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### Livelihood Diversification among Sugarcane Farmers in Makarfi Local Government Area, Kaduna State

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#### Abstract

*An Assessment of livelihood diversification among sugarcane farmers was conducted in Makarfi Local Government Area of Kaduna State, Nigeria. A three-stage sampling procedure was used in the study. The first stage was the random selection of three wards (Makarfi, Tudunwada and Gubuchi) while in the second stage, two villages were also randomly selected from the three wards. Finally, random sampling was employed in selecting a total of one hundred and five (105) farmers from the three wards. Descriptive statistics were used to analyze the data collected. The result of the study showed that about 39% of the farmer's income ranged between ₦110,000 - ₦150,000 and 46% cultivated below 1ha of land. Furthermore, the study revealed the diversified activities the farmers engage are of agricultural (e.g. livestock production) and non-agricultural forms (e.g. Okada/ tricycle commercial transport). It was found that the primary reason for the diversification is the non-stability of income from sugarcane production. The farmers' major constraint was a lack of credit facilities to support their livelihood activities. Therefore, the study recommended the government and NGOs revive the rural financial system and provide a conducive policy for rural livelihood.*

**Keywords:** Livelihood diversification, sugarcane farmers, Kaduna State

#### Introduction

Sugarcane (*Saccharum officinarum*) is a species of tall perennial grass belonging to the Poaceae family. It is one of the most valuable crops grown in the world and this is a result of its strategic position and its varied use both for individual and industrial reasons. It is indigenous to the warm temperate to tropical climates of South and Southeast Asia, although it is grown in more than 100 different countries around the world (FAO, 2019), the major producing countries such as Brazil, India, China and Mexico account for 76% of global sugar production. However, African countries did not top the list, but Nigeria and

South Africa are among the major producers in the continent (Yawun, Adu & Osei, 2018). Nigeria is the largest producer of sugarcane in sub-Saharan Africa, with an annual production of about 1.5 million tons. Nigeria, like many parts of the world, sugar consumption for various uses is high, the country has largely depended on importation for both household and industrial use. Primarily, this is attributed to the challenge of sugarcane cultivation and processing to finished products (Ebenezer, 2021). In Nigeria, smallholder sugarcane farming is one of the socioeconomic livelihoods of farmers in the producing areas, such as; Niger, Kano, Kaduna, Jigawa, and Taraba States (Demola, 2021). Kaduna State produces over 40,000 MT of sugarcane annually, and Makarfi L.G.A. accounts for about 39% (15,500 MT) (KADP, 2013). The production and processing of sugarcane is a major source of employment and livelihood in the Makarfi Local Government Area of Kaduna State.

Rural livelihood is the ability of rural households to judiciously utilize resources at their disposal by engaging in activities that enable them to make a living (Stacey, Gibson, Neil, Loneragan, Wiryawan, Dedi, Adhuri & Steenberg, 2021). The nature of livelihood activities depends on the availability of assets. Livelihood diversification refers to combining both agricultural and non-agricultural activities to survive and improve the standard of living (Pritchard, Rammohan & Vicol, 2019). It is also the pattern of an individual's voluntary exchange of assets and their allocation of assets across various activities (on and off-farm) to achieve an optimal balance between expected returns and risk exposure (Ayenil, 2022). Livelihood diversification plays a crucial role in promoting economic growth and reducing rural poverty in sub-Saharan Africa (SSA) and other developing regions (Elimeleck, 2021; Loison, 2019; Waha, Van Wijk, Fritz, See, Thornton, Wichern, Herrero & 2018). It is also well-evidenced that households widely adopt livelihood diversification as a coping strategy in response to shocks (Gao and Mills 2018; Mohammed, Batung, Kansanga, Nyantakyi-Frimpong & Luginaah, 2021). Diversification has two aspects, a shift away from agricultural activities and an increasing mix of income activities. These activities are mostly influenced by livelihood options available in rural communities.

Livelihood diversification comprises two components; First, it's perceived as a progressive development tool that spurs economic growth within the rural economy; Secondly, livelihood diversification is a mere stop-gap for fostering secured livelihoods during periods of hardships. Several factors propel households to diversify their means of livelihood, but risk management is the fundamental reason for households' engagement in multiple livelihoods (Jedidah and Kefa, 2018). A livelihood is sustainable when it can cope with and recover from the stresses and shocks and maintain or enhance its capabilities and assets both now and in the future without undermining the natural resource base (Roscher, Eriksson, Harohau, Mauli, Kaltavara, Boonstra & van der Ploeg, 2022).

Nigeria faces a lot of challenges in its agricultural production. Some of these challenges are caused by natural factors (soil, water and climate), faulty micro-economies, or agricultural policies. These challenges affect individual farmers and put the household welfare of the farmer at danger or risk. Farming as a source of income in some African countries has failed to bring about enough income for farm households. This is due to the subsistence nature of agriculture, the decline in farm size, and the low level of farm produce which characterize the agricultural sector in developing countries such as Benin, Ghana and Nigeria (Etuk, Udoe & Okon 2018; Yawson et al., 2018). Nigeria's sugarcane yield fluctuated substantially in recent years and the annual quantity of sugarcane production in Kaduna State declined from 18.9 tons per hectare in 2010 to 18.02 tons per hectare in 2018 (Issa, Kagbu, Sunusi & Oba, 2020). With this decline in production and low demand,

sugarcane farmers are forced to develop strategies to cope with the increasing vulnerability associated with sugarcane production through diversification. Thus, this study assessed the livelihood diversification of sugarcane farmers in Makarfi Local Government Area, Kaduna State. The objectives of the study were to;

- i. assess the farm size and quantities of sugarcane harvested;
- ii. examine the diversified livelihood activities of the farmers and
- iii. identify the constraints encountered by the farmers.

## **Methodology**

The study was conducted in Makarfi L.G.A. Makarfi L.G.A is one of the 23 L.G.As in Kaduna State, located on latitude 11°.332795 and longitude 7°.974132. The mean temperature of 34°C is experienced between the months of March and May, while the temperature could be as low as 20°C from December to February. This low temperature is intensified by humidity due to the dry Harmattan wind. The wet season usually begins from May to October, and the dry season lasts from November to March. Makarfi is characterized by low-lying fertile land important for farming activities. The People are predominantly farmers who engaged in livestock production but mostly at the subsistence level, also producing rice, sorghum, millet, soya beans, cotton and sugarcane (Issa et al., 2020).

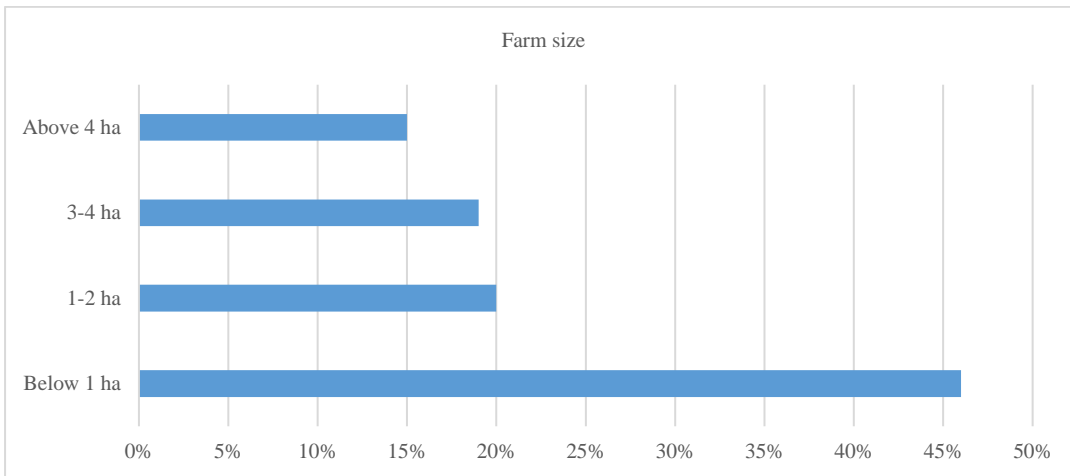
Multistage sampling procedure was used in this study. In the first stage, Makarfi LGA was purposively selected due to its comparative advantage in the production of sugarcane. The second stage involved the random selection of three wards (Makarfi, Tudun Wada and Gubuchi) from the LGA. In the third stage, 2 villages were randomly selected from each of the wards (Anguwar Danju, Barbashi, Anguwar Geri, Sako, Dambakwa, Dangarba). Lastly, 105 small-scale sugarcane farmers from the lists of the Sugarcane Farmers Associations were randomly selected.

Primary data was used for this study. It was collected with the aid of a structured questionnaire. The information was collected on farmers' socio-economic characteristics, diversified activities engaged in, income as well as constraints faced by the farmers. The analytical tool used was frequency and percentages.

## **Results and Discussion**

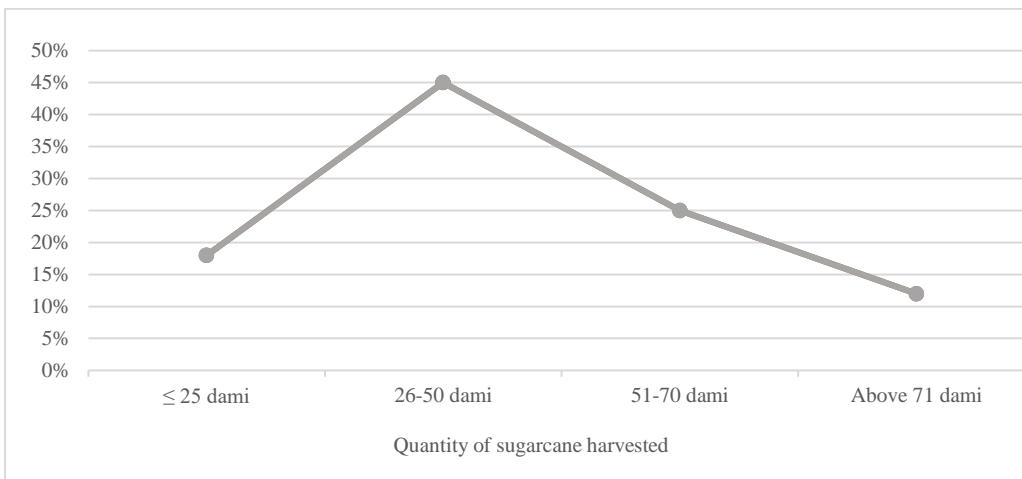
### **Farm Size, Quantity of Sugarcane Harvested, and Income of the farmers**

Figure 1 shows that a greater proportion (46%) of sugarcane farmers cultivated below 1ha of the farm, while 19% cultivated between the range of 3-4ha. This result agreed with Issa et al. (2020), that the majority of the farmers had less than 2 hectares of land. Small farm size impedes agricultural mechanization because some farm machinery like tractors cannot be operated on such farms.



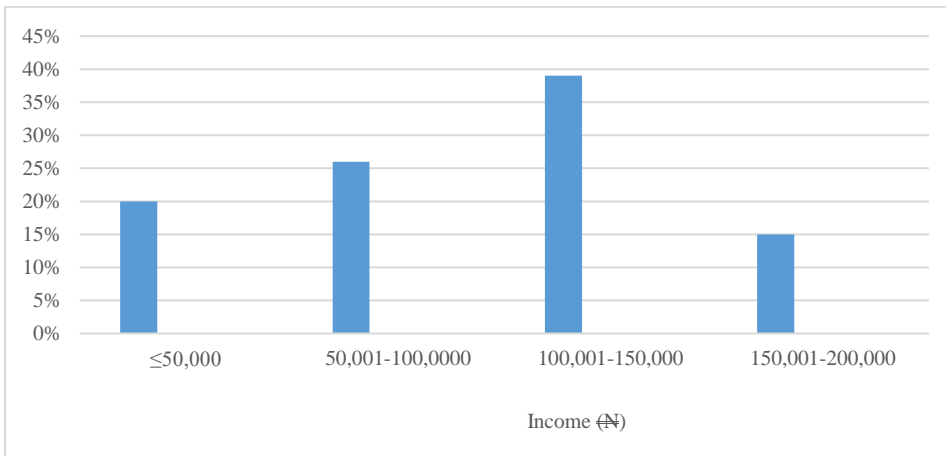
**Figure 1: Farm size**

Eighteen percent (18%) of the farmers harvested  $\leq 25$  *dami* (a tie/bunch), 45% harvested between the range of 26-50 *dami*, 25% harvested 51-70 *dami*, while a few (12%) harvested above 71 *dami*. This implies that the majority of the farmers had less output, probably as a result of poor agronomic practices, lack of improved varieties, and the size of their farms.



**Figure 2: Quantity of sugarcane harvested**

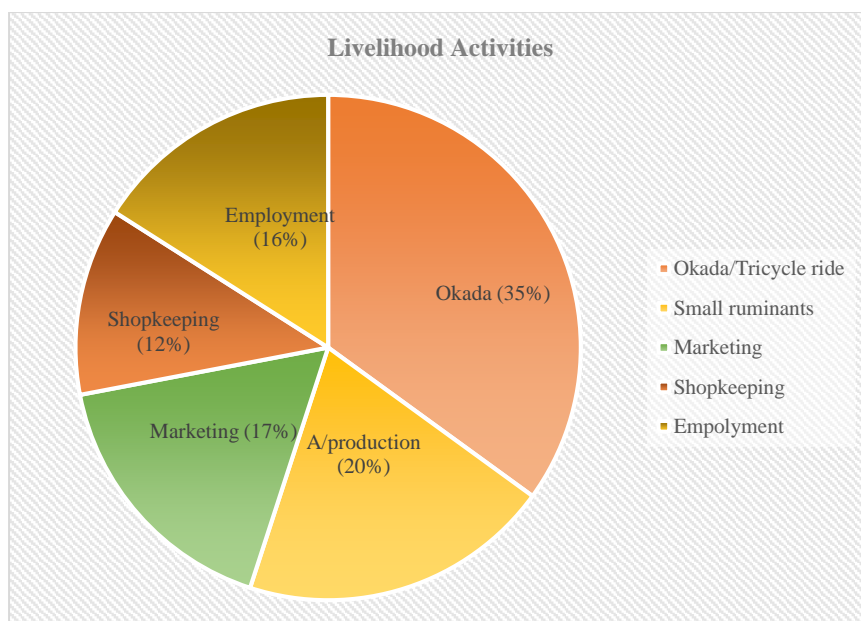
Figure 3 shows that 39% of sugarcane farmers had an income between ₦110,000-₦150,000. With these low incomes, the majority of the farmers have to secure another source of income. The farmers further stated that they could not sustain themselves and their family members with the meagre farm income. This result translates that, the majority of the farmers diversified to other alternatives to sustain their household needs. Income diversification is the norm among rural households, and different income-generating activities offer alternative pathways out of poverty for households as well as a mechanism for managing risk in an uncertain environment. According to Beltrán-Tolosa, Cruz-Garcia, Ocampo, Pradhan & Quintero (2022), diversifying farming activities build household resilience against income instability linked to crop seasonality and sales.



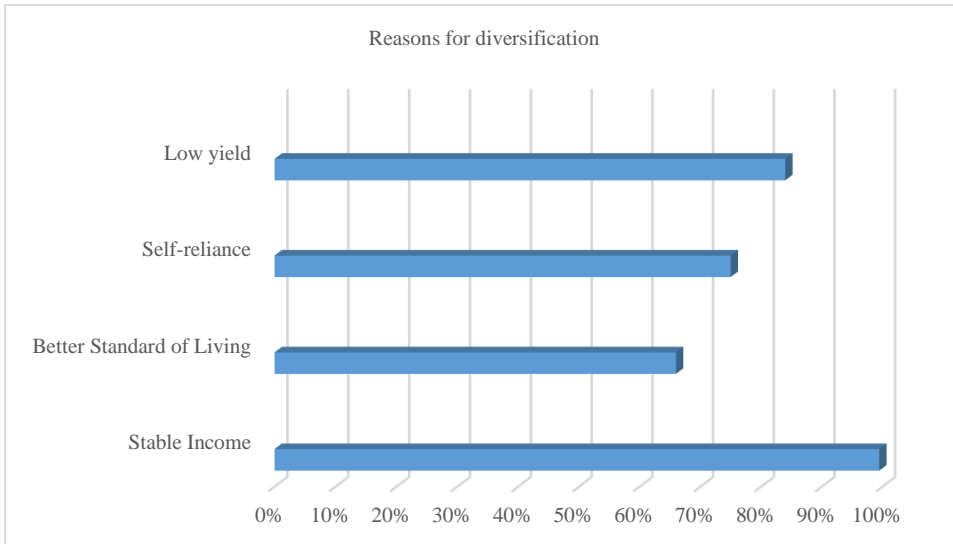
**Figure 3: Income from sugarcane farming**

### Livelihood Activities Engaged in by the Farmers

Figure 4 shows some of the farmers diversified to other agricultural-related activities such as livestock, small ruminant production and marketing. While the non-agricultural activities diversified to are *okada/tricycle* commercial transport, shopkeeping, and other local services such as trade and employment which includes formal and informal jobs in construction, manufacturing, education, and health institutions to receive wages. The major reason for diversifying in the study area is to enhance stable income as attested by 100% of the farmers, 66% diversified in pursuit of better living standards, 75% diversified to attain self-reliance, while 84% diversified due to low yield from sugarcane (Figure 5). The positive effect of diversification according to Nguyen, Nguyen & Grote (2022), is that land diversification and labour diversification help improve households' per capita consumption.



**Figure 4: Diversified livelihood activities**

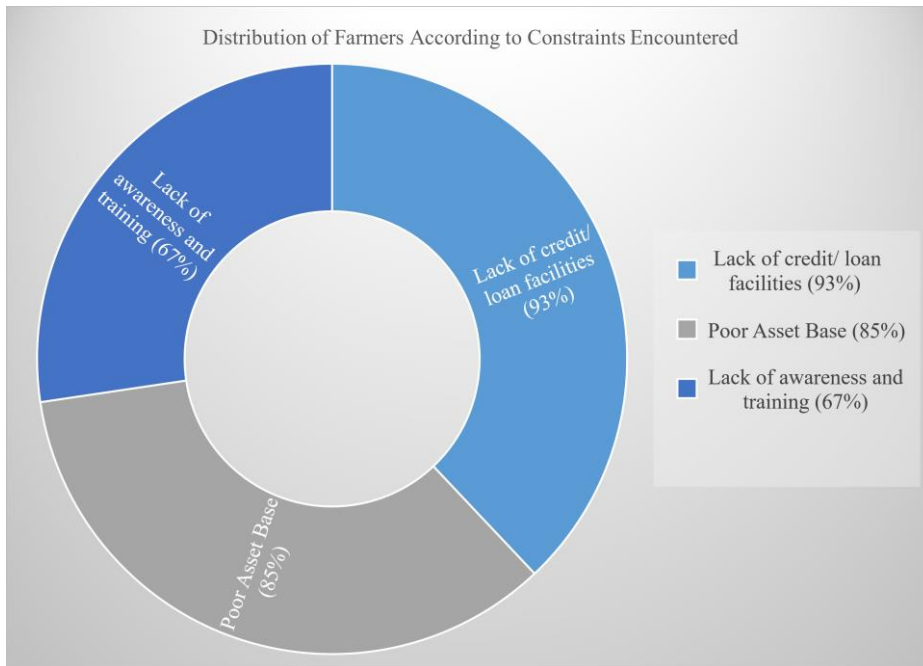


**Figure 5: Reasons for diversification**

**Constraints encountered by the farmers**

Figure 6 shows lack of access to institutional credit is a deterrent factor in the farmers' livelihood diversification in the study area. In the absence of credit support from institutional agencies, resource-poor households are not able to start their own non-farm business or enterprise. The farmers (34%) reported a poor asset base as a constraint to livelihood diversification in the study. Possession of small assets enables households to take opportunities in the non-farm sector, particularly in the self-employment sector. Ownership of a sewing machine may induce a person to start his own tailoring business. Similarly, possession of means of transportation may help the employee in going to the nearby town for non-agricultural employment. Most of the landless and small farmers in the study area do not have assets to act as a big barrier to livelihood diversification. While some farmers are unaware of any government intervention, or any non-governmental organization to inform the rural households regarding livelihood diversification.

The study agrees with Bekalu, Endalkachew & Sagni (2019); Abera, Yirgu & Uncha (2021), who reported that lack of credit, lack of infrastructure, lack of awareness and training and poor asset base were the major problems to livelihood diversification.



**Figure 6: Distribution of Farmers According to Constraints Encountered**

### Conclusion and Recommendations

Livelihood diversification activities among the farmers in the study area were motorcycle (*okada*)/tricycle business, rearing of small ruminants, marketing and shopkeeping. Lack of credit facilities and poor access to loans are overwhelmingly acknowledged as constraints inhibiting diversification, the study concludes that livelihood diversification among the farmers in the study area is prevalent to cope with risk. Engagement in off-farm income generation activities stabilizes and increases farmers' income. This study showed that sugarcane farmers who have alternative sources of income can meet the requirements of their households to some certain extent. Start-up capital and assets are crucial for the household livelihood diversification of sugarcane farmers in the study area.

The rural financial systems need to be revamped. Non-governmental organizations and other donor agencies in collaboration with the government can link farmers to access credit through reduced interest rates and possibly a waiver of the collateral requirement for a small amount of loans. There is a need for stakeholders to establish technical and vocational schools in rural areas, especially for farmers. Both access to extension services and the frequency of visitations between extension staff and farmers should be strengthened.

There is a need for government and NGOs to provide a conducive environment for rural livelihood activities to thrive, this will enhance sustainable rural livelihoods. It is therefore critical that policy-making and implementation to solve the identified problems of diversification should be put in place.

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