

# Prospect and Challenges of Farming along the Hadejia-Nguru Wetland in Jigawa State Nigeria

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## Abstract

Jigawa State has high potentials for agricultural production for household consumption, commerce and industry uses. Over 70% of the State's landmass is considered arable which make it one of the most agriculturally endowed State in Nigeria.. However, over the years the area covered by this potential agricultural land has been bedeviled by the problems of flooding, Typha grass and Migratory birds. This research focused on the challenges and prospect of agricultural production as well as rural livelihood in Hadejia-Nguru wetland area in Jigawa State. Data collection was done through focus group discussion (FGD) which involved groups of Farmers who actively involved in both rainy season and dry season farming in Miga, Kaugama and kafin Hausa local governments of Jigawa state. A total of 360 farmers had been selected through purposive sampling. Results of the FGD showed that flood, migratory birds and typha grass played an important role in determining agricultural output and rural livelihood in the study areas. In conclusion, It was suggested by all the communities visited among others that there should be controlled release of dams during dry season which will provide adequate irrigation water to the farmers in dry season as well as drastically reduce the volume of the water which could prevent overflowing in rainy season. Similarly the farmers recommended that the government should increase its subsidized fertilizer allocations substantially so that more famers can access cheaper fertilizer thereby lowering their cost of production and increase production

**Keywords:** Prospect, Challenges, Wetland

## Background of the Study

The Hadejia-Nguru Wetlands (HNWs) are located in the Sahel zone of north-eastern Nigeria. The area is a floodplain wetland comprising permanent water bodies and seasonally flooded areas. The wetlands constitute important feeding grounds for different migratory bird species. In addition the area supports about 1.5 million farmers, herders and fishermen, who depend on the wetlands for their livelihoods. The water in the wider basin is most important for drinking and agriculture purposes. Hadejia-Nguru Wetland (HNW) supports at least 250 species of flowering plants, over 136 types of aquatic flora and fauna and more than 103

species of fishes and 378 species of birds (Birdlife International, 2006). All these wild plants and animals depend on one another and the flood for survival and so many people depend on them for their livelihood. HNW falls in an area regarded as marginal land whose use is limited by physical and economical factors and which therefore makes it unproductive to extensive agriculture, however the wetland creates an economical and productive possibility in the midst of such an unproductive area (Adam, 1993).

However, the construction of several upstream dams outside the HNWs has significantly modified the natural pattern of annual floods, and this represents a major threat to the natural water balance of the wetland system. As a result of this man-made change, large areas of farming and grazing land and important fish ponds have either gradually dried up along blocked channels now occupied by the invasive *Typha* grass, or have been flooded. As a result, local farmers and grazers have been forced to over-harvest the fewer remaining natural resources, and encroach on some protected areas. Some villages were forced to relocate on higher grounds

Therefore, this study will attempt to investigate some of these problems and the prospect for intervention in order to improve the productivity and livelihood of farmers in the area. An area of confused drainage has been formed in the wetlands, with multiple river channels and a complex pattern of permanently and seasonally flooded land and dry land. The wetlands are nationally and internationally important for migratory waterfowl. The wetlands support extensive wet – season rice farming, flood- recession agriculture and dry season irrigation. The flood plain also supports large numbers of fishing people, most of who also farm, and is grazed by very substantial numbers of Fulani livestock (Oduntan, Akinyemi, Adetoro & Osunsina, 2010)

The Hadejia-Nguru wetland is confronted by multiple natural, ecological, social and economic problems. For instance, there are natural changes, for example the impacts of drought, that have serious implications for the future of the wetlands and the sustainability of their production systems. There are also major economic changes within the wetlands themselves. The extent of irrigation has greatly increased over the 1980s, largely as a result of the advent of small petrol-powered pumps and the ban on the importation of wheat in 1988. As the use of small pumps spreads, conflicts are beginning to emerge between farmers and pastoralists, and between small and large farmers for access to land.

The wetlands have also been affected by developments elsewhere in the river basin. The construction of the Tiga Dam on a tributary of the Hadejia River in the early years of the 1970s has exacerbated the effects of the low rainfall of the last two decades. The result has been a reduction in the extent of flooding in the wetland. Construction of a dam on the Hadejia River just above Hadejia town to provide short-term storage of water to irrigate the Hadejia Valley Project Phase 1 began, in the early 1980s, but was stopped for several years because of financial problems. The main dam was completed in 1992, soon after work restarted on the project. The dam has created a large shallow lake upstream and it will probably have a major effect on the timing and extent of flooding in the wetlands.

The Hadejia-Nguru wetlands have long been known as a centre of fish production. Upstream hydrological developments induced by irrigation projects threaten to degrade this important resource. Studies of flood plain fisheries have shown that fish production is closely related to flood extent. The existing and planned dams upstream of the Hadejia-Nguru wetlands are likely to have a serious impact on fisheries. The dams are likely to bring changes in river flow, loss of habitat, blocking of channels, changes in silt loading, plankton abundance and temperature which are likely to affect fish communities.

In addition to producing fuel wood, the forest reserves and bush land of the flood plains yield important non-timber forest products that are significant to the livelihoods and subsistence of local communities. Some, including leaves, are important marketed commodities that generate substantial income.

Since 1985, the area has been the focus of the Hadejia-Nguru Wetlands Conservation Project. This project has been run jointly by the Nigerian Conservation Foundation, IUCN (International Union for the Conservation of Nature), the Royal Society for the Protection of Birds and the International Council for Bird Preservation (now renamed Birdlife International). In 1990 a major development project was started by the European Community that included the eastern part of the area. The North East Arid Zone Development Project (NEAZDP) has a very substantial budget to generate village-based development initiatives. Attention has tended to be directed in particular to the potential resources of the wetlands.

Wise use of the wetlands of the Hadejia-Nguru wetlands demands a proper understanding of the environmental and socio-economic changes that are occurring and of those that may be predicted. Understanding of the impacts of changes inside and outside the flood plain is far from easy, and prediction of future impacts is even harder. However, without such understanding and prediction, effective planning and management is impossible.

This kind of study becomes very important because of the economic importance of this wetland to national and international development. The study will adopt a participatory focused group interaction with the host communities in order to fully understand the nature of the problems and how they feel they can be addressed. And in the end the final report will be shared with the government, NGOs and international organization by disseminating it through the media and local and international journals.

### **The Objective of the Study**

The main goal of this study is to critically examine the prospect and challenges of farming along the Hadejia-Nguru wetland in Jigawa State. This study will limit its scope to the three Local Government Areas (LGAs) covered by the wetland within Jigawa State which includes Miga, Kaugama and Kafin Hausa respectively. Over the years the area covered by this wetland has been bedeviled by the problems of flooding, Typha grass and Migratory birds

The specific objectives of this study are:

1. To determine the socio-economic characteristics of the farmers in the study area.
2. To discover the nature of the problems.
3. To assess the impact of the problems on the productivity and livelihood of the farmers.
4. To examine the prospect for intervention to alleviate the problems

### **Research Methodology**

This research is based on qualitative study which is concerned with the study of people in their natural settings. Qualitative research method allowed used of a variety of tools and techniques in order to develop deep understandings of how people perceive their social realities and in consequence, how they act within the social world. The method also makes connections between events, perceptions and actions so that the analyses are holistic and contextual

### **Population and Sampling**

The population of this study consists of the large scale farmers and small scale farmers in Hadejia-Nguru wetland rural areas of Jigawa state, Nigeria. The sample of the study was

selected through Purposive sampling, which is one of the most common sampling strategies, groups' participants according to preselected criteria relevant to a particular research question. Purposive sampling is one of the most successful when data review and analysis are done in conjunction with data collection. In the first step, three local governments of Miga, Kaugama and Kafin Hausa were selected representing the major central areas of Hadejia-Nguru wetland in State, within the selected local governments four study areas were selected based on three criteria namely; are along the river basin/ fadama area, have enough evidence of both rainy and dry seasons farming and there were evidences or present of certain challenges which are threat to livelihood of the communities. The evidence or present of certain challenges was decided based on pilot study which uncovered, some problems faced by the farmers that has a serious setback on the livelihood of Hadejia-Nguru wetland communities.

### Sampling Process

The data were collected from 360 respondents (120 respondents per local government) which were purposely selected from the groups of farmers (Large scale and Small).

Local Government Areas	Villages	Numbers of Respondent	Total
Miga	Tsakuwawa	30	120
	Agufa	30	
	Yalon Tsagaiwa	30	
	Miga	30	
Kaugama	Hadin	30	120
	Dingare	30	
	Marke	30	
	Tsindun	30	
Kafin Hausa	Hago	30	120
	Jabo	30	
	Ashuran -Tudu	30	
	Gamayin	30	
Grand total			360

This sort of research is not easy to be carried out. One of the main difficulties is to obtain cooperation from the respondents or key informants. The right and practical method needs to be employed. It is for this reason the researchers decide to carry a focused group discussion (FGD). The first FGD was held on 3<sup>rd</sup> May, 2014 at Yalon Tsagaiwa, Tsakuwawa, Miga and Agufa in Miga local government. This is followed by the second FGD held on 4<sup>th</sup> May, 2014 in Hago, Gamayin, Ashuran-Tudu and Jabo in Kafin Hausa local government. The last FGD was held on 10<sup>th</sup> May, 2014 in Hadin, Tsindun, Marke and Dingare at Kaugama local government

## Findings and Discussion

## Socio-Economic Characteristics of The Respondents

LGA	AGE	Main Source(s) of Income	Other Source(s) of Income	Major Crops		Level of Education
				Rainy Season	Dry Season	
Miga	35-65	Farming	Fishing	Millet Sorghum Maize Rice	Rice Maize Wheat Vegetables	<input checked="" type="checkbox"/> Non-formal <input checked="" type="checkbox"/> Primary <input checked="" type="checkbox"/> Secondary <input checked="" type="checkbox"/> Few Tertiary
Kaugama	30-55	Farming	Fishing and Rearing Animal	Millet Sorghum Maize Rice Sasme	Rice Maize Wheat Vegetables	<input checked="" type="checkbox"/> Secondary <input checked="" type="checkbox"/> Tertiary <input checked="" type="checkbox"/> Above 50years had Non-formal
Kafin-Hausa	35-60 above	Farming	Rearing of Animals	Millet Sorghum Maize Rice	Rice Maize Wheat Vegetables	<input checked="" type="checkbox"/> Youth Complete Secondary <input checked="" type="checkbox"/> Few reaching Tertiary <input checked="" type="checkbox"/> Above 50 years had Non-formal

## The Major Challenges of Farming Activities Along Hadejia-Nguru Wetland

The following were the major problems identified by the farmers in the 3 LGAs affecting their farming activities during both rainy and dry seasons respectively.

- i. **Flood:** During rainy season flooding was identified as the major problem in the study area. Heavy down pour over powers dams up from Tiga dam in Kano state to the Hadejia-Jama'are dam and other river channels; they over flow and consume farm lands often destroying an individual farmers entire crops. Crops worth millions are destroyed annually rendering families incapacitated, demoralized and bankrupt. Other causes of the flood raised by the farmers were the typha grass which blocks waterways, lack of good drainage and lack of concrete embankments.
- ii. **Typha Grass** is a species of hardened grass that grows wildly on waterways, channels and riverbanks. This grass has become a common feature along the HNW and a nuisance to the communities. It blocks the passage of canoes used for fishing or access to remote farmlands. Some of the farmers interviewed claim that the thickness of the typha grass provides niche for thieves especially cattle rustlers and also for the dreaded migratory birds that destroy crops.
- iii. **Migratory Birds:** the communities lamented that there were two species of small migratory birds that destroy their crops. The birds peck the pods and destroy the seeds.

The communities said their presence is worst during rainy season when the flocks in thousands barricading the sky like a canopy.

- iv. **Fertilizer Inadequacy:** in all the villages visited they identified fertilizer inadequacy as a fundamental problem. They claim that, the subsidized government allocation was grossly inadequate and often intermeshed with political anomalies. Mobile phone text messages were they medium for posting allocations to individual farmers who is expected to head to the designated centre with the stated amount to receive his/her allocation. Most farmers interviewed claim that their allocations were not granted or a higher price was charged contrary to the initial one in the text message. The general opinion among the whole communities was that the government allocation was inadequate, the channel of distribution was ineffective and the market price for fertilizer was very expensive compared with the income of an ordinary farmer in the village.
- v. **CAPITAL:** Almost all the farmers studied complained that they lack sufficient capital to accommodate all the farming expenses. They needed capital to purchase fertilizer, hire labor, hire tractors, and buy other farm implements and transportation.
- vi. **EROSION:** The perennial flooding has caused serious land degradation according to the farmers

#### **Impact of Challenges on Productivity And Livelihood**

- i. **Flood:** Flood submerges farmlands, wipe out planted crops, destroys investments worth millions, renders farmers bankrupt and Causes rural-urban migration
- ii. **Typha grass:** it Causes flood by blocking waterways and provides hideout for migratory birds
- iii. **Migratory birds:** they destroys crops, and also cause fatigue and anxiety that leads to depression among the farmers
- iv. **Lack of fertilizer:** this lowers yield and if total cost is not recovered it will cause serious losses to the farmers. This could discourage further investment in farming thus, casing set back in production.
- v. **Lack of capital:** All farming activities depend on the farmers' level of capital. A small capital can only produce a small output and vice-versa. They said this is part of what causes rural-urban migration
- vi. **Erosion:** erosion washes out fertilizer, degrade the soil and causes serious destruction of farmlands. This could lead to poor harvest and lowers production.

#### **Previous Attempts Made To Tackle The Problems**

##### **Communal Effort**

- i. Flood: Erecting embankments using sand sacks.
- ii. Typha grass: Burning the grass in dry season as a temporary measure. It re-grows as soon as rain starts
- iii. Migratory birds: The use of nets to cover the plants, shouting, hitting metallic objects to create loud noise, gunshots, prayer, and burning tires. They go out to the farm from dawn to dusk to ward off the birds. the birds start predation at dawn and retreat at dusk
- iv. *Scarecrow:* Farmers in the villages used scarecrow or hay-man which is a decoy or mannequin in the shape of a human usually dressed in old clothes and placed in open fields or within the farm to discourage or frightening birds away from crops but not dangerous.

- v. Lack of fertilizer: buying at the market price mostly on credit and supplementing with manure. At Yalon Tsagaiwa village most of their animals died after eating a kind of grass that sprouted when the flood receded. So they had no manure.
- vi. Lack of capital: Obtaining loans from family and friends
- vii. Erosion: Erecting sand sack embankments.

#### **Government And Other Partners Interventions**

- i. Government support only comes in the form of allocating subsidized fertilizer and donating empty sacks for erecting embankments. The market price for a bag of fertilizer in the last season was N4, 500 while the subsidized one was given at N3, 500.
- ii. IFAD donated free seeds and gave advice to farmers at Hago.
- iii. Almost all the communities confessed that the researchers visit was the first time they had a focus group discussion with anyone. No one has ever assembled them and listen to their problems, so they showed serious appreciation of our visit.

#### **Recommendations**

Several recommendations are directed toward Jigawa State Ministry of Agriculture, Jigawa Agricultural Development Authority (JARDA), Jigawa Agricultural Supply Company (JASCO) and Farmers Associations as well as Development Partner working on improve agricultural output and rural livelihood in the state. In addition, suggestions for further research are also presented.

1. It was suggested by all the communities visited that there should be controlled release of dams during dry season which will serve two purposes. First, it will provide adequate irrigation water to the farmers in dry season and secondly, it will drastically reduce the volume of the water which could prevent overflowing in rainy season. However, at Yalon Tsagaiwa of Mega local government, the community needed a culvert along Hadejia-Gujungu road this will drain the accumulated water that destroyed farm land and farm product annually (it is a peculiar case that requires technical assessment).
2. All the communities have no clear idea of how to eliminate the spread of the Typha grass. However, they believe that if it is eliminated it will go a long way in addressing the hideout of the migratory birds, and blockage of waterways
3. The farmers recommended that the government should increase its subsidized fertilizer allocations substantially so that more famers can access cheaper fertilizer thereby lowering their cost of production. And also it should develop an effective distribution mechanism that will ensure fertilizer reaches the farmers at the grassroots. They suggested that in order to avoid diversion by official seldom with the responsibility of distribution the fertilizer village and ward heads should be task with this responsibility
4. All the communities seek the government to provide loans directly to the farmers through their cooperatives. In Hago village, the farmers said they received free seeds and advice from IFAD
5. The erosion was caused by the flood therefore if the flood is controlled the erosion will recede suggested all the communities

#### **Further Research**

Although this study provides new information regarding factors influencing agricultural productivity and rural livelihood of farmers along Hadejia -Nguru wetland area there are several limitations that indicate directions for further research.

1. This study employed focused group discussion method and used an in-depth interview as a mode of data collection. Therefore, it was unable to capture more real information in understanding the factor influencing agricultural activities and rural livelihood. An extensive survey method and quantitative analysis may explore more data and contribute to the derivation of a theory which can be tested using a quantitative approach
2. Further research should be conducted in other local government areas in the state to validate the findings of this study, and a more in-depth study should be done by incorporating other variables such as drought, poverty and lack of credit facilities. Other variables could be added for their possible influence on productivity and rural livelihood, such as farmers/Fulani conflict and lack of modern techniques of farming

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