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Agricultural Production Safety Information and Health Needs of Rural Women Farmers in Southeast, Nigeria: Implications for Agricultural and Farm families Development.

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ABSTRACT

Agricultural production is the primary livelihood activity of most rural households in Southeast, Nigeria, yet farming activities are often unsafe and present many safety and health risks. This study examines agricultural production safety and health information needs of rural women farmers. A multi-stage sampling technique was used to select 250 respondents out of 2,500 registered women farmers. Questionnaire and oral discussion were used to elicit information from them. Data collected were analyzed using percentages, mean and standard deviation. Results showed that the women farmers were aware of production safety information such as, safe use of agro-chemicals (92%), use of personal protective equipment (90%), first aid for farm injuries (84%), but do not use most of the production/health information. They do not utilize safe agro-chemical handling (16%), use personal protective equipment (14.2%), first aid for farm injuries (84%), medical treatment and health information (16%), safe agricultural equipment use (14.2%), heat stress/wealth safety (10%). The health challenges faced include respiratory problems (93.6%), skin disease (68%), problems (60%), pesticide poisons (94.4%), zoonotic disease (87.6%), among others. The health needs include access to affordable health care serious (88%), regular medical checkup (70%), access to personal protective equipment (96.1%), first aid and training sources (87.2%). The general challenges faced while using production safety/health information include level of education (80%) language (84%), language (84%), cost to accessing information (92.4%), cultural belief (92.8%). To solve problems of access to agriculture production safety and health information needs, adult education/literacy should be promoted, local language should be used easily to understand programme be used as well.

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INTRODUCTION

Agriculture continues to play a vital role in Nigeria's economy, particularly in rural areas where it provides livelihoods for a large portion of the population. Women are central to this sector, actively involved in food production, processing, and marketing. Across sub-Saharan Africa, women make up a major share of the agricultural labor force, contributing significantly to food systems [1]. In Nigeria, rural women represent approximately 70–80% of those working in agriculture, playing a key role in ensuring household food security and supporting national development. However, despite their contributions, these women frequently work in unsafe conditions and have limited access to modern farming technologies, health services, and safety knowledge—factors that increase their exposure to occupational risks and hinder productivity. Rural women farmers face numerous health threats linked to their work, including pesticide exposure, injuries from manual tools, musculoskeletal problems, and environmental

hazards. These dangers are intensified by a lack of access to safety education and reliable agricultural health information [1]. In Southeast Nigeria, where farming is predominantly small-scale and traditional, many women rely on long-standing practices without sufficient awareness of safer, updated methods. This knowledge gap leaves them more vulnerable to illness and injury, worsening health outcomes within this group. Social, cultural, and economic barriers also shape women's ability to access resources and safety-related information. Deep-rooted norms, gender disparities, and lower educational attainment often limit women's involvement in agricultural training programs and decision-making processes [2]. Research shows that female farmers typically have less access to land ownership, credit, and extension services, which restricts their capacity to implement safer farming techniques. As a result, identifying the specific needs of rural women regarding agricultural safety information and health support is crucial for enhancing both their well-being and agricultural output.

PROBLEM STATEMENT

Although rural women are essential to agricultural production, their health and safety concerns are often overlooked. In Southeast Nigeria, many women engage in farming without proper understanding of occupational safety, leaving them at risk of chemical exposure, physical injuries, and infectious diseases [3]. This lack of awareness is closely tied to limited outreach from agricultural extension services and weak information networks. These challenges are compounded by structural issues such as underdeveloped infrastructure, insufficient healthcare access, and few training opportunities tailored to women. Evidence suggests that female farmers in Nigeria frequently receive inadequate support, tools, and education needed to farm safely. Poverty and low literacy rates further reduce their ability to obtain and apply safety information effectively. Additionally, there is little research specifically examining how agricultural safety information intersects with the health needs of rural women farmers in Southeast Nigeria. Most existing studies focus on productivity and resource access, paying little attention to occupational health and safety. This gap highlights the need for targeted research to better understand the safety information gaps and health challenges faced by this underserved population. This research is grounded in the vital contribution rural women make to agricultural production and food security in Nigeria. Since women are heavily involved in food cultivation, ensuring their health and safety is crucial for advancing sustainable agriculture [1]. Better access to safety-related information can help minimize work-related risks and boost agricultural output. The study will also offer practical guidance for policymakers, development organizations, and agricultural extension services in creating programs that respond to gender-specific needs. By addressing the health and safety challenges faced by women farmers in rural areas, it supports broader efforts to alleviate poverty and enhance living standards, as empowering women has been shown to positively affect household well-being and economic stability. Moreover, the research will add to academic knowledge by addressing a notable gap in studies on agricultural safety and health among rural women farmers in Southeast Nigeria. This evidence can inform more effective, data-driven policies and strategies to strengthen rural farming systems. The main objective of this study is to examine the agricultural production safety information and health needs of rural women farmers in Southeast Nigeria.

The specific objectives include to:

1. identify the types of agricultural safety information available to rural farmers.
2. assess farmers' level of awareness and utilization of safety information.
3. examine the health challenges associated with farming activities.
4. identify the health needs of rural farm families.
5. identify factors influencing access to agricultural safety information. These objectives align with the need to enhance women's productivity and well-being by addressing gender disparities in agricultural systems

MATERIAL AND METHODS

The research was carried out in Southeast Nigeria, specifically in Abia, Anambra, Ebonyi, Enugu, and Imo States—a region known for its extensive agricultural practices, largely based on small-scale farming and rural communities. A descriptive survey design was employed to gather data from a representative group of rural farming households. The target population included rural families involved in both crop cultivation and livestock rearing across the region. Respondent selection followed a multistage sampling approach. Initially, certain states were chosen purposefully due to their agricultural significance. Next, Local Government Areas (LGAs) and specific communities within them were selected at random. Finally, individual farm households were chosen through simple random sampling, resulting in a sample of 250 participants. Data collection relied on structured questionnaires and interview schedules. The

questionnaire gathered details on socio-economic backgrounds, access to agricultural safety information, and health issues related to farming. Interviews supplemented the survey responses, especially for individuals with limited literacy. In addition, secondary data were drawn from academic journals, textbooks, government documents, and other pertinent sources. Descriptive techniques—including frequency distributions, percentages, and mean scores—were used to organize and present the data.

RESULT AND DISCUSSION

Agricultural Production Safety Information needs

Table 1 showed the different agricultural production safety information needs of farmers. These needs include safe use of agro-chemicals (92%), use of personal protective equipment (90%), safe handling of farm tools/machinery (90.8%), first aid for farm injuries (84%), environmental safety and waste disposal (96%), prevention of zoonotic diseases (85%), safe storage of farm inputs (86.4%), heat stress and weather-related safety (84%), water sanitation and hygiene (86–92%), and occupational health risk awareness (92.4%). Rural farmers have access to a broad range of agricultural safety information aimed at minimizing workplace risks, preventing injuries, and supporting overall well-being during farming operations. A key component is guidance on chemical and pesticide safety, which covers correct handling, storage, and application of agricultural chemicals, along with the use of protective gear to avoid poisoning and long-term health issues. This also involves strategies to limit exposure to harmful substances and prevent related illnesses [4,5]. Another critical area focuses on the safe use of farm machinery and equipment, including tractors, harvesters, and irrigation systems. Farmers receive training on proper operation, routine maintenance, and accident prevention—particularly incidents like rollovers, mechanical injuries, and equipment failures. Emphasis is placed on using safety features such as seat belts and rollover protection systems, as machinery accidents remain a leading cause of injury in agriculture [6]. Farmers are also informed about environmental and occupational hazards commonly found in agricultural settings. These include dangers posed by extreme temperatures, dust, loud noise, hazardous gases, and poor air quality. Educational efforts promote safe working conditions, adequate ventilation, and preventive measures against heat-related illness and respiratory problems [7]. For those working with livestock, biological and health safety information is especially important. It raises awareness about zoonotic diseases—those that can spread from animals to humans—and promotes safe animal handling, hygiene practices, and infection control. This knowledge helps reduce health risks associated with close contact with animals and contaminated farm environments. Additionally, farmers are encouraged to adopt personal protective measures and general safety practices. This includes consistent use of personal protective equipment (PPE) like gloves, boots, helmets, and respirators, as well as learning how to identify hazards, follow safe work procedures, and apply injury prevention techniques. Extension programs and training initiatives frequently deliver this information to foster safer behaviors and greater risk awareness [4,8]. Lastly, emergency preparedness and farm safety management resources help farmers respond to crises such as fires, accidents, and natural disasters. These materials support the development of emergency plans, risk evaluation, and protective actions to safeguard people and property. By providing this knowledge, farmers gain improved capacity to handle unforeseen events and strengthen their resilience in the face of agricultural emergencies.

Table 1: Types of Agricultural Production Safety Information

	Type of Safety Information	Frequency	Percentage
1	Safe use of agrochemicals	230	92.0
2	Use of personal protective equipment (PPE)	245	90.0
3	Safe handling of farm tools and machinery	227	90.8
4	First aid for farm injuries	210	84.0
5	Environmental safety and waste disposal	240	96.0
6	Prevention of zoonotic diseases	238	95.2
7	Safe storage of farm inputs	216	86.4
8	Heat stress and weather-related safety	210	84.0
9	Water sanitation and hygiene (WASH)	217	86.8
10	Occupational health risk awareness	231	92.4

*Multiple response

Awareness and Utilization of Production Safety Information

Table 2 showed that women farmers were very aware of production safety information, including safe use of agrochemicals (16%), personal protective equipment (14%), first aid for farm injuries (68%), environmental safety practices (72%), prevention of zoonotic diseases (58%), safe storage of farm inputs (70%), heat stress and weather safety (56%), water sanitation and hygiene (66%), and occupational hazard identification (61.2%). They utilize the following safety information: safe handling of farm tools (59.2%), environmental safety practices (54.8%), storage of farm tools (57.6%), and water sanitation and hygiene (54%). Low utilization was observed for occupational hazard identification (19.2%), prevention of zoonotic diseases (12.8%), first aid for farm injuries (12%), use of personal protective equipment (14%), and safe use of agrochemicals (16%). Farmers in many developing agricultural settings show moderate to high levels of awareness and access to safety information, yet putting that knowledge into practice often falls short. While extension services, media, and training programs have increased exposure to safety guidelines, leading to better understanding of risks related to pesticides, machinery, and farming methods, the connection between knowledge and action remains weak. For example, research in Nigeria found that although farmers were well aware of safe herbicide practices, actual adherence was limited by a lack of skills, insufficient protective equipment, and inconsistent compliance with safety protocols [9]. Further studies on risk behavior in agriculture indicate that awareness by itself does not guarantee safer conduct; farmers' decisions are also shaped by their attitudes, personal experience, and perception of risk. As a result, many continue risky behaviors even when they recognize the dangers, revealing a persistent disconnect between knowing and doing [10]. Additionally, broader analyses suggest that factors like education level, availability of extension support, and socio-economic conditions play a critical role in determining whether safety information is effectively used, either enabling or restricting its implementation [11]. In sum, while awareness of farm safety is on the rise, its practical application varies significantly. Closing this gap requires sustained training efforts, better access to tools and resources, and targeted strategies that address behavioral and structural barriers to safe farming.

Table 2: Awareness and Utilization of Production Safety Information (n = 250)

S.No.	Safety Information Type	Awareness	Awareness	Utilization	Utilization
1	Safe use of agrochemicals	210	84.0	40	16
2	Use of personal protective equipment (PPE)	204	81.6	35	14
3	Safe handling of farm tools and machinery	179	71.6	148	59.2
4	First aid for farm injuries	170	68.0	30	12.0
5	Environmental safety practices	180	72.0	137	54.8
6	Prevention of zoonotic diseases	164	65.6	32	12.8
7	Safe storage of farm inputs	175	70.0	144	57.6
8	Heat stress and weather safety	140	56.0	25	10.0
9	Water sanitation and hygiene (WASH)	167	66.8	135	54
10	Occupational hazard identification	153	61.2	48	19.2

Health Challenges Among Women Farmers in the study Area

Table 3 showed the health challenges affecting farmers in their production activities include respiratory problems (93.6%), skin diseases/irritation (68.0%), musculoskeletal disorders (80.0%), injuries from tools/machinery (89.6%), eye problems (60.0%), heat stress/dehydration (76.0%), pesticide poisoning (94.4%), zoonotic diseases (87.6%), waterborne diseases (62.0%), and fatigue/stress-related conditions (70.0%). Farming is a crucial livelihood, yet it involves significant health risks due to the demanding nature of agricultural work. These risks can be grouped into five main categories: physical, chemical, biological, environmental, and psychological. Physical strain is a major concern, as farming often requires intense labor, repetitive motions, and operation of heavy equipment. This frequently leads to musculoskeletal problems, exhaustion, injuries, and accidents. The use of tractors, tools, and machinery raises the likelihood of cuts, broken bones, and in severe cases, death. Exposure to agrochemicals such as pesticides, herbicides, and fertilizers presents another serious hazard. Without adequate protective gear, farmers may suffer skin conditions, breathing difficulties, poisoning, or develop chronic diseases like cancer. In agriculture, research consistently identifies pesticide exposure as a leading occupational danger [13, 14]. Farmers are also at risk from biological threats. Interactions with livestock, insects, and polluted soil or water can result in infections, diseases transmitted from animals, and parasitic conditions. Inadequate sanitation and frequent contact with pathogens in farm settings further heighten the chances

of illness [15]. Environmental conditions add to these challenges. Extreme temperatures, whether hot or cold, as well as heavy rainfall, can severely impact health. Extended heat exposure may cause dehydration, heat stress, and lower work efficiency, with climate fluctuations making such risks more pronounced [16]. Lastly, mental health issues are becoming more evident within the farming community. Factors such as financial instability, changing climate patterns, heavy workloads, and social isolation contribute to stress, anxiety, and depression.

Table 3: Health Challenges Among Farmers (n = 250, Multiple Responses)

S.No.	Health Challenge	Frequency	Percentage
1	Respiratory problems	234	93.6
2	Skin diseases and irritation	170	68.0
3	Musculoskeletal disorders	200	80.0
4	Injuries from tools and machinery	224	89.6
5	Eye problems	150	60.0
6	Heat stress and dehydration	190	76.0
7	Pesticide poisoning	236	94.4
8	Zoonotic diseases	219	87.6
9	Waterborne diseases	155	62.0
10	Fatigue and stress-related conditions	175	70.0

Health Information Needs of Rural Farm Families

Table 4 showed the health information needs of farm families. The highest needs include access to affordable healthcare services (88.0%), agricultural health and safety education (80.0%), first aid training and services (86.8%), clean water and sanitation (84.0%), health insurance coverage (85.6%), safe agrochemical use training (78.0%), and mobile clinics and outreach services (96.4%), maternal and child healthcare (68.0%). Rural farming households face a range of interconnected health challenges shaped by their living environments, work conditions, and socio-economic circumstances. Their well-being encompasses more than just the absence of illness, extending to physical, nutritional, environmental, and mental health. A primary concern is access to basic healthcare. Many farming communities struggle with limited availability of medical facilities, qualified health workers, and affordable services. This makes treating everyday illnesses and work-related injuries difficult. Sudden health crises, such as disease outbreaks, can severely disrupt household earnings and agricultural output, emphasizing the importance of reliable and low-cost healthcare [17]. Nutrition is another critical area. Despite producing food, many rural farm families experience food insecurity due to seasonal fluctuations and low crop yields. Research indicates that limited access to a varied and nutritious diet often leads to malnutrition, particularly among women and children [18,19]. Addressing this requires better food access, improved dietary variety, and education on nutrition. Occupational health is also a significant issue. Farmers routinely face risks from pesticide exposure, physically demanding labor, and environmental hazards. Without proper safety guidance or protective gear, these conditions can result in long-term health problems and injuries, highlighting the need for training and safety equipment [20]. Environmental health factors—such as clean water, proper sanitation, and safe housing—are equally vital. Inadequate infrastructure in rural areas often leads to unsanitary living conditions and increased risk of waterborne diseases, which in turn affect both health and work capacity [21]. Lastly, mental well-being and economic security are gaining recognition as essential components of rural health. Pressures from financial instability, changing climate patterns, and uncertain livelihoods contribute to stress and psychological strain. Strengthening income resilience, expanding access to credit, and building stronger social support networks can help alleviate these burdens [22].

Table 4: Health Information Needs of Rural Women Farmers

S/N	Health Information Needs	Frequency	Percentage
1	Access to affordable healthcare services	220	88.0
2	Agricultural health and safety education	200	80.0
3	Access to personal protective equipment (PPE)	241	96.1
4	Regular medical check-ups	175	70.0
5	First aid training and services	218	86.8
6	Clean water and sanitation	210	84.0
7	Health insurance coverage	214	85.6
8	Maternal and child healthcare	170	68.0
9	Safe agrochemical use training	195	78.0
10	Mobile clinics and outreach services	241	96.4

FACTORS INFLUENCING ACCESS TO AGRICULTURAL SAFETY INFORMATION

Table 5 showed the factors influencing access to agricultural production safety information. These include level of education and literacy (80.0%), availability of extension services (84.0%), language barriers (74.4%), access to media (78.0%), cost of accessing information (92.4%), distance to information sources (72.0%), membership in farmers' associations (90.8%), cultural beliefs and practices (92.8%), government policies and support programs (92.4%), and availability of training and workshops (90.4%). Farmers' access to agricultural safety information is influenced by a mix of socio-economic, institutional, technological, and infrastructural conditions. Education, farming experience, income level, and farm size all affect how well farmers can find and apply safety-related knowledge. Those with higher education and more experience are generally better at understanding safety guidelines, while individuals operating larger farms or earning higher incomes typically have greater access to information sources [23,24]. These personal and economic factors shape awareness, understanding, and the likelihood of adopting safer farming methods, ultimately impacting access to reliable safety information. Institutional support also significantly affects information access. The presence of agricultural extension services, involvement in training programs, and availability of credit or government assistance improve farmers' exposure to safety practices. In areas where extension systems are poorly resourced or ineffective, farmers often turn to informal networks like fellow farmers, which may result in incomplete or less accurate information [25]. Strong institutional frameworks help ensure that safety knowledge is shared effectively, accurately, and adopted more widely. The role of technology and communication tools is increasingly important. Access to information and communication technologies (ICTs)—including radio, mobile phones, and online platforms—can greatly improve the speed and reach of safety messaging, particularly in remote regions. However, challenges such as lack of devices, low digital literacy, and unreliable internet or network coverage limit many farmers' ability to take advantage of these tools. As a result, both the availability and practical usability of technology remain central to ensuring fair access to safety information. Physical infrastructure and geographic location also play a part. Poor road conditions, distance from markets or training centers, and inconsistent electricity supply hinder farmers' contact with information providers and extension workers. Those situated far from urban or development hubs often miss out on timely safety updates and learning opportunities [26]. Enhancing rural infrastructure can therefore improve communication channels and expand access to essential agricultural safety knowledge.

Table 5: Factors Influencing Access to Agricultural Production Safety Information

S.No.	Factors	Frequency	Percentage
1	Level of education and literacy	200	80.0
2	Availability of extension services	210	84.0
3	Language barriers	185	74.0
4	Access to media (radio, TV, mobile phones)	195	78.0
5	Cost of accessing information	231	92.4
6	Distance to information sources	180	72.0
7	Membership in farmers' associations	227	90.8
8	Cultural beliefs and practices	232	92.8
9	Government policies and support programs	231	92.4
10	Availability of training and workshops	226	90.4

Reasons for Agricultural production Safety and Health information Needs

Table 6 showed the importance of agricultural production safety and health information. The reasons cited include prevention of injuries and accidents (88.0%), improvement of productivity and efficiency (84.0%), reduction of healthcare costs (78.8%), ensuring long-term physical well-being (80.0%), enhancement of quality of life (77.2%), prevention of exposure to harmful chemicals (82.0%), reduction of stress and fatigue (79.2%), ensuring food safety and quality (74.4%), protection of family members (78.8%), and sustaining agricultural livelihoods (86.0%). Agriculture is inherently risky, which creates a strong need for safety and health information among farmers. The nature of farming—operating heavy machinery, handling chemicals, working with animals, and performing strenuous physical labor—exposes individuals to a high potential for injury, illness, and even death. To manage these dangers effectively, farmers need reliable and timely guidance on how to recognize hazards and take preventive actions. Research consistently places agriculture among the most hazardous industries worldwide, with significant rates of both fatal and non-fatal incidents, underscoring the importance of safety knowledge in protecting lives and improving health outcomes [27, 28].

The variety of hazards present in agricultural settings further increases the demand for safety information. Farmers routinely face chemical exposures from pesticides and fertilizers, biological threats such as diseases transmitted by animals, and environmental challenges including extreme heat, dust, and noise. Without adequate knowledge, these risks can result in long-term health problems, poisoning, infections, or permanent disability. Access to clear safety guidance enables farmers to implement protective measures—such as safe chemical storage, proper use of personal protective equipment, and better hygiene practices—reducing the likelihood of harm [5]. Safety and health information also plays a key role in supporting farm productivity and economic stability. When injuries or illnesses occur, they often lead to labor shortages, lower output, and added financial strain on farming families. By promoting awareness and safe work practices, safety education helps prevent accidents, sustain a capable workforce, and minimize costs related to medical treatment, equipment damage, and operational downtime. Studies suggest that well-designed safety training improves both individual behavior and overall farm performance, contributing to long-term sustainability [4,29]. Another important factor driving the need for safety information is the involvement of vulnerable populations—such as children, women, and older adults—in farm work and life. Because agriculture frequently operates within family-run environments, people who may not be formal workers are still exposed to serious risks. Safety education helps safeguard these individuals by encouraging safer interactions with machinery, animals, and hazardous conditions. It also fosters a culture of responsibility and awareness across all members of the farming household, leading to safer living and working conditions for everyone involved.

Table 6: Reasons Why Safety and Health Matter to Women Farmers

S.No.	Reasons	Frequency	Percentage
1	Prevent injuries and accidents	220	88.0
2	Improve productivity and efficiency	210	84.0
3	Reduce healthcare costs	215	86.0
4	Ensure long-term physical well-being	200	80.0
5	Enhance quality of life	220	88.0
6	Prevent exposure to harmful chemicals	205	82.0
7	Reduce stress and fatigue	198	79.2
8	Ensure food safety and quality	186	74.4
9	Protect family members	197	78.8
10	Sustain agricultural livelihoods	215	86.0

SOLUTIONS TO PROBLEMS OF ACCESS TO INFORMATION

Table 7 showed solutions to problems of access to agricultural production safety and health information. The most highly endorsed solutions include providing adult education and literacy programs (93.6%), using local languages in teaching (96.4%), making agricultural information easy to access (90.0%), expanding rural electrification (91.2%), providing cheap digital services (98.0%), supporting farmer cooperatives (90.8%), using media programs and storytelling (95.2%), and improving network connectivity (97.6%) among other strategies. Improving access to safety and health information in agriculture calls for integrated efforts across technological, institutional, and socio-economic areas. A key approach involves leveraging Information and Communication Technologies (ICTs)—such as mobile phones, radio, and social media—to deliver timely, accurate, and geographically relevant safety updates directly to farmers. Research indicates these tools greatly improve access to agricultural advisory services, foster knowledge exchange, and support more informed decision-making, particularly in remote regions where conventional extension systems are under-resourced[30, 31]. Yet, for ICTs to deliver meaningful impact, sustained investment is needed in rural internet connectivity, low-cost data plans, and digital skills training to overcome existing digital inequalities. Equally important is reinforcing agricultural extension systems through better funding, staff training, and modernized service delivery methods. Well-functioning extension programs can equip farmers with practical guidance on safe pesticide application, machinery operation, and workplace health. Evidence shows that blending face-to-face extension with digital advisory tools—and offering incentives to extension agents—can significantly expand reach and effectiveness, especially among small-scale producers. Moreover, extension initiatives that actively engage both men and women and incorporate local needs help ensure equitable access to vital safety knowledge, contributing to improved farm productivity and rural well-being [30]. Another essential strategy is fostering stronger collaboration among diverse stakeholders. Governments, non-governmental organizations, research bodies, and private sector partners should jointly develop safety information that is locally relevant and culturally appropriate. In Nigeria, for example, cooperation

between agricultural development programmes (ADPs), farmer groups, and NGOs has enhanced the spread of improved farming techniques, though shortcomings persist in areas like storage, marketing, and safety practices. Such partnerships can also support the creation of accessible communication formats—such as broadcasts in local languages and community-led training—helping farmers better understand and apply safety measures in their daily work.

Table 7: Solutions to Problems of Access to Agricultural Production Safety and Health Information

Solutions	*Frequency	Percentage
Provide adult education and literacy programs	234	93.6
Use local languages in teaching	241	96.4
Introduce farmers field schools	225	90.0
Make agricultural information easy to access	209	83.6
Recruit and employ extension staff	214	85.6
Strengthen regular farm visits	228	91.2
Expand rural electrification	245	98.0
Provide cheap digital services	214	85.6
Improve access to community and public transport	227	90.8
Support farmer cooperatives	218	87.2
Use community and civil labor	238	95.2
Use media programs and storytelling	240	96.0
Improve network connectivity	244	97.6

*Multiple responses

IMPLICATIONS FOR AGRICULTURAL DEVELOPMENT

Access to agricultural safety information and the health needs of rural farming households have significant consequences for agricultural development in Southeast Nigeria. One key factor is that better access to health and safety knowledge helps boost productivity by minimizing farmers' exposure to occupational risks like agrochemicals, injuries, and illness. Research indicates many farmers come into contact with chemicals but struggle to understand labeling or instructions, increasing the likelihood of sickness and lower work capacity [32]. When farmers are healthier and well-informed, they can maintain steady farming activities, leading to higher yields and improved food security. Another important aspect is the need to combine agricultural extension services with health education to support long-term transformation in the sector. Farmers' ability to absorb new information and adopt modern practices depends heavily on their existing knowledge and skills [33]. By expanding extension programs to include training on risk prevention, safe use of inputs, and hazard awareness, adoption of technology can improve while also reducing environmental harm and supporting climate-resilient farming methods. This integration plays a vital role in meeting sustainable agriculture targets. Additionally, raising awareness about workplace dangers contributes to both environmental protection and public health. Study on livestock farming in the region show that while some farmers recognize certain risks, many still lack understanding of contamination pathways and proper waste disposal [34]. Closing these knowledge gaps through focused training and policy interventions can reduce pollution, enhance food safety, and strengthen the entire agricultural supply chain. Finally, stronger systems for delivering safety and health information support broader rural economic growth. Farmers who remain healthy are more productive, spend less on medical care, and are better able to reinvest in their farms. On the other hand, unsafe practices often result in illness, lost income, and lower output [35]. Investing in effective information systems for farm health and safety is therefore crucial for improving rural livelihoods, alleviating poverty, and ensuring national food security.

IMPLICATIONS FOR FARM FAMILIES' DEVELOPMENT

At the household level, access to safety information plays a direct role in the wellbeing and progress of rural farming families. Improved awareness leads to better health by reducing exposure to dangers such as pesticides, zoonotic diseases, and physical injuries. Limited understanding of safety practices has been associated with frequent illness among farmers, which in turn affects the availability of family labor and overall household welfare [32]. Families in good health are more capable of engaging in consistent farming and other income-generating activities. Safety knowledge also supports more stable household incomes and helps reduce poverty. When families follow safer practices, they experience fewer crop or livestock losses, lower medical costs, and fewer disruptions to daily work. Evidence suggests that greater access to agricultural information positively affects both productivity and earnings among rural households [33], contributing to improved nutrition, housing, and children's access to education.

Furthermore, such education promotes greater gender equity and social inclusion in rural development. Women and children, who frequently participate in farm work, are especially at risk of health hazards. Ensuring that safety training reaches all family members helps protect vulnerable groups and empowers them to contribute more effectively. This enhances household resilience and supports long-term, sustainable livelihoods. Lastly, increased awareness of health and safety supports the development of human capital over time. Healthy families are more likely to invest in education, learn new skills, and explore alternative sources of income. These outcomes support wider rural development goals, including poverty reduction, food security, and improved quality of life.

CONCLUSION

This study aimed to explore agricultural safety information and the health needs of rural farming households in Southeast Nigeria, acknowledging their significance for sustainable agricultural and rural development. Its goals included identifying existing safety resources, evaluating farmers' awareness and use of such information, understanding common health issues, and analyzing the factors affecting access to both safety knowledge and healthcare services. The results indicate that although agriculture remains a key source of livelihood in the region, farming families often work in conditions that expose them to serious occupational and health risks. Challenges such as limited availability of safety information, insufficient extension support, and underdeveloped healthcare systems continue to leave farmers vulnerable. These issues not only compromise the well-being of farming households but also hinder agricultural output and long-term sustainability. From the standpoint of agricultural advancement, the study highlights the need to incorporate safety education into agricultural extension programs. When farmers have access to proper safety knowledge, they are more likely to adopt safer practices, minimize risks, and improve productivity. This contributes positively to food security, income levels, and broader economic progress. As such, reinforcing institutional support for agricultural safety and health is crucial for meeting sustainable development targets in the region. Regarding household-level development, better access to health services and safety information can lead to meaningful improvements in living standards. Healthier farmers tend to be more productive, which benefits their families through higher incomes, improved nutrition, and greater opportunities for children's education. Additionally, reducing exposure to workplace hazards supports long-term health and resilience within rural communities.

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