FOOD SECURITY IN THE CONTEXT OF ENVIRONMENTAL RISKS: PUBLIC PERCEPTION ASSESSMENT

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Abstract: *Factors such as climate change, changes in plant and animal life, and the spread of diseases have an increasing impact on food production, which can lead to serious consequences for food security. The paper explores the complex issues of food security in relation to environmental impacts and associated risks. Through an analysis of various environmental challenges, such as climate change and environmental pollution, the paper explores the associated risks and potential consequences for food systems. Additionally, it investigates the increased risks of disease spread, contamination of food by chemicals and microorganisms, and the depletion of essential resources for food production. Furthermore, this paper presents the outcomes of a survey aimed at understanding and analyzing public perceptions of food security within the context of environmental risks. Through the analysis of citizens' perceptions, it investigates how people perceive these risks and what their attitudes and concerns are. According to the research results, most respondents are aware of environmental pollution and its impact on food security. Almost all respondents believe that environmental risks affect food security, and that pollution affects food quality, with almost 50% of respondents changing their food and beverage consumption habits due to concerns about environmental risks and noticing changes in the quality and availability of certain foods.*

Keywords: *food, security, environment, perception, risk*

1. INTRODUCTION

In today's world, food safety is becoming an increasingly important issue given the growing impact of various environmental factors. Climate change, changes in plant and animal life, and the spread of diseases are all significant factors that can seriously threaten food safety. These factors can have a wide range of consequences, including food contamination, loss of vital resources for food production, and increased risk of disease spread. Therefore, it is crucial to explore the complex issue of food safety in the context of environmental impacts and associated risks.

2. ENVIRONMENTAL RISKS AND THEIR IMPACT ON FOOD SAFETY

Environmental risks can have a significant impact on food safety. This includes the contamination of soil, water, and air with chemicals such as heavy metals, pesticides, and other pollutants. Such contaminants can enter food chains through the cultivation of plants or the harvesting of food from the environment, potentially leading to food contamination and health problems for consumers. Climate

change can also exacerbate these issues, increasing the risk of extreme weather conditions that can affect plant cultivation and soil quality (Feliciano et al., 2022).

2.1. IMPACT OF CLIMATE CHANGE ON FOOD SAFETY

Climate variations significantly affect agriculture, and climate change is a key factor for food safety. It leads to disruptions in ecosystems and agriculture, increasing the risk of droughts, storms, and other extreme weather conditions. Anthropogenic factors, such as greenhouse gas emissions from industry and agriculture, further intensify these changes. Additionally, climate changes can directly affect agricultural practices and productivity, posing a threat to food supply and the economy (Haile, 2020). It is estimated that in the 21st century, up to 25% of Croatia's economic sector will be exposed to the dangers of climate change, which will have a detrimental impact on human health, not only due to rising temperatures but also because of diseases transmitted by birds and insects (EFSA, n.d.). Therefore, it is necessary to take adaptation and mitigation measures to reduce vulnerability to these changes and preserve food safety (MPRRR, 2010; Fung et al., 2018).

2.2. SPREAD OF DISEASES

The health status of animals directly affects public health and food safety. Animal diseases can be transmitted to humans and cause epidemics, as well as cause food safety issues, leading to serious health and economic consequences. After the outbreak of foot-and-mouth disease in the United Kingdom in 2001, which spread to other countries, costs reached as high as 12 billion euros (Jamal & Belsham, 2013). The crisis caused by bovine spongiform encephalopathy in the 1990s, also centered in the United Kingdom, resulted in costs of 3 billion euros (Richt et al., 2007). This led to a reduction in exports and a decrease in beef prices. The prevalence of animal diseases varies across different parts of the EU. The occurrence of certain diseases is significantly influenced by climate, agricultural practices, veterinary practices, and animal movements (Haile, 2020). Recently recorded diseases that have crossed borders include African swine fever (Lithuania, Estonia, Latvia, Poland), avian influenza (Netherlands, Germany), and bluetongue disease (North Africa, Greece, Italy, Spain, Portugal). Climate change may facilitate the spread of these diseases, further complicating the situation (Samy & Peterson, 2016; Brand & Keeling, 2017).

2.3. CHANGES IN PLANT AND ANIMAL LIFE

Changes in sea temperatures have caused negative effects in the aquatic ecosystem. Numerous marine species can only survive at certain temperatures. Climate change impacts ecosystems and biodiversity, which can have serious consequences for the agricultural sector and food supply (Vogel & Meyer, 2018). The increase in sea temperatures, changes in water and atmospheric acidity, and other environmental changes lead to disruptions in the life cycles and migrations of plants and animals. This affects the productivity of fisheries, agriculture, and other sectors. The effect of higher CO_2 levels will be more pronounced in wheat crops, as they are sensitive to CO_2 deficiencies (Högy & Fangmeier, 2008). Increased concentrations of carbon dioxide can reduce the concentration of micronutrients in plant crops, which can impact herbivores as they will need to consume larger amounts of food to compensate for the required protein levels (Hamann et al., 2021). Higher CO_2 levels also lead to reduced nitrogen absorption, which will affect crops with lower nutritional values. Consequently, the greatest impact will be on crops in poor countries that cannot compensate by eating larger quantities of food and do not have access to diverse diets (King et al., 2017). Although animals are adaptable to temperature changes, a

loss in productivity due to thermoregulation is inevitable. Frequently, due to the lack of basic living conditions for livestock and increasingly unfavorable weather conditions, livestock death or loss of productivity occurs (Uyttendaele et al., 2015).

2.4. BIOLOGICAL AND CHEMICAL HAZARDS

Microorganisms and parasites in food pose a serious risk to human health and food safety (Jiang et al., 2021; Oskarsson, 2012). Climate change can affect their distribution and prevalence, further complicating the issue. Therefore, it is important to enforce strict hygiene standards, food monitoring, and proper food preparation to reduce the risk of foodborne infectious diseases. Additionally, various chemical substances toxic to humans are present in many raw materials used in the food industry, and excessive consumption of these substances can lead to health problems (Jiang et al., 2021). Chemical hazards can be categorized into natural toxins, environmental contaminants, contaminants arising during food processing or storage, food contaminants generated during production processes, processing, or storage, contaminants from materials and articles in contact with food, and food additives (Zormpas, 2024). Natural toxins include nitrates (EFSA, n.d.; Tamme, 2010), while pesticides are considered poisonous, with many pesticides being shown to be carcinogenic, toxic, reproductive toxicants, and hazardous to health (Marinculić et al., 2009; Carvalho, 2017).

3. MATERIALS AND METHODS

Secondary data were collected through a review of scientific research, articles, books, and other relevant literature sources. Key search terms included climate change, environmental pollution, and food safety. The gathered data were thoroughly analyzed to identify key aspects of environmental changes affecting food production, safety, and quality. In the second part of the study, public perception of food safety in the context of environmental risks was analyzed through a survey.

Survey design: The survey consisted of several sections related to perceptions of food safety, awareness of environmental risks, changes in food consumption habits, and general attitudes towards the impact of the environment on food safety, totaling 35 questions. Most questions were closed-ended, and constructs were measured using statements where respondents rated their level of agreement on a 5-point Likert scale (from 1 - strongly disagree to 5 - strongly agree).

Data collection and survey implementation method: Data were collected via an online survey accessible to respondents over a period of two weeks. The survey was distributed through online platforms. Implementation of the survey involved clearly framing questions, providing response options, and ensuring respondent anonymity to secure honest answers.

Participant selection: A total of 199 respondents participated in the survey. Respondents were selected from a broad population to obtain representative results. Participants included individuals from various age groups, educational backgrounds, and socioeconomic statuses.

Data analysis: Data collected from the survey were statistically analyzed to identify trends, patterns, and significant differences in perceptions of food safety among respondents. Descriptive analysis was conducted, including calculating means, frequencies, and percentages for relevant variables in the study.

4. RESULTS AND DISCUSSION

Out of a total of 199 respondents, 36% of the participants were male, comprising 71 men, while 64% were female, totaling 128 women (Figure 1).

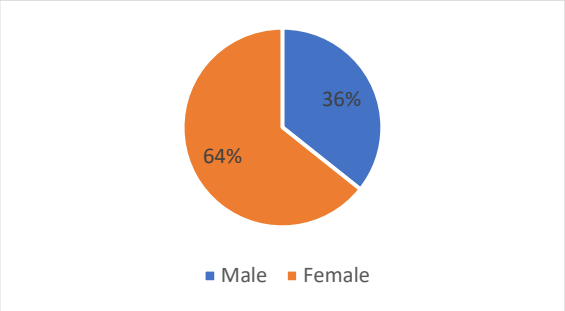

Figure 1. Survey question 1 - What is your gender?

Regarding the age structure, 20% of the respondents were in the age group of 18 to 25 years, which corresponds to 40 individuals. The age group of 26 to 35 years included 21% of the respondents, totaling 42 individuals. A notable portion of respondents, 38% of the total, fell within the age range of 36 to 45 years, comprising 76 individuals. Finally, 21% of the respondents, or 41 individuals, were aged 46 years and older (Figure 2).

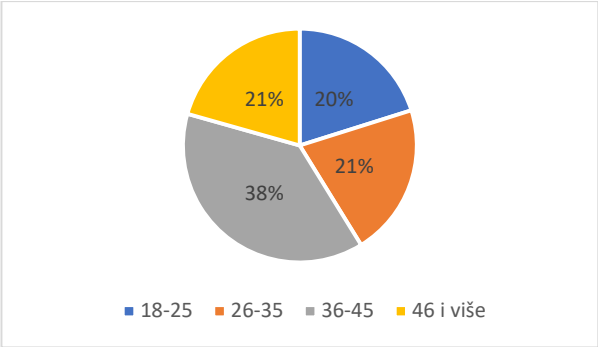

Figure 2. Survey question 2 - How old are you?

Out of the total number of respondents, 2 had a lower level of education, 99 had completed secondary school, 28 respondents had completed bachelor's degree, 62 respondents had completed master's degree, and 8 indicated another level of education (Figure 3).

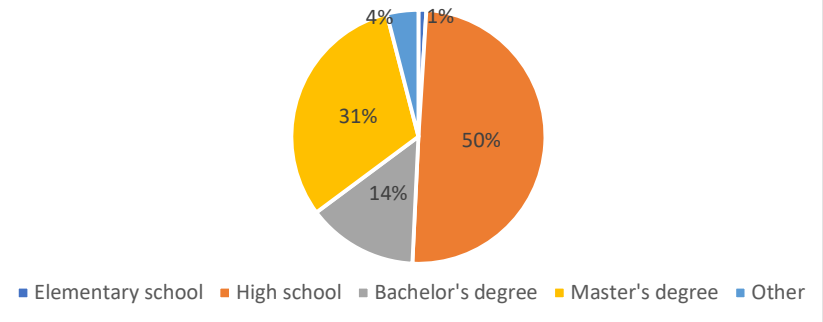

Figure 3. Survey question 3 - What is the highest level of education you have achieved?

Out of the total number of respondents, 88 indicated that they reside in rural areas, which accounts for 44%, while 56%, or 111 respondents, stated that they live in urban areas (Figure 4).

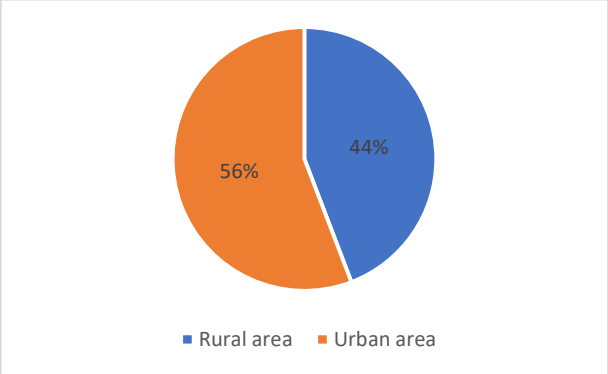

Figure 4. Survey question 4 - Where do you live?

Out of the total number of respondents, 86% are familiar with the issue of environmental pollution and its impact on food safety, while 14% are not familiar with the issue, totaling 28 respondents (Figure 5). This finding indicates a high level of awareness among the majority of respondents regarding the connection between environmental pollution and food safety. This awareness is crucial for understanding public perception and potentially influencing attitudes and behaviors related to food consumption and environmental sustainability.

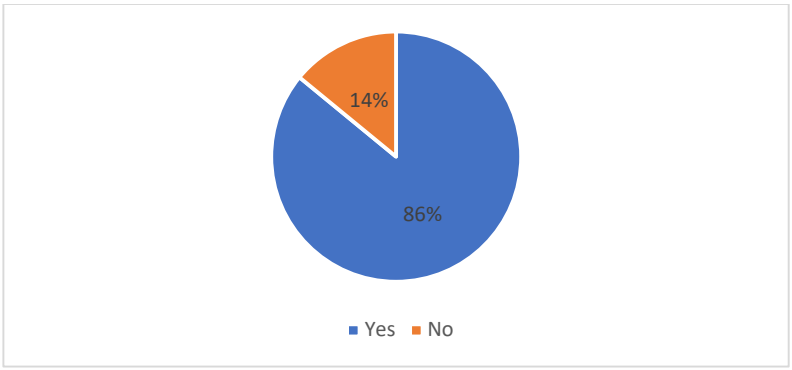

Figure 5. Survey question 5 - Are you aware of the issue of environmental pollution and its impact on food safety?

According to the responses to the sixth survey question "Do you believe that environmental risks play a significant role in food safety," as depicted in Figure 6, all respondents provided their answer. Specifically, 123 respondents answered that they completely believe environmental risks play a significant role in food safety, while 52 respondents indicated they believe environmental risks do play a significant role in food safety, totaling 88%. The remaining 12% mostly or completely do not believe that environmental risks impact food safety. These results highlight a strong consensus among the majority of respondents regarding the significant role of environmental risks in food safety. This perception underscores the importance of environmental factors in shaping public attitudes and potentially influencing behaviors related to food consumption practices and environmental stewardship. Such insights are crucial for developing targeted interventions and policies aimed at enhancing food safety in the context of environmental challenges..

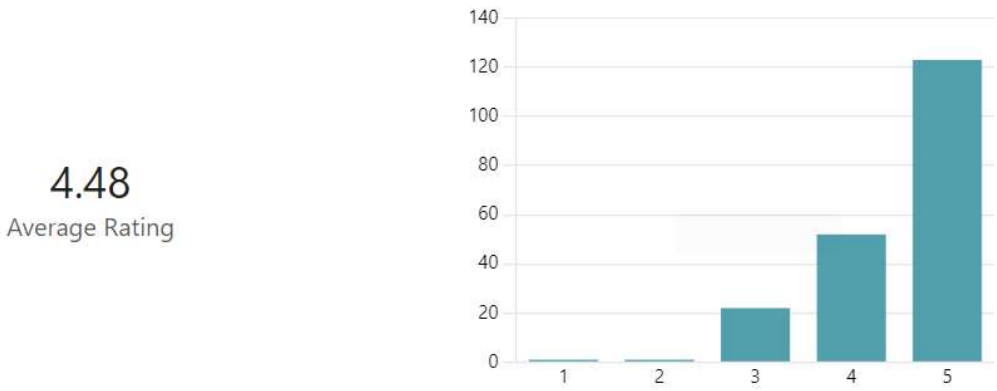

Figure 6. Survey question 6 - Do you believe that environmental risks play a significant role in food safety?

Out of the total number of respondents, 189 believe that marine pollution affects the quality of food, which constitutes 95% of the respondents, while 5%, or 10 respondents, do not believe that marine pollution affects food safety (Figure 7). This finding indicates a strong consensus among the majority of respondents regarding the impact of marine pollution on food quality.

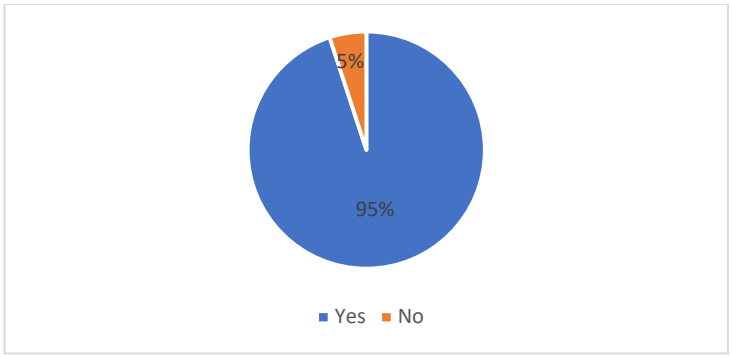

Figure 7. Survey question 7 - Do you think that sea pollution affects food quality?

Out of the total number of respondents, 30% use livestock manure as fertilizer, while 70% do not use livestock or mineral fertilizers (Figure 8). This result provides insight into agricultural practices among the survey participants. The significant portion (30%) using livestock manure highlights a reliance on organic fertilizers, which can have implications for soil health, crop productivity, and potentially food safety depending on the management practices. Understanding the use of fertilizers is crucial for assessing environmental impacts and sustainability in agriculture, which are integral to ensuring food security and safety.

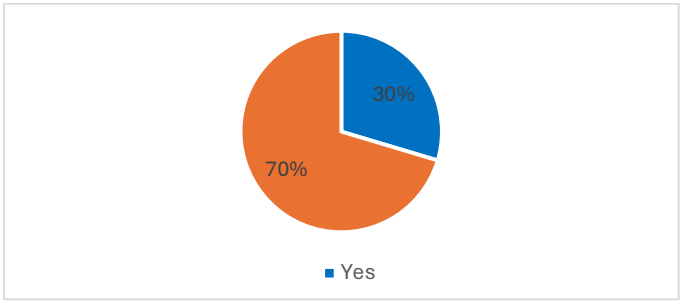

Figure 8. Survey question 8 - Do you use livestock or mineral fertilizers?

According to the responses to the ninth survey question "Do you agree that the use of livestock and mineral fertilizers causes pollution," depicted in Figure 9, all respondents provided their answers. Specifically, 84 respondents mostly agree that the use of livestock and mineral fertilizers causes pollution (42%), 39 respondents agree that the use of livestock and mineral fertilizers causes pollution (19%), and only 45 respondents completely agree (22%) that the use of livestock and mineral fertilizers causes pollution. The remaining 15% of respondents do not agree at all that the use of livestock and mineral fertilizers causes pollution. These findings indicate varying levels of agreement among respondents regarding the environmental impacts of livestock and mineral fertilizers. The majority either agree or strongly agree that these fertilizers contribute to pollution, highlighting awareness and concerns about agricultural practices and their effects on the environment.

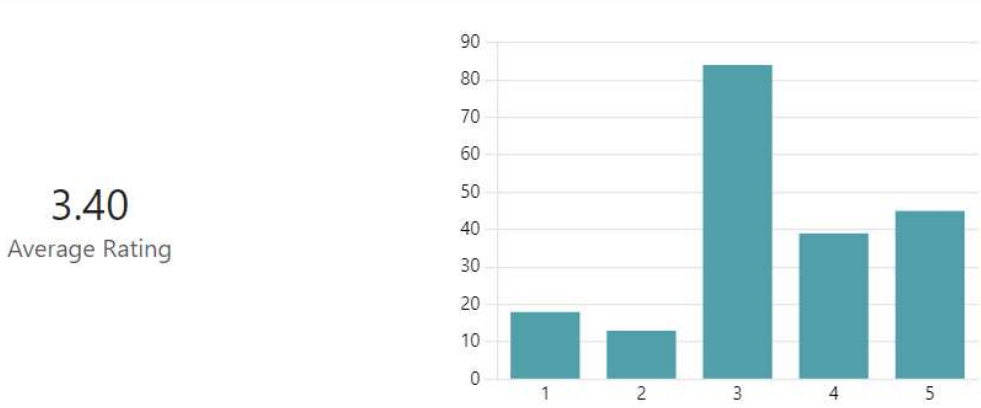

Figure 9.Survey Question 9 - Do you agree that the use of livestock and mineral fertilizers causes pollution?

In response to the tenth survey question "To what extent do you consider adequate and responsible behavior towards the environment," all respondents provided their answers. Specifically, 82 respondents answered that they consider adequate and responsible behavior towards the environment (41%), 57 respondents completely consider adequate and responsible behavior towards the environment, 52 respondents mostly consider adequate and responsible behavior towards the environment, while only 4% of respondents rated 1 and 2, indicating they do not consider or partially consider adequate and responsible behavior towards the environment. The distribution of respondents' answers is shown in Figure 10.

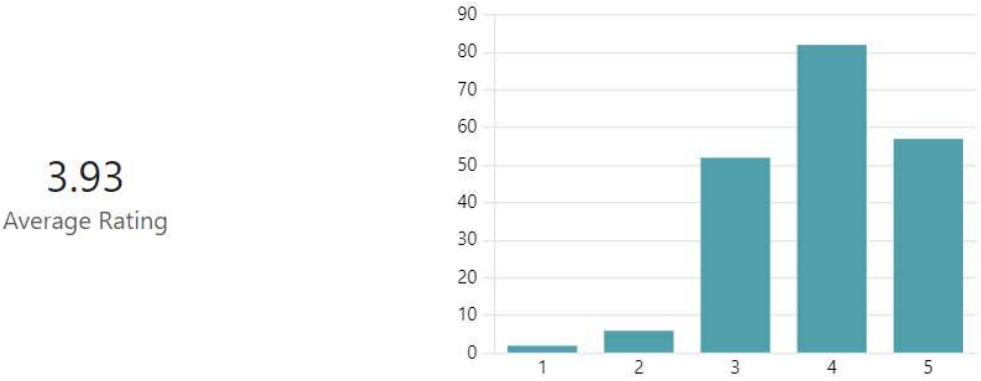

Figure 10. Survey question 10 - To what extent do you care about adequate and responsible behavior towards the environment?

In response to the 11th survey question "Do you believe that a large percentage of pollution is caused by the issue of managing (non) returnable packaging," all respondents provided their answers. The respondents gave an average rating of 4.23 to this survey question (Figure 11), indicating that the majority of respondents believe that (non) returnable packaging contributes significantly to pollution. Specifically, 78% of respondents fully believe or believe that a large percentage of pollution is caused by the issue of managing (non) returnable packaging, while only 3%, or 8 respondents, do not believe at all that a large percentage of pollution is caused by this issue.

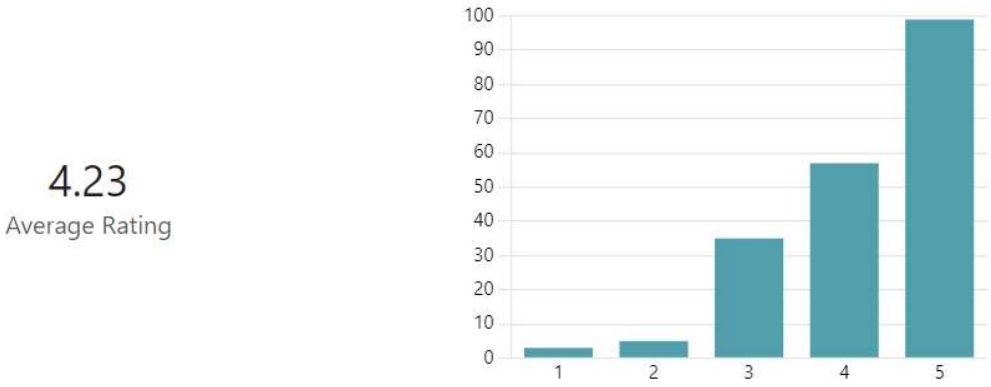

Figure 11. Survey question 11 - Do you think that a large percentage of pollution is caused by the problem of managing (non)returnable packaging?

In response to the 12th survey question about the perceived safety of products they purchase for consumption, all respondents provided their feedback. The average rating given to this question was 2.85, as shown in Figure 12. This average score indicates that a majority of respondents (53%) do not completely trust that all products they buy are consistently safe for consumption. This finding suggests that there is a notable level of concern among respondents regarding the safety of consumer products. While 30 respondents believe that all products they purchase are always safe for consumption, indicating some level of trust, only a small fraction of respondents (5 individuals) fully trust in the consistent safety of the products they consume.

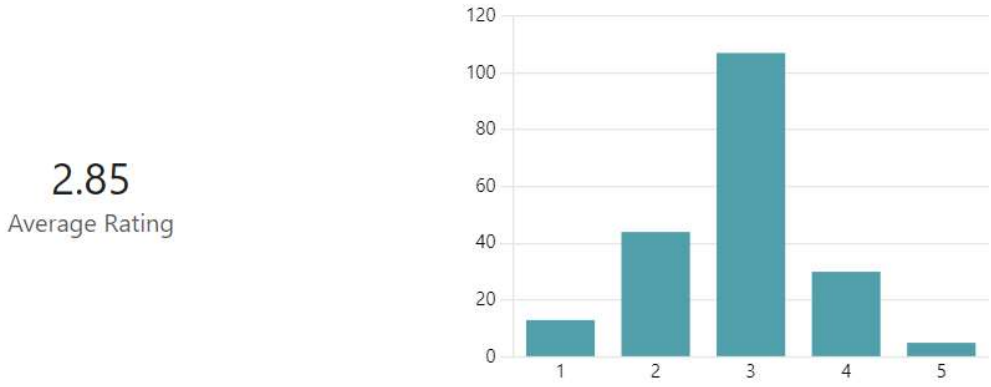

Figure 12. Survey question 12 - To what extent do you consider the products you buy to be always safe for consumption?

From the total number of respondents, the average response to the 13th survey question "Do you consider environmental risks when choosing food?" indicates varying levels of consideration. Approximately 25 to 40 respondents do not consider environmental risks when selecting food, while 46

respondents consider environmental risks to some extent. Only 17 respondents fully consider environmental risks when choosing food. The majority of respondents, 73 individuals, sometimes think about environmental risks when selecting food, as depicted in Figure 13.

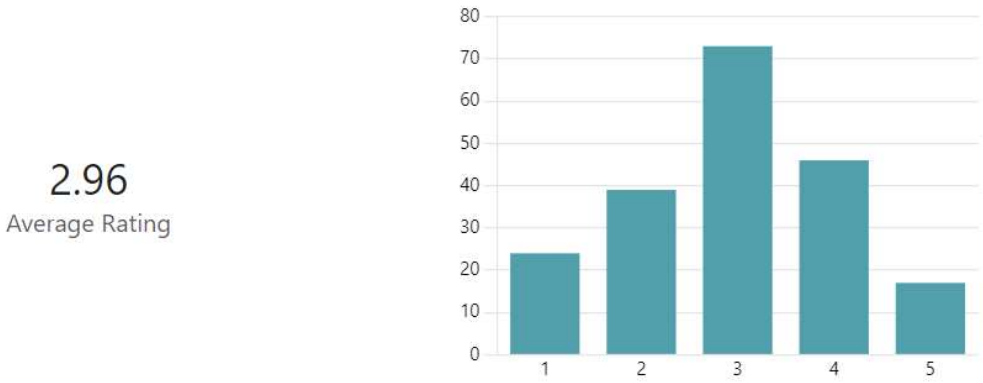

Figure 13. Survey question 13 - Do you consider environmental risks when choosing food?

All respondents participated in answering the 14th survey question "Do you consider food labeling important regarding environmental risks?" The results show a diverse perspective among participants. A significant majority, comprising 63% of respondents, believe that food labeling is crucial when considering environmental risks associated with food products. This indicates a strong awareness and concern among consumers about how their food choices impact the environment. In contrast, 10% of respondents do not perceive food labeling as important in relation to environmental risks, suggesting a smaller but notable segment of the population that may prioritize other factors or be less informed about the environmental implications of food choices. Meanwhile, 26% of respondents view the importance of food labeling regarding environmental risks with some degree of consideration, highlighting a middle ground between those who fully endorse its significance and those who do not. These findings underscore the importance of clear and informative food labeling practices to help consumers make informed choices that align with their environmental values.

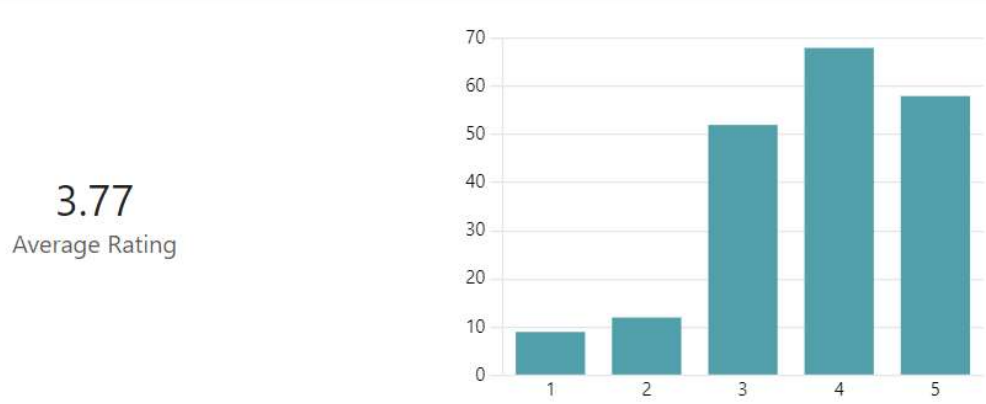

Figure 14. Survey question 14 - Do you consider food labeling important regarding environmental risks?

Figure 15 illustrates how respondents answered the 15th survey question, "Are you aware of the consequences of consuming contaminated food?" All participants provided their responses to this question. The results show that a significant majority, comprising 92% of respondents, indicated they are aware of the potential consequences associated with consuming contaminated food. This high awareness among respondents reflects a strong recognition of the health and safety risks posed by

consuming food that may be contaminated. Conversely, a very small percentage, only 1% of respondents, stated they are not aware of these consequences. This finding suggests a small but noteworthy segment of the population may lack understanding or awareness regarding the risks associated with consuming contaminated food.

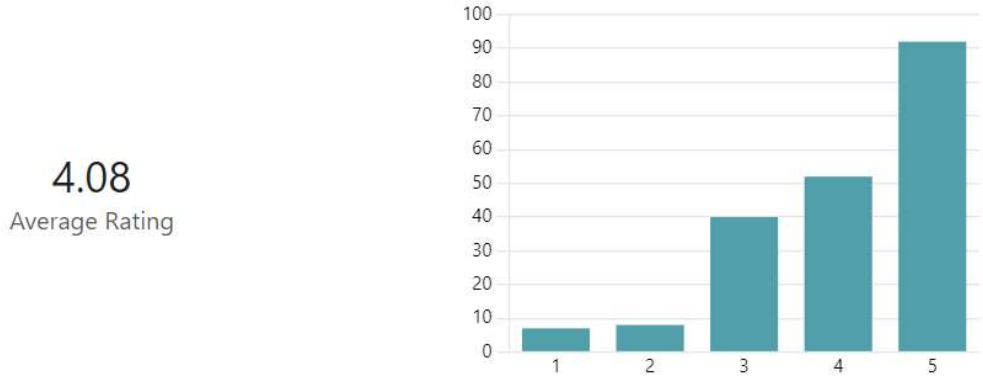

Figure 15. Survey question 15 - Are you aware of the consequences of consuming contaminated food?

According to the survey results, the majority of respondents (72%) are willing to pay more money for food that is produced in a way that minimizes environmental risks (Figure 16). This finding indicates a strong consumer preference for environmentally sustainable practices in food production. It reflects a growing awareness and concern among consumers about the environmental impact of their food choices. This willingness to pay more for environmentally friendly food highlights a shift towards sustainable consumption patterns. It suggests that consumers are increasingly prioritizing factors such as organic farming practices, reduced use of pesticides, sustainable packaging, and ethical sourcing in their purchasing decisions.

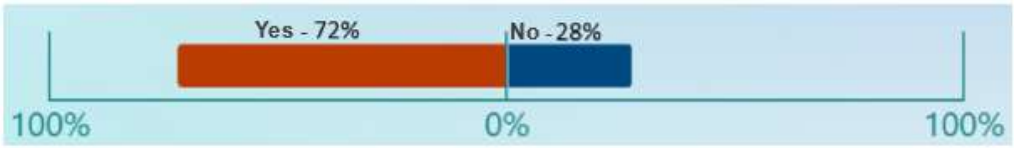

Figure 16. Survey question 16 - Are you willing to pay more for food produced in a way that minimizes environmental risks?

Most respondents (87%) are concerned about the use of pesticides in food production (Figure 17). This reflects a growing awareness and apprehension among consumers regarding the health and environmental implications associated with pesticide use in agriculture.

Figure 17. Survey question 17 - Are you concerned about the use of pesticides in food?

Furthermore, a significant majority of respondents (149) indicated that they believe, with some fully believing, that pesticides can be reduced in food production. This insight emerged from responses to the 18th survey question, where all participants provided their input. Only a small minority, comprising

3% of respondents, expressed skepticism or disbelief regarding the possibility of reducing pesticides in food production to any meaningful extent (Figure 18).

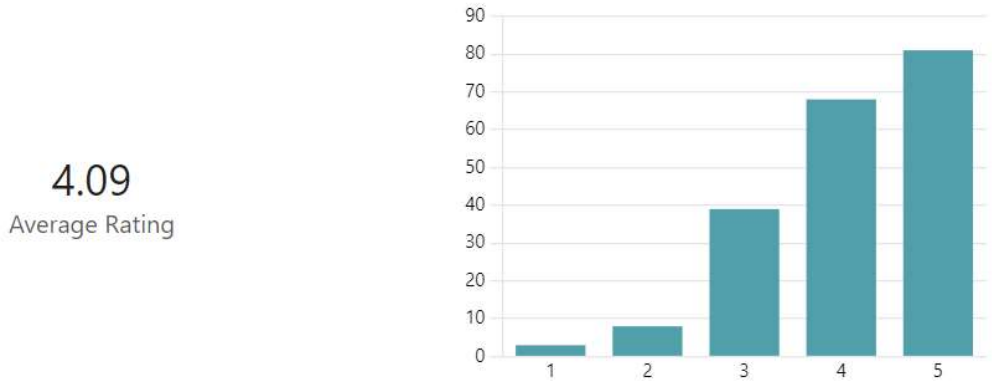

Figure 18. Survey question 18 - Do you think that pesticides can be reduced to some extent in food production?

From the total number of respondents, 38% reported experiencing negative health effects due to consuming contaminated food (Figure 19).

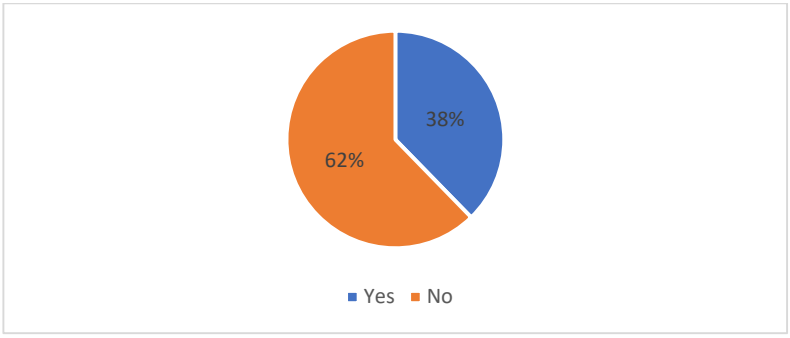

Figure 19. Survey question 19 - Have you ever experienced any negative health effects from contaminated food?

From the total number of respondents, 70% are aware of the impact of climate change on food security, which amounts to 140 respondents, while 30% have not heard about the impact of climate change on food security (Figure 20). This awareness among the majority of respondents highlights a growing recognition of the link between climate shifts and food safety, underscoring the need for informed approaches to mitigate these risks in agricultural practices and food systems.

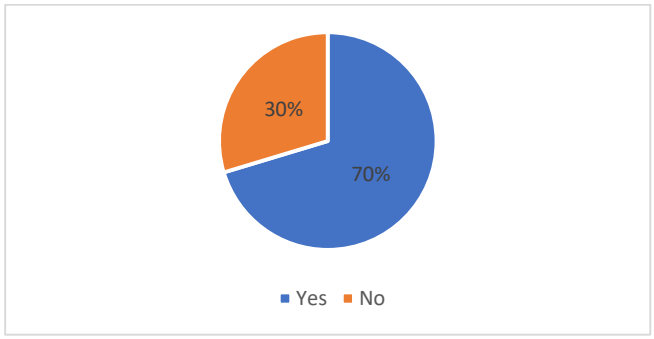

Figure 20. Survey question 20 - Have you heard about the impact of climate change on food safety?

In the 21st survey question, respondents were asked whether they believe environmental risks can lead to foodborne diseases. All participants provided an answer to this question. Specifically, 125 respondents believe or fully believe that environmental risks can lead to foodborne diseases, while 63 respondents partially believe that environmental risks can lead to foodborne diseases. Only 11 respondents do not believe at all that environmental risks can lead to foodborne diseases. Responses to this question are depicted in Figure 25.

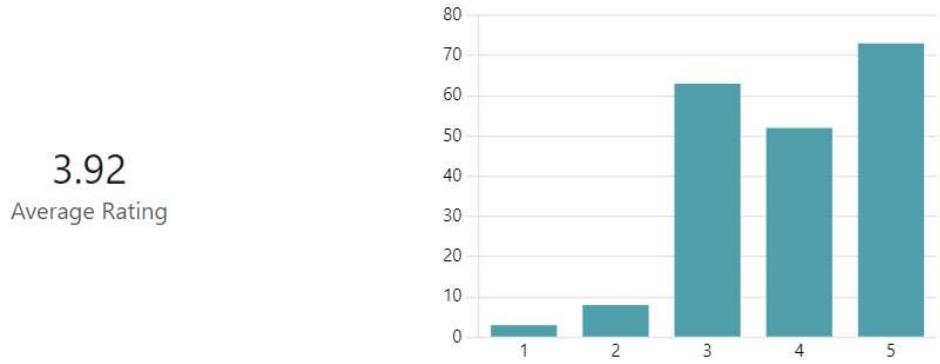

Figure 21. Survey question 21 - Can environmental risks lead to foodborne diseases?

Nearly half of respondents have altered their food (47%) and beverage (50%) consumption habits due to concerns about environmental risks (Figure 21). This finding highlights a significant shift in consumer behavior driven by increasing awareness of environmental issues related to food production and consumption. Such changes may reflect a growing preference for sustainable and environmentally friendly products, indicating a potential shift towards more responsible consumer choices in response to environmental challenges.

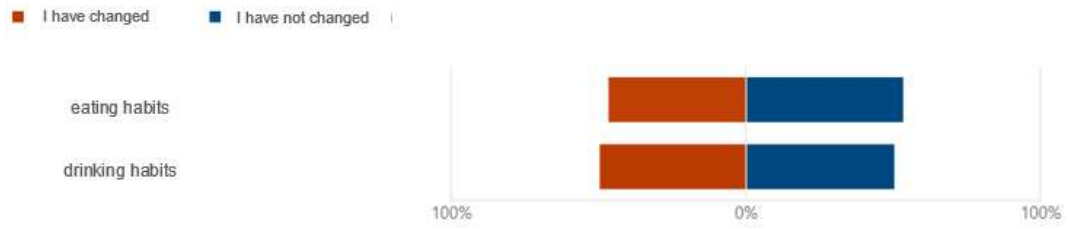

Figure 22. Survey question 22 - Have you changed your eating/drinking habits due to your concern about environmental risks?

According to the respondents' answers shown in Figure 23, more than half of respondents have noticed changes in the availability (56%) and quality (60%) of certain foods due to environmental risks. This suggests a significant impact of environmental factors on food supply chains, potentially influencing the variety and reliability of food options accessible to consumers. Such observations underscore the complex interplay between environmental challenges and food security, prompting considerations for resilience and sustainability in food systems planning and management.

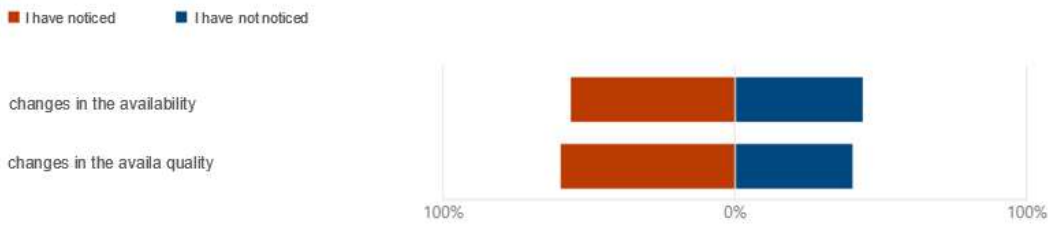

Figure 23. Survey Question 23 - Have you noticed changes in the availability and quality of certain foods due to environmental risks?

From the total number of respondents, 24%, or 47 individuals, would participate in educational campaigns and programs related to the impact of environmental pollution (Figure 24). Conversely, 19% indicated they would not participate, while the majority, 57% of respondents, expressed a potential interest in participating. These findings show different levels of interest in environmental education initiatives among those surveyed, suggesting opportunities for targeted outreach and awareness campaigns.

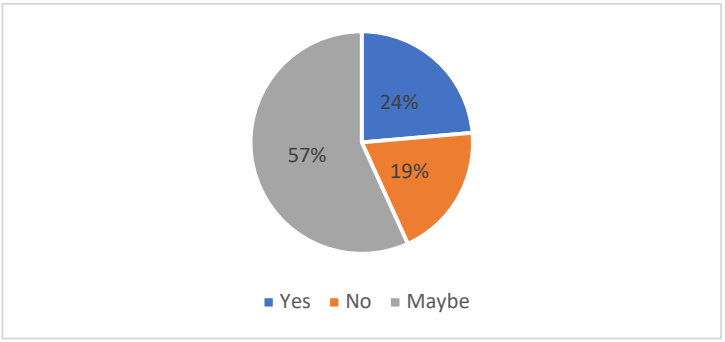

Figure 24. Survey question 24 - Would you participate in educational campaigns or programs related to the impact of environmental pollution?

Among the surveyed individuals, 20% consistently check food labels, demonstrating a regular practice. Furthermore, 49 respondents do so frequently, indicating a notable degree of attention. Another 93 respondents check food labels occasionally, suggesting periodic interest. In contrast, 37 respondents never check food labels, indicating a substantial portion of the surveyed population does not prioritize label inspection (Figure 25).

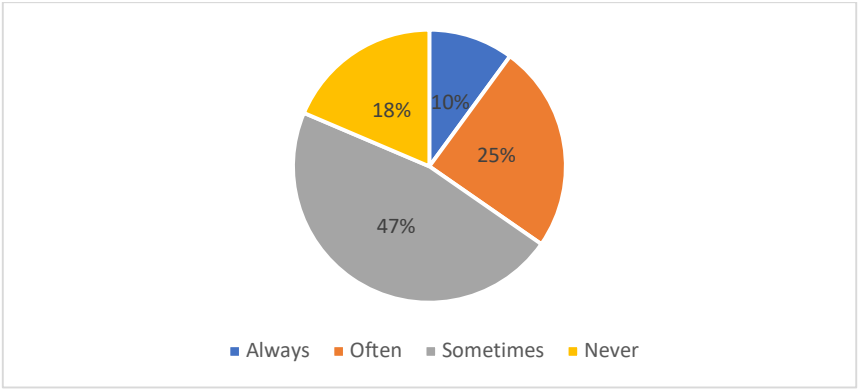

Figure 25. Survey question 25 - How often do you check food labels or product information for details on possible environmental risks or health impacts?

Respondents hold divided opinions regarding their trust in labels and information on food products, highlighting a diverse range of perspectives among the surveyed population. Half of the respondents, constituting 50% of the total, express confidence in the accuracy and reliability of these labels. Conversely, the other 50% of respondents do not trust the information provided on food products, indicating skepticism or concerns about the accuracy, transparency, or relevance of the information presented (Figure 26). This division in trust underscores the importance of transparency and clear communication in food labeling to address consumer concerns and ensure informed choices.

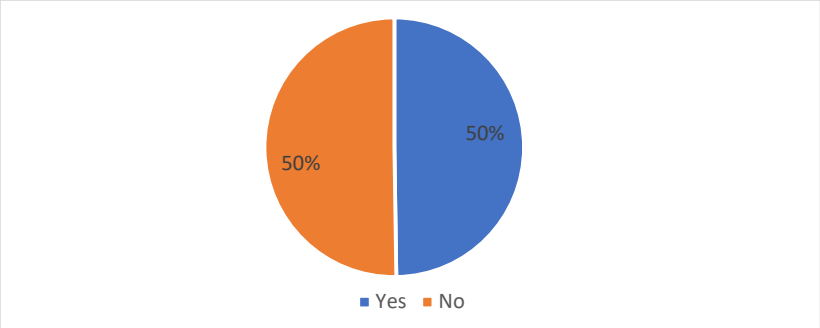

Figure 26. Survey question 26 - Do you trust the labels and information on the food product?

All respondents provided their answers to the 27th survey question "Do you believe that the use of antibiotics in livestock farming poses a risk to food safety and the environment?" A significant majority of 132 respondents fully believe (44%) respondents mostly believe (25%), that the use of antibiotics in livestock farming poses a risk to both food safety and the environment. Only 1% of respondents do not believe or partially believe (6%) that the use of antibiotics in livestock farming poses such risks (Figure 27).

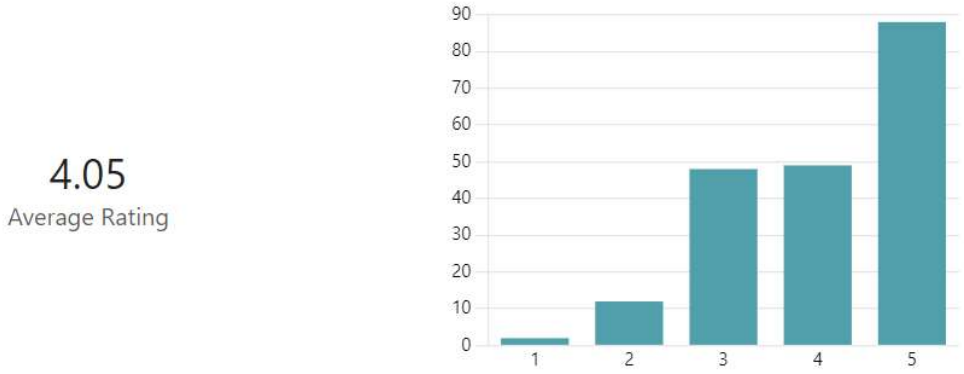

Figure 27. Survey question 27 - Do you think that the use of antibiotics in livestock poses a risk to food and environmental safety?

From the results shown in Figure 28, it is evident that all respondents answered this survey question regarding concerns about potential contamination of seafood and its impact on food safety. The analysis of responses indicates significant concern among respondents regarding the potential contamination of seafood and its impact on food safety. A large majority, 136 respondents or 67% of the total, expressed concern, with some being completely concerned (39%). Only a small percentage, 2% of respondents, showed no concern at all.

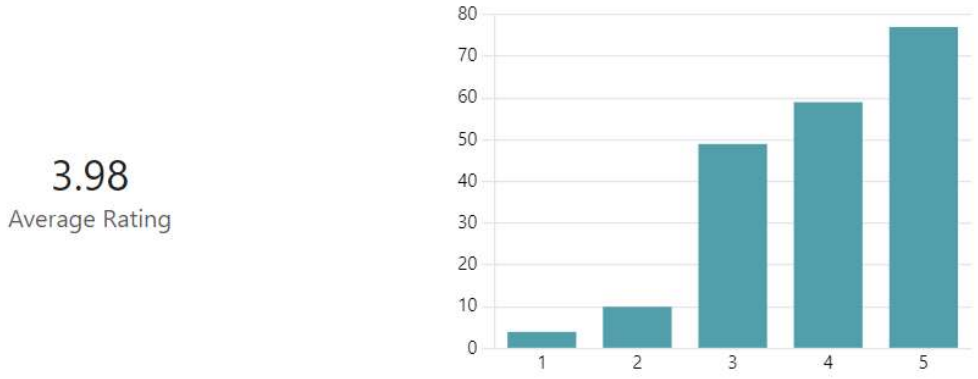

Figure 28. Survey question 28 - Are you concerned about potential seafood contamination and its impact on food safety?

Respondents' answers to survey question 29 about the likelihood of practicing home gardening as a way of mitigating environmental risks and ensuring food security were undecided. However, looking at the mean value, there is evident potential and desire among respondents to engage in food gardening for the purpose of mitigating environmental risks and ensuring food safety. 48 respondents would definitely grow food, while 50 respondents would probably or very likely grow food to mitigate environmental risks and ensure food security. Only 3% of respondents would not grow food for these purposes (Figure 29).

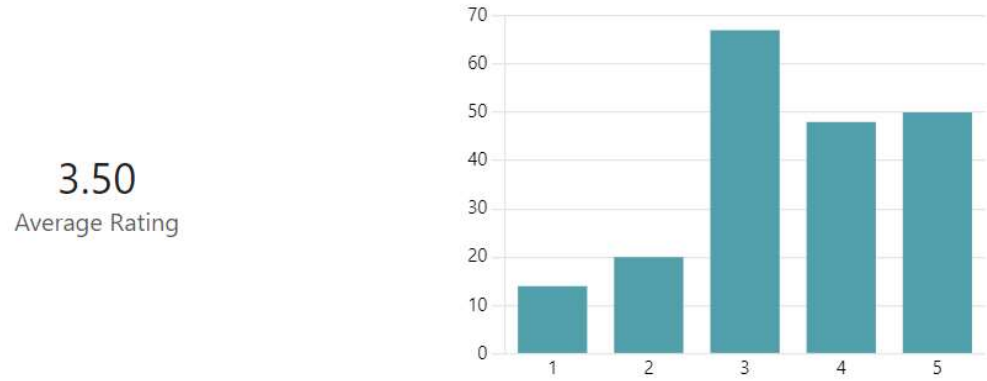

Figure 29. Survey question 29 - How likely are you to engage in growing your own food as a way to mitigate environmental risks and ensure food safety?

According to the responses to the 30th survey question concerning the potential impact of organic farming methods on reducing environmental risks and enhancing food safety, the findings from Figure 30 indicate a strong consensus among respondents. A majority, comprising 51% of those surveyed, expressed confidence in the ability of organic farming practices to effectively mitigate environmental risks and improve the safety of food products. This high level of support underscores a widespread belief in the benefits of organic agriculture for environmental sustainability and food security. Conversely, a small minority of 6% of respondents expressed skepticism, perceiving organic methods as unlikely to achieve these goals.

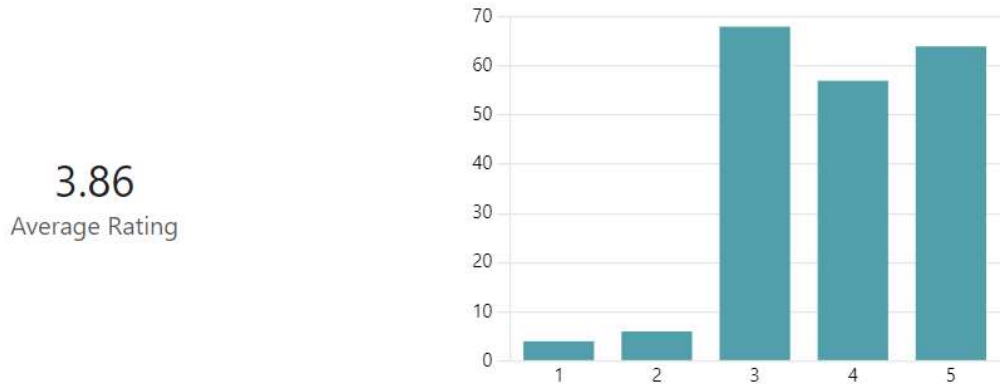

Figure 30. Survey question 230 - How likely do you think organic farming methods reduce environmental risks and improve food safety?

In response to the question "Have you ever encountered information regarding water source contamination and its impact on food safety?" as shown in Figure 31, it was found that 55% of respondents have indeed come across such information. On the other hand, 45% of respondents stated that they have not come across information on this topic. This highlights an opportunity for increasing awareness and education among this segment of the population about the relationship between water quality and food safety.

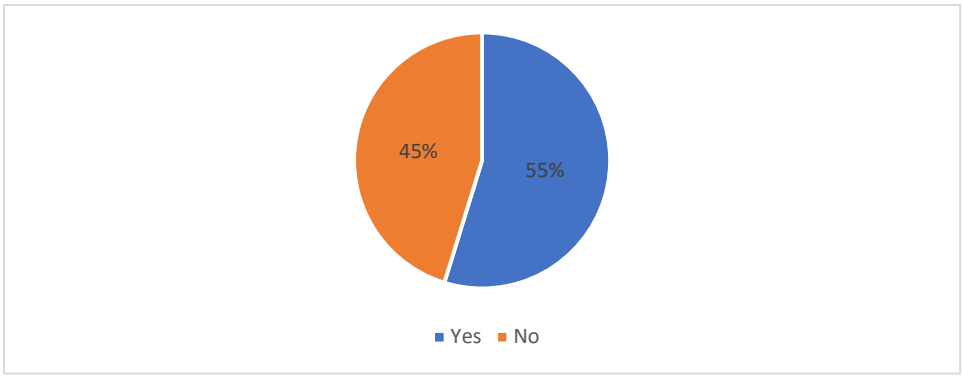

Figure 31. Survey question 31 - Have you ever come across information about water source contamination and its impact on food safety?

The research findings indicate that out of 199 respondents who answered 32nd survey questions regarding the effectiveness of government policies and regulations in addressing environmental risks in the food industry, only 2 respondents fully agree with the statement that these policies and regulations are effective and 19 respondents partially agree with the statement. These results suggest a widespread perception among respondents that there is room for improvement in the effectiveness of governmental measures in this critical area of environmental protection (Figure 32).

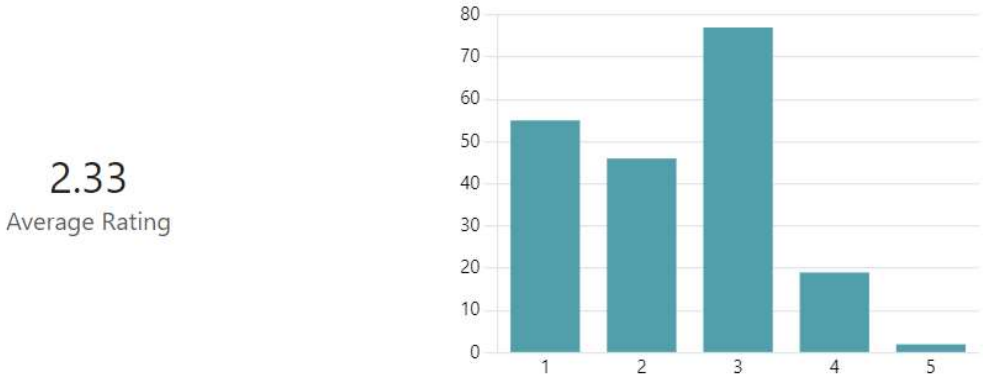

Figure 32. Survey question 32 - Do you think that government policies and regulations are effective in addressing environmental risks in the food industry?

To the 33rd survey question "Are you concerned about the potential long-term effects of environmental risks on food safety," all respondents answered. 133 respondents are fully concerned (39%) or concerned (27%) about the long-term effects of environmental risks on food safety. In contrast, only 10% of respondents are not concerned about the potential long-term effects of environmental risks on food safety (Figure 33).

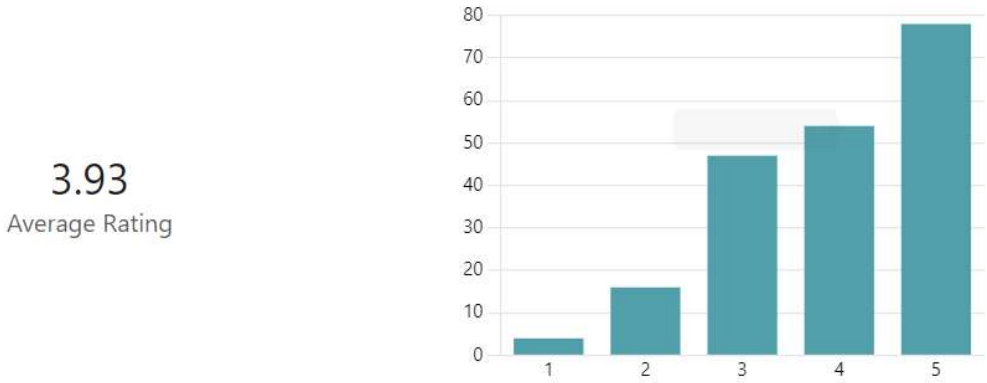

Figure 33. Survey question 33 - Are you concerned about the potential long-term effects of environmental risks on food safety?

From the entire pool of respondents, it is evident that there is a varied approach to seeking information on environmental risks concerning food safety. Specifically, out of all participants, only 5 individuals consistently stay updated with the latest research and insights on environmental risks affecting food safety. This proactive approach demonstrates a heightened awareness and engagement with ongoing developments in this critical area. Additionally, 39 respondents indicated that they frequently seek out such information, reflecting a substantial interest and concern. A larger group of 115 respondents reported seeking information occasionally, underscoring a significant portion of the surveyed population that remains intermittently engaged. On the other hand, 40 respondents stated that they never actively seek information on environmental risks related to food safety, highlighting a segment that may benefit from increased awareness initiatives. These insights are illustrated in Figure 34, providing a comprehensive view of information-seeking behaviors among the surveyed individuals.

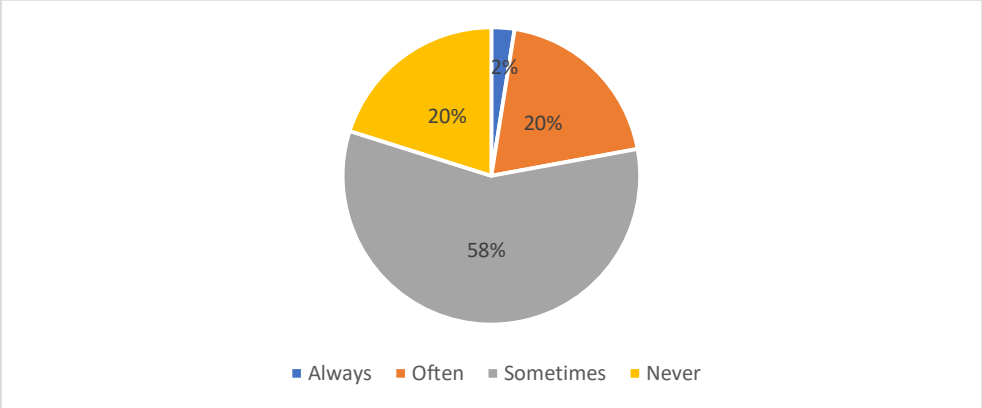

Figure 34. Survey question 34 - How often do you inform yourself about the latest research and findings on environmental risks related to food safety?

The last survey question "What steps or measures would you like to see taken to reduce environmental risks and improve food safety?" received responses from 197 participants. The analysis of respondents' answers to the question on measures to reduce environmental risks and improve food safety reveals a wide range of suggestions. Education is highlighted as a key factor in raising awareness and knowledge, which could result in better agricultural practices and waste management. Furthermore, there is an emphasis on the need for stricter regulations and better supervision of food production, both domestic and imported. It is important to note support for sustainable agriculture and reducing the use of pesticides and chemicals, which could significantly contribute to reducing negative environmental impacts. Additionally, respondents emphasize the importance of promoting local food production and reducing imports to ensure greater food security and quality. Finally, there is a strong interest in promoting environmentally friendly packaging materials and protecting natural resources by reducing the use of plastics and other environmental pollutants.

5. CONCLUSION

In conclusion, the survey results clearly indicate increasing awareness and concern among citizens about the impact of environmental factors on food safety. According to the survey findings, the majority of respondents are aware of environmental pollution and its potential impact on food safety. A majority of participants (88%) believe that environmental risks significantly impact food safety. The research also revealed deep concern over various forms of pollution, such as marine pollution, which according to the majority (95%), affects food quality. There is also significant concern (87%) regarding pesticide use in agriculture, highlighting worries about health and environmental implications. Nearly half of the respondents have changed their dietary habits due to concerns about environmental risks and more than half of the respondents noted changes in the availability (56%) and quality (60%) of certain foods due to environmental risks. Additionally, nearly two-thirds of participants (67%) consider adequate and responsible environmental behavior important, indicating a positive attitude towards sustainability in food production and consumption. Moreover, a significant majority of participants (72%) express willingness to pay more for food produced in ways that minimize environmental risks, signaling a growing consumer interest in sustainable practices.

Furthermore, the research results highlight the importance of active citizen engagement in promoting sustainable practices in food production and consumption, as well as the need for stronger support and

implementation of environmentally conscious policies in the food industry (only 1% of respondents fully agree that government policies and regulations effectively address environmental risks in the food industry, with 6% partially agreeing with this statement).

These findings underscore the potential for developing targeted policies and educational initiatives that promote sustainable practices in food production and increase awareness of the critical role of environmental protection in food consumption.

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