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## THE ROLE OF INSURANCE IN AGRICULTURAL DEVELOPMENT IN SERBIA

Zoran Tomić, MSc\*

Jelena Z. Stanković, PhD\*

***Abstract:** Agriculture is an important economic sector in all countries of the world, especially in developing ones, such as the Republic of Serbia. In order to be successfully developed, among numerous other issues, it is necessary to improve insurance in the field of agriculture. Currently, the achieved level of agricultural insurance development in Serbia is much lower than its potential. A large number of authors have devoted their research analysis to the current state of agriculture insurance in Serbia comparing it to the state in other developing and developed countries and giving recommendations to improve the system of insurance in Serbia based on examples of good practice in the world. In this paper, a brief overview of the state of agricultural insurance in Serbia, as well as suggestions in which direction to continue the development of agriculture insurance in Serbia will be presented.*

***Keywords:** insurance, crops and fruits, livestock, Serbia, agriculture*

### 1. Introduction

Agriculture has always been an essential factor of social and economic development. It has conditioned the progress of civilization and is considered an important contributor of the economy, although the share of agriculture in GDP of the developed countries amounts approximately 3% and in developing countries 9% (Pejanović and Njegomir, 2011, p. 91). Agricultural industry is also a branch of the economy, which is largely dependent on a number of factors because it is characterized by biological specificity. The influence of certain factors can be controlled, and the development of science and technology significantly improved agricultural production, both in quantity and in quality. However, there are factors that cannot be directly influenced, such as storms, droughts, climate, that are causing a decline in yields in agricultural production and reverse the conditions for further processing. Therefore, it is important to promote the development of insurance in

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\* PhD student at University of Niš, Faculty of Economics, Serbia; ✉ zoranzoca@gmail.com

\* University of Niš, Faculty of Economics, Serbia; ✉ jelenas@eknfak.ni.ac.rs

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agriculture, since it can greatly assist in the protection of agricultural production and enable stable economic development. Insurance provides financial protection to agricultural producers from the harmful effects and disorders caused by the occurrence of the insured event, i.e. the realization of the risk with insurance coverage (Miletić, Milojević and Terzić, 2016, p. 151).

In Serbi, agricultural production has a particular social and economic importance. Considering the long tradition of farming (Nikolić et al., 2017), the share of agricultural land in the available land, which amounts 72.2% (Republički zavod za statistiku, 2012) and the fact that agricultural production contributes 13.48% to GDP of the Republic of Serbia, it can be concluded that agro-industry brings significant contribution to the economic development of Serbia. This sector of the Serbian economy has a great possibility for development due to its geographical position, climate, size and the quality of land, but also because of the improved institutional framework, such as free trade agreement CEFTA, the customs agreement with Russian Federation and other countries for export of agricultural goods. Perspective membership in European Union represents a substantial potential for its further development.

The aim of this paper is to present the level of development of agricultural insurance in Serbia, as well as recommendations for its further development. In the first part of the paper, we present the statistical data related to agricultural production and the development of agricultural insurance in Serbia. The second part of the paper provides a brief overview of the supply of the five largest insurance companies in Serbia, while in the last part of the paper, we provide an overview of the recommendations for the development of agricultural insurance in Serbia.

## 2. The state of agriculture and agricultural insurance in Serbia

Agriculture is the economic sector which is vital for economic development of the Republic of Serbia. As it can be seen from the Table 1, in the last 10 years the agro-industry production contributes to the total value of GDP by 13 to 15 percent, which can be considered a significant share of gross domestic product.

**Table 1. Fluctuation of GDP and agricultural production in Serbia**

Year	GDP (in mil. RSD in current prices)	Agricultural production (in mil. RSD)	Share of agricultural production in total value of GDP (in %)
2007	2,355,065.6	330,173.80	14.02
2008	2,744,913.2	417,831.70	15.22
2009	2,880,059.0	407,850.60	14.16
2010	3,067,210.2	466,810.90	15.22
2011	3,407,563.2	519,959.50	15.26
2012	3,584,235.8	502,684.20	14.02
2013	3,876,403.4	544,441.50	14.05
2014	3,908,469.6	569,387.00	14.57
2015	4,043,467.8	525,466.30	13.00
2016	4,261,927.4	574,441.60	13.48

Source: NBS and Statistical Yearbook of Serbia 2017, calculations carried out by author

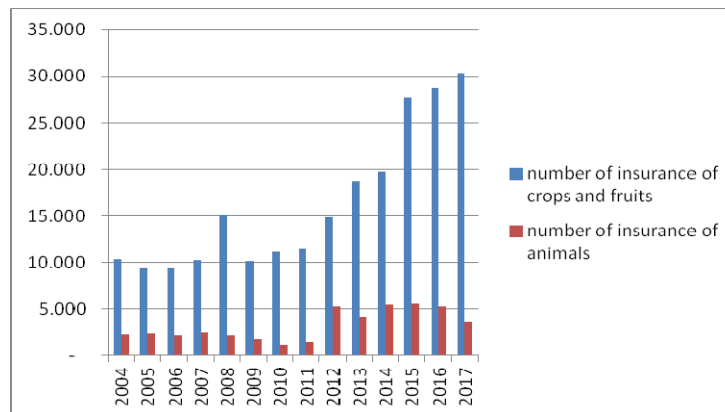
## **Agriculture Insurance in Serbia - Current Status and Prospects for Development**

Moreover, according to the statistical data from the Statistical Yearbook of Serbia, in 2017, 18.6% of total number of employees worked in agriculture, forestry and fisheries. In 2016, overall agricultural trade conducted between Serbia and the world was 4,619.1 million USD, of which 3,209.3 million USD was the value of export and 1,409.8 million USD the value of import, accounting for 21.6% share in total exports and 7.3% of imports, respectively (PKS information - agriculture in February 2017).

Further development of agriculture requires considering numerous issues. The most significant obstacle in development of insurance in the field of agriculture is insufficient households' earnings, since the land used in the agriculture production of the household covers, in the most cases (47% of all households) only 2 hectares (Miletić, Milojević and Terzić, 2016, p. 151). Moreover, age and education structure of the population working in the agriculture is unfavorable, and the equipment used in production is inefficient and old. A critical constraint for further development is the insufficient fund for the investment in the agricultural production and development of farms. Destroyed cooperatives, a large number of non-functioning cooperatives and scarce funds allocated for their development are the issues that prevent prospective development of this economic sector in Serbia.

In terms of climate change and increased frequency of occurrence and intensity of realization of the catastrophic risks, an important factor affecting the development of agricultural production is the group of natural factors, i.e. risks. In this group, we include all natural risks and hazards, such as lightning, drought, floods, disease, etc., that may affect the agricultural production and its quality. Comparing the costs of insurance to the total cost of agricultural production, it can be concluded that the share of agricultural insurance premium in total cost of agricultural production is extremely low – 1.5 to 2%, but it could provide the protection of overall production, both crop and livestock (Miletić, Milojević and Terzić, 2016, p. 151).

**Figure 1: Number of insurance policies of crops, fruits and animals in Serbia**

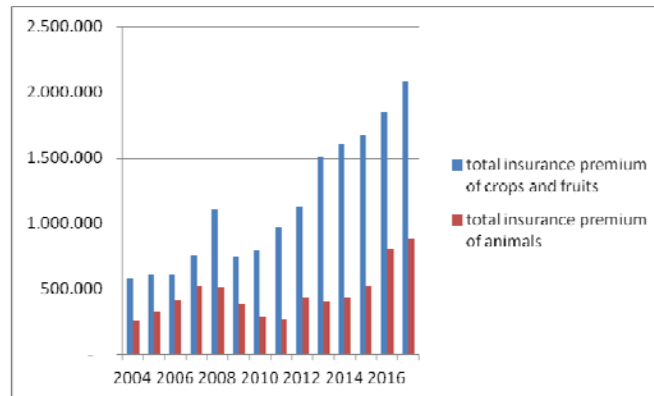


*Source: NBS*

Economic protection is also an important factor in ensuring agriculture production, since it provides protection to agricultural producers from the harmful effects and disorders that occur when the insured risk is realized (Radović, 2016, p.8). Thus, it can help to ensure the quantity and quality of production in agriculture, both plants and animals. Therefore,

agricultural insurance can be divided in two groups: insurance of plants and insurance of animals. In crop production risks are caused by adverse weather conditions or natural disasters, while in livestock production by the illness or death of animals.

**Figure 2: Total insurance premium of crops, fruits and animals in Serbia in millions RSD**



Source: NBS

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In the Figure 1. and Figure 2, the total number and total value of insurance premiums in Serbia for crop insurance, as well as insurance of animals in the period 2004 – 2017 are presented. Regarding crop insurance, it can be observed that there is a growing trend of insurance. The value of crop insurance premiums plummeted after 2008 due to the effects of the economic crisis, which is affecting this line of insurance. After that period, the value of premiums and the total number of agricultural insurance policies recovered and continued to grow until 2017, when the highest values of these indicators were recorded. When it comes to the animals' insurance, the dynamics is similar. The number of animals' insurance policies was significantly lower than crop insurance, and after 2007 began to fall. In 2012, the growth of the number of crop insurance policies was recorded, but after this period it stagnated and in 2017 fell below the value of 2012. The value of total premiums paid for animals' insurance had similar dynamics as crop insurance. The highest value of this indicator was recorded in 2017 and showed an upward trend from 2012 onwards.

In his study, Radović (2016) stated that experts believed that the market opportunities for development of crop insurance were much higher than the used capacities. The same can be claimed for the current state of animals' insurance market development. One of the most important reasons for the insufficient use of this market potential is households' holdings, which are mostly (in 47.2% of cases), according to the census of 2012, of the size up to 2 hectares (Statistical Yearbook of Serbia 2017, p. 255). This has a

## **Agriculture Insurance in Serbia - Current Status and Prospects for Development**

direct impact on competitiveness, production, income and ability to allocate financial resources and, therefore, it determines the demand for agricultural insurance. Also, a weak cooperation of agricultural producers disables the full usage of favorable conditions for the insurance development, as well as ignorance of the importance of agricultural insurance. The insurance is in most cases viewed as an additional cost, especially in the terms of smaller households, but not the opportunity for protection of life, property and production.

The state introduced premium subsidy of crop insurance, as well as animals' insurance as a measure for insurance demand improvement. According to the latest ordinance on the conditions, manner and form required for the eligibility of the incentives for the premium on crops', fruits', perennial plants', nursery's and animals' insurance (Official Gazette, 61/2017) the state subsidizes 40% to 45% of the net insurance premiums paid (insurance premiums reduced for the amount of tax). The incentives are given for the insurance of agricultural crops, vegetable crops, fruit crops, vines and hops, perennial nurseries and young seedlings and animals' insurance. Refunding the part of the insurance costs increase the funds of households and provides financial incentive for the investment in development of agricultural production and farms. According to the above mentioned ordinance, the maximum amounts for the incentives are as following:

1. to encourage insurance tillage culture	100,000 RSD
2. to encourage insurance vegetable crops	500,000 RSD
3. insurance orchards, vines and hops	1,000,000 RSD
4. insurance nurseries and young perennial plantations	500,000 RSD
5. to insure the animals	2,000,000 RSD

The total amount of incentives a user can achieve is at its maximum 2,500,000 RSD. In this way, agricultural producers are stimulated to specialize in specific production.

Experts' opinions regarding the effects of government support measures in agriculture insurance are different. While some authors state that these measures cannot enable achieving the expected results (Radović, 2016; Miletić, Milivojević and Terzić, 2016), Pejanović and Njegomir (2011) in their study show that the existence of state aid is very important for developing countries, because agricultural insurance cannot be developed without the government's subsidies. The practice in the EU countries is different (European Commission, 2006). In Spain, the government collaborates with farm unions and insurance companies to run the system. All the insurance companies operate in a pool, in a co-insurance regime. In other countries, such as Austria, France, Italy, and Luxembourg the insurance system is also well-developed, and most risks are covered depending on the contracts. In Bulgaria, the Czech Republic, Hungary, Poland, Portugal, Slovakia, Slovenia and Sweden, single and combined risk insurance is available and it is provided by the private insurance companies that are subsidized in most cases by the government. For Belgium, Germany, the Netherlands and UK hail insurance are the main products available and there is no public support to insurance. In Finland, private crop insurance is less developed, but there is a public "Crop Compensation Scheme" provided to compensate yield losses after natural disasters. The schemes in Greece and Cyprus are different and are based on a compulsory insurance system provided by the public sector.

Regarding the livestock insurance, some of the reasons for underdevelopment are the low purchasing power of the agricultural producers, lack of information, as well as a significant decline in livestock production (Miletić, Milojević and Terzić, 2016, p. 152).

According to the presented data it can be observed that the share of insurance premiums for crops and fruit insurance is significantly higher and makes 70% of the total insurance premiums in the agriculture insurance, while insurance premiums for livestock insurance account for 30% of total insurance premium amount. The analyses conducted by Radović (2016, p.18) confirmed the fact that there were unused potential of agricultural insurance development, since in 2015 only 19,799 farms were insured and that made 3.13% of the total number of farms recorded in 2012.

In the following part of the paper the brief overview of agriculture insurance supply in the Republic of Serbia will be presented.

### **3. Agriculture insurance supply in Serbia**

In the Republic of Serbia, the crop insurance, as well as the insurance of animals has not been developed at the satisfactory level. Unlike the practice in some other countries, where it is mandatory, Serbia is among the countries where the voluntary insurance system is provided by insurance companies.

The supply of the insurance services on the Serbian market is provided by 17 insurance companies, of which only five offer their services in the field of agriculture insurance. Those companies are the following: “Dunav osiguranje”, DDOR Novi Sad, “Triglav osiguranje”, “Wiener Städtische osiguranje” and “Generali osiguranje”. Of these five insurance companies, all five offer crop and livestock insurance.

Regarding crop insurance, all five insurance companies are offering protection against basic risks: hail, fire and lightning strike. They also offer insurance against additional risks provided that insurance against the basic risks is bought, namely: flooding, spring frost, storms, frost of the season (in the seed corn), salt precipitation, risks after the completion of harvest. Depending on the insurance company, the coverage for these risks may be provided for crops and fruits in nurseries, such as by the insurance company “Dunav osiguranje”. Essentially, the offers of these insurance companies are similar, except that some of them have specific insurance packages in cooperation with other insurance companies in the world, such as “Generali osiguranje”, which has a special stored package of insurance against loss of income in agricultural production and drought in cooperation with “Swiss Re” that is a unique insurance offer on the market.

As a rule, insurance only compensates the loss of quantity, but not the quality. Yet when it comes to hemp and flax, broomcorn, fruit, grapevine and forest planting material and propagating material of ornamental plants, willow knitting, the loss of quality is also compensated. However, the compensation of the quality loss will be provided in the field of the insurance of the crops for seed production only as additional insurance and if an additional insurance premium is paid. Generally, the insurance of additional risks can be contracted only if previously main risks are insured. The exception is the insurance of crops when the insured crop is protected using the net for protection against the shower (Labudović-Stanković and Todorović, 2011, p.730). Insurance contracts may be concluded with an individual, group of individuals or legal entity, annually and perennially. Also, the insurance coverage for the crops for one household is valid for all the crops cultivating at the same household.

## **Agriculture Insurance in Serbia - Current Status and Prospects for Development**

Considering the livestock insurance, all abovementioned insurance companies offer insurance against basic risks: disease, injury, death by natural causes and slaughter. Insurance companies, also, offer additional insurance that can be contracted only if basic risks are insured, and this additional insurance covers the following risks: loss of a calf (foal) at birth, loss of breeding beef cattle, or cows skills, loss of breeding ability of male breeding animals, the dangers of castration and ovariectomy. This insurance is the short-term insurance, which is contracted for the period of up to one year. The animals may be insured only at a certain age - if they are healthy, intact and grown in appropriate conditions.

### **4. Recommendations for further development of agriculture insurance in Serbia**

Based on the data that are presented in the previous section, it can be concluded that agricultural insurance is not developed to the extent to which it can be. The development of insurance is important because it will allow further development of agriculture in Serbia. Therefore, many authors in their studies made certain suggestions and recommendations that may promote agriculture insurance.

In their study, Miletić, Milojević and Terzić (2016) express their attitude towards the increase of government incentives for agricultural insurance in accordance with good European practice, stating that it would foster the development of agricultural insurance. They also present the possibility of introducing the partly compulsory insurance, regulated by the state legislation, as a new model of compulsory insurance for the users of state subsidies to agricultural producers. The similar opinion shares Radović (2016), who is discussing the possibility of introducing partial compulsory insurance of agriculture, as well as adoption of a strategy for the development of agriculture insurance in the Republic of Serbia. According to his model, agriculture insurance should be mandatory in the following circumstances (Radović, 2017 p.20):

- for the users of incentives for the development of agriculture, which is paid from the national, provincial budget or the budget of local government,
- for the users of credits, which are approved with interest subsidies provided from the state funds,
- for the users of credits that are approved by the state financial institutions with low or subsidized interest rates,
- for the tenants of the state agricultural land.

The same author also advocates that respectable income, which insurance companies will realize on the basis of this model, up to 20% of the collected premiums should be allocated in the agricultural financial institutions, i.e. specialized agricultural bank whose aim of operating is financing further development of agriculture and agricultural production.

Generally, the authors suggest the need for the new model of agricultural insurance in the Republic of Serbia. The practice of the other countries in the world showed that there are three models of agriculture insurance (Vanjskopolićka inicijativa BH, 2014, p. 2):

- *full state ownership*, which is based on a strong state support, but also monopolistic treatment of insurance supply; a load of the state budget, but also a satisfactory market penetration;

- *public-private partnerships*, which is considered the most successful model of agriculture insurance, because it involves sensible fiscal issue and gradually increases the market penetration;
- *commercial approach*, which is characterized by the lack of fiscal costs, but by relatively low market penetration; dominated by commercial criteria.

The insurance system in the Republic of Serbia is more oriented towards the commercial approach, and the suggestions that the authors made should contribute to its reform toward the public-private partnership. The first model, which is fully-owned by the state, in the case of Serbia will not give the desired results because of the insufficient funds available in the budget for the purpose of agriculture insurance. Therefore, the potential load of the state budget would make this model unsustainable in the long term. However, authors Labudović-Stanković and Todorović (2011) came to the conclusion that the state had to be involved in the development of agriculture insurance, because the Serbian market was not developed enough.

Author Vladan Manić (2012, p.38) in his study proposes certain changes of the insurance platform in the Republic of Serbia such as:

- stable portfolio (with the risk diversification),
- an appropriate system of subsidies,
- developing prevention funds,
- providing insurance services adapted to the needs of the insureds,
- developing a program to increase the awareness of the risks in agriculture and improve the availability of insurance.

Creating and implementing a program to increase the awareness of agriculture producers about the importance of insurance should be conducted in cooperation with relevant ministries, institutions, such as the Serbian Chamber of Commerce, the Development Agency of Serbia, and the professional advisory services providers in the field of agro-industry, local governments and insurance companies. A mutual commitment and synchronized operation of the public sector and the insurance industry can make visible incentives for development in this area.

In the future, more funds should be allocated in the incentives for agriculture insurance in order to increase the number of households, buying this type of insurance. Moreover, a strategy for the development of insurance in agriculture should be defined, and a new model (platform) of insurance of agriculture in Serbia, which should promote public-private partnerships in this field of insurance, should be introduced.

## 5. Conclusion

Agriculture has a great potential for economic development of the Republic of Serbia. However, available agricultural resources in Serbia are not fully utilized. The analyses presented in the paper indicate that there is a lack of one of the most important features for the development of agriculture. Possibilities for the development of agriculture insurance are favorable. Although there is a growing trend in demand for the insurance of crops and fruits, as well as the animals, there is still a large untapped potential. Insufficient awareness of agricultural producers about the importance of insurance, fragmentation of the agricultural land, as well as overall perception of insurance as an additional cost, determined the demand



## **Agriculture Insurance in Serbia - Current Status and Prospects for Development**

for agricultural insurance in Serbia. On the other hand, there are 17 insurance companies in Serbia that provide services of agricultural insurance, as well as government's incentives for agricultural insurance. Nevertheless, the state of agricultural insurance development is not at the satisfactory level. There is a need to change the framework within the agricultural insurance in Serbia, so that the base of the platform for insurance development is a form of public-private partnership, which would be brought in a form of compulsory agricultural insurance for producers who are beneficiaries of a state program of agricultural development. Prospectively it would increase demand for agriculture insurance, increase the amount of insurance premiums, but also reduce the expenses in agriculture production.

### **References**

- European Commission, Directorate General JRC, Joint Research Centre ISPRA. (2006), *Agricultural Insurance Schemes*, Institute for the Protection and Security of the Citizen, Agriculture and Fisheries Unit, Summary Report, 11.
- Foreign trade of agriculture and food industry in Serbia with the world in 2016 (2017), <http://www.pks.rs/SADRZAJ/Files/Poljoprivreda/Razmena%20agrara%20za%20period%20I%20-%20XII%202016%20%20godine.pdf>, accessed 10.08.2018.
- Labudović-Stanković J., Todorović N. (2011), *Osiguranje biljne proizvodnje u EU i Srbiji*, *Ekonomika poljoprivrede* 2011 (58) 4, pp. 723-734
- Manić V. (2012), *Osiguranje u poljoprivredi - Iskustva razvijenih zemalja, modeli tržišta, analiza i predlog mogućeg rešenja u republici Srbiji*, *Makroekonomske analize i trendovi*, novembar 2012, pp. 37-38
- Miletić D., Milojević M., Terzić I., (2016), *Izloženost rizicima i trendovi osiguranja u poljoprivredi Srbije*, *Rizici u savremenim uslovima poslovanja*, Finiz, pp. 149-153
- Nikolić, R., Fedajev, A., Stefanović, V., Ilić, S. (2017). The agriculture sector in Western Balkans - some characteristics of development, *Economics of agriculture*, 1/2017, pp. 275-293.
- Ordinance on the conditions, manner and form required for eligibility for incentives for the premium on crops', fruits', perennial plants', nursery's and animals' insurance (2017), *Official Gazette*, 61/2017.
- Pejanović R., Njegomir V. (2011), *Problemi upravljanja rizicima u poljoprivredi*, *Ekonomika poljoprivrede* 2011 (58) 1, pp. 91-103
- Radović G. (2017), *Osiguranje poljoprivrede kao moguće obavezno osiguranje u Srbiji*, *Tokovi osiguranja*, No.1, pp 7-23
- Republički zavod za statistiku (2012). *Popis poljoprivrede 2012. godine u Republici Srbiji – metodološko uputstvo*, Beograd.
- Statistical Yearbook of Serbia 2017 (2017), Republic Institute for Statistics Belgrade
- Vanjskopolitička inicijativa BH (2014), *Poljoprivredno osiguranje kao strategija menadžmenta rizika: pregled postojećih modela u Evropi i svijetu*, [http://vpi.ba/wp-content/uploads/2016/05/analiza\\_polj\\_osiguranje\\_2.pdf](http://vpi.ba/wp-content/uploads/2016/05/analiza_polj_osiguranje_2.pdf), pristupljeno: 10.08.2018. <https://www.dunav.com/proizvodi/poljoprivreda/>, accessed 10.08.2018. <http://www.triglav.rs/osiguranja/fizicka-lica/osiguranje-u-poljoprivredi>, accessed 10.08.2018. [https://www.generali.rs/fizicka\\_lica/poljoprivreda.964.html](https://www.generali.rs/fizicka_lica/poljoprivreda.964.html), accessed 10.08.2018. <https://www.ddor.rs/stanovnistvo/za-poljoprivrednike/>, accessed 10.08.2018. <https://wiener.co.rs/za-stanovnistvo/osiguranje-imovine/osiguranje-useva-i-plodova/>, accessed 10.08.2018. [http://nbs.rs/internet/cirilica/60/60\\_2/index.html](http://nbs.rs/internet/cirilica/60/60_2/index.html), accessed 10.08.2018.

## ULOGA OSIGURANJA U RAZVOJU POLJOPRIVREDE U SRBIJI

**Rezime:** Poljoprivreda je važna privredna grana u svim zemljama sveta, posebno u državama u razvoju kakva je Republika Srbija. Kako bi mogla uspešno da se razvija, pored brojnih drugih uslova, potrebno je da se unapredi osiguranje u poljoprivredi. Trenutno je dostignuti stepen razvoja osiguranja u poljoprivredi u Srbiji znatno niži od potencijala koje ima. Veliki broj autora je svoja istraživanja posvetio analizi trenutnog stanja osiguranja poljoprivrede u Srbiji pružajući poređenja dostignutog stepena razvoja sa ostalim razvijenim državama, kao i državama u razvoju i predlažući mere za unapređenje sistema osiguranja u Srbiji na osnovu primera dobre prakse u svetu. U ovom radu biće prikazano stanje osiguranja u Srbiji, kao i sugestije u kom pravcu treba nastaviti razvoj osiguranja poljoprivrede u Srbiji.

**Ključne reči:** osiguranje, usevi i plodovi, životinje, Srbija, poljoprivreda