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ABSTRACT

In spite of the use of available production technologies byswamp rice farmers, much of the world's intensive food production is still onsmall land holdings. Although swamp rice contributes significantly to the foodrequirements of the population, its production is far below the nationalrequirements. Hence this study was designed to assess availability and use ofswamp rice production technologies among farmers in Enugu State, Nigeria.Primary data were obtained from 96 swamp rice farmers through the use of astructured interview schedule. Descriptive statistics, multiple regression andlogit regression equation were used to analyze the data. Findings indicatedthat (13.3%) of the respondents had no formal education, with a mean householdsize of 6 persons. Majority of the respondents (43.2%) borrowed their farmlandand cultivated an average of 3.8 hectares of land yearly. The percentage of therespondents that belonged to at least one organization was (78.6%), while about21.4% were not members of any organization. Majority of the respondents (60.6%)had no access to credit facilities, and 52.4% had no contact with extensionagents while the average contact made by the farmers was 9.5 contacts in thepast one year. Findings of the swamprice production technologies available to the farmers included: Rice varietiessuch as Nerica and Faro (95.7%), recommended seed/seedling rate (95.7%), plantingwith 20×20 cm or 25cm x 25cm spacing (92.0%) control weed using herbicides suchas propanyl-plus (90.4%). Also, the number of respondents that were categorizedas high users was 14.2% while 21% were medium users, 11.5% were categorized aslow users and 3.3% did not use any production technologies. The respondentsperceived the following as factors promoting level of use of swamp rice production technologies; abilityto enhance income of farmers (M = 2.52), adaptable to culture of users (M =2.35) and access to available technologies (M = 2.28) among others. Therespondent's perceived constraints to the use of available swamp riceproduction technologies include pest, diseases and weeds, (M = 2.64), droughtissues such as rainfall, solar radiation, (M= 2.49) and land tenure issues M =2.46 among others. The regression results show that there was a significantrelationship (f = 2.341., p< 0.05) between the socio-economiccharacteristics of the SR farmers and the use of available SR productiontechnologies. Furthermore, results of the hypothesis revealed that years offarming experience (t = 0.032: P = 0.021), membership of social organization (t= 2.179: p= 0.001) number of contacts with extension workers (t = 0.965; P =0.000) had positive significant relationship on farmers use of available swamprice technologies. The overall finding of the study shows that the identifiedconstraints to the use of available swamp rice production technologies shouldbe tackled by government and non government organizations in order to enhancefarmers ability to use available technologies effectively.

CHAPTER ONE: INTRODUCTION

Background information

The two major species of rice commonly cultivated are Oryzaglaberrima and Oryza sativa, with Nigeria and Madagacar accounting for 60% ofthe rice land in sub Saharan Africa (SSA) (Consultative Group on InternationalAgricultural Research (CGIAR), 2006). Nigeria is currently the highest riceproducer in West Africa, producing an average of 3.2 million tons of paddy (2million tons of milled rice) (Damola, 2010). Rice indeed is no longer a luxuryfood in Nigeria, and it has become a major source of calories for the urbanpoor. The report further adds that the poorest of urban households obtain 33percent of their cereal-based calories from rice and therefore rice purchasesrepresent a major component of cash expenditure on cereals.

Swamprice(SR) is a major food crop of the world by virtue of the extent and variety ofuses and its adaptability to a broad range of climatic, edaphic and culturalconditions. It is grown under shallow flood or wet paddy conditions. Swamp production is concentrated in areas wheremanagement is convenient on flat low lands, river basins and delta areas. Thecrop flourishes well in humid regions of the sub tropic and temperate climates.About 90% of the world's swamp rice is produced in tropical, semitropical areasand consumed where it is grown by small-scale farmers in low-income developingcountries (Food and Agriculture Organization, (FAO) 2008).Swamp rice is cultivated in virtually all theagro-ecological zones in Nigeria (Akande,2001). According to Damola (2010),swamp rice is relatively easy to produce and is grown for sale and for homeconsumption. In some areas there is a long tradition of SR growing, but formany, swamp rice has been considered a luxury food for special occasions only.With the increased availability of rice, swamp rice has become part of theeveryday diet of many in Nigeria.

National Cereal Research Institute (NCRI) (2008) identifiesthree (3)prevalent types of swamp rice production systems in Nigeria vizrainfed lowland SR, rainfed SR and irrigated swamp rice production systems.Rainfed lowland SR production system (RLSPS): accounts for about 48% ofNigerian's rice area. It is very common in the South Eastern part of Nigeriasuch as Enugu, Ebonyi etc. The riceyield is generally high and ranges from 2-8 tons/ha and it is also estimated tocontribute about 53% to national rice production source (Atala, 2009) RainfedSR production system (RSRPS): accounts for 30% of the total rice productionarea with more than 1.30mm of annual rainfall. It is predominant in thesouthern part of Nigeria and mostly found in the flooded river valleys, whichaccounts for about half of total rice areas and has an average yield of 2.2tonnes (Akpokodji, Lancon and Erenstein, 2009). Irrigated swam price production system (ISPS) which is the most recentlydeveloped rice environment in Nigeria is common in the Northern and Southernpart of Nigeria. Irrigation is supplied from rivers, wells, bore holes amongothers to supplement the rain for full rice crop growth. It contributes about16% of cultivated rice land and yields range from 2-8 ton/ha thus accountingfor 27% of national rice supply. (Saka,2010)

Other less common rice production systems include the deepwater (floating rice) (Deep water swamp rice production system) whichconstitutes about 5% of the national rice production area. The yields are verylow due to the predominant use of unimproved rice variety (Oglaberrima steud),which yields less than 1 ton /ha. It accounts for about 3% of the national riceoutput. Also, the tidal (mangrove) Swamp rice(TSPS) which lies between thecoast line and fresh water swamps has potential for one million hectares ofcultivable rice area but at present contributes less than 2% to national riceproduction with low rice yields of only about 1 ton/ha. (FAO, 2009).

Consequently, rice production technologies have beendeveloped for swamp rice farmers, but these technologies have not been fullyutilized by the farmers. Such riceproduction technologies include: use

ofappropriate seed/ seedling varieties such as Nerica, Faro 44, 43 etc, use ofappropriate seed rate such as 30 – 40kg seed per hectare, use of pre and postemergence herbicides, land preparation technologies such as ploughing and harrowing, time of planting,appropriate spacing, pest and disease control etc. (FAN, 2007).

Nigeria is the largest swamp rice producing country in WestAfrican region and swamp rice production increased gradually over the yearswith area expansion to surpass major rice producing countries like Cote d'voireand Sierra Leone .(WARDA, 2004)Unfortunately, the increase in demand in recent times has not been accompaniedwith a corresponding rise in production. This is attributed to wide spreadpoverty, dominance of the nation's agriculture by small holders, the use ofrelatively primitive tools for farm operations lack of exposure to improvedagricultural technologies (improved seeds, fertilizers, pesticides etc) andinadequate farm mechanization aids by government (Damola, 2010).

Ani and Kwaghe (1997) observed that the process ofincreasing efficiency of agricultural production through agriculturalmodernization depends mainly on the extent to which farmers can incorporateimproved agricultural practices into farming operations. This, according toSule, Ogunwale and Atala (2006) necessarily entails shifting away from the drudgeryof age-long use of traditional methods to the 'utilization of modern productiontechniques so as to accomplish self sufficiency in food production andimprovement of life in the rural areas. It has long been recognized by expertsin this field that the only way to significantly increase the productivity ofthe small scale farmers in developing countries is to improve the farmer'stechnological capabilities.

Technology may therefore be defined as the specializedknowledge, skills, methods and techniques required for production anddistribution of goods and services. Agricultural technology can also beembodied in people, tools, crop varieties, agricultural practice, andprocessing equipment. Technology according to Ayoola (2001) includes thetotality of how the society performs particular activities. Specificallytherefore, agricultural technology consists of the nature and types ofavailable inputs (for example, seeds, fertilizer, chemicals, tools, machines,farm power e t c.) and the way in which these inputs are combined (for example,land fertilizer ratio, labour-machine ratio).

Recent studies has shown that SR production technologieshave not been able to meet the increasing demand for rice (FAO, 2002). In theWest African sub region, Nigeria has experienced a well established growingdemand for rice caused by rising per capita consumption and consequently theinsufficient domestic production had to be complemented with enormous importboth in quantity and value at various times (Saka and Lawal, 2009). Accordingto the United State Agency for International Development (USAID) (2010),Nigeria's rice sub sector is dominated by weak and insufficient producer-marketlinkage due to poor infrastructure and limited efficiency of distributionnetwork which has resulted to low productivity and participation of farmers inthe rice field.

In order to reduce the rate of rice importation, Saka andLawal (2009) were of the opinion that disseminating improved varieties andother modern inputs as a composite package to rice farmers is very important.Nwite Igwe and Wakatsuki (2008) indicated that the adoption of rice productiontechnologies should lead to substantial yield increase in rice production.However, this invariably underscores the important role technology stands toplay in attaining the much needed growth in the rice sub sector. As a result ofthis, International Rice Research Institute (IRRI) (1996) opined that new ricevarieties that combine higher yield potential with excellent grain quality,resistance to biotic and abiotic stress and input use efficiency

aredesperately needed to reduce the importation of foreign rice. Kebede (2001)indicated that growth in production can be gained through the use oftechnologies and allocative efficiencies of farmers in response to the changingtechniques and production environment. Hence, adoption of technologies shouldlead to substantial yield increase.

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