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Peasant households' livelihoods negotiation in the semi-arid zone of Nigeria

Gbahabo Terfa Percy

Water Research Node, Monash South Africa.

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Peasant households in the semi-arid region of northern Nigeria have to contend with the problems of low rainfall and desertification in their agricultural practices. They have also to contend with the problem of bioproductivity loss and inadequate capital. This research investigates the livelihoods negotiations of peasant households in the semi-arid region. The findings of the research show that peasant households have evolved livelihoods strategies in the face of their precarious environment. They do not rely solely on farming for their livelihoods because farming alone is increasingly becoming incapable of providing adequate livelihoods for households in the Sahel. Hence, they are engaged in an array of livelihoods activities to enable them realize their livelihoods. They grow different crops and livestock, and engage in off-farm and on farm livelihoods engagements. More so, they integrated crop and livestock, and have devised indigenous soil management techniques to tackle the problem of soil decline as a result of land degradation. Lastly they rely on migrant remittances, and favour rearing small ruminants because of their advantages over large ruminants. The research uses a case study of Gursulu village, and was undertaken through review of existing literature, personal observations and interviews with peasants in Gursulu village, Yobe State.

Key words: Desertification, land degradation, livelihoods, Northern Nigeria, peasant households, semi-arid region.

INTRODUCTION

In this paper, the term 'peasant' is used in reference to small-scale holders who either rely mostly on family labour or work as a labour to produce for their households' livelihood subsistence. The term 'peasantry' (in Hausa, 'talakawa') is a class situated between capitalist and non-capitalist economic production, and social and political relations. The major features of peasants are 'the use of simple technology and family labour; some degree of household control of land; a satisfier rather than a maximize attitude towards production, but implying some participation in markets; and obligation in form of rent, interest or tax to power holders outside the household' (Hesselberg, 1985: 49). The foregoing discussion on peasantry implies two things. Firstly, peasant households participate minimally in the market economy, buying and selling products. Secondly, importantly, peasants households are not only challenged by their environmental, climatic, or geo-graphical existential thrownness, their precarious crisis is also a function of capitalist economic relations (global and local), which is, in part, conditioned by political structures and relations in the larger polity of the State.

E-mail: kasieswar@gmail.com

Desertification is an age-old phenomenon and it affects countries and people the world over either directly or indirectly (Thomas and Middleton, 1994: 17-19). Environmental crises, desertification and land degradation included, are much more than natural events; though they may have natural causes and can be human-induced, they also reveal the nature of the productive activities of a given community and the strengths and weaknesses of socio-political and economic systems to cope with the crisis (Apeldoorn, 1981:73). For instance, in the aftermath of the Sahelian droughts of the late 1960s and early 1970s, desertification received renewed interest, and human actions such as deforestation, over-cultivation, overgrazing and irrigation-induced salinization, more than climatic factors, were now perceived to be the chief drivers of desertification and land degradation. Furthermore, popular beliefs presented the Sahel as a disaster zone, where people suffer from the impact of land degradation and desertification and in turn cause these environmental problems; where human's misuse, overuse and abuse of the environment has led to a Malthusian crisis; and where development interventions have, themselves, failed to yield results. Against these portrayals of the Sahel and Sahelians, Mortimore (1989) describes the adaptive behaviour among the Hausa, Ful'be and Manga communities in response to the drought of the 1970s and 1980s. Mortimore and Adams (1999) further pursued this theme arguing that it is possible for the crisis of degradation in the Sahel to be contained and that it is being contained in some communities. They present the critical attributes of Sahelian households: diversity, flexibility and adaptability.

Scholars have over the years disagreed about the nature, causes, extent, assessment methodology for desertification and the best way to tackle the phenomenon. Batterbury and Warren (2001) identify some unresolved themes in the desertification debate: periodic expansion versus contraction of the Sahara; anthropogenic forces versus climatic factors; fragility versus resilience capacity of ecosystems, and land use systems; influence of grazing and livestock; effects of increased population in rain-fed dryland agricultural systems; soil erosion and fertility decline. Mortimore (1989: 17), in addition to already discussing some of the above-mentioned themes, has questioned the idea that desertification is irreversible. Also, Le Houérou (1996:146) distinguishes between desertification and land degradation: should desertification[1], for instance, be conceived and understood solely as land degradation?

But, land degradation is defined by the United Nations Convention to Combat Desertification as a: reduction or loss, in arid, semi-arid, and dry sub-humid areas, of the biological or economic productivity and complexity of rain-fed croplands, or range, pasture, forest, and woodlands resulting from land uses or from a process or combination of processes arising from human activities and habitation patterns, such as: (i) soil erosion caused by wind and/ or water; (ii) deterioration of the physical, chemical, and biological or economic properties of the soil; and (iii) long-term loss of natural vegetation (UN, 1994:5).

Further, land degradation, described in relation to the expectation of the human society in terms of land quality, entails a change from a previously productive state to a current unproductive state (reduction or loss in the quality of land) and points to economic loss and does not necessarily refer to ecologic deterioration (Kassas, 1995: 115). Kassas (1995) states further that (1) there is a connection between land degradation and land use systems. There are four prevalent land use systems, used separately or in combination in the desertification prone areas: (a) the use of woodland (cutting, gum tapping, etc.), (b) pastureland, (c) rain-fed agriculture and (d) irrigated farmland. Hence, Kassas (1995) concludes that the symptoms of desertification in different land-use forms are manifested differently. In irrigated farmlands, deteriorations are often connected to the rise of water table (water-logging[2]), mainly because of imbalance between 'excessive irrigation and inefficient drainage' (Kassas, 1995:116). Degradation in rain-fed farmlands appears as soil erosion, loss of organic matter and depletion of nutrients, compaction and crust formation, and excessive evasion of weeds. Lastly, rangeland degradation comprises reduction of bio-productivity, invasion of non-palatable species.

The first distinction that needs to be made between desertification and land degradation concerns the menaced territory. Whereas desertification is land degradation under arid, semi-arid and dry sub-humid climates, and connotes degradation of drylands (Kasses, 1995: 116); land degradation essentially occurs in all kinds of climate (Kasses, 1995: 116; Le Houérou, 1996:146). Le Houérou (1996) for instance concedes that not all kinds of erosion and degradation are particular to arid and semi-arid lands and that dune formation does occur in humid climates under particular situations. Although land degradation resulting from salinity, water logging and poor irrigation practices are common in dry lands and developing countries, they are not restricted to these countries. For example, land degradation could occur in tropical rainforest. Yet, a number of experts favour the term land degradation as opposed to desertification since land degradation does not have emotional connotations (Le Houérou, 1996: 137). Even though this distinction is important, it is imperative to note that peasant households suffer the effects of *both* land degradation and desertification as they both lead to the

[1]Desertification is 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climate variation and human activities' (UNCED[1], 1992: 111). This definition is regarded as the most up to date and less problematic definition of desertification

[2]Water-logging mostly involves salinization and other forms of chemical damage of the soil.

reduction of soil and land bioproductivity.

The second distinction has to do with what desertification actually is. Desertification is much more than the advancement of deserts; it can involve the encroachment of sand dunes on land. Desertification is better understood as "the persistent degradation of dry land ecosystems by human activities and climatic variations" (IFAD[3]). Desertification has been considered as one of the greatest environmental and developmental challenge that the world faces as it impacts on human well-being and the environment.

The extent, severity and rate of progression of desertification in Nigeria have not been fully determined and documented (FMEnv, 2001). Desertification and persistent drought affect 10 northern states and it is seen by the Government as the most serious environmental problem northern Nigeria faces. Desertification and land degradation mostly affects peasant households who are forced to depend on natural resources for their livelihoods. They impact on the socio-economic life of peasant households (e.g. reduction in crop and animal production, death of livestock, high prices for food stuffs etc.) and lead to widespread poverty. More so, drought and desertification lead to the migration of people to urban or other areas to engage in economic activities such as farming, grazing and fishing. Other impacts of desertification are that it could lead to economic and social strives. It leads to the destruction and loss of biodiversity and impacts on water resources (NAP, 2000; Medugu et al., 2008; Mortimore, 1989).

This paper focuses primarily on how peasant households negotiate their livelihoods in the face of land degradation and what is often called desertification. Given that peasant households are dependent on rain-fed agriculture, it is important to understand how these households continue to cope with land degradation. The study believes that understanding the livelihood strategies of rural households in the face of constraints will enable government initiate policies that are geared towards removing constraint and expanding the opportunities of the rural poor (Ellis, 1998).

METHODS OF RESEARCH

The aim of this study is to investigate the livelihoods and adaptive strategies of peasant households in the face of desertification and land degradation. The study uses a case study of households in Gursulu village, Yobe State, Nigeria.

This study involved open-ended interviews with 11 heads of households to get detailed information.

Interviews were complimented by observations made over a period of about four weeks. Data were collected in the month of June 2009. Purposive sampling was employed to generate the village and households interviewed with the aim of generating qualitative data on livelihoods and adaptive strategies of peasant households in the face of desertification and land degradation. Gursulu village was selected as the village of the case study for this research because it is located in one of the Local

Government Areas worst affected by desertification in Yobe State. The village is located at the northernmost part of Nigeria and at the Maine Soroa border of Niger republic. As one goes northwards, there is decline in rainfall availability.

Data collected were qualitatively analysed using content analysis.The following steps were followed for data analysis (Blanche, Durrheim and Painter, 2006). These were: Data was transcribed immediately after each of the interviews. Following the fieldwork, the reality of the fieldwork was converted into text. The researcher became familiar and immersed in the data during the transcription of the data. Following transcription of the interviews, concepts and typologies like common words and shared experiences that participants used were grouped so as to identify patterns. Themes were then developed or constructed from these patterns. The research used the nominal measurement to code and analyze the data collected. Codes, labels and categories were developed to find patterns in the responses of the respondents. Similar patterns were grouped together under the same theme (Boeije, 2010: 103). This is consistent with the philosophical assumptions of the research: constructivism (i.e. reality is constructed by people) and interpretivism (i.e. by reflecting on human experiences, people construct their own understanding of the world). In qualitative content analysis, data is seen as emergent. Even though the researcher has taken measures to understand the literature relevant to the research through some literature review, the researcher took care not to allow the literature to constrain the process of coding and recording. Themes and codes were elaborated on based on their relationships. In some cases, a specific sub-code from a theme could relate to other sub-codes from other themes. The researcher constantly returned to themes and coding to better elaborate on them. Analysis and interpretation of the elaborated data was done in line with the theoretical and conceptual framework that this study employs. This study uses the livelihood framework to understand how peasant households negotiate their livelihoods in the face of desertification and land degradation.

As in most research studies in rural Nigeria, there are limiting factors in data collection. They include non-availability of GDP of the villages under study, incomplete or no record of rainfall data, non-availability of maps and population figures. In Gursulu there is no record of the population. The researcher is aware that by relying partly

on oral data from fieldwork, the research was limited because there are methodological challenges and inherent weaknesses with oral testimony. The reasons for the limitations are numerous. One limitation had to do with the challenge of human memory, which involves the problem of the politics of selective memory and whether respondents can remember and report historical data accurately. Also, the tendency of humans to relate events that are not connected is another factor. Informants may have self-serving interest and may report accordingly, and this may affect the data presented. Power relationship between the interviewee and the interviewer may affect the data reported. Further still, there is sometimes a difference between what is spoken and what is written, and this could lead to inaccuracies in meanings when transcribing conversations.

Hence, the researcher constantly assessed the accuracy of the data collected. This was done by constantly comparing the oral data with scientific and policy documents. More so, data from interview was triangulated with those from focus group discussions, observations, and policy and scientific literature

The study area

Nigeria is situated in West Africa within the tropical region. It is

[3]International Fund for Agricultural Development

located approximately between latitudes 4º and 14º north of the Equator and between longitudes 2º 2' and 14º 30' east of the Greenwich Meridian. The total landmass of Nigeria, according to the Federal Ministry of Environment, is approximately 923,770 km^2 (FMEnv, 2001). Approximately 35% of Nigeria's land mass is considered arable, 15% is utilized for pastures, 10% as forest reserve, 10% used for settlement and 30% is regarded as uncultivable (NAP, 2000). Of these landmasses, Nigeria is at present losing about 350,000 square meters to desertification, which is regarded as the gravest environmental problem that northern Nigeria faces (NAP, 2000: v). Current statistics by the Federal Ministry of Environment show that Nigeria loses about 0.6km yearly of its arable land mass to desert encroachment (NAP, 2000). Nigeria is bordered by the Republics of Niger and Chad in the North, the Republic of Cameroun to the east, the Atlantic Ocean in the South, and the Republic of Benin in the West. The population of Nigeria is estimated to be 149,229,090 (July 2009 est.). Not only does Nigeria have diverse ecology and different climates, the country has varied biophysical characteristics, ethnic nationalities, agro-ecological zones and socio-economic conditions (Aregheore). While the climate of the south is equatorial, the central region is tropical and it is arid in the north.

Yobe State is situated between latitudes 10º 27' and 13º 23' north and Longitudes 9º 40' and 12º 30' east of the equator (Environment Group, 2008). The State has a landmass of 45,502km and is located in the Northeastern part of Nigeria and shares borders with Borno State on the eastern part, Jigawa and Bauchi States on the west, Gombe on the south and Niger Republic on the north. The total population of Yobe State, according to the 2005 estimate was 2,532,395. The State is prone to drought and desertification. Desertification and the low rainfall have impacted on the livelihoods, primarily because Yobe State relies on agriculture, mainly rain-fed agriculture as the mainstay of the economy (Natural Resources). Since rainfall patterns are unpredictable in the semi-arid region, uncertainty prevails in the agricultural practices in the state.

Gursulu village is located within the Sahel Savanna zone, has sparse vegetation, and it is dry and mostly hot from March to July. Gursulu village is located in Yunusari Local Government area, which is considered as one of the Local Government Areas worst hit by desertification in Yobe State. Gursulu village is located at the northernmost part of Nigeria and at the Maine Soroa border of Niger republic. The rainy season lasts for about 3 to 4 months with less than 1000mm annual rainfall. Gursulu village comprises a number of ethnic groups: Fulani, Kanuri, Hausa, Kare Kare and the Shuarabs, and these different groups speak different languages.

LIVELIHOODS STRATEGIES OF GURSULU PEASANTS

The understanding of the nature and cause of desertification among researchers informs policy choice to combat the phenomenon. This also informs the strategies negotiated by peasant households to deal with the problem. In contrast to the scientific definitions of desertification and land degradation, the peasants interviewed in this study had a slightly different understanding of these concepts. In this regard, the peasants of Gursulu understand land degradation in terms of the ecological deterioration of the land measured mostly by the economic productivity of the land. For them, land degradation entails a change from a previously productive state to a currently less productive state. Hence, land degradation points to both economic loss but also to ecological deterioration. As most of the peasants noted, 'the land was more productive 10 to 15 years ago; we could harvest about 30 to 40 bags for each piece of land. Today, we harvest about 10 bags. Our yield is decreasing because the land's nutrient is decreasing'. Another peasant noted, 'I have spent about forty years in this village; the sand dune was not up to this stage. But now the wind is bringing the desert closer. My father told me that there were more trees in the fields than today'.

On the other hand, desertification is perceived in terms of the desert-edge advancement idea. According to peasants interviewed, desertification is a cause of land degradation. This is evident from interview conducted in Gursulu: 'The soil is losing its fertility, and this leads to low crop yield. Some lands are enveloped by shifting land dunes and also there is little rainfall which is caused by the desert encroachment'. This conceptualization of desertification by the Gursulu peasants may have been influenced by the popular notion of desertification defined in terms of the advancement of the desert caused by moving sand dunes.

The Rio Conference understands desertification as 'land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climate variation and human activities' (UNCED, 1992: 111). While this definition is less problematic as it avoids contentious terms as in previous definitions of desertification, this paper adopts the notion that desertification is much more than the idea of the desert advancement. For sure, the phenomenon may involve the encroachment of sand dunes on land, but it is the 'persistent degradation of dry land ecosystems by human activities and climatic variations' (IFAD).

DIVERSIFICATION

Diversification refers to 'the process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living' (Ellis, 1998: 4). This involves engaging in a range of off-farm and non-farm income earning activities (vending, wage labour, healing, weaving, and blacksmithing) and on-farm farm activities such as crop and livestock production. Fieldwork data show that most households diversify their income sources into more than one income earning activity in both on-farm and off-farm endeavours.

Crop production is the predominant source of livelihoods in Gursulu village, yet most households are simultaneously engaged in livestock production. This is substantiated by the comments of one of the peasants which said: 'I also grow livestock so that I do not have to depend on farming only. When I need money for any family problem, I sometimes sell one of my livestock or

poultry. I also get meat, milk and manure from these animals. More so, for me it is a source of pride for me to keep these different livestock'. As such, it is evident that Gursulu peasants do not rely solely on farming for their livelihoods because farming alone is increasingly becoming incapable of providing adequate livelihoods for households in the Sahel. Hence, they are engaged in an array of livelihoods activities to enable them realize their livelihoods.

DIVERSITY OF CROPS AND LIVESTOCK PRODUCTION

Diversity in crops grown and livestock reared is the norm for most households in the semi- arid region. Peasant households grow a variety of crops such as maize, millet, guinea corn, groundnuts, bambara nut and vegetables. They also rear a variety of livestock such as sheep, goats, cattle, and, for a few households, camels and donkeys. This is exemplified by the responses of some of the peasants: 'The reason why I keep cow, sheep and goats is because if I have a little problem, I sell one among them. Because of small problem, I cannot go and sell a cow; I take my goat or sheep to the market when I have a little problem to solve my problem" and "I grow maize, millet, sorghum, beans, and rice. But my wives have their own farm and they grow vegetables like tomatoes, okra, and pepper'.The rationale for keeping different types of livestock are: 1) for risk aversion, that is, as insurance against crop failures and, 2) as an investment to be drawn from to purchase farm inputs, solve family problems. In time of family crisis and hardship, peasant households in the semi- arid region could sell their livestock (or birds) and, with the income from the sales, solve their problems. For instance, some of these problems could be the educational needs of children, starvation or famine from environmental or socio-economic crisis. One of the peasants interviewed stated, 'I rear livestock so that I do not have to rely on farming alone. When I need money for any problem, I sometimes rely on my animals if I don't have crop to sell'. Furthermore, there are many advantages of keeping these animals: 'I consume the milk and I get manure from these animals'. Also, while most households combine both small and large ruminants in addition to crop production, others combine both crop production and small ruminants.

OFF-FARM/NON-FARM LIVELIHOODS ENGAGEMENT

With respect to the livelihoods activities of other members of his household, one of the peasants interviewed noted: 'They are traders. They bake groundnut cake and sell; they buy and sell millet, beans and rice'. Off-farm and non-farm activities are a common practice in the semi-arid region. Peasant household in Gursulu are engaged, not only in farming and animal husbandry; they are also involved in non/off-farm activities such as trading, fishing, weaving of baskets and mats, blacksmithing and making of herbal medicine. Evidence from interview data suggests that peasant households are engaged in off-farm/non-farm livelihoods endeavours: 'in my family, we are engaged in different activities. Some are traders, my brother weaves and sells baskets and mats; my son is a fisherman like me: we catch and sell fish; and one of my sons works for the government in Damaturu'. While some children may be involved in fishing and trading, other may attend to livestock or embark on migrant visitation for remittance. There are several reasons why peasants diversify into non-farm and off-farm livelihoods activities, one of which is risk reduction from crop failure resulting from rainfall variability and shortage. It must be remarked, however, that not all households are involved in off-farm/non-farm livelihoods activities.

INTENSIFICATION

Tiffen et al. see intensification as the 'increased average inputs of labour or capital on a smallholding, either on cultivated land alone, or on cultivated and grazing land, for the purpose of increasing the value of output per hectare' (Adams and Mortimore, 1997: 151). This understanding of agricultural intensification includes: an additional input of labour per hectare; creation of capital like 'water management structures or irrigation systems' and alteration of land management system. However, Adams and Mortimore (1997:151) have suggested that intensification is not an easy and attractive option for peasants experiencing a high population growth rate in marginal environment because intensification is a risky practice. Intensification has worked in communities that have been very efficient in their use of available labour in relation to returns needed from the land. For Sutton (1989), attempting 'more elaborate, more 'intensive' and laborious methods is always a risk, one sensibly undertaken only if both the needs and the expectation of rewards are overwhelming' (Adams and Mortimore, 1997: 151).

In response to environmental uncertainties and rainfall shortage, the peasant households of Gursulu have intensified their agricultural practices. Also, the household members are united in their pursuit of agricultural activities. Hence they rely on household labour as a livelihoods strategy, even though some households still rely on hired labour to augment their household's labour input per farmland. Some factors used as determinants of intensification in Gursulu are: 1) the amount of time spent in the agriculture or related activities, 2) quantity and quality of land owned, 3) number of household members that works the household land (amount of labour allocated for the household land), 4) the system of

farming practiced by the household, 5) and the soil management practice of households.

INTEGRATION OF LIVESTOCK AND CROP PRODUCTION

Peasant households in Gursulu have resorted to the practice of rearing and growing livestock and crops concurrently. Integration of both livestock and crop production is instrumental in achieving other livelihoods assets. One of the interviewed peasants says that the sale of livestock enables households to acquire other assets such as farm inputs and technologies. Also, households benefit from integrating livestock and crop production because it provides them with the opportunity to recycle both crop residues and manure.

Mortimore and Adams (2001: 54) note that in most agricultural communities in the Sahel, 'everyone owns, or aspires to own, livestock'. This is the case for Gursulu village as livestock serve as assets, as a store in which households' bank their wealth and could draw upon in times of household hardship. Furthermore, Mortimore and Adams (2001:54) note that livestock keeping is beneficial for farming households because 'livestock could serve as a reserve for contingencies, a self-reproducing asset, a source of current income, and a source of energy for farm.... In addition to all these, they support intensification on the farm through the cycling of nutrients through crop residues and manure'. Another benefit of integrating livestock and crop production is that it serves the household labour needs in the form of animal traction. Lack of financial capital constraints some households' ability to keep livestock. Some households integrate crop, livestock and fishing as the sources of their livelihood.

SOIL FERTILITY MANAGEMENT

Soil management is a conservation practice that helps in raising the fertility of soil and land for optimal yield per farmland. This is because soil management entails the manipulation of nutrient levels and soil physical conditions to meet the needs of crops so as 'to produce as much crops for households' (Philips-Howard, 1995:187). Philips-Howard (1995: 187) says that the practice of soil management is necessary 'for sustained crop production and the improvement of the farmers' livelihoods'.

Soil management involves a considerable knowledge not only of local environment but also of different crops, fertilizers and soils. Traditional smallholder farmers generally are able to differentiate among the different soil types, using a simple but traditional soil profiling technique based on characteristics such as colour, texture and nutrient value, and 'recognize their moisture holding, crop suitability and other properties' (Mortimore and Adams, 1999: 99).

Farmers in the semi-arid zone have a wealth of indigenous knowledge about their local environment and the different soil types suitable for different crops. The knowledge of soil types, soil fertility, prevalence of weeds and, importantly, of rainfall patterns is essential for peasant agricultural production. One of the peasants interviewed expressed this knowledge: 'This area is very hot; beans produces better here than millet. If I grow millet on this piece of land, it will not produce well. That other piece of land I told you about is close to the river. It will be good for irrigation farming. If I get money I will engage in irrigation farming'. More so, in Gursulu, households improve the quality of their farmland and crop yield through the use of farm inputs like inorganic fertilizers, organic manure, the practice of crop rotation intercropping and early planting. Since households understand the rainfall pattern, some engage in the practice of early planting, which involves cultivating and sowing seeds with the sign of the first rain.

The use of organic manure to improve soil fertility is a common practice among the households. Organic manure is commonly used in Gursulu village not because farmers recognized that it is in general non-toxic and environmentally sustainable than inorganic fertilizers. Organic manure is predominant because of its affordability and accessibility compared to chemical fertilizer. The most common organic manure employed by farmers includes manure prepared from livestock dung, of which cow manure is the most common. Some of the farmers graze some of their livestock (goat, sheep, cattle, camel) in their farms and harvest the manure[4] for use in the farm. Those unable to prepare organic manure could purchase manure from households who prepare them. For example, in Geidam, the headquarter of Geidam Local Government Area, Yobe State, organic manure packaged in 50kg bags cost about NGN400.00 ($ 2.01 at $1 = N199.050) a piece. Sometimes, farmers in Gursulu enter into a beneficial relationship with herdsmen in which the farmers allow the herdsmen to graze their livestock in their farmland, usually during the dry season. The animal droppings serve as manure and enrich the soil against the next farming season. More so, another kind of organic manure used by Gursulu peasants is plant-based organic manure. For example, compost, which is a rich source of soil nutrient, is used.

Additionally, farmers in Gursulu village generally employ the slash and burn method (burning of cleared grasses and shrubs from the land). The advantage of the ash derived from the burning exercise is that it raises soil pH, improves soil structure, and adds nutrients (potassium) to the field. Much has been written of the economic advantages of the slash and burn method of land preparation. See for example, Simoranggkir's (2007:

[4]Manure is usually mixed with the soil during land preparation just before planting.

154) work in Indonesia.

However, low rainfall constrains the availability of organic manure because drought impacts on both livestock production and grass and plant growth, and these are some important ingredients for organic manure preparation. Interview data support this self-same point: 'grasses and plants germinate when there is rainfall, and we use plants and animal dung for preparing organic matter. After I harvest my fields, I use most of the stalks in preparing organic manure and some as feed for my livestock. I even sell some of the manure that I prepare to other people'.

There is a general government reluctance to encourage the use of organic manure through research and funding. This is because of the general perception that such endeavour is futile and inefficient. This reflects a general bias for modern agriculture that emphasizes more use of external inputs for increased productivity. Inorganic fertilizer has gained ascendancy over organic manure in the last few years because its effects seem to be more immediate than that of organic manure. Many households in Gursulu today tend to prefer inorganic fertilizer to organic manure because of the decline in soil fertility and hence crop yield, and perceive inorganic fertilizer as having more potency than organic manure. Moreover, many households consider the use of inorganic fertilizer to be a pre-requisite for successful and plentiful harvest and hence the best and most expedient way to improve the soil fertility. Another reason why inorganic fertilizer is preferred in Gursulu is that the acquisition of organic manure is increasingly becoming difficult as a result of inadequate rainfall which impacts on grass availability for livestock feeds and organic manure. This is supported by the peasants interviewed: 'we rely on inorganic fertilizer when we have money; I buy fertilizers to apply on my farm but when I do not have money, I do without it'. Even though the use of chemical fertilizer is preferred in Gursulu village, the quantity applied is usually low because of the scarcity of chemical fertilizer or the high cost of acquiring it.

More so, the research study finds out that peasant households intensify their agricultural activities by intercropping millet and sorghum (guinea corn) because these crops have different nutrient requirements. Intercropping also suggests indigenous knowledge, and it is a method of soil management.

RELIANCE ON MIGRANT REMITTANCE

Not all peasant households interviewed receive remittances. Some households receive remittances from more than one source (Adams, 2006). Remittances are either received in the form of cash or farm input. This is substantiated by the peasants: 'my brother who is government personnel with the Ministry of Agriculture sends me money and fertilizers sometimes'. Remittance from rural or urban location is more pertinent in the study area.

There is significant increase in the reliance on foreign migrant remittances, and Nigeria is the highest recipient in Africa (Obadare and Adebanwi, 2009). Despite this, none of the family members interviewed receive foreign remittance. Migration is the movement of people temporarily or permanently, either due to seasonal variations or higher income earning opportunities in national, urban or other rural centres. There are two basic reasons for migration in the semi-arid region: voluntary and economic migration and forced migration (Ellis, 2003: 5). Forced migration occurs when an environmental and climatic hazard, such as drought and desertification, leads to migration, as in the case of the 1968-1973 droughts in the Sahel which led to the vast migration of people (UN, 1977). Nevertheless, popular perception of migration tends to regard migration solely as an outcome of a negative occurrence. De Haan (2000:1) expresses this point, migration 'is often seen as the *consequence* of ruptures, of environmental disaster, economic exploitation, or political or civil tensions and violence…. it is often perceived to be a *cause* of problems, like environmental degradation, health problems, 'brain drain', political or social instability, declining law and order, and unravelling social fabric and support systems'. De Haan (2000) furthermore discusses the factors that impact on migration and on those who benefit from opportunities arising from other locations. These factors are social context, social norms and structures, household compositions, gendered ideologies and social contract and networks. Despite these factors, it is the 'head of [peasant households] that decides about the migration of their sons or nephews – and their wives. This is an economic investment…' (De Haan, 2000:21) because remittances enable households to enhance their livelihoods by investing in other assets or resources such as land, livestock, land, farm inputs and implements. According to Ellis (1998), migration is one of the most important methods of diversifying rural livelihoods. Research has shown that migrant remittances relieve rural credit constraints and mitigate their risks (Ellis, 1998). This point was noted by one of the peasants interviewed: 'my son who is in Kano sends money to me when we have a difficult problem in the family. He sends money during Salah for the celebration. Sometimes I use some of the money that my son sends to buy livestock or fertilizer for my farm.'

Notwithstanding the positive economic impact of migration remittances on the 'remittance class' that is those who depend on remittances, Obadare and Adebanwi (2009) note the implication of foreign remittances on the idea of citizenship, the relationship between citizens and the state, and the patterns of political allegiances. In fact, migration impacts on family life and leads to separation from families—wives and children and ultimately to the destruction of family pattern

(NAP, 2000: 19; Oladikpo, 1993) as women, children and the elderly are left with the burden of agricultural activities. Furthermore, Ellis (1998) has argued that migration may lead to decline in agricultural outputs in rural areas. For example, if there are better incomes earning opportunities in distant labour markets, this will divert labour resources away from agriculture and hence a depletion of labour force required to prepare the land and harvest farm produce.

BIAS IN FAVOUR OF SMALL RUMINANTS[5]

Rainfall scarcity and desertification impact on the availability of fodders in the Sahel of northern Nigeria with their attendant impact on livestock production. Consequently, the past few years in Gursulu village has seen a gradual change in the pattern of livestock reared, that is, a shift from rearing large ruminants to small ruminants, mainly because small ruminants have comparative advantage over large ruminants. In this way the peasants of Gursulu negotiate the changing climatic, environmental and social circumstances. This adaptive behaviour is exemplified by the responses of some of the peasants:'The number of livestock that I rear has reduced because there are few grasses to feed these animals in the dry season, and I do not have the resources to take care of these animals' and 'I now rear more goats and chicken. Sometimes we eat the chicken and when there is a special celebration in the family, we kill a goat. I keep goats because they don't easily get attacked by diseases as chickens. Also goats multiply quickly'. The other reasons revealed during the interviews are, as one of the peasant's state, 'I do not have enough money to rear donkeys and horses. If you do not have enough money, you cannot rear these kinds of animals because they are heavy feeders". Also, small ruminants are easier to sell in times of family hardship than cattle.

Mortimore and Adams (2001: 54) note that small ruminants are less costly, more resilient, and easier to feed; they reproduce faster than cattle. Shankarnarayan et al. (1985: 1965) confirms the point that small ruminants like goats are preferred in marginal environments because fodder in the semi- arid region are scarce and have low nutrient. Furthermore, they say, 'Smaller animals like the goat with lower maintenance needs can cover large areas to gather sufficient nutrients for survival and for minimum production of meat and milk' (1965).

Government officials greatly praised the enabling environment that government created to assists peasants in securing their livelihoods. This was evident in a comment made by a government official who stated: 'government supports peasant households through projects interventions as it enhance agricultural systems. The provision of animal traction and tractors, helping treat their animals against diseases, assisting rural communities with new breeds and improved crop varieties, linking them with financial services providers'. However, this was not supported by many of the peasants interviewed. Peasants insisted they were left unsupported in the face of the problem of desertification and other livelihood problems. It is possible that the Gursulu peasants' assertion that they do not benefit in any direct way from the state is shaped by their interest in lessening tax claims, and in increasing state assistance. Certainly, the evidence provided by government officials and documentation shows that there is substantial state expenditure on the peasantry.

Conclusion

The study set out to investigate the ways in which peasant households negotiate their livelihoods in the face of land degradation and what is often called desertification in the semiarid region of Nigeria. In this concluding section, the principal findings of the study are laid out.

The study shows that households diversify their livelihoods portfolio by collecting their income sources into more than one income earning activity in on-farm, non-farm or/and off-farm activities. This is because farming alone is increasingly becoming incapable of providing adequate livelihoods for households in the semi-arid zone. Two particular livelihoods strategies were identified in Gursulu: diversity of crops grown and livestock reared and engagement in off-farm/on-farm livelihoods activities.

In response to environmental and climatic uncertainties, households in the semi-arid zone intensify their agricultural practice; they have resorted to the practice of rearing and growing crops concurrently. Households also intensify their agricultural activities by resorting to indigenous soil fertility management techniques, which may involve intercropping millet and sorghum (guinea corn) because these crops have different nutrient requirements or through the practice of crop rotation or the use of organic manure etc.

Some households receive migrant remittances, either in the form of cash or farm inputs, which are used to solve household needs, and sometimes invested in some assets for livelihoods activities. Lastly, another livelihoods strategy that has been evolved in the semi-arid region is that more and more households have shifted from reliance on large ruminants to small ruminants. This is mainly because small ruminants like goats and sheep have comparative advantage over large ruminants like cattle, donkeys and camels. Most of the findings on the livelihoods strategies of peasants' households in Gursulu corroborate the study carried out by Eriksen et al. (2005) in Kenya and Tanzania.

From the foregoing, it is clear that households in the semi-arid region are not passive recipients or victims of environmental crisis. They are aware of the functioning

[5]While small ruminants include goats and sheep, large ruminants include cattle, camel and donkeys.

of their environment and their farming techniques are well suited to their environment. They have, for example, a wealth of indigenous knowledge of soil management skill and about their local environment; of soil types and the different crops that they grow; of the prevalence of weeds and of rainfall patterns. Consequently, as was shown, they have devised what they consider to be the best ways to manage their environment and eke out their livelihoods. In this regard, the head of households make decisions about livelihoods in peasant communities. However, it is imperative to note that while the household is collectively empowered they are also individually empowered to make decisions regarding their livelihoods options.

The position of this study challenges the view that drought and desertification are caused and aggravated by peasants' lack of knowledge of better productive (livestock and crop) practices. The point that needs emphasizing is that indigenous knowledge should be taken seriously. A lesson from previous efforts to tackle the problem of desertification and its impacts is that the lack of incorporation of indigenous knowledge created a problem of adaptation of recommended measures for the people. Government should place emphasis on building on existing local knowledge and capacity.

It is further recommended that policy intervention should not only appreciate the complexity and many ways that determine the success and failure of livelihoods strategies, but support the creativity and determination of the peasant households in the double margins of globalization.

In conclusion, the study informs academics, policy makers and governments on livelihood strategies of rural households in the face of constraints. The study also recommends that government should initiate policies that are geared towards removing constraint and expanding the opportunities of the rural poor.

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Conflict of Interests

The author has not declared any conflict of interests.

REFERENCES

Adams MW, Mortimore M (1997). "Agricultural Intensification and Flexibility in the Sahel". Geogr. J. 163(2):150-160.

Adams RH (2006). "Remittances and Poverty in Ghana". World Bank Policy Research Working Paper 3838, February 2006.

Apeldoorn JV (1981). Perspectives on Drought and Famine in Nigeria. London: George Allen and Unwin

Aregheore EM 'Nigeria'. Available at http://www.fao.org/ag/AGP/agpc/doc/Counprof/nigeria/nigeria.htm retrieved on 3 May 2009.

Batterbury S, Warren A (2001). "The African Sahel 25 Years After the Great Drought: Assessing Progress and Moving Towards New Agendas and Approaches". Global Environ. Change 11:1 - 8.

Blanche MT, Durrheim K, Painter D (2006). Research in practice: Applied methods for the social sciences: jutaonline. co. za.

Boeije H (2010). Analysis in Qualitative Research. London: Sage.

De Haan A (2000). "Migrants, Livelihoods, and Rights: The Relevance of Migration" in Development Policies. Social Development Working Paper No.4.

Obadare E, Adebanwi W (2009). "Transnational Resource Flow and the Paradoxes of Belonging: Redirecting the Debate on Transnationalism, Remittances, State and Citizenship in Africa", 36:122:499-517.

Ellis F (2003). A Livelihoods Approach to Migration and Poverty Reduction. Commissioned by the Department for International Development (DFID). Availableat<http://www.ruta.org:8180/xmlui/bitstream/handle/123456789/542/RN76.pdf?sequence=1>retrieved on 13 August 2013.

Ellis F (1998). "Household Strategies and Rural Livelihood Diversification". J. Dev. Stud. 35(1):1-38.

Environment Group (2008). 'The Yobe Environment: Problems and Proposed Interventions'. Paper Presented at the Yobe Economic Summit 2008.

Eriksen S, Brown K, Kelly PM (2005). "The Dynamics of Vulnerability: Locating Coping Strategies in Kenya and Tanzania". Geogr. J. 171(4):287-305.

FMEnv (2001). "National Action Programme Report: Combating Desertification and Mitigate the Effect of Drought". Abuja, FMEnv Nigeria.

Hesselberg J (1985). The Third World in Transition: The Case of the Peasantry in Botswana. Uppsala: Scandinavian Institute of African Studies.

IFAD "Desertification". Available at http://www.ifad.org/pub/factsheet/desert/e.pdf retrieved on 12/08/13

Kassas M (1994). "Desertification: A General Review". J. Arid Environ., 30:115-128.

Le Houérou H (1996). "Climate Change, Drought and DeseEnvironments 34:133–185.

Medugu NI, Majid MR, Choji ID (2008). A Comprehensive Approach to Drought and Desertification in Nigeria: A Brief Evaluation of Government Policies. Manage. Environ. Q.: Int. J. 19(6):690-704.

Mortimore M (1989). Adapting to Drought: Farmers, Famines and Desertification in West Africa. New York, Cambridge University Press.

Mortimore M, Adams MW (1999). Working the Sahel: Environment and Society in Northern Nigeria. London: Routledge.

Mortimore M, Adams M (2001). "Farmer Adaptation, Change and 'Crisis' in the Sahel". Global Environn. Change 11:49-57.

NAP (2000). The National Action Programme to Combat Desertification and Mitigate the Effect of Drought. Federal Ministry of Abuja, Nigeria Natural Resources available at http://www.onlinenigeria.com/links/yobestateadv.asp?blurb=384> accessed on 6 May 2015.

Oladipo EO (1993). "A Comprehensive Approach to Drought and Desertification in Northern Nigeria". Natural Hazards 8:235-261.

Philips-Howard K (1995). Soil and Fertilizer Use Among Small-scale Farmers on the Jos Plateau, Nigeria. In People and Environment in Africa. Tony Binns (ed.). New York: John Wiley and Sons.

Shankarnarayan KA, Bohra HC, Ghosh PK (1985). "The Goat: An Appropriate Animal for Arid and Semi-Arid Regions". Economic and Political Weekly, 20(45/47):1965-1972.

Simoranggkir D (2007). “Fire Use: Is it Really the Cheaper Land Preparation Method for Large-scale Plantations? Mitig Adapt Strat Glob Change (2007) 12:147–164.
Thomas D, Middleton N (1994). Desertification: Exploding the Myth. New York: John Wiley and Sons.
UN (1994). Final Text of the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa. Available at http://www.unccd.int/convention/text/pdf/conv-eng.pdf> retrieved on 10 February 2010.
UN (1977). Desertification: Its Causes and Consequences. Oxford: Pergamon Press.
UNCED (1992). Earth Summit ’92. London: The Regency Press.
Watts M (1983a). Silent Violence: Food, Famine and Peasantry in Northern Nigeria. London: University of California Press.
Watts M (1983b). “Hazards and Crisis: A Political Economy of Drought and Famine in Northern Nigeria”. Antipode 15 (1): 24-34.
Watts M (1984). “The Demise of the Moral Economy: Food and Famine in a Sudano-Sahelian Region in Historical Perspective” in Life Before the Drought. Ed Earl Scott. London: George Allen and Unwin publishers.
Tiffen M (1996). Land and Capital: Blind Spots in the Study of the “Resource Poor” Farmer”. In, M. Leach & R. Mearns (eds.), The Lie of the Land: Challenging Received Wisdom on the African Environment. Oxford: James Currey, pp.168-185.