory of Bulgaria covers irrigated land amounting to 818 062 ha, of which fit for irrigation amounted to 541 779 ha. Over the last decade, the percentage of utilization of existing irrigation systems is very low when moving from 4 to 8%.

The low level of use of irrigated areas has led to high cost of water. In recent '15 actually irrigated areas are between 5% and 10% of edible irrigation and 1.4% of the utilized agricultural area. The production of protein crops, and not only of them is related to the presence of water and good water management in general. Therefore, rehabilitation and improvement of the structure of the irrigation sector can only guarantee stable and high production volumes of agricultural crops.

Figure 4 presents the irrigated areas, with the first watering realized by this includes the areas occupied by maize, tobacco etc. crops, including protein. Data submitted by "Irrigation Systems" EAD.

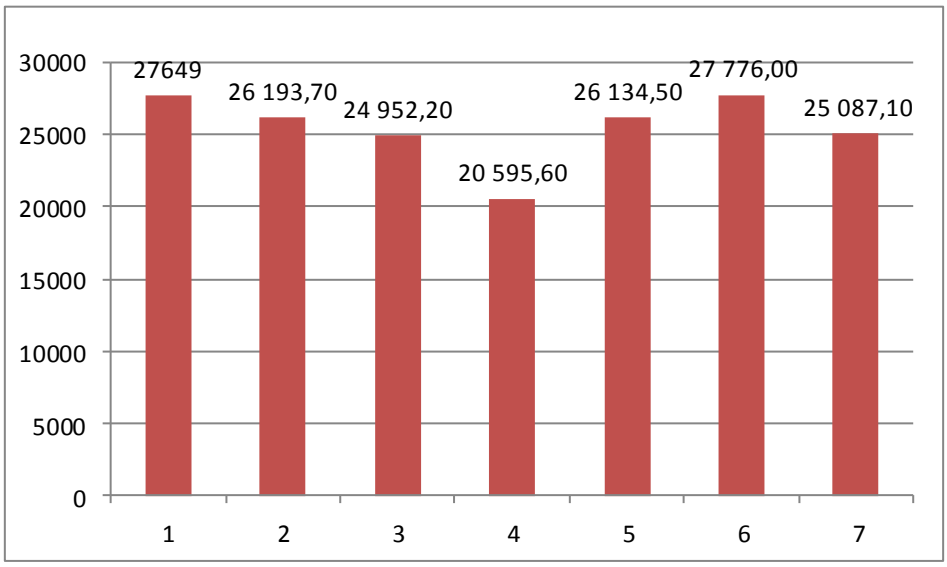

Fig. 4. Irrigation areas realized first watering, ha

Protein crops are responsive to irrigation. Unevenly distributed rainfall fell over on crop production are not always able to provide the optimal amount of readily available moisture for normal development. The water deficit registered during the period "blooms and boboobrazuvane" leads to a drastic reduction in the quantity and quality of production.

In soybean, watered by gravity, it has been found to increase productivity compared to growing under natural water supply. Irrigation with optimum irrigation rate (80% of FC) has contributed to the preparation of yield by 60.9% higher than non-irrigated culture. When submitting a reduced half irrigation rate is formed yield 24.7% higher than the cultivated under irrigation conditions are established MUHOVA et al. (2007).

The coefficient of efficiency of irrigation is set at the optimum irrigation regime (0.54). The regulated water deficit made by reducing the amount of irrigation, submission of irrigation water through the furrow and canceling watering provides yield 24.7% to 44.7% compared to growing under natural water supply. The coefficient of efficiency of irrigation water varies from 0.40 to 0.44. The optimization of the factor of water leads to the formation of a second crop of 556 to 1370 kg/ha.

Study on beans for a period of three years shows the influence of irrigation on the productivity of the culture (MATEV et al., 2014). In optimizing the factors of water to give a second crop of 20.9 to 24.3% higher than beans grown under non-irrigated conditions. The coefficient of efficiency of irrigation ranges from 0.61 to 0.86.

The Efficiency use of water resources is related to the renovation irrigation infrastructure and introduction of new technologies for irrigation. It can increase the productivity of irrigation water. Good water management can increase the net benefits arising from the production of irrigated crops such as protein.

CONCLUSIONS

Analysis of the production of protein crops has shown that the introduction of the subject support leads to an increase in the volume of production of protein crops.

There is a positive trend in the growth of the producers of protein crops. The fixed an indicative amount of aid per unit area leads to a negative trend in the rate of conditional support for years. Growth of production is indicated in the feed peas, lentils, and especially in chickpeas (96%).

In optimizing the factors of water yields in soybeans increased by 60.9%, while beans range from 20.9 to 24.3%.

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