

## ECONOMY

**RISKS OF AGRICULTURAL PRODUCTS AND THE NEED FOR INSURANCE IN ARMENIA****Hrant Hayrapetyan***Armenian State University of Economics,  
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JEL- Q140**ABSTRACT**

Agriculture is one of the main sectors of the economy of the Republic of Armenia. The efficiency of agricultural production in the province is mainly due to climatic conditions. For this purpose, first of all, a systematic study should be carried out on the situation in the provinces, the agricultural features of each province, the dangers posed and the agricultural work being carried out. The features of this system are different in different countries, and their study will allow us to find similarities that can be applied in Armenia. Assessing the importance and difficulties of agricultural insurance, it is necessary to introduce an insurance system that equally expresses the interests of both the insured and the insurer. In other words, to neutralize farm risks, insurance companies will not increase their risks, so a reasonable way to balance them is to introduce a state-subsidized agricultural insurance system.

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**Introduction.** Given the fact that agriculture in the Republic of Armenia is largely conditioned by the risk factor, taking into account the country's vital activity and food security, the key importance of the sector in raising the general living standards of the national economy is one of the main goals of state policy, created as the insurance system with mechanisms. As an effective factor in the development of a number of key areas of the economy and in solving the problems that ensure the normal functioning of society, insurance has proven its importance, role and significance in market relations.

In the developed countries, insurance had been penetrated all spheres of public life, thus deepening people's consciousness, without which society did not imagine its normal functioning. Due to various reasons, people insured almost everything, such as: life, property, investing significant financial resources, realizing the need for it and assessing the possible risk factor in the future. The regions of the Republic of Armenia were located in the middle or high risk zone of natural disasters. Armenia was the mountainous country where droughts and water resources were disproportionately distributed. Undergoing natural disasters and erosion, the country became sensitive to adverse climate change, making agricultural activities vulnerable. At the same time, the agricultural sector was of great importance for the Republic of Armenia. It provided the significant part of the livelihoods of rural communities in Armenia, rural development, food security, and product exports.

**Literature Review.** Within the framework of the selected topic, reference was made to the scientific works of many foreign and Armenian authors, the ideas presented by them. Taking into account the fact that agricultural insurance, as a separate direction of insurance, does not yet have its proper manifestation in the Republic of Armenia, the study of scientific works with closer and more practical connections on the topic becomes more complicated.

**Research Methodology.** The topicality and problematic nature of the topic made it more popular both in terms of research and in terms of creating trends for its application in Armenia. As agricultural insurance in Armenia did not yet reflect the positive results that exist in many countries, there was the need for the comprehensive study and the emergence of unique approaches. The introduction of a test agricultural insurance system in Armenia has been allowed some entities to have agricultural insurance. But at the moment, agricultural insurance in Armenia referred only to a few farms, and it did not have the general calculation method for all types of plants. So, wanting to create the general calculation methodology, we started studying agricultural insurance and agriculture from a new page. Numerous analyzes were conducted during the study of the topic, comparisons were made, parallels were drawn between the facts, information and "results" related to the topic, and the issue of involving the average calculation methodology for obtaining an average yield over the years was addressed. We were talking about the trend of changing agricultural products over time. Finally, it was proposed to create a new calculation methodology based on common calculation and forecasting methods.

**Analytical part.** There were different classifications of intrinsic risks to crops that could be summarized in the following groups:

- ✓ **Climatic risks due to the negative impact of nature**, which occur in the form of elementary disasters, plant diseases, climate change, etc.;
- ✓ **Sanitary risks**: rodents, pests, epidemics, various diseases, etc.,
- ✓ **Market risks** related to price fluctuations in local or international markets for agricultural products, changes in quality requirements for goods, etc.;
- ✓ **Legislative risks** arising from possible non-compliance with the new laws in case of non-compliance with the norms defined by the legislation or their amendment;
- ✓ **Quantitative and qualitative changes** in production factors, which are reflected in the deterioration of the quality of plant seeds, fertilizers, malfunctions of used technical means, reduction of productivity. Other similar factors.
- ✓ **Other risks**, which were not included in the previous groups due to human factor: conflicts, financial and economic crises, loss and slaughter of agricultural animals, looting of agricultural property, damage, etc. [1]

According to another classification, the risks to crops could be divided into risk factors (frostbite, snow, ice, drought, flood, hail, storm, etc.). It was also possible to classify sanitary risks among the climate risks.

Harvest losses and deficiencies in the Republic of Armenia had several times exceed similar losses in other countries due to various factors, including natural disasters, such as acute equipment shortages, unreliability and imperfections due to service life compared to foreign counterparts. with equipment.

Let's look at the following classification of common agricultural risks to crops and sowing areas: [6]

- ✓ Natural risks,
- ✓ Low investment efficiency risks,
- ✓ Profit Loss Risk
- ✓ Risks of depreciation of fixed assets due to the negative impact of climatic factors,
- ✓ Self-reproduction risks,
- ✓ Risks of seasonality of agricultural production,
- ✓ Risks of climatic characteristics of significantly differentiated regions according to natural zones,
- ✓ Risks of unequal turnover of assets of agricultural enterprises related to production seasonality (risks of not receiving loan financing);
- ✓ Low risks of efficiency of agricultural production compared to other sectors of the economy;
- ✓ Low competitiveness risks of agricultural production;
- ✓ Risks of inability of agricultural enterprises to participate equally in interstate and international competition;
- ✓ Risks of slow implementation of scientific and technological innovations;
- ✓ Risks of inadequate, slow, conservative market changes;
- ✓ Risk of change in demand for goods;
- ✓ Reproductive cycle risks;

- ✓ Risks of non-compliance between the cost of agricultural products and the cost of resources required for its production,
- ✓ Limited attractiveness of agricultural products for investors,
- ✓ Risks of decreasing sowing and arvesting areas;
- ✓ Natural and climatic risks, which are reflected in the fact that most of the territory of Armenia is in the agricultural risk zone;
- ✓ Risks of rising agricultural prices;
- ✓ Risks of declining international competitiveness of agricultural products;
- ✓ Risks of fixed assets, low security of agricultural machinery, risks of reduction of production and technical potential;
- ✓ Risks of financial insolvency of agricultural enterprises;
- ✓ Risks of insufficient support to the state budget.

The main difficulty in providing insurance coverage for the cultivation of agricultural crops was agricultural risk, which was due to a number of objective and subjective factors that distinguished it from other insurance risks. Subjective factors included the catastrophic distribution of risk over time, which has been reflected in the alternatives of the production years and its cumulative nature. Subjective factors reduced the workforce in agriculture, the level of scientific training of rural producers, the ability to adapt to a competitive environment, and the ability to find one's own "economic depth." It was difficult to formulate subjective factors when assessing agricultural risks.

Armenia, despite its relatively small area, was characterized by a pronounced diversity of flora and fauna, which was the result of the complex physical-geographical conditions of the area and the favorable geographical and geographical position, more than 100 species per 1 km<sup>2</sup>. was one of the highest indicators in the world.

69% of Armenia's territory was agricultural land. Agricultural farms employed more than 500,000 people or about 44% of the economically active population. According to the Ministry of Emergency Situations of Armenia (MES), 12% of the country's territory was subject to frostbite, 15% to drought, and 17% to hail. There were regions whose areas are vulnerable to several types of dangerous climate. According to the Food and Agriculture Organization of the United Nations (FAO), one of the most common recurring natural disasters in Armenia was drought, which was accompanied by a dry climate. Strong droughts were observed in the territory of Armenia in the Ararat Valley. It was also significant in some regions of Vayots Dzor and Syunik regions. With drought, the quality of the crop decreases, plant diseases increase, the volume of imported food, the cost of food products. As a result, the incomes of those involved in agriculture are declining, at the same time affecting the overall economic growth rate. All regions of Armenia were vulnerable to frostbite. They were often seen in the valleys of the republic, in the Ararat valley and its gorges, in Tavush and in the valleys of Syunik. The most vulnerable was the Ararat Valley, where the probability of frostbite is 45-50%. Armenia was also considered one of the most dangerous areas in the world. Hail caused great damage, especially to agriculture. About 4-5% of the annual crop rotation in Armenia has been destroyed by hail: [5]

In the form of Table 1, we presented a number of plant species that are of great agricultural importance in Armenia, and the threatening risks of each plant could be classified as follows:

Table 1. Risks threatening plant species in Armenia [3]

<b>Vegetables:</b>	<b>Vegetables:</b>
1	2
<b>Breads</b>	
Wheat	Frostbite, drought
Barley	Drought
Corn	Frostbite, drought
<b>Vegetable garden</b>	
Potatoes	Drought, hail, phytophthora, hard insects!
Tobacco	Hail, dry wind, drought
Tomatoes:	Choleptyl larvae
Pepper	Teaser:
Eggplant	Excess air humidity
Cucumbers	

Continuation of table 1.

1	2
Pumpkin	Hail, dry wind, drought
Melon	Drought, hail, larvae, ticks
Watermelon	
Complaint:	Hail, dry wind, drought
Onion / Garlic head	Sons:
Cabbage head	Hail, dry wind, drought
Beets / carrots	
Greens	
Apricot tree	Early flowering frostbite, excess moisture in the air, spore diseases, larvae
Apple tree	Dry air, larvae
Pear	Drought, dry air, bacterial burns, larvae
Peach	Humidity, larvae, frostbite of early flowers
Grapes:	Frostbite, hail, excess air humidity, sports diseases
Acid	Winter frost and hail
Cherry	
Plum	Drought, larvae
Walnut	Winter frost and hail
Strawberry	Drought, dry air, ticks
Note:	Winter frost and hail
Raspberry tree	
Beans, peas	Frostbite, drought

According to Table 2, if 6,217,032 cents of wheat were produced in Armenia in 2016, in 2018 the yield was only 3,376,502 cents, which was almost half of the 2016 figure. In 2018, in terms of vegetables, compared to 2017, there has been a decline again. In 2017, the vegetable index was 8,610,022 cents, and in 2018, it was 6,281,591 cents.

Table 2. Gross crop of basic agricultural crops by regions of RA and Yerevan city in the period of 2016-2018 [2]

1	Cereals and grains			Potatoes			Vegetables		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
1	2	3	4	5	6	7	8	9	10
Yerevan city	4 600	150	-	19 016	4 513	4 011	64 310	15 050	6 430
Aragatsotn	930 330	334 437	389 725	412 500	300 216	192 248	366 538	168 288	105 770
Ararat	342 625	177 941	123 978	302 682	216 879	163 308	3 118 982	2 229 981	2 008 966
Armavir	257 776	206 494	150 550	545 167	561 993	441 548	4 216 115	4 480 275	2 914 322
Gegharkunik	1 061 106	457 590	519 889	3 323 111	2 050 108	1 689 083	587 301	367 297	352 028
Lori	478 747	337 618	362 938	742 677	736 799	524 292	335 777	277 195	180 927
Kotayk	365 837	261 874	279 117	174 244	207 034	132 348	220 788	224 119	186 672
Shirak	1 574 629	775 770	1 085 710	11 799 74	933 428	696 224	566 147	490 532	314 291
Syunik	745 390	306 827	314 434	337 515	282 284	189 856	182 181	156 774	96 073
Vayots_Dzor	121 919	34 384	44 106	62 250	44 717	18 531	135 918	114 232	43 993
Tavush	334 073	131 628	106 055	221 882	136 227	99 052	117 488	86 279	72 119
Total:	6 217 032	3 024 713	3 376 502	7 321 018	5 474 198	4 150 501	9 911 545	8 610 022	6 281 591
1	Vegetable garden			Fruits and berries			Grapes		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
Yerevan city	13 500	6 688	3 500	40 000	61 676	41 412	35 000	6 173	3 100
Aragatsotn	72 350	64 555	14 085	475 527	726 712	887 715	51 047	79 994	74 451
Ararat	783 831	573 849	475 973	746 624	1 054 268	928 236	759 342	951 696	703 102
Armavir	1 455 769	1 490 384	761 802	560 460	805 392	919 109	836 836	903 076	853 748
Gegharkunik	-	-	-	112 513	133 252	118 582	-	-	-

Continuation of table 2.

1	2	3	4	5	6	7	8	9	10
Lori	1 590	621	986	15 795	79 199	64 035	1 313	3 237	1 460
Kotayk	-	-	-	116 917	375 191	229 439	2 954	8 175	2 261
Shirak	-	200	806	80 950	59 871	50 985	-	-	-
Syunik	70	-	4	121 067	121 342	58 869	9 244	8 475	4 834
Vayots Dzor	9 820	7 384	3150	49 755	81 001	43 664	19 777	40 652	54 558
Tavush	24 520	14 387	7816	106 412	118 219	92 173	72 005	98 058	99 167
Total:	2 361 450	2 158 068	1268122	2 426020	3 616 123	3 434219	1 787518	2 099536	1 796681

In order to promote the production of grain, those who cultivated uncultivated lands in the country should be given privileges. In 2018, about 70,000 tons of fruits and vegetables were procured by fruit and vegetable processing companies, of which 45,000 tons were vegetables. In the same period last year, 61,000 tons of fruits and vegetables were procured. 110.9 tons of grapes were procured by grape processing companies this year, compared to 109.8 tons of grapes in the same period last year.

Thus, it was proposed to calculate the amount of damage expected for each crop and provided it to insurance companies with the expectation that they will receive a product in the future. This could be achieved by performing only 5 types of calculations. Obviously, the main suggestion is based on the calculating the quantity of the given crop, the amount of damage and their percentage for several years. As a result, we would get interest rates, the average arithmetic value of which would show the expected damage in the coming year. We could not cite the example of this calculation, as we must had statistical data for a particular crop in terms of yield and damage.

**Conclusions.** Summing up the work, we can conclude that in 2015-2018, both damage and increase in indicators were registered in the RA agriculture. The agricultural insurance system in Armenia is still in its infancy, and the institutes should create appropriate products and services that will improve the agricultural sector in Armenia, facilitate the activities of farmers, and create opportunities for growth and development. As a result, the villager, in turn, will try to work harder, which will benefit both the villager and the Republic of Armenia.

For this purpose, it was suggested to implement the experience of Belarus, to create and operate agricultural insurance products in Armenia, as a result of which we will achieve the above-mentioned goals. In particular, we present the product offered by us, which is intended for fruit-berry and grape insurance, with steps:

1. Calculate the amount of the expected harvest, which we got by adding the damage and the harvest results registered at the end of the year, expressed in drams.
2. Determine from the received number what part of the damage was that percentage, expressed as a percentage, and calculate the annual index in this way.
3. Determine the average of the percentages expressed for each year, adding these numbers and dividing the result by the number, after which we got the percentage expressed in percentages.
4. We would calculate this percentage from the indicator of the expenditure made by the villager, expressed in drams, and we would understand the amount of risk.
5. The insurance companies, realizing the amount of the risky part of the expenses incurred by the villager, expressed as a percentage, must calculate the insurance premium for the entire expense. In other words, the insurance company had to reimburse the amount of the entire cost incurred by the farmer, but they didn't consider the entire amount risky, almost considered the fixed amount of the cost as risky.

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