Int. j. adv. multidisc. res. stud. 2025; 5(4):438-443

Received: 26-05-2025
Accepted: 06-07-2025

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Risk Management in Agricultural Marketing: A Comprehensive Review of Strategies, Challenges, and Effectiveness

[1] Mohammad Naim Kakar, [2] Dr. Ali Ahmad, [3] Amanullah Niazai

[1] BBA Department, Assistant Professor and Dean, Economics Faculty, Helmand University, Afghanistan

[2] Associate Professor, Department of Agricultural Economics and Extension, Agriculture Faculty, Helmand University, Afghanistan

[3] Lecturer, BBA Department, Economics Faculty, Bost University, Afghanistan

DOI: https://doi.org/10.62225/2583049X.2025.5.4.4611

Corresponding Author: **Mohammad Naim Kakar**

Abstract

Risk management identifies, assesses, and controls threats to an organization's resources, returns, and operations. Risk management is essential in agricultural marketing because it addresses the uncertainties producers and agribusinesses face. The overview describes the implications of risk management for achieving the utility and sustainability of rural marketing strategies. It highlights numerous production, market, financial, and operational risks that affect agricultural activities. Effective risk management enables stakeholders to recognize, assess, and alleviate these risks, leading to better decision-making and better allocation of resources. The review article examines various risk management tools and techniques, including insurance, divergence, futures, and hedging strategies, underlining their role in protecting income and ensuring market stability. By assimilating risk management into agricultural marketing, producers can enhance their sustainability by justifying market variations, improving productivity, and contributing to food security. This overview covers the way for an all-inclusive analysis of the effectiveness of risk management in agricultural marketing, intending to provide information for practitioners and policymakers.

Keywords: Risk Management, Importance, Types, Role, Benefits, and Strategies

1. Introduction

Risk management is identifying, analyzing, and responding to risks. This involves examining the potential risks associated with a financial decision, determining the likelihood of their occurrence, and deciding how to respond to them. For example, when considering an investment in a business, it is essential to assess the potential risks involved, such as economic fluctuations or competition from other businesses. You might then decide to invest a smaller amount of money or invest in another venture with lower risk (Introduction to Risk and Risk Management, n.d.) [19].

Risk management aims to anticipate what may not go as planned and implement measures to mitigate uncertainty as much as possible. Risk can be perceived as either positive opportunities or negative threats. Risk is the possibility that a situation or event will affect the achievement of specific objectives. Working with the risk owner, the project manager ensures that risks are clearly identified before proceeding to the risk analysis phase of the risk management process. The project risk management process reflects the dynamic nature of project work, capturing and managing emerging risks while incorporating new knowledge into existing risk analyses. A risk register documents risks, analyses, and responses and clearly assigns responsibility for actions (Association for Project Management, 2019) [1].

Risk management is intentionally proactive, not reactive. This could be as simple as a team member telling a colleague to wear their safety glasses, or it could involve something as complex as a comprehensive asset allocation model for your organization’s fixed assets. Risk management practices can also be applied to large, broad events such as losing a major employer in the community. Different situations and events can have both positive and negative consequences. Each consequence may require a different risk management strategy. For example, let us say a new 300-unit residential development is planned in your community. On the positive side, such an event is likely to be well-received, as it will result in increased tax revenue, a larger population to support local businesses, and a greater sense of community vitality. On the downside, however, it could also lead to increased traffic and additional demands on law enforcement and firefighters, potentially upsetting neighbors who oppose the change. Each problem will require a specific risk management strategy (Neal, 2018) [26].

Risk and Risk management are essential parts of economic activity. People generally manage their affairs to be as happy and secure as their environment and resources allow. However, no matter how carefully these problems are handled, there is a risk, as the outcome, whether good or bad, is rarely predictable with certainty. Risk is inherent in almost everything we do; however, this reading focuses specifically on economic and financial risk, particularly in the context of investment management (Gibson, 2025) [10].

Hazards related to agriculture are diverse and constantly evolving. Producers face various challenges, including animal diseases, volatile commodity markets, climate change, political issues, and labor shortages. Increased volatility of input and output prices, international trade restrictions, climate change, and stricter food safety regulations are just some of the new factors that expose producers and agri-food companies to high risks. The concept of risk is related to an aspect of business operations involving forecasting financial results that may not materialize due to unforeseen circumstances in the planning, production, and sales cycles. The practice of agriculture typically involves some outdoor work. It always involves the management of living plants and animals, which makes it particularly vulnerable to risks. Business risk and financial risk are the two categories of risks. Business risk includes institutional risk, market risk, and individual risk. Whatever the company's risk or financing structure, we discuss business risk (Gangadhara Doggalli, 2024) [9].

Risk Management: What is it?

According to IBM (2021) [17], risk management is the process of identifying, assessing, and mitigating financial, legal, strategic, or security threats to a business. Financial instability, legal ramifications, misuse of technology, poor strategic management, mishaps, and natural disasters are just a few of the numerous sources of business hazards. Risk management techniques aim to identify and foresee these dangers, their potential effects, and strategies to mitigate them when they materialize.

Risk management is the process of identifying, assessing, and mitigating risks to an organization's assets, profits, and operations. These risks stem from several factors, including unforeseen expenses, legal obligations, technological issues, poor strategic management, accidents, and natural disasters (Tucci, 2023) [31].

Individual risk occurrences and overall risk can be comprehended and proactively controlled through risk analysis and management. They maximize success by reducing risks and increasing possibilities and results (Association for Project Management, 2019) [1].

Importance of Risk Management:

Risk management is crucial because it provides a company with the resources it needs to identify potential risks and take appropriate action. It is simple to reduce a risk once it has been discovered. Furthermore, risk management provides a company with a foundation for informed decisions. The best approaches for a firm to get ready for potential obstacles to advancement and growth are through risk assessment and management. A company increases its chances of success by assessing how it will handle potential risks and then creating mechanisms to mitigate them. Furthermore, progressive risk management ensures that high-priority hazards are addressed as effectively as possible. Additionally, management will be equipped with the knowledge necessary to make informed decisions and ensure the company's continued profitability (CFI Team, 2020) [4].

Risk management helps companies anticipate and address potential threats and uncertainties in the following domains (IMD, 2024) [18].

1. Finance

Risk management is essential for banks, insurance providers, and investment organizations in the financial industry. Credit, market, operational, and liquidity risks are just a few of the many hazards that these institutions must manage. Effective risk management techniques contribute to stability and the avoidance of financial catastrophes.

2. Medical care

The healthcare sector relies heavily on risk management to ensure patient safety and deliver high-quality care. Risks to healthcare organizations include patient privacy violations, medical mishaps, and regulatory compliance issues.

3. Project management

Since uncertainties and possible hazards can significantly impact a project's success, risk management is equally important in project management. By integrating risk management into project planning and execution, project managers can reduce project delays and cost overruns by identifying possible roadblocks, allocating resources efficiently, and implementing backup plans.

4. Technology

Information technology (IT) is another industry where risk management is crucial. Due to the growing dependence on digital technologies and cyber threats, organizations must implement strong risk management procedures to safeguard sensitive data, preserve system integrity, and guarantee business continuity. Risks to cyber security, like virus assaults and data breaches, can have serious repercussions, such as monetary losses and harm to one's reputation.

5. Supply chain management

Another area where good risk management is essential is supply chain management. Natural disasters, supplier failures, and logistical interruptions are just a few of the hazards that supply chains are susceptible to. Organizations can reduce the impact of supply chain interruptions by identifying potential vulnerabilities, establishing alternate supply sources, and creating backup plans by implementing risk management practices.

Evolution of Risk Management in Agriculture:

Because of changes in market dynamics, regulatory interventions, and technology breakthroughs, risk management in agriculture has changed dramatically over time. This evolution can be followed via several phases, from conventional risk avoidance techniques to contemporary, data-driven methods.

1. Traditional Risk Management (Pre-20th Century)

Growers have traditionally used subsistence farming, diversification, and unofficial community-based solutions to manage risks. They used crop rotation, intercropping, and keeping cattle next to crops to distribute risks. Social networks and mutual aid were essential to reducing losses brought on by natural disasters or low yields (Hardaker *et* *al*., 2015).

2. Early Institutional Interventions (20th Century)

As modern agriculture and international trade grew, institutions and governments developed formal risk management measures. The creation of price support systems, cooperative farming projects, and agricultural insurance schemes aided income stability. To reduce yield volatility, for instance, the United States launched the Federal Crop Insurance Program in 1938 (Goodwin & Smith, 2013) [13].

3. Technological Advancements and Market-Based Risk Management (Late 20th Century - Early 21st Century)

Financial instruments and agricultural research advances have resulted in increasingly complex risk management strategies. Innovations like weather forecasting, precision farming, and better seed varieties strengthened growers' ability to anticipate and control hazards. To control price volatility, market-based instruments such as futures contracts and hedging techniques have become common (Moschini & Hennessy, 2001) [24].

4. Digital and Climate-Smart Risk Management (21st Century - Present)

The most recent stage of agricultural risk management incorporates climate-smart methods, big data, and artificial intelligence. For smallholder farmers, remote sensing, machine learning, and blockchain technologies enhance production projections, supply chain transparency, and financial inclusion. Furthermore, in areas vulnerable to climate risks, parametric insurance which is based on weather indicators rather than actual losses—has grown in popularity (Carter *et al*., 2014) [2].

Risks in Agriculture:

The handling of living things and their exposure to weather and other natural occurrences (such as viruses, animal diseases, etc.) have always made farming dangerous. A rising lack of societal acceptance of intensive agriculture, uncertainty about future agricultural and environmental policies, and the reluctance of skilled staff to work in agriculture are some examples of additional hazards that stem from the political and social context around farms. Some of the most significant risks in agriculture are listed in Figure 1. Many people believe that some of the hazards listed in Figure 1 have increased in importance for farmers and producers in the last few years (Ludwig Theuvsen, 2013; Frentrup *et al*., 2010) [22, 8]:

Because of the gradual liberalization of the EU's Common Agricultural Policy, EU farmers are now more exposed to global agricultural markets and worldwide market prices than they were previously. As a result, today's EU growers must contend with rising price volatility. The Common Agricultural Policy's future (such as the requirement for decoupling payments to European growers) and other pertinent policies (including environmental and animal welfare) are also becoming more contentious. More extreme weather events, such as droughts, heavy rains, storms, and exceptionally high or low temperatures, as well as altered volumes and seasonal rainfall distribution, will be brought on by climate change.

In many regions, agriculture has become less attractive for younger people, and it has become more difficult to find adequately trained and motivated farm workers and young growers willing to continue family farming businesses.

The use of genetically modified organisms, widespread animal welfare regulations, agriculture's effects on the environment, and other issues are the focus of intense public and media debate in many European nations. One might add many instances of the increasing risks in agriculture. Given this, it is generally accepted that agricultural risk management is more important now than ever, particularly for contemporary farms that can no longer primarily rely on family labor, their own land, and equity capital. Rather, modern farms are frequently defined by expansion strategies that include increasing debt-to-equity ratios, leasing significant land shares, and employing hired farm workers (Ludwig Theuvsen, 2013; Schaper *et al*., 2011) [22, 28]. As a result, these farms must make large fixed payments and run the risk of going bankrupt if significant unanticipated hazards, including

Types and Sources of Risks in Agricultural Marketing:

A significant part of the farming industry is risk. Wide variations in agricultural revenue can result from the unpredictability of weather, yields, pricing, government regulations, international markets, and other factors related to farming. Adopting measures to lessen the adverse financial effects of such uncertainties is known as risk management. The five broad risk categories discussed here are production risk, pricing or market risk, financial risk, institutional risk, and human or personal risk (Tsiboe, 2025) [30].

1. The unpredictable natural growth processes of crops and livestock are the source of production risk. Several factors, including weather, illness, and pests, impact the quantity and quality of commodities.
2. Price or market risk refers to the uncertainty surrounding the prices that manufacturers must pay for inputs or the prices they will receive for commodities. Price risk takes many different forms from commodity to commodity.
3. Financial risk arises when a farm firm takes out a loan and incurs repayment obligations. Increasing interest rates, the possibility of lenders calling loans, and limited credit availability are all components of financial risk.
4. Uncertainty about government decisions leads to institutional risk. Tax laws, chemical use regulations, animal waste disposal requirements, and the amount of price or income support subsidies are a few examples of government choices that can significantly affect the farm industry.
5. A farm business may be impacted by human or personal risk, including health issues or interpersonal relationships. Personal catastrophes such as divorce, illness, accidents, and death can threaten a farm enterprise.
6. Technological risk is the incapacity to use or obtain new technology that could increase marketing effectiveness, lower expenses, or boost production. This includes concerns about advancements in storage, digital marketing tools, and mechanization (Hardaker *et al*., 2015).
7. Health and the Environment Pollution, water scarcity, and soil deterioration are risk factors, whereas food safety and contamination issues are health risks. Reduced demand for agricultural products and declining consumer confidence are two outcomes of these risks (Moschini & Hennessy, 2001) [24].

Techniques for Controlling Agricultural Hazards:

Economic stability, farmer livelihoods, and food security depend on effective agricultural risk management. Factors like market volatility, pests, illnesses, policy changes, and climate change might harm agriculture. The following are some essential methods and resources for agricultural risk management (FAO, 2022) [7].

a) The process of diversification

Crop diversification: Planting various crops lowers the chance that anyone will fail completely because of pests, illnesses, or bad weather. Enterprise diversification that combines crop farming with agro-processing or livestock production can distribute risks (FAO, 2022) [7].

b) Agriculture Smart to the Climate (CSA)

Crops resistant to drought: Better seed types that can tolerate harsh weather are employed. Crop rotation, cover crops, and limited tillage are examples of conservation agriculture techniques that enhance soil health and lower risk (IPCC, 2022) [20].

c) Financial Instruments and Insurance Index-based insurance bases payouts on temperature, precipitation, or other meteorological indices instead of actual losses. Growers benefit from government subsidies by receiving guaranteed minimum prices and subsidized inputs (World Bank, 2021) [32].

d) Managing Price and Market Risk

Contract farming: Price unpredictability is decreased via agreements between buyers and growers. Growers can use futures contracts and hedging for Commodity exchanges to fix crop prices (FAO, 2022) [7].

e) Management of Pests and Diseases

Integrated Insect Management (IPM) integrates chemical, cultural, and biological measures to reduce insect damage. Tracking and predicting disease and pest outbreaks ensures timely response (FAO, 2022) [7].

f) Better Control of Water

Infrastructure for irrigation lessens dependency on erratic rainfall. Rainwater harvesting collects and stores rainfall to be used during dry spells (FAO, 2022) [7].

g) Institutional and Policy Support

Government engagement includes creating safety nets, risk management guidelines, and disaster assistance initiatives. To improve market access and input pricing, farmer cooperatives increase their collective negotiating power (World Bank, 2021) [32].

2. Agricultural Risk Management Tools:

a) Tools for Weather and Climate Prediction

GIS and remote sensing: Track crop health, soil moisture, and weather trends. Growers can receive customized weather forecasts and farming advice from agro-climatic consulting services (IPCC, 2022) [20].

b) Mobile and Digital Technologies

Growers' mobile applications: Provide real-time weather forecasts, pest alarms, market prices, and best farming practices. Blockchain technology improves traceability and transparency of agricultural supply chains (IPCC, 2022) [20].

c) Decision Support Systems (DSS)

Software for farm management: Growers can efficiently plan and manage risks using tools like AgriEdge, Climate FieldView, and FarmLogs. Yield forecasting models use AI and big data analytics to forecast agricultural yields and possible hazards (IPCC, 2022) [20].

d) Tools for Finance and Insurance

Access to loans and microfinance helps smallholder farmers invest in low-risk technologies. Platforms for agricultural insurance provide customized insurance plans according to crop types and climate.

e) International and Government Assistance Programs

Policymakers can use the FAO's Agricultural Risk Management Framework to create risk management plans. The World Bank's Agricultural Risk Assessment Tools aid in building resilience in agricultural sectors (World Bank, 2021) [32].

Global Approaches to Agricultural Risk Management:

As illustrated below, several international approaches have successfully controlled agricultural hazards.

1. Mechanisms of Risk Transfer

Agricultural insurance is one of the most popular instruments for risk management, especially in industrialized nations like the US and the EU. Index-based insurance is becoming increasingly popular in developing nations because it pays growers based on meteorological data rather than real losses (Hazell *et al*., 2010) [16].

Hedging and Futures: Growers can protect themselves against price volatility by using commodity futures markets. Futures markets for agricultural commodities are developing in nations such as the United States, Brazil, and India (Shields, 2010) [29].

2. Strategies for Risk Mitigation

Diversity: Crop and livestock diversity lessens susceptibility to shocks by reducing reliance on a single revenue stream. Climate-Resilient Agriculture: Growers can adapt to climate change by implementing precision farming methods, conservation agriculture, and drought-resistant crops (FAO, 2018) [6].

Better Infrastructure: Investments in irrigation, storage, and transportation decrease post-harvest losses and improve market accessibility.

3. Techniques for Coping with Risk

Government Safety Nets: Subsidies, minimum support prices, and emergency assistance initiatives are typical in nations like China and India. Cooperatives and Farmer Organizations: Collective action lowers the risks of price fluctuations and market access by strengthening negotiating power.

4. Case Studies

United States: Federal crop insurance and disaster aid programs are part of the country's extensive agricultural risk management framework (Glauber, 2013) [11].

Sub-Saharan Africa: To manage risks, nations in this region depend on donor-supported programs like microfinance and weather-indexed insurance (Carter *et al*., 2017) [3].

Role and Benefits of Risk Management in Agricultural Marketing:

Because it helps growers, traders, and agribusinesses reduce uncertainty and increase profitability, risk management is essential in agricultural marketing. Price volatility, market swings, unpredictable weather, insect infestations, and policy changes are just a few of the dangers that the agricultural industry is inevitably subject to. Stability, sustainability, and resilience in agricultural marketing are guaranteed by efficient risk management techniques

(Chavas, 2004) [5].

Role of Risk Management in Agricultural Marketing

1. Price Risk Mitigation: Because supply and demand fluctuate so much, agricultural markets are extremely volatile. Growers and dealers can stabilize prices and reduce losses by using risk management techniques like futures contracts, options, and hedging (Chavas, 2004) [5].

2. Income Stability: Growers can ensure steady revenue despite erratic market conditions by implementing risk management techniques. This financial stability makes better planning and investment in future output possible (Hardaker *et al*., 2015).

3. Market Access and Competitiveness: By lowering the risks involved with open-market sales, risk management strategies like contract farming and cooperative marketing give growers guaranteed markets and competitive pricing (González-Rivera & Helfand, 2001) [12].

4. Improving Investment Opportunities: Growers and agribusinesses who adopt good risk management techniques are more likely to receive support from financial institutions and investors. The agriculture sector grows and innovates as a result of this access to capital and investment (OECD, 2009) [27].

5. Supply Chain Stability: Risk management guarantees a steady supply of agricultural products by managing logistical risks, transit delays, and storage losses. This improves market efficiency and food security (Jaffee *et al*., 2010) [21].

Benefits of Risk Management in Agricultural Marketing

1. Decreased Financial Losses: To guard against market downturns, growers and agribusinesses can reduce losses by utilizing forward contracts, insurance plans, and diversification (Musshoff & Hirschauer, 2008) [25].

2. Better Decision-Making: Stakeholders can allocate resources more effectively by making well-informed decisions about pricing, marketing, and production strategies using trustworthy risk assessment tools (Hardaker *et al*., 2015).

3. Enhanced Efficiency and Productivity: Risk management promotes the use of contemporary farming methods, better storage facilities, and more effective financial planning, all of which increase efficiency and productivity (OECD, 2009) [27].

4. Improved Farmer Welfare: Risk management helps to improve growers' livelihoods by lowering uncertainties, which guarantees social and economic stability in rural communities (Jaffee *et al*., 2010) [21].

5. Long-Term Sustainability: Eco-friendly farming methods, climate change losses, and the preservation of natural resources are all aided by sustainable risk management techniques (Chavas, 2004) [5].

3. Conclusion

Risk management is crucial for agricultural marketing to be stable, profitable, and resilient to unforeseen events. By employing efficient risk mitigation techniques, growers and agribusinesses may ensure market access, achieve sustainable growth, and improve their competitiveness in the global agricultural economy. Active risk management in farming necessitates combining strategies and tools that discourse climate changeability, market variations, and production risks. Risk management in farmed marketing is vital to safeguarding the sustainability and realization of agricultural dealings. It involves judging, recognizing, and extenuating several risks, including climate change, market fluctuations, policy changes, and pest infestations. In conclusion, effective risk management is important to enhance the sustainability of agricultural marketing, supporting growers, and ensuring food security. By accepting the proactive and combined approaches, investors can better overcome uncertainties and benefit from growth opportunities.

4. References

1. Association for Project Management. What Is Risk Management? | *APM*. Www.apm.org.uk; APM, 2019. https://www.apm.org.uk/resources/what-is-project-management/what-is-risk-management/.
2. Carter MR, De Janvry A, Sadoulet E, Sarris A. Index-based weather insurance for developing countries: A review of evidence and a set of propositions for up-scaling. FERDI Working Paper, 2014.
3. Carter MR, De Janvry A, Sadoulet E, Sarris A. Index-based weather insurance for developing countries: A review of evidence and a set of propositions for upscaling. Development Policy Review. 2017; 35(2):203-231.
4. CFI Team. Risk Management. Corporate Finance Institute, July 2, 2020. https://corporatefinanceinstitute.com/resources/career-map/sell-side/risk-management/risk-management/.
5. Chavas JP. Risk Analysis in Theory and Practice. Elsevier, 2004.
6. FAO. Climate-smart agriculture: Policies, practices, and financing for food security, adaptation, and mitigation. Food and Agriculture Organization of the United Nations, 2018.
7. FAO. Agricultural Risk Management: A Holistic Approach. Food and Agriculture Organization of the United Nations, 2022.
8. Frentrup M, Heyder M, Theuvsen L. Risikomanagement in der Landwirtschaft. Frankfurt a. Main, Landwirtschaftliche Rentenbank, 2010.
9. Gangadhara Doggalli. Risk Management Strategies for Agricultural Enterprises. ResearchGate. 2024; 3:413-427. https://www.researchgate.net/publication/382736296_Risk_Management_Strategies_for_Agricultural_Enterprises.
10. Gibson K. Introduction to Risk Management. CFA Institute, 2025. https://www.cfainstitute.org/insights/professional-learning/refresher-readings/2025/introduction-risk-management
11. Glauber JW. The growth of the federal crop insurance program, 1990-2011. American Journal of Agricultural Economics. 2013; 95(2):482-488.
12. González-Rivera G, Helfand SM. The Extent, Pattern, and Degree of Market Integration: A Multivariate Approach for the Brazilian Rice Market. American Journal of Agricultural Economics. 2001; 83(3):576-592.
13. Goodwin BK, Smith VH. What harm is done by subsidizing crop insurance? American Journal of Agricultural Economics. 2013; 95(2):489-497.
14. Hardaker JB, Huirne RBM, Anderson JR, Lien G.

Coping with risk in agriculture: Applied decision analysis (3rd ed.). CABI, 2015.
15. Hardaker JB, Lien G, Anderson JR, Huirne RB. Coping with Risk in Agriculture: Applied Decision Analysis. CABI Publishing, 2015.
16. Hazell PBR, Pomareda C, Valdés A. Crop insurance for agricultural development: Issues and experience. Johns Hopkins University Press, 2010.
17. IBM. Risk management, Aug 26, 2021. https://www.ibm.com/think/topics/risk-management.
18. IMD. Risk Management: Understanding the Basics and Importance, Feb 22, 2024. Www.imd.org. https://www.imd.org/blog/management/risk-management/.
19. Introduction to risk and risk management (article). Khan Academy, n.d. https://www.khanacademy.org/college-careers-more/financial-literacy/xa6995ea67a8e9fdd:insurance/xa6995ea67a8e9fdd:what-is-risk-and-how-to-manage-it/a/introduction-to-risk-and-risk-management.
20. IPCC. Climate Change and Food Security: Risk Management Strategies. Intergovernmental Panel on Climate Change, 2022.
21. Jaffee S, Siegel P, Andrews C. Risk Management in Agriculture: A Holistic Approach. World Bank, 2010.
22. Ludwig Theuvsen. Risks and Risk Management in Agriculture. Scientific Journal Warsaw University of Life Sciences-SGGW. 2013; 13(4):162-174. Doi: https://doi.org/10.22630/prs.2013.13.4.73.
23. Moschini G, Hennessy DA. Uncertainty, risk aversion, and risk management for agricultural producers. In Gardner BL, Rausser GC. (Eds.), Handbook of Agricultural Economics (Vol. 1, pp. 87-153). Elsevier, 2001.
24. Moschini G, Hennessy DA. Uncertainty, risk aversion, and risk management for agricultural producers. Handbook of Agricultural Economics. 2001; 1:87-153.
25. Musshoff O, Hirschauer N. Modern Risk Management in Agriculture. Springer, 2008.
26. Neal R. MRSC - An Introduction to Risk Management, March 15, 2018. Mrsc.org. https://mrsc.org/stay-informed/mrsc-insight/october-2018/an-introduction-to-risk-management.
27. OECD. Managing Risk in Agriculture: A Holistic Approach. OECD Publishing, 2009.
28. Schaper C, Deimel M, Theuvsen L. Determinanten der Wettbewerbsfähigkeit Ǝerweiterter FamilienbetriebeƎ - Ergebnisse einer Betriebsleiterbefragung, in: German Journal of Agricultural Economics. 2011; 60(1):36-51.
29. Shields DA. Federal crop insurance: Background and issues. Congressional Research Service, 2010.
30. Tsiboe F. USDA ERS - Risk in Agriculture, Jan 5, 2025. Www.ers.usda.gov. https://www.ers.usda.gov/topics/farm-practices-management/risk-management/risk-in-agriculture.
31. Tucci L. What is Risk Management and Why is it Important? TechTarget, September, 2023. https://www.techtarget.com/searchsecurity/definition/What-is-risk-management-and-why-is-it-important.
32. World Bank. Agricultural Risk Assessment and Management: A Policy Framework. Washington, DC, 2021.