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Utilisation of Fadama Land for Improved Rural Economy in Niger State

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Abstract
This paper highlights the role of Fadama in enhancing the economy of the rural populace in Niger state. Fadama (wetland or floodplains) is seasonally flooded plain along major rivers and depression on the adjacent terraces. Its resources constitute an important agricultural ecology in the world and are major contributor of economic growth of the society. It is usually a site of busy agricultural activities (rainfed and irrigated agriculture) throughout the year owing to its characteristic residual and underground moisture retention within the root zone. Wetland soils have great potential for sustainable increase in food production. It hosts the production of arable and vegetable crops, fisheries and grazing land for livestock. The potential of Fadama is based on its ability to retain sufficient soil moisture that support cultivation of wide variety crops in two distinct seasons (wet and dry season). It also has soils that are generally more fertile than that of upland. However, some challenges that can hinder the attainment sustainable agricultural production in the Fadama include; difficulty in clearing natural vegetation, intensive weeds infestation, prevalence of pest and diseases, poor water control (flooding) and poor land use management. The study recommends supply of farm inputs and equipment to Fadama farmers at the right time, support farmers groups, and maintenance of rural roads and direct purchase of vegetables for school feeding programme to improve income of Fadama farmers.

Keywords: Fadama, Land, Peasants, Soil
JEL Classification: Q15

1. Introduction

Fadama is an Hausa word meaning a valley-bottom, flood plain, wetland, or a lowland around a river that floods or becomes wet when the river is high (Blench and Ingawa, 2004). The word *Fadama* has been generally adopted and universally accepted for use among Scientists. Scoones (1992), described *Fadama* as "wet land in dry land" while Arnbog (1998) used the phrase "a garden, a little paradise' in the semi-arid regions. *Fadama* have been described as the '*kidney of the landscape*' because of their ability to store, assimilate and transform contaminants lost from the land before they reach waterways. Like the kidney, *Fadama* helps to dilute and filter

material that could otherwise harm our lakes, rivers and other waterways. Functions of *Fadama* include water storage, nutrients transformation, growth of living organism including fishes and wetland crops. Brinson (1995) observed that location and size of a wetland may determine what functions it will perform. Wetland soils have great potential for sustainable increase in food production (crops and fisheries) because of their inherent fertility status and their occurrence in flat or near flat landscape where soil erosion is not a major constraint. *Fadama* (wetland or floodplains) resources constitute an important agricultural ecology in the world and are major contributor of economic growth of the society (Usor and Uhie, 2016).

The rapid increase in population in Nigeria, and the realization of the need to feed the ever-increasing human populations and pressure for grazing land and for livestock, attention is now focused on the utilization of *Fadama* lands that were hitherto neglected. This is evidenced in the Federal Government's Projects of the National *Fadama* Development Project, (*Fadama* I. *Fadama* II, *Fadama* III and *Fadama* III+ AF).

Niger State covers a total land area of about 86,000km^2 or 8.6million hectares, representing about 9.3% of the total land area of the Country. Out of this, about 7Million ha (or 80%) are arable from which about 32% (2.3mha) is actually cultivated for production of various food and cash crops. The state's potential for agricultural output cuts across various food and cash crops including Sorghum, Maize Rice, Cowpea, Groundnut, Yam, Cassava, Sweet Potatoes, Cotton, Soya-beans, Sugarcane, Melon and Vegetables. Other cash crops are Sheanut, Locust bean, Jatropha, and Cashew.

Fadama farming through small and large scale irrigation plays a key role in the economy of Nigeria as a basic source of food, income, and employment, especially for youths and women in the period of rainfall and dry season agriculture. This paper reports on some general information on *Fadama* farming and how it could improve the economy of the rural populace in Niger state.

1.1 Fadama Land in Niger State

Niger State is endowed with abundant underground and surface water reserves, and favourable agro-ecological conditions in the country's low-lying plains with alluvial deposits, popularly referred to as *Fadama* lands. *Fadama* lands are largely found in the extensive flood plains of the Niger River. The State has an estimated 495,000ha of irrigable land (*Fadama/*floodplain) the second largest *Fadama* in Nigeria after Adamawa with 625,000 Ha (Ingawa, 1998) of which only about 26,500ha being cultivated annually. The soils, moderately fertile with residual moisture offer attractive opportunities for the arable farmers to grow both season and off-season high-value crops. The potential and importance of *Fadama* agriculture for food production and economic development is crucial. *Fadama* areas in Niger state are critical to the survival and economic development of millions of rural dwellers.

The agricultural potentials of *Fadama* in Niger state have been rated medium to high and are typically waterlogged during rainy season but retain moisture during dry season. They are considered to have high potential for economic development through appropriate investments in agricultural infrastructure. The soils are poorly drained and are generally greyish or sometimes whitish in colour due to the high content of silt.

Fadama areas are scattered across the ecological zones of Guinea Savanna, Sudan Savanna, and the Sahel and the area vary from 1.5 to 3 million ha out of the 33million ha of land put into cultivation (FAO, 1997). These diverse wetlands are valuable for grazing, agriculture, and other domestic uses. The *Fadama/*wetlands have been used for dry season farming in Nigeria and it has contributed greatly to food crop production in the country.

1.2 Utilization of Fadama Land

Fadama land constitutes the back bone of arable crop production in the dry humid, semi-arid and arid agro-ecological zones where rainfall is not adequate for agricultural production. *Fadama* land is cultivated widely under the rainfed agriculture to crops that like moisture such as rice, sugarcane, etc. During the dry season *Fadama* land is also cultivated to host of vegetable crops. Irrigation, fisheries, grazing and other agricultural economic activities are also undertaken in *Fadama* land.

1.3 Small Scale Vegetable Gardening

Majority of *Fadama* farmers in Niger state are usually peasants, small-scale farmers that cultivate the *Fadama* land, usually around stream and riverbanks. These farmers cultivate varieties of vegetables for town and city population during the rainy and dry seasons when a proportion of inundated and flooded surface water must have receded, drained and evaporated. Towards the end of the dry season and on-set of rainfall, farmers most especially around the northern guinea savannah of the state cultivate maize and early maturing vegetables. The farmers because of their peasantry nature of farming carry out their farming with their local/crude implements like hoe and cutlass. The dry season's farming is carried out mostly by farmers of all age.

Ojo (2000) described dry season farming as a common practice in peri-urban or urban areas for production of vegetables and cereals for the ever-increasing population of the urban centres. Ladele and Omotosho (2000) pointed out that urban agriculture in Nigeria has not been given much policy considerations. This has resulted in deficiencies in some technical and managerial skills of *Fadama* resources use. In order to achieve optimum production level, resources must be available and whatever quantities of available resources need be utilized efficiently. Successful and result-oriented farming requires the skill and knowledge of the farmers, which can only be attained through the right training.

1.4 Large-Scale Arable Crop Production

The arable land in Niger state consists of a vast upland (tudu) and some *Fadama* land (low-lying relatively flat areas in streamless depression or adjacent to streams/rivers).

The state's potential for agricultural output cuts across various food and cash crops including Sorghum, Maize Rice, Cowpea, Groundnut, Yam, Cassava, Sweet Potatoes, Cotton, Soya-beans, Sugarcane, Melon and Vegetables. Other cash crops are soya bean, beniseed, jatropha, and cashew. These crops are mainly cultivated in the upland which consists of over 70 % of the arable land. *Fadama* land though smaller is cultivated to host of high valued crops such as rice, sorghum, sugarcane and vegetable crops.

Niger State is presently cultivating 371,482 hectares of rice, mostly under the rainfed production season. Under the FADAMA III AF, 2,635 rice farmers with 7,100 ha land holding have been registered, 100 business plans for 10 production clusters were reviewed, out of which 49 were approved and currently being implemented. This is to ensure all-season farming through large scale irrigation system in the *Fadama* land. Nigeria and Niger state in particular has the land resources to support the production of rice through *Fadama* farming either rainfed or irrigated. Improved arable crop production through rainfed *Fadama* farming using recommended production practices and inputs will improve crop output and serve as a basis for improved income and poverty alleviation, particularly in the rural areas.

1.5 Dry Season Farming (Irrigation)

The potential for dry season farming (i.e. *Fadama* development) is also enormous. The State has an extensive irrigable land of which only about 15 % (26,000Ha) is being cultivated annually. The extensive flood plains at the water bodies (River Niger, Kaduna, Gbakogi, Gurara, Kontagora and Chanchaga), dams/reservoirs (Kainji, Shiroro and Jebba), numerous perennial streams as well as the distinct six months of dry season allows for the cultivation of rice, maize etc. *Fadama* dry season farming has also been given a boost by the Federal Government through the Federal Ministry of Water Resources (FMWR) and collaborating with the World Bank (WB) towards the implementation of a seven year programme dubbed *"Transforming Irrigation Management in Nigeria (TRIMING) Project"*. The development objective of the program is to support and improve agricultural production and productivity in selected large-scale public scheme in Northern Nigeria. This is to be achieved through strengthened institutional arrangements and improved access to irrigation and drainage services including value chain development with active involvement of the stakeholders.

Table1 shows the irrigation projects in Niger state covering expanse *Fadama* lands that when fully utilised can bring the desired agricultural development in the state and also ensure food sufficiency and food security. This list is not exhaustive as new irrigation areas are coming up, the Kontagora-Auna and the Lioji dams in Magama and Kontagora local governments respectively.

Table 1. Irrigation Projects in Niger State by Local Government and Sited Area

Local Government Area	Project (Area Sited)	Gross Area (HA)
	Fogbe	1,000
Agaie	Ma Agba	50
	Agaie	40
	Loguma	120
Agwara	Papiri	45
	Landzu	8
Bida	Masaga	12
	Tungan Kawo	800
Borgu	Tamani	10
	Swashi	22,000
Chanchaga	Chanchaga	80
	New Chanchaga	40
	Kwale	200
Edati	Baratsu	400
	Kpayi	500
	Guzan	1,400
	Sonkpata	5,500
	Kusokenchi	80
Gbako	Nda'aji Guzan	125
	Marya/Eregi	6,000
	Edozhigi	1,000
	Toroko	80
Katcha	Badeggi	880
	Gbakogi	830
Lapai	Edo/Lapai	1,200
	Ebbo	50
Lavun	Sopa	200
Mariga	Lioji	80
	Masuga	12
Mokwa	Rabba	1,000
Rafi	Zara	100
Shiroro	Kuta	80
	Gusoro	30
Suleja	Rafin Karfe	50
	Tufa	50
Niger State		46,102

Source: *Niger state Ministry of Agriculture*

1.6 Fisheries

The abundant large inland water bodies including dams/reservoirs along valleys and flood plains of River Niger and Kaduna spanning over 436,196ha can support Artisanal fisheries if productively exploited. There are over 27,000 fishermen in the State with annual fish output estimated at about 43,000 metric tonnes. Many natural

fish ponds/lakes (Oxbow lakes) are found in valley bottoms (*Fadama*) around water bodies. Earthen ponds for fish farming are best constructed in *Fadama* land because of the availability of water year round and the nature of the soils.

1.7 *Grazing*

The wetlands/*Fadama* around the water bodies and along the Niger River, Kaduna and their tributaries provide good grazing land for herders. The land is green throughout the year because of the residual moisture. Grazing in wetlands during dry seasons has caused conflict between famers and headers in recent time because of the increased activities of dry season farming (irrigation). The wetland provides luxuriant and palatable pasture grasses for animals to graze. This land if properly demarcated and allotted between farmers and headsmen will go a long way to support livestock production and reduce conflict.

2. Constrains to *Fadama* Farming

Utilization of *Fadama* land for various farming activities has increased significantly over the years because of increasing demand for perishable commodities and arable crops (like rice and sorghum). The majority of farmers most especially those into arable crops (Rice and sorghum) production are assisted by World Bank Funded States Agricultural Development Program (ADP) under the *Fadama* III additional funding through provision of equipment and inputs.

However, the problems associated with *Fadama* farming include

1. Farmers lack adequate start-up capital for large scale irrigation activities and for those who irrigate using pumps are often faced with irregular fuel supply, frequent pump breakdown, low stream flow, and well dry ups.
2. The increasing irrigation activities along the *Fadama* land, has brought about famers-herders conflict due to competing use of the *Fadama* land
3. The soils of *Fadama* are subjected to seasonal flooding. The land is inundated with water as a result of the overflow of Rivers. Farmers often record losses of tonnes of agricultural produce thus worsening the food security situation in the country. The 2012 and 2018 nation-wide floods were more disastrous in Niger state as farmland and houses along River Niger, Kaduna and adjoining tributaries were all flooded.
4. Weeds are the major problem of *Fadama* farming. This problem of weeds in *Fadama* do take about 40 % cost of production
5. Other problems include pest infestation of farms

3. Conclusion

Fadama land constitutes the back bone of arable crop production, irrigation farming, fish farming and grazing in Nigeria. If well utilised, *Fadama* farming could be a solution to the food security issue and way to alleviating poverty in the rural areas in the country and Niger state in particular

4. Recommendations

1. The need for increased support from the Federal and State Governments in the supply of equipment and inputs to enable farmers to engage in massive food production in *Fadama* land.
2. Irrigation farming schemes, availability of farmers groups/cooperatives, existence of favourable policies and strategies, among others, would boost agricultural production and productivity in *Fadama* land
3. The government in its school feeding programme should make efforts to compel food vendors to buy vegetable directly from *Fadama* farmers to create a ready market
4. Construction and maintenance of rural roads to improve access to markets by *Fadama* farmers

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