

Farmers' Perception of Sustainable Agriculture in South-Western Nigeria: Implications for Rural Economy

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Abstract

The modern industrial agriculture had created an array of ecological and equity problems through the introduction of high input agricultural technology such as heavy machinery, irrigation and agrochemicals. This approach favours the rich farmers at the expense of poor farmers because it is not scale neutral. This study examined the perception of farmers with respect to sustainable agriculture that produces abundant food devoid of the earth's resources depletion. A multistage sampling technique was used to select 480 crop farmers in three states (Oyo, Osun and Ekiti) of the south-west, Nigeria. Data were collected with the use of structured interview schedule and described using frequency counts, percentages, mean and standard deviation. Pearson Product Moment Correlation (PPMC) was used to test the existence of relationships between the pairs of variables (age, year of formal education, farming experience, farm size and farmer's perception).. This study was able to examine farmers' disposition toward sustainable agriculture. Farmers were favourably disposed to the practice of sustainable agriculture and realized its potentials as an alternative to industrial agriculture, a profitable venture, capable of providing a healthy family income that would improve the rural economy. Extension agency should intensify efforts through collaboration with relevant non-governmental organisations to keep farmers abreast of the sustainable agriculture practices and benefits.

Key words Sustainable practices, industrial agriculture, agricultural technology, rural economy

Introduction

The incessant growth of the world population, which had exceeded 7 billion and expected to grow above 9 billion will necessitate an increase in agricultural output of about 60 percent (Alexandratos and Bruinsma, 2012) to meet the food demand from a growing human population. This demand will put more pressures on agriculture as well as natural resources needed to increase food production if the goal of eradicating hunger of the United Nations (UN) millennium development is to be met (Hanna, 2010). As part of strategies to meet the millennium goal, there is the need for expansion and intensification of agriculture through the use of

new technologies which in most of the time, resulting in negative impacts such as land degradation, water quality decline and biodiversity loss (Rockstrom *et al.*, 2004; Millennium Ecosystem, 2005). In many developing countries, agriculture plays a vital role in the rural economy by addressing the issues of poverty alleviation, food security and acts as a source of stable income generation (Lee 2005; Bhutto and Bazmi 2007). In response to these multiple challenges both in terms of food provision, socio-cultural and environmental benefits without depleting the natural resources, there is a need to shift to a more sustainable system of agriculture. Sustainable agriculture rests on the principle of

production and food systems that are profitable, environmentally sound, energy efficient, able to provide a healthy family income and a quality of life (Earles, 2005). Sustainable agriculture if embraced has the potentials of sustaining the economic viability of farm enterprises; taking advantage of knowledge and skill of farmers to satisfy the needs of food, fibre and energy. It is also durable, resilient to pests' outbreak and market variability; enhance the efficient use of both non-renewable and on-farm resources and integration of biological cycles and pest control tools with production practices (Sustainable Agriculture Network, 2014).

Sustainable agriculture is still in its infancy in Nigeria and a better understanding of the system by the farmers is needed to attain the goals of sustainability. However, it should be noted that no agriculture is sustainable unless it is profitable and able to sustain the farming families in terms of healthy income and good quality of life. Thus, farmers must be knowledgeable and convinced of the value of the sustainable agriculture to enable them in making an appropriate decision regarding its adoption. Knowledge is also known to be a component of individual behaviour hence, the need to examine farmers' perceptions of the concept.

Lowest agricultural production had been observed (Ehui and Pender, 2005) in Sub-Saharan Africa (SSA) where Nigeria is also located and it is characterised largely with rainfed agriculture with attendant problems of food scarcity and management practices. This study was designed to determine the perception of farmers with respect to the several dimensions of sustainable agriculture. Information from this study could play an important role in forming a base for future extension efforts in Nigeria and improve the economy of rural areas where the majority of its inhabitants engage in farming activities.

Methodology

The study area was south-western Nigeria covering three states of Oyo, Osun and

Ekiti. A multi-stage sampling procedure was employed in the random selection of respondents from two (2) Agricultural Development Programme (ADP) zones in each of the three states in this study. The zones were Ibadan/Ibarapa and Ogbomoso in Oyo state; Iwo and Ife/Ijesha in Osun state and Ikere and Ikole in Ekiti state. The next stage involved the random selection of two Local Government Areas (LGAs) from each of the selected zones. The selected LGAs were Ido; Oluyole, Orire and Surulere in Oyo state; Egbedore, Ayedire, Obokun and Oriade in Osun state; Ilawe, Gbonyin, Moba and Omuo in Ekiti state making a total of twenty-four (24) LGAs. At the third stage, four (4) villages were randomly selected from each LGA. Thereafter, ten (10) farmers were randomly selected from each of the selected villages through the assistance of the ADP extension agents to arrive at a sample size of 480 farmers. Data were collected with the aid of structured interview schedule and described using frequency counts, mean and standard deviation. Pearson Product Moment Correlation (PPMC) was used to test the relationships among variables. Statements relating to several dimensions of sustainable agriculture were designed to determine farmers' perception. The perception was measured on a five-point Likert scale with assigned values that ranged from 1 "strongly disagree" to 5 "strongly agree" for positive statements and the values were reversed for negative statements.

Results and Discussion

Socio-economic Characteristics of the Respondents

Results in Table 1, show that about one-third (32.0%) of the farmers fell within the age group of less than or equal to 30 years, followed by age range of 31 – 40 years (26.1%). Farmers were still in their active years with a mean age of 42 ± 13.0 years. This active age is likely to make them more responsive to the adoption of innovations. About two-thirds (73.3%) of the farmers were

females. A greater percentage of the farmers had one form of formal education or the other with only 24.6% of them had no formal education. The majority (80.4%) of the farmers had farm size within the range of 3 -6 hectares and above. The mean farm size was 4.4 ± 3.8 hectares. The average farming experience recorded in this study was 23.8 ± 18.2 years.

Table 1: Distribution of farmers by socio-economic characteristics

n = 480			
Characteristics	Frequency	Percentage	Mean
Age (years)			
≤ 30	154	32.0	
31 – 40	125	26.1	
41 – 50	82	17.1	
51 – 60	58	12.1	
Above 60	61	12.7	42.0
Gender			
Male	352	73.3	
Female	128	26.7	
Educational status			
No formal education	118	24.6	
Primary education	184	38.3	
Secondary education	98	20.4	
Tertiary education	80	16.7	10.5
Farm size (Hectare)			
1 – 2	94	19.6	
3 – 4	192	40.0	
5 – 6	112	23.3	
> 6	82	17.1	4.4
Farming experience (Years)			
≤ 5	144	30.0	
6 – 10	102	21.3	
11 -15	126	26.3	
> 15	108	22.5	23.8

Field survey: 2014

Identification of crops cultivated by farmers

Table 2 shows the various common crops cultivated by farmers in the study area. The majority (92.3%) of the farmers indicated

the cultivation of maize and while cassava was cultivated by 91.7% of the farmers. Cocoa tops the list of the tree crops cultivated by 41.3% of the farmers in the south-western Nigeria.

Table 2. Distribution Respondents by Crops cultivated
n = 480

Crops	*Frequency	Percentage
Cassava	440	91.7
Maize	443	92.3
Tomato	356	74.2
Yam	387	80.6
Oil Palm	106	22.1
Cocoa	198	41.3
Citrus	69	14.4
Pepper	289	60.2
Leafy vegetables	426	88.8
Sweet potato	90	18.8

Field survey: 2014; * Multiple responses

Sources of Sustainable Agriculture related information

Sustainable agriculture is still an evolving concept hence, the need for the availability of reliable sources of information to acquaint farmers with its numerous

dimensions. Extension agency was the common source of information on sustainable agriculture as indicated by farmers (68.5%) in the study area (Table 3). More than half (56%) of the farmers reported radio as their source of information.

Table 3. Sources of information relating to sustainable agriculture

Source of information	*Frequency	Percentage
Extension agency	329	68.5
Radio	271	56.4
Television	219	45.6
Fellow farmers	186	38.8
Non-governmental organisations	116	24.2

Field survey: 2014 * Multiple responses

Respondents' Perception of Sustainable Agriculture

Results of respondents' level of agreement with both positive and negative statements are shown in tables 4 and 5. Table 4 show that eight (8) out of ten (10) positive statements had a mean value of 4.0 or higher indicating agreement with those statements. Only one item (High productivity readily came to mind whenever they heard the term "sustainable agriculture") had a mean value of 2.20 indicating disagreement and one item (Provision of adequate and dependable

income) had a mean value of 3.71 indicating a neutral response. Items rated high by farmers were: "Low chemical input" (M = 4.55, SD = 0.97), "Minimize adverse effects on health, safety, wildlife, water quality and environment" (M = 4.35, SD = 1.27) and closely followed by "Abundant food production without depleting the earth's resources" (M = 4.34, SD = 0.89). A closer examination of strong agreement with positive statements by the respondents suggests that farmers in the study area believe that Sustainable agriculture has benefits.

Table 4. Farmers' Mean Scores on Positive Statements about their Perception of Sustainable agriculture

n = 480

Statement (What readily comes to mind when I hear the term sustainable agriculture)	Mean	Standard Deviation
Abundant food production without depleting the earth's resources.	4.34	0.89
Environmental protection.	4.28	0.95
Agricultural practice that provides rich lives for farm families.	4.21	1.18
Low chemical input	4.55	0.97
High productivity	2.20	0.82
Innovative and economically viable opportunities for farmers and consumers	4.19	1.11
Reduction in the use of non-renewable resources and purchased production inputs	4.20	1.05
Provision of adequate and dependable income	3.71	1.32
Minimize adverse effects on health, safety, wildlife, water quality and environment.	4.35	1.27

*Mean computed on a scale 1 "strongly disagree" to 5 "strongly agree"
Field survey: 2014

Farmers disagreed with most of the negative statements as nine (9) items had a mean value of 4.0 or higher since the scale was reversed for negative statements (Table 5).

However, farmers agreed with the statement that sustainable agriculture cannot support the growing population (M = 1.99, SD = 0.87).

Table 5: Farmers' Mean Scores on Negative Statements about their Perception of Sustainable agriculture

n = 480

Statement (What readily comes to mind when I hear the term sustainable agriculture)	Mean	Standard Deviation
A laborious and complex approach	4.43	0.55
A non-profitable venture	4.26	0.68
A practice that does not support integration of crop and livestock	2.34	0.94
Discourages the use of new technologies.	4.13	1.24
Renewable of soil fertility under sustainable agriculture is not adequate for high production.	4.23	1.02
A practice that does not guarantee a healthy income and a good quality of life for farmers	4.15	1.16
Not capable of reducing pests and disease problems	4.38	0.79
It cannot support the growing population.	1.99	0.87
It does not encourage high production.	4.10	0.97
Reduction in the use of nonrenewable resources does not enhances productivity	4.35	0.82

*Mean computed on a scale 5 "strongly disagree" to 1 "strongly agree"
Field survey: 2014

Relationships between Farmers' socio-economic characteristics and their perception of Sustainable Agriculture

Results in Table 6 show that all the selected farmers' personal characteristics had positive and significant ($p < 0.01$) relationship with their perception of sustainable agriculture. Age of the farmers had a positive and significant ($r = 0.779$) relationship with their perception of sustainable agriculture indicating that the higher the age of the farmer, the more experienced and knowledgeable they are to develop a rightful perception of any issue that affects their welfare. Education ($r = 0.494$) was also found to be positive and significantly related to farmers' perception. This is an indication that farmers would be literate and able to gather information from various sources like mass media, extension bulletins

and through interaction with the professionals may become updated with news regarding the concept of sustainable agriculture (Sakib, *et al.*, 2014). Farming experience had positive and significant ($r = 0.322$) relationship with perception indicating that the higher the experience of a farmer the higher his acquaintance with various dimensions to farming systems. This is likely to place him in a better position to perceive sustainable agriculture in a better way than his counterpart with lesser experience in farming. Significant (0.770) and positive relationship was also found between the farm size and perception. It implies that farmers with larger farm size would have invested more in the farming enterprise and would be eager to have a better understanding of the new concept that will enhance sustainability.

Table 6. Relationship between farmers' perception of sustainable agriculture and selected socio-economic characteristics

Socio-economic Characteristics	r-value	p – value	Remark
Age	0.779**	0.000	Significant
Year of formal Education	0.494**	0.002	Significant
Farming experience	0.322**	0.000	Significant
Farm size	0.770**	0.001	Significant

**Correlation is significant at 0.01 level (2 -tailed)

Conclusion and Recommendations

It can be concluded that farmers in the study area had a favourable disposition toward sustainable agriculture. This is evident in their agreement with the most of the positive statements and disagreement with the negative statements regarding the sustainable agriculture. Farmers' responses toward series of questions being posed to them with respect to sustainable agriculture indicated their realization of its potentials as an alternative to industrial agriculture. The implication for the rural economy is that positive attitude of farmers toward sustainable agriculture is expected to encourage their future participation in extension programmes on sustainable

agriculture that will improve rural livelihood. Their future engagement in sustainable agriculture will also serve as a source of adequate and dependable income. Extension agency should intensify efforts through collaboration with relevant non-governmental organisations to disseminate appropriate information on sustainable agriculture practices and benefits. Such efforts would go a long way to showcase the value of sustainable agriculture.

References

- Alexandratos, N. and Bruinsima, J. (2012). World Agriculture Towards 2030/2050: ESA Working Paper No. 12 –

- 03, June, FAO, Rome, Italy.
- Bhutto, A. W., and Bazmi, A. A. (2007). Sustainable Agriculture And Eradication of Poverty in Pakistan. *Natural Resources Forum*, 37,253-262.
- Earles, R., (2005) Sustainable Agriculture: An Introduction revised by Paul Williams, www.attra.ncat.org/attra-pub/sustagintro.html Retrieved 13th January 2015.
- Ehui, S. and Pender, J. (2005). Resource Degradation, Low Agricultural Productivity and Poverty in Sub-Saharan Africa: pathways out of the spiral. *Agricultural Economics* 32: 225 – 242.
- Hanna S. (2010). Factors Restricting Adoption of Sustainable Practices in a Smallholder Agro-Ecosystem: A case study of Potshini community, upper Thukela region, South Africa. M.Sc. Thesis in Ecosystems, governance and Globalization (EGG), 52,5p Stockholm Resilience Centre, Stockholm University.
- Lee, D. R. (2005). Agricultural Sustainability and Technology Adoption: Issues and Policies for Developing Countries. *American Journal of Agricultural Economics*, 87, 1325-1333.
- Millennium Ecosystem Assessment (2005) *Ecosystems and Human Well-Being: Current State and Trends* Island Press, Washington, DC.
- Rockstrom, J., C. Folke, L. Gordon, N. Hatibu, G. Jewitt, F. P. de Vries, F. Rwehumbiza, H. Sally, H. Savenije, and R. Schulze. (2004). A Watershed Approach to Upgrade Rainfed Agriculture in Water Scarce Regions through Water System Innovations: An Integrated Research Initiative on Water for Food and Rural Livelihoods in Balance with Ecosystem Functions. *Physics and Chemistry of the Earth* 29: 1109–1118.
- Sustainable Agriculture Network. (2014). *What is sustainable agriculture?* Retrieved October 10, 2014, from [http:// www. sare. org/ htdocs/ docs/ SAN and SARE.html](http://www.sare.org/htdocs/docs/SAN%20and%20SARE.html)