

## COMMON AGRICULTURAL POLICY TOOLS FOR RISK MANAGEMENT IN AGRICULTURE: A CASE STUDY ON 24 UNITS EXPLOITING TOGETHER OVER 12,000 HA IN THE NORTH EAST OF ROMANIA

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### Abstract

*The paper emphasizes the influence that the Common Agricultural Policy programmes and subsidies on the agricultural production in Romania from the risk management point of view. Agricultural production is deeply dependent on climatic factors. In the perspective of climate changes with increasingly pronounced effects, the European Union, through specific institutions and mechanisms, has introduced financial facilities for agricultural units that apply for insurance premiums for agricultural crops or animals. This approach is likely to increase the share of cultivated areas that are insured, following the model of the west states in the European Union. The present paper centralizes the technical-economic details of some studied agricultural units benefiting from non-refundable financing as a result of applying some insurance policies. Extensive research was made for this article in the North-East Region of Romania, managing to obtain primary sources data from 24 agricultural units and 53 insurance policies applied by these units. The units studied range in size from 148 ha to 1,910 ha. However, most of the units are of the medium-large category, their average exploited area being 521 ha. Moreover, the cumulative area of the studied units is 12,503 ha. It was found that for the 24 agricultural units studied, 80.75% of their cumulative area benefits from insurance against natural disasters. The total amount for the policies paid by the 24 farmers was over 400,000 Euro, while the total value of the settlements by AFIR was 230,141 Euro. The results of the empirical study indicate the increasing interest of large agricultural units in accessing non-reimbursable grants intended for agricultural insurance for cereal crops. The authors have identified the efforts that responsible entities support to maintain this interest, even if the way of organizing reporting and ensuring visibility needs improvement.*

**Key words:** crops risk management, crop insurance, insurance grants

### INTRODUCTION

Agricultural production has always been determined by climatic factors. This imposed the need to regulate and develop some financial compensation or compensation schemes for farmers, given the strategic nature of the products obtained. These schemes have always aimed at compensating at least partially the losses resulting from climatic phenomena to allow farmers to resume production activity [12]. The literature introduced relatively recently the concept of "critical moments" with reference to the risks to which agriculture is exposed in certain periods, as a result of climate change and considering the very high vulnerability of the sector to environmental conditions, along with the almost total

dependence of agriculture on climate and natural factors. CM (critical moments) is defined as periods of risk during the year when livelihoods are vulnerable to specific climate hazards. The World Bank (2015) reports raise the same risks issue of which agriculture is subjected. "Agriculture and associated land use change account for up to one quarter of greenhouse gas (GHG) emissions globally and at the same time, agriculture has the potential to become part of the solution." [11]

The Common Agricultural Policy represents the main instrument for regulating markets in the production, processing and distribution of agri-food products at the European level [2]. For Romania, an important challenge is to obtain an equivalent on technical and economic terms with the rest of Europe. This

can become possible through numerous approaches of varying complexity. Since joining the European Union, Romania has gone through two complete multi-annual financial exercises and is currently in the third. The first such financial exercise took place between 2007 - 2013, in continuation of the pre-accession exercise, which took place between 2000 and 2006. The period 2007 - 2013 represented an important improvement in those sectors of agriculture that had the greatest deficiencies [15]. Later, in 2014 - 2020, the PAC levers contributed to the further improvement of an already stable and relatively resilient Romanian agricultural framework [16]. The financial incentives were directed where, from a statistical point of view, there were still gaps compared to the averages of the European Union countries. Such a deficiency was identified as the low incidence of cultivated and insured areas against various climatic risks [4]. From this point of view, the western states of the E.U. had, since 2014, a much larger share of insured arable areas. In the absence of optional insurance policies applied by farmers with private insurance companies, the Romanian government had to compensate them from the state budget, with substantial amounts, as a result of calamities recorded almost annually [14]. As a result, in the period 2002 - 2014, compensation or compensation systems for farmers were developed that contributed to the partial reduction of production losses suffered by [7]. Hail, storms and torrential rains are the meteorological phenomena that generated the most compensations paid for agricultural crops in 2019 and 2018 (96.3%)", according to the data provided by UNIRC, the National Union of Insurance and Reinsurance Companies in Romania, by member companies [13].

In the European Union, the grants for encouraging the insurance appliance emerged in 2007 by the Common Agricultural Policy developed by European Union [3]. At first, the harvest compensation was made available just for the fruits and vegetables sectors and the wine producers. Later, Article 68 of 73/2009/EC has extended the way of compensation to all agricultural sectors from 2008, but it has been launched only in specific

Member States like Italy France, Netherlands and Hungary [9]. Crop insurance premium have an influence on crops in two ways. The first is by rising the expected income to the insured crop areas, keeping the share amount of insured crop revenue (the effect of direct profit). The second is by encouraging agricultural units to apply for insurances for more of their crop revenue, thus increasing the amount received and reducing the risk degree of the crop to which an insurance premium has been submitted, which in turn stimulates more areas dedicated of those crops (the effect of indirect coverage) [17]. In Romania, the first specific mechanism for financial stimulation for applying insurance policies appeared in 2020. This was implemented through SM 17.1 of AFRI – Agency for Financing Rural Investments [6]. In August 2020, the first call of insurance policies files for vegetable crops and livestock was established. From that moment, every year, the financing institution AFRI launches one such call during which farmers can submit files by which they are granted 70% of the eligible amount of the policies actually paid to the insurance company [1].

The purpose of the article is to highlight, on the one hand, to what extent the farmers who choose to apply for insurance premiums on their agricultural crops, consider certain crops more efficient in insuring and which are these. On the other hand, it was determined what are the actual costs of securing the surfaces and what is the support from European funding in this regard.

The theoretical framework is developed in two directions: European grants and risk management. If for the second topic, the literature, as a theoretical framework, is very well developed, regarding the effects of European grants, the literature is rather of the type of reports of specialized institutes, such as the Ministry of Agriculture, the Ministry of European Funds, NSI (National Statistics Institute), the Agricultural Directorates, PIAA (Payments and Intervention Agency for Agriculture) or Eurostat.

In the Romanian agricultural sector, a practice of agricultural and livestock insurance has not yet been formed, the main reason being

associated with the economy from the communist period, the mentality being difficult to change. Thus, the idea of association in agricultural cooperatives, as well as the idea of insurance against imminent risks of crops and animals, hardly makes their way. Through the Common Agricultural Policy, major efforts are being made to change the mentality in this regard, which is why this special grant branch was allocated to finance insurance against natural risks in agriculture (17.1). In addition, given that specific grant funds for risk management in agriculture are an absolute novelty for national agricultural practice, the authors believe that the specialized literature, in a pragmatic approach, can be improved by bringing such topics to the fore. In this way, transparency of information can be ensured and the idea that supports the relevance and importance of agricultural risk management can be conveyed through the use of insurance grants. In fact, the idea of non-refundable insurance financing as a component of agricultural risk management is new to practice and specialized literature. We believe that the specific literature reporting on the progress of Romanian agriculture, achieved as a result of accessing non-reimbursable funds since 2000, starting with the Special Accession Program for Agriculture and Rural Development (SAPARD) grants, can be completed with this new idea [7]. For international approaches regarding the functionality of agricultural systems in developed countries, this topic may seem exhausted or a normality, but for the specifics of national agriculture, the idea practically promoted by the EU and supported by the present empirical research, may prove useful and important, as well as with high degree of novelty. Basically, a main reason why we support this approach is to ensure the transparency of information, to increase the visibility of the favorable results obtained as a result of the change in mentality regarding insurance in agriculture and in this way to make a minimal contribution to highlight the Romanian agricultural potential. A direct consequence of this approach, thought of as an assumption in the way of approaching the work, from the perspective of the theme novelty degree, is that the way of using the

non-reimbursable funds intended exclusively for agricultural insurance is a support for attracting other grants and, especially, to improve losses in the Romanian agricultural sector. When constructing this assumption, we took into account the degree of absorption of grants and the efficiency of their use. Thus, we noticed from the analysis of the progress reports regarding the access to the grants intended for Romanian agriculture that, although the first SAPARD funds had a very low degree of absorption (a little over 50%), the following multi-annual financial exercises were accessed and used much more efficiently, currently reaching a high level of competition. Therefore, applying to the funds for insurance policies, especially non-refundable, in the context of considering risk management, is not a habit or a generality for the Romanian agricultural sector, especially among small and medium-sized farms. Moreover, there was and still is some aversion to this farm insurance expense. In this way, the authors have the opinion that the results of the work could indicate the importance and relevance of these expenses for financial protection against imminent risks and, gradually, the change in the attitude of farmers towards the way of managing agricultural insurance, together with a better understanding of the way of operation of risk management. The improvement of the level of knowledge in the field can be realized mainly in the side of practical approaches, so necessary for Romanian literature and not only.

## **MATERIALS AND METHODS**

The design of the methodological structure for the development of this article included the analysis of a number of 24 agricultural units in Romania, respectively from the counties of Iași and Galați. All the 24 agricultural units studied are active in the vegetable production sector. They were also selected based on the fact that in the 2022-2023 agricultural year they opted for an optional insurance policy for at least one crop in their crop structure. In addition to the crop structure of each of the 24 units, the authors also had access to all the details of the insurance policies applied with the insurance companies. Although the research is based on

a small sample, the quality of the results is ensured by the relevant structure of the subjects included in this sample.

Therefore, the output elements of this paper are based on data from primary sources. In this regard, the authors collected and processed both PIAA – Payments and Intervention Agency for Agriculture area files and insurance policies, annexes and all their accompanying documents. A series of correlations will be centralized in this paper between the total areas exploited by the 24 units and the insured areas, in relation to the types of crops, the amounts paid to the insurance companies and the non-refundable amounts from the E.U. In order to design the tables, figures and ideas in the work, it was gathered, centralized analyzed and interpreted a data set consisting of 400 entries.

It was also considered reviewing the crop structure of each individual unit, for highlighting the share of the insured / uninsured areas of the units. Also, all this database and details were used to formulate the ideas and the tables and graphs presented in the following.

Taking into account only 24 agricultural units in the present empirical research was a decision taken and accepted with difficulty, but we argue this aspect as follows: obtaining complete data in accordance with the proposed work variables was very difficult, given that for now the reports on the non-reimbursable funds allocated to specific 17.1 grants branch are not centralized, they are not completely organized; moreover, on the page dedicated to these Payments and Intervention Agency for Agriculture (PIAA) reports, numerous errors are recorded in each monthly report; for this reason, to which are added others that it will be mentioned as follows, we selected the information that presented a maximum degree of certainty and accuracy [10]. Then, considering the specificity of the paper theme, which is of the utmost novelty, it was difficult to find data from several reporting sources, so as to ensure a larger number of farms considered for analysis. Another justification is the following: the monthly average number of accepted financing requests is 600 economic units throughout the country, which means for

the year 2023 an average of 170 economic units per county. It was chosen to work with the 2 counties, Iasi and Galati, because for them it was gained access to complete sources of information. In addition, given that small farms are not yet part of the category of those very interested in agricultural insurance even from grants, the study was conducted on large farms, so from this point of view the area of investigation has narrowed. Considering these limits, it was assumed the context of developing a work that can generate extended results in future works, this being a pilot approach. Thus, it was proposed that in future works, thinking that the reports will be richer in information, and will allow to expand the area of representation of the units. Generalization is an extremely relevant aspect for a complex methodological framework, but through this article, considered as a pilot study, its aim is to highlight the results on the two counties, so that the research can be continued on a larger number of counties and, moreover, to ensure the visibility of the results in the form of an impulse for an extended approach to such a subject. Therefore, given the limit of generalization of the results, the decision of the research approach is argued with the fact that for the 2 reference counties there are few agricultural units that have accessed non-reimbursable funds through branch 17.1. in 2022.

The choice of the two reference counties is given by the access to complete data and the consideration of the physical-geographic characteristics for the suitability of cereal crops. Thus, on the banks of the Prut River, in exposure from North to South, there are 4 counties with identical or very similar pedo-climatic conditions favorable to cereal crops: Botosani, Iasi, Vaslui, Galați. Of these, 2 are the poorest in the North-East Development Region, and on some indicators also in Romania (Vaslui and Botosani), although the agricultural and natural potential is high. For the county of Iasi, it was relatively easy to identify the data for analysis, respectively for Galați, compared to the counties of Vaslui and Botosani. Moreover, the motivation for choosing this specific investigation area, is also given by the fact that during the repeated

documentation regarding the results of attracting non-refundable funds for Romanian agriculture, it was noticed that even starting with SAPARD financing (2000-2006) these produced favorable results, but at a very slow pace, especially in the Northeast Development Region. Even if Romanian agriculture, in each region, has a very high development potential, there are a number of limiting factors, and the lack of sufficient support funds is one of the major factors acting against the development of national agriculture, especially in the North-East Region.

## RESULTS AND DISCUSSIONS

As previously mentioned, the main selection criteria of the agricultural units taken over for the study was the size expressed in exploited area and the option of the farmer to apply for a risk insurance premium for at least one of the agricultural crops in their farm. The size structure of the selected agricultural companies selected is presented below in Table 1.

Generally accepted and used tie-breaking thresholds were taken into account in the classification of agricultural units according to the exploited area.

It can be seen that the distribution based on cultivated areas is eloquent. This is evidenced by the average size of each farm in the category in which it was nominated. Also, the average of the dimensions reveals a uniform distribution of the economic units in the three categories.

Table 1. The size structure of the studied agricultural holdings

Farm size (ha)	Number of farms	%	Total area (ha)	Average size (ha)
<250	5	20.8	1,009.55	201.91
250 – 500	10	41.6	3,152.81	315.28
>500	9	37.5	8,340.73	926.75
<b>TOTAL</b>	<b>24</b>	<b>100</b>	<b>12,503.09</b>	<b>520.96</b>

Source: own analysis of primary data from sample of farmers.

As stated before, a database was formed by the primary sources information gathered from the 24 agricultural units. The authors centralized and analyzed this 400-entry database. This is

rendered, explained and interpreted in the Table 2 below.

The centralizing table highlights most of the data used for this paper. The areas of all the 24 studied units are centralized, the percentage of the total area of each individual unit, insured and uninsured, the insured areas, in bold and the uninsured areas. The insured and uninsured areas are highlighted at the unit level, at the culture level and at the total general level.

The presentation of the results shown in Figure 1 below is relevant as the basis for the following figures and tables. As can be seen in this figure the distribution of crops within the areas exploited by the 24 agricultural units studied, generally respects the general average percentage allocation of the areas at the national level. Specifically, maize, wheat and sunflower crops have the most generous area usage. An aspect that emerges from the model of the distribution of crops at the national level is the presence, within the total areas of the 24 units studied, of an important share in terms of seed lot crops.

It can be seen that the seed plots (maize and sunflower) are cultivated on an area of 1,551 ha out of the total of 12,503 ha exploited by the units, respectively 12%.

This relatively large area and significant percentage is due to the fact that the units selected by the authors for the study are from the medium-large category and have performant economic indicators and an advanced technical capacity.

Due to these aspects, these units have been selected by multinational seed multiplication companies for seed production. As is well known, these multinational seed producing companies only contract agricultural units that have the technical and financial capacity necessary for the precision of obtaining the seed.

Within the following Figure 2, the share of insured areas is presented at the level of the same agricultural crops or crop categories.

As can be seen, the shares of areas insured for each individual crop, out of the total areas allocated to the respective crop or group of crops, are between 0% and 100%. However, most of the categories shown in the Figure 2 present shares worthy of analysis and debate.

Thus, as regards the maize crop, it is cultivated by all 24 producers, the total area allocated for this crop being 3,846 ha. Of this area, the largest part, in percentage of 78.3%, is insured against climatic risks. A very close share is also found in the case of wheat cultivation, where

79.72% of the total allocated area of 2,309 ha is insured against climatic risks. As for the wheat crop, it is in the crop structure of 20 of the 24 analyzed producers. The total area allocated is, according to Figure 2, 2.397 ha and 94% of this area is insured.

Table 2. The area exploited (ha) by the 24 agricultural units analyzed, and the share of insured and uninsured crops

Area share	Unit													Insured		Uninsured			
		Maize	Wheat	Sunflower	Rape	Soybean	Seed lot	Sorghum	Lucern	Feed crops	Meadows	Barley & Oa	Sugar Beet	TOTAL	Area	Percent	Area	Percent	
1.2	1st	86.7	22.8	13.0	7.2			9.6	0.8		8.6	0.0	148.7	129.7	87.2	19.0	12.8		
1.3	2nd	62.4	17.6	35.4	14.9				13.3	6.5	16.0	0.0	166.1	130.3	78.5	35.7	21.5		
1.7	3rd	43.7	0.9	40.5	28.6				3.5	18.6		48.6	22.9	207.3	154.3	74.4	53.0	25.6	
1.9	4th	131.5	65.1	34.5					7.4			0.0	238.5	231.2	96.9	7.4	3.1		
2.0	5th	19.7		3.3				225.9				0.0	248.9	248.9	100.0	0.0	0.0		
2.0	6th	24.6	59.3	106.3	20.3	18.7			13.7	3.1	5.7	0.0	251.6	229.2	91.1	22.4	8.9		
2.0	7th	66.4	75.7	45.3	67.0							0.0	254.4	254.4	100.0	0.0	0.0		
1.9	8th	123.6		30.9		21.7			3.7		6.3	46.6	232.9	222.9	95.7	10.0	4.3		
2.3	9th	100.1	97.4	23.1	30.1	31.1			11.4			0.0	293.2	293.2	100.0	0.0	0.0		
2.5	10th	48.4	41.2	76.0					106.9		1.1	0.0	41.6	315.2	131.2	41.6	184.0	58.4	
2.6	11th	115.8	153.2	30.7		20.0			1.0			0.0	320.7	320.7	100.0	0.0	0.0		
2.7	12th	137.9	106.6	54.0		37.1			0.5			0.0	336.1	336.1	100.0	0.0	0.0		
2.5	13th	179.0	14.5	30.8	66.4		3.6		20.9			3.4	318.6	315.0	98.9	3.6	1.1		
3.1	14th	70.0	151.1	54.3	43.9				8.8			44.2	13.3	385.7	322.5	83.6	63.1	16.4	
3.6	15th	303.5	27.8	57.4	52.6				2.0	1.2		0.0	444.5	110.0	24.8	334.4	75.2		
4.7	16th	104.2	308.0	170.7								0.0	583.0	583.0	100.0	0.0	0.0		
5.0	17th	107.6	115.0	329.3	65.5					3.7		0.0	621.2	394.9	63.6	226.4	36.4		
5.5	18th	68.8						623.3				0.0	692.1	692.1	100.0	0.0	0.0		
5.6	19th	194.8	250.0	134.5								0.0	127.1	706.3	571.8	81.0	134.5	19.0	
5.9	20th	238.4		26.1				471.0				0.0	735.5	735.5	100.0	0.0	0.0		
7.8	21st	462.0	183.8	284.1	40.1				2.5			0.0	972.5	929.9	95.6	42.6	4.4		
8.4	22nd	433.9	280.8	298.5							31.4	0.0	1,044.6	579.3	55.5	465.3	44.5		
8.9	23rd	130.7	119.9	92.8	136.0	20.6	227.4	11.5	69.8			162.9	103.6	32.1	1,107.1	900.6	81.4	206.5	18.6
15.0	24th	592.3	306.8	338.3	245.7	123.8			96.5	8.7		0.0	166.3	1,878.4	1,144.8	60.9	733.6	39.1	
	<b>TOTAL</b>	<b>3,846.1</b>	<b>2,397.5</b>	<b>2,309.8</b>	<b>818.2</b>	<b>273.0</b>	<b>1,551.1</b>	<b>24.5</b>	<b>377.7</b>	<b>23.2</b>	<b>280.7</b>	<b>220.7</b>	<b>380.4</b>	<b>12,503.1</b>	<b>9,961.5</b>	<b>79.7</b>	<b>2,541.6</b>	<b>20.3</b>	
	Insured area	3,001.1	2,253.8	1,841.3	778.2	149.2	1,547.5	0.0	122.2	0.0	0.0	220.7	214.1	10,128.2					
	Insured percent	78.0	94.0	79.7	95.1	54.7	99.8	0.0	32.3	0.0	0.0		56.3	81.0					
	Uninsured percent	22.0	6.0	20.3	4.9	45.3	0.2	100.0	67.7	100.0	100.0		43.7	19.0					

Source: own analysis and centralization of primary data from the sample of farmers.

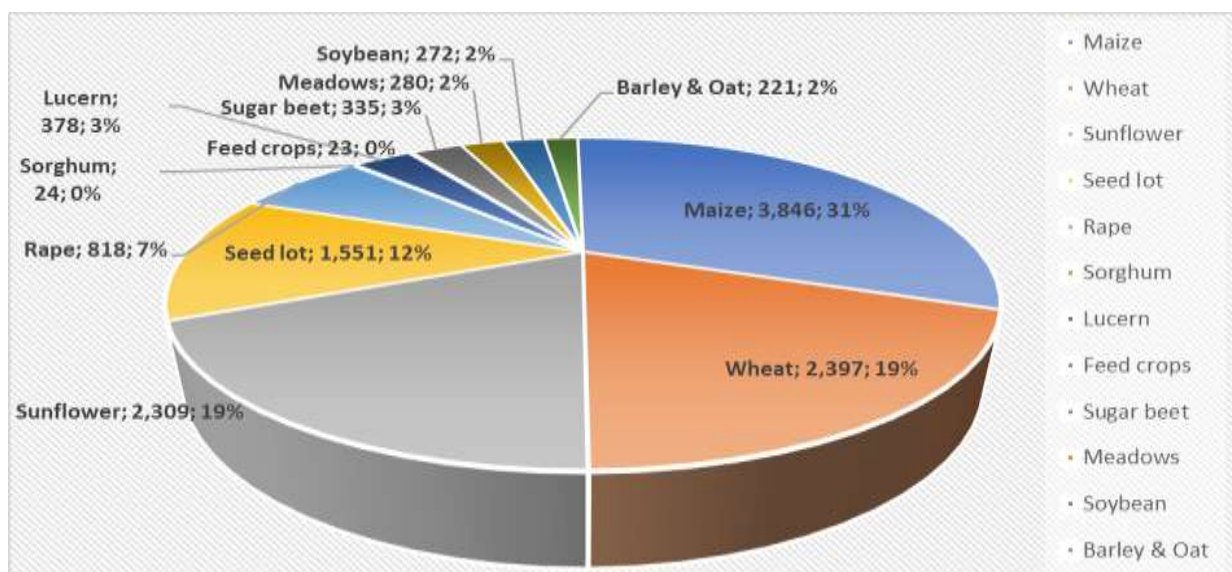


Fig. 1. The structure of crop area in all the 24 studied farms (ha; %)

Source: own analysis and centralization of primary data from the sample of farmers.



Fig. 2. The share of the area for which insurance premiums were applied  
 Source: own analysis and centralization of primary data from the sample of farmers.

Worthy of debate are at least two categories of crops, namely seed lots and barley & oat, which have the largest shares of the insured areas. The explanations are different for the two categories. Thus, as far as seed lots are concerned, farmers are obliged by seed multiplication contracts to make insurance premiums for seed lot crops [5]. Thus, over 99% of the analyzed areas benefited from this facility. On the other hand, we can see a 100% insured area in the case of Barley & Oat crops. This time, the share of 100% is due to the fact that farmers allocate relatively small areas to these two crops, in the present analysis, concretely, 221 ha, respectively 2% of the 12,503 ha. The reason why statistically the areas of these two crops are insured in 100% share is given by the fact that all the cultivator farmers (5 out of 24) also have other cereal crops on significant, insured areas. Thus, when concluding the policies and insuring the main cereal crops, these two crops are also added to the insurance package, even if they benefit from smaller areas. As for the sugar beet crop, it is exploited by a number of 3 of the 24 analyzed farms, and the total area allocated is 335 ha or 3%. It can be seen that 50% of this area is insured against harmful climatic phenomena. Finally, the situation of the meadows is also worthy of interpretation. This is 0% insured, not being an arable area. It was however taken into account in the present study

because for the 24 analyzed units all data and area were collected and processed to show, among other things, the share of non-arable land in relation to arable land. At the level of all the units studied and the entire area of land exploited cumulatively, 80.75% of the areas are insured, respectively 10,096.03 ha out of a total of 12,503 ha.

As will be shown in the following, the share of medium-large agricultural units in Romania that opt for applying of an optional insurance for climate risks is constantly increasing and is expected to increase further given the popularization among farmers, of the financing instrument that settles 70% of the eligible value of these policies.

In the Table 3, the cumulative values of the policies applied by the 24 analyzed companies were reported in relation to the total area exploited cumulative by them. The exchange rate is the average exchange rate of the whole 2023 published by the Romanian National Bank.

Table 3. AFRI Insurance Cost Reporting and Grant Funding for the combined exploited area of the 24 agricultural units studied, 12,503 ha

Nr. crt	Criteria name	Euro	Lei [8]
1	Total cumulative value of the insurance premiums for all 24 units	400,485.05	1,974,992.00
2	Total value per arable ha	32.77	161.59

3	Eligible cumulative value of the insurance premiums for all 24 units	328,773.40	1,621,346
4	Eligible cumulative value per arable ha	26.90	132.66
5	Total settled value from grants for all 24 units	230,141.34	1,134,942
6	Settled value from grants per arable ha	18.83	92.86

Source: own analysis and centralization of primary data from the financial documents of the sample of units.

Numerous interpretations can be derived from Table 3 shown previously. Thus, the cumulative eligible and non-eligible value for the financier settlement of the policies applied by the 24 companies studied was 400,485.05 Euro (1,974,992 lei). The total insurance value per arable ha was thus 32.77 Euro (161.59 lei). All the funds granted to the 24 agricultural units analyzed came from the 2014-2020 financial year. Starting with 2023, the financing institution will continue granting these incentives from the new financial allocation, namely from the National Strategic Plan 2023-2027.

There are several considerations that need to be made regarding the previously rendered results. As can be seen, the authors selected for the present study a number of 24 economic operators from the agricultural sector based on certain criteria. Size was one of the criteria, namely the selected units are part of the medium-large category, over a third having more than 500 ha exploited and more than 40% having between 250 and 500 ha exploited. On the other hand, according to Table 3, a relatively low cost can be found with optional insurance concluded for adverse weather events. Thus, it is found that, on a general level, one hectare of insured arable land costs 32 Euro (161 lei), of which Almost 19 Euro (92 lei) is the amount settled later by the financier. Thus, the farmer remains with an effective cost of 14 Euro (69 lei) per insured arable ha. It should be emphasized, in this sense, that the financing institution settles 70% of the eligible value of the insurance policy regardless of the occurrence or not of unfavorable weather conditions or the compensation or not to the farmer. Thus, the farmer can have unfavorable conditions registered and benefit from compensation through the policy even if this is also settled with the financier. The reason why

an insurance policy does not present the total value as being eligible for settlement from AFRI is given by the fact that, in addition to the standard features of the premium and the insured risks, farmers also choose a series of optional features by their own choice. These optional features, although they have modest costs compared to the total value of the policy, are not settled by the financier. A calculation of the intensity of the non-refundable support relative to the total value of the policy reveals that 57% of the total values were settled by the financier. In other words, processing the settled value to the total value, with options included, the intensity of the non-reimbursable support is 57%, which we consider to be a significant aid. The authors intend to continue the study by analyzing the total values and amounts, eligible, settled, etc. for each crop individually, among the 10 crops or groups of crops found in the structure of the 24 units. The number of units taken for study is likely to increase during a subsequent study. Therefore, a series of subsequent results will be based on a larger number of units, and the research will thus be more extensive. The authors have decided that in this work they will refer to the global, general analysis of the characteristics of the insurance policies, the analysis of the data at the level of individual crop, rendering it in a future work.

As it appears from the data analysis carried out, in 6 of the 10 basic agricultural crops, namely maize, wheat, sunflower, rapeseed, seed lot, barley and oat, the areas are insured in a proportion of over 75%, among which 2 with 100% and 99.77%. This is a hint that the possibility of accessing these funds has stimulated the interest of farmers to insure their crops and to consider the mechanisms for managing agricultural risks given by natural hazards. To this finding is added the promotion in various ways, such as the mass media, articles in publications with easy access to the public, interviews, the involvement of officials, etc. of the advantages of accessing these funds and, thus, encouraging a change in mentality. Another very favorable factor is the simplification of the documentation that allows access to the submission of financing requests and the provision of free consultancy for this



purpose. Thus, the implications at the agricultural policy level have a positive impact, in the sense that the directions proposed by the PAC are followed, which leads to the chance of attracting other funds and encouraging local producers to continue investing in agricultural crops, especially as in the past for about 15 years they felt helpless and discouraged.

## CONCLUSIONS

The authors studied, processed and centralized the technical-financial data of 24 agricultural units from the counties of Iași and Galați, România. The total cumulative area of the 24 farms is 12,503 ha. It was found that thanks to the financial incentives for settling 70% of the eligible value of the policies, more than 80% of the areas of the 24 units benefit from insurance, the percentage varying depending on the crop or group of agricultural crops. It was also found that for farmers the average cost of crop insurance is 14 Euro (69 lei) /ha. Receiving financial aid from AFRI is not conditioned by the incidence of unfavorable climatic elements or the activation of the insurance policy. The studied units benefited from a total cumulative amount of 230,141 Euro (1,134,942 lei) from the financing institution AFRI. The authors will continue the research by studying all the technical-economic characteristics of the areas provided by each agricultural culture individually. In 2024 and the following years, farmers will continue to benefit from the settlement of policies in the same way, also with 70% non-refundable, the source of financing being the National Strategic Plan 2023 – 2027 currently in force.

In terms of considering managerial risks in agricultural farms, including from the PAC perspective, it is mentioned that major difficulties may arise in accessing non-reimbursable funds, especially in conditions where the policy is not assumed. Accessing the funds is a major opportunity for farmers in Romania, regardless of the size of the farm they manage, which is why it is imperative to know and understand the role of the PAC by farmers who undertake the organization of the complete activity for agricultural farms. This is a sure way of increasing the level of

performance, of superior positioning in relation to the requirements of international agricultural market policies and a way of guaranteeing market success.

The limits of this paper consist in the limitation of the reference region for the proposed analysis, respectively in the consideration of a minimal set of risks, which is why it is not possible to generalize the results. However, given the specificity of agricultural areas and management systems in Romanian agriculture, we believe that in other future works we will be able to extend the reference area to other geographical areas and other size categories of agricultural farms. Certainly, the paper indicates a practical prevalence that can be useful including in taking measures to reduce the effects of the analyzed risks and to adopt a more efficient management system.

## REFERENCES

- [1] Agency for Financing Rural Investments, 2020, AFRI, SM 17.1, Insurance premiums for crops, animals and plants, August 2020, [https://portal.afir.info/informatii\\_generale\\_pndr\\_investitii\\_prin\\_pndr\\_sm17\\_1\\_prime\\_de\\_asigurare\\_a\\_culturilor\\_a\\_animalelor\\_si\\_a\\_plantelor](https://portal.afir.info/informatii_generale_pndr_investitii_prin_pndr_sm17_1_prime_de_asigurare_a_culturilor_a_animalelor_si_a_plantelor); Accessed on December 7, 2023.
- [2] Coletta, A., Giampietri, E., Santeramo, F.G., Severini, S., Trestini, S., 2018, A preliminary test on risk and ambiguity attitudes and time preferences in decisions under uncertainty: towards a better explanation of participation in crop insurance schemes, *Bio-based and Applied Economics*, 7(3): 265-277.
- [3] Dalhaus, T., Musshoff, O., Finger, R., 2018, Phenology information contributes to reduce temporal basis risk in agricultural weather index insurance, *Scientific reports*, 8(1): 1-10.
- [4] Giampietri, E., Yu, X., Trestini, S., 2020, The role of trust and perceived barriers on farmer's intention to adopt risk management tools. *Bio-based and Applied Economics*, 9(1):1-24.
- [5] Macholdt, J., Gyldengren, J.G., Diamantopoulos, E., Styczen, M.E., 2020, How will future climate depending agronomic management impact the yield risk of wheat cropping systems? A regional case study of Eastern Denmark. *The Journal of Agricultural Science*, 158(8-9): 660-675.
- [6] Ministry of Agriculture and Rural Development – National Development Rural Programme 2014 – 2020, available at: [www.madr.ro%2Fdocs%2Fdezvoltare-rurala%2Fcomitet-monitorizare%2Fcomitet\\_2018%2FAviz\\_CM\\_PNDR\\_nr.\\_26\\_din\\_2018\\_si\\_anexe.pdf&usg=AOvVaw3KeC-Ec1618k\\_-NIdkO1Kd](http://www.madr.ro%2Fdocs%2Fdezvoltare-rurala%2Fcomitet-monitorizare%2Fcomitet_2018%2FAviz_CM_PNDR_nr._26_din_2018_si_anexe.pdf&usg=AOvVaw3KeC-Ec1618k_-NIdkO1Kd); Accessed on January 8, 2024.

[7]Ministry of Agriculture and Rural Development, SAPARD 2000-2006, Ex-post assessment regarding the SAPARD Programme implementation in Romania in the aperiod 2000-2008, <https://www.madr.ro/sapard.html>; Accessed on January 8, 2024.

[8]National Bank of Romania – lei/Euro Exchange rates, <https://www.bnr.ro/Cursul-de-schimb-3544.aspx>; Accessed on January 10, 2024..

[9]Palvin, R.K., Paradi-Dolgos, A., Spiczki, Z., 2017, Crop insurance market in Hungary. Proceedings of IISES- 5th Business and Management Conference. 2017, Rome, Italy, DOI 10.20472/BMC.2017.005.008.

[10]PIAA, Payments and Intervention Agency for Agriculture, 2023, <https://apia.org.ro/>. Accessed on September 14, 2023.

[11]The World Bank, 2015, Agricultural risk management in the face of climate change, Group Report Number AUS5773, available at: <https://documents1.worldbank.org/curated/en/787511468170682886/pdf/AUS5773-REVISED-Box393228B-PUBLIC-54292-AG-GP-Climate-Change-Web-10162015.pdf>; Accessed on December 29, 2023.

[12]Trestini, S., Morari, F., Pirotti, F., Epstein, D.A., Severini, S., 2022, How can data monitoring and crop modelling support agricultural risk management solutions in climate change scenarios? 2022 IEEE Workshop on Metrology for Agriculture and Forestry (MetroAgriFor), Perugia, Italy, pp. 298-302, doi: 10.1109/MetroAgriFor55389.2022.9964867.

[13]UNIRC, UNSAR, The National Union of Insurance and Reinsurance Companies in Romania, 2018, <https://unsar.ro/en/homepage/>; Accessed on December 4, 2023.

[14]Vroege, W., Dalhaus, T., Finger, R., 2019, Index insurances for grasslands–A review for Europe and North-America, *Agricultural systems*, 168: 101-111.

[15]Woodard, J.D., Garcia, P., 2007, Basis risk and weather hedging effectiveness. 101st Seminar, July 5-6, 2007, Berlin, Germany, 9254, DOI: 10.22004/ag.econ.9254.

[16]Youngjune, K., Jisang, Y., Dustin, L.P., 2020, Effects of crop insurance on farm disinvestment and exit decisions, *European Review of Agricultural Economics*, 47(1): 324–347, February 2020. <https://doi.org/10.1093/erae/jbz035>.

[17]Yu, J., Smith, A., Sumner, D.A., 2018, Effects of Crop Insurance Premium Subsidies on Crop Acreage. *American Journal of Agricultural Economics*, 100: 91-114. <https://doi.org/10.1093/ajae/aax058>.