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Harnessing the Potentials of the Coconut Palm in the Nigerian Economy

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Abstract: The coconut palm (cocos nucifera) though not indigenous to Nigeria, grows well in places with a mean annual temperature of 25°C - 28°C and an annual rainfall of 200mm. Great potentials exist for increasing coconut production and productivity in Nigeria. The low productivity of few coconut holdings in Nigeria is as a result of poor management practices, high density plantings in the groves, poor soil fertility management, lack of fertilizer use, poor pest and diseases control. In other for the development of the coconut product trade to result in tangible improvement in the Nigerian economy, partnership between producers, national policy makers, the private sector and the international industry is inevitable. Policies that are made should be private sector driven thereby increasing productivity in all chains of the coconut palm production. This paper is designed to unveil the potentials of the coconut palm and its role in the development of the nation's economy, by providing food, raw materials, income and employment to millions of Nigerians.

Key words: Coconut · Potentials · Productivity

INTRODUCTION

The coconut palm (*Cocos nucifera L.*) is one of the most important and useful palms in the world, it is an important crop in the agrarian economy of many countries of the world providing food, drink, shelter and raw materials for industries. [1]. The coconut palm, is a member of the palm family Arecaceae. It is the only accepted species in the genus *Cocos. (Hahn, William J. [2]).* The coconut palm is undoubtedly the most economically important plant in the family, as it is used as both an ornamental and as a food crop.

The term coconut can be referred to the entire coconut palm including the seed, or the fruit, which is not a botanical nut. [3, 4]. explained that the origin of the coconut palm is obscured by the ability of the fruit to disseminate the species naturally over distances of thousands of miles. Coconuts can float on the ocean for months and still germinate when beached, so they may have arisen anywhere between the eastern Indian and western Pacific oceans. Prior to the age of discovery, coconuts were dispersed from east Africa to the Pacific coast of Panama. Coconuts provided the only source of food and water on many of the atolls across the equatorial Pacific and the natural distribution of coconut may have influenced the initial colonization of the region. It is clear that there were no coconut palms along the east coast of the Americas, western Africa, or the Caribbean prior to European exploration in the sixteenth century. Coconut oil was one of the first, if not the first plant oil to be used by man and was the leading vegetable oil until 1962 when eclipsed by soybean oil. Unlike many tropical fruits, coconuts are still grown largely by small landholders instead of on large plantations, although plantations have become more popular recently [5] Coconut palms have two natural subgroups simply referred to as "Tall" and "Dwarf". Most commercial plantings use high yielding, longer lived Tall cultivars and each region has its own selections, e.g., 'Ceylon Tall', Indian Tall', 'Jamaica Tall' (syn. 'Atlantic Tall'), 'Panama Tall' (syn. 'Pacific Tall'). The Tall cultivar group is sometimes given the name *Cocos nucifera* var. *typica* and the dwarf cultivar group *C. nucifera* var. *nana*. [6]. Although the coconut palm is not indigenous to Nigeria, but of the humid tropics. Though it is known to grow under diverse types of climate and is highly adaptable, are usually grown along the sea coast and in plain grounds. They can be cultivated up to 1,000m above sea level and it tends to grow best in places with a mean annual temperature of 25°C -38°C and an annual rain fall of 200mm [1]. More than 90% of the nation's coconut belt is a continuation of the plantations or groves along the West African coast running from Cote d'Ivoire and southeast towards Ghana, Togo and Benin to Lagos state in Nigeria. This belt continues in a 1 kilometre wide strip

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of groves along some 200km of coastline in Lagos state. The cultivation of coconut is in scattered holdings and mostly in groves in the rainforest zone of Nigeria, so it is difficult to estimate the number of farmers that grow the crop. An estimated 36,000ha is presently under cultivation mostly in Lagos and Rivers states and an estimated 1.2million hectare of land is suitable for coconut cultivation [7]. The west African tall (WAT) is the most extensively grown tall variety both as a plantation and compound crop. Traditionally, tall varieties are commercially cultivated are usually known by the places where they are cultivated. They grow to a height of 15-18 metres and their life span expands up to 60 to 75 years. They can be easily detected by the presence of balls at the base of the palm. They come to flowering 6 to 7 years after planting and produces large sized nut with good quality copra and oil content (67%) [1]. Coconut palm is an important economic crop because of the heavy demand for its products. In recent years coconut palm has gained importance as an economic crop hence the federal government of Nigeria vested the Nigerian Institute for Oil palm Research with the mandate for coconut research in Nigeria and this results to the creation of the coconut research substation in Badagry, Lagos State which was established in 1978. The sole responsibility of the sub-station is to research into the economy, ecology and biology of the coconut palm with the aim of improving yields, provide job opportunities for researchers and provide avenues for the increased production of the product to the end users. Consequently, coconut output for both export and local consumption will increase tremendously in the coming years. In Africa the major coconut producing countries include Tanzania, Cote d'Ivoire, Kenya, Madagascar, Ghana and Mozambique [8].

Methodology: This study reviews literature on the coconut palm. Sources of information were from Nigerian Institute for Oil Palm Research (NIFOR) annual reports, NIFOR in house review [7], articles and journals, conference papers, FAO data from the internet.

The Need for Coconut Production in Nigeria: The Nigerian Agricultural industries have the potentials to make major contributions to the economic and industrial development of the nation, especially with the wild range of industrial application of most of the agro-produce like the coconut. For a crop not indigenous to Nigeria, she is blessed with coconut trees which could be harnessed for industrial development through which the quality of life of the people will be improved. The coconut occupies a pre-eminent position in the Nigerian economy in providing employment to a large number of people living in the coconut belt if special consideration is given to its cultivation. There will be a reduction in the unemployed population if the opportunities provided by the numerous application of the coconut palm are fully tapped. The planting, harvesting and processing of the coconut will not only provide business opportunities to thousands of people in the region where it is cultivated, it will also offer a wide range of investment opportunities that are economically attractive to the people at home and abroad. The role of coconut in food production, foreign exchange earnings, raw materials for industries, income and employment generation to millions of Nigerians including women and young people make it a very crucial asset for National Economic Development.

Plant: *Cocos nucifera* is a large palm, growing up to 30 metres (98 ft) tall, with pinnate leaves 4-6 metres (13-20 ft) long and pinnae 60-90 cm long; old leaves break away cleanly, leaving the trunk smooth. Coconuts are generally classified into two general types: tall and dwarf [9]. On very fertile land a tall coconut palm tree can yield up to 75 fruits per year, but more often yields less than 30 mainly due to poor cultural practices [5]. In recent years, improvements in cultivation practices and breeding has produced coconut trees that can yield more [10].

Fruit: Botanically the coconut fruit is a drupe, not a true nut. Like other fruits it has three layers: exocarp, mesocarp and endocarp. The exocarp and mesocarp make up the *husk* of the coconut. Coconuts sold in the shops of non-tropical countries often have had the exocarp (outermost layer) removed. The mesocarp or "shell" thus exposed is the hardest part of the coconut and is composed of fibers called coir which have many traditional and commercial uses. The shell has three germination pores (stoma) or *eyes* that are clearly visible on its outside surface once the husk is removed.

A full-sized coconut weighs about 1.44 kilograms (3.2 lb). It takes around 6000 full-grown coconuts to produce a tonne of copra [11].

The Seed: The coconut palm like the oil palm is an economic tree that has a lot of value chain in which an individual or investors can invest into that can provide a profitable venture thereby increasing the GDP of an economy. Some of the more important and/or interesting components of the coconut tree that can generate income when explored include;

Nutmeat: This firm, white, rich stored food that lines the inside of the seed is very nutritious (one nut has as much protein as 1/4 lb. of beefsteak) and high in calories. In the United States over 72 million pounds are used each year in candies and confectioneries.

Coconut Oil (Copra Oil): Extracted from the dried nutmeat of mature seeds, this white, glycerin rich, semi-solid, lard-like fat is stable in air and remains bland and edible for several years. It is used in soaps, chocolate, candy, ice cream, in baking instead of lard, candles, dyeing cotton, ointments and hair dressings, tooth paste, paints, hydraulic fluids, lubricants, synthetic rubber, plastics and insecticides. While coconut possesses many health benefits due to its fibre and nutritional content, it's the oil that makes it a truly remarkable food and medicine. Once mistakenly believed to be unhealthy because of its high saturated fat content, it is now known that the fat in coconut oil is unique and different from most all other fats and possesses many health giving properties. Coconut oil has been described as "the healthiest oil on earth." That's quite a remarkable statement. What makes coconut oil so good? What makes it different from all other oils, especially other saturated fats? The difference is in the fat molecule. All fats and oils are composed of molecules called fatty acids. There are two methods of classifying fatty acids. The first is based on saturation. You have saturated fats, monounsaturated fats and polyunsaturated fats. Another system of classification is based on molecular size or length of the carbon chain within each fatty acid. Fatty acids consist of long chains of carbon atoms with hydrogen atoms attached. In this system you have short-chain fatty acids (SCFA), medium-chain fatty acids (MCFA) and long-chain fatty acids (LCFA). Coconut oil is composed predominately of medium-chain fatty acids (MCFA), also known as medium-chain triglycerides (MCT) [12]. The vast majority of fats and oils in our diets, whether they are saturated or unsaturated or come from animals or plants, are composed of long-chain fatty acids (LCFA). acids in coconut oil are predominately medium-chain fatty acids. Both the saturated and unsaturated fat found in meat, milk, eggs and plants (including most all vegetable oils) are composed of LCFA. [12] Apart from being good for the skin and hair of a person, coconut oil has been found to be beneficial in case of the following ailments; Stress Heart Diseases, High Cholesterol Levels, Too Much Weight, Kidney Problems, Poor Digestion, Low Metabolism, High Blood Pressure, Low Immunity, Dental Problems, Diabetes, Low Bone Density, Cancer, Premature Aging, Pancreatitis [13]. Some 98 to 100% of all the fatty acids consumed by are LCFA. The size of the fatty acid is extremely important. Why? Because our bodies respond to and metabolize each fatty acid differently depending on its size. So the physiological effects of MCFA in coconut oil are distinctly different from those of LCFA more commonly found in our foods. The saturated fatty MCFA are very different from LCFA. They do not have a negative effect on cholesterol and help to protect against heart disease. MCFA help to lower the risk of both atherosclerosis and heart disease. It is primarily due to the MCFA in coconut toil that makes it so special and so beneficial. There are only a very few good dietary sources of MCFA. By far the best sources are from coconut and palm kernel oils [12].

Coconut Water: This is the watery fluid contained within immature nuts. A 5-month old nut will yield about two glassfuls. It is clear, colorless and contains about two tablespoons of sugar along with vitamins and minerals. It is so pure and sterile that in World War II both American and Japanese doctors found that in emergencies they could use the coconut water in place of sterile glucose for I.V. solutions. In plant tissue culturing, coconut water was at one time routinely added to the growing medium because of its wide diversity of nutrients.The nutritional composition is followed; water 95.5%, Nitrogen 0.05%,phosphoric acid 0.56%, Potassium 0.25%, Calcium oxide 0.69%,magnesium oxide 0.59%, Iron 0.71%,Total solids 4.71%, Reducing sugars 0.80%, Total sugars 2.08% and Ash 0.62% [14]. Because it is a natural refreshing drink full of electrolytes that can also be considered free of fat and cholesterol, coconut water has been marketed as a sports drink. It has been suggested that while fine for most people who workout, it may be unsuitable for athletes undergoing more intensive training because of its relatively low carbohydrate and sodium content in relation to some commercial sports beverages. The roughly 2 grams of protein a serving provides is also less than the 15 to 17 grams or protein required to restore an adult after a hard workout. However, it has a high potassium content and contains antioxidants linked to a variety of health benefits [15] Cytokinins in coconut water may be among its most beneficial components [12].

Coconut Milk: This white liquid is squeezed from the nutmeat of the coconut seed. Rich in oils and various nutrients, it is used for sauces and prepared foods.

Flowers: Unopened flowers are surrounded by a sheath of modified leaves that resemble burlap. The sheath is used as a natural cloth for everything from shoes and caps to helmets for soldiers. If the flowers are bound together tightly to prevent their opening and then cut at the tips, sap will drip from the wounds at a rate of up to one gallon per day. The sugar-rich fluid can be boiled down to syrup that can be used much like maple syrup. If left standing, the fluid will ferment in a few days to yield an 8% alcohol drink. It can be distilled to yield pure alcohol, or left to eventually become vinegar.

Desiccated Coconut: This is a pure white crisp cake of coconut and it is made by removing the brown testa (seed coat) and the resultant white meat is shredded or disintegrated and dried at about 60-75°C to a moisture content of 2.5%. it usually has the fresh taste of coconut and could be used for the manufacturing of sweets, biscuits, cakes and cake fillings.

Fruit Husk: The fruit husk is composed of tightly packed fibers known as coir. If soaked in salt water, they separate and can be woven into a variety of items including rope, twine, mats, rugs, chair and cushion stuffing and bags. If ground up to a small particle size, it can be used in soil mixes for greenhouse plants.

Seed Shell: The inner seed shell is a hard, fine-grained material. The shells can be fashioned into cups, ladles, pots, eating utensils, buttons and rings. Used extensively as a fuel in the tropics, the shells burn essentially smoke free. When made into a fine charcoal, it has exceptional absorption properties and has been used in gas masks, submarine air purifying systems and in cigarette filters.

Leaves: The leaves are used whole for roofs and fences in the tropics. Thin leaf strips are used to weave clothing and furnishings, while the stiff midribs make cooking skewers, kindling and arrows. Bound together, the leaves can be fashioned into brooms and brushes; it can be used for thatched roofs used for covering homes, making basket, mask etc.

Coir Fibre: Coir fibres are extracted from the husks surrounding the coconut. In most areas coir is a by-product of copra production and the husks are left on the fields as a mulch or used as fertilizer because of high potash content. Where coir is extracted by traditional methods it can be used for the commercial production of a variety of products, including brushes and brooms, ropes and yarns for nets and bags and mats and padding for mattresses, stuffing cushion and chairs. Coir fibre is usually elastic, resistant to water and mechanical wear and as such, it is readily used in heat insulation and sound proofing.

Coir pith- As a by-product of coir fibre extraction large quantities of pith are obtained, which have been accumulating at production sites over the years. The extraction of 1 kg of fibre generates more than 2 kg of coir pith. Recently, however, the product has gained commercial interest as a substitute for peat moss in horticultural substrate cultivation. Low susceptibility to biodegradation and a highly porous structure enables coir pith to absorb large volumes of water (more than 50 per cent by weight), which makes it highly suitable in a potting mixture. For horticultural use, the product has to meet specific chemical and biological standards of pH, electrical conductivity and elemental composition.

Charcoal: A coconuts shell, which comprises 12 per cent of the weight of the coconut, could be utilized more efficiently. Commercial production of charcoal from the coconut shell provides for an increasingly important export market for cocos producing areas. Carbonization of one tonne of coconut shells produces of the order 300 kg of charcoal, which can be converted into 120 kg of activated carbon. The combustion of waste gases can be utilized to enhance the efficiency of the processes and to generate power. The market for activated carbon in filter materials, absorbents and similar uses could be increased substantially if controlled processing and product certification were available. An alternative domestic application for charcoal could be as fuel for cooking or for drying agricultural products (for example, copra and/or coir). It is a good raw material for the preparation of active carbon for gas absorption, bleaching and deodorisation. It can also be used as a refining agent. The stem: (Coconut wood) this is usually obtained from the trunk. Coconut wood is used as timber in building. Coconut wood has two advantages that can make it an interesting timber substitute for certain end-uses. It has low raw material cost and a green image being a plantation by-product. Thus there has been an increasing interest in this resource on the European and North American markets. However, due to the lack of a sustainable raw material supply, coconut wood has not established itself, as yet, on the international markets. Copra oil is one of the major products of importance from the coconut palm hence an

overview of how it is done is of importance. Copra drying; this is done traditionally by smoking or bare sun drying. Sun drying is the simplest and most popular method of copra drying. In this process, the cups are laid out in a yard with the open side turned towards the sun, after about two days of sun drying the kernel or meat gets detached from the shell and can easily be removed by means of a thin wooden lever. The detached meat is again dried for another 4 to 5 days. Though sun drying is the cheapest, it cannot be done during the raining season. In such cases, smoke drying with either direct heat or indirect heat is resorted to. In smoke drying, the cups are spread over a platform of wooden slates over a fire place and subjected to the heat of a slow fire produced by burning coconut shells for 4 to 5 days, the walls are made of bricks and mud and the roof can be thatched with palm leaves. Various types of improved kilns are available to produce high quality copra. Extraction of copra oil: on a domestic scale, coconut oil extraction involves wet processing of the fresh coconut meat. In this method the coconut kernel is grated and is pressed by hand or by using a simple press. The milky liquid produced is then strained through a cloth or filter, the liquid produced is known as coconut milk and is itself very palatable. On boiling the coconut milk, clean oil is separated. The residue can also be used as food. On a commercial scale, power driven rotary mills, expellers and hydraulic presses are used in the ascending order of efficiency (55% to 65%) and a scale of production.

Production Problems: The problems with coconut production in Nigeria are largely government induced rather than environmental. The challenges being faced by coconut producers are aggravated by inappropriate agricultural policies that have stifled agricultural potentials. Study of the coconut commodity chain in Nigeria shows that the sector is confronted with many constraints some of which include the inadequacy price of coconut and the competition with other oleaginous plants, an aging coconut plantation, the impact of the coconut lethal yellowing disease, shortage of rainfall and temperature, demand for nuts towards Nigerian markets and the weak instructional organisation. [16]. Other problems that hinders coconut production to at least meet local demand include land acquisition, infrastructure, finance and out of date production techniques [7]. Another problem that have affected coconut production and all other agricultural production is import tariffs that have put fertilizer out of reach of small scale producers thus leading to low yield and hard manual labour. The distribution and marketing of fertilizer is controlled by politicians who use it to amass wealth and patronage, in the end genuine farmers are left out [17].

Production and International Trade: *Cocos nucifera* is one of the most important sources of vegetable oil in the rural areas of the rain forest zones of West Africa and in the world generally. The bulk of coconuts produced are for home consumption and local trading. As at 2004 the annual coconut production value according to FAO was 195,000MT, then Nigeria was in the 20th position among the world's major coconut producing countries. By 2005 there was an increase in production from195,000MT to 209,000MT. In 2006 Nigeria moved to the 19th position in the world with an increased production value of 225,000MT i.e. 16000MT higher than the previous year. Then another increment by 500MT in 2007 bringing the total production value to 225500MT. In 2008 Nigeria's production value increased from 225500MT in 2007 to 234000MT [8]. As at 2008, Indonesia was the highest producer of coconut followed by Philippines and India with an annual production value of 19500000MT, 15319500MT and 10894000MT respectively [8]. In Africa, Tanzania is the highest producer of coconut and maintains the 11th position in the world, followed by Ghana and Mozambique producing568499MT, 316300MT and265000MT respectively. Nigeria is the 5th major producer of coconut in Africa. Nigeria produced a total of 1088500MT of coconut between 2004 and 2008. In recent years, china, USA, the Netherlands United Kingdom are the major importer of coconut and its product, while Philippines, Indonesia and Brazil are the major exporter of coconut and its product [8]. The economy of a number of countries is based on the coconut palm. Asia generates $^{5}/_{6}$ of total production. On the American continent Mexico has a moderate yield, while in Africa production is more limited [18]. This plant alone provides around $^{1}/_{5}$ of all the oils and fats on the market [19]. The production centres can be divided into four areas: (1) Southern Asia: the Philippines, Indonesia (Java), India, Srï Lanka, Malaya. (2) Central and South America: Mexico, Brazil, Florida, Jamaica, Honduras, Cuba. (3) Oceania: Fiji Islands, New Guinea, New Caledonia, Salomon Islands, Samòa. (4) Southern Africa: Mozambique, Tanzania, Madagascar. In 2009, world production was 54,716,444 tons of fruits [8]. The US alone annually imports 190 million pounds of coconut oil and more than 650 million pounds of copra [20-22]. Many countries rely on the coconut palm for their livelihood and increase in the GDP of their economy.

The Nutritional Importance of Coconut: Coconut is a fruit that is consumed in a number of forms - raw (flesh), milk, water and oil. Coconut is a simple dry nut, formed of a number of layers. The outermost is the brown husk, formed of fibers called coir, while the second one is endocarp i.e. an inner stone. As you remove the second layer, you get to the testa, which covers the white and fleshy edible part of fruit. Inside it is the coconut water, associated with a number of health benefits. Coconut water is mostly had from the green coconut, which is not fully ripe. Given below is information on nutritional value and nutrition benefits of coconut & coconut oil. The amount of nutrients in 100 gm of coconut meat contains Carbohydrates - 15.23 gm, Sugars - 6.23 gm, Dietary Fiber-9.0gm, Saturated Fat - 29.70 gm Monounsaturated Fat - 1.43 gm, Polyunsaturated Fat - 0.37 gm, Protein - 3.3 gm, Vitamin B6 - 0.054 mg,Thiamin (Vitamin B1) - 0.066 mg , Riboflavin (Vitamin B2) - 0.02 mg, Niacin (Vitamin B3) - 0.54 mg Pantothenic Acid (Vitamin B5) - 0.300 mg Folate (Vitamin B9) - 26 ìg,Vitamin C - 3.3 mg, Calcium - 14 mg Iron - 2.43 mg,Magnesium - 32 mg Phosphorus - 113 mg Potassium - 356 mg,Zinc - 1.1 mg Energy - 350 kcal (1480 kJ) Source: FAO [8].

Medical Properties of Coconunt: Coconut and its products are known to be helpful both in traditional medicine and in modern medicine.

Coconut in Traditional Medicine: People from many diverse cultures, languages, religions and races scattered around the globe have revered the coconut as a valuable source of both food and medicine [23]. Wherever the coconut palm grows the people have learned of its importance as an effective medicine. For thousands of years coconut products have held a respected and valuable place in local folk medicine. In traditional medicine around the world, coconut is used to treat a wide variety of health problems including the following: abscesses, asthma, baldness, bronchitis, bruises, burns, colds, constipation, cough, dropsy, dysentery, earache, fever, flu, gingivitis, gonorrhoea, irregular or painful menstruation, jaundice, kidney stones, lice, malnutrition, nausea, rashes, scabies, scurvy, skin infections, sore throat, swelling, syphilis, toothache, tuberculosis, tumours, typhoid, ulcers, upset stomach, weakness and wounds [23].

Coconut In Modern Medicine: Published studies in medical journals show that coconut, in one form or another may provide a wide range of health benefits. Modern medical science is now confirming the use of coconut in treating many of the following conditions. It kills viruses that cause influenza, herpes, measles, hepatitis C and other illnesses. It kills bacteria that cause ulcers, throat infections, urinary tract infections, gum disease and cavities, pneumonia and gonorrhoea and other diseases. It kills fungi and yeasts that cause candidiasis, ringworm, athlete's foot, thrush, diaper rashes and other infections. It expels or kills tapeworms, lice, giardia and other parasites. It provides a nutritional source of quick energy, boosts energy and endurance, enhancing physical and athletic performance, improves digestion and absorption of other nutrients including vitamins, minerals and amino acids. It improves insulin secretion and utilization of blood glucose, relieves stress on pancreas and enzyme systems of the body. It reduces symptoms associated with pancreatitis, helps to relieve symptoms and reduce health risks associated with diabetes. It reduces problems associated with mal absorption syndrome and cystic fibrosis. It has no harmful or discomforting side effects and is completely non-toxic to humans.

CONCLUSION

It is obvious that from the economic, nutritional and medicinal evidences of coconut palm deduced so far, that when the tree is given a special consideration, the economy of the entire country will receive a major boost from both the domestic and international market. This will then provide practical, market based incentives for the sustainable management and conservation of the coconut palm. The industry not only provides food, income and raw materials, it also provides employment for the growth of the nation. While the economic, nutritional, medicinal and other benefit is undoubtedly clear that there is need to guide the tree against destruction. For a tree not indigenous to Nigeria and being the 19th major producer in the world, prospects for sustainable economic profit for the citizens and the country as a whole on coconut products will remain uncertain if strategies are not developed through research to bring about technological progressiveness to boost the productivity of the farmers. The establishment of coconut plantations will not only add to the total economic GDP of the country but will invariably make a positive impact on the income of the citizens as well as the diets of the people thereby contributing to the standard of living of not only the farmers but the entire population. In other for the development of coconut product trade to result in

tangible improvement in sustainable management of the coconut resources in the country, partnership between rural producers, national policy makers, the private sector and international industry is inevitable and some portion of the benefit must be channel to better management of the coconut industry. Because of the usefulness of coconut there are several Philippines proverbs to demonstrate its usefulness;

> "*If you could count the stars, then you could count all the ways the coconut serves us.*"
> "*He who plants a coconut tree, plants vessels and clothing, food and drink, a habitation for himself and a heritage for his children*." [24]. In these areas the coconut is referred to as the tree of life.

Recommendations: The government should ensure along with the organized private sector the provision of standard markets and marketing facilities, stable market price, product certification and quality control should be ensure by the revived commodity marketing boards as this will not only provide employment but also alleviate poverty amongst farmers through the provision of substantial income to support their basic needs. The coconut palm is among the economic trees grown in the rain forest zone of Nigeria. The industry has the potentials of providing food, raw materials, income and employment to millions of Nigerians, the government should make these possible by giving credit facilities to farmers to boost their productivity and to meet up with both domestic consumption and export. Mechanized processing centres is needed for the application of new processing technique and should be provided by the organized private sector not only to ease the drudgery involved in the traditional method of processing but to boost production and ensure higher quality oil that will attract better prices from local and international markets. The improved materials available and the tested technologies should allow the boosting of the production sector and the reduction of the vulnerable conditions of household plantations affected or threatened by diseases. Concerning fertilizer, there is need to make fertilizer distribution process less political and farmer friendly. Efforts should be made by government extension agents to inform prospective farmers of the value chain of the coconut palm as there are several parts of the coconut palm that can be utilized both locally and internationally and if this information is acted upon there will be an increase in their incomes and in the GDP of the Nigerian economy.

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