

Farming Hazards and Safety Practices among Food Crop Farmers in Ikole Ekiti, Ekiti State, Nigeria

Oluwasusi JO*, Adeyemo AO, Muhammed MM and Olusipe BJ

Department of Agricultural Science, Afe Babalola University, Ado-Ekiti (ABUAD), Ado-Ekiti, Ekiti State, Nigeria

***Corresponding author:** Oluwasusi JO, Department of Agricultural Science, Afe Babalola University, Ado-Ekiti (ABUAD), P.M.B 5454, Ado-Ekiti, Ekiti State, Nigeria, Tel: +2348032094612; E-mail: johnkayod@gmail.com; oluwasusijo@abuad.edu.ng

Citation: Oluwasusi JO, Adeyemo AO, Muhammed MM and Olusipe BJ (2020) Farming Hazards and Safety Practices among Food Crop Farmers in Ikole Ekiti, Ekiti State, Nigeria. *J Waste Manag Disposal* 3: 208

Abstract

Farming hazards (FHs) and safety practices (SPs) among food crop farmers in Ikole Ekiti Local Government area (LGA) of Ekiti State, Nigeria were investigated in this study. Combinations of quantitative and qualitative data using focus group discussion (FGD) were used to elicit information from the respondents. Multi-stage sampling technique was used to select 105 respondents from the registered 262 crop farmers under Agricultural Development Programme in the study area. Two separate groups of 8 respondents consisting solely men and women, respectively were interviewed. Farming hazards investigated were farming injuries, diseases contracted from farming and farming losses experienced by the respondents. Also, 56.2% of the respondents were highly affected with FHs. The results showed that 61.0% were non-formally educated. Respondents' most serious constraints to safe farming practices were poor access to farm machineries and non-guaranteed market for harvested crops (99.0%). Respondents' sex ($\chi^2=24.06$), educational level ($\chi^2=12.21$), knowledge on FHs ($r=0.243$) and constraints to SPs ($r= -0.082$) were significantly related to safe farming practices. All (100%) sustained farm injuries as farm hazard. Theory of planned behaviour predisposes farmers to attitudinal formation as individual behaviour towards their farming situation and environmental norms that subject them to demonstrate such behaviour, either good or poor. It is therefore recommended that government and non-governmental organizations into agricultural production should make information on safe farming practices more accessible to the farmers and advocate for compliance to its utilization among the farmers as a veritable tool to sustainability of farm production and wellbeing of the farmers.

Keywords: Safe Farming Practices; Knowledge; Constraints; Farm Hazard

Introduction

According to Cole [1], Park [2], and Idio and Adejare [3], occupational hazard in the agricultural sector could be classified into seven: (i) Climate: dehydration, heat cramps, heat exhaustion, heat stroke, and skin cancer; (ii) Snakes and insects: injurious bites and stings; (iii) Tools and farm equipment: Injuries, cuts, and hearing impairment; (iv) Physical labour: musculoskeletal disorders, e.g. pain and fatigue; (v) Pesticides: poisonings, neurotoxicity, reproductive effects, and cancer; (vi) Dusts, fumes, gases, particulates: irritation, respiratory tract, allergic reactions, respiratory diseases such as asthma, chronic obstructive pulmonary disease, and hypersensitivity pneumonitis, and (vii) Biological agents and vectors of disease: Skin diseases, fungal infections, allergic reactions, malaria, schistosomiasis, sleeping sickness, leishmaniasis, ascariasis, and hookworm. Farmers are exposed to various farm hazards, which include; environmental, physical, chemical, biological and health. Agricultural sector of Nigeria is dominated by small scale holder farmers accounting for over 90% of the total output while more than half of the farmers produce only food crops [4].

An estimated 76% of the Nigerian population lives in the rural area and about 90% of the rural dwellers are engaged in agricultural production [5]. These subsistent farmers are key players in food security and the nutritional status of homes across the world. They tend to be venturesome in multiple livelihood strategies with the eminent climate vagaries experienced in the world today, in order to meet their social and economic demands. However, agricultural practices highly concentrated in the hands of subsistent rural farmers, adopting crude, tedious and seemingly unsafe agricultural operations are inevitably prone to various hazards. These laborious practices of agricultural production are inherent and indigenous to many of these farmers with individual efforts to improve their lives. The subsistent nature of farming in the disadvantaged rural environment, in terms of basic social amenities and use of modern farming technologies, inclines intensive land cultivation and management practices of indiscriminate fertilizer and pesticides utilisation, laborious farming engagement and poor adaptation to changing climatic conditions that are hazard prone. According to Olowogbon [6] and Idio and Adejare [3], rural farmers in Nigeria are exposed to occupational hazards of various types.

Many subsistent farmers engage in tedious activities ranging from soil preparation to post harvest activities in crop production that may involve long working hours with bad posture, strenuous indigenous knowledge of agricultural practices. They practice indiscriminate use of herbicides and pesticides to avail themselves weed and insect management, worthy of profitable farm income. Hence, exposing themselves to different sorts of infections and poisoning that seem unknown to them as repercussions. Lawal, *et al.* [7] and Ogunjimi and Farinde [8] reported that farmers in Nigeria do not adhere to methods on the use of pesticides, hence expose themselves to environmental hazards. Similarly, Barbas *et al.* [9] posited that farmers are vulnerable to health hazards in a bid to effectively use herbicides to control weeds posing threat to their plants without having in-depth knowledge on the chemical agent action and its impact on the environment. The environmental hazards caused by farmers, with herbicide spraying done using backpack sprayer to protect plants against diseases and insects remains un-notable to many with their poor understanding of the interactions between weed control methods and the impact on the environment [9].

The environmental hazards experienced do affect soil organisms, reduce the fertility of the soil and reduce agricultural labour force with farm labour sick conditions and untimely death among farmers. Thereby, limiting the proficiency of the soil, optimizing farmers' potential for sustainable farming and food shortage production. Moreover, many crop farmers seem to involve in animal husbandry as livelihood diversification strategy to bolster food availability and avail more rewarding farming income under poor sanitary system with inclinations of zoonotic diseases. International Labour Organization [10] reported that high prevalence of epidemic and endemic diseases in most rural areas further aggravates poor health and misery of farmers.

Head portage is observed as a common means of transportation of crop produce from rural farms to farmers' homes markets with overstressed muscular effects that could lead to body pains and fever. Traditional processing methods of food crops like cassava and plantain among others for increased shelf-life and value addition could cause back ache, itching or scratching, cuts, skin irritation, dermatitis, pigmentation and fungal infection on skin, tiredness, headache, cough and swelling of the eyes due to smoke characterizing occupational hazards of women cassava processors in rural communities [11]. These small scale farmers concentrated in the rural areas are behind the bulk of food production in the country, yet prone to farming accidents and other hazards that could lead to injuries, reduction of work days and low economic returns with seemingly inadequate risk management and safety practices.

Vulnerability of crop farmers to farm and health hazards with little or no safety practices constitute threat to food production. Crop losses, food shortage and inefficiency of the farm labour remain imminent in circumstances of farm hazards. It has been established that farmers in many parts of Nigeria did not pay attention to the safety measures needed in the use of weed and insects control on crops [12,13]. Safety practices employed by farmers to mitigate farm and health hazards in farming situations with little or no crop and health risk insurance needs to be investigated. Moreover, there is paucity of research on the impact of the farming hazards on crop farmers and the safety practices used to mitigate hazard risks. It is against this backdrop the study developed the following objectives;

1. To examine the socio-economic characteristics of the selected food crop farmers,
2. To determine the crop farmers' sources of information on crop production safety practices,
3. To examine the crop farmers knowledge of farm hazards experienced in crop production
4. To ascertain the constraints faced by the respondents in utilizing safe farming practices

Hypotheses

Ho1: There is no significant relationship between the socioeconomic characteristics of the crop farmers and the safe practices utilized

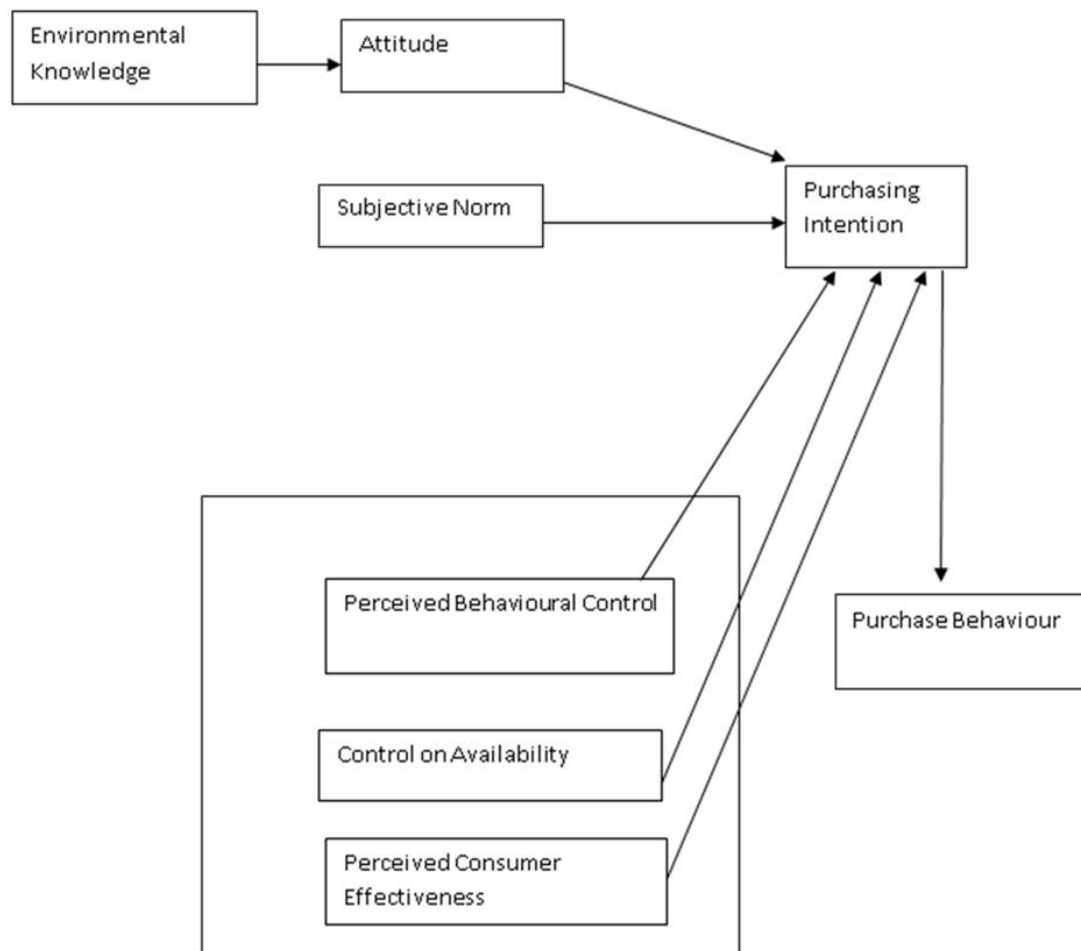
Ho2: There is no significant relationship between respondents' knowledge on farm hazard and their safe farming practices

Ho3: There is no significant relationship between respondents' constraints to safe practices and the safe farming practices utilized.

Theory of planned behaviour is adopted for this study as propounded by Ajzen [14] that individual behaviour is a function of intent to respond to confronted situations, with the conscious awareness of acceptable behaviour to a society. Individual behaviour depends on personal disposition towards a situation and environmental norms that subject the individual demonstrate such behaviour. Attitude towards the behaviour is defined as the individual's feelings about exhibiting behaviour in response to a situation. It is determined through an assessment of individual's belief on the likely consequences of his behaviour over a situation. Attitude can be assessed as an individual's disposition towards an event, either good or poor. It is believed by the individual as the best course of action under such circumstance. The opinion of people around the individual motivates his or her behaviour and attitude towards environmental issues. Subjective norm can be defined as individual's disposition to issues and enthusiasm derived from the environment to behave in a manner thought as appropriate in any circumstance.

Behaviour is influenced by intention. Intention involves a mental process an individual passes through before exhibiting certain behaviour. It could be a slow or fast response to issue. It usually depends on the personality of an individual. Intention of an individual is associated with behaviour and environmental subjective norms which control the perceived behaviour of an individual over issues. This theory is related to farmers utilisation of safe farming practices as an appropriate concept to sustainable and profitable farming in that availability of safe farming practices at their disposal and the environmental knowledge of safe farming practices in crop production manifested through their safe farming information seeking behaviour will influence their attitude

towards safe farming practices utilisation, while their subjective norm, which is the decision made over appropriate safe farming practices to adopt under their farming circumstances, will inform whether safe farming practice is ideal for them to use or not, which will further inform their attitude towards it (Figure 1).



Source: Ajzen (1991)

Figure 1: Schematic representation of the theory of planned behaviour

Methodology

Area of Study

The study was conducted in Ikole Local Government Area of Ekiti State, Nigeria. The climate is predominantly humid with rainfall ranging between 2000mm in the coastal areas to 1200 mm in extreme northern parts. The rainfall is distributed over April to October, followed by a short break between July and early August. Food crop farmers predominate this area with arable crops like maize, yam, cassava, vegetables, pepper, okra and some cash crops like cocoa, kolanut, oil palm, plantain, banana and rubber. The farmers also raise animals like goats, sheep, poultry and cattle.

Population and Sampling Procedure

The population of the study constitutes food crop farmers in Ekiti State. Multi-stage sampling techniques was used to select the local government area and respondents for the study based on the large intensity of food crop farmers concentrated in the study area, among other local government areas constituting sixteen Local Government Areas in the state. Forty percent of the eight (8) cells of Agricultural Development Programme, monitoring and supervising Ekiti State agricultural activities in Ikole Local Government Area were selected through random sampling method to give (3) cells (Ikole, Oke-Ako, Ijesa-Isu). The second stage involved forty percent of the 262 registered farmers in the selected three cells of Agricultural Development (ADP) to make a total of 105 respondents as the sample size for the study.

Data Analysis

Data collected was analyzed using descriptive statistics of frequency counts and percentages. Inferential statistics such as, Chi-square (χ^2) and Pearson Product Moment Correlation was used to analyze the study hypotheses. Focus Group Discussion was used to elicit in-depth information from the sixteen participants that added supplementary data to the study.

Measurement of Variables

Socio-economic characteristics were measured in nominal and interval levels. Respondents' sources of information on safe farming practices were asked from the list of items presented to them on the scale of Always (2), Occasionally (1) and Never (0). Knowledge on farm hazard was elicited and measured as Yes (1) and No (0), the minimum score was (8.00) and maximum score was (12.00). The mean score was determined as 9.82, used as the index to categorize respondents' levels of knowledge. Constraints to safe farming practices were measured as serious constraint (2), mild constraint (1) and not a constraint (0). Safe farming practices was measured as Always (2), Occasionally (1) and Never (0). The mean score obtainable was 10.69 used as the bench mark to determine respondents level of compliance with safe farming practices the minimum score (5.00) and maximum score (15.00) were obtainable.

Results and Discussion

| Variables | Frequency (105) | Percentage | Mean |
|-------------------------------|-----------------|------------|------------|
| Age | | | |
| < 30 years | 1 | 1 | |
| 30-39 years | 17 | 16.2 | |
| 40-49 years | 35 | 33.3 | 49.02±9.35 |
| 50-59 years | 33 | 31.4 | |
| 60 and above | 19 | 18.1 | |
| Sex | | | |
| Male | 77 | 73.3 | |
| Female | 28 | 26.7 | |
| Marital Status | | | |
| Single | 9 | 8.6 | |
| Married | 93 | 88.6 | |
| Widowed | 2 | 1.9 | |
| Widower | 1 | 1 | |
| Level of Education | | | |
| No Formal Education | 64 | 61 | |
| Primary | 20 | 19 | |
| Secondary | 14 | 13.3 | |
| Tertiary | 7 | 6.7 | |
| Secondary Occupation | | | |
| Livestock Rearing | 72 | 68.6 | |
| Agricultural processing | 24 | 22.9 | |
| Artisan | 9 | 8.6 | |
| Farm size | | | |
| 1 - 3acres | 25 | 23.8 | |
| 4 - 6acres | 72 | 68.6 | |
| 7 -9acres | 8 | 7.6 | |
| Average Monthly Income | | | |
| # 20,000 - # 30,000 | 22 | 21 | |
| # 31,000 - # 40,000 | 61 | 58.1 | |
| # 41, 000 - # 50,000 | 16 | 15.2 | |
| above # 50,000' | 6 | 5.7 | |
| Farming experience | | | |
| 11 - 20 years | 20 | 19 | |
| Above 20 years | 85 | 81 | |

Field Survey, 2018

Table 1: Socioeconomic characteristics of the respondents

The socio-economic characteristics of food crop farmers in Ikole Local Government Area of Ekiti State, is presented in Table 1. Majority (73.3%) of the respondents were men. This implies that men more involved in food cropping than their female counterparts in the study area, plausibly because of its laborious farming operations. Ekong [15] corroborated this finding that, there are more male

household heads in active productive farming in the rural areas of southwest Nigeria than females. Age of the respondents showed a mean age of 49.02 ± 9.35 years, which reveals that the respondents were in their active and economically productive ages. This may be connected to the fact that young farmers have the tendency to withstand the stress of subsistent farming and take risk more than the aged ones. The marital status of the respondents revealed that 88.6% were married. This result is an indication of high marital status among the respondents, with a possibility of sustaining their farming practices on family labour. This finding is supported by Ekong [15] that marriage facilitates farming activities in rural areas, because it is one way to have access to unpaid labour, which farmers usually crave. The educational status of the respondents revealed that 61% of them had no formal education.

This implies that many of the crop farmers had low level of formal education, and might limit their opportunities to informed knowledge on farm risk mitigation and improved cropping practices for enhanced farm income. Many (68.6 percent) of the respondents had between 4-6 acres of farm land for their cropping activities. This suggests subsistence farming engagement by the respondents, which clearly indicates a low level of income among respondents. This result come to terms with Agumagu, *et al.* [16] that rural farmers are mostly low income earners and as such, do not have adequate finance to carry out some cost-intensive mitigation and adaption practices. The result further reveals that all food crop farmers indicated that they have other occupations than food crop production. This implies that additional occupation could have bolster economic effect of meeting respondents' financial demands more responsibly, serving as livelihood diversification opportunity and security against crop losses. The result also revealed that 81% of the respondents had more than 20 years of crop farming experience. This indicates that majority of the respondents had been in sustainable crop farming enterprise for substantial years, with possible wealth of experience useful for improved cropping practices and risk mitigation for enhanced farm income.

Sources of Information on Safe Farming Practices

Table 2 shows that 98.1% of the crop farmers occasionally sourced safety practices as mitigation information against crop losses from extension agents. This implies that respondents had limited accessibility to extension services, plausibly to higher farmers ratio compared to the extension agents. Also, 96.2% of the respondents always had access to safe practices in crop production through the radio. This implies that safe and better crop production practices were not often aired on the radio for farmers' listenership. The result also revealed that 94.3% of the respondents always sourced safe crop farming operations from farmers association. The implication of this is that, farmers association offered respondents' high accessibility to safe cropping operations and risk mitigation through role model farmers and shared farming experiences. This corroborates the work of Heckathorn [17] that quality information is a variable that highly has profound effect on actors. Zarzecka, *et al.* [9] supported these findings that effective weed control can eliminate the competitive effects of weeds and should be based on detailed knowledge and impacting factors on the environment as sustainable farm management practices which are safe.

| Variable | Frequency | Percentage |
|------------------------------|-----------|------------|
| Extension Agent | | |
| Always | 1 | 1 |
| Occasionally | 103 | 98.1 |
| Never | 1 | 1 |
| Radio | | |
| Always | 101 | 96.2 |
| Occasionally | 2 | 1.9 |
| Never | 2 | 1.9 |
| Farmers Association | | |
| Always | 99 | 94.3 |
| Occasionally | 4 | 3.8 |
| Never | 2 | 1.9 |
| Friends and Relatives | | |
| Always | 101 | 96.2 |
| Occasionally | 3 | 2.9 |
| Never | 1 | 1 |
| Native intelligence | | |
| Always | 49 | 46.7 |
| Occasionally | 53 | 50.5 |
| Never | 3 | 2.9 |

Field Survey, 2018

Table 2: Sources of Safe Farming Practices

It was further revealed that 96.2% of the respondents sourced safe cropping operations always from friends and relatives who are model farmers in their community. This implies that respondents had low preference and confidence in seeking safe cropping operations from friends and relatives who seem not to have reliable information that could enhance respondents' profitable crop production. More than half (50.5%) of the respondents occasionally relied on their native intelligence for safe cropping operations that could enhance their profitability. This implies that many of the respondents did not bank on their native intelligence often because they were desirous of appropriate knowledge that could yield them profit and motivation for increased crop production. These findings are supported by Nwokocha, *et al.* [18] that farmers need accurate, complete and user friendly information to enhance agricultural production.

This was buttressed in the FGD reports that respondents preferred and sourced safe cropping operations occasionally through the radio, friends and relatives.

"because we usually hear of safe cropping operations and the importance of adherence to them through the radio, friends and relatives that are very accessible channels of improved farming information to us".

Knowledge on Farm Hazards

Table 3 shows the result of respondents' knowledge on cropping hazards. The result revealed that all the respondents had knowledge of muscle and body pains, farm injuries, skin diseases, crop harvest loss to erosion and crop failure to drought, respectively as farm hazards. These imply that the crop farmers did not just notice the aforementioned as farm hazards but had the knowledge of them and did experience them almost every planting season with their usual laborious traditional cropping systems of farming. Majority (99%) of the crop farmers were knowledgeable of the vulnerability to snake bite and scorpion sting, likewise cold and fever working in the rain and sunlight and physical exhaustion. These show that crop farmers were inadvertently exposed to farm hazards. This may be as a result of crude farming method of land clearing adopted, making the farm land habitable for reptiles. Also, inaccessibility to farm machineries prone them to non-human friendly farming weather conditions of practice, leading them to sick conditions and loss of farm days.

| Variable | Frequency | Percentage |
|--|-----------|------------|
| Muscle and Body pains | 105 | 100 |
| Snake bite and scorpion sting | 104 | 99 |
| Farm injuries | 105 | 100 |
| Hardening of soil and infertility of soil to climate change | 74 | 70.5 |
| Cold and Fever working in the rain and sun | 104 | 99 |
| Exposure to burn from wrong mix of agrochemicals | 59 | 56.2 |
| Respiratory problems through inhaling of herbicides solution | 12 | 11.4 |
| Skin diseases | 105 | 100 |
| Crop harvest loss to erosion | 105 | 100 |
| Crop failure to drought | 105 | 100 |
| Crop damage by herders | 105 | 100 |
| Crop harvest loss to theft | 104 | 99 |
| Physical exhaustion | 104 | 99 |

Field Survey, 2018

Table 3: Farmers knowledge on farm hazards

It was further revealed that 56.2% of the respondents had knowledge of possible burn from wrong mix of agrochemicals. This could be as a result of their personal experience or being learnt from inscribed instructions on the purchased agrochemicals for farm use. However, 11.4% had knowledge of vulnerability to respiratory problems through inhaling herbicides solution. This gives a hint that only a few of the respondents knew the hazard they exposed themselves to by inhaling herbicides solution in the course of its application to the farm land. Large percent (75.0) of the respondents experienced hardening of soil and infertility of soil as a negative effect of climate change posing farm hazard to them. This indicates that many of the crop farmers were knowledgeable of the negative and devastating effect of climate change on their farming soils. These findings are supported by Adesoji and Kerere [19] that knowledge of farming-related hazards is expected to be acquired from farming experience.

FDG excerpts with participants supported this finding that

"Long years of engagement in farm operations remain our wealth of experience on farm hazards in farm operations and drive to seek farming safety measures to reduce our vulnerability to farm hazards."

Level of Knowledge on Farm Hazards

Table 4 shows that the respondents' knowledge of farm hazard was high in the study area, with 56.2% of the crop farmers having a mean score higher than 9.82. This high knowledge of farm hazard is expected to spur them to pragmatically search for effective knowledge and safe farming practices to cope with and mitigate the known farm hazards that could limit their productivity and profitability.

| Levels of Respondents Knowledge on Farm Hazard | % | Minimum | Maximum | Mean | SD |
|--|------|---------|---------|------|------|
| High | 56.2 | 8 | 12 | 9.82 | 0.95 |
| Low | 43.8 | | | | |

Field Survey, 2018

Table 4: Distribution of Respondents Knowledge on Farm Hazards

Safe Farming Practices (SFPs)

Table 5 shows that 85.7% of the respondents always ensured crop biosecurity in their cropping operations. This implies that high percentage of the respondents employed crop-biosecurity always through multi-cropping to cater for the advent of crop failure, as some crops may not be able to withstand vagaries of weather conditions. This may be connected to coping strategy for profitable cropping venture. Majority (81.9%) of the respondents always washed the clothes they worn on the farm previously, before wearing them. This may be connected to the observance of hygienic practice inculcated over time or taking precaution against possible skin diseases from wearing dirty farm cloth. Substantial percentage (64.8%) of the respondents always worked in the early hours of the morning before sunrise. This could be a strategy to prevent them from contracting fever easily and experiencing quick physical exhaustion with their usual intensive agronomic activities.

| Variable | Always (%) | Sometimes (%) | Never (%) |
|--|------------|---------------|-----------|
| Working in the early hours of the morning before sunrise | 64.8 | 27.6 | 7.6 |
| Use of hand gloves | 0 | 32.4 | 67.6 |
| Wearing of hats in the sun | | 80 | 20 |
| Wearing of rain boots or shoes on the farm | 1.9 | 70.5 | 27.6 |
| Use of nose cover | | 6.7 | 93.3 |
| Washing of hands with soap and water immediately after application of agro-chemical | 13.3 | 77.1 | 9.5 |
| Washing clothes worn on the farm before wearing again | 81.9 | 8.6 | 9.5 |
| Clearing of the road to the farm for easy passage and transport of harvested produce | 12.4 | 83.8 | 3.8 |
| Routine weeding of the farm to prevent habitation of reptiles | 39 | 57.1 | 3.8 |
| Ensuring crop biosecurity | 85.7 | 14.3 | |
| Strengthening cross border operations with local hunters to forestall herders attack | 67.6 | 20.9 | 11.4 |

Field Survey, 2018

Table 5: Safe Farming Practices

The result also revealed that 70.5% of the respondents sometimes wore rain boots or shoes on the farm, while 57.1% ensured routine weeding of their farms to prevent the habitation of reptiles injurious to them. These imply that majority of the respondents often adopt conscious efforts to preventable farm injuries by working on the farm, with rain boot and regular weeding of their farm land.

Level of Safe Farming Practices

Table 6 shows that 57.1% of the crop farmers recorded low safe farming practices against farm hazard, with a mean score of less than 10.69 belonging to this category. This may be connected to 61% of the crop farmers not having any form of formal education. This could be the reason for their low compliance to safety practices against farm hazards.

| Levels of Respondents Safe Farming Practices | % | Minimum | Maximum | Mean | SD |
|--|------|---------|---------|-------|------|
| Low | 57.1 | 5 | 15 | 10.69 | 2.04 |
| High | 42.9 | | | | |

Source: Field survey, 2018

Table 6: Level of safe farming practices

Constraints to Safe Farming Practices

Table 7 shows that almost all (99%) the respondents had poor access to farm machineries as a serious constraint. This may be as a result of government bureaucracy and high hiring cost of farm machineries at local government and state ministries of agriculture. This result also reveals that 99% of the respondents indicated that non-guaranteed market for their harvested food crops remained

a serious constraint to them. This shows that the respondents were vulnerable to experiencing glut in production and selling below profitable market price to potential customers. This could cause financial losses to many of the farmers and possibly loose interest in sustaining their production, let alone increasing it for improved food security in the farming communities. Moreover, 98.1% of the respondents indicated that poor technical capacity on adaptation to climate changes poses a serious problem in ensuring safe farming practices. This implies that the respondents do not have the technical capability to adapt to climate change, which has a strong negative influence on their farm production.

| Variable | Serious Constraint (%) | Mild Constraint (%) | Not a Constraint (%) |
|--|------------------------|---------------------|----------------------|
| Discomfort working with gloves | 2.9 | 93.3 | 3.8 |
| Movement with rain boots slows down work pace | 1 | 93.3 | 5.7 |
| Inconsistent government policies | 96.2 | 3.8 | 0 |
| High cost of overall and boots | 0 | 9.5 | 90.5 |
| Poor access to farm machineries | 99 | 1 | 0 |
| Poor information on weather forecast | 92.4 | 7.6 | 0 |
| Poor weather forecast adaptability to local environment | 90.5 | 8.6 | 1 |
| Inadequate crop bio-security | 96.2 | 3.8 | 0 |
| Non-guaranteed market | 99 | 1 | 0 |
| Post-harvest losses | 63.8 | 36.2 | 0 |
| Poor sales of resilient crops to climate variation | 86.7 | 12.4 | 1 |
| Poor technical capacity on adaptation to climate changes | 98.1 | 1.9 | 0 |

Field Survey, 2018

Table 7: Constraints to Safe Farming Practices

Also, 96.2% of the respondents admitted that inconsistent government policies remain a serious constraint to ease farm operations. This implies that government policies as a result of change of government pose problems to beneficiaries of good policies, as successful government come up with changed policies and never see governance as a continuum for the wellbeing of farmers in the state. These findings are in line with the assertion of Lehtola *et al.* (2008) that there is little evidence that farmers farm management techniques and farm risks management have been effective.

It was further revealed that 98.1% of the respondents had poor technical capacity on adaptation to climate changes as a serious constraint to their cropping operations. This implies that substantial percentage of the respondents had inadequate capacity to appropriately manage the negative effects of climate change on their crop production for appreciable profit gain. This result is in line with Ifeanyi-obi, *et al.* [20] who reported that farmers most times encounter high risks of loss from drought, uncertain rainfall and deforestation. Furthermore, 63.8% of the respondents indicated post-harvest losses as a serious constraint. This could be as a result of poor handling of harvested crops during transportation to the market or poor capacity for storage and processing of harvested crops for prolonged shelf life and profitable cropping.

The results of FGD corroborate this finding. According to a discussant Village Development,

“Safe farming practices offer huge benefits of preventing injuries, farm losses and death among crop farmers. We are predominantly arable crop farmers; we do crop processing and marketing. We are confronted mostly with problems of poor access to farm machineries and non-guaranteed market for our farm produce despite all our innumerable painstaking and laborious farm operations.”

Another discussant remarks during FGI that:

“low technical information and adaptability to the changes in weather conditions affecting our farm plants and produce negatively remain a great problem to us and fear that our younger ones and children may not embrace farming with time, even though we have accepted our fate and age will not make us opt for a new professionw”.

Ho1: Relationship between Socio-economic Characteristics of Respondents and their Safe Farming Practices

Table 8 shows that significant relationship existed between sex of the respondents and safe farming practices ($\chi^2 = 24.06$, $p = 0.000$). This implies that sex of the respondents influenced adoption of safety practices against farm hazard. This could be as that women likely showed more meticulousness to farming safety practices than men who could likely show complacency to farming safety practices as a result of their bravery and over confidence in cropping and farming operations. Educational level of the respondents was also significant to safe farming practices ($\chi^2 = 12.21$, $p = 0.002$). This implies that the higher the educational level of respondents, the more the possibility of adopting safety practices against farm hazards. This could be that the educated crop farmers had advantage of access to a variety of information sources on farm safety practices than the non-educated crop farmers and they possibly adopted safe farming practices than the non-educated crop farmers. This finding is supported by Ojo [21] that education, which represents human capital of farmers, is generally postulated to have a positive impact on efficiency of farmers [22,23].

| Variable | Chi-square value (χ^2) | p-value | Decision |
|------------------------------|-------------------------------|---------|-----------------|
| Sex | 24.06 | 0 | Significant |
| Marital Status | 3.45 | 0.326 | Non-Significant |
| Educational level | 12.21 | 0.002 | Significant |
| Secondary Occupation | 6.06 | 0.108 | Non-Significant |
| Farm size | 4.5 | 0.105 | Non-Significant |
| Average monthly income | 5.53 | 0.137 | Non-Significant |
| Membership of association | 1.47 | 0.225 | Non-Significant |
| Years of cropping experience | 0.05 | 0.83 | Non-Significant |

Source: Field survey, 2018

Table 8: Table showing Chi-square analysis of the relationship between respondents' socio-economic characteristics and cropping safety practices

Secondary occupation did not have a significant relationship with crop farmers safe farming practices ($\chi^2 = 6.06, p = 0.108$). This implies that the secondary occupation crop farmers got themselves involved, did not influence their farming safety practices other than providing alternative sources of income for better social and economic well-being. The farm size of the respondents did not have a significant relationship with respondents' safe farming practices ($\chi^2 = 4.05, p = 0.105$). This indicates that respondents' farm size did not influence the safe farming measures adopted by them to prevent possible farm hazards. Respondents average monthly income had no significant relationship on their farming safety practices ($\chi^2 = 5.53, p = 0.137$). This implies that respondents' average monthly income did not influence their safe farming practices. This could be that the respondents paid little or no priority to cropping safety practices as a result of overwhelming financial and social respondents as pressing needs, limiting their financial commitments to cropping safety practices.

Respondents years of cropping experience had no significant relationship with their cropping safety practices ($\chi^2 = 1.47, p = 0.137$). This implies that respondents' experience on cropping over the years did not influence adoption of safe farm practices. This could be as a result of the fact that the experience gathered over years by the respondents has not substantially reflected effective cropping safety practices. Hence, crop farmers might need updated knowledge of improved and appropriate cropping safety practices in their cropping venture to prevent them from farm hazards and financial losses.

Ho2: Relationship between Respondents Knowledge on Farm Hazard and their Safe Farming Practices

Table 9 revealed that a significant relationship existed between respondents knowledge on farm hazards and safe farming practices ($r = 0.243, p = 0.010$). This implies that respondents' knowledge on safe farming practices influenced their adoption of safe farming practices, as appropriate and effective measures of safe guarding farm hazards among crop farmers.

| Independent Variable | R | P |
|--------------------------|--------|------|
| Knowledge on Farm Hazard | 0.243* | 0.01 |

Field Survey, 2018

Table 9: Relationship between Respondents Knowledge on Farm Hazard and their Safe Farming Practices

Ho3: Relationship between Respondents Constraints to Safe Farming Practices and Safe Farming Practices Utilized

Table 10 shows that significant relationship existed between constraints faced by respondents in ensuring safe farming practices and their safe farming practices ($r = -0.082, p = 0.000$). This implies that the higher the constraints faced by the respondents in ensuring safe farming practices, the lesser their adoption of safe farming practices. This could be as a result of the overwhelming constraints faced by respondents in adopting safe farming practices. Hence, this poses discouragement to the farmers on efficient utilization of safe farming practices.

| Independent Variable | R | P |
|----------------------|---------|---|
| Constraints | -0.082* | 0 |

Table 10: Relationship between Constraints Faced by Respondents in adopting Safe Farming Practices and Safe Farming Practices

Another discussant buttressed this finding with remarks during FGI:

“We face constraints in utilising safe farming practices in different forms, ranging from government strict conditions in access and utilising farm machineries for our farm operations, inconsistent policies that abruptly remove the benefits we get from a past government when a new one emerges, low technical empowerment to manage the vagaries of weather conditions affecting our food produce among others which discourage us from reckoning with the government for assistance on safe and profitable farming”

Conclusion

The study concludes that the food crop farmers were in their active ages and are expected to be productive in the various livelihood activities they engaged in, and more so that, majority were male. Due to the low level of education among the respondents, they have

limited sources of information on safe farming practices from which they could access information that can enhance their livelihood activities. Another conclusion from this study is that secondary occupations did not guarantee priority and support for safe farming practices among the respondents. The study further concludes that the level of food crop farmers' knowledge on farm hazard was low, while their level of compliance with safe farming practices was low. The constraints which majority of the crop farmers' faced and which made them vulnerable to farm hazard centered on inadequacy of extension services and inadequate government support for agricultural development. The study concludes that amidst constraints which confronted the respondents, poor access to farm machineries and non-guaranteed market for harvested crops were the most severe constraints.

Recommendations

- Successive government should consciously sustain good policies on agriculture and their implementation to boost youth participation and enhancement of food security in the country.
- Agricultural extension agents should be better remunerated and trained by government on prompt linkage of farmers with proven innovative researches by researchers on farm risk mitigation and effective coping strategies to negative climate change and other farm hazards.
- Agricultural engineers should be better remunerated and provided with enabling environment by government to locally fabricate machines that should be subsidized for farmers, either to purchase or hire for safe farming activities in order to ensure profitable farming to the crop farmers and food security in the domestic markets.
- Extensions agents should be better encouraged to increase visits to the farmers regularly in order to arm farmers with effective information on how they can prevent or stem farmers crop losses, prevent farm hazards and provide technical capacity on adaptation strategies to climate change.
- There should be increased awareness of farmers on safe farming activities through mass media for better access to productive farming practices and adoption of better farm practices.

References

1. Cole D (2006) Understanding the Links between Agriculture and Health: Occupational Health Hazards of Agriculture, focus 13, Brief 8 of 16. International Food Policy Research Institute.
2. Park K (2011) Park's Textbook of Preventive and Social Medicine, 21st Edn. M/s Banarsidas Bhanot Publishers. 1167, Prem Nagar, Jabalpur, 482 001 (M.P.) India.
3. Idio AD, Adejare GT (2013) Conceptual Analysis of Rural Farmers' Health and Its Implication on Agricultural Productivity. *Niger J Agr, Food Environ* 8: 32-38.
4. International Fund for Agricultural Development (2011) Rural poverty in Nigeria.
5. United Nations Children Education Fund UNICEF (2008) Draft Country Programme Document, Nigeria. E/ICEF/2008/P/L.7, UNICEF, Enugu, Nigeria.
6. Olowogbon ST (2011) Health and Safety in Agriculture and Food Security Nexus. *Int J Emer Sci* 1: 73-82.
7. Lawal BO, Torimiro DO, Banjo AD, Joda AO (2005) Operational Habits and Health Hazards Associated with Pesticide Usage by Cocoa Farmers in Nigeria: Lessons for Extension Work. *J Human Ecol* 17(3): 191-5.
8. Ogunjimi SI, Farinde AJ (2012) Farmers' Knowledge Level of Precautionary Measures in Agro-Chemicals Usage on Cocoa Production in Osun and Edo States, Nigeria. *Int J Agri Forestry* 2: 186-94.
9. Zarzecka K, Gugala M, Grzywacz K, Sikorsa A (2020) Agricultural and Economic Effects of the use of Biostimulants and Herbicides in Cultivation of the Table Potato Cultivar Gawin. *Acta Sci Pol Agric* 19: 3-10.
10. International Labour Office (2000) Safety and health in agriculture, Published by Safe Work, International Labour Office, 4, route de Morillons CH-1211 Geneva, Switzerland.
11. Adejare TG (2001) Health Problems of Women Cassava Processors in Oluyole Local Government area. M.sc Thesis, Department of Agricultural Extension and Rural, University of Ibadan. Ibadan.
12. Alimi T (2004) Use of Cultural Practices Economic Impact of Insecticide Use and Awareness and Practice of Insecticide Safety Precaution on Okra Production. *J Veg Crop Prod* 10: 24-25.
13. Farinde AJ, SI Ogunjinmi (2006) Assessment of Operational habits and health related problems in the use of Agro-chemicals among Cocoa Farmers in Osun State of Nigeria. *J Agri Rural Devt* 1: 39-48.
14. Ajzen I (1991) The theory of planned behavior. *Organizational Behav Human Decis Processes* 50: 179-211.
15. Ekong E Ekong (2003) Rural Development in Nigeria: An Introduction to Rural Sociology. Dove Educational Publishers, Uyo, Akwa-Ibom State.
16. Agumagu AC, Ifeanyiobi CC, Iromuanya PK (2014) Constraints Faced by Rural Women Arable Crop Farmers in Adapting to Climate Change in Orlu Agricultural one of Imo State. *Nigerian J Rural Sociol* 1: 45-54.
17. Heckathorn DD (1997) Overview: The paradoxical relationship between sociology and rational choice. *The American Sociologist* 28: 6-15.
18. Nwokocha VI, Ibeawuchi II, Chukwueke NO, Aubuikue NO, Nwokocha GA (2009) Overview of the Impact of Information and Communication Technology on Agricultural Development in Imo State, Proceeding of the 43rd Annual Conference of the Agricultural Society of Nigeria held in Abuja, from 15-20 August, 009, Nigeria, p.714.
19. Adesoji SA, Kerere FO (2013) Assessment of the knowledge level of fishers and fish farmers in Lagos State, Nigeria. *Int J Knowl, Innovation and Entrepreneurship* 1: 41-56.
20. Ifeanyi-obi CC, Etuk UR, Jikewai O (2012) Climate change, effects and adaptation strategies, Implication for Agricultural Extension System in Nigeria. *Greener J Agri Sci* 2(2).
21. Ojo SO (2000) Effect of socio- economic variables on technical efficiency of small scale oil palm farmers in Ondo State: Food and fiber production in Nigeria in the 20th century (proceedings of the first annual Conference of the College of Agriculture and Veterinary Medicine Abia State University Held on 10th - 20th September.
22. Lehtola MM, RH Rautiainen, LM Day, E Schonstein, J Suutarinen, et al. (2008) Effectiveness of interventions in preventing injuries in agriculture: A systematic review and meta-analysis. *Scandinavian J Work Environ Health* 34(5): 327-36.
23. Miles MB, Huberman AM (1994) *Qualitative Data Analysis* (2nd Edn). Thousand Oaks, CA: Sage Publications.