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STUDIES ON THE SITUATION OF INVESTMENTS SUPPORTED IN ROMANIA BY THE "THEMATIC SUB-PROGRAM FOR THE TREE FRUIT SECTOR", PART OF THE NATIONAL RURAL DEVELOPMENT PROGRAM, IN THE SOUTH WEST OLTENIA REGION, ROMANIA

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Abstract

The National Rural Development Program is a program coordinated by the Ministry of Agriculture and Rural Development, in consultation with representatives of bodies, organizations and social partners active in this field and approved following consultations with the European Commission, which provides European non-reimbursable funds for investments private and public projects that ensure the development of rural areas in Romania. Sub-measure 4.1a of NRDP 2014-2012 - Investments in fruit holdings - the purpose of the investments supported under this sub-measure is to increase the competitiveness of the fruit farms by endowing with equipment and equipment, setting up, modernizing and / or expanding the processing units, setting up fruit plantations, existing plantings and the growth of areas occupied by fruit nurseries. The main purpose of this paper is an analysis of the investments with European funds regarding the development of the fruit sector in the South-West Oltenia Region in the period 2015-2017. We propose, in this paper, to follow the funded projects of the fruit holdings through sub-measure 4.1 a, in of the South-West Oltenia Region, which have an eligible value of 20,138,023 euros, and the public value is 17,027,919 euros, with 34 projects, in relation to nationally funded projects with an eligible value of 289,236,406 euros and a public value of 233,371,337 euros and a number of 461 projects.

Key words**:** *public value, eligible value, fruits tree, species, variety, funded project, measure*

INTRODUCTION

Currently, most orchards of fruit trees and small fruits are abandoned, aged, have low productivity and are dominated by only two species. Aging crops with low yields and reduced assortment affect the quality and quantity of fresh fruit supply on domestic markets, favor the emergence of imported products and reduce exports. It is necessary to establish the establishment of fruit plantations, including protected areas and the rejuvenation of existing fruit plantations.
In Romania, in this rather long period of transition, there are still many fruit tree orchards with old (classical) varieties which do not fully meet today's market and consumer's criteria [9].
The country is one of the main ten important European producers of horticultural products in terms of production volumes and acreage. Results showed that over the last seven years (2007-2014), the sectorial production drawbacks have not been improved very much [5].
Also, in order to ensure the need for planting material, adapted to the pedoclimatic conditions in Romania, it is necessary to increase the area occupied by the fruit nurseries. Expanding the areas under fruit plantations and diversifying the range would have a positive effect on the supply of fresh fruit to the domestic and foreign markets, increase the degree of processing of raw materials produced internally and have a positive effect on the development of the fruit

sector in general. In Romania, the low level of investments in fruit holdings was strongly influenced by the low financial capacity of primary producers, the high cost of loans and investments, and the lack of guarantees. The high costs of setting up orchards, and their maintenance, have limited the interest of investors in this area. Over the last 23 years, the fruit sector has been in a steady decline, with negative consequences not only on the economic development of the rural environment but also on the quality of life of traditional fruit-growing communities and on the contribution of the sector to environmental protection [11]. Weak association and cooperation, with the purpose of producing but especially of the joint exploitation of fruit production, is another important factor that negatively influenced the capitalization of production, the quality of products, the supply of inputs and implicitly the fruit growers' incomes. The association of Romanian cultivators represents an opportunity for them to become competitive and to value their production at a convenient price. The orchards with the size between 0 and 5 hectares represent 52% of the total area. Obtaining smaller production than the European average is due to technology and outdated equipment [7]. Farmers need to partner in horticulture for better yield and higher income in terms of workload [8].

The super-intensive technology is the most expensive and requires very large investments per hectare, having a very good economic performance, compared to the intensive technology that needs smaller investments per hectare, and the traditional technology which is very easy to implement, and does not require large investments, having a minimum profitability [16].

Through the National Program for Rural Development grants are granted for the development of rural areas in Romania, granted by the European Union together with the Government of Romania. Technical and financial implementation is provided by the Agency for Rural Investment Finance (ARIF). Sub-measure 4.1a "Investments in fruit holdings" falls under Measure 4 - Investments in physical assets - from NRDP 2014-2020 and contributes to improving the economic performance of all farms and facilitating farm restructuring and modernization, especially with a view to increasing participation and orientation towards market, as well as agricultural diversification [2].

The main priorities for rural development are to modernize and increase the viability of agricultural holdings by strengthening them, opening up to the market and processing agricultural products, encouraging the renewal of farmers generations by supporting the setting up of young farmers, promoting the fruit sector as a sector with specific needs.

MATERIALS AND METHODS

In this paper, a statistical study was carried out to highlight the investments made under Sub-measure 4.1a of the NRDP on the study period 2015-2017 regarding the projects financed for the development of the fruit sector in the counties of Dolj, Gorj, Mehedinti, Olt, Valcea that make up the Region of development SW Oltenia.

The list of the fruit plantations / fruit tree shrubs plantations from the Agriculture Directorates in Oltenia counties was consulted, taking over the authorized species, varieties and hybrids. The data regarding the number of projects and their amounts were extracted from the selection reports of the contracting authority.

Thus, the situation of the fruit farms in the counties of Oltenia, the numerical situation of the selected projects, the public value (non-refundable) and the eligible value of the selected projects in Oltenia were analyzed.

There have been several correlations such as: Correlation between projects number and orchard area, Correlation between projects number and eligible value, Correlation between eligible value and new orchards area.

Romania occupies the eighth position for the production of apples and the third position for the area of apple orchards, being an important fruit producer in the EU, occupies the ninth position for the consumption of apples [12].

In order to improve producers' competitive conditions, the 2007 reform of the Common Market Organization for fruit and vegetables provides measures in favor of growers who are members of Producer Organizations (POs) [3].

After analyzing the correlation between the value of fruit production, the GDP of agriculture and the import of fruits, it is observed that there is a correlation, and the increase of their production would lead to the increase of the GDP, and also to the decrease of the imports [10]. With the EU funding the groups of fruit and vegetable producers have specialized equipment for harvesting, storage and preparation of fruits for sale. The groups have their own storage bases, specialized for cleaning, sorting, packaging and conditioning of fruits as well as means of transport for delivery of products to customers, while maintaining their quality. Through group actions agricultural producers are able to obtain benefits, which are very hard to achieve by acting alone [4].

This study uses the following indicators: orchards area and investments (eligible value) public investment reported on orchards area,at Oltenia level were calculated using the formulas:

$$\mathbf{I_{no}=}\ \frac{\sum_{i=1}^{n} V_e}{N_{no}};$$

I_{no}– Public investment reported on new orchards area;

V_e – Eligible value;

N_{no} - The value of new orchards area;

N - Number of projects ranging from 1 to 34.

$$\mathbf{I_{np}=}\ \frac{\sum_{i=1}^{n} V_e}{N_p};$$

I_{np} – Medium investment value reported on number of projects;

V_e – Eligible value;

N_p - The value of the number of projects;

N - Number of projects ranging from 1 to 34.

To highlight the correlations we used:

- the Equation for the correlation coefficient:

$$r = \frac{\sum (x_i - \overline{X})(y_i - \overline{Y})}{\sqrt{\left(\sum (x_i - \overline{X})^2\right)\left(\sum (y_i - \overline{Y})^2\right)}},$$

where $\overline{x}$ și $\overline{y}$ -are the averages for samples, AVERAGE (matrix1) and AVERAGE (matrix2).

-form linear and polynomial function of second degree:

Linear – linear model (simple regression): $y = a + bx$;

Polynomial – the second order polynomial model: $y = a_0 + a_1x^1 + a_2x^2$;

RESULTS AND DISCUSSIONS

The Oltenia region is located in the SW of Romania, and is bordered by the Southern Carpathian Mountains in the North, Olt river in the East and Danube river in the South and West. and Dolj, Gorj, Mehedinţi, Olt and Vâlcea counties). Oltenia region covers a surface of 29,015 km^2, which reprezents up to 12.2 % of the surface of Romania [6].

Oltenia region is characterized in general by favorable climatic and soil conditions for fruit, nut and small trees growing from the foot of the Carpathian Mountains, which correspond to the Sub-Carpathian area of Oltenia, to the Mehedinţi Plateau and the Severin Basin, Getic Piedmont (Plateau) and the Oltenia Plain, which is a subunit of the Romanian Plain.

The climate is temperate continental, with some Mediterranean influences. Eastern and the Southern parts of Oltenia are subject of important thermic amplitudes induced by the continental cold air masses coming from the East and North East.

The areas were most of the fruit growing was located in the past are in Vâlcea (13,145 ha), Gorj (4,756 ha), Mehedinţi (4,635 ha), Dolj (2,833.62 ha) and Olt (861.90 ha) counties. Total number of hectares covered by fruit tree, nut crops and small fruits in Oltenia was 26,231.52 ha [15].

The situation of the regional distribution of the approved and financed projects, their sum, as well as the existing fruit growing area, as well as the newly established area, are presented in the tables below.

Table 1. Number of projects funded in Oltenia and at national level

Year	County					Total	Total national
	Dolj	Gorj	Mehedinți	Olt	Vâlcea		
2015	0	0	0	0	1	**1**	**16**
2016	1	0	1	3	4	**9**	**116**
2017	6	5	2	8	3	**24**	**329**
Total	**7**	**5**	**3**	**11**	**8**	**34**	**461**

Source: https://www.afir.info/

We observe that in the Oltenia Region, under sub-measure 4.1a, in the period 2015-2017, 34 projects were financed, representing 7.4% of the total number of projects financed at national level, so far (461 projects), which represents a small number in relation to the region's horticultural potential. Olt County has the largest number of projects financed, with 11 projects, followed by Valcea county with 8 projects financed, Dolj county 7 projects, Gorj County 5 projects, and Mehedinti County with the last 3 projects financed (Table 1).

Table 2. Fruit tree and nut crops situation in Oltenia and funded projects by NRDP(The National Rural Developement Program) through Submeasure 4.1.a - Support for *investments in fruit-growing* holdings

Counties	Situation	Pip fruits			Stone fruits					Nut crops		
		Apple	Pear	Quince	Plum	Apricot	Peach and Nectarine	Sweet cherry	Sour cherry	Walnut	Hazelnut	Almond
Dolj	Orchard area[A] (ha)	511.37	11.00	No data	1,580.35	269.90	139.00	296.00			11.00	
	Projects on new orchards by NRDP (ha)	5.80	0	0	0	0	1.90	9.90	0	55.30	66.20	0
Gorj	Orchard area[A] (ha)	694.00	106.00	No data	3,588.00	0	0	118.00			77.00	
	Projects on new orchards by NRDP (ha)	12.80	2.00	9.50	2.00	0	0	0	0	0	0	0
Mehedinți	Orchard area[A] (ha)	2,010.00	0	No data	1,580.00	80.00	130.00	685.00			150.00	
	Projects on new orchards by NRDP (ha)	3.30	0.26	0.26	0.26	0.26	0.26	7.80	0.26	7.00	0	0
Olt	Orchard area[A] (ha)	40.86	0	No data	735.68	45.21	10.00	27.05			0	
	Projects on new orchards by NRDP (ha)	34.20	0	0	17.10	0	0	2.90	0	0	9.20	0
Vâlcea	Orchard area[A] (ha)	2,940.00	240.00	No data	9,484.00	11.00	2.00	95.00			92.00	
	Projects on new orchards by NRDP (ha)	0	0	4.00	0	0	0	3.10	0	46.70	0	0
Total	***Orchard area[A] (ha)***	***6,196.23***	***357.00***	No data	***16,968.03***	***406.11***	***281***	***1,221.05***			***330.00***	
	Projects on new orchards by NRDP(ha)	***56.10***	***2.26***	***13.76***	***19.36***	***0.26***	***2.16***	***23.70***	***0.26***	***109.00***	***75.40***	***0***

A Source: [15].

Table 3. Small fruits situation in Oltenia and approved projects by NRDP through Submeasure4.1.a - Support for *investments in fruit-growing* holdings

Counties	Situation	Small fruits				Other crops	Total orchard surface (ha)
		Strawberry	Raspberry	Blueberry	Sea buckthorn		
Dolj	Orchard area[A] (ha)	0		0		15.00	2,833.62
	Projects on new orchards by NRDP (ha)	0.40	0	20.10	0	0	159.60
Gorj	Orchard area[A] (ha)	170.00		0		3.00	4,756.00
	Projects on new orchards by NRDP (ha)	0.50	5.90	0	0	0	32.70
Mehedinti	Orchard area[A] (ha)	0		0		0	4,635.00
	Projects on new orchards by NRDP (ha)	0	0	0	0	0	19.66
Olt	Orchard area[A] (ha)	1.50		0		1.60	861.90
	Projects on new orchards by NRDP (ha)	0	5.70	33	2.70	0	104.80
Vâlcea	Orchard area[A] (ha)	179.00		8.00		94.00	13,145.00
	Projects on new orchards by NRDP (ha)	0.30	0	2.60	5.60	0	62.30
Total	***Orchard area[A] (ha)***	***350.50***		***8.00***		***113.60***	***26,231.52***
	Projects on new orchards by NRDP (ha)	***1.20***	***11.60***	***55.70***	***8.30***	***0***	***379.06***

A Source: [15].

Table 4. The cultivars' assortment of the fruit tree funded projects for Oltenia region NRDP (The National Rural DevelopementProgram) through Submeasure 4.1.a - Support for *investments in fruit-growing* holdings

Counties	Fruit tree crops							
	Pip fruits			Stone fruits				
	Apple	PEAR	Quince	Plum	Apricot	Peach	Sweet cherry	Sour cherry
Dolj	'Luna'[T], 'Rozela'*, 'Orion'*, 'Starkrimson', 'Red Topaz'[T], 'Florina', 'Generos'	-	-	-	-	'Florin', 'Alexia', 'Redhaven', 'Cardinal'	'Kordia'[T], 'Regina'*, 'Lapins'*, 'Skeena'[T], 'Early Red'*	-
Gorj	'Prima', 'Jonathan', 'Golden 'Delicious', 'Florina', 'Starkrimson', 'Generos', 'Idared',	'Napoca', 'Williams', 'Ina Estival'**, 'Curé', 'Conferance', 'Haydeea'	'Bereczki', 'Adonia', 'Aromate'	'Stanley', 'Centenar', 'Anna, Späth', 'RenclodAlthan', 'D'Agen'	-	-	-	-
Mehedinți	'Idared', 'Florina', 'Goldspur' and *Malus floribunda* (pollinator)	'Williams', 'Red Williams', 'Beurré Bosc', 'Abate Fetel'**	'Bereczki'	'Stanley'	'Ceamaibună de Ungaria' ('Hungary's Best')	'Redhaven'	'Kordia'[T], 'Regina'*, 'Stella', 'Hedelfinger', 'Carmen'*, 'BigarreauBurlat', 'Valeri Cikalov'*, 'Boambe de Cotnari', 'BigarreauDönissen'	'Morella Neagră' ('Schattenmorelle'), 'Ilva', 'Nana'**
Olt	'Golden Delicious'	-	-	'President'[T], 'Anna Spath', 'TopendPlus'*	-	-	'Kordia'[T], 'Regina'*	-
Vâlcea	-	-	'Bereczki', 'Aromate'	-	-	-	'Rivan'[T], 'Stella', 'Ludovic'**	-

[T] – Tested officially in Romania, but not listed in the Romanian Official Catalogue of Cultivars [1]

* - not listed in the Romanian Official Catalogue of Cultivars

** - cancellation of listing in the Romanian Official Catalogue of Cultivars

Table 5. The cultivars' assortment of the nut tree and small fruits approved projects for Oltenia region by NRDP (The National Rural DevelopementProgram) through Submeasure4.1.a - Support for *investments in fruit-growing* holdings

Counties	Nut tree and small fruits crops					
	Nut crops		Small fruits			
	Walnut	Hazelnut	Strawberry	Raspberry	Blueberry	Sea buckthorn
Dolj	'Jupânești', 'Valcor', 'Valrex', 'Velnița', 'Anica', 'Șușița', 'Sibișel 44', 'Geoagiu 65'	'Vâlcea 22', 'Romavel', 'Halle's Giant', 'Cozia', 'Fertile de Coutard'*, 'Ennis'[T], 'Tonda Gentile delle Langhe'(T.G.D.L.), 'Tonda di Giffoni'*, 'Tonda Gentile Romana'*	No data available	-	'Duke', 'Blue Gold'*, 'Elliott'[T], 'Simultan', 'Bluecrop'[T]	-
Gorj	-	-	No data available	'Polonez'*, 'Poemat'*	-	-
Mehedinți	'Chandler'*, 'Franquette'	-	-	-	-	-
Olt	-	'Vâlcea 22', 'Romavel', 'Tonda Gentile delle Langhe' (T.G.D.L.), 'Cozia', 'Halle's Giant'	-	'Polana'*, 'Sokolica'*, 'Laszka'*	'Duke', 'Bluegold'*, 'Bluecrop'[T]	'Clara','Andros', 'Mara'
Vâlcea	'Jupânești', 'Velnița', 'Valrex', 'Orăștie'**, 'Valcor', 'Valmit', 'Mihaela'**, 'Roxana'**, 'Geoagiu 65', 'Valcris'	-	No data available	-	'Elliott'[T], 'Legacy'*	'Clara', 'Mara', 'Cora', 'Andros'

[T] – Tested officially in Romania, but not listed in the Romanian Official Catalogue of Cultivars [1]
* - not listed in the Romanian Official Catalogue of Cultivars
** - cancellation of listing in the Romanian Official Catalogue of Cultivars

Table 6. The total value of the selected projects in the S-V Oltenia Region and national value (€)

Year	DJ		GJ		MH		OT		VL		Total e.p.* [€]	Total p.v.** [€]	Total e.p.* National [€]	Total p.v.** National [€]
	E*	P**	E*	P**	E*	P**	E*	P**	E*	P**				
2015	0	0	0	0	0	0	0	0	413,641	362,290	**413,641**	**362,290**	**10,190,088**	**7,530,941**
2016	656,934	591,243	0	0	251,121	175,784	1,074,174	913,025	1,463,004	1,188,281	**3,445,233**	**2,868,333**	**66,251,199**	**51,198,300**
2017	4,361,036	3,667,078	3,840,566	3,258,879	1,737,543	1,563,787	5,106,288	4,233,778	1,233,716	1,073,774	**16,279,149**	**13,797,296**	**212,795,119**	**174,642,096**
Total	**5,017,970**	**4,258,321**	**3,840,566**	**3,258,879**	**1,988,664**	**1,739,571**	**6,180,462**	**5,146,803**	**3,110,361**	**2,624,345**	**20,138,023**	**17,027,919**	**289,236,406**	**233,371,337**

* - eligible value;
** - public value;
Source: Own calculation.

Out of the region the largest number of hectares were recorded in case of plums and apples and plums in Vâlcea county (9,484 ha and 2,940 ha respectively), sweet and sour cherries in Mehedinți (685 ha), apricots in Dolj (269.90 ha), pears and strawberries in Vâlcea (240 ha and 179 ha respectively), nut crops in Mehedinți (150 ha), peach and nectarines in Dolj (139 ha), etc (Tables 2 and 3).

As result of projects funded in Oltenia by NRDP (The National Rural Developement Program) through Submeasure 4.1.a - Support for investments in fruit-growing holdings, the following ranking of future plantings occured: 109 ha of walnut, 75.4 ha of hazelnut, 56.1 ha of apples, 55.7 ha of blueberries, 23.7 ha of sweet cherries, 19.36 ha of plum, 13.76 of quince, 11.6 ha of raspberries, 8.30 ha of sea buckthorn, 2.26 ha of pears, 2.16 ha of peach and nectarines, 1.20 ha of strawberries, 0.26 ha of apricots and 0.26 ha of sour cherries (Tables 2 and 3). On first place is Dolj county with 159.60 ha of future orchard plantings, followed by Olt with 104.90 ha, Vâlcea with 62.30 ha, Gorj with 32.70 ha and Mehedinți with 19.66 ha.

The new orchards will have to be established using "certified" virus free planting material of domestic or E.U. origin. In the case of walnut and hazelnut, a lack of biological material was observed, on a national scale.

The assortment to be used in the case of these approved projects is generally composed of domestic and foreign cultivars that are included into the Romanian Official Catalogue of Cultivars or have been officially tested in Romania.

As it can be observed in table 4, the assortment to be used for establishing apple orchards is based on classical cultivars such as 'Golden 'Delicious', 'Florina', 'Idared', 'Starkrimson' and the Romanian cultivar 'Generos'. Besides the tested cultivars, two new patented cultivars: 'Rozela' and 'Orion' have been declared chosen to be planted in Dolj.

The pear assortment is also composed by old cultivars such as as Williams', 'Red Williams', 'Beurré Bosc', 'Curé', 'Conferance'. The assortment comprise also Romanian cultivars like 'Napoca' and 'Ina Estival'.

Since there is a high potential for developing the apple production and marketing sector in Romania, a series of measures are required at both macroeconomic and microeconomic level [14].

Apple production in the EU is typified by intensive production practices, involving high investment costs both during the orchard establishment period and during the operational life of the orchard [13].

The assortment comprise also Romanian cultivars like 'Napoca' and 'Ina Estival'. In the case of quince, new domestic cultivars 'Aromate' and 'Adonia' are taken into account along the classic one 'Bereczki'.

Plum cultivars to be planted are also on the market from long time ('D'Agen', 'Anna Späth', 'RenclodAlthan', 'President' and 'Stanley' and domestic one 'Centenar'). The only exception is the newer German cultivar, 'Topend Plus', but this one was not officially tested in Romania, so its behaviour is not known for the area where it is intended to be used.

Sweet cherry cultivars to be planted are generally in accordance with the trends, most of the cultivars being international ones. There are some ones not yet officially studied regarding their behavior in Romania as 'Valeri Cikalov', 'Early Red', etc. Assortments used for the projects on establishing new orchards of apricot, peach and sour cherries are based also on older cultivars, with the insertion of domestic cultivars such as 'Florin' and 'Alexia' for peach and 'Ilva' and 'Nana' for sour cherry.

Walnut cultivars to be planted are mostly Romanian, with the exception of 'Franquette', an old French variety of very good quality, but less productive and the variety 'Chandler' from U.S.A. This Californian cultivar has lateral bearing habit and is extensively planted in many countries with milder climate due to its productivity and fruit and kernel quality. The extensive use of this cultivar into continental temperate climate areas characterized by high thermic amplitudes should be done with care, due to its susceptibility to low temperatures during winter. 'Chandler' was not yet tested officially in Romania, so its behavior in Oltenia it is not known.

For hazelnut orchards, domestic and introduced cultivars have been proposed for planting, some of the proposed cultivars are originated from central Italy, where the climate is milder then in Romania.

In the last years, the interest for planting walnut and hazelnut orchards increased a lot. The demand for planting material of these nut crops was not covered by the domestic nurseries and imported material from France, Hungary, Italy, Bulgaria, Turkey and Republic of Moldova was used. With this occasion many cultivars, which were not prior tested in the local ecological conditions, have been planted. Such orchards established with the support of E.U. and national public funds should be monitored not only during the 5 years period after establishing of the investment (which is generally carried out for the funded projects), but additional at least 3 years of yielding, knowing that hazelnut is coming into bearing in the 5^{th} year after planting and walnut in the 7^{th} year after planting. In this respect, valuable data should be collected, suitable and productive cultivars will be promoted and the not successful ones will be avoided in the future for planting into the areas where they did not perform.

Lack of availability of planting material is affecting also the assortment to be used for planting in Oltenia in the case of strawberry. The varieties proposed of raspberry and blueberry are new and originated from Poland and U.S.A. respectively.

Also, in the last decade, the interest for growing sea buckthorn (*Hippophaërhamnoides* L.) exploded. Many orchards have been established all over Romania, using Romanian cultivars. Although it has valuable nutritional fruits and being considered a „cash crop" in some countries, its extension on very large scale as fruit crop is problematic due to difficult harvesting.

Taking into account the issues regarding the use of listed into Official Catalogues, tested or not tested cultivars and lack of availability of quality planting material adequate decisions are requiured.

According to the legislation and NRDP guide for Submeasure 4.1.a - Support for investments in fruit-growing holdings, orchards can be also established with cultivars and rootstocks which are listed in the official catalogues of any other E.U. country. Such option can be risky when are chosen species and cultivars not adapted to the ecological conditions. As long as the risk is taken only by the farmer who decides what to plant on his property is fine, but problems might occur when financial support of 50 to 90% of total investment is granted from public domestic and E.U. funds and the choices of species and cultivars are not based on reccomandations of the extension and research services and decisions prove not to be appropriated. Use on extensive scale of cultivars and rootstocks that have not been tested officially in Romania should be carefully analysed in advance.

In the South-West Oltenia Region, projects amounting to 20,138,023 euros (eligible value - 6.9% of the national total) were financed, where the public value is 17,027,919 euros, between 2015-2017. At the national level, projects with a value of 289,236,406 euros (eligible value) were financed with a public value of 233,371,337 euros, between 2015-2017 (Tabel 6).

The Olt County obtained the most funds, with an eligible value of 6,180,462 euros (public value being 5,146,803 euros), and 11 projects financed, being the county where most investments were made through sub-measure 4.1a, in the Oltenia area. In Dolj county investments were made of 5,017,970 euros (eligible value) where the public value is 4,258,321 euros, we can say that this county has a good score comparing with the number of projects submitted (7 projects). The third place is occupied by Gorj with an eligible value of 3,840,566 euros, and the public value is of 3,258,879 euros. Although Valcea County has 8 projects financed, their value is relatively small, having an eligible value of 3,110,361 euros (the public value being 2,624,345 euros). In Mehedinti County, the least investment was made in this area, 1,988,664 euro - eligible value and 1,739,571 euros' public value (Table 6 and 1).

Table 7. Eligible value reported on new orchard area and average project value

County	Orchard area	New orchards area	Projects number	Eligible Value	Public Value	Eligible value / New orchards area [€/ha]	Average value/ Project [€]
DJ	2,833.62	159.60	7	5,017,970	4,258,321	31,440.91	716,852.86
GJ	4,756	32.70	5	3,840,566	3,258,879	117,448.50	768,113.20
MH	4,635	19.66	3	1,988,664	1,739,571	101,152.80	662,888.00
OT	861,90	104.80	11	6,180,462	5,146,803	58,973.87	561,860.18
VL	13,145	62.30	8	3,110,361	2,624,345	49,925.54	388,795.13
Total	**26,231.52**	**379.06**	**34**	**20,138,023**	**17,027,919**	**53,126.21**	**592,294.79**

Source: Database of the Agricultural Directorate of Dolj County

From the analysis of Table 7, we find that Gorj County has invested the most money in relation to each newly-built hectare, namely on an area of 32.70 ha, invested an average of 117,448.50 euro/
hectare, being followed by Mehedinti county 101,152.80 euro/hectare, followed by Olt county with 58,973.87 euro/ha and Valcea county with 49,925.54 euro/ha, and the last place is the Dolj county, which on an area of 159.60 hectares invested 31,440.91 euro.

The average value of the projects in Gorj is 768,113.20 euro / project, representing the county with the highest average, followed by Dolj county with 716,852.86 euro/project, Mehedinti county with 662,888 euro/project, Olt county with 561,860.18 euro/project, and the lower average value of the projects is in Valcea county of 388,795.13 euros.

Using linear and polynomial formulas, several correlations are made between the number of storage spaces, the total storage capacity and the arable land surface in the counties of SW Oltenia.

Table 8 presents the coefficients of correlation and coefficients of determination both for the linear functions and polynomial functions of the grade 2 and 3.

It was found a weak correlation between the number of projects and orchards area, but a positive and strong correlation between the

number of projects and the eligible value and the eligible value and the new orchards area.
The determination coefficients confirmed that the variation of the dependent factors has a high influence on the variation of the independent factors for the 2nd and 3rd pair of variable in case of linear model, respectively between the number of projects and the eligible value and the eligible value and the new orchards area.

In case of all the polynomial functions, grade 2 and grade 3, it was noticed a high variation of the dependent factor on the variation of the independent factor for all the three pairs of variable, respectively: projects number and orchards area, projects number and eligible value and eligible value and new orchards area (Table 8).

Table 8. Values of regression coefficient and R^2

Correlation	r	R^2 Linear function	R^2 Polynomial function grade 2	R^2 Polynomial function grade 3
Projects number – Orchards area	-0.109	0.011	0.936	0.936
Projects number – Eligible value	0.819	0.671	0.671	0.852
Eligible value – New orchards area	0.751	0.565	0.722	0.788

Source: Own calculation.

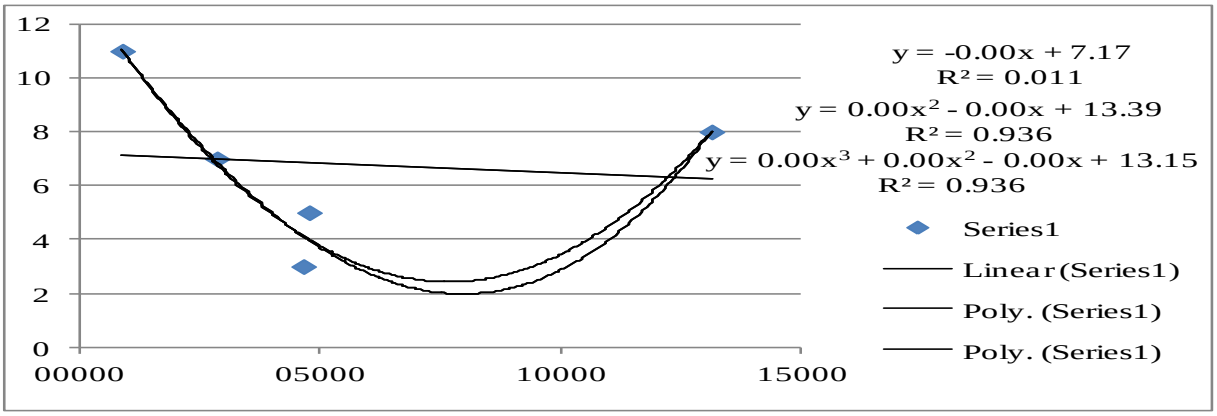

Fig. 1 Correlation between projects number and orchard area (r= -0.109)
Source: Own design.

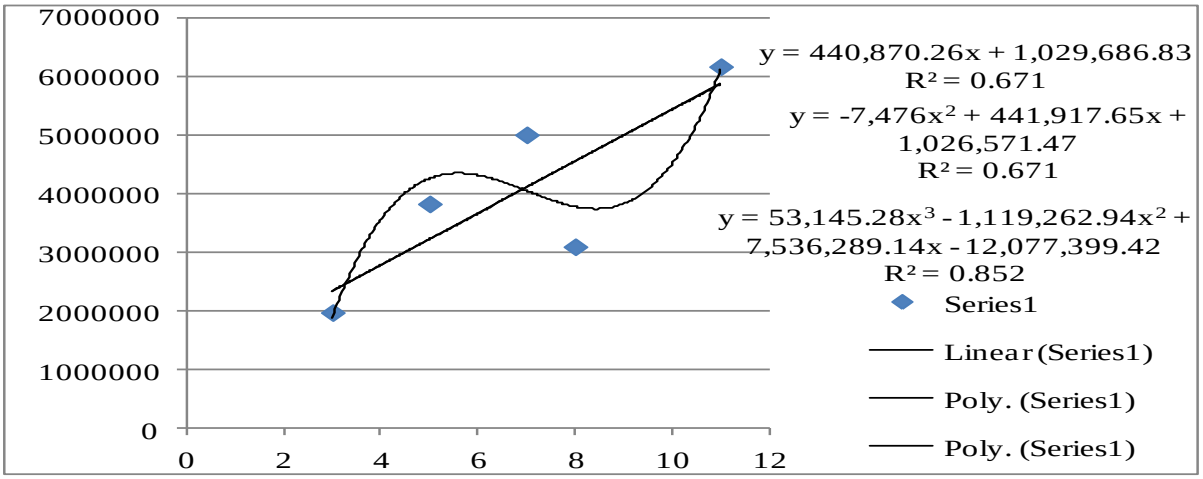

Fig. 2 Correlation betweenprojects number andeligible value (r= 0.819)
Source: Own design.

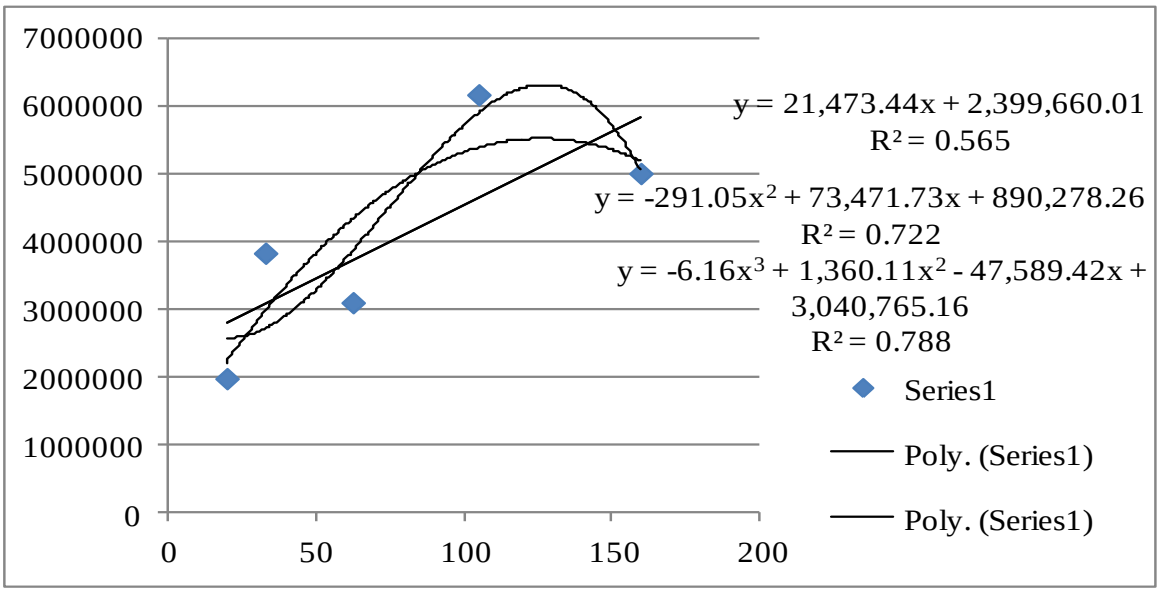

Fig. 3. Correlation between eligible value and new orchards area (r= 0.751)
Source: Own design.

Applying the correlation coefficient formula it is observed that there is a correlation between the number of projects and their eligible value (Figure 2) with a value of 0.819, respectively between the eligible value and the new surface created in the fruit sector (Figure 3) with a value of 0.751 from the counties of South-West Oltenia Region.

CONCLUSIONS

According to the study, in the SW Oltenia Development Region, the dynamics of the investments in the fruit sector is small compared to the investments made at the national level, and it is concluded the necessity of setting up new fruit plantations by using the European funds made available through the NRDP, it is also recommended introduction into the cultivation of varieties and species tested in the region.

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