Sustainablility of Agricultural Transformation Agenda: The Place of Rice Farmers in Ogun State, Nigeria

L. O. Ogunsumi[1] A. Ajayi[2], C.M. Amire[3] and S. Williams[4]
1. Institute of Agricultural Research and Training, Obafemi Awolowo University, Ibadan, Nigeria
2. Federal College of Agriculture, IAR&T, Ibadan, Nigeria
3. Crawford University, Department of Economics, Igbesa, Ogun State, Nigeria
4. Obafemi Awolowo University, Ile-Ife, Nigeria
E-mail: lucyogunsumi@yahoo.com

Abstract

Self-sufficiency in rice production and processing has eluded Nigeria for a long time despite continuous efforts by the Federal Government of Nigeria towards its realization. Chains of activities in the Nigerian rice production and processing industry are largely executed manually and on small scale level. Thus, the issues of value chain aspects that would have improved the profitability of the rice industry have only just been taken into consideration as part of the Presidential Initiative – Agricultural Transformation Agenda (ATA).This study examines the prospect of Agricultural Transformation Agenda amongst rice farmers in Ogun State where rice production is a growing industry in attempt to achieve food sustainability in line with the Agricultural Transformation Agenda. Well-structured and validated questionnaires are used to survey and report the activities and processes carried out by the rice farmers in target area. However, part of the result of the survey indicated that the level of awareness of Agricultural Transformation Agenda is still very low in the study area. There is need for a conscious and concerted effort to be made by relative Government Agencies to create greater awareness about ATA for the rice farmers and others involved in empowering the growth of the rice industry, otherwise the vision and motives of Agricultural Transformation Agenda may remain just an academic exercise. Other Government Agricultural Policy, for example the Fadama and/or Ogun State Agricultural Development (OGADEP) were well accepted and their impact is greatly significant in the study area which is a clear indication that ATA strategies like the above-named policies would be well adopted by the rice farmers as well as those related participants like the processing and marketing aspects of the industry if the gospel of Agricultural Transformation Agenda is effectively preached to the rice farmers in the study area.

Key words: Rice industry, Small holder farms, Family labour, Agricultural Transformation Agenda, Government Agricultural Policy, Ogun State, Nigeria.

Background

Rice is a monocot plant -*Oryza sativa* (Asian rice) or *Oryzaglaberrima* (African rice). As a cereal grain, it is one of the most important staple foods for a large part of the world's human population. It is the grain with the second-highest worldwide production, after maize (FAOSAT,2008). Since a large portion of maize crops are grown for purposes other than human consumption, rice is the most important grain with regard to human nutrition and caloric intake, providing more than one fifth of the calories consumed worldwide by the human species.(Smith, 1998).

Rice is a staple food for about half of the human race, it ranks second after wheat, due to decline in maize production in terms of worldwide production (Jones, 1995).The earliest cultivation of improved rice varieties (*0. saliva)* L. started in 1890. The demand for rice in Nigeria is growing faster than any other major staples, with consumption broadening across all socio-economic classes. Substitution of rice for coarse grains and traditional roots and tubers has fuelled growth in demand amongst other factors at an annual rate of 5.6 per cent between 1961 and 1992 (Osiname, 2002).According to Daramola (2005) Nigeria is currently the highest rice producer in West Africa, producing an average of 3.2 million tons of paddy rice or 2.0 million tons of milled rice. Nigeria is also the largest consuming nation in the region, with the growing demand amounting to 4.1 million tons of rice in 2002, with only about half of that demand met by domestic production (USDA FAS, 2003). Nigeria imported 1.9 million tons of rice in 2002 valued at approximately 500 million USA dollars (USDA FAS, 2003). In 2010 alone, Nigeria spent N365 billions on imported rice (Akinwunmi, 2011).

Ofada rice is the local swampland variety grown in Ogun State; it has gained more prominence in social circle more than any varieties, despite its highest market price. Chains of economic activities in the rice industry like

planting, harvesting, processing, packaging and marketing are largely executed manually and on small scale level. This is so simply because of the relative importance of rice transcends human consumption as its losses (waste/by product is said to be of medicinal important to man and it represents a source of protein and carbohydrate in animal food composition).

Erenstein, (2003) observed that different actors are involved in each stage in rice production. The Public Sector (that is the Government, Research Institutes, Extension Agencies and others) as well as the Private Sector (rice farmers, rice processors, rice marketers, Non-Governmental Organizations, Input and Service Providers) are involved in the successes of the rice industry. Thus, 'rice production as an industry' requires an integrated quality management strategy/approach along the entire commodity value chain from rice production, through processing, storage, packaging and to marketing.

Rice production and growing ecology in Nigeria
In Nigeria, rice is grown on an estimated 1.77 million hectares of land area. It ranks fifth in the cereal line of stem/tuber and crops after sorghum (4.0m ha), millet (3.5m ha.) cassava (2.0m ha) and yam (2.0mha) according to Longtau, 2003. A chart showing rice production systems is shown below in Figure 1.
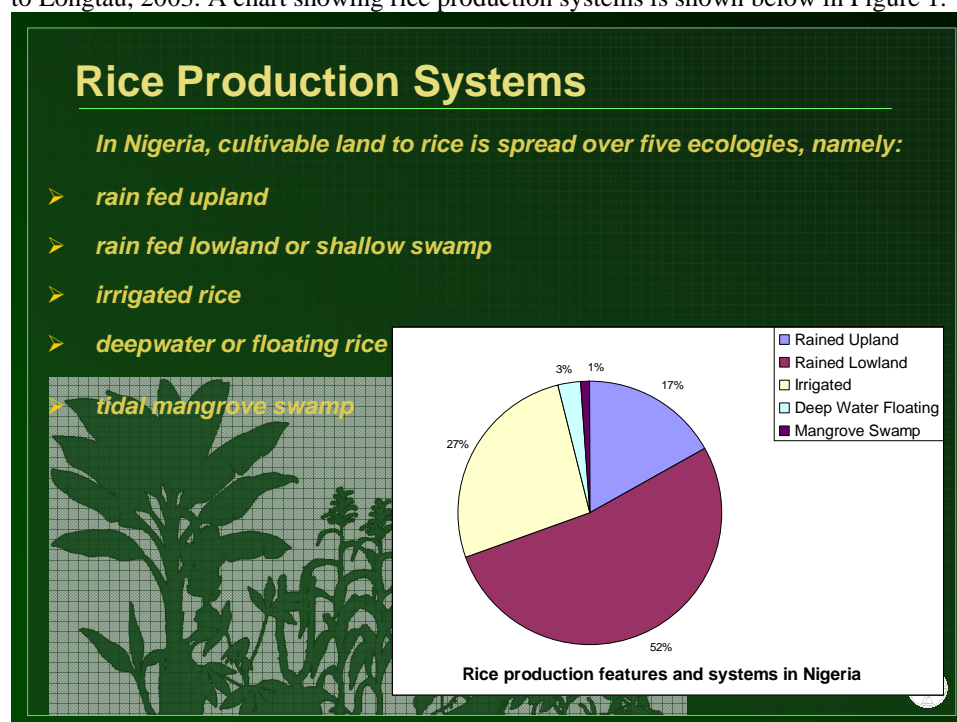

Figure 1: Rice Production Systems (Ezedinma, 2009).

Rice production ecologies and their potentials - the potential area for rice production in Nigeria is between 4.6 million and 4.9 million hectares (ha). This area includes five different rice environments or ecologies according to Imolehin, 1991.

The Upland Ecology: In the upland ecology, the rice crop depends strictly on natural rainfalls for its growth and productivity. This ecology accounts for 55 to 60 percent of the rice cultivated land areas, and yielding an estimated 30 to 35 percent of total national rice production (Singh, 1997). Rice yields in the upland ecology are generally low in production and range from 0.8 to 2 tonnes/ha (IRRI, 1991). Hence, the upland ecology accounts for 32 percent of the total rice area in Nigeria (Singh *et al*, 1997). Locally, the upland rice is described as Alabere (Yoruba dialect meaning that it needle-like in shape).

Inland or Shallow Swamp Ecology: An estimated 25 percent of Nigeria's rice area is under inland swamp rice production (Ofada, Yoruba). The rice yield in this ecology is generally high and ranges from 2 to 8 tonnes/ha. It is estimated that this ecology contributes between 43 and 45 percent of national rice production (Singh *et. al,* 1997).

Irrigated Rice Ecology*:* This irrigated rice ecology is one of the most recent developed rice variety. It is of great importance in terms of the issues of the environmentally related strategy in the rice industry Nigeria. Irrigation is supplied from aquatic resources (water) from rivers, creeks, streams, wells, boreholes and other sources to supplement rainfall for full rice crop growth (Imolehin, 1991). This ecology strategy accounts for about 18 percent of cultivated rice land, and yields are estimated to range from 2 to 4 tonnes/ha. It contributes 10 to 12 percent of the national rice supply (Singh*, et.al.,1*997).

Deep Water or Floating Rice Ecology: The floating rice ecology constitutes 5 to 12 percent of the national rice production area (References?). The yields in this ecology are very low owing to the predominant use of unimproved rice varieties (*O. glaberrinia*Steud), which yield less than 1 tonne/ha. The ecology does, however, contribute 10 to 14 percent of the national rice output (Singh*, et. al.*, 1997).

Tidal (mangrove) Swamp Ecology: The Nigerian tidal (mangrove) swamp ecology lies between the coastline and the freshwater swamps. It covers a potential 1 million ha of land that would be cultivable for rice, but at present less than 100 ha of this ecology is being developed. The ecology contributes less than 2 percent to national rice production, and has low yields of only about 1 tonne/ha. The development of appropriate technology for expanding and increasing rice production in this ecology is the most urgent issue for attention (Singh,*et. al.,* 1997).

Rice production in Ogun State

 Rice is an increasingly important crop in Ogun State as in other rice growing States like – Eboyin, Osun and Niger States in particular; it has become part of the staple food items that people consume as an everyday diet especially in Ogun State. In some areas there is a long tradition of rice growing for example in Ofada village in Owode Local Government Area ofOgun State. Rice consumption in Nigeria has risen tremendously, at about 10% per annum due to changing consumer preferences (Akande, 2007). There are many rice varieties grown in Ogun State dating back to the 18th and 19th centuries. Some of these are considered 'traditional' varieties while others are recently introduced (within the last twenty year). Rice is grown in paddies or on upland fields, depending on the requirements of the particular variety, however, there is limited mangrove cultivation. New varieties are produced and disseminated by research institutes, or are imported from Asia (also within the last twenty years).

Consumption of *Ofada* rice has gained more prominence possibly due to the health awareness of educated Nigerians who now associate its positive taste and natural flavour, higher nutritive value of critical significance to their health compared to the polished imported rice varieties. The *Ofada* rice variety has been reported through research results to have higher fibre content and better health consideration. Consequently, it now commands the highest market price given its scarcity relative to other rice varieties including the imported varieties. The paddies of the rice plant are first milled to remove the chaff. A popular form being the parboiled rice, is subjected to steam or parboiling. Raw untreated rice may be ground into flour for many uses - such as making of beverages (alcoholic or non-alcoholic), rice flour noodles and food items (Tuwo, Hausa). Processed rice seeds may be boiled, steamed or further fried in cooking oil before eating. When combined with milk, sugar, and honey, it is used to make rice desserts. Rice flour and starch are often used in batters and breading to increase crispiness.

Government intervention in rice production

The Nigerian Government has actively interfered with the rice economy over the last thirty years. The country's policy on rice has been inconsistent and has oscillated between import tariffs and import restrictions including outright ban. For instance, there was subsidized provision of inputs and finance for rice production, but none of these measures halted the long term end to import dependency (Akande, 2002).

In response to the growing demand for this staple food item, the Government at various periods actively impacted in the rice economy coming up with various policies and programmes. One of such activities was the enormous (rice) imports to supplement the local production in an attempt to meet the rising high demand for rice for local consumption which no doubt constituted an enormous drain on the country's foreign earnings. Other policies had included oscillating import tariffs and import restrictions. Notwithstanding the various policy measures, domestic rice production has not increased sufficiently to meet the increased demand, hence the significance of the study.

Therefore in achieving modest strides in rice production, research and extension in Nigeria, excellent collaboration work has been done by both National and international organizations such as IITA, Africa Rice

(formerly known as WARDA), IRRI, and INGER-Africa. Agricultural Research and Cooperative collaborative work with these institutions has been the bedrock for improved technologies developed for the attainment of increased rice production in Nigeria. Sustainability of this trend will hopefully lead to greater improvements and ensure the country's success in its bid to meet the food sufficiency through rice.

The recent drain on the country's foreign reserve led the Nigerian Government to ban rice imports in October 1985. Specific programmes put in place to ensure sustainability included the following actions: the National Accelerated Food Production project (NAFPP), in 1974; the World Bank-Assisted Development Programmes in 1975; (Operation Feed the Nation - OFN), 1976; the River Basin Development Authorities (RBDs), 1977; Back to Land Programme (BLP) and the Directorate of Food, Roads and Rural Infrastructures (DFRRI), 1988; and, more recently, the National Land Development Authority (NALDA), 1995. In spite of these various Government Policies and programmes, domestic rice production has not kept pace with the domestic consumption increased high demands for domestic rice that the Nigerian populace request for and, consequently, rice is still being imported (Singh,*et. al.,* 1997).

In the same vein the efforts of the incumbent President of Nigeria, Dr. Jonathan Goodluck has brought forth another policy measure named 'Agricultural Transformation Agenda' aimed at improving the agricultural production of some selected crops of which rice is one of them. The policy comes with a clear agenda at making Nigeria self-sufficient in terms of food and agricultural productivity, amongst others objectives.

Agricultural transformation agenda (ATA) for massive rice production in Nigeria
An extract from the President's speech to the people stated as follows: "Before we leave office in 2015, we must stop the importation of rice to Nigeria. There is no reason why Nigeria should be importing rice…………" the President Jonathan said on August 16, 2011 at a meeting in the State House with the President of the International Fund for Agricultural Development (IFAD), Dr. KanayoNwanze. The promise was solemn and a commitment to boost rice production in order to achieve self-sufficiency in milled rice as an appropriate national goal.

The President assured Nigerians that his administration has given agricultural development the highest possible priority in its agenda for national transformation because of its critical importance to the wellbeing of the citizens. Indeed, the President has made it clear that achieving self-sufficiency in rice production is part of the main assignments for the Minister of Agriculture and Rural Development. Nigeria should have no reason to depend on imported rice for domestic consumption. "We have all that is needed to grow, process and market enough rice for domestic consumption and have a surplus we can export to other countries," the President added.

ATA action plan

The Action plan of ATA is to intensify rice production and increase on-farm yield so asto reduce production costs as well as to improve the quality and standard of rice thereby reduce post-harvest losses. In addition it will facilitate empowerment of rural rice enterprises and businesses especially in the small-scale milling of domestic rice processing and packagingso as to sustain productivity, incomes and employment. This will strengthen human and institutional capacities that will result in improved production, processing and marketing of rice competitively in Nigeria.

In a recent speech at the International Institute of Tropical Agriculture (IITA) in Ibadan on Cassava Value Chain Development, the Minister of Agriculture and Rural Development, Dr. Akinwunmi Adesina said he regretted that "In 2010 alone, Nigeria spent N356 billions on imported rice…….." However, it was pointed out that Nigeria was actually exporting agricultural food materials from the 1940s up until just before the country's independence. For various reasons beyond the farmers understanding exporting agricultural product gradually became a thing of the past while at the same importing food items became the norm. By the 1980s, Nigeria's exportation of rice from Asia in particular became the accepted process, but as the Honourable Minister indicated under his watch, this will be reduced as much as possible as reflected in the programme – ATA**.** According to the Honourable Minister of Agriculture and Natural Resources, 'the vision in the transformation strategy is to achieve a hunger free Nigeria through an Agricultural Sector that will drive income growth, accelerate achievement of food and nutritional security, generate employment and transform the country into a leading player in global food markets and to grow the wealth of the nation for example that of millions of rural farmers.

The Agricultural Transformation Agenda is designed to make the Agricultural Sector a Business project as against development project and to promote Private Sector investment in agriculture, thereby execute integrated projects via value chain processes; generate employment, and transform Nigeria into a net exporter of agricultural commodities. The transformation action plan is focused on key aspects of Agricultural Value Chain processes. They include the provision and availability of improved inputs (seed and fertilizer), increased productivity and production, as well as the establishment of staple crop processing zones. ATA is expected to address reduction in post-harvest losses, improve linkages with industries as well as improve access to financial services and markets. ATA, he targets Rural Communities particularly Rural Women Farmers, Rural Youths and Farmers' Associations, as well as the improvement of Rural Institutions and Infrastructures.ATA sets out to create over 3.5 million jobs from the Agricultural Sector such as: rice, cassava, sorghum, cocoa and cotton using the value chain processes; with many more jobs to come from other value chains programmes that are under implementation. The programme aims to provide over N300 billions of additional income for rural farmers. Over N60 billions are to be injected into the economy from the substitution of 20% of bread using wheat flour with cassava flour. The initiative will help efforts as mandated as listed above so that the country will be food secure by increasing production of key food staples by 20 million tons: Rice production will be increased to an estimated 2MT: Cassava increased to 17MT and Sorghum increased to 1MT respectively.

The Honourable Minister further said that the Ministry of Agriculture has established 18 Staple Crop Processing Zones (SCPZ) as a cluster-based value chain strategy to attract Private investors set up food processing plants in areas of high Agricultural food production areas; also link rural farmers in clusters to food manufacturing plants; create jobs and drive rapid rural economic growth while adding that operators in these staple crop processing zones will receive fiscal investment and infrastructure incentives. He is quoted that the "Use of Guarantee Minimum Price [GMP] serve to stabilize prices; absorb excess output of agricultural produce and encourage increased production of commodities in a manner that would benefit the stakeholders involved in the ATA value chain processes; The actions will improve the promotion of agricultural mechanization through the use of farm machinery, implements, and processing machines for the production of crops, livestock and fish as well as their finished products.(Akinwunmi, 2011).

The Research - Statement of Problem
With the expansion of the agricultural land area under rice cultivation, there has been a steady increase in rice production in Nigeria. The production increase has, however not been enough to meet the increasing rice consumption demand of the rapidly growing population (National Bureau of Statistics, 2005). Despite the Federal Government of Nigeria concerted efforts to make Nigeria self-sufficient in rice production, the achievement of the policy objective has remained elusive. There has been a considerable lag between production and demand level with imports making up the shortfall. Thus as culled from the Honourable Minister's speech "In 2010 alone, Nigeria spent N356 billion on imported rice". (Akinwnmi, 2011).

Objectives of the Study
The broad objective of the study is to examine the prospect of rice in sustainable food production under the Agricultural Transformation Agenda in Ogun State.

The specific objectives are to:
i.   Identify the various socio-economic and demographic characteristics of rice farmers in the study area as it affects rice production;

ii.   Determine the effect(s) of Agricultural Transformation Agenda on rice production as a means of agricultural food sustenance in the study area;

iii. Determine the place of rice farmers and the potentials for expansion for food sustenance through application of Agricultural Transformation Agenda in the study area.

Research Methodology
The study was carried out in Obafemi Owode Local Government Area (LGA) of Ogun State with the Headquarter in Owode. Twelve (12) communities were selected by simple random sampling technique out of the 22 major rice producing communities of the LGA. The randomly selected communities are:Ajura, Owode, Mokoloiki, Onidundu and OFADA from Owode cluster and Moloko-Ashipa, Egbeda, Ayiwere, Iyana, Ogbe – Ita, Oba and Ogbe-Inu from Oba cluster. Using systematic random sampling, a respondent was selected from every third rice farmer in each village until 12 respondents were selected from each of the villages. A total

number of 144 respondents were selected and these were on whom a well-structured questionnaire were administered for the study. This ensured that an element of the projected population was given equal chance of being included in the sample.

The data for the study were collected through the use of these questionnaires coupled with personal interview administered on the respondents. Information collected included both demographic and non-demographic characteristics of the respondents. The additional data collected with the use of personal interview were written and recorded to validate the data collected with use of questionnaire. This enhanced the correlation between the personal information collected from other source and the structured questionnaire responses by the respondents. Secondary data were also collected from the internet, for relevant information on rice production and Agricultural Transformation Agenda.

Measurement of Major Variables

Farm Size: This was measured using the number of heaps that can be made on respondent's rice farms. Phillips, 1997 calculated how to convert the number of heaps on a Farmer's land to hectares. Thus, using this process the number of heaps on farmer's farms was converted to hectares. For example: 10,000 heaps is equivalent to 1.0 hectare (Phillips, 1997).

Knowledge Score: Knowledge of respondent was put to test by asking them information on recommended rice, production practices, that is names of improved varieties of rice they are familiar with, planting spacing, types of fertilizers required by the crop, recommended quantity/ha, rate of application, frequency of application, method of application, the expected yield/ha, recommended storage chemicals and dosage and so on.

Productivity Level of the Farmer: This is the cost of the output per unit cost of input used (cost of output/cost of input).The data that were collected from the study area was analyzed using descriptive statistics like frequency, percentage and mean. One hundred and forty four questionnaires were administered to the farmers in the study area. One hundred thirty(130) were returned while the remaining 10 questionnaires were wrongfully filled. One hundred and twenty of the questionnaires were used for the final analysis and discussion.

Results and Discussion

The selected demographic characteristics of the respondents in this study were age, gender, educational qualification, marital status, family size, improved farming techniques, ATA awareness that are directly related to rice production and processing. Table 1 showed that 77.5% of the rice farmers were male while the remaining 22.5% were females. This indicated that more male farmers were involved in rice production in the study area compared to female farmers. The gender difference may be due to the fact that rice production is labour intensive.

Approximately eighty eight percent (88.8%) of the respondents were within the age category of 25 to 55 years. The data showed that the respondents were in their productive age. The significance of this information is that the respondents their age range is ideal and that this will enable them to cope with the rigours of rice production. The mean age of the respondent was 45.2% which indicated that they are still very active. Almost forty-one percent (40.8%) of the respondents had no formal education while 37.5% of them completed Primary school. The low literacy level among the respondents might affect their access to information as previous study by Singh *et. al.* (1997) showed the relationship between the level of education and access to information among rice farmers. Data also indicated that 25.0% of the respondents had less than 10 years' experience in rice cultivation, and about 34.0 % had between 11 and 15 year experience while about 41 .0 %had more than 10 years' experience with the mean number of years being 16.9 years. Over 90.0%of the respondents had been in rice cultivation for several years and that justified their experience in rice production.

Approximately, eighty-four percent (84%) of the respondents were married, while only 2.5% were single and 3.3% divorced. The high percent of married respondents is a good indication that those married rice farmers have access to family members (wives and children) who could supply free family labour, thus making more hands available for productive activities on respondents' rice farms. The mean household size is 8.8 indicating that majority of the respondents have large households that would contribute free family labour that would be useful for supporting the labour intensive period needed for successful rice production.

Table 1: Personal Characteristics of Respondents in the Study Area

Characteristics	Frequency	Percentage
Sex		
Male	93	77.5
Female	27	22.5
Marital Status		
Married	101	84.1
Single	15	12.6
Divorced	4	3.3
Age		
Less than 25 years		6.7
25-35 years	8	20.8
36-45 years	25	35.0
46-55 years	42	25.0
Above 55 years	30	12.5
HouseholdSize	15	
3-6 individuals		25.8
7-10 individuals	31	60.0
> 10 individuals	72	14.2
EducationalQualification	17	
No formal education		40.8
Primary education	49	37.5
Secondary education	45	16.7
Post-Secondary education	20	5.0
Year of Experience	6	
5-10 years		25.0
11-15 years	30	34.2
More than 15 years	41	40.8.
	49	

Source: Survey Data from Study Area, 2012

Distribution of respondents according to their rice cultivation

Table 2 showed that all the respondents have knowledge of exotic seeds of rice cultivation but none of the respondents in the study area actually planted any of the exotic varieties. All the farmers in the study area cultivated the improved rice variety identified as OFADA OS6.Table 2 showed that 16.7 % of the respondents cultivated less than 3 hectares of farm land, with the mean farm size being greater than 6 hectares. The majority of rice farmers in the study area were small holders, and this limited their production potential, as well as making them remain at subsistence level. Ten percent (10%) of the respondents cultivated rice primarily for their family subsistence and consumption. However, fifty-five (55.0%) of the respondents produced rice mainly for commercial purpose. Thirty-five percent (35.0%) of the respondents cultivated rice because of its short maturity period. Rice is thus a major source of income generating activity among 90% of the respondents in the study area. The result further showed that upland rice is majorly cultivated in study area.

Table 2 showed that all the rice farmers in the study area cultivated improved version of the local variety known as OFADA OS6, named after one of the communities. The farmers reported that they once adopted the exotic varieties but had abandoned it as a result of its taste and difficulty to sell the finished product at good prices. It is interesting to note that the local varieties cost more in the local market. Majority of the respondents are thus small holders and this limits their production potentials. Thus, they fall into the category described as subsistence farmers in the context of ATA.

Only 45.0% of the respondents own their farmlands which they inherited, while the remaining 55.0% rented or leased the parcel of land they use for rice cultivation. Farm ownership may be a restriction and might result in their inability to continue to use the farmland for rice cultivation as there special properties needed in the type of land that can be used for rice cultivation.

Table 2: Farming characteristics of the respondents

Variable	Frequency	Percentage
Reason for Cultivating Rice		
Short maturity period	42	35.0
For home consumption		
For commercial sale	12	10.0
Major Variety of Rice Cultivated		
17A 150	66	55.0
WAB 189		
Nerica		
Ofada OS6		
Farm Size	0	0
1 - 3.0 ha		
3.1 – 6.0 ha	0	0
6.1- 9.0 ha		
Over 6.0ha	0	0
Sources of Farmland		
Inheritance	120	100
Rented		
Leasehold		
	10	16.7
	55	29.2
	40	33.3
	15	20.8
	54	45.0
	51	42.5
	15	12.5

Source: Survey Data from Study Area, 2012

Respondents' Knowledge of Recommended Rice Farming Practices

Table 3 showed that respondents were sufficiently knowledgeable about the appropriate seed rate of 60kg/ha of rice to be planted as well as appropriate time to sow for optimal performance. This is indicated as between March and April. This is good for rice cultivation as it ensured that farmers cultivate rice when they could have good yield and reduce the incidence of pests and diseases with the use of cultural method. This is in line with finding of Singh *et.al,* (1997) on respondents' knowledge and use of improved seed in rice cultivation.

Table 3 further showed that 67.5% of the respondents are knowledgeable about the appropriate dosage of fertilizer to be used on rice farms. This is an indication of the extent to which the desire to use fertilizers, despite the fact that it is not always available for them to use. This corroborated by previous finding by Singh *et. al.* (1977) and IRRI (1995) on respondent's use of fertilizer as recommended in rice production. Ninety percent (90%) were knowledgeable about the appropriate dilution of herbicides to be used on rice plot while 88.5% did have knowledge about the appropriate time of applying the post-emergence herbicides. Most of the respondents did not have knowledge about the use of herbicides. However, there was an indication that most of them hardly used herbicides but make use of other methods for weeding their farm plots.

Table 3 also showed that 94.2% of the respondents were knowledgeable about the different types of legumes and method of inter-cropping them with the rice on their farms as well the appropriate time and methods of harvesting rice. This corroborates with the fact that farmers in developing countries still cultivate multiple crops on their farmlands, which usually served as an insurance against crop failures.

Table 3: Respondents Knowledge of Recommended Practices

Items		Frequency	Percentage
Seeds (Appropriate ones and Planting Rate)			
	Knowledgeable	118	98.3
	Not Knowledgeable		
Sowing time (March to April)		2	1.7
	Knowledgeable		
	Not Knowledgeable		
Fertilizers (Appropriate type and dosage)		120	100
	Knowledgeable		
	Not Knowledgeable		
Herbicides (Type and dilution rate)		0	0
	Knowledgeable		
	Not Knowledgeable		
Time of application of herbicides		81	67.5
	Knowledgeable		
	Not Knowledgeable		
Appropriateness of intercropping rice with legume and type of legume		39	32.5
	Knowledgeable		
	Not Knowledgeable		
Appropriateness time and method of harvesting rice			
	Knowledgeable	108	90
	Not Knowledgeable		
		12	10
		106	88.3
		14	11.7
		113	94.2
		7	5.8
		117	97.5
		3	2.5

Source: Survey Data from Study Area, 2012

ATA Awareness and Compliance

Table 4 showed that only 8.3% of the respondents are aware of Agricultural Transformation Agenda, compared to other programmes such as OGADEP and FADAMA which they perceived and believed that it is one of the Government's initiatives that were just for the learned and therefore will not be beneficial to them anyway. In their considered opinion they believed that any Government's initiative that was not channeled to the remote parts or rural areas where farmers could easily access the information was not really meant for farmers. Hence with this pre-conceived prejudice ATA is of almost zero importance to the respondents in the study area.

Table 4: Respondents Awareness of Agricultural Transformation Agenda.

Variable	Frequency	Percentage	
Agricultural Transformation Agenda Awareness			
Not Aware	87	72.5	
Fairly aware			
Fully aware	23	19.2	
Perceived Effect of Agricultural Transformation Agenda			
significant	10	8.3	
moderately significant			
not significant			
Readiness for Agricultural Transformation Agenda	0	0.0	
Ready			
Not ready	0	0.0	
indifference			
	120	100	
	70	58.3	
	18	15.0	
	32	26.7	

Source: Survey Data from Study Area, 2012

Productivity level of rice farmers in study area

Productivity of the farmers in the study area was conceptualized according to Coelli (1996) as the ratio of total revenue (quantity produced at a unit price and the total input cost). The higher the ratio, the more productive the farmer is and the more efficient he or she is in the use or allocation of the production. The productivity of the rice farmers was therefore a measure of their economic performance.

Table 5 showed that 8.3% of the farmers achieved productivity level of more than 2.0 that is achieved income twice their total revenue. Also, 25.0 % achieved between 1.6 and 2.0 productivity levels, while 50.0% achieved between 1.1 and 1.5 productivity levels. Thus, 83.3% had high levels of productivity. This is good, considering the productivity that was previously reported for rice farmers (Singh *et al*., 1997). These however showed that there was more room for improvement. Only 12.5% of the respondents achieved productivity levels of 0.5 to 1.0, while 4.2 % of the rice farmers achieved productivity levels of less than 0.5.

Table 5: Productivity levels achieved by the respondents

Productivity	Frequency	Percentage	
Less than 0.5	5	4.2	
0.5- 1.0			
1.1- 1.5	15	12.5	
1.6- 2.0			
> 2.0	60	50.0	
	30	25.0	
	10	8.3	

Source: Survey Data from Study Area, 2012

Recommendations

Based on the research findings, the following recommendations were made. There is a need to assist the rice farmers in the study area in order for them to improve on their productivity levels and thereby reducing the wage bill on the importation of rice in the country.

- Ogun State has the potential to be self-sufficient in rice production under Agricultural Transformation Agenda.

- Workshops and seminars should be organized to disseminate the information on the importance of ATA to rice farmers in the study area. This process will result in increased awareness that would lead to increase in production for self-sufficiency through rice industry. The resultant effect might also lead to the possibility of increased supply and marketing of rice to neighboring States as planned by ATA.

- There is the need to encourage the rice farmers in the study area to open up new areas of land for enhance mechanization of rice production,

- Through the understanding of ATA, more rice farmers would benefit from strengthened human and institutional capacities to produce, process, and package and market rice competitively in the study area. Also, through the outcomes of the value chain processes employed rice farmers would be more efficient and effective in the channeling of the provisions and tools of Agricultural Transformation Agenda to the study area.

This would help to reduce the huge investment expended on the importation of rice into the country.

Conclusions

It can be concluded from this study that most of the rice farmers in the study area had the potentials needed for sustainable rice production, processing, packaging and marketing of domestic rice. Most of the rice farmers in the study were not familiar with policy in place on Agricultural Transformation Agenda. They are familiar with previous policies and programmes like the Fadama and OGADEP which had helped them in one way or the other in their domestic production of rice. The level of awareness, impact and acceptability of other Government initiatives like Fadama and OGADEP were well received by the rice farmers in the study area. This is an indication that Agriculture Transformation Agenda could also make an impact on the rice farmers if the awareness is positively created among the respondents. However, scarcity of Agro-inputs and Agro-chemicals as well as agricultural equipment that would lead to farm mechanization is needed. The inability of the respondents to access ATA information was observed as constraints to optimize rice production in the study area. Addressing at least most of these problems using the Agricultural Transformation Agenda is a good first step towards attaining the goals of ATA for rice self-sufficiency in the country.

Factors that determine the respondents' productivity level included: farm size, knowledge of improved practices of rice cultivation, the quantity of labour they use (especially as the occurrence of birds infestation of farms is a serious problem) as well as the educational level attained by the respondents. The small farm plot sizes resulted in the current low productivity level attained by the respondents.

Bibliography

Ajibefun I. A. and Aderinola E. A. (2003): Determinants of Technical Efficiency in Traditional Agricultural Production: Application of Stochastic Frontier Modelling to Food Crop Farmers in South-Western Nigeria. *African Journal of Economic Policy*, 10 (2): 31- 56.

Akpokodje, G. Lancon, F. and Erenstein, O. (2001): Nigerian's rice economy: State of the Art. Proceedings of NISER/WARDA Nigerian rice Economy Stakeholders Workshop, Ibadan,   2001.

A.O. Adejobi, F.O. Omolayo and S.B. Williams(2008): Expanding the improved seed market in Nigeria: an imperative for increased rice production In: Africa Rice Center (WARDA). 2008. P Kormawa and AA Touré (eds). Rice Policy and Food Security in Sub-Saharan Africa. Proceedings of a workshop held on 7–9 November 2005, Cotonou, Benin. Cotonou, Benin: Africa Rice Center (WARDA),Pp 376-387.

Azhar R (1991): Education and Technical Efficiency during the green revolution in Pakistan. *Econ. Dev. Cult. Change*, 39:651-665.

Bravo-Ureta B. E. and R. E, Evenson (1994): Efficiency in agricultural production: the case of peasant farmers in eastern Paraguay. *Agricultural Economics*, 10: 27-37.

Bravo-Ureta, B.E and A.E Pinheiro, (1997): Technical, Economic and Allocative Efficiency in peasant farming, Evidence from the Dominican Republic. *Journal of DevelopingEconomies*.XXXV(1): 48-67.

Boris, J.P. (2004): Nigeria formost importer of rice in the world. http:www.abcburkina.net/english/eng-vu-vu/abc-114.htm.Date assessed December 8, 2005.

Coelli, T. (1996): A Guide to FRONTIER Version 4.1: A computer programme for stochastic. Centre for efficiency and productivity analysis (CEPA) Working Paper 96/07.

Daramola B (2005): Government Policies and Competitiveness of Nigerian Rice Economy. A Paper presented at the `Workshop on Rice Policy & Food Security in Sub-Saharan Africa' organized by.http://www.foodnet.cgiar.org

FAOSTAT data, (2005): FAOSTAT-ON LINE: http://faosts.fao.org. *FAOSTAT*.http://faostat.fao.org/site/567/DesktopDefault.aspx. Retrieved December 26, 2006.

Goodluck J., (2012): At the Inauguration of the Agricultural Transformation Implementation Council, Abuja. Monday, 14th May 2012

Imolehin, E. D and A. C Wada (2000): Meeting the rice production and consumption demands of Nigeria with improved technologies. International Rice Commission Newsletter.*FAO*, 49: 33-41.

International Rice Research Institute (IRRI). (1995): World rice statistics IRRI, Manila, Phillipine, Pp. 32 – 42.

Jones, M.P. (1995): The rice plant and its environment WARDA Training Guide 2. WARDA. Bouake Pp. 27-30.

Longtau, S.R. (2003): Multi-agency partnerships in West African Agriculture, A review and description of rice production systems in Nigeria Eco-systems Development Organization (EDO) report.

National Bureau of Statistics (2005): Trade statistics by origin (1996-2005), National Bureau of Statistics Abuja, Nigeria. http:/www.nigeranstat.gov.neg/connections/tradestatistics Sept, 2006.

National Archives, (1934–48): Archives, Kaduna, Nigeria.

Nigerian Tribune, Wednesday,06 July, 2011.News Headline

Nigerian Tribune, Tue, 13 Sept, 2011. News Headline

Osiname O.A (2002): Review of Current Status, Policy and Prospects of Rice production in Nigeria. Paper Presentation at the Rice Stakeholders Workshop, Nigerian Institute of Social and Economic Research (NISER): 19th-20th November.

Singh, B.N., S. Fagade, M.N. Ukwungwu, C. Williams, S.S. Jagtap, O. Oladimeji, A. Efisue and O. Okhichievbie (1997): 'Rice Growing Environments and Biophysical Constraints in Different Agro-ecological Zones of Nigeria. *Meteorological Journal.,*21: 34- 44.

Smith, Bruce D. (1998): *The Emergence of Agriculture*. Scientific American Library, A Division of HPHLP, New York, 1998 ISBN 0-7167-6030-4.

WARDA, Cotonou, Republic of Benin, November 07-09.

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** http://www.iiste.org/journals/ The IISTE editorial team promises to the review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Recent conferences: http://www.iiste.org/conference/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar