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CLASSIFICATION OF RISKS IN AGRICULTURAL INSURANCE

Lilian MARIN

Academy of Economic Studies of Moldova, Doctoral School, 61 Banulescu-Bodoni Street, MD-2005, Chișinău, Republic of Moldova; E-mail: marinlilian8@gmail.com

Corresponding author: marinlilian8@gmail.com

Abstract

Agricultural insurance is rightly considered by both researchers and practitioners as one of the main methods of managing risks in agriculture. However, a unanimous conception of agricultural risk classification has not been established in the literature. There are divergences of opinion regarding the systematization of clear criteria for grouping agricultural risks, and the risk be useful for both agrarian entrepreneurs and especially for managers groups are not integrated into a classification. In the author's opinion, such systematization will of insurance companies, who provide agricultural risks. Based on this systematization, advantageous insurance offers can be developed for agricultural producers because the insurance companies in the Republic of Moldova offer separate insurance products, mostly those that are subsidized by the state.

Key words**:** *agricultural insurance, subsidy, classification, risks, Republic of Moldova*

INTRODUCTION

A modern business in agriculture can not be conceived without considering the risks to which the investor or the manufacturer is exposed. To avoid possible damage, managers of agricultural entities can opt for:
a) risk avoidance or prevention;
b) limiting the damage caused by the risks produced;
c) creation of reserves in order to cover own resources of eventual damages;
d) insurance risk.
Agriculture Insurance is treated as a specific category of property insurance, through which it is granted protection insured against a certain set of risks. Object of insurance production risks are of patrimony interests related to obtaining harvest in agriculture and raising livestock (animals, birds, honey bees, fish).
If risk events will occur, they will have a negative impact on agricultural manufacturer activities from financial point of view and that may trigger bankruptcy for agricultural entity. Under the crop agricultural insurance contract, the insurer grants finances against total or partial destruction caused by various natural calamities, disease, injury and other damages provided by the insurance conditions [7, p.78], as well as in the event of injury or damage to animals, birds, bee families and fish.
Agricultural insurance is particularly useful for risks caused by natural disasters. These risks, by definition, can not be controlled and are the effect of several factors, among which climate change plays an important role.
Currently, science and technology achievements do not allow human intervention to avoid or manage natural phenomena. Man is able to predict the time when this will happen and the probable intensity of it. However, forecasts that warn man about the occurrence and propagation of such adverse weather conditions do not offer full protection. Property, assets, assets owned by agricultural producers can not be fully protected, especially in plant breeding. Open field plants and vineyards, fruit trees etc. are almost entirely exposed to these natural calamities. The most appropriate method of risk management is the conclusion of an insurance contract with the possibility of compensation in case of the occurrence of the risk event.
Natural and legal persons carrying out an activity in the agricultural field and is aware of the potential risks, the insurance companies offers them solutions for the safe conduct of

the activities. Considering that Moldovan farmers do not use any risk management, the state grants some risks of their production, which they consider insured risks. Insured risk is one risk characteristic to agriculture, which includes unfavorable influence of weather conditions, plant and animals diseases [10].

MATERIALS AND METHODS

According to the Law on the subsidized insurance of production risks in agriculture no.243 -XV from 08.07.2004 from 08.07.2004 [10], the state subsidizes the insurance premiums in proportion of 50% in case of the crop harvest insurance and multiannual plantings of any risk or a group of risks such as: destruction or harvest decline as a result of excessive drought, hail, storm, low temperatures below the biological limit of resistance plant, flood, other unusual natural events specific for respective locality, as well as disease or pest attack.

According to the provisions of art. 22 of the Law on the subsidized insurance of production risks in agriculture no.243 -XV from 08.07.2004, the subsidies for insurance premiums refer to the following agricultural crops: wheat, autumn and spring barley, corn, sunflower, beet sugar, tobacco, vegetables, potatoes, rape, soybeans, multiannual plantings (alive, orchards, vineyards, fruit trees, lavender plantations, roses and sage plantations) as well as for grape and fruit harvest [2].

On 21 May 2017, the Government of Republic of Moldova approved Decision no. 455 on the allocation of the funds of the National Fund for Agriculture and Rural Development for the years 2017-2021 [4]. Sub-measure 1.7A. The *timing of the risk insurance mechanism in agriculture* contains references to the destination of the financial means used to subsidize insurance premiums. According to this decision, the state provides subsidies from the National Fund for Agricultural Development and Rural ensuring their production risks the amount of which is established considering the insurance premiums calculated according to the insurance tariffs provided in the special agricultural production insurance conditions and does not exceed the ceiling of 400.0 thousand MDL for one and the same agricultural producer.

The number of companies operating subsidized insurance of agricultural production risks in the Republic of Moldova is declining. If in 2017 this type of insurance was found in the portfolio of 9 insurers, in 2018 only 7 insurers issued insurance policies for agricultural risks. Accordingly, the total insurance premium decreased, but not essential (Table 1).The number of subsidized insurance policies for production risks in agriculture increased by 57, constituting 529 compared to 472 in the previous year and 221 in 2014 [3, p.82]. This increase resulted in the annual increase of insurance damages paid by insurers with 670 thousand MDL. However, we can mention that the number of subsidized insurance policies for production risks in agriculture is very small compared to the large number of agricultural producers in the Republic of Moldova.

Table 1. Indicators regarding subsidized insurance of agricultural production risks in the Republic of Moldova, millions of MDL

Insured objets	Full insurance premium, mil. MDL	Paid by:		Share of total revenues, %	Insurance compensation, mil. MDL	Share of total compensation paid, %
		Agricultural producer	state			
Harvest	7.40	3.7	3.69	72.84	2.62	98.96
Multiannual plantations	1.14	0.57	0.56	11.17	0.00	0.00
Animals, Birds	1.62	0.78	0.76	15.99	0.03	1.04
Total	10.1	5.05	5.01	100.0	2.65	100.0

Source: The NCFM Report, 2018 [2].

Table 1 shows that 80.7 percent of the insurance premiums were collected by the insurance companies for the subsidized harvest insurance. For the damages caused to the insured harvest, indemnities amounting to 1,900 thousand MDL were paid, which represents 95.96% of the total compensations paid. The livestock sector and the multiannual plantations are not subject to insurance

necessary to extent, given the losses incurred by farmers due to risk factors.

In general, we can assume that agricultural insurance does not make an important contribution to the insurance portfolio of Moldovan companies. They had a weight of 0.74% in the total amount of insurance premiums of 1,440.9 million MDL in 2017.

We will mention that the offer of insurance companies is virtually identical to the subject of agricultural insurance. In this study the offer of 3 insurance companies from the Republic of Moldova: Klassika Asigurari S.A., Galas S.A., General Insurance S.A., have been researched, which offer 3 units of agricultural insurance.

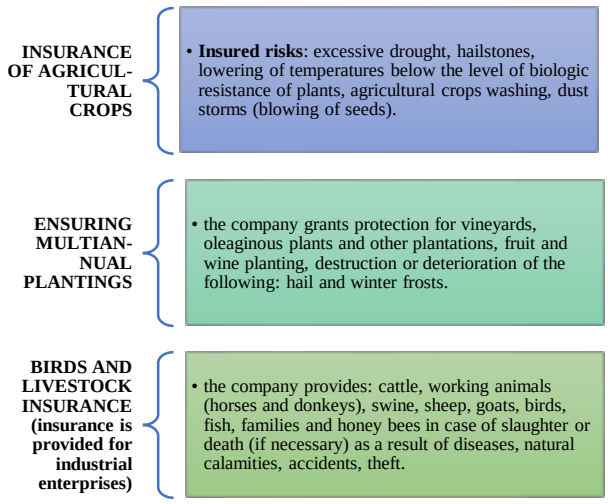

Fig. 1. The agricultural insurance offer of „Klassika Asigurari" SA

Source: elaborated by the author on the basis of „Klassika Asigurari" SA data, https://klassikaasig.md/asigurarea-riscurilor-de-productie-in-agricultura [6]

The other two companies also have in their portfolio such an offer, specifying conditionalities. For example, one of the determining factors in conditioning livestock and poultry is age. Insurance company „Galas" SA provides protection by providing animal husbandry producers with protection against death, slaughter in case of need and for theft for the following categories of animals and birds [9]:

-cattle aged between 4 months and 10 years;

-working animals (horses and donkeys) aged between 4 months and 15 years;

-swine aged between 4 months and 4 years;

-sheep (sheep, goats) aged between 4 months and 7 years.

-birds aged between one day and two years.

At the same time, the company does not undertake to pay damages for cases where the destruction or slaughter of animals (birds) was caused by:

-asphyxiation or drowning of animals due to the disconnection of electrical equipment, aqueducts, feed preparation and transport systems, if not all natural disasters;

-asphyxiation of animals (birds) that was caused by carbon monoxide poisoning as a result of damage to electrical cables from natural gas following ammonia poisoning as a result of manure decomposing process.

Galas SA provides multiannual crops for hail and winter frost, or both. These risks are characterized by the destruction not only of the foliage (hail), but also of annual and multiannual shoots. The hail, it is envisaged fall on the surface of the grains of hail with a diameter of 5 or more millimeters, the intensity of which is intensified if the drops are accompanied by raging wind speed of 50 and more km per hour (depending on the size of the hailstones). This phenomenon can cause damage to the foliar apparatus, the shoots, and depending on the intensity and duration of the hailstones can cause the plantation to fall.

The risk of „winter frosts" in multi-year planting is considered as a risk when the air temperature drops below -20 degrees Celsius, and remains at this level for at least 4 days in a row. Winter frosts affect the aerial part of vineyards and orchards, especially young ones, i.e. buds. Affecting buds on the aerial side of vineyards and young orchards implies the need for deforestation, and in case of partial damage to buds, agricultural entities will have to bear additional costs for their renewal.

General Insurance SA also offers subsidized insurance products of young fruit and wine plantations, not included in fruit and fruit for cases of: hail; winter frosts; floods (overflowing rivers). In addition to these services, the company provides for fruit and wine plantations for locusts and other hazards,

but under unsubsidized conditions. The subject of the subsidized insurance may also be the harvest of spring crops (sugar beet, sunflower, corn, soybeans, vegetables, tobacco and potatoes), autumn (wheat, barley and rape (or their spring analogs) multiannual crops (fruits and grapes, vineyards and fruit trees) [1].

Large companies also offer optional insurance solutions in case of destruction, deterioration, theft of agricultural machinery: tractors, combines, forklifts, mowers, other complex equipment, chemical treatment machinery and equipment and fertilizer application, for drying and cleaning of seeds; technical and towable inventory.

RESULTS AND DISCUSSIONS

The diversity of the risks to which activities of agricultural producers and insurance companies are exposed and which assume these risks obliges to their systematization. From insurers point of view, such systematization is necessary to determine the insurance and the price of protection depending on the nature and possible damage that may be caused.

The researches regarding classification of the risk have been achieved with consideration to both the insurer and the insured person. We have identified that there are many and various classification criteria, the most important being presented below. Most often, the risk classification criterion can be met based on the nature of the source of the source [8, p. 115].

Thus, depending on the *nature of the risk* they, which may be: natural-climatic; biological; geological; social; employment; risk price/market; financial (interest rate, exchange rate); informational.

We consider appropriate to classify risks by the nature of factors in 3 categories:

a) natural-climatic;

b) agrobiological;

c) technogenic.

Depending on the *intensity* of *the impact of the risk* on the insured object:

-risks minor or accepted;

-risks critical;

-risks catastrophic.

Following *the response of the policyholder*:

-risks controllable;

-risks partially controlled;

-risks uncontrollable.

Classification of risks in controllable, partially controllable and uncontrollable is one accepted by many authors [5]. However, agricultural risks, in large part, can be considered as uncontrollable. Thus, most agricultural risks are predictable but uncontrollable. Insurance is the only method of managing them and farmers should be aware of this. An important role in promoting insurance as a method of managing agricultural risks lies with state institutions, but insurance companies, could collect major benefits from this unexploited market segment.

Another criterion for classifying agricultural risks is the „*degree of typicalness*" of the risk phenomenon for the respective territorial area. Depending on this criterion, the risks may be:

-*typical*, characterized by a high frequency of occurrence;

-*atypical*, whose probability of occurrence is very low.

The significance of typical and atypical risk delimitation is conditioned by the identification of a set of specific or typical risks of a field of agricultural activity or an area that is produced for objective reasons. For example, producers in the southern region of the Republic of Moldova are specific, so typical drought risks. Also, in recent years, can be considered typical risks - the risks of late spring frosts, hailstones. On the other hand, the risk of tornado is atypical.

In the same sense, but with another criterion formulation we find it at the Sofia Donea [10]. They outline the risks in *terms of frequency and intensity of occurrence* in:

-risks with low frequency, medium, high;

-risks with low, medium, high intensity.

There is an inversely proportional link between these two types of risk.

In turn, depending on the *frequency* of *events*, risks can also be classified into:

-moment risks;

-episodic risks;
-periodic risks;
-permanent risks.

Agricultural risks are enclosed mostly in periodic risk category (hail, frost late spring, drought) and some-episodic (floods, animal diseases etc.).

Depending on the *insurance prospects,* risks can be insurable and non-insurable. Insurable risks are those that insurers undertake them and for which they offer protection to the insurant. Non-insurable risks (excluded) are considered those risks that insurers do not accept; here are included those events which occurrence is certain or approaching certainty, or those that are caused by the insured, known by him and hidden to the insurer. This classification is applicable to the insurance agricultural risks. Usually, insurance companies state what risks are insurable and who are non-insurable. For example, the insurance company „General Insurance" does not insure: [1]

-multiannual plantations that are not maintained according to the agrotechnical requirements;
-highly rare plantations;
-losses (damage, theft) of the pillars (support) and the irrigation system.

Semen concept approach on „insured risk" is important because a number of specific risks for agricultural production can be considered as non-insurable. Thus, some companies in the Republic of Moldova do not grant protection to agricultural entities for price risk, political risk, social risk etc.). Among the causes of assigning these risks to unreliable ones is the elementary lack of a statistical database necessary to estimate as accurately as possible the probability of occurrence of a risk event.

Depending on the factors causing risk:

• *internal or specific risks;*
• *external risks.*

In our opinion, Agriculture insurable risk can be assigned to specific risks category. The degree of uncertainty may influence an individual uncertain event as:

-*unpredictable*, the occurrence of something similar;
-*predictable*, possibility to estimate the level of loss;
-*controllable*, partially or in fully, by the decision-maker.

Depending on *the risk predictability criterion*, they may be: predictable; partially foreseeable and unpredictable. Some authors omit the partially unpredictable interim category. We support this view, as a risk can be predictable or unpredictable. A „partially foreseeable" risk can be intercepted as a foreseeable risk. Most of the agricultural risks can be considered predictable but uncontrollable. In our opinion, an important criterion that insurance companies could use to justify price policy for agricultural risk insurance services is the classification of risks according to the *stage of development of crops / agricultural plantations* as follows:

-risks specific to the embryonic development stage;
-risks specific to crops, young plantations;
-specific risks at the maturity stage;
-risks specific crops, old plantations.

This classification is important for loss determination and the insurance premium for the insured risk. In general, we find that size damage increase with the development cultures of safety. It can be explained through the costs growth for the related works, technological processes, and uncollected revenues due to harvest loss. Development in stages allows the manufacturer to minimize the risk. If, for example, the risk event occurred at the embryonic development stage (sunflower or maize, sunflower seeds have perished in the soil due to torrential rains), the agricultural producer may intervene by repeating the sowing of the land with the same or another crop. At the maturity stage, it is no longer possible to repeat this technological process.

The insurance companies group the risks and offer the most often „package" as „insurance conditions" under different names, depending on the nature of the insured assets and the risks included in the insurance.

Insurance companies are free to group the risks for policyholders and company management according to their needs. At the

same time, including a certain risk in one of the categories mentioned above may not have a permanent character. Depending on the criteria of insurance, the potential damage and the extent of the damage. The policy offers the possibility to change the category of the risk group.

CONCLUSIONS

Agricultural insurance in the Republic of Moldova is at a very low level of development. Neglecting agricultural insurance by the producers as a method of risk management, as well as by the insurance companies, for which they provide an opportunity for income growth, has a negative impact on the development of the Moldovan economy.

An agricultural insurance classification system would facilitate the understanding of their importance for the efficient management of an agricultural business. At the same time, the classification of agricultural risks according to certain criteria will allow insurers to diversify their insurance offers in order to make them attractive to potential insured persons.

The potential of agricultural insurance is insufficiently capitalized by agricultural producers, but also by insurance companies. Against this background, we believe that concrete measures are necessary to increase the volume of agricultural insurance in the Republic of Moldova.

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