
INFLUENCE OF MODERN FARMING ACTIVITIES ON AGRICULTURAL PRODUCTIVITY OF RURAL FARMERS IN OMUMA LOCAL GOVERNMENT AREA, RIVERS STATE; NIGERIA

Dr. Nlebem, Bernard Soromadu*¹

*¹Department Of Vocational And Technology Education Faculty Of Education,
Rivers State University; Nkpolu- Oroworukwo, Port Harcourt.

ABSTRACT

The study examined the influence of modern farming activities on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State, Nigeria. Descriptive research design was adopted for the study, the area of the study was Omuma Local Government Area, of Rivers State. The population of the study consisted of 180 registered crop farmers in the study area male and female according to extension division of ministry of agriculture and natural resources Eberi. Census sampling technique was adapted to select all the 180 respondents as sample because of manageable size of the population. The instrument for data collection was a structured questionnaire titled Influence of Modern Farming Activities on Agricultural Productivity of Rural Farmers Questionnaire (IMFAAPRFQ). The study adopted a 4-point modified Likert rating scale of agreement, Strongly agreed, (SA) Agreed (A), Disagreed (D), Strongly disagreed (SD), with numerical values of 4, 3, 2, and 1 respectively. The instrument before use was validated by two experts in the Department of Vocational and Technology Education, agricultural education option Rivers State University. The instrument also passed the test of reliability, through test-retest method and its result computed using Pearson's Product Moment Correlation Technique which yielded a coefficient of 0.88. Data collected were analyzed using mean and standard deviation measures, with a criterion mean value of 2.50 and above as benchmark for agreement and below 2.50 as disagreement. The study concluded that the rural farmers in Omuma Local Government Area of Rivers State agreed that improved crop varieties, use of agro-chemicals, proper waste management practices, and modern housing unit all positively influenced agricultural productivity. The paper recommended that government should encourage the use of improved crop varieties, for this influenced positively crop productivity of rural farmers in the area. Government through agricultural extension officers should intensify the use of agro-chemicals by rural farmers for this helped to influenced positively agricultural productivity in the area among other recommendations.

Keywords: Influence, Modern Farming, Activities, Agricultural Productivity, Rural Farmers.

I. INTRODUCTION

There has been much discussion on the need to increase productivity and sustainability in agriculture globally from medium to long terms, but much less information is available on specific means to achieve this aim. Increasing agricultural productivity is critical to meet expected rising demand and, as such, it is instructive to examine recent performance in cases of modern farming (agricultural) activities Moser, C., Barrett, C. B. (2003), meanwhile, Baidu, A. U. & Forson, J. (2004) stressed that agriculture is the cultivation of land for crop and animals production, plants, fungi and other life forms for food, fiber, bio-fuel and other products used to sustain human life. Agriculture is regarded as the major and certain path to socio-economic growth and sustainability. It encompasses all aspects of human activities as it has to do with clearing, planting, weed, harvesting, processing, distribution, and marketing, among others. Adesina, & Baidu-Forsion,. (2005) defined agriculture as an art, science and business of systematic production of useful plants and animals for man's use through concerted human efforts. It was further stated that agriculture is concerned with soil management, crop production, animal production, fish production, forestry, wildlife management, processing and storage of crops and animal products and the economic utilization of these products by man. As an art, it is the cultivation of land for crop production and rearing of livestock for the use of man. This simply connote that its activities takes place in the farm.

Agriculture has undergone several development stages in time past ranging from the Stone Age to the Iron Age, down to the biotech era, among others to the use of sophisticated implement, Feder, Just & Zilberman (2005).

These various stages have grown to this 21st century which it is being referred to as modern agricultural farm practice. Modern farm practice is used to describe the wide type of production practices employed by (farmers), it makes use of hybrid seeds of selected variety of single crop. Technologically advanced equipment and lots of energy subsidies in form of irrigation water, fertilizer, and pesticide, Baidu, & Forson, (2004) stated that modern farm activities are evolving approach to agricultural innovations and farming practices that help farmers increase efficiency and reduce the number of natural resources like water, land and energy necessary to meet the world, food, fuel and fiber needs as most of the farmers were operating in a subsistence method which only simple hand tools and natural environment were required for production.

Hence, innovative farm activities became necessary since the old ancient practices were no longer possible to meet the food needs of increasing numbers of world population and to achieve food security objectives by expanding areas under cultivation since the fertile land is not increasing over time. But this problem can only be solved more by increasing agricultural productivity of farm households. However, achieving agricultural productivity growth will not be possible without developing and disseminating yield-increasing technologies and application of these technologies by farm households. Agricultural research and technological improvements are therefore crucial to increase agricultural productivity and thereby reduce poverty and meet demands for food without irreversible degradation of the natural resource base. Agricultural research and technological improvements are also crucial in reducing poverty (Solomon, 2010; Solomon, Bekele, Franklin & Mekbib, 2011).

Barriers to technology adoption, initial asset endowments, and constraints to market access may all inhibit the ability of the poorest to participate in the gains from agricultural productivity growth. This agricultural productivity growth can also be driven by improved farm technologies, including improved seeds, fertilizer, and water control (Nlebem, 2018). Despite rapid growth in agricultural production all over the world, the realized yields are still well below their genetic potential. Deviations from potential yields appear to vary remarkably among countries and regions even after adjusting for different soil, moisture and temperature environments. Other conditioning factors, such as different farm sizes and management capacities, access to markets, and legislative/institutional factors, play heavily in determining yield performance Boahene, Snijders, & Folmer, (2009). The roles of agriculture in economic development of Nigeria has been well recognized for years. It accounts for roughly 43% of GDP, and 30% of exports and 25% to employment. Grains dominates Nigeria agriculture, accounting for about 45 per cent of agricultural GDP. Daku, L (2012). Agriculture is also the sources of food and cash for those who are engaged in the sector and others, most agricultural households earn the food they consume and the cash they need to cover other expenses only from farming activities so that improvement of agricultural productivity is very important to them Green, & Ng'ong'ola. (2000).

An increase in agricultural productivity is a prevailing motive for farmers and a driving force in Nigeria's agricultural policy. Increasing productivity in smallholder agriculture is Government's top priority, recognizing the importance of the smallholder sub-sector, the high prevalence of rural poverty and the large productivity gap, Boahene, Snijders, & Folmer, (2009). Agriculture in Nigeria is subsistence-oriented, that is, rural farmers mostly produce on the basis of their demand on household level. In order to achieve the objective of food security and nutrition for all and to reduce poverty through improving incomes of rural farmers, there is a need to progressively transform the agricultural sector away from subsistence oriented production towards an integrated economy. This transformation process can be fueled by agricultural productivity growth through the help of modern agricultural technologies, Green. & Ng'ong'ola (2000). In Omuma Local Government Area in Rivers State, most of the people are rural dwellers, farm households, all the problems which affect agricultural productivity of the country also equally affect Omuma rural farmers. The farmers need the use of modern agricultural technology to overcome the problem of low production, all of government programmes toward eradicating poverty and to ensure food security by the people of the country are being practiced in Omuma Local Government Area. Development Agents and other necessary farm experts are utilizing their best expertise knowledge to help the poor farm households gain better output from their farm activities (Mapila, 2011).

Considerable resources are being utilized by the Nigerian government to realize agricultural productivity and alter the state of agriculture in the country. Human and material resources are rallied towards this end.

Development agents, extension packages, and agricultural inputs are some of the resources that are made available to farmers to change their style of farming and augment productivity by the government Baidu, & Forson, (2004). Despite all these efforts by the government in Nigeria, crops and livestock yield of rural farmers are still very much low as they only produce to feed their family. It was reported that the productivity of cassava, grain, wheat, maize and sorghum in Nigeria are 12.81 qt/ha, 16.72 qt/ha 20.29 qt/ha, 29.54 qt/ha, 20.54 qt/ha, respectively recorded low productivity in market GDP in 2011 Mapila. (2011), due to low utilization of improved technologies and traditionally accustomed ways of production. Liberio (2012) stressed that this is very low when compared to some African countries like Tanzania, South Africa, and so on which produced more due to their heavy involvement in the use of modern farm practices. However, noting that some rural farmers in Rivers State especially Omuma has equally adopted modern farm activities, the research thought it relevant to examine how such activities has influenced these farmers agricultural productivities in areas of utilization of improved crop varieties, agro-chemical for crop production, waste management, modern housing unit in livestock production, in the study area.

II. PURPOSE OF STUDY

The main purpose of this study is to examine the influence of modern farming activities on agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State. Specifically, the study sought to:

1. Examine the influence of improved crop varieties on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State;
2. Examine the influence of agro-chemicals on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State;
3. Determine the influence of waste management on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State;
4. Determine the influence of modern housing unit on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State;

Research Questions:

The following research questions guided the study;

1. What are the influence of improved crop varieties on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State?
2. What are the influence of agro-chemicals on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State?
3. What are the influence of waste management on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State?
4. What influence of modern housing unit on agricultural productivity of rural farmers in Omuma Local Government Area, of Rivers State?

III. METHODOLOGY

The study adopted descriptive research design, the study was carried out in Omuma Local Government Area of Rivers State. Omuma Local Government Area is one of the 23 Local Government Areas in Rivers State, Omuma people are of Etche ethnic nationality the people are predominantly farmers with a good arable land, and they are located in the rain forest zone of Niger Delta region of Nigeria, this is the main reason why the study was conducted in the area. The population of the study consisted of all the registered male and female farmers in the local Government Area, which is 180 farmers. Census sampling technique was adopted to select all the 180 farmers made up of 90 male and 90 female due to the manageable size. The instrument for data collection was a structured questionnaire 'titled Influence of Modern Farming Activities on Agricultural Productivity of Rural Farmers Questionnaire (IMFAAPRFQ). The study adopted a 4-points modified Likert rating scale of agreement, strongly agreed (SA), Agreed (A), Disagreed (D), and strongly disagreed (SD), with numerical values of 4, 3, 2, and 1 respectively. The questionnaire before used was validated by two experts in the field of Agricultural Extension, drawn from Faculty of Agriculture, Rivers State University. The questionnaire also passed the test of reliability through test-retest method and its result computed using Pearson's Product Moment Correlation Techniques which yielded a coefficient of 0.82. Data collected were analyzed using mean and standard

deviation measures. A criterion mean value of 2.50 and above as benchmark for agreement and below 2.50 as disagreement. 120 copies of the questionnaire were distributed to the respondents, and all were collected within two (3) weeks.

IV. RESULTS AND DISCUSSION

Research Question 1: what are the influence of improved crop varieties on agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State?

Table 1: Respondents Mean Responses on the Influence of Improved Crop Varieties on Agricultural Productivity of Rural Farmers in Omuma Local Government Area

S/N	Variables	Male farmers = 90			Female farmers = 90		
		x	SD	Decision	x	SD	Decision
1	Crops takes shorter period to mature	3.20	0.50	Agreed	3.30	0.51	Agreed
2	Crops are produced all years round	2.96	0.85	Agreed	3.00	0.84	Agreed
3	Crops with higher yield	2.70	0.75	Agreed	2.72	0.74	Agreed
4	There is increase in crop vigor	3.10	0.46	Agreed	3.00	0.61	Agreed
5	Crops with good climate resistance	3.28	0.60	Agreed	2.90	0.70	Agreed
6	Crops that can resist pest and diseases	2.60	0.86	Agreed	2.60	0.84	Agreed
7	Crops with better yield	2.54	0.96	Agreed	2.60	0.94	Agreed
8	Crops with better nutritional value	2.70	0.76	Agreed	2.63	0.84	Agreed
9	Crops that are tolerance to biotic and abiotic constraints	2.42	0.80	Disagreed	2.40	0.82	Disagreed
	Focus on orphan crops	2.70		Agreed	2.68		Agreed
10	Grand mean	2.70	0.71	Agreed	2.68	0.84	Agreed

Source: Researchers Field Work 2022

Data in Table 1 revealed that the respondents agreed that improved crop varieties influenced agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State, as all the items test had their mean value above the benchmark of 2.50, apart from item number 9 that had the mean value below 2.50 (2.42 & 2.40), others crops takes shorter period to mature (3.20 & 3.30), crops are produced all years round (2.96 & 3.00), crops with higher yield (2.70 & 2.72), there is increase in crop vigour (3.10 & 3.00), Crops with good climate resistance (3.28 & 2.90), Crops that can resist pest and diseases (2.60 & 2.60), Crops with better yield (2.54 & 2.60), Crops with better nutritional value (2.70 & 2.63), Crops that are tolerance to biotic and abiotic constraints (2.42 & 2.40), Focus on orphan crops (2.70 & 2.68) with a grand mean of 2.70. The standard deviation (SD) of male farmers ranges from 0.46 to 0.96 while that of the female farmers ranges from 0.51 to 0.94. The closeness of the (SD) indicated homogeneity in the opinion of the respondents. The findings of this study is in agreement with the work of Nkonya, Schroeder, & Norman (2007). On their work titled 'Factors Affecting Adoption of Improved Maize Seed and Fertilizer in Northern Tanzania'. They observed that improved crop varieties influenced agricultural productivity of rural farmers in Tanzania, such as crops with higher yield, there is increase in crop vigour, Crops with good climate resistance, Crops that can resist pest and diseases), Crops with better yield, among other crop improved factors.

Research Question 2: What are the influence of agro-chemicals on crop production for agricultural productivity for rural farmers Omuma Local Government Area of Rivers State?

Table 2: Respondents Mean Responses on the influence of Agro-chemicals on Agricultural Productivity of Rural Farmers in Omuma Local Government Area

S/N	Variables: The following are Influence of agro-chemicals on crop production	Male farmers = 90			Female farmers = 90		
		x	SD	Decision	x	SD	Decision
1	Reduce cost of weeding compared to hired labour	3.60	0.37	Agreed	2.90	0.86	Agreed
2	Increases crops yield bountifully	3.00	0.56	Agreed	2.85	0.85	Agreed
3	Massive production on less farm space and time	2.70	0.75	Agreed	3.00	0.56	Agreed
4	Reduces farm labour	3.28	0.83	Agreed	3.36	0.84	Agreed
5	Aid in all year round food production	3.00	0.56	Agreed	3.36	0.64	Agreed
6	Use in eradication of crop diseases	3.26	0.79	Agreed	2.86	0.84	Agreed
7	Make farm work interesting	2.94	0.84	Agreed	3.28	0.71	Agreed
8	Use in controlling pest	2.87	0.84	Agreed	2.90	0.93	Agreed
9	Add more nutrient to the soil	2.71	0.71	Agreed	2.67	0.70	Agreed
10	Improve soil fertility	3.11	0.54	Agreed	3.11	0.54	Agreed
	Grand Mean	2.77		Agreed	2.76		Agreed

Source: Researchers Field Work 2022

Data in Table 2 revealed that the respondents agreed that the use of agro-chemicals influenced agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State, as all the items test had their mean value above the benchmark of 2.50, such as Reduce cost of weeding compared to hired labour (3.60 & 2.90), Increases crops yield bountifully (3.00 & 2.85), Massive production on less farm space and time (2.70 & 3.00), Reduces farm labour (3.28 & 3.36), Aid in all year round food production (3.00 & 3.36), Use in eradication of crop diseases (3.26 & 2.28), Make farm work interesting (2.94 & 3.28), Use in controlling pest (2.87 & 2.90), Add more nutrient to the soil (2.71 & 2.67), Improve soil fertility (3.11 & 3.11). The standard deviation (SD) of male farmers ranges from 0.37 to 0.84 while that of the female farmers ranges from 0.54 to 0.93. The closeness of the (SD) indicated homogeneity in the opinion of the respondents. The findings of this study is in agreement with the work of Eslher, & Bottrell, (2000), in their work titled 'The illusion of integrated pest management'. They noted that agro-chemicals influences agricultural productivity such as reduce cost of weeding compared to hired labour, increases crops yield bountifully, massive production on less farm space and time, reduces farm labour, aid in all year round food production, use in eradication of crop diseases among other benefits.

Research Question 3: What are the influence of waste management on agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State?

Table 3: Respondents Mean Responses on the Influence of Waste Management on Agricultural Productivity of Rural Farmers in Omuma Local Government Area

S/N	Variables The following are Influence of waste management on crop production	Male farmers = 90			Female farmers = 90		
		x	SD	Decision	x	SD	Decision
1	Help to curb the spread of disease in the farm	2.80	0.80	Agreed	3.21	0.65	Agreed
2	Improves soil water retention capacity	3.03	0.93	Agreed	3.07	0.94	Agreed
3	Use in the production of organic manual for crop production	3.22	0.82	Agreed	3.22	0.82	Agreed
4	Generate income when the waste	2.86	0.82	Agreed	3.46	0.95	Agreed

	are sold						
5	Reusing agricultural waste reduces operational cost	3.19	0.82	Agreed	3.16	0.85	Agreed
6	Lower greenhouse gas (GHA) emission	3.20	0.69	Agreed	3.22	0.92	Agreed
7	Reduce disease transmission to the farmer and family	3.41	0.74	Agreed	3.28	0.48	Agreed
8	Less waste is dispersed with increases benefit to the ecosystem	3.16	0.82	Agreed	2.94	0.89	Agreed
9	Reduce the use of fertilizers and other artificial chemicals	2.74	0.83	Agreed	2.80	0.80	Agreed
10	Improve overall quality of soil and water, protect fauna and flora	2.86		Agreed	2.76		Agreed
	Grand Mean	2.76	0.84	Agreed	2.73	0.96	Agreed

Source: Researchers Field Work 2022

Data in Table 3 revealed that the respondents agreed that the use of waste management influenced agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State, as all the items test had their mean value above the benchmark of 2.50, such as Help to curb the spread of disease in the farm (2.80 & 3.21), Improves soil water retention capacity (3.03 & 3.07), Use in the production of organic manual for crop production (3.22 & 3.22), Generate income when the waste are sold (2.86 & 3.46), Reusing agricultural waste reduces operational cost (3.19 & 3.16), Lower greenhouse gas (GHA) emission (3.20 & 3.22), Reduce disease transmission to the farmer and family (3.41 & 3.28), Less waste is dispersed with increases benefit to the ecosystem (3.16 & 2,94), Reduce the use of fertilizers and other artificial chemicals (2.74 & 2.80), Improve overall quality of soil and water, and protect fauna and flora (2.86 & 2.76). The standard deviation (SD) of male farmers ranges from 0.74 to 0.93 while that of the female farmers ranges from 0.63 to 0, 96. The closeness of the (SD) indicated homogeneity in the opinion of the respondents. The findings of this study is in agreement with the work of Feder, G., Just E. R. & Zilberman D. (2005). Titled 'Socio-economics Factors Influencing the Level of Waste Management Practices on Fragile Land. The author observed that waste management help to curb the spread of disease in the farm, improves soil water retention capacity, use in the production of organic manual for crop production, generate income when the waste are sold, reusing agricultural waste reduces operational cost, Lower greenhouse gas (GHA) emission among others.

Research Question 4: What are the influence of modern housing unit on agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State?

Table 4: Respondents Mean Responses Modern Housing Unit on Agricultural Productivity of Rural Farmers in Omuma Local Government Area

S/N	Variables: The following are Influence of modern housing unit on livestock production	Male farmers = 90			Female farmers = 90		
		x	SD	Decision	x	SD	Decision
1	Enhances the production of healthy livestock	3.60	0.37	Agreed	2.90	0.86	Agreed
2	Improve storage facilities	3.00	0.56	Agreed	2.85	0'66	Agreed
3	It ensures quick detection of sick livestock	2.70	0.75	Agreed	3.00	0.56	Agreed
4	It ensures that livestock are given adequate medical care	3.28	0.83	Agreed	3.36	0.84	Agreed
5	It ensures adequate accountability of livestock	3.00	056	Agreed	3.36	0.64	Agreed
6	Production is achieved within a small space	3.26	0.79	Agreed	2.86	0.84	Agreed

7	It encourage proper and adequate record keeping	2.94	0.84	Agreed	3.08	0.98	Agreed
8	Provides better housing for the livestock	2.87	0.84	Agreed	2.90	0.98	Agreed
9	Reduces unnecessary livestock losses	2.71	0.71	Agreed	2.67	0.70	Agreed
	Ensure maximum comfort for the livestock	3.11		Agreed	3.11		Agreed
10	Grand Mean	2.71	0.54	Agreed	2.70	0.54	Agreed

Source: Researchers Field Work 2022

Data in Table 4 revealed that the respondents agreed that modern housing unit influenced agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State, as all the items test had their mean value above the benchmark of 2.50, such as enhances the production of healthy livestock (3.60 & 2.90), Improve storage facilities (3.00 & 2.85), It ensures quick detection of sick livestock (2.70 & 3.00), It ensures that livestock are given adequate medical care (3.28 & 3.36), It ensures adequate accountability of livestock (3.00 & 3.336), Production is achieved within a small space (3.26 & 2.86), It encourage proper and adequate record keeping (2.94 & 3.08), Provides better housing (2.87 & 2.90), Reduces unnecessary livestock losses (2.71 & 2.67), Ensure maximum comfort for the livestock (3.11 & 3.11). The standard deviation (SD) of male farmers ranges from 0.37 to 0.84 while that of the female farmers ranges from 0.54 to 0, 98. The closeness of the (SD) indicated homogeneity in the opinion of the respondents. The findings of this study is in agreement with the work Benient, Mogues, Cudjoe, & Randriamamonjy, (2009). In their work titled 'Modern Housing Unit and Agricultural Productivity Growth in Ghana'. They noted that modern housing unit ensures quick detection of sick livestock, ensures that livestock are given adequate medical care, ensures adequate accountability of livestock, production is achieved within a small space, encourage proper and adequate record keeping, Provides better housing for the livestock's among others.

V. CONCLUSION

Based on the findings of the study it was discovered that the rural farmers in Omuma Local Government Area of Rivers State agreed that improved crop varieties, use of agro-chemicals, proper waste management practices, and modern housing unit all positively influenced agricultural productivity of rural farmers in Omuma Local Government Area of Rivers State, Nigeria.

VI. RECOMMENDATIONS

From the findings of the study, the following recommendations were made:

1. Government should encourage the use of improved crop varieties by rural farmers in Omuma Local Government Area of Rivers State, for this influenced positively crop productivity of rural farmers in the area.
2. Government through agricultural extension officers should intensify the use of agro-chemicals by rural farmers in Omuma Local Government Area of Rivers State for this helped to influenced positively agricultural productivity in the area.
3. Agricultural extension officers through their regular meetings with the rural farmers encourage them on the benefit of proper waste management in Omuma Local Government Area of Rivers State for this influenced positively their crop productivity in the area
4. Government through agricultural extension officers should intensify the use of modern housing unit by rural farmers in Omuma Local Government Area of Rivers State for this influenced positively their livestock productivity in the area.

VII. REFERENCES

- [1] Adesina, A. A & Baidu-Forsion, J. (2005). Farmers' Perceptions and Adoption of New Agricultural Technology: Evidence from Analysis in Burkina Faso and Guinea, West Africa. *Journal of Agricultural Economics*, 13(3) 1-9.
- [2] Baidu, A. U. & Forsion, J. (2004). Factors Influencing Adoption of Land-enhancing Technology in the Sahel: Lessons from a Case Study in Niger. *Journal of Agricultural Economics*, 20, 231-239.

-
- [3] Benient, S., Mogues, T., Cudjoe, G., & Randriamamonjy, J. (2009). Public Expenditures and Agricultural Productivity Growth in Ghana. Contributed Paper for Intentional Associated of Agricultural Economists in Beijing. PP 45-60.
- [4] Boahene, K., Snijders, T. A. B. & Folmer, H. (2009). An Integrated Socio-economic Analysis of Innovation Adoption: The case of Hybrid Cocoa in Ghana. *Journal of Policy Modeling*, 21(2), 167-184.
- [5] Daku, L. (2012). Assessing Farm-level and Aggregate Economic Impacts of Olive Integrated Pest Management Programs in Albania. PhD. Dissertation, Virginia Polytechnic Institute and State University, David, Lynne Rienner Publishers.
- [6] Eslher, L. E & Bottrell D. (2000). The Illusion of integrated Pest Management. *Issues in Science and Technology*. Bell and Howell Information and Learning Company.
- [7] Feder, G., Just E. R. & Zilberman D. (2005). Adoption of Agricultural Innovations in Developing Countries: A survey. *Economic Development and Cultural Change*, 33, 255-298.
- [8] Green, D. A. G. & Ng'ong'ola D.H. (2000). Factors Affecting Fertilizer Adoption in Less Developed Countries: An Application of Multivariate Logistic Analysis in Malawi. *Journal of Agricultural Economics*, 44 (1), 99-109.
- [9] Mapila, M. A. T. J. (2011). Rural livelihoods and Agricultural Policy Changes in Malawi. *Agricultural Innovations for Sustainable Development in Manners, G and Sweet more, A., (Editors)*. Accra-Ghana, CTA and FARA, 3, 190-195.
- [10] Moser, C., Barrett, C. B. (2003). "The Disappointing Adopting Dynamics of a Yield increasing, Low External input Technology: The case of SRI in Madagascar. *Agricultural Systems*, 76(3), 1085-1100.
- [11] Nkonya, E., T. Schroeder, & Norman D. (2007). Factors Affecting Adoption of Improved Maize Seed and Fertilizer in Northern Tanzania. *Journal of Agricultural Economics*, 48(1), 1-12.
- [12] Nlebem, B. S. (2018), *Introduction to Principles of Vocational Agricultural Education*, Chi's Publications, Diobu, Port Harcourt.
- [13] Solomon, A. Bekele, S., Franklin, S. & Mekbib, G.H. (2011). Agricultural Technology Adoption, Seed Access Constraint and Commercialization in Ethiopia, *Journal of Development and Agricultural Economics*, 3, 9:436-447
- [14] Solomon Asfaw (2010). Estimating Welfare Effect of Modern Agricultural Technologies: A Micro-Perspective from Ethiopia, *International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)*, Nairobi, Kenya.