

## THE IMPACT OF COUPLED SUPPORT ON VEGETABLES GROWN IN GREENHOUSES AND PLASTIC TUNNELS IN ROMANIA

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### **Abstract**

*The paper presents the impact of the coupled support on vegetables cultivated in green houses and plastic tunnels in Romania. In this study, a detailed analysis is carried out on the coupled support received by farmers for vegetables grown in greenhouses and plastic tunnels in the period 2015-2018. The main indicators used refer to the evolution of cultivated areas, both in field and in greenhouses and plastic tunnels, the evolution of productions and yields, and trade balance. The paper also presents an analysis of the evolution of the number of farmers who received coupled support, of the areas entitled to payment and of the coupled support calculated per hectare in territorial profile. The analysis is based on data provided by the Agency for Payments and Intervention in Agriculture and the National Institute of Statistics. The results reveal a low impact of the coupled support on the main analyzed indicators, as well as the lack of consistency in the support provided in the investigated period.*

**Key words:** coupled support, vegetable cultivated in green houses and plastic tunnels, impact

### **INTRODUCTION**

This paper studies the impact of coupled support on vegetables cultivated in plastic tunnels and greenhouses in the period 2015-2018 and carries out a detailed analysis in territorial profile. The coupled support is conditioned by the production, but also by certain documents that the farmer must submit to APIA (Agency for Payments and Interventions in Agriculture). The purpose of this support is to avoid overproduction of certain products and to ensure that farmers respond to the real market demand. But sometimes a struggling agricultural sector or subsector may receive dedicated aid. The optional coupled support scheme aims to prevent the increasing of difficulties, which could lead to the abandonment of production and could affect other parts of the supply chain or associated markets. Therefore, EU countries can maintain a link (coupling) between income support payments (with a limited amount) and certain sectors or products (European Commission 2019) [6]. However, the process is subject to strict conditions and limits, to reduce the risk of market distortion. This support scheme is

known as optional coupled support (OCS). Optional coupled support is a system of production limitation, designed to restrict distortions of competition in the market. Potentially eligible sectors are cereals, oilseeds, protein crops, grain legumes, flax, hemp, rice, nuts, starch potatoes, milk and dairy products, seeds, sheep and goat meat, meat beef and veal, olive oil, silkworms, dried fodder, hops, sugar beet, sugar cane and chicory, fruits and vegetables and short-lived forest species. To fund optional coupled support, the EU countries can:

- use up to 8% of the total budget allocated to income support
- raise this ceiling to 13%, if certain preconditions are met
- raise the ceiling beyond 13% if the support meets very strict criteria and the Commission approves this measure (European Commission, 2019) [6].

EU countries may review their decisions on optional coupled support by 1 August of any year, with effect from the following year. All EU countries, except Germany, have decided to apply the scheme in the period 2015-2020. The amounts awarded and the range of sectors

targeted varies greatly from one country to another (European Commission, 2018) [4]. Almost all Member States apply this payment scheme (coupled support), although the amount of funding and the sectors covered differ significantly from country to country. In the "initial support decisions", 19 Member States have decided to provide such coupled support to the fruit and vegetables sector since 2015. This has remained unchanged to date [7]. At EU 28 level, the number of support measures compared to previous support decisions has remained unchanged at 54 measures since 2015 (Eurostat, 2019) [8].

## MATERIALS AND METHODS

The approach used in this paper is based on quantitative analyses, which include both a descriptive part of the vegetables grown under plastic tunnels and greenhouses, in evolution after accession, and a comprehensive analysis of the impact of the application of the payment scheme (coupled support) on the above-mentioned sector, in territorial profile, in the period 2015-2018.

The aim of the paper is to analyse the impact of coupled support on field tomatoes and cucumbers for processing cultivated in the field in 2015-2018, both territorially and nationally, on important indicators such as: cultivated area, yields, total production, prices, trade balance. For this analysis, data provided by APIA and the National Institute of Statistics were used, and the research was conducted for the period 2007-2018, using the calculation of the growth rates of the above-mentioned indicators in dynamics over four-time intervals, namely: 2007-2010, 2011-2014, 2015-2018 and 2007-2018.

## RESULTS AND DISCUSSIONS

### **Impact of coupled support for vegetables grown in greenhouses and plastic tunnels**

The coupled support for vegetables grown in greenhouses is granted to farmers who prove the selling of the following minimum yearly quantities per cultivated hectare, based on a tax invoice or the sheets in the marketing book of agricultural products, in the case of

individuals: 85 tons for tomatoes for fresh consumption; 50 tons for cucumbers for fresh consumption; 50 tons for cucumbers intended for processing for which a contract must be concluded with a registered processing unit for food safety, 29 tons for peppers for fresh consumption; 46 tons of cabbage for fresh consumption. The percentage of certified native seed used must be at least 5% of the sowing rate per hectare for each species.

Farmers must present to APIA the tabs from the marketing book, the contract concluded with a processing factory and the fiscal invoice, as well as the official certification document of the seed lot or the official analysis bulletin.

Coupled support for crops cultivated in plastic tunnels shall be granted to farmers who demonstrate the selling of the following minimum annual quantities per cultivated hectare: 32 tons for fresh and/or processed tomatoes, 30 tons for cucumbers for fresh and/or processed consumption, 16 tons for peppers for fresh consumption, 22 tons of cabbage for fresh consumption, 20 tons of eggplants for fresh consumption. In the case of cucumbers intended for processing, farmers must have a contract with a registered agro-processing unit for food safety.

According to the representatives of the sector, "granting this support was a good decision, money that Romania would otherwise have lost" [11]. The minimum eligible area for coupled support granted for vegetables cultivated in greenhouses and plastic tunnels is 1,000 square meters, and for tomatoes for processing, minimum 3,000 square meters. These conditions are not difficult to meet, and farmers who have already received subsidies have only to check this additional support when submitting applications to APIA [2].

In the year 2015, 70 farmers received coupled support for vegetables grown in greenhouses and solariums, the area entitled to payment representing 196 hectares. As the number of farmers who knew about this support was very small, the value of this support was extremely high, i.e. 12,675 euros/hectare. Regarding the payment applications submitted in the 2018 campaign, the largest amount, respectively 7,510 euros/hectare was allocated

for vegetables grown in greenhouses and plastic tunnels (Fig. 1).

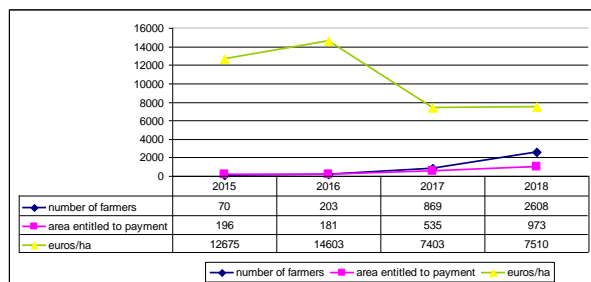


Fig. 1. Coupled support per hectare for vegetables grown in greenhouses and plastic tunnels, 2015-2018. Source: author's calculations based on APIA data [1].

By counties, in the year 2015, the largest number of farmers who benefited from coupled support came from the counties Buzău (9), Constanța (8 farmers), Olt (6 farmers), but the area entitled to payment had the highest values in the counties Ilfov (75 hectares), Dolj (41 hectares), Constanța (33 hectares). In 2018, the hierarchy slightly changed, the main beneficiaries coming from Olt and Galați counties (about 16% of the vegetable farmers from Galați who grow vegetables in greenhouses and plastic tunnels received coupled support). Practically, the county Galați has one third of the total area cultivated in greenhouses and plastic tunnels in Romania.

Table 1. Number of farmers, authorized amount and area entitled to payment for vegetables grown in greenhouses and plastic tunnels, by counties %

County	2015			2016			2017			2018		
	No. farmers authorized for payment	Amount authorized for payment	Area entitled to payment	No. farmers authorized for payment	Amount authorized for payment	Area entitled to payment	No. farmers authorized for payment	Amount authorized for payment	Area entitled to payment	No. farmers authorized for payment	Amount authorized for payment	Area entitled to payment
	1	2	3	4	5	6	7	8	9	10	11	12
Bz	13*	5	5	9	8	8	8	8	9	9	7	7
Ct	11	17	17	3	17	18	3	3	1	1	1	1
Dj	3	21	21	2	24	24	10	10	11	11	11	11
Gl	0	0	0	48	18	18	16	16	28	28	24	24
Gi	3	1	1	3	1	1	2	2	2	2	2	2
Hd	11	2	2	2	1	1	1	1	0	0	0	0
If	4	39	39	1	0	0	21	21	1	1	10	10
Is	3	2	2	3	2	2	1	1	1	1	1	1
Ms	7	1	1	1	2	2	2	2	2	2	2	2
Ot	9	1	1	7	4	4	21	21	33	33	30	30
Vl	4	1	1	0	0	0	1	1	1	1	1	1

\*(1), (4), (7), (10) Number of farmers authorized for payment, in % ; (2), (5), (8), (11) Amount authorized for payment in % ; (3), (6), (9), (12) Area entitled to payment, in %  
 Source: author's calculations based on APIA data, 2019 [1].

The coupled support for vegetables grown in greenhouses and plastic tunnels, namely tomatoes for fresh consumption, cucumbers

for fresh consumption and / or for processing, peppers, cabbages and eggplants for fresh consumption is 7,600 euros/ha, field tomatoes for processing 1,715 euros/ha, field cucumbers for processing 530.03 euros/ha. In the period 1990-2018, the total area cultivated with vegetables remained relatively constant, with an average of 239 thousand ha, but since 2007 the areas cultivated with field vegetables has decreased by 16%. From 2007 to the present, the areas cultivated in greenhouses and plastic tunnels doubled in size, which could lead to the increase of average yields by a better application of technologies and the correct use of agricultural inputs, yet the share of these areas in total area under vegetables represented only 1.9% in 2018.

In order to see the impact of this support on the areas cultivated with vegetables in the field, greenhouses and plastic tunnels and in total, it was calculated the dynamics of the cultivated areas over several time intervals covering the period 2007-2018.

Table 2. Impact on areas cultivated with vegetables in the field, in greenhouses and plastic tunnels and on total areas under vegetables, 2007-2018, dynamics by time intervals %

	2007-2010	2011-2014	2015-2018	2007-2014	2007-2018
Area cultivated with vegetables – total	4%	-9%	-6%	-6%	-11%
Area cultivated with field vegetables	2%	-15%	-7%	-14%	-17%
Area cultivated with vegetables grown in plastic tunnels and greenhouses	17%	14%	10%	45%	106%

Source: author's calculations based on NIS data, 2019 [9].

In 2018, the areas cultivated in greenhouses and plastic tunnels reached 4,461 hectares, which is double compared to 2007 (areas increased by 106%). The share of areas cultivated with vegetables in greenhouses and plastic tunnels, entitled for coupled support payment in 2018, in total area cultivated in greenhouses and plastic tunnels is 22%, a relatively important share that should have contributed to the increase of average yields

and total productions. However, Tables 4 and 5 show that the impact on areas cultivated with vegetables grown in the field is relatively modest, and in the case of areas cultivated in greenhouses and plastic tunnels for the period 2015-2018 (10%) it is even lower compared to other compared intervals 2007-2010 (17%) and 2011-2014 (14%). Therefore, the real impact of this support in terms of a possible increase of areas cultivated in greenhouses and plastic tunnels due to this support is out of discussion.

In order to see the impact of this support on total vegetable productions obtained in the field and in greenhouses and plastic tunnels, their dynamics was calculated by several intervals covering the period 2007-2018 (Table 3).

Table 3. The impact of coupled support on the total production of vegetables grown in the field and in greenhouses and plastic tunnels; the dynamics by time periods in %

	2007-2010	2011-2014	2015-2018	2007-2014	2007-2018
Vegetable production – total	24%	-9%	3%	22%	22%
Production of vegetables grown in the field	15%	-10%	4%	19%	17%
Production of vegetables grown in plastic tunnels	33%	22%	16%	124%	190%

Source: author's calculations based on NIS data, 2019 [9].

Analyzing the data from Table 3 it can be noticed that the impact of the coupled support on the total productions obtained in the field as well as on those obtained in greenhouses and plastic tunnels in the period 2015-2018 is lower compared to the period 2007-2010, yet slightly higher compared to the period 2011-2014 (affected by drought since 2013). For field-grown vegetable production, however, the increase is rather due to the slight rebalancing of the market after the shock of EU accession, especially in 2007-2009. The dynamics of vegetable production obtained in greenhouses and plastic tunnels was higher both in the period 2007-2010 (33%) and in the period 2011-2014 (22%), compared to the dynamics of the period 2015-2018 (16%), the period for which coupled support was granted.

### The impact of coupled support on the evolution of the total area under vegetables, of total production and trade balance

It can be noticed that the impact of coupled support on the evolution of total cultivated area and of total vegetable production is non-significant (Figure 2), the total vegetable production still failing to reach the level of 2011, which represented a historical highest production (4.1 million tons) in the period 2007-2018.

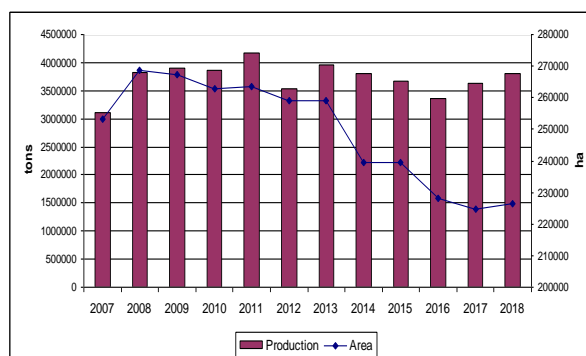


Fig. 2. Evolution of cultivated areas and total production

Source: NIS, tempo online, 2019 [9].

A similar conclusion can be drawn in the case of the impact on imports, which continues to increase significantly even in the period 2015-2018, contributing to the accentuation of the negative balance of trade in vegetables that reached over 450 million euros in 2019: tomatoes 20%, followed by other fresh vegetables (22%) are the main imported species. Nevertheless, the exports of tomatoes for processing at the EU level increased in 2019 by about 33%, following an increase of production of tomatoes for processing by 6% [5], which shows a good perspective for this product at the EU level and perhaps a positive impact of support scheme in other EU countries.

With an increasing trade balance for vegetables and with tomatoes being the most imported species Romania poses an important risk on its food security in terms of vegetable consumption. Increasing trade balance draws back also the opportunities for transforming this sector into a competitive one [10].

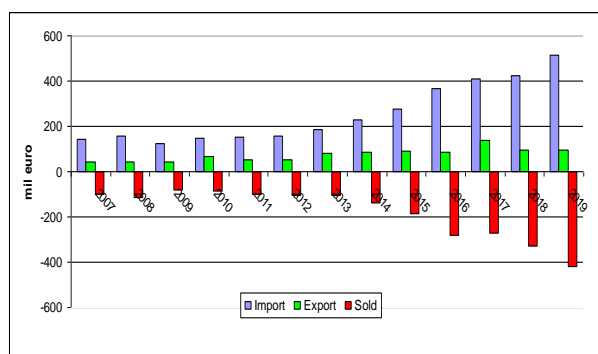


Fig. 3. Total trade balance in vegetables  
 Source: NIS, Tempo online, 2020 [9].

## CONCLUSIONS

In the vegetable sector, the share of areas under vegetables grown in greenhouses and plastic tunnels that benefited from coupled support represents 22% of the total area cultivated in greenhouses and plastic tunnels, and only 1% in total area cultivated with vegetables, the impact being very low/insignificant on the vegetable area dynamics, yields and total productions both for vegetables grown in the field and for vegetables grown in greenhouses and plastic tunnels. This low impact on these indicators is also reflected in the evolution of imports, which continued to increase, in the period 2015-2019 inclusively, contributing to maintaining a negative trade balance.

The impact of coupled support in Romania's vegetable sector was relatively modest and did not lead to an improvement of the situation, as there was no consistency in its provision although the number of those applying for support increased significantly from 2015 to 2018.

The higher yields are primarily due to the increase of areas cultivated in greenhouses and plastic tunnels that allow for the use of more productive varieties and a correct application of technologies, a trend that was also noticed in the period 2007-2015, prior to granting the support. This conclusion is also reinforced by the calculation of the dynamics of the evolution of cultivated areas, of average yields and total productions over four types of time intervals covering the period 2007-2018. Regarding the coupled support for vegetables grown in greenhouses and plastic tunnels, farmers in Dolj, Galați and Olt benefited the

most with about 30% of the amounts granted. The same proportion is maintained for the areas entitled to payment. About 16% of vegetable farmers in Galați county who grow vegetables in plastic tunnels received support. This support was primarily an aid to cover production costs, which was appreciated by the farmers who received it. However, as it was shown, the impact of this support was modest in terms of the analyzed indicators. For a major impact on the sector, investments in productive varieties, technologies and new equipment/machinery are needed primarily to increase yields, [12] correlated with the improvement of the supply chain operation (through the organization of the sector, namely the increase of the number of producer groups and organizations). At the same time the, this would help a better integration of supply chain and adaptation of framers to retailer's requirements [3].

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