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# Extent of Usage of Environment-Friendly Farming Practices in Ekiti State, Nigeria

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## ABSTRACT

*Environment Friendly Farming Practices (EFFPs) are methods toward ensuring sustainable development through the use of environmental and soil conservation practices. The study examined the extent of usage of selected EFFPs in Ekiti State. Multi stage sampling procedure was used to randomly select 200 respondents from farming communities in the State. Primary data were collected through the use of interview schedule. Data obtained were analysed and presented using Chi square, Pearson's Product Moment Correlation and ANOVA. EFFPs always practised by the farmers was mulching ( = 2.81) while the least practised was terracing ( =1.09). Majority (61%) of the farmers obtained information on EFFPs through radio and television. The main contribution of the State government to environment friendly farming practices was the provision of information. There existed significant relationships between income (r= -0.21), farming experience (r= -0.24), farm size (r= -0.23), age (r= -0.15), and the extent of usage of EFFPs. There is need for improvement in extension services through enhanced roles of extension agents in the adoption and usage of environment-friendly farming practices in the State in order to enhance sustainable agricultural practices and environment.*

**Key words**: Ekiti State, Environmentally friendly, farming practices, usage

## INTRODUCTION

There is no doubt that agriculture still remain the key pillar of most African economy (Alufoha and Oyoboh, 2013). Agricultural activities have both beneficial and harmful impacts on the environment through changing the quality or the quantity of locally available natural habitats, biodiversity and landscapes (Sambo, 2015). Agricultural production affects water, air and soil quality, influences ecosystems and biodiversity and shapes rural landscapes (Vojtech, 2010). The effects of prolonged and over usage of chemicals in crop production has resulted in human health hazard and pollution of environment and ground water (Manimozhi and Gayathri, 2012). In Nigeria, human induced soil degradation is a common phenomenon (James and Ngale, 2016). A visible parallel correlation between higher productivity, high chemical input use and environmental degradation and human hazards effects is evident in Nigeria where commercial agriculture is gradually gaining ground (Alufoha and Oyoboh, 2013).

According to Buddhibhveneswari (2005), reflecting on excessive, unscientific and imbalance use of chemical inputs, agricultural scientists, environmentalists and policy makers are now advocating the introduction of low input sustainable agriculture, ecological farming, eco-friendly and integrated farming system, which is mainly based on the principle of integration of both organic and inorganic farming system so also to acquire the target of agricultural production without causing several environmental problems. The necessity of having alternative agriculture methods which can be functional in a friendly eco-system while sustaining and increasing the productivity is widely discussed not only among the agricultural scientists but also even common man (Rajesh and Nidhishukla, 2014). There should be a balance between environment and farming practices in such a way that farming practices do not harm the integrity of the environment (Stockwell and Bitan, 2012). Environment-friendly agriculture is mainly aimed to achieve optimum agricultural production without posing any severe problem to our environment (Bhatt, 1999).

Environment-friendly agricultural technology does not assault the nature but would have key roles to play in ensuring food security and in improving human health and in rehabilitating and conserving the environment to

safeguard the well-being of the future generations (Manimozhi and Gayathri, 2012). Several strategies have been devised to combat soil degradation, among these are cover cropping, terracing, contour plowing, crop rotation, agroforestry and intercropping (Ademola and Oluyide, 2014). Cover crops, residues retention, conservation tillage and integrated pest management are central components of any sustainable system (Preston, 2003). Mulching is important practices in crop production since it controls soil erosion, suppresses the growth of weeds and improves soil moisture content during the season of inadequate rainfall (Gido *et al*., 2013).

Integrated Pest Management is an approach that can help lower production costs, reduce exposure to pesticides and improve long-term sustainability of the agricultural system (Mauceri, *et al*., 2005). According to Ademola and Oluyide (2014), terracing is the levelling of a section of a hilly cultivated area to prevent rapid surface run-off of water. It gives the landmass a stepped appearance thus slowing down the easy washing down of the soil (Ademola and Oluyide, 2014) Terracing prevents erosion and conserve ground water (Parrot and Marsdan, 2002). The global development of environmentally friendly agriculture as well as the practice or lower exterior input agriculture is the outcome of the search for the models of sustainable food production and consumption (Abbasov, 2015). With increasing globalization of information through modern communication technologies, farmers should have access to various channels of information and extension should forge new link to create a network for sharing knowledge and experience (Nsoanya and Nenna, 2011).

The Federal, State, Local Governments, Non-Governmental Organisations and private institutions have made several efforts through provision of resources, technologies, practices so as to address the environmental problems but their dreams are yet to be realised (Sambo, 2015). The study aims at determining the usage of environment-friendly farming practices in Ekiti State, Nigeria. Specifically, the study is to 1) identify EFFPs being practised in Ekiti State, 2) identify the sources of information on EFFPs, 3) examine the extent of usage of EFFPs, and 4) to examine the contributions of State government to encourage environment friendly farming in the State. The study hypothesized that 1) there is no significant relationship between farmers' socio-economic and production characteristics and the extent of usage of EFFPs and, 2) there is no significant difference in extent of usage of EFFPs in agricultural extension blocks and cells in the study area

# METHODOLOGY

## Study Ara

The study was carried out in Ekiti State. It is located in the Southwest of Nigeria between latitudes 7º25` and 8º05`N and between longitudes 4º45` to 5º50` east of Greenwich meridian. The State is bounded to the north by Kwara and Kogi States while it is bounded by Osun State to the west. To the east of Ekiti State is Edo State while it is bounded in the south by Ondo State (Figure 1). On creation, it had sixteen Local Government Areas. The State is mainly an upland zone, rising over 250 metres above sea level. It lies on an area underlain by metamorphic rock. It is generally undulating with a characteristics landscape that consists of old plains, broken by step-sided out-crops that may occur singularly or in groups or ridges. The State is dotted with rugged hills. The State enjoys tropical climate with two distinct seasons. These are the rainy season (April-October) and the dry season (November-March). Temperature ranges between 21ºC and 28ºC with high humidity of 70%. Tropical forest exists in the South, while savannah occupies the northern peripheries. The land of Ekiti is known for its forest resources, notably timber. The people of Ekiti State are predominantly agrarians. Food crops such as yam, cocoyam, rice, cassava, plantain and pumpkin are cultivated in the State, other notable crops like cocoa, cola nut, coffee and varieties of fruits like oranges, cherry, cashew, mango and banana are also cultivated in commercial quantities.

## Sampling, Instrument and Analysis

Multi-stage procedure was used to select 200 respondents from four blocks of Ekiti State Agricultural Development Programme operational zones. Firstly; the two zones were purposively selected for the study due to differences in topographical features of the study area. Secondly; four blocks (25% of the blocks) out of the16 agricultural extension blocks were randomly selected from the two zones (two blocks from each agricultural extension zones). Thirdly, five cells were randomly chosen from each of the selected block, making a total of 20 cells. Finally, at stage four, 10 farmers were randomly selected from each of the 20 selected cells making a total of two hundred respondents.

Interview guide was used to elicit information on EFFPs from the respondents. Farmers' access to extension agents was measured by numbers of extension agents' visit within a particular period of time. Farmers were asked to indicate their sources of information of EFFPs from the options provided. Respondents were asked to indicate the extent of their agreements with each indicator using three-point Likert scale of always used, occasionally used, and not used.

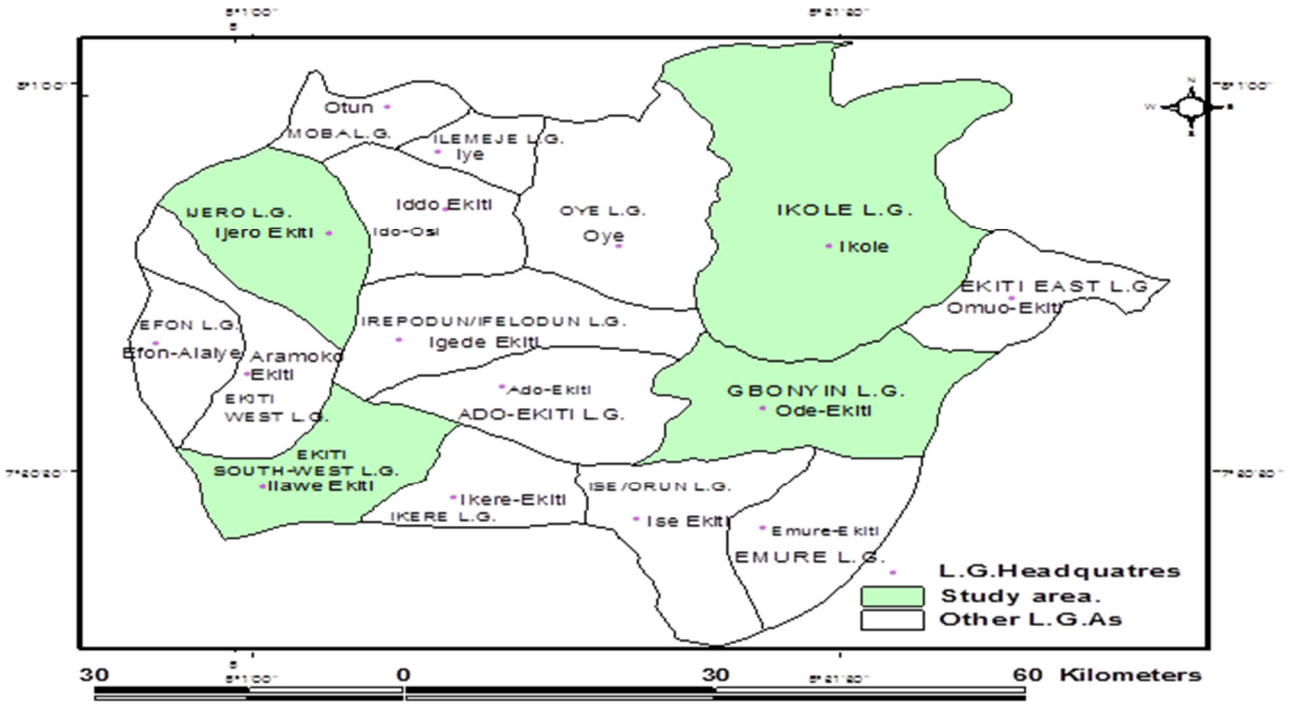


**Figure 1:** Map of Ekiti State showing the study area. Source: Ogunjinmi *et al.,* 2017

Figures of 3, 2 and 1 were assigned to 'always used, occasionally used and not used' respectively. These figures were then used to compute usage scores for each of the respondents with regards to the selected environment friendly farming practices. Farmers were also asked to indicate the State government's contributions to EFFPs from the list provided. Data were analysed and presented using tables, percentages and frequencies, Chi square, Pearson's Product Moment Correlation and ANOVA.

## RESULTS AND DISCUSSION

### Socio-economic and production characteristics of the respondents

Table 1 shows that more than half (56.5%) of respondents fall within the age bracket of 41-60 years. This suggests that the farmers within this age bracket were more involved in environment-friendly farming. This finding is lower than 66.9% reported by Oladipo *et al.* (2017) in Kwara State, Nigeria. The study further shows that 81.0% of respondents were male. This could suggest that male farmers were more involved in environment friendly farming practices. This is inconsistent with Adeola and Adetunbi (2015) reported a lower percentage (73.3%) of male farmers in a study conducted on sustainable agriculture while Rezvanfar *et al.* (2011) reported higher percentage (98.0%) of male famers in their study on organic agriculture. The findings of the study reveal that 89.5% of the farmers were married. This could imply that farmers practising EFFPs in the study area were married. Odoemelam and Ajuka (2015) reported a lower (84.4%) percentage of married farmers in a study conducted on sustainable environment.

Findings further show that 56.5% of the farmers were Christian. This could have resulted from Christianity being the dominant religion in Ekiti State. However, Okoro *et al.* (2016) in Akwa Ibom State, Nigeria reported that 97.5% of their respondents were Christians. About half (53.0%) of the farmers had no formal education. This might imply that majority of the farmers did not acquire education through formal setting. The result is similar to what was reported by Oladipo *et al.* (2017) where half of their respondents had no formal education in their study on utilization of soil conservation practices. The study also shows that majority of the farmers earned between ₦21,000-₦40,000 (22.0%), N41,000-N60,000 (27.6%) and N61,000-N80,000 (16.5%) respectively per annum. This could imply that majority of the farmers were low income earners with their monthly earnings far below the country's minimum wage of ₦18,000 per month. In addition, 28.0% and 37.0% of the farmers cultivated between 0-5 and 6 to 10 hectares of land. The large farm size was as result of integrated pest management mostly practised on cocoa farms with large

**Table 1:** Distribution of respondents based on personal and production characteristics (n=200)

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| 1-20 | 11 | 5.5 |
| 21-40 | 47 | 23.5 |
| 41-60 | 113 | 56.5 |
| >60 | 29 | 14.5 |
| **sex** | | |
| Male | 162 | 81 |
| Female | 38 | 19 |
| **Marital status** | | |
| Single | 12 | 6 |
| Married | 178 | 89.5 |
| Widow | 9 | 4.5 |
| Divorced/ separated | 2 | 1 |
| **Religion** | | |
| Christianity | 117 | 56.5 |
| Islam | 78 | 39 |
| Traditional | 5 | 2.5 |
| **Education** | | |
| No formal education | 106 | 53 |
| Primary Sch. Cert. | 46 | 23 |
| Secondary Sch. Cert. | 26 | 13 |
| N.C.E/OND | 14 | 7 |
| B.Sc./HND | 7 | 3.5 |
| Master/PhD | 1 | 0.5 |
| **Average annual income (₦)** | | |
| 1,000-20,000 | 39 | 19.5 |
| 21,000-40,000 | 44 | 22 |
| 41,000-60,000 | 55 | 27.5 |
| 61,000-80,000 | 33 | 16.5 |
| >80,000 | 29 | 14.5 |
| **Farm size (ha)** | | |
| 0-5 | 56 | 28 |
| 6-10 | 73 | 37 |
| 11-15 | 36 | 18 |
| 16-20 | 25 | 12.5 |
| >20 | 9 | 4.5 |
| **Farming experience (years)** | | |
| 0-5 | 18 | 9 |
| 6-10 | 17 | 8.5 |
| 11-15 | 20 | 10 |
| 16-20 | 25 | 12.5 |
| >20 | 120 | 60 |

hectares of land. This is inconsistence with what was reported by Fasina (2016) who observed that 54.4% of respondents cultivated less than 2 hectares of land. Majority (60.0%) of the respondents had more than 20 years of farming experience. This suggests that the respondents had experience in the usage of EFFPs. This is consistent by the findings of Ademola and Oluyide (2014) with 48.4% of farmers having greater than 21years of farming experience on soil conservation practices.

Table 2 reveals that majority of the (61.0%) farmers sourced information on EFFPs from radio and television. This could imply that the main sources of information available to the farmers on EFFPs were radio and television. This could indicate that television and radio are the popular media through which information on EFFPs were disseminated in the State. Furthermore, the result also shows that 24.0% of the farmers obtained information on EFFPs through extension agents. This could suggest that extension agents played less roles in dissemination of EFFPs in the study area. The result is similar to the reports of Olwasusi (2014) and Adesope *et al.* (2012) where 26.3% and 27.8% of farmers respectively obtained information on organic farming practices through extension agents. Furthermore, 3.5% of the respondents sourced information on EFFPs from newspaper/ agricultural journal. This very low percentage (3.5%) of farmers could invariably have resulted from the fact that more than half (53%) of the farmers had no formal education and therefore could not have obtained information on EFFPs through newspaper. The result obtained is similar to what was reported (3.8%) by Oluwasusi (2014) in a research conducted on organic agriculture.

**Table 2:** Sources of information of EFFPs (n=200)

| Variables | *Frequency | Percentages (%) |
|---|---|---|
| Radio and television | 122 | 61 |
| Neighbour, friends and fore fathers | 53 | 33 |
| Extension agents | 4 | 24 |
| Newspaper/Agricultural Journal | 7 | 3.5 |

*Multiple responses

## Frequency of Agricultural Extension Contacts

Table 3 shows the frequencies of agricultural extension contact with the farmers. The study reveals that 64.0% of the farmers had no contact with extension agents. This could be the main reason why some EFFPs were occasionally and/or never practised in the study area. The is consistent with Fasina (2016) who reported that 66.9% of their sampled farmers never had personal contact with extension agents. Furthermore, 17.5% of the farmers quarterly had contacts with extension agents.

**Table 3:** Frequency of Extension Contact (n=200)

| Variables | Frequency | Percentages (%) |
|---|---|---|
| Never | 127 | 64 |
| Once a year | 13 | 6.5 |
| Quarterly | 35 | 17.5 |
| Monthly | 23 | 11.5 |

This could indicate a weak link between extension agents and the respondents. Mwase *et al.* (2015) also reported that a lower percentage (4.0%) of farmers were visited by extension agents quarterly while Oyewole and Ojeleye (2015) reported a little higher percentage (9.1%) of farmers.

**Table 4:** Distribution of respondents according to their extent of usage of EFFPs (n=200)

| EFFPs | Always used | Occasionally used | Not used | Mean | Rank |
|---|---|---|---|---|---|
| Mulching | 176(88) | 10(5) | 14(7) | 2.81 | 1st |
| IPM | 106(53) | 6(3) | 87(43.5) | 2.09 | 2nd |
| Cover cropping | 51(25.5) | 50(25) | 94(47) | 2 | 3rd |
| Contour farming | 17(8.5) | 51(25.5) | 131(65.5) | 1.84 | 4th |
| Terracing | 8(4) | 21(10.5) | 170(85) | 1.2 | 5th |

The study also shows that 11.5% of farmers were visited by extension agents monthly on EFFPs. This suggests that fewer farmers had contacts with extension agents on monthly basis. This is lower than (31.8%) reported by Muhammed and Ruslan (2012). In addition, 6.5 % of the respondents were visit once in a year by extension agent. The result of the finding is similar to what was reported by Balogun *et al*. (2013).

## Extent of Usage of EFFPs

Table 4 shows the extent of usage of EFFPs by the sampled farmers. It shows that the EFFP mostly practised was mulching ( $\bar{x}$ =2.81) while the least was terracing ( $\bar{x}$ =1.20). This could suggest that mulching is practised on a regular basis by the respondents. This finding is consistent with Ademola and Olujide (2014). Okoro *et al*. (2016) ranked cover cropping 3rd out of 13 sustainable agricultural practices utilized by their respondents. Similarly, Atoma and Atoma (2015) reported that 45.0% and 32.5% of farmers regularly practised mulching and biocontrol respectively.

## Contributions of Government to EFFPs in the study area

Table 5 shows government's contributions to the usage of EFFPs in the study area. The study shows that 40.0% of the farmers admitted that the main contribution of state government was supply of information on EFFPs via radio, television, newspaper and extension agents. The information provided were on the types, methods, inputs, benefits and challenges relating to EFFPs. Also, government was able to subsidy 28.0% of the respondents with inputs. The study further shows that 5.0% of the farmers were supplied with inputs.

**Table 5:** Contributions of government to EFFPs

| Variables | Frequency | Percentages (%) |
|---|---|---|
| Supply of information | 80 | 40 |
| Input subsidies | 56 | 28 |
| Input supply | 10 | 5 |

Multiple responses*

## Relationships between socioeconomic characteristics and the usage of EFFPs

Table 6 reveals there were significant correlations ($p<0.05$) between farmers' age ($r=-0.15$, $p<0.05$), income ($r= -0.21$, $p<0.01$), farming experience ($r=-0.24$, $p<0.01$), farm size ($r =-0.23$, $p<0.01$), and extent of usage of EFFPs. However, Okoro *et al.* (2016) reported no significance relationships between farmers' age and the use of sustainable agricultural practices.

**Table 6:** Relationships between age, income, farming experience, farm size and extent of practice of EFFPs

| Variables | r value | Decision |
|---|---|---|
| Age | -0.15* | S |
| Income | -0.21** | S |
| Farming experience | -0.24** | S |
| Farm size | - 0.23** | S |

## Association between respondents' sex, marital status and extent of usage of EFFPs

Table 7 shows that significant association ($\chi^2$= 12.719a, p<,0.05) existed between sex of the farmers and their extent of usage of EFFPs while no association ($\chi^2$=24.23a, p.0.05) existed between marital status and extent of practice of EFFPs. This is an indication that sex could be a determinant of farmers' extent of usage of EFFPs while marital status may not. This might indicate that the extent of usage of EFFPs does not depend on marital status of a farmer. The finding on marital status agrees with Oladipo *et al.* (2017) who reported that there was no significant relationship between marital status and use of sustainable agricultural practices.

**Table 7:** Association between respondents' sex, marital status and extent of usage of EFFPs.

| Variable | $\chi^2$ | Df | P | Decision |
|---|---|---|---|---|
| Sex | 12.719a | 1 | 0.03* | S |
| Marital status | 24.238a | 1 | 0.52 | NS |

*P<0.05

### Differences in extent of usage of EFFPs

Table 8 reveals that there was no significant difference (F=8.88, 4.38) in farmers' extent of usage of environment friendly farming in selected blocks and cells for the study. Farmers usage of EFFPs was similar, most especially farmers within the same farm location having similar topographical features. Mauceri *et al.* (2005) observed that adoption intensity was significantly different across farmers' groups, the pattern of adoption was similar, i.e. least adopted and most-adopted technologies were consistent across groups.

**Table 8:** Differences in farmers' extent of usage of EFFPs based on blocks and cells.

| Variables | F value |
|---|---|
| Farmers' extent of usage among extension blocks | 8.88 |
| Farmers' extent of usage among extension cells | 4.38 |

P>0.05

## CONCLUSION AND RECOMMENDATIONS

Findings from this study indicated that mulching was the major EFFP always practised by the majority of the selected farmers while terracing was the least practised. There were no statistically significant differences in farmers' usage of EFFPs in the selected extension blocks and cells. Also, the main sources of information on EFFPs were radio and television while extension agents' contact with the farmers was low. There is need for improvement in extension services through enhanced roles of extension agents in the adoption and usage of environment-friendly farming practices in the State in order to enhance sustainable agricultural practices and environment.

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