AGRONOMY AND SANITARY SURVEILLANCE: AN INTEGRATED APPROACH TO FOOD SAFETY, RISK CONTROL, AND HEALTH PROTECTION

https://doi.org/10.63330/aurumpub.043-004

Gabriela Camilly de Lima Nogueira[1], Antonela Marçallo[2], Wenderson Cordeiro dos Santos[3], Anderson Fernandes de Carvalho Farias[4], Michel dos Reis da Silva[5], Juçara Dantas da Silva[6], Marcos Aurélio Rodrigues Fonte[7] and Rafaela Fouchard Machado dos Santos[8]

Abstract

The increasing complexity of contemporary agri-food systems imposes significant challenges to ensuring food quality and protecting public health, requiring the articulation of different fields of knowledge. In this context, the present study analyzed the integration between agronomy and sanitary surveillance as an essential strategy for promoting food safety, risk control, and public health protection. This is a narrative literature review with a qualitative approach, based on publications indexed in the SciELO and Latindex

[1] Undergraduate student in Veterinary Medicine
Faculdade Serra Dourada - SERRA DOURADA, Lorena SP
E-mail: gabrielanogueira838@gmail.com
[2] Undergraduate student in Veterinary Medicine
Universidade Positivo - UP, Curitiba PR
E-mail: antonelamarcallo21@gmail.com
ORCID: https://orcid.org/0009-0008-3768-5564
[3] Undergraduate student in Veterinary Medicine
Universidade Estadual do Maranhão - UEMA, São Luís MA
E-mail: wendeson2702@gmail.com
Lattes: https://lattes.cnpq.br/9339569007559567
[4] International Master in Medicine
Esneca Business School - ESNECA, Zaragora AR
E-mail: andersonfercalho@gmail.com
https://lattes.cnpq.br/3357217652638543
ORCID: https://orcid.org/0000-0002-4326-9689
[5] Master's student in Education Sciences,
University Internacional - UNILOGOS, Paris FR
E-mail: michel_dsilva@outlook.com
http://lattes.cnpq.br/5614836604851081
ORCID: https://orcid.org/0009-0004-2146-2885
[6] Graduate in Agronomic Engineering
Universidade Estadual da Paraíba - UFPB, Brejo do Cruz PB
E-mail: jucara.silva@aluno.eupb.edu.b4
ORCID: https://orcid.org/0009-0002-5316-0801
[7] Graduate in Agronomic Engineering
Universidade Federal Rural de Pernambuco - UFRPE, Recife PE
E-mail: socramforte@hotmail.com
Lattes: http://lattes.cnpq.br/2696077607745837
[8] Undergraduate student in Veterinary Medicine
Universidade Federal do Pampa - UNIPAMPA, Uruguaiana RS
E-mail: rafaelafouchard.aluno@unipampa.edu.br

databases, as well as official documents from the Ministry of Health and the National Health Surveillance Agency, covering the period from 2022 to 2026. The study was guided by the following research question: how does the integration between agronomy and sanitary surveillance contribute to food safety and the mitigation of risks to collective health? The results showed that the intensive use of pesticides, contamination of water resources, and the presence of chemical residues in food represent significant sanitary challenges. On the other hand, sustainable agricultural practices, combined with efficient surveillance and monitoring systems,demonstrated potential to reduce such risks. Furthermore, the role of public policies and regulations in controlling the food production chain was highlighted. It is concluded that the integration between agronomy and sanitary surveillance strengthens preventive actions and contributes to the development of safer and more sustainable food systems.

Keywords: Agronomy, Food Safety, Pesticides, Public Health, Sanitary Surveillance.

INTRODUCTION

Food and nutritional security constitutes one of the fundamental pillars for the promotion of public health, especially in contexts marked by social inequalities, production intensification, and the expansion of agricultural technologies. In this scenario, the integration between agronomy and sanitary surveillance emerges as an essential strategy to ensure food quality from production to consumption, encompassing aspects related to risk control, environmental sustainability, and the protection of human health. The complexity of this topic requires an interdisciplinary approach, considering that agricultural production, while ensuring food supply, may also represent a source of risk, especially when associated with the inappropriate use of chemical inputs, water contamination, and failures in sanitary control processes (Domene et al., 2023; Oliveira et al., 2025).

In the Brazilian context, the intensification of pesticide use has raised relevant debates regarding its impacts on health and the environment, highlighting the need for effective monitoring and regulatory mechanisms. Studies indicate that the country presents worrying scenarios regarding the flexibilization of

policies related to the use of these inputs, which may compromise food safety and increase population exposure to potentially harmful substances (Hess et al., 2024; Barroso et al., 2025). Furthermore, the presence of pesticide residues in food has been widely documented, reinforcing the importance of surveillance programs, such as systematic monitoring conducted by regulatory agencies (Leite; Vilarinho; Inoue, 2025).

The central issue of this study lies in the need to understand how the articulation between sustainable agronomic practices and sanitary surveillance actions can contribute to strengthening food safety and mitigating risks to public health. In this sense, the following question is raised: in what way can the integration between agronomy and sanitary surveillance enhance the control of risks associated with the production and consumption of food, promoting greater protection of collective health?

Given this context, the present study aims to analyze the importance of an integrated approach between agronomy and sanitary surveillance in promoting food safety, with emphasis on risk control and public health protection. It also seeks to discuss the main challenges and strategies related to contaminant monitoring, the adoption of sustainable agricultural practices, and the strengthening of public policies aimed at food safety.

The relevance of this study is justified by the growing demand for safe and high-quality food in a global scenario marked by climate change, urban expansion, and increased pressure on production systems. The literature shows that food safety is not limited to food availability but also involves ensuring sanitary and nutritional quality, being influenced by socioeconomic, environmental, and institutional factors (Pedrotti et al., 2022; Moura et al., 2025). In this context, the role of sanitary surveillance, combined with the technical knowledge of agronomy, becomes fundamental to preventing risks, promoting good practices, and ensuring compliance with established regulatory standards.

In addition, sanitary surveillance plays a strategic role in the inspection, regulation, and monitoring of food, contributing to the identification of microbiological, chemical, and physical hazards throughout the production chain. Regulations such as RDC No. 216/2004 and RDC No. 331/2019

establish important guidelines to ensure the hygienic-sanitary quality of food, reinforcing the need for rigorous control at all stages of production and commercialization (Brazil, 2004; Brazil, 2019). Likewise, programs such as the National Plan for the Control of Residues and Contaminants (PNCRC) and the Program for the Analysis of Pesticide Residues in Food (PARA) demonstrate institutional commitment to continuous monitoring and risk mitigation (Brazil, 2023).

Within the field of agronomy, the importance of adopting sustainable practices stands out, such as ecologically based agriculture and integrated pest management, which aim to reduce the use of chemical inputs and minimize environmental impacts. Initiatives focused on training farmers, especially in urban and family farming contexts, have demonstrated positive results in promoting food safety and valuing food sovereignty (Machado et al., 2024). Furthermore, the quality of water used in irrigation is also a determining factor for food safety, since water contamination can directly compromise consumer health (Camargo et al., 2025).

Another relevant aspect concerns integrated plant health surveillance, which seeks to anticipate and mitigate the occurrence of pests and diseases, contributing to the stability of agricultural production and the reduction of sanitary risks. Proactive approaches in this field have been identified as essential for strengthening resilient and sustainable food systems (Soubeyrand et al., 2024). Additionally, international experiences in monitoring food residues reinforce the importance of using technologies and data to improve surveillance systems and ensure greater efficiency in sanitary control (Popescu et al., 2025).

Finally, it is emphasized that the construction of safe and sustainable food systems depends on articulation among different sectors and public policies, including health, agriculture, environment, and education. Instruments such as the National Food and Nutrition Security Plan (PLANSAN) reinforce the need for integrated and intersectoral actions to address food safety challenges in Brazil (Brazil, 2016). In this sense, the integration between agronomy and sanitary surveillance not only contributes to risk control but also strengthens the promotion of public health, consolidating itself as a strategic approach for sustainable development and the guarantee of the human right to adequate food.

METHODOLOGY

The present research is characterized as a narrative literature review, with a qualitative and descriptive approach, whose purpose is to gather, analyze, and synthesize relevant scientific publications and institutional documents regarding the integration between agronomy and sanitary surveillance in the context of food safety, risk control, and public health protection. The narrative review allows for a broad and in-depth understanding of the topic, favoring the articulation among different theoretical perspectives and empirical evidence, especially in interdisciplinary areas.

The study was structured around the following guiding question: how does the integration between agronomy and sanitary surveillance contribute to the promotion of food safety, risk control, and public health protection in the Brazilian context? This question directed the search, selection, and analysis of studies, enabling the organization of knowledge in a systematic and coherent manner aligned with the proposed objectives.

Data collection was carried out through searches in the Scientific Electronic Library Online (SciELO) and Latindex databases, in addition to consultation of official documents provided by Brazilian governmental bodies, such as the Ministry of Health and the National Health Surveillance Agency (ANVISA). The choice of these sources is justified by their scientific and institutional relevance, as well as by the reliability of the information in the field of public health and food production.

Previously defined descriptors based on the Health Sciences Descriptors (DeCS) were used, combined through Boolean operators (AND and OR), namely: “food safety,” “sanitary surveillance,” “agronomy,” “pesticides,” “public health,” “food contamination,” and “risk control.” These terms were applied in Portuguese, considering the national focus of the study, although relevant studies in English were also considered when available in the selected databases.

The inclusion criteria were: (i) complete scientific articles freely available; (ii) publications from 2022 to 2026; (iii) studies directly addressing the relationship between agricultural production, sanitary surveillance, and food safety; (iv) official documents and regulations related to food sanitary control in

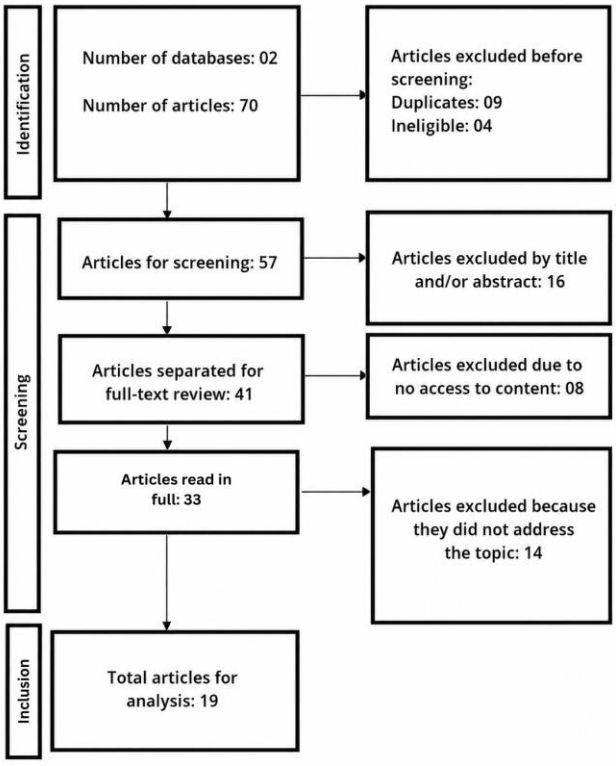
Brazil; and (v) publications relevant to the public health context. The exclusion criteria were: (i) duplicate studies; (ii) publications outside the defined time frame; (iii) studies not directly related to the proposed topic; (iv) abstracts, editorials, letters to the editor, and publications lacking methodological rigor; and (v) articles not available in full.

The study selection process occurred in stages, including reading titles, abstracts, and subsequently full texts, to verify compliance with the established criteria. After this screening, the selected studies were organized and interpretively analyzed, enabling the identification of relevant thematic categories, such as pesticide use, residue monitoring, sustainable agricultural practices, and the role of sanitary surveillance.

The systematization of the methodological process is represented in Figure 1, which illustrates the stages of searching, selecting, and including studies, from initial identification in the databases to the final definition of the analyzed sample.

Figure 1

Flowchart of the study selection process included in the narrative review.



Source: Authors (2026)

Finally, it is noted that, as this is a narrative review based on secondary data in the public domain, submission to a Research Ethics Committee was not required, in accordance with current ethical guidelines. Nevertheless, principles of scientific integrity were respected, with proper citation of the sources used, ensuring the reliability and transparency of the information presented.

RESULTS AND DISCUSSION

The results of this narrative review show that the integration between agronomy and sanitary surveillance constitutes a strategic element for strengthening food safety and public health protection, especially in the face of contemporary challenges related to the intensification of agricultural production, the use of chemical inputs, and the increasing complexity of food chains. Analysis of the selected studies made it possible to identify central thematic categories directly aligned with the research objective, namely: pesticide use and its impacts, residue monitoring in food, the quality of natural resources used in production, sustainable agricultural practices, and the regulatory role of sanitary surveillance.

Regarding pesticide use, the studies point to a worrying scenario in Brazil, characterized by increased consumption of these substances and the flexibilization of regulatory policies. This context increases the risks of environmental contamination and human exposure, directly impacting food quality and population health (Hess et al., 2024; Barroso et al., 2025). The persistent presence of pesticide residues in food products was observed, requiring continuous monitoring and control actions. In this sense, residue analysis programs play a fundamental role in identifying irregularities and ensuring safe consumption standards (Leite; Vilarinho; Inoue, 2025).

The relevance of monitoring also extends to the international context, where data-driven approaches have been used to improve contaminant surveillance in food, especially fruits and vegetables. These strategies demonstrate that the use of technologies and integrated systems can significantly contribute to early risk detection and more assertive decision-making in public health (Popescu et al.,

2025). Such evidence reinforces the need to strengthen national surveillance systems through investments in innovation and technical training.

Another relevant aspect identified concerns the quality of water used in agricultural irrigation. Studies show that contamination of water sources, especially groundwater, can compromise food safety, representing a significant risk to human health (Camargo et al., 2025). The use of water without adequate sanitary control favors the dissemination of pathogenic microorganisms and harmful chemical substances, highlighting the importance of integrated surveillance of natural resources in agricultural production.

The analysis also highlighted the importance of sustainable agricultural practices as a strategy to reduce risks and promote food safety. The adoption of agroecological models, integrated pest management, and reduced use of chemical inputs has proven effective in producing safer food and preserving the environment (Machado et al., 2024). Furthermore, farmer training initiatives, particularly in urban and family farming contexts, contribute to strengthening food sovereignty and improving production and commercialization conditions (Moura et al., 2025).

In this context, food safety should be understood broadly, encompassing not only food availability but also sanitary quality, nutritional value, and accessibility. Studies indicate that socioeconomic, environmental, and institutional factors directly influence the effectiveness of public policies aimed at food safety, reinforcing the need for integrated and intersectoral approaches (Pedrotti et al., 2022; Oliveira et al., 2025).

Sanitary surveillance emerges as a central element in ensuring food quality through regulation, inspection, and risk monitoring throughout the production chain. Brazilian regulations establish strict standards for food production, handling, and commercialization, contributing to the prevention of health hazards (Brazil, 2004; Brazil, 2019). In addition, food and nutritional surveillance plays a relevant role in identifying vulnerabilities and promoting actions aimed at improving population health conditions (Moura et al., 2023).

The integration between agronomy and sanitary surveillance is also reflected in the need for plant health surveillance, focusing on preventing and controlling pests and diseases that may compromise agricultural production and food safety. Proactive and research-based approaches are essential to anticipate risks and ensure production system sustainability (Soubeyrand et al., 2024).

Furthermore, the articulation among public policies, such as national food safety plans and residue control plans, is fundamental to addressing identified challenges. Implementation of these policies depends on coordinated action among different sectors, including health, agriculture, and environment, highlighting the importance of integrated governance (Brazil, 2016; Brazil, 2023).

Table 1 presents a synthesis of the main findings of this review, systematizing the analyzed studies by authors, objectives, and main contributions to the investigated theme.

Table 1

Synthesis of the studies included in the narrative review.

Author (Year)	Objective of the study	Main findings	Contributions to the theme
(Camargo et al., 2025)	Evaluate the sanitary quality of groundwater used in the irrigation of vegetables	Identified potential contamination of the water, with direct implications for food safety	Highlights the need for surveillance of water quality in agricultural production
(Hess et al., 2024)	Analyze the scenario of pesticide policies in Brazil	Points to regulatory flexibilization and increased exposure to toxic substances	Reinforces the importance of rigorous public policies and continuous monitoring
(Leite; Vilarinho; Inoue, 2025)	Investigate pesticide residues in food in Brazil	Identified a significant presence of residues in the foods analyzed	Highlights the relevance of sanitary control and monitoring programs
(Moura et al., 2025)	Analyze food security in family farming contexts	Revealed socioeconomic challenges and the importance of local production	Values sustainable practices and the strengthening of food sovereignty
(Machado et al., 2024)	Evaluate the training of urban horticulturists	Demonstrated improvement in food production and quality	Indicates education as a tool for food safety

(Oliveira et al., 2025)	Discuss food safety and food security	Highlights the multidimensionality of food security	Provides a basis for the need for an integrated approach
(Messias, 2025)	Analyze sanitary surveillance in the environmental and tourism context	Highlights the importance of surveillance in risk prevention	Broadens the understanding of surveillance as an instrument of public health
(Moura et al., 2023)	Evaluate food and nutritional surveillance	Identifies its contribution to health promotion and the prevention of health problems	Reinforces the role of surveillance in food safety
(Domene et al., 2023)	Reflect on the complexity of food safety	Points to the social, economic, and environmental factors involved	Provides a basis for the interdisciplinary approach
(Pedrotti et al., 2022)	Discuss the evolution of food and nutritional security in Brazil	Highlights advances and persistent challenges	Contextualizes public policies and their importance
(Soubeyrand et al., 2024)	Propose integrated plant health surveillance	Highlights a proactive approach to pest prevention	Integrates agronomy and surveillance in protecting production
(Barroso et al., 2025)	Analyze pesticide residue management	Highlights impacts on health and the environment	Reinforces the need for rigorous control
(Popescu et al., 2025)	Evaluate pesticide surveillance in food	Presents the use of technologies for monitoring	Contributes to innovation in sanitary surveillance

Source: Authors (2026)

In addition, Table 2 presents the main thematic categories identified, associating them with public health risks and the control strategies proposed in the literature, allowing an integrated view of the factors that influence food safety in the context of the relationship between agronomy and sanitary surveillance.

Table 2

Thematic categories, associated risks, and control strategies in food safety.

Thematic category	Public health impacts	Control strategies	Agronomy–sanitary surveillance interface
Pesticide use	Poisonings, chronic diseases, and environmental damage	Regulation, residue monitoring, and reduction in use	Development of sustainable practices combined with sanitary inspection
Water quality in irrigation	Waterborne diseases and food contamination	Water quality control and environmental surveillance	Proper water management integrated with sanitary inspection
Residues in food	Chronic exposure to chemical contaminants	Monitoring programs and laboratory control	Integration between agricultural production and sanitary surveillance
Sustainable agricultural practices	Improvement in food quality and reduction of environmental damage	Agroecology, integrated pest management, and training	Application of agronomic techniques under sanitary supervision
Sanitary surveillance	Prevention of foodborne diseases	Regulations, inspections, and health education	Regulation of all stages of the production chain
Food security	Reduction of social and nutritional vulnerabilities	Intersectoral public policies	Integration among production, access, and food quality
Plant health surveillance	Stability of production and food quality	Pest monitoring and preventive control	Integration between agronomic research and sanitary control
Education and training	Improvement of productive and sanitary practices	Technical training and continuing education	Articulation between agronomic and sanitary knowledge

Source: Authors (2026)

Finally, the results show that the integration between agronomy and sanitary surveillance is indispensable for the construction of safe, sustainable, and resilient food systems. The articulation among appropriate agricultural practices, continuous monitoring, and effective public policies is configured as an essential pathway for risk reduction and the promotion of public health, reinforcing the need for investments in research, innovation, and integrated management in the sector.

The discussion of the findings shows that the integration between agronomy and sanitary surveillance constitutes an indispensable strategy for addressing contemporary challenges related to food safety and the protection of public health. As emphasized by Domene et al. (2023), food safety must be understood as a complex and multifactorial phenomenon, involving social, economic, environmental, and

sanitary dimensions, thus requiring interdisciplinary and intersectoral approaches. In this sense, the articulation between agronomic practices and sanitary surveillance actions expands the capacity to respond to the risks present in the food production chain.

With regard to pesticide use, the results discussed corroborate the analyses of Hess et al. (2024), who point to a worrying scenario in Brazil, marked by the flexibilization of regulatory policies and the increased authorization of chemical substances. This reality contributes to the expansion of the population's exposure to potentially toxic compounds, directly impacting public health. In a complementary manner, Barroso et al. (2025) highlight that the inadequate management of pesticide residues may generate adverse effects both on the environment and on human health, reinforcing the need for effective systems of monitoring and control.

The presence of pesticide residues in food, as evidenced by Leite, Vilarinho, and Inoue (2025), reinforces the importance of sanitary surveillance programs that operate continuously and systematically. These authors emphasize that monitoring should not be limited to the detection of irregularities, but should also contribute to the formulation of more rigorous public policies and to the promotion of safer agricultural practices. In this context, the role of regulatory bodies, such as the National Health Surveillance Agency, becomes fundamental to ensuring the conformity of food products with established standards.

In addition, the quality of the water used in irrigation constitutes a critical factor in food safety. As evidenced by Camargo et al. (2025), contamination of groundwater may directly compromise the sanitary quality of vegetables, representing a significant risk to consumer health. This finding reinforces the need for integrated surveillance of natural resources, articulating agronomic knowledge with sanitary control practices, in order to prevent the dissemination of contaminants throughout the production chain.

In the field of agricultural practices, the literature points to the relevance of adopting sustainable models as a strategy for risk mitigation. Machado et al. (2024) highlight that the training of producers, especially in urban and family farming systems, contributes to improving food quality and reducing the

use of chemical inputs. In a convergent manner, Moura et al. (2025) show that family farming plays a fundamental role in promoting food safety, especially when associated with agroecological practices and the strengthening of food sovereignty.

The discussion also shows that sanitary surveillance plays a central role in preventing health problems related to the consumption of contaminated food. As established by Brazilian regulations, such as RDC No. 216/2004 and No. 331/2019, there is a set of guidelines aimed at guaranteeing hygienic-sanitary conditions and defining microbiological standards, which must be strictly followed throughout the production chain. In this sense, Moura et al. (2023) highlight that food and nutritional surveillance contributes significantly to the identification of vulnerabilities and to the implementation of preventive actions within the scope of public health.

Another relevant aspect concerns plant health surveillance, which has been identified as a strategic element for the sustainability of agricultural systems. Soubeyrand et al. (2024) advocate the adoption of proactive and integrated approaches to monitoring pests and diseases, with the aim of anticipating risks and reducing impacts on food production. This perspective reinforces the importance of the interface between agronomy and sanitary surveillance, since plant health is directly related to the quality and safety of agricultural products.

Furthermore, the use of technologies and data-based systems for contaminant monitoring has emerged as a relevant trend in the field of sanitary surveillance. Popescu et al. (2025) highlight that data-driven approaches allow greater precision in risk identification and contribute to more effective decision-making. This technological innovation may be incorporated into national surveillance systems, expanding their response capacity and promoting greater efficiency in sanitary control.

Within the scope of public policies, the discussion highlights the importance of instruments such as the National Food and Nutrition Security Plan, which proposes intersectoral actions aimed at guaranteeing the human right to adequate food. As Pedrotti et al. (2022) point out, the evolution of food security policies in Brazil reflects significant advances, although challenges related to inequality of access

and food quality still persist. In this context, integration among different sectors, including health, agriculture, and the environment, is fundamental for strengthening actions to promote food safety.

Finally, it is observed that the integration between agronomy and sanitary surveillance not only contributes to risk control, but also promotes the construction of more sustainable and resilient food systems. The articulation among technical knowledge, appropriate agricultural practices, and regulatory actions is configured as an essential element for the protection of public health. Thus, as argued by Oliveira et al. (2025), food safety must be treated as a strategic priority, requiring continuous investments in research, innovation, and integrated management in order to ensure food quality and the health of the population.

CONCLUSION

The present research demonstrates that the integration between agronomy and sanitary surveillance constitutes a structural component for consolidating food and nutritional security, particularly in the context of increasing complexity of production systems and risks associated with the food chain. Analysis of the selected studies showed that articulation between sustainable agronomic practices and sanitary regulatory actions favors the construction of safer, more resilient food systems aligned with public health principles.

In response to the guiding question, it is concluded that this interaction enhances the capacity for surveillance, prevention, and intervention regarding major risk factors affecting food production and consumption. Integrated action enables not only contaminant monitoring but also the implementation of preventive practices that reduce population exposure to harmful agents, promoting greater effectiveness in collective health actions.

Regarding the established objectives, the study successfully critically analyzed the relevance of the integrated approach between agronomy and sanitary surveillance, highlighting its contribution to strengthening food safety. Additionally, key challenges related to intensive pesticide use, contamination of

water resources, the presence of residues in food, and limitations of monitoring systems were discussed, emphasizing the need for more robust and articulated strategies.

The results indicate that indiscriminate use of chemical inputs, combined with fragile regulatory mechanisms, represents one of the main obstacles to ensuring the sanitary quality of food. The persistence of pesticide residues and vulnerability of irrigation water quality reinforce the importance of integrated surveillance systems. Conversely, agroecology-based practices, integrated pest management, and producer training show significant potential for risk mitigation and promotion of safer, more sustainable food.

From a scientific perspective, this research contributes by systematizing contemporary evidence and highlighting the need for an interdisciplinary approach to addressing food safety challenges. Integration between agronomy and sanitary surveillance is presented as an essential strategy for articulating agricultural production, sanitary control, and public policies, broadening understanding of the determinants influencing food quality and their impacts on population health.

From a social and sanitary perspective, the findings reinforce that ensuring safe food is directly linked to protecting collective health and promoting the human right to adequate food. Integrated action between agricultural and sanitary sectors contributes to reducing health problems arising from consumption of contaminated food, while strengthening preventive and educational actions aimed at populations and producers.

Finally, future research is recommended to deepen investigation into the incorporation of digital technologies and intelligent systems for food risk monitoring, as well as to evaluate the effectiveness of public policies aimed at integrating agronomy and sanitary surveillance in different regional contexts. Studies exploring the interface between innovation, sustainability, and sanitary regulation may expand available evidence and support the formulation of more effective strategies to promote safe, equitable, and sustainable food systems.

REFERENCES

Barroso, Gabriela Madureira et al. Pesticide residue management in Brazil: implications for human health and the environment. Sustainability, v. 17, n. 9, p. 3891, 2025.

Brasil. Agência Nacional de Vigilância Sanitária. Programa de análise de resíduos de agrotóxicos em alimentos (PARA) [Program for pesticide residue analysis in foods (PARA)]. Brasília: ANVISA, [s.d.]. Relatórios periódicos.

Brasil. Agência Nacional de Vigilância Sanitária. Resolução RDC nº 216, de 15 de setembro de 2004 [RDC Resolution No. 216, of September 15, 2004]. Dispõe sobre regulamento técnico de boas práticas para serviços de alimentação [Provides for the technical regulation of good practices for food services]. Brasília: ANVISA, 2004.

Brasil. Agência Nacional de Vigilância Sanitária. Resolução RDC nº 275, de 21 de outubro de 2002 [RDC Resolution No. 275, of October 21, 2002]. Regulamento técnico de procedimentos operacionais padronizados aplicados aos estabelecimentos produtores de alimentos [Technical regulation of standardized operating procedures applied to food-producing establishments]. Brasília: ANVISA, 2002.

Brasil. Ministério da Agricultura e Pecuária. Plano nacional de controle de resíduos e contaminantes (PNCRC) 2023 [National plan for control of residues and contaminants (PNCRC) 2023]. Brasília: MAPA, 2023.

Brasil. Ministério da Saúde. Plano nacional de segurança alimentar e nutricional (PLANSAN) [National food and nutrition security plan (PLANSAN)]. Brasília: Ministério da Saúde, 2016.

Camargo, Mariana Souza et al. Qualidade sanitária da água subterrânea aplicada na irrigação de hortaliças no sertão produtivo baiano [Sanitary quality of groundwater used in vegetable irrigation in the productive backlands of Bahia]. Cadernos Macambira, v. 10, n. 4, p. 010041765, 2025.

Domene, S. M. Á. et al. Segurança alimentar: reflexões sobre um problema complexo [Food security: reflections on a complex problem]. Estudos Avançados, v. 37, n. 109, p. 181–206, 2023.

Hess, S. C.; Bombardi, L. M.; Nodari, R. O.; Soares, M. R.; Meirelles, L. C.; Mua, C. T. B.; Augusto, L. G. da S. Agrotóxicos no Brasil: cenários de políticas sinistras [Pesticides in Brazil: scenarios of sinister policies]. Revista da ANPEGE, v. 20, n. 42, 2024.

Leite, Poliana Nicéia Ferreira; Vilarinho, Grace; Inoue, Miriam Hiroko. Resíduos de agrotóxicos em alimentos no Brasil (2018 a 2025): desafios e monitoramento [Pesticide residues in foods in Brazil (2018 to 2025): challenges and monitoring]. Aracê, v. 7, n. 10, p. e9234, 2025.

Machado, Helena et al. Capacitação de horticultores urbanos: uma ação de soberania e segurança alimentar através da agricultura de base ecológica [Training urban horticulturists: an action for food sovereignty and food security through ecologically based agriculture]. Cadernos de Agroecologia, v. 19, n. 1, 2024.

Messias, Gabriela Aparecida. Vigilância sanitária e perícia ambiental para o turismo no Brasil [Health surveillance and environmental forensics for tourism in Brazil]. In: Aurum Editora, p. 237–247, 2025.

Moura, Beatriz Gouveia et al. Contribuição da vigilância alimentar e nutricional para a segurança alimentar e nutricional: um estudo qualiquantitativo [Contribution of food and nutrition surveillance to food and nutrition security: a qualitative-quantitative study]. Ciência & Saúde Coletiva, v. 30, supl. 2, p. e18922023, 2025.

Moura, Marta Aparecida et al. Segurança alimentar e agricultura familiar em tempos de pandemia: o caso dos assentamentos Ribeirão Bonito em Teodoro Sampaio, SP-Brasil [Food security and family farming in times of pandemic: the case of the Ribeirão Bonito settlements in Teodoro Sampaio, SP-Brazil]. Scripta Nova. Revista Electrónica de Geografía y Ciencias Sociales, v. 29, n. 1, p. 215–243, 2025.

Oliveira, V. da S.; Santos, G. Q. V. dos; Lara, M. A. de; Morini, A. C.; Teixeira, A. I. P. Segurança dos alimentos e segurança alimentar: uma revisão narrativa [Food safety and food security: a narrative review]. Revista Foco, v. 18, n. 10, p. e9958, 2025.

Pedrotti, Fabricio et al. Segurança alimentar e nutricional no Brasil: ontem, hoje e o amanhã [Food and nutrition security in Brazil: yesterday, today, and tomorrow]. Revista de Alimentação e Cultura das Américas, v. 3, n. 2, p. 176–188, 2022.

Popescu, Diana Ionela et al. Pesticide surveillance in fruits and vegetables from Romanian supply: a data-driven approach. Journal of Xenobiotics, v. 15, n. 4, p. 104, 2025.

Soubeyrand, Samuel et al. Building integrated plant health surveillance: a proactive research agenda for anticipating and mitigating disease and pest emergence. CABI Agriculture and Bioscience, v. 5, n. 1, p. 72, 2024.