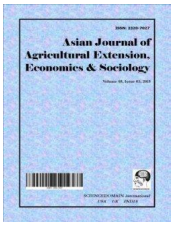

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Cashew Production as Livelihood Improvement to Small-holder Producers in North Bank Region of the Gambia

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The research work focuses on cashew production in Lower Niumi of North Bank Region. Gambia's economy is predominantly supported by agriculture, and cashew as a cash crop has recorded an increasing amount of production in metric tons per annum. Cashew provides income for many farmers in the rural communities especially where this survey was conducted. The main objective of the research was to determine the prospect of cashew production, processing and marketing and identify problems faced by the producers. The research was conducted in Amdallai, Fast Njaga Njoi and Kerr Jatta. Thirty (30) cashew farmers were randomly selected and interviewed.The result shows that, twenty-three (23) male cashew farmers have attained education while seven female have attained level of primary school education. Furthermore, result showed that, 78% of male

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farmers are engaged in cashew production for consumption and income generation while 33% of female producers produce cashew for income respectively. In conclusion, cashew production has great economic potentials for vibrant income generating activity and social protection. It is recommended that farmers undergo production and related business management training programs on the best adaptive agronomic practices.

Keywords: Small holder farmers'; cashew-nut; cashew nut improvement; Gambia.

1. INTRODUCTION

The Gambia's cashew sector has shown tremendous potential in the last 20 years as an alternative crop to diversify production and exports from the current concentration on groundnut production. The sector's performance has grown steadily in the last few years, sustained by the global demand for cashews and its by-product. The sector's future development hinges on the ability of stakeholders from both public and private sectors to address and correct key constraints and seize emerging opportunities. Without concerted efforts to address critical issues and identified market development opportunities, the sectors potential will remain untapped instead of leveraging its potential and capacity. Cashew farming has gained most of its momentum in the Western and North Bank Regions [1]. It is estimated that by 2011 there will be about 2.3 million cashew trees planted on 23,529 ha block. The current production of the Gambia, if it is confirmed, would rank the country at 16th in terms of global production volume [2]. Cashew grows across virtually the entire country but production and quality differs greatly from one region to another due to geographical and agro-ecological location. The average yield of cashew production in the Gambia is estimated at 450 kg / ha, which is low when compared to world average of 840 kg / ha. The average yields in the Gambia are partly explained by limited use of good agricultural practices (GAP) and post-harvest losses caused by inadequate handling and management practices [1,2].

The Gambia offers ideal environment for cashew production in terms of arable land, climate, know-how and available skills. Cashew production records an increasing amount of tons every year. In recent years statistic has shown that the cashew crop production is increasingly becoming an important cash crop in the Gambia than groundnut. In some parts of the Gambia like Lower and Upper Niumi of North Bank Region many farmers are now concentrating on cashew production due to the increasing demand in the world market. Therefore every effort should be made to develop cashew production as it will play a significant role in reducing poverty and serve as spring board for economy growth. In The Gambia cashew tree provides firewood, hedging and erosion control. It also produces jam used in vanishes and it is similar in composition to that of many other succulent fruits with a lower calorific, low protein and fat content but has very high vitamin C. According to cashew farmers association, a well matured cashew tree that has been established for a period of 4-7 years can produce or yield from 400 to 600 fruits per season. These 400-600 fruits can give approximately 3 kg of dried raw cashew nut.

The principal products are the kennel or nut that varies considerably in composition but is of high nutritional and calorific value [3]. Cashew production can also allow for intercropping thus providing extra opportunities to farmers to diversify and increase their incomes from the same fields. It also provides opportunities for export diversification and thereby reducing dependence on one single crop for export. Cashew processing presents a unique opportunity to address the challenges of youth unemployment in the Gambia [2,3]. However, cashew production in the Gambia faces numerous constraints such as markets and marketing, inadequate processing outlets, inadequate production techniques, record keeping and related business management skills. Therefore, research findings focus on key areas of production, processing and marketing and possible solutions to increase yield.

Cashew was first introduced in The Gambia in the 1960s as an agroforestry crop, planted around forestry boundaries as a fire and wind break. In the 1980s the ministries of agriculture and forestry promoted the cultivation of the crop on a large scale as a measure of protecting the environment and providing an economic benefit to farmers [3]. Farmers were advised to plant

cashew along the borders of their farmland and forests to contain growth of grass and curtail intrusion of fires into farm areas. The Gambia's cashew sector was mostly developed through private sector efforts in the late 1980s. In the early 1990s the private sector commenced distribution of seeds of locally improved varieties [4]. Seeds were distributed along with a cashew grower's manual.

The production of raw cashew steadily increased from 200 tons in 1998 to 2,000 tons in 2007. Importantly, the number of cashew exporters grew from two exporters in 2003 to more than 15 in 2007, confirming the vitality of the sector. The export of cashew from the sea-port of Banjul exceeded 30,000 tons, while production of Gambia's cashew nuts was merely 2,000 tons [2]. Cashew growers associations and cooperatives have emerged to the development of the sector. Currently, there are five cashew farmers associations operating in The Gambia. In 2012, the Federation of Gambian Cashew Farmers Associations was established to represent the interests of all the cashew farmers associations and facilitate dialogue with other sector stakeholders. An apex body of Cashew Alliance of Gambia chapter was also established 2011 to represent the interest of private sector [1]. In sum, the sector has grown in 2011 as the sixth most important export sector of The Gambia. For a long time there was little government assistance but that situation is changing, with government leaders speaking favorably about the need to develop cashew production.

The cashew nut (*Anacardium Occidental*) is said to have been originated from northern part of South America, but it is now grown in all tropical countries. The main producers of cashew nut are Brazil, India, Vietnam, Africa (such as Tanzania and Mozambique) and south East Asia [5]. The nut is kidney-shaped about 3 cm long, and this nut is attached to an 'apple' that is called the fruit. The most important part of the cashew is the nut which has recently attracted many business fraternities and the shell must be removed from the nut. A shell contain a skin-blistering oil which was formerly regarded as unpleasant nuisance, but is now highly valued for its many industrial application [6]. The cashew tree has well developed root system and can tolerate drought condition. Rains during flowering period causes flower abortion due to anthracnose and mildew. During harvesting while nuts are on the ground, rain and overcast weather causes the nuts to rot or start germinating, nuts germinate within four (4) days when lying on the wet soil [7]. Rainfall during ripening also causes discoloration of fruits as this reduces market value and turn-over. Apart from these requirements the cashew is quite tolerant of environments generally unfavorable for other fruit nuts. The tree will withstand 6 months of drought without showing adverse effects and will survive with a little 750 mm per year of rainfall [6,7]. The drought tolerance of the cashew is attributed to wide range of lateral root system and can be reduced if trees are planted too closely together. The economic environment of the Gambia is ideal for investing in cashew production, processing and marketing.

Notably, ideal conditions are good drying conditions of superior quality nuts count of 190-210 per kilogram and an outcome of 23-28 kilograms of kernels per 80 kilograms of raw cashew nuts comparing to nut production in Senegal and Guinea Bissau [4]. Quality of cashew trees have been selected in various countries but it has been realized that progeny of such trees, when derived from an open pollination will continue to show considerable variation in yield and quality. Viability of seed can be determined by placing the seeds into the water, the ones that sink in the water are the good seeds and the seed that floats are regarded as bad [8].

On the field, the production of cashew is mostly hindered by insect pests and diseases. He stated that various insects and animal pests cause more economic losses. Insect pests are a major source of crop loss in all cashew-growing areas of the world. More than 60 species of insects attack the crop during different stages of plant growth [9]. These pests include sap-sucking bugs, leaf-chewing caterpillars, beetles, aphids, scales, thrips and mites. They can cause considerable damage to cashew by destroying the floral flushing shoots, the early abortion of young nuts. Other major pests include leaf beetles, spider mites and scales. Rodents such as rats, squirrels and porcupines, may cause serious damage to cashew seedlings. Fruit flies sometimes attack the cashew apples and monkeys also are attracted to ripe apples and can cause damage to the cashew trees whilst foraging for the ripe apples, bats and parrot also eat cashew apples [10].

Cashew seedlings can be affected by a number of different diseases. The fungus, *Colletotrichum*

glocosporioides is one of the most common pathogens in cashew. Initially symptoms show the development of reddish-brown, shiny, water-soaked lesions followed by resin oozing out into affected parts. As the lesions grow, the affected shoots and inflorescences are killed and the leaves become crumpled [11]. Disease trees can be sprayed with various fungicides, including bordeaux mixture, to control the fungus. The cashew is mostly purchased by seasonal Indian exporters. Over the years, the price of raw cashew nuts (RCN) has steadily increased as a result of increasing global demand and the quality attributes to Gambia's cashew nuts. Currently, the cashew through-out its export has been estimated at 54, 000 tonnes annually which is 8% increase over 2009 [12].

The Gambia's cashew nut value chain includes several different stages between the farmers and processors which further squeezes the margins of the farmers. Specifically, after the postharvest handling, purchasing is generally handled by middlemen, village shop owners, and collection agents. The product is then transported to either local exporters, seasonal Indian exporters, or to national stockists. National stockists are mostly Gambians, generally local businessmen who stand to make a profit by buying, storing, and selling nuts to seasonal Indian buyers [12]. Almost all of the nuts that are purchased are eventually shipped to India for processing. The value chain would need to overcome a number of challenges to enhance wealth creation opportunities: *i*) marketing challenges, i.e. lack of official cashew buying centres in the Gambia; *ii*) no processing facilities; *iii*) farmers and technicians in need of best practices training; iv) no processing done on the cashew apple; *v*) insufficient and expensive transportation from rural farming areas to urban areas; *vi*) lack of storage and drying facilities at the farm level. Cashew processing in the Gambia is negligible by processing between 5-10 tonnes annually and large proportions of cashew nuts are exported to processors in India [12, 13]. With the 165,000 tonnes of cashew nuts that come out of the region, there is an opportunity for companies to set up processing facilities in the Gambia and to become a major processor in Africa. The advantage of the location is efficient and cost-effective system relative to that of the sub region. Another potential venture would be processing of the cashew apple; this would be a venture for which the input would essentially be free as farmers in the region discard cashew apples away. In some parts of the world particularly the pulp from the cashew apple is prepared to make juice, spirits, and jams [11].

In general, agriculture provides 25-35% of Africa's gross domestic products, 60% of total employment remain the main source of income for people living in rural areas. Cashew production is a global demand; now due to its high price and cashew production provide an alternative source of income for farming communities by reducing their excessive dependent on a single cash crop. Cashew production costs are relatively low in the sub-region, and the high quality of the raw nut from this area has been well documented and acknowledged among cashew industry stakeholders [12]. Maintaining the high quality of cashew nuts produced in this region particularly The Gambia is outstanding to a viable cashew sector development [14]. As more producers choose to establish cashew plantations, the adoption of best production, processing, and marketing practices from empirical evidence is central to ensuring that cashew businesses can be transformed into highly profitable ventures for farmers actively engaged in production [14,15].

2. METHODOLOGY

Cashews can be grown in almost all parts of The Gambia, with current production concentrated along the north bank and west coast areas. The west coast offers easy access to Banjul port and airport, while the north and south roads and navigable river ensure easy access from the rest of the country. The study area covered three (3) villages namely Amdalai, Kerr Jatta, and Fass Chaga Choi in the North Bank Region of the Gambia. There were 27 questions in a questionnaire, divided into four (4) sections i.e. socio-economic information, production, processing and marketing. The sample size of the research findings was thirty (30) farmers, randomly selected and interviewed. In the process of interview farmers were independent responding to questions basing on their own opinion. Additional information was obtained through key informant interview and focus group discussion. The data collected from the respondents were later analyzed using SPSS software.

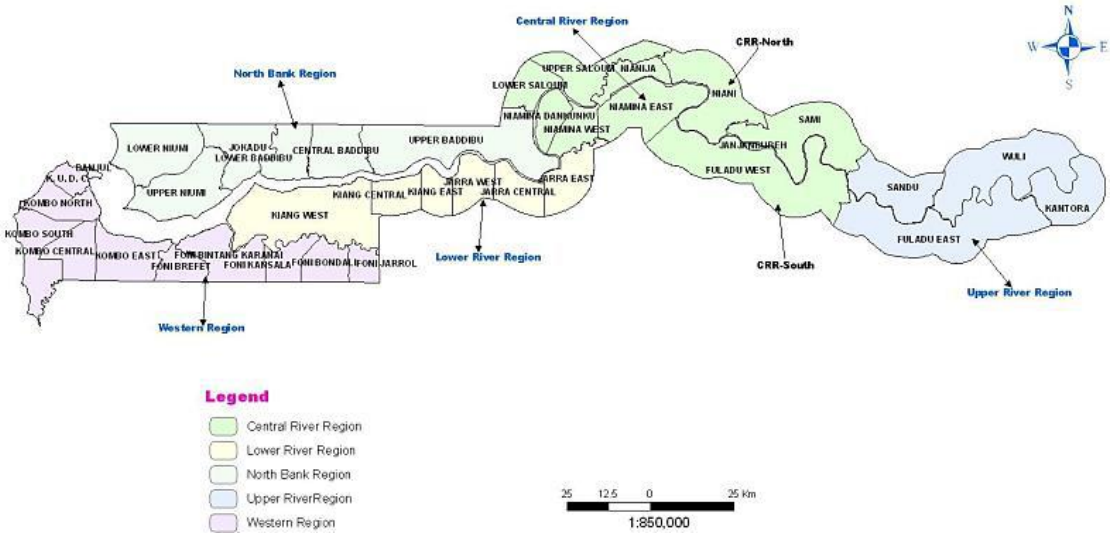

Fig. 1. Cashew growing areas
Source: GNAIP agriculture investment plan 2011-2015

3. RESULTS AND DISCUSSION

In any development activities acquisition of knowledge is a fundamental pillar that can bring unprecedented change in the livelihood of small-holder farmers. In the context of small holder farmers especially in Sub-Saharan Africa, knowledge acquisition is not adequate. The result in Table 1 shows that out of thirty (30) respondents twenty-three male cashew farmers have attained education while seven (7) female have attained level of primary school education respectively. In the Gambia, the level of illiteracy is high particularly in the women folk comprising of over 50% of women are illiterates. However, illiteracy level of women in the Gambia should not be impediment for development. Government, NGOs and other stakeholders are directing sound policies to gender empowerment, so that women who are engine of economic growth are not left behind. In another development capacity is a need to our small-holder farmers.

Table 1. Education level of respondents in study area

Male	23
Female	7

In the Gambia, cashew-nut production is gaining surmounting consideration by the government, NGOs and private sector. It is the second highest income earner by small-holder farmers' next to ground-nut which is the main cash crop of the Gambia. The result in Table 2 showed that, 78% of male farmers are engaged in cashew nut production for consumption and income generation while 33% of female producers produce cashew nut for income respectively. Importantly, cashew nut production has brought improvement livelihood and social protection of the producers. Cashew nut production enhances food security as the income gain from the product is use to solve many domestic problem. However, in the Gambia cashew nut production is basically men domain activity as it is labour intensive or tedious while women are engaged in nut picking and collection. The incomes earn from the selling of processed nut and fire wood is usually spent on payment of school fees, medical attention, clothing and other family endeavour.

Table 2. Purpose of cashew production in the study area

Purpose	Male (%)	Female (%)
Consumption and income	78	22
Income only	67	33

Cashew production in the Gambia faces numerous challenges that is retrogressing its flourishing potentials as mentioned by small holder farmers. The result in Table 3 shows that 100% of male respondents indicate low prize and theft while 100% of female respondents indicate theft as their major challenge respectively. The issue of low price and price fluctuations is a

problem and will continue to be problem if measures are not taken by relevant stakeholders to reduce such problems. The implications of low price and fluctuations are associated to immature and poor quality nuts. Immature nuts have high moisture content and are unfit for export. Inadequate drying and improper storage for example the use of polythene bags instead of jute bags to store harvested cashew nuts deteriorates stored kernels.

Training farmers on best agricultural practices right from production to storage will help mitigate the defects of quality nuts. Furthermore, government support for smallholder farmers to improve on their livelihood can reduce the menace of harvesting immature nuts. In addition, the existence of better and organized producer associations or cooperatives generally will help the small-holders farmers. In view of this, it will help the producers to have bargaining power, negotiate, collective marketing and bulk buying. Cattle are another challenge small holder farmers do encounter especially in dry season when there is little or pasture to graze. This triggers the cattle to intrude the cashew plantation causing serious damage to tender flowers and cashew apple. This in turn will result to poor yields and low income while affecting local economic growth of the communities concern.

Table 3. Problems encountered in cashew production by respondents

Problems	Male (%)	Female (%)
Price fluctuation and theft	83	17
Price fluctuation and cattle	75	25
Insecurity by theft and cattle	83	17
Theft only	-	100
Low price and theft	100	-
Price fluctuations and un-organized groups	100	-

4. CONCLUSIONS

The Gambia's cashew sector has shown tremendous achievements in the last 20 years, an alternative crop to diversify production and exports from current concentration on groundnuts. The sector's performance has grown steadily in the last few years, sustained by the global demand for cashews. The sector's future development hinges on the ability of relevant stakeholders from both public and private sectors to address and correct key constraints and seize emerging opportunities. The results highlight that cashew can be planted on sandy loamy soil but does not tolerate waterlogged areas. Furthermore, it was observed that cashew starts bearing fruits at the tender age of three (3) years. The information gathered indicated that for the farmers to have quality cashew nut it is imperative to allow ripened fruits to drop down in a clean and protected area during harvesting. However, it was realized that there is no organized market for cashew production and only one processing facility in the entire region. The production of cashew in the study area is on increase, due to benefits derived from cashew as lucrative enterprise. In the near future, production of cashew could increase to supplement the main cash crop which is ground-nut. The study also indicates that the main purpose of growing cashew is to generate income, firewood, cashew honey, cashew paste, delicious alcohol and juice. There were surmounting problems associated to cashew production such as bush fire, insect, cattle intrusion, price fluctuation and theft. Basing on the research findings, I conclude that cashew production, marketing and processing would be a viable business enterprise that can reduce poverty, increase income, household food security and social protection.

5. RECOMMENDATIONS

It is recommended that, Department of agriculture and Non-Governmental Organizations have to make frantic effort in providing viable improved varieties to local farmers through associations and extension officers to become one of the leading cash crops in the Gambia. In addition, processing facilities to local farmers, market information, and access to loans and capacity building has to be a priority needs to cashew producers and the government. In addition, with the development of sound and well-articulated policy framework geared towards cashew production can go a long way in improving the economy of farmers on a sustainable basis.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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