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## **PAYMENT COUPLED TO PRODUCTION – SECTORAL IMPACTS SPECIFIC FEATURES IN CASE OF SOY PRODUCTION**

### *PLATNOŚCI ZWIĄZANE Z WIELKOŚCIĄ PRODUKCJI – WPLYW SEKTOROWY NA PODSTAWIE DANYCH O PRODUKCJI SOI*

**Key words: Agricultural Policy (CAP), voluntary coupled support, protein crops, soybean**

*Słowa kluczowe: Wspólna Polityka Rolna, dobrowolne wsparcie powiązane z wielkością produkcji, rośliny białkowe, soja*

*JEL codes: Q14, Q19*

**Abstract.** Between 2014 and 2020 there have been substantial rearrangements within the Common Agricultural Policy, which – in harmony with the former reform phases of CAP – has aimed to implement real conceptual and technical changes in the system of direct subsidies and market measures. As a result of this process, the system of subsidies coupled to production could be extended in Hungary, too. This new approach, which was totally different from the previous reform phases, does not restrict, but rather expands the possible amount and areas of implementation. This, in many cases, may result in a number of favourable impacts for the beneficiary sectors. Sectors, which have not received any EU subsidies before, can be supported and the member states have substantial say in forming the conditions according to their needs. In general, it is still a question, what effects can be expected, what actual consequences of the measures can be quantified on the basis of the currently available information. Following these, the main goal of this paper is to characterize the consequences of the coupled support payment by the soy production.

### **Introduction**

The Multiannual Financial Framework (MFF), the “EU 2020 Strategy” and the need to give adequate replies to the CAP challenges have played key role in the elaboration of the Common Agricultural Policy (CAP) reform phase between 2014 and 2020. Considering the aims of CAP, the reforms – which are running parallel with the budget periods – should ensure 1) the sustainable food production; 2) sustainable management of natural resources, as well as the measures against climate changes; and 3) balanced regional development. The CAP should be fully integrated in the strategic targets of Europe 2020 – especially the target concerning sustainable growth – by also observing the objectives of agricultural policy as they are laid down in the Treaty [Jámbor, Mizik 2014]. Following the approval of CAP reforms, the EU regulation no. 1307/2013/EU about direct payments to farmers was issued. This regulation established the scheme and principles which should be fully applied in the member states in case of direct subsidies in order to achieve the main CAP objectives. Compared to the previous reform phases, there were new or novel approaches, which were given priority in many elements (e.g. greening, young farmers’ scheme). Thus wide range of compulsory and optional elements has become available for the member states as well as for the producers. There is a remarkable new element in the range of these measures, namely the possibility of using payments coupled to production.

The incentives which had been formed in the early years of CAP by the operational and political specialties and resulted massive internal tensions by the 1980s had to be moderated and gradually terminated since the MacSharry reform in 1992. The direct payments were introduced

in order to replace the discontinuing effect of market measures<sup>1</sup>. It can be concluded that the EU's interest, until the development of the current conditions, had been to hold back the production willingness in the different sectors. Prior to the reform phase, it was possible to spend 3.5% of the full member state budget on the operation of items coupled to production. The main objective of these measures was to ensure the support of sensitive or specific sectors<sup>2</sup>. In this case the main motivation was not to increase production but to maintain its current level. The measure which has been applied since 2014, serves the same purpose. And in spite of the fact, that it is an extended budget (in case of Hungary, it is 15% of the direct member state payments), it still supports the sector, which is in specific situation.<sup>3</sup> As regards the measure it is important, that – instead of the higher amount of payments which can be realized on average – the differentiated subsidies, even coupled to production, can handle the difficulties at member state level and thus actually alleviating the problems of producers in each country. It can be widely seen that the role of this measure has been highly appreciated due to the recent market situation causing sales tensions (e.g. in case of milk and pork) at EU level. As regards the implementation in Hungary, mostly those sectors have become into the foreground which have been subsidized and had market problems and farming technology difficulties long before (e.g. cattle and sheep sector). It has also become possible to support highly-prioritized cultures (e.g. full range of vegetable and fruit sector), in line with the directions of national policy and strategies. Payments for protein crops have not been possible before, therefore the study especially focuses on the impacts seen in connection with cereal proteins and soy. The significance of subsidizing the former is also underlined by the aim of the Hungarian government to expand the domestic production of fodders with high protein content, based on GMO-free soy [MA 2012]. It may also enhance the reduction of protein import ratio (mostly from overseas) and the increasing use of domestic supply in order to meet the fodder demand of animal husbandry. The payment system coupled to production – in addition to other measures – can have significant role in stimulating fodder crop and fodder production.

### Material and methods

It is important to underline regarding the research that multiple measures together can affect the decisions of producers. It is not possible to cover all of these measures in the present paper, therefore it focuses only on the impacts of direct subsidies.

The new approach starting from 2015 has resulted considerable changes in the system of payments. The producers of soy and other protein crops received only SAPS payments (flat-rate decoupled area payments). There were no other budget sources available for other payment items. Therefore it was obvious that upon the selection of crop cultures, the producers were not motivated by the subsidies from EU sources, available for all the eligible areas. The payment system has been transformed from 2015 and a new incentive has been added. The amount of SAPS – which has been reduced, compared to the previous era – together with the new, so-called greening item has reached the budget of former flat-rate area payments. Therefore the payments coupled to production beginning from last year have meant some actual differences compared to the former subsidy level. Since in case of protein crops, some considerable payments could be obtained, a number of farmers started the production of these crops (Tab. 1).

Examining the expected joint value of SAPS and production-coupled items, it is obvious that the payments can jump by 74% compared to the subsidies of the previous year, which is really a significant incentive for the producers. The increasing specific amount of payments indicate that it is relatively easy and can be profitable for the producers engaged in traditional field crop

<sup>1</sup> A number of other measures have also served the efficient problem-solving. In this respect, the role and significance of rural development, direct sales [Kujáni 2014], cooperation [Baranyai 2014], market-oriented sales [Erdeiné, Gally 2014], and the new sustainable agricultural technologies [Takács-György et al. 2014] have also been highlighted.

<sup>2</sup> Hungary used these in dairy, beef and veal, sheep and goat meat, as well as in the rice sector.

<sup>3</sup> On the basis of 9/2015 (III. 13) MA (Ministry of Agriculture) regulation, payment coupled to production can be applied in case of meat breed suckler cow, fattened bull, dairy cow, ewe, rice, sugar beet, vegetables, industrial crops, orchards and berries, cereal and roughage protein crops.

Table 1. Payment items and values of cereal protein crops (2010-2015)  
 Tabela 1. Płatności i wartości dopłat do roślin białkowych (2010-2015)

Specification/ <i>Wyszczególnienie</i>	Payment items [EUR/ha]/ <i>Płatności [EUR/ha]</i>					
	2010*	2011*	2012*	2013*	2014*	2015**
SAPS	172,55	206,39	204,22	233,64	224,76	222,19
Cereal protein subsidy coupled to production/ <i>Subsydia do roślin białkowych związane z wielkością produkcji</i>						186,27
Total/ <i>Razem</i>	172,55	206,39	204,22	233,64	224,76	408,45

\*specific amount to be paid on the basis of redistribution following over-subscription; \*\*calculated with the annual official euro foreign exchange reference rates/*kwota obliczona do zapłaty na podstawie redystrybucji następującej po nadsubskrypcji*; \*\**obliczono na podstawie rocznych oficjalnych stóp referencyjnych dla euro*  
 Source: own study based on ARDA (Hungarian Agricultural and Rural Development Agency) data  
 Źródło: opracowanie własne na podstawie ARDA (*Węgierska Agencja Rolnictwa i Rozwoju Obszarów Wiejskich*)

cultures to start the production of cereal protein crops. The available subsidies are clearly attractive for them. In connection with payments coupled to production, however, it should be obvious that many conditions are fixed:

- each plot shall be at least 0.25 hectares and the producer shall own at least one hectare land eligible for SAPS;
- a minimum yield must be proven to achieve, which is 1 t/ha in case of soy, field beans and sweet lupins, and 2 t/ha in case of dry peas, chickpeas, field peas and green peas;
- a certain amount of propagating materials must be applied per hectare as defined by regulation, purchased from an official and certified supplier.

It is obvious from the above, that the producer should meet a lot of conditions but these conditions are basically not impossible to achieve for an average agricultural producer.

### Material and methods

The analysis starts from the data of areas defined in single application, submitted for direct payment claims. The producers had to identify the planted culture by indicating the utilization code. The analysis relies on the utilization codes processed between 2010 and 2015. The basis for calculations is the data of areas eligible for direct subsidies between 2010 and 2014, as approved by the Agricultural and Rural Development Agency (ARDA). Since the monitoring of the last year (2015) will be finished after the deadline of submitting this paper, the research includes only the data of applications. Descriptive statistical methods were used in the analysis. The following questions had to be answered:

- does the area of cereal protein crop production change as the effect of subsidies?
- if it is increasing, to what extent the producers plant these crops?

### Research results

By analysing the application data of protein crops over 6 years, it is obvious that the introduction of payments coupled to production has had considerable impact in case of protein crops. While the area of total cereal protein crop production essentially had not changed for five years, it increased by 35% in one year (Tab. 2). The almost 23 thousand hectare increase was mostly due to the expansion of soy production areas, which grew by 34 thousand hectares, thus compensating for the value of declining cultures. The decline was remarkable in case of horse bean, sweet lupine, pea, and especially dry pea – this last one was really substantial.

This trend can be explained by the actual difficulties caused by providing proof that certified sowing seeds, sealed propagating materials were used. Many producers used rather part of the yield from the previous year than certified raw materials. This finding was also confirmed in case of field pea, where the use of propagating material should not be verified according to the related regulation, and as a consequence, the area of land used for field pea production increased in 2015.

Table 2. Area of subsidized cereal protein crops (2010-2015)  
 Tabela 2. Powierzchnia dotowanych roślin białkowych (2010-2015)

Specification/ Wyszczególnienie	Area of subsidized crops/ Powierzchnia subsydiowanych upraw [ha]						Changes/Zmiany [%]		
	2010	2011	2012	2013	2014	2015	2014/ 2010	2015/ 2014	2015/ 2014
Soybean/Soja	45 791	46 060	42 644	40 451	42 908	76 719	94	168	179
Horse bean/Bób	142	234	189	149	199	39	141	28	20
Sweet lupine/Lubin	418	286	230	827	622	580	149	139	93
Dry pea/Groch syпки	15 046	12 408	13 036	10 600	13 532	2 279	90	15	17
Chickpea/Ciecierzycа	33	11	22	65	97	157	297	484	163
Pea/Groszek	2 556	3 124	5 919	7 383	8 528	7 483	334	293	88
Field pea/Groch	76	429	23	50	94	1 604	123	2116	1714
Total protein crops/Razem rośliny białkowe	64 061	62 552	62 062	59 524	65 979	88 862	103	139	135

Source: own calculation based on ARDA

Źródło: opracowanie własne na podstawie ARDA

It is obviously good for those who could not fully meet the requirements, but still intended to participate in the program (and had produced e.g. dry pea before). It can also be concluded that soy is clearly prioritized among cereal protein crops in terms of area sown, thus it is justified to discuss mainly this culture hereinafter. Similar trend can be observed by evaluating the area data from the table which summarizes the number of participating producers (Tab. 3).

It is obvious that the number of producers turning to soy jumped the highest, and the field pea also became popular for a lot of producers. Owing to the new regulation system, the number of soy producers – which had increased by about two thousand heads per year in the first five years of the examined period – jumped by one-and-a-half times. Thus the number of farmers dealing with cereal protein crop production grew by almost 88%. By focusing only on soy production, it is obvious that the examined period can be divided into two main phases. The number of those producers who grew soy in addition to other cultures increased in the year of introducing payments coupled to production. It is interesting to see in the farms concerned that the share of soy in each year was not higher than 9-10% on average, compared to other cultures (Tab. 4).

It is especially interesting if we consider that in the frames of crop rotation it cannot be planted after sunflower, rape, mustard, flex and itself, due primarily to soil fertility and weed control issues. Soy can be grown on the same area in minimum two years time – but ideally in 4-5 years – because its impact on the soil and the following crop is favourable only after this time span [Magyar Szója 2015]. It is worth analysing, how the new actors entered the group of soy producers during the examined period.

Table 3. Number of producers growing subsidized cereal protein crops (2010-2015)  
 Tabela 3. Liczba producentów uprawiających dotowane rośliny białkowe (2010-2015)

Specification/Wyszczególnienie	Number of producers/Liczba producentów						Changes/Zmiany [%]		
	2010	2011	2012	2013	2014	2015	2014/ 2010	2015/ 2010	2015/ 2014
Soybean/Soja	1 915	1 954	1 783	1 707	1 877	5 157	98	269	275
Horse bean/Bób	22	21	18	20	21	13	95	59	62
Sweet lupine/Lubin	101	64	82	91	144	197	143	195	137
Dry pea/Groch syпки	1 179	767	684	632	782	198	66	17	25
Chickpea/Ciecierzycа	8	5	6	12	18	24	225	300	133
Pea/Groszek	411	417	641	685	938	1 289	228	314	137
Field pea/Groch	7	18	5	7	10	250	143	3571	2500
Total protein crops/Razem rośliny białkowe	3 643	3 246	3 219	3 154	3 790	7 128	104	196	188

Source: own calculation based on ARDA

Źródło: opracowanie własne na podstawie ARDA

Table 4. Breakdown of those concerned in soy production

*Tabela 4. Producenci nastawieni na produkcję soi*

Year/Rok	Number soy producers/ <i>Liczba poducentów soi</i>	Number possessing other areas/ <i>Liczba innych producentów</i>	Soy area/ <i>Areal uprawy soi [ha]</i>	Total SAPS area/ <i>Powierzchnia z płatnościami SAPS [ha]</i>	Soy ratio within the whole farm/ <i>Udział soi w strukturze upraw [%]</i>
2010	1 915	1 762	45 790,95	437 224,37	10,5
2011	1 954	1 793	46 059,66	441 213,09	10,4
2012	1 783	1 683	42 643,77	416 413,89	10,2
2013	1 707	1 612	40 450,57	438 362,08	9,2
2014	1 877	1 762	42 908,11	441 210,33	9,7
2015	5 100	4 878	76 718,79	820 369,54	9,4

Source: own calculation based on ARDA

*Źródło: opracowanie własne na podstawie ARDA*

It should also be reviewed, how many times soy was planted during the 6 years. The results of table 5 show that altogether 7820 producers reported soy utilization, but only 5% of them – only 388 producers – grew soy every year during the examined period. This table also demonstrates that 5020 farmers planted soy only once in the examined period. And out of them basically there were only 3100 producers who started soy production only in 2015. Most of the remaining approximately 2000 producers have had probably no favourable experiences regarding the crop. In the whole period in general there were almost 1600 producers who regularly grew the crop, that is they grew this culture at least 3 times, in half of the examined period.

The table clearly confirms that the producers growing soy mostly are professional producers, because in their case the average size of soy growing area (cultivated in the examined period) is the highest and the size of their average soy growing area is above 50 hectares. It is important to see, however, that the gradually entering new producers started production only on small areas, at low risk, following the „trial” or „sounding” strategy. It is also obvious, however, that the entrepreneurship has massively strengthened due to availability of subsidies, and the sowing area has jumped to the production level of farmers having 3-4 years of practice. Those, who entered the previous year as new producers, started soy production on greater-than-average areas. It is clear, that the more years the producers spend with soy production, the better they know the special technological features and the larger areas they plant with this culture. Those who deal with this crop every year, plant on 54.3 hectare on average, while those, how have had experiences of only two years, produced this culture only on 5 hectares.

Table 5. Breakdown of soy producers according to the frequency of soy-yield (2010-15)

*Tabela 5. Podział producentów soi w zależności od częstotliwości uprawy soi (2010-15)*

Number of soy sowings/ <i>Liczba wysiewów soi</i>	Number of producers/ <i>Liczba producentów</i>			Average size of area/ <i>Średnia powierzchnia [ha]</i>			Specific average area size/ <i>Specyficzna średnia powierzchnia [ha]</i>		
	2010-2015	2010-2014	2015	2010-2015	2010-2014	2015	2010-2015	2010-2014	2015
6	388	0	0	21 055,2	0	0	54,3	0,00	0,00
5	283	428	0	6 590,4	22 478,2	0	23,3	52,5	0,00
4	358	320	0	4 646,1	6 605,4	0	13,0	20,6	0,00
3	599	481	0	4 715,3	5 156,9	0	7,8	10,7	0,00
2	1 172	882	0	4 982,1	4 561,4	0	4,3	5,2	0,00
1	5 020	2 608	5100	7 106,1	4 764,7	76 718,8	1,4	1,8	15,0
Total/Razem	7 820	4 719	5100	49 095,3	43 566,8	76 718,8	6,3	9,2	15,0

Source: own calculation based on ARDA

*Źródło: opracowanie własne na podstawie ARDA*

## Summary and conclusions

In the frames of conclusions, it can be confirmed that the payments coupled to production have received again a prominent role in the system of agricultural policy processes in terms of operating the sectors. Regarding the processes adjusted to and implementing the CAP reform requirements, it has become possible to ensure the support of sensitive sectors – which are important for the national economy – in the frames of reformed agri-policy tools and priorities. Substantial research can be carried out in case of a product group – like soy – which had not been subsidized before, but it has been included in the items from 2015. The impact of subsidies is pretty obvious in case of protein crops which are dominant under Hungarian conditions from multiple aspects. Due to the conditions of payment – mostly administrative reasons – the sowing areas decreased in case of some cereal protein crops. The number of producers, however, who started to produce soy as the result of subsidies, has increased substantially, to 3000 heads. Following the producers' calculations, the sowing area substantially increased, by 34000 hectares, although the average size of soy plantations per producer was low (15 hectares). The growth of soy-growing areas was the highest in those counties where the soy production had considerable traditions and favourable ecological basis. Thus it can be presumed that – following the measures – those producers increased their growing areas the most, who have appropriate expertise in the field of soy production.

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## Streszczenie

*Celem opracowania jest przedstawienie wpływu nowego systemu dopłat bezpośrednich na rolnictwo na Węgrzech. W latach 2014 i 2020 doszło do zmian wspólnej polityki rolnej w zakresie systemu dopłat bezpośrednich i mechanizmów regulacji rynku. W efekcie tych działań na Węgrzech stało się możliwe połączenie wielkości produkcji z wielkością dopłat. Nowe podejście nie powoduje ograniczeń w dostępie do dopłat, lecz stwarza możliwości do ich szerszego wykorzystania. Dopłaty bezpośrednie mogą mieć znacznie większy pozytywny wpływ na niektóre sektory. jednak niewiadomą jest, jak duże efekty to będą i które sektory skorzystają z tych zmian najbardziej.*

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