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CIRCULAR AGRICULTURE AS FOOD SECURITY AND AGRICULTURAL RISK MITIGATION TOOL

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Introduction: Food security has always been a focus of local and international institutions, researchers, businesses, and other stakeholders. It is becoming even more important in the context of a growing world population and global climate change. This is compounded by economic practices that are unsustainable in terms of human resources, increasing the risks and challenges in agriculture. Recently, a lot of attention has been paid to the circular economy, the main goal of which is the efficient use of resources and the reuse of waste in the production process. Organizing a circular economy in agriculture is a means to mitigate agricultural risks and, ultimately, a toolkit that will also contribute to ensuring food security.

Taking into account the above, it is necessary to organize agricultural activities with such approaches that will allow to maximally mitigate the challenges related to food security faced by mankind. The article proposes circular agriculture as such an approach. All this was determined by **the relevance** of the article. **The purpose** of the article is to identify agricultural risks related to ensuring food security and to propose ways to mitigate them as efficiently as possible through circular agriculture. To achieve the set goal, the following **tasks** were set:

- Identify agricultural risks that threaten food security.
- To study the nature and importance of the circular economy.
- Identify the characteristics of circular agriculture.
- To present approaches towards the organization of circular agriculture.

There have been many scientific studies on food security, agricultural risks, circular economy, and agriculture, both at the level of individuals and organizations, which have been presented in the literature review section of this work. The study of a part of these works made it possible to draw appropriate conclusions and make appropriate recommendations regarding the topic of this scientific work

Literature Review: The 2030 Agenda, developed by the Food and Agriculture Organization of the United Nations, states: "While nearly 800 million people are hungry, global food production would need to increase by 60 percent by 2050 to feed the more than nine billion people projected to live on our planet". And this must be done in the face of diminishing water, production and labor resources, global climate change, loss of biodiversity and other challenges[1]. As Matthews A. notes: "Agriculture no longer has the dominant role in economic activity which it once had, but when the contribution of the food industry is factored in, the agrifood sector remains a significant player"[2]. This is because a

[1] Food and Agriculture, Key to achieving the 2030 Agenda for Sustainable Development, FAO, 2016, 31p., p. 10,
https://sustainabledevelopment.un.org/content/documents/2313foodandagriculture.pdf

[2] Matthews A., 2017, Agriculture and Food, The Economy of Ireland: Policy-Making in a Global Context, London, Palgrave Macmillan, pp. 236-261, p. 236,
DOI:10.1057/978-1-137-61107-9_9
https://www.researchgate.net/publication/318821037_Agriculture_and_Food

person simply cannot survive without food. Therefore, no matter how much other sectors develop and come to the fore, food security will always be a priority issue at all times.

Despite its importance, agricultural activity has some negative impacts. Grumbine R. Edward and others noted that food systems are the primary driver of biodiversity loss and ecological degradation, the largest contributor to freshwater consumption, and are major sources of multiple pollutants including nitrogen, phosphorus, heavy metals, antibiotics, and microplastics"[3]. The issue of ensuring food security has always been at the center of public attention, and its role will only increase in the coming decades [4].

Agriculture is one of the riskiest sectors of economic activity, which is mainly explained by the fact that it always involves the management of living plants and animals[5]. Currently, agriculture is at a crossroads where its resources are limited and its negative consequences are increasing. Experts from the Asian Development Bank claim that increasing food production, which is critical in achieving the SDG for hunger and malnutrition, can no longer solely be done through resource intensification[6].

As it was already mentioned, agriculture is threatened by various risks, among which Suchithkumara Ch. et al. distinguish the following: "Modern agriculture is facing an array of challenges that include climate change, soil management, maintaining the crop and the increasing soil biodiversity of the world"[7].

Among the risks in agriculture, one can also distinguish the losses faced by farmers from the harvest to the final consumption of agricultural products. In particular, Dhasmana A. and Singh M. note that farmers are forced to rely on local traders and middlemen to sell their agricultural produce, which is sold at a loss because they lack viable marketing channels. Most of the time, these farmers are forced to sell their produce at a loss due to socio-economic circumstances[8]. It should be noted that large farmers have several advantages over small farmers. In particular, farmers with large land holdings can use

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[3] Grumbine R. Edward, Xu J. and Ma L., 2021, An Overview of the Problems and Prospects for Circular Agriculture in Sustainable Food Systems in the Anthropocene, Circular Agricultural Systems 1: 3, 11p., p. 1, https://www.maxapress.com/data/article/cas/preview/pdf/CAS-2021-0003.pdf

[4] Marlos de S. and Koo-Oshima S., Food and agriculture, Chapter 5, FAO, 68-78 p., p. 68 https://collections.unu.edu/eserv/UNU:8110/Food-and-agriculture.pdf

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[6] 2018, SOLUTIONS FOR AGRICULTURAL TRANSFORMATION, INSIGHTS ON KNOWLEDGE-INTENSIVE AGRICULTURE, ASIAN DEVELOPMENT BANK, APRIL 53p., p. 1, https://www.adb.org/sites/default/files/publication/421526/solutions-agricultural-transformation.pdf

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[8] Dhasmana A. and Singh M., Major Issues/ December 2022,Problems in Agriculture Sectors and their Possible Solutions, Just Agriculture, multidisciplinary e-Newsletter, Vol.3 Issue-4, 5 p., p. 2, https://justagriculture.in/files/newsletter/2022/december/29.%20Major%20Issues%20%20Problems%20in%20Agriculture%20Sectors%20and%20their%20Possible%20Solutions.pdf

modern agricultural techniques to improve productivity. Small landholdings limit the farmer's ability to use conventional farming methods and reduce productivity[9].

If there is a risk, it needs to be managed. In general, there are different approaches to risk management. Huirne R.B. et al. note that risk management can be defined as the systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, assessing, treating, and monitoring risk[10]. Now consider circular agriculture as a method of agricultural risk management.

Before moving on to circular agriculture, let's address the question of what a circular economy is in general. There is no single definition of the circular economy.

As concerns rise about the achievability of the 2030 Agenda for Sustainable Development, an opportunity is emerging to promote the circular economy as the solution of the future – and to put the concept at the heart of action on everything from tackling climate change to reducing poverty[11].

Haji-Rahimi M. et al. find that the core philosophy of the Circular Economy is the optimal use of limited resources, waste reduction, and the reuse of waste in production processes or the creation of by-products. According to them, if the main goal of the linear economy is to make a profit, then the main goal of the circular economy is the effective reuse of waste in production [12]. OECD experts give the following definition of the circular economy: "A circular economy is generally understood as an economy where the generation of waste and contamination is minimized, resources are retained for as long as possible and materials are returned to product cycles at the end of their use"[13].

Bianchi F. et al. noted in their study that the current global agri-food system is built in such a way that all actors involved – including farmers, processors, seed companies, producers of fertilizers and other agricultural inputs, traders and retailers, and consumers – are first and foremost concerned with maximizing profits or minimizing costs[14]. It is

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[9] Ramesh L., Prakash Dr. L., (2021), A study on agriculture problems faced by farmers and its solutions, Journal of Social Work, Vol. XIII, Issue-I 120-126 p., p. 121, https://bssspublications.com/PublishedPaper/Publish_376.pdf

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[13] 2024, An international review of national and subnational circular economy monitoring frameworks: Lessons and ways forward for Italy, OECD, 84 p., p. 9 https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/06/an-international-review-of-national-and-subnational-circular-economy-monitoring-frameworks_5d3173a6/854b848b-en.pdf

[14] Bianchi F., Beek Ch., Winter D., Lammers E., March 2020, Opportunities and barriers of circular agriculture, insights from a synthesis study of the Food & Business Research Programme, 16 p., p. 3,

precisely as a result of this approach that the issue of ensuring food security deepens even further. Therefore, there is a need to apply approaches that will make it possible to mitigate agricultural risks and ensure a higher level of food security.

The issue of reducing harmful waste in production processes and reusing it in production has been discussed for several decades. Several countries have pioneered versions of a circular economy as state policy (Germany in 1996, Japan in 2000), yet circularity in agriculture is a much older idea following the principles of 'grow, make, use, restore'[15].

The United Nations, Department of Economic and Social Affairs, has provided the following approach to circular agriculture: "In circular agriculture, all steps of the food system from growing, harvesting, packing, processing, transporting, marketing, consuming and disposing of food are designed to promote sustainable development[16]. Velasco-Muñoz J. et al. have given this definition of circular agriculture: "CE in referring to agriculture can be defined as 'the set of activities designed to not only ensure economic, environmental and social sustainability in agriculture through practices that pursue the efficient, effective use of resources in all phases of the value chain but also guarantee the regeneration of and biodiversity in agro-ecosystems and the surrounding ecosystems"[17].

Methodology: To solve the problems posed in the article, the materials, analyses, and statistical data published by several international organizations (UN, FAO, OEDC, etc.), as well as scientific works of Armenian and foreign researchers, statistical data characterizing RA agriculture, etc. were collected. The data collected during the research were subjected to qualitative analysis using historical, comparative, abstract, analytical, and deductive methods.

Discussion: Experts at the European Investment Bank estimate that the world's population consumes more than 100 billion tons of materials every year and that more than 90% of all materials extracted and used are wasted. The goal of the green economy is to reduce this waste, which can be achieved through innovative solutions and service models and more sustainable approaches to consumption. The European Investment Bank supports the transition to a circular economy through three mutually reinforcing activities: financing, advisory support and awareness-raising[18].

Velasco-Muñoz J.F. and others have concluded in their studies that the rapid socio-economic transformations of the last century have shaped a future in which humanity will face significant challenges. Since 1900, the world's gross domestic product has increased

https://www.nwo.nl/sites/nwo/files/documents/1.%20Circular%20agriculture_full%20paper.pdf

[15] Grumbine R. E., Xu J., and Ma L., 2021, An Overview of the Problems and Prospects for Circular Agriculture in Sustainable Food Systems in the Anthropocene, Circular Agricultural Systems 1: 3, 11p., p. 2,
https://www.maxapress.com/data/article/cas/preview/pdf/CAS-2021-0003.pdf

[16] May 2021, Circular agriculture for sustainable rural development, United Nations, Department of Economic and Social Affairs, 7 p., p. 3
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DOI: 10.1016/j.resconrec.2021.105618
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[18] Circular economy overview, European Investment Bank, 2024, 7 p., p. 1
https://www.eib.org/attachments/lucalli/20240104_circular_economy_overview_2024_en.pdf

25-fold, leading to a 10-fold increase in resource extraction. According to the authors, this trend will continue in the coming decades and will have a negative impact on agriculture. For example, the global area of irrigated cropland, which currently stands at about 275 million hectares, grew at an average annual rate of 1.3% between 1940 and 2015. Agricultural activities and land conversion are therefore the main causes of soil erosion and biodiversity loss[19]. United Nations experts have estimated that food-related CO_2 emissions could double by 2050 without changes to the current unsustainable food systems and consumption patterns[20].

There are a number of challenges to organizing circular agriculture. One of the challenges of designing CA at any scale in any place is to capture the elements of complex food systems. These challenges are related to debates about whether to narrowly frame food systems as only about technological, supply-side issues (increasing crop yields, closing nutrient loops, recoupling crop-livestock linkages, etc.) to produce more food efficiently, or to include social and demand-side issues (improving smallholder livelihoods, creating sustainable supply chains, promoting dietary changes, etc.) to produce more food security[21]. Currently, work is underway not only to increase the volume of agricultural production but also to create a product that will have minimal negative socio-economic and ecological impacts.

United Nations experts note that the integration of mixed crop-livestock and organic farming, agroforestry, and water and wastewater recycling is a key element of a circular agriculture model that aims to reduce CO_2 emissions, use natural resources more efficiently, and significantly reduce the use of inputs. Circular agriculture is closely linked to the concept of mixed crop-livestock production. Another key element of circular agriculture is organic farming, which aims to eliminate dependence on chemical fertilizers, pesticides, and plastics. Agroforestry, defined as the planting of trees in combination with crops or pastures, is an integral part of circular agriculture. Recycling and reuse of irrigation water is an important part of circular agriculture water management. A shift to circular agriculture should not be seen as a return to past practices, but rather as a way of farming with nature, while actively using scientific advances, innovations, and new technologies. Institutions and incentives, such as water user associations and secure water and land tenure rights, are critical to encouraging smallholder farmers to adopt circular agriculture practices. Smallholder farmers need improved access to new technologies and skills, which can be

[19] Velasco-Muñoz J. F., Mendoza J., Aznar-Sánchez J. A., Gallego-Schmid A., April 2021, Circular economy implementation in the agricultural sector: Definition, strategies, and indicators, Resources Conservation and Recycling, 35p., p. 1-2,
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[21] Grumbine R. E., Xu J., and Ma L., 2021, An Overview of the Problems and Prospects for Circular Agriculture in Sustainable Food Systems in the Anthropocene, Circular Agricultural Systems 1: 3, 11p., p. 2,
https://www.maxapress.com/data/article/cas/preview/pdf/CAS-2021-0003.pdf

facilitated through international cooperation for technology transfer and capacity development[22].

The gross domestic product of RA in 2023 was 9453175.0 million. AMD, while in 2019 it was 6543321.8 million. AMD [23]. In other words, the RA GDP increased more than 1.4 times during those years. Along with that, the total emission of pollutants also increased. Thus, in 2023 that figure was 116,800t, and in 2019 it was 89,700t. In other words, this indicator has increased by 1.3 times. Captured hazardous substances in 2023 was 263400 t, and in 2019 it was 121400t[24]. In other words, that indicator has increased 2.2 times. Therefore, when the GDP growth rate is compared with the Captured hazardous substances growth rate, the latter exceeds the GDP growth rate by 57%, which, of course, is a worrying indicator. As for RA agriculture, it should be noted that RA's total land area is 2974300 ha, of which only 2041400 ha (6.9%) is agricultural land[25]. Average annual precipitation ranges from 250 mm in the south to 450 mm in the north[26]. Effective use of agricultural land and irrigation water is an important issue, especially for RA, which has limited land and water resources[27].

Regarding the issue of ensuring food security in the Republic of Armenia, it should be noted that the level of food insecurity in the Republic of Armenia is high. More than half of the population is at risk of food insecurity. The latest "Food Security and Vulnerability Assessment of the Republic of Armenia" conducted by WFP shows that 23% of the surveyed households are food insecure and 56% are at the threshold of food security. This indicates that the majority of the population of the Republic of Armenia is at risk of becoming food insecure in the event of a crisis or shock[28]. These indicators once again prove the need for multifaceted and comprehensive work that will contribute to the mitigation of these indicators.

To effectively organize circular agriculture in RA, it is necessary to find out the types of pollution present in the sector. Here, pollution is mainly caused by cattle breeding and farming. Various gases and types of waste are produced and emitted. Gases emitted by agricultural activities include nitrogen, methane, carbon dioxide, and halogen gases, which lead to air, water, and soil pollution[29]. Effective fertilizer management will be essential for

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https://armstat.am/file/doc/99552323.pdf

[25]2024, STATISTICAL YEARBOOK OF ARMENIA, p. 370,
https://armstat.am/file/doc/99552343.pdf

[26] Haykazyan V., Problems of Armenian agriculture and development prospects, pp. 41-66p., p. 41, http://www.noravank.am/upload/pdf/103_am.pdf

[27] Tonoyan G., Buniatyan M., 2022, Some approaches to solving multi-criteria problems arising in the field of agriculture, Banber of Yerevan University. Economics, N1, 53-63, p. 53, http://www.old.ysu.am/files/05G_Tonoyan_M_Buniatyan.pdf

[28] Food security system development strategy, 2023, Appendix No. 1, to the RA Government Decision No. 1083-L of June 29, 32p., p. 6, https://www.arlis.am/Annexes/7/2023_N1083hav.1.pdf

[29] Atoyan G., 2021, Circular economy, Yerevan 61 pages, page 42
https://library.anau.am/images/stories/grqer/Tntesagitakan/shrjanadzev.pdf

increased yield, long-term sustainability, and minimizing environmental impact. Agriculture organic waste, such as compost, animal manure, and agricultural leftovers, has so traditionally been regarded as a valuable source of agricultural fertilizer in agroecosystems[30].

As already mentioned, organic agriculture is one of the circular agriculture approaches. In 2008, the RA Law "On Organic Agriculture" was adopted. The law regulates relations related to the production, storage, processing, transportation, and sale of organic agricultural products and raw materials, as well as the collection of wild plants, defines the legal foundations and principles of organic agriculture, the main requirements for product circulation, directions of state support and the obligations of the authorized body[31]. It is worth noting that today some work is being done in the direction of organic agriculture in Armenia.

Conclusion. Based on the studies and analyses carried out within the framework of the article, it can be concluded that human activity should move from a resource-consuming approach to a policy of waste reuse. Otherwise, humanity is threatened with irreversible losses, which will become even more vulnerable shortly. The basis of this policy is the circular economy, which has received a lot of attention recently. Ensuring food security has always been at the center of the studies of international institutions and scientists, and its importance is increasing in the conditions of the annual growth of the world population and the increase of local and global problems in the agricultural sector. Circular agriculture is one of the ways to alleviate these problems. Summarizing the results of the studies carried out within the framework of the article, the following definition of circular agriculture can be given "Circular agriculture is a type of human activity based on the efficient use of limited resources and the reuse of agricultural waste, the main goal of which is to reduce risks in the agricultural sector and increase the level of food security".

To effectively organize circular agriculture in RA, it is recommended:

- To exercise state-level control over the organization of effective crop rotations and mix farming (combination of crop cultivation with animal husbandry).
- Conduct work on the specifics of organizing organic agriculture, especially among small farms, and first of all provide them with state support in this direction.
- Increase the level of awareness and utility of circular agriculture among farmers.
- To strengthen the agriculture-education-science-state-international cooperation chain, which will allow applying scientific achievements on circular agriculture in everyday life and ensure positive results.

The practical application of the presented recommendations for the organization of circular agriculture will contribute to the increase of the level of food security in the Republic of Armenia.

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ՇՐՋԱՆԱՁԵՎ ԳՅՈՒՂԱՏՆՏԵՍՈՒԹՅՈՒՆԸ ՈՐՊԵՍ ՊԱՐԵՆԱՅԻՆ ԱՆՎՏԱՆԳՈՒԹՅԱՆ ԱՊԱՀՈՎՄԱՆ ԵՎ ԳՅՈՒՂԱՏՆՏԵՍԱԿԱՆ ՌԻՍԿԵՐԻ ՄԵՂՄՄԱՆ ԳՈՐԾԻՔ

ԳՈՀԱՐ ՈՍԿԱՆՅԱՆ

Համառոտագիր

Աշխարհի բնակչության թվաքանակն աճում է ամեն օր, որն այսօր կազմում է ավելի քան 8 մլրդ.։ Միևնույն ժամանակ բնակչության աճող թվաքանակին հակառակ սահմանափակ են այն ռեսուրսները, որոնցով ապահովվում է բնակչությանը պարենով։ Պետք է նշել նաև, որ մարդն իր տնտեսական գործունեությամբ ևս բացասական ազդեցություն է թողնում գյուղատնտեսության վրա՝ նպաստելով պարենային անվտանգության խնդրի մեծացմանը։ Հաշվի առնելով այս ամենն անհրաժեշտություն է առաջանում այնպիսի գործունեություն ծավալել, որը կնպաստի ռեսուրսների արդյունավետ օգտագործմանը, գյուղատնտեսական ռիսկերի մեղմմանը և վերջին հաշվով պարենային անվտանգության մակարդակի բարձրացմանը։ Այս ամենը պայմանավորել են հոդվածի արդիականությունը և կատարման անհրաժեշտությունը։ Հոդվածի նպատակն է բացահայտել պարենային անվտանգության ապահովման հետ կապված գյուղատնտեսական ռիսկերը և առաջարկել շրջանաձև գյուղատնտեսության միջոցով դրանք հնարավորինս արդյունավետ կառավարելու ուղիներ։ Դրված նպատակին հասնելու համար խնդիր է դրվել բացահայտել պարենային անվտանգության ապահովմանը սպառնացող գյուղատնտեսական ռիսկերը, ուսումնասիրել շրջանաձև գյուղատնտեսության էությունը և կարևորությունը, բացահայտել շրջանաձև գյուղատնտեսության առանձնահատկությունները, ներկայացնել համապատասխան մոտեցումներ շրջանաձև գյուղատնտեսության կազմակերպման ուղղությամբ։ Հոդվածի շրջանակներում հավաքագրված տվյալները ենթարկվել են որակական վերլուծության՝ օգտագործելով պատմական, համեմատական, վերացարկման, վերլուծական և դեդուկցիայի մեթոդները։ Հոդվածի շրջանակներում կատարված ուսումնասիրությունների արդյունքում տրվել է շրջանաձև գյուղատնտեսության հետևյալ սահմանումը. «Շրջանաձև գյուղատնտեսությունը մարդկային գործունեության տեսակ է, որը հիմնված է սահմանափակ ռեսուրսների օգտագործման և գյուղատնտեսական թափոնների վերաօգտագործման վրա, որի հիմնական նպատակը ագրարային ոլորտում ռիսկերի մեղմումն է և պարենային անվտանգության մակարդակի բարձրացումը»։ Հոդվածում ներկայացվել են որոշ առաջարկություններ ՀՀ-ում շրջանաձև գյուղատնտեսության կազմակերպման ուղղությամբ, որոնց գործնական կիրառումը կնպաստի հանրապետությունում պարենային անվտանգության մակարդակի բարձրացմանը։

Բանալի բառեր. շրջանաձև տնտեսություն, գյուղատնտեսություն, պարենային անվտանգություն, ռիսկ, մարտահրավեր, ռեսուրս, թափոն, վերաօգտագործում:

ЦИРКУЛЯРНОЕ СЕЛЬСКОЕ ХОЗЯЙСТВО КАК ИНСТРУМЕНТ ОБЕСПЕЧЕНИЯ ПРОДОВОЛЬСТВЕННОЙ БЕЗОПАСНОСТИ И СНИЖЕНИЯ СЕЛЬСКОХОЗЯЙСТВЕННЫХ РИСКОВ

ГОАР ВОСКАНЯН

Аннотация

Численность населения планеты увеличивается с каждым днем и сегодня составляет более 8 миллиардов человек. При этом, вопреки растущей численности населения, ресурсы, которыми население обеспечивается продовольствием, ограничены. Следует также отметить, что человек своей экономической деятельностью также оказывает негативное влияние на сельское хозяйство, способствуя нарастанию проблемы продовольственной безопасности. Учитывая все это, возникает необходимость проведения таких мероприятий, которые будут способствовать эффективному использованию ресурсов, смягчению сельскохозяйственных рисков и, в конечном итоге, повышению уровня продовольственной безопасности. Все это обусловлено актуальностью статьи и необходимостью ее реализации. Цель статьи – выявить сельскохозяйственные риски, связанные с продовольственной безопасностью, и предложить способы максимально эффективного управления ими посредством циркулярного сельского хозяйства. Для достижения поставленной цели была поставлена задача выявить сельскохозяйственные риски, угрожающие продовольственной безопасности, изучить природу и значение циркулярного земледелия, выявить характеристики циркулярного земледелия, представить взаимные подходы к организации циркулярного земледелия. Собранные в статье данные были подвергнуты качественному анализу с использованием исторических, сравнительных, абстрактных, аналитических и дедуктивных методов. Обобщая результаты исследований, проведенных в рамках статьи, можно дать следующее определение циркулярного сельского хозяйства: «Циркулярное сельское хозяйство – это вид человеческой деятельности, основанный на эффективном использовании ограниченных ресурсов и повторном использовании сельскохозяйственных отходов, основной целью которого является снижение рисков в аграрном секторе и повышение уровня продовольственной безопасности». В статье представлены некоторые рекомендации по организации циркулярного земледелия в РА, практическое применение которых будет способствовать повышению уровня продовольственной безопасности республики.

Ключевые слова. циркулярная экономика, сельское хозяйство, продовольственная безопасность, риск, вызов, ресурс, отходы, повторное использование

CIRCULAR AGRICULTURE AS FOOD SECURITY AND AGRICULTURAL RISK MITIGATION TOOL

GOHAR VOSKANYAN

Abstract

The world's population is constantly growing and now stands at more than 8 billion people. At the same time, the resources with which the population is fed are limited, in contrast to the growing number of people. It should also be noted that man's economic activity also has a negative impact on agriculture, which contributes to the aggravation of the food security problem. Taking all this into account, it is necessary to carry out such activities that will contribute to the efficient use of resources, the reduction of agricultural risks and, ultimately, the increase in the level of food security. All this is conditioned by the relevance of the article and the necessity of its implementation. The purpose of the article is to identify agricultural risks related to food security and propose ways to manage them as efficiently as possible through circular agriculture. In order to achieve the set goal, the task was to identify the agricultural risks that threaten food security, to study the nature and importance of circular agriculture, to identify the characteristics of circular agriculture, to present common approaches to organizing circular agriculture.

The data collected within the article were subjected to qualitative analysis using historical, comparative, abstract, analytical, and deductive methods. As a result of the studies carried out within the framework of the article, the following definition of circular agriculture was given "Circular agriculture is a type of human activity based on the use of limited resources and the reuse of agricultural waste, whose main objective is to reduce risks in the agricultural sector and increase the level of food security". The article presents some recommendations for the organization of circular agriculture in RA, the practical application of which will contribute to increasing the level of food security in the Republic of Armenia.

Keywords: circular economy, agriculture, food security, risk, challenge, resource, waste, reuse.