

Cashew Nuts and Production Development in Nigeria

¹L.A. Hammed, ²J.C. Anikwe and ³A.R. Adedeji

¹Agronomist, ²Entomologist, ³Plant Pathologist,
Cocoa Research Institute of Nigeria (CRIN), Ibadan, Iran

Abstract: Prior to the cultivation of cashew in Nigeria in 1950, the plant survived in the wild for more than four centuries. Research into the cultivation, uses and economy of cashew actually commenced in 1972, by Cocoa Research Institute of Nigeria (CRIN). The increased awareness in the economic benefits of the crop has led to the astronomical increase and renewed interests in the agri-business of the crop. This necessitates a look into the constraints militating against the crop cultivation and formulation of strategies for sustained development. Six different sizes of cashew nuts existed in Nigeria. Six factors were identified to constitute constraints while eleven developmental strategies were formulated. Insect and disease attacks were more devastating threats. Plates of their destructive effects and that of improved cashew material were shown.

Key words: Cashew • Production constraints • Developmental strategies

INTRODUCTION

The cashew of commerce is a small to medium-sized tree believed to have originated from a short-growing ecotype *Anacardium occidentale*, L. that occurs among the low vegetation of the *restinga* in coastal north-eastern Brazil [1]. A tall-growing ecotype is found in the *Ilanos* of Colombia, Venezuela, *Caatinga* (dry thorn forest) and the *cerrado* vegetation of the savannas of the Amazon basin [1]. Therefore, cashew is well adapted to seasonally wet and dry tropical climates and has the capacity to grow and yield satisfactorily on well-drained, light textured soils with minimum inputs. This indicates that, cashew has a very good adaptability to wide ecological differences.

In 1970s, Africa was the largest producer of raw cashew nuts accounting for 67.5% of world production. This subsequently declined to 35.6% by 2000, with Nigeria, Tanzania and Mozambique being largest producers. The production in Asia during the same periods increased from 26.8% to 49.5% with the major producers being India, Indonesia and Vietnam. Similarly, the production in South and Central America also rose from 4.5% in 1970 to 14.5% in 2000 with Brazil and El Salvador being the leading producers (Table 1) [2].

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Cashew was introduced into Nigeria between 15th and 16th centuries by the Portuguese explorers

[4, 5]. The plant was then, purposefully for the erosion control and the afforestation schemes of the defunct Eastern Nigeria. Cashew became a popular crop in 1953, when planted on a large scale principally for the nuts, afforestation and erosion prevention programmes in the escarpment areas of Udi, Mbala, Oghe, Oji, Isuochi and Kingie in Eastern Nigeria by the defunct Eastern Nigeria Development Corporation [6, 7]. In Western Nigeria, the first planting of cashew started in 16th century at Agege in Lagos [4]. The commercial cultivation actually started in 1950s at Iwo, Eruwa and Upper Ogun in the defunct Western Nigeria by the then Western Nigeria Development Corporation (WNDC) [5, 8].

Cashew was thereafter, introduced into the Middle Belt and Northern Nigeria from the Eastern and Western Nigeria. These cashew nuts were mainly of the medium nut-size biotype, which according to ISO-6477 standard fall within the W320 category. This cashew biotype therefore constitutes the landrace of cashew in the Nigerian cashew plantations. This biotype, which was an introduction from Asian continent [8], attracts low premium in the International market. However, with the recent introductions of the Brazilian cashew biotype (jumbo nut-size), by Cocoa Research Institute of Nigeria (CRIN), which is now being grown by cashew farmers, the cultivation of the crop is rapidly spreading to all agro-ecologies of Nigeria [9, 10].

Table 1: World production (tones) of cashew nuts from 1970-2000

Continent/Country	2000	1998	1995	1990	1985	1980	1975	1970
World	1,217,210	1,070,774	944,070	606,681	520,973	464,215	563,795	511,939
Africa	432,955	405,271	274,971	125,745	114,795	162,502	358,035	345,772
Asia	602,237	614,037	494,378	374,427	283,004	218,920	179,016	137,039
South and Central America	176,018	45,466	168,721	102,913	119,226	78,394	23,002	22,813
Nigeria	176,000	152,000	95,000	30,000	25,000	25,000	25,000	25,000
Tanzania	106,500	93,200	63,400	17,060	32,750	41,416	115,840	107,445
Mozambique	35,000	51,716	33,423	22,524	25,000	71,100	188,000	184,000
India	440,000	440,000	321,640	285,500	221,330	180,266	144,254	123,319
Indonesia	69,027	69,027	74,995	29,907	21,114	9,074	9,122	-
Vietnam	41,200	54,000	52,800	26,000	9,000	5,600	3,500	2,100
Brazil	167,123	39,836	164,156	99,367	115,000	75,000	20,490	20,309
El-Salvador	4,000	4,000	3,000	2,098	2,162	2,208	1,702	1,700

Source: FAO [3]

CONSTRAINTS TO THE PRODUCTION OF CASHEW NUTS IN NIGERIA

There are some factors militating against rapid development of cashew production sector in Nigeria. These include:

Perpetuation of Cashew landraces on Nigerian cashew plantations: The acquisition of cashew nuts as planting materials from any source other than CRIN results, among others, in the perpetuation of the old/unimproved stock. The ISO-6477 standard introduced in 1988, to reconcile the Brazilian and Indian classifications, gave a high premium to the W180 (jumbo) and W210 (large) grades [2]. Unfortunately, the medium nut-size of cashew nuts that currently exists on many plantations in Nigeria, falls within W320 and W280 categories, which attracts low pricing in the International market. The highly priced Brazilian cashew biotypes (W180 and W210) are being given out to cashew farmers who contacted CRIN for technical supports.

Low funding for cashew research activities: Timely availability of funds is the driving force of any research. In Nigeria, fund allocation from federation account is the only source of research funds for cashew research programme. This fund, if available on time, is extremely small compared to the volume of work on the crop occasioned by its vast economic potentials. Besides, the fact that the cultivation of the crop cuts across all agro-ecologies further testifies to fund requirements of the crop. Thus, there is need for a national policy that will ensure consolidated funding for the research and development of cashew in Nigeria.

Lack of awareness on the economic potential of cashew:

Cashew kernels are a high value luxury commodity with sales growing steadily at an annual rate of 7.0%, with every expectation that the market will remain strong [2]. Besides, there is substantial potential to exploit cashew by-products, such as cashew butter (from broken kernel), Cashew Nut Shell Liquid (CNSL) and Vitamin C-rich juice of cashew apple among others. Therefore, unawareness on the market outlets for cashew had forced many cashew nut processing factories out of operation in Nigeria.

The problem of compensatory nut yield: In Nigeria, six different sizes of cashew nuts are discernible. These include jumbo (≥ 16 g), extra large (12-15g), large (8-11 g), medium (6-7 g), small (2 g-5 g) and madras (≤ 2 g). The nut yield of jumbo nut-size, which is an equivalence of W180, is averagely 8-10 kg/tree while the nut yields, from equally matured medium and madras cashew trees fall between 30 kg/tree and 250 kg/tree. Unfortunately, the medium and madras nut-sizes fall within W280 and W450 categories according to International classifications. Therefore, the low nut yield of the jumbo nut-size, which appear compensatory to its heavier nut-size needs to be improved upon in order to have the expected development in the sub-sector. This will further encourage the cashew farmers to look for such improved heavier nut-size.

Entomological/Pathological problems: In Nigeria, the production of cashew is impaired mostly by problems associated with its insect pest complex. In the last twenty years, the insect pest complex of cashew increased year after year and over 286 species have been reported so far. However, only *Analeptes trifasciata* (stem girdler), *Selenothrips rubrocinctus* (red-banded thrips) and



Plate 1: A cashew plant girdled by *Analeptes trifasciata* in Nigeria



Plate 2: The insect *Analeptes trifasciata*



Plate 3: A cashew plant infested by stem and root borer *Plocaederus ferrugineus* L. in Nigeria



Plate 4: A cashew killed by *Plocaederus ferrugineus* L. in Nigeria



Plate 5: The insect *Plocaederus ferrugineus* L



Plate 6: A cashew plant infected by twig die-back infection (*Lasiodiplodia theobromae*) in Nigeria



Plate 7: A cashew plant that attain anthesis 18 months after transplanting (flowers being examined)

Pachnoda cordata (fruit scrapper) have been comprehensively studied while stem and root borer (*Plocaecderus ferrugineus* L.) is being exhaustively studied. These insect species have been implicated with economic losses estimated between 52 and 75% of the production level [11] (Plate 1-5). Similarly, cashew production is seriously affected by three major diseases. These include floral shoot die-back (caused by *Lasiodiplodia theobromae* (Pat) Giffon and Maubl.), twig die-back (caused by *L. theobromae*) and root rot of cashew seedlings (caused by *Pythium ultimum*, Trow.). Floral shoot die-back reduces total nut yield by an average of 38-70% [12]. Twig die-back causes more than 50% death of vegetative shoot of cashew [13] (Plate 6). The loss due to root rot of cashew seedlings was estimated at 10-15% in the nursery [14].

Vast differences in cashew ecology: Cashew ecology cuts across all agro-ecological zones of the country. Therefore, the coastal and rainforest zones of the southern Nigeria characterized with the occasional rainstorm/rainfall during the dry season, when the cashew is at peak fruiting period, affect the quality of the maturing nuts. Nut-picking (harvesting method of cashew) especially by the unskilled casual workers involves both matured, maturing and immature nuts found on the ground. However, cashew is faced with establishment problems in the savanna. The problems become intense northwards. Burning or firing as a method of weed control especially in the savanna, is a serious threat to both young and matured plantations of cashew. Live cashew trees are more inflammable than the dead cashew trees. The caustic liquid, CNSL, of the crop is an inflammable liquid. The soils of each of these agro-ecologies differ. Therefore, the sustainability of the cashew culture depends largely on soil suitability and land capability. Thus, the differences in cashew ecology in Nigeria calls for different cultivation packages for different agro-ecologies.

STRATEGIES FOR CASHEW PRODUCTION DEVELOPMENT IN NIGERIA

In order to astronomically develop the cashew production sub-sector in Nigeria, all stakeholders must religiously work together and formulate developmental policies for cashew research and development in Nigeria. Such policy may include the following-

Immediate and periodic broadening of Nigerian cashew gene-pools through the exploration of the Brazilian

heavier nut-size germplasms: The nut-size of the Nigerian landraces of cashew is the same as those of India, Indonesia and Vietnam cashew. The genetic base of the Brazilian cashew biotype (jumbo nut-size), in Nigeria is very shallow. Therefore, further exploration of the Brazilian cashew biotype has become an immediate necessity and a continual activity for the crop's improvement programmes.

Establishment of cashew seed garden centers at strategic places accessible to the farmers: The farmers do not need to travel long distances for the acquisition of improved cashew planting materials. The establishment of such seed garden centers will provide a drastic avenue for eradicating the landraces of cashew from our farmers' plots and restrict them only to the research centers. More importantly, improved cashew varieties would be within the reach of these farmers. Such varieties include the materials that attained anthesis at 18 months after transplanting (Plate 7).

Immediate and periodic national cashew survey: This becomes imperative in view of the fact that, Nigeria does not have a cashew map, insect/disease map, the yield gradient with ecological differences, the yearly expansion of cashew hectareage and the actual cashew hectareage of Nigeria among others. The availability of these statistics would ensure the sustainable developmental plans for the crop in Nigeria.

Ecological protection: Strict legislation against burning is inevitable in this country in order to protect cashew plantations from annual destruction through burning. Monitoring and enforcement of such legislation should be vested on the State government of the cashew producing States. Furthermore, cashew plantations should not be established at some close range to a timber plantation. This is because firing as a maintenance operation in timber culture is a destructive operation in cashew plantations.

Constant awareness creation on economic potentials and the health benefits of cashew product consumption: It is worthy of note that cashew kernel is rich in unsaturated fatty acids with high protein and low levels of saturated fats and soluble sugars. Higher levels of polyunsaturated fatty acids which lower blood cholesterol is particularly of high nutritional significance [15]. Cashew has therefore, gained acceptability in the international markets where consumers are more health-conscious. Promotion of

jingles on radio and television including the print media will further promote the awareness on the health benefits of cashew, thus strengthening the domestic economy of the crop. For instance, the local consumption of cashew kernel, in India, has increased from 13,000 tons in 1960-61 to 92,000 tons in 1996 [16]. Besides, all educational institutions (from elementary to tertiary) in cashew producing states may be assisted to have “cashew week” at least once in a session. During the week, cashew harvests made from their cashew plots should be processed and eaten by the school community. The said school cashew plots should be established with the improved Brazilian cashew biotype (Jumbo nut-size). This method would endear and inculcate the cultivation of cashew in the minds of the youth at the appropriate level. Thus, alleviating unemployment and poverty in the land and further strengthening the crop’s economy.

Youth encouragement in Cashew-based agriculture:

Having caught them (youth) young in cashew-based agriculture, they need to be encouraged to contribute meaningfully into the cashew Agribusiness. This can be achieved through the provision of land and other farm inputs and supervision especially during the juvenile period of the crop.

Value addition: The vast market potentials of the country should be fully explored for the development of cashew sub-sector. Further encouragement of the local processing capacity and gradual discouragement of exportation of raw cashew nuts are viable steps towards adding values to Nigerian cashew. In India, the processing capacity of cashew nuts has increased rapidly more than production. Thus, India imports raw nuts to the tune of over 203,000 tons (mainly from Africa) in order to satisfy her processing capacity of 440,000 tons. Vietnam also has graduated from exporter of raw nuts into importer of the commodity in order to make up the requirements for her processing capacity [2].

Maintenance of the organic nature of Nigerian cashew:

Monitoring of chemical inputs, (chemical fertilizer, insecticides, fungicides and herbicides) in cashew cultivation is essential in order to guard against the contamination of the organic nature of Nigerian cashew (which is currently a pride).

Constitution of Cashew development commission: The constitution of the commission should include the presidency, the ministries of agriculture, commerce and

finance, all cashew producing states, Cocoa Research Institute of Nigeria (CRIN), National Cashew Association of Nigeria (NCAN), Central Bank of Nigeria (CBN), Nigeria Export Promotion Council (NEPC), African Cashew Alliance (ACA) and other relevant agencies. This commission is expected to further provide the technical and political supports for the promotion of the Nigerian cashew at both national and international levels.

Establishment of “Consolidated Cashew trust fund”:

This is to ensure constant and sustainable availability of fund for cashew research activities. Availability of sufficient fund is the driving force of any research and development. The government of the federation, the governments of the cashew producing states, CBN and NEPC are to contribute into this trust fund. Others include the cashew nut exporters, who should be made to contribute about 2.5% of the cost of every tonnage of cashew nuts being exported. The processors may be exempted for now in order to further encourage local processing of the nuts into kernel.

Periodic acquisition of modern research equipment/materials and manpower:

This becomes imperative in order to have the expected development in cashew research and not to be left out of the global research focus and direction. Besides, research institutes, especially, CRIN, must be on dedicated power supply or private power generation through solar electricity.

CONCLUSIONS

- The elaborate research network and development in Nigeria is beneficial to the expansion of cashew industry.
- Development and sustainability of eco-friendly production packages such as organic farming and integrated pest management would further provide a boost to the development and international acceptability of Nigerian Cashew.
- In Nigeria, cashew production may not assume any economic importance in the agricultural framework of the country unless a vigorous campaign is carried out to encourage and attract cashew growers (especially, the youth) through provision of land and improved planting materials. This should be supported by strong research and extension efforts. It is only such a consolidated effort based on scientific management techniques that can assist farmers to increase production and productivity of cashew.

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