REVIEW OF LITERATURE

The different aspects of cashew-nut have been covered by several scholars throughout the world under interdisciplinary umbrella. Cashew-nut is widely discussed in various research publications, which are related to the production, processing, and export of cashew-nut. But few studies discuss about international trade and its related problems considering globalization context.

Cashew nut shell (CNS) was utilized for carbonization in developed prototype kiln. Prototype kiln was evaluated with direct and indirect methods and characteristics of CNS and CNS char were determined by proximate and ultimate analysis. The maximum CNS temperatures obtained inside the kiln during direct and indirect method were recorded as 452.20°C and 458.80°C respectively. Maximum oil percentage, charcoal percentage and ash percentage in direct method were observed as 21.1 per cent, 21.04 per cent and 3.34 per cent respectively whereas 23.8 per cent, 18.3 per cent and 1.27 per cent in indirect method respectively. Hydrogen content in CNS was found about 6 to 7 per cent and nitrogen content in CNS was found about 0.70 to 0.75 per cent.

Ethanol has been known for a long time, being perhaps the oldest product obtained through traditional biotechnology. A study was taken up to evaluate the role of some fermentation parameters like substrate concentration, pH, temperature and inoculum concentration on ethanol production from cashew apple juice using immobilized yeast cells by Saccharomyces cerevisiae. This paper mainly focused on identifying the optimum conditions resulting revealed that the substrate concentration 10 per cent, pH 6.0, temperature 32.5°C and inoculum level of 8 percent (v/v) on 24 hours which gives maximum yield of ethanol 7.62 per cent respectively.

This paper attempts to study the current cost and return, average life span of profitability and important constraints of cashew production based on the sample survey on marginal farms in some villages of Midnapore district in West Bengal state. The study suggests that the net economic returns of cashew production are considerably high for the marginal farmers during the current year of study.

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 llanos 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.

The cashew apple is a tropical fruit, which is being wasted as manure after picking the nut attached in it. Understanding the presence of bioactive compounds and minerals in pseudo fruit will help in developing technologies for value addition of cashew apple. In the present study variation in minerals and bioactive compounds of cashew apple juice was investigated. Minerals like calcium (Ca), Magnesium (Mg), Copper (Cu), Potassium (K), Phosphorous (P), Iron (Fe), Sodium (Na), Zinc (Zn), and Salenium (Se) were analyzed by ICP-OES and bioactive compounds by GC-MS.

Dapoli is known for its reach natural resources of natural heritage. Dapoli is alsofamous for “Dapoli Agriculture University” Where research works about various cropsand fruits are going on. The cashew was introduced in India during 16th century mainly for checking soil erosion on the cast. Cashew industry has an important place in Indian economy. The area under cashew in India has been steadily increasing over the years. Cashew is an important fruit crop of the Konkan region of Maharashtra. This region is characterized by high rainfall ranging form 2500 to 4000 m.m annually received during June to October. The climate is warm and humid. Dapoli is situated in hilly areas, which is useful for cultivation of cashew; so many cashew nut processing units are situated in Dapoli.

The cashew crop (Anacardium occidentale L.) is of great economic and social importance for Northeast Brazil, a region usually affected by water and soil salinity. The present study was conducted in a greenhouse to evaluate the effects of four salinity levels established through electrical conductivity of irrigation water (ECw: 0.7, 1.4, 2.1 and 2.8 dS m-1, at 25oC), on growth and physiological indexes of five rootstocks of dwarf-precocious cashew varieties CCP06, CCP09, CCP1001, EMBRAPA50, and EMBRAPA51.

Cashew, Anacardium occidentale belongs to the family Anacardiaceae. Cashew is indigenous to South America and was introduced into Nigeria by Portuguese explorers in the 15th and 16th centuries (Ohler, 1967; 1979; Togun, 1977). In Nigeria, commercial plantations of cashew were developed simultaneously by the Eastern and Western Nigerian Development
Corporations at Oghe and Iwo/Eruwa respectively (Togun, 1977). From these locations, it’s planting spread to other parts of Nigeria (Olunloyo and Igboekwe, 1985).

Majority of the soil series in Goa state are coarse to medium textured and well–drained with poor water holding capacity. Crops like cashew, mango, arecanut, coconut etc. are predominantly occupying the steep slopes of lower coastal ghats and central undulating uplands of goa. In the steeply sloping regions of Goa, the cultivation of orchard crops without adopting proper soil and water conservation measures has resulted in siltation of drainage channels and small reservoirs.

Cashew is an immigrant tree from Eastern Brazil and now among the top three commercial crops of India. Cashew Nut Shell contains 25-34% oil which was not much used earlier. Commercial and industrial applications are being developed in the recent decade. This research work investigates cold pressed, straight Cashew Nut Shell Liquid (CNSL) as an alternative fuel for Internal Combustion Engine, which was not experimented earlier. CNSL can power the engines at cashew processing industries and surrounding places and has the cost saving advantage due to its much lesser price compared to diesel.

This review aims to show the research on the safe use of the cashew nut and its by-products in animal feed. They can replace corn and soy in animal diets. These investigations have involved chickens, rabbits, pigs, rats and cattle. Indeed, the cashew nuts and its by-products are rich in nutrients (carbohydrates, fats, minerals and proteins). They allow animals that eat them to make animal performances comparable to those obtained with corn and soybeans. The use of cashew nut and its by-products in livestock production is in addition to the nutritional, economic interest.

The cashew nut is 2 to 4 cm long and kindly shaped. The shell of the nut is about 0.3 cm thick, having a soft leathery outer skin and a thin hard inner skin. Between these skin is a soft honeycomb structure containing a viscous reddish – brown liquid known as Cashew Nut Shell Liquid (CNSL). It is a phenolic material having an irritating action on the human skin and gives natural protection against insects for the white cashew kernel. The shell forms about 60% to 70% of the raw cashew nut and CSNL is present to the extent of about 25% to 30% in the shell. CSNL is a versatile industrial raw material with a wide range of useful commercial applications.

This study was conducted in Annamalai University, Faculty of Engineering and Technology, Department of Technology, India during 2009 to optimize the process variables in
the production of ethanol from cashew apple juice using Saccharomyces cerevisiae. Bioethanol is an important renewable energy resource; it is an attractive, sustainable energy source to fuel additives (has higher octane number and higher heat of vaporization).

A study was carried out on the utilization of cashew kernel meals (CKM) in the nutritional enrichment of biscuit. The biscuits were prepared from blends of soft wheat flour (SWF) and cashew kernel meals (CKM). The different ratios of SWF to CKM used were (A) 100:0, (B) 90:10, (C) 85:15, (D) 75:25 and (E) 50:50 respectively. The digestive biscuit (DB) bought at the open market served as reference sample. The different biscuits produced were nutritionally analyzed.

There are many kinds of coated paper made in the world today. But pigment coated paper for printing is by far the most common to provide the printer with a sheet of superior surface for printing. It provides enhanced smoothness, better ink receptivity, higher whiteness, better printability and better gloss. The field of paper coating has grown in leaps and bounds over the last few decades simply because of the growth in demand for quality products that could withstand the printing operation.

Cashew nut tree, Anacardium occidentale L. is a medium size tree belonging to the family Anacardiaceae (Woodroof, 1979). The nut (a fruit seed enclosed in a woody covering - the pericarp) is attached to the end of the fruit of cashew tree (Ranken and Kill, 1993). The cashew nut has within itself a whole kernel, a membrane and a thick covering shell which effectively protect the kernel from the ravage of nature from time of harvesting to processing. In Nigeria, cashew nut tree ranked among the tree crops like cocoa, rubber, kola and coffee that have great cultivation potentials (RMRDC, 2004).

Africa is endowed with multi-variant climate and soil conditions and about 70% of their population depend on agriculture for survival (James, C. McCann (1978). Agricultural by-products in the tropics are as abundant as there are wide arrays of plants and fruits. Majority of such crop residue and by-products were formally not reckoned with and are hence discarded either on farms as waste or as by-products from most agro-based industries.

Cashew nut butter recipe of 70, 80 and 90% cashew kernel inclusion was formulated and produced nutritional composition of the 3 cashew nut butter and a commercial peanut butter was determined in item of nutrient composition. The nutritional composition of the cashew nut butter
increased with the increased inclusion of cashew kernel in the recipe. The protein content of cashew nut butter compared favorably with that of commercial peanut butter.

Cashew production in Tanzania has made a remarkable recovery since the near collapse of the 1980s. Marketed production rose to 121,207 tons in 1999/00, from a low of 29,868 tons in 1990/91. Export earnings from raw cashew nuts rose from less than $4 million in 1990 to $107 million in 1998 (figure 1). This recovery has been credited to the economic reforms begun in 1986, especially trade liberalization and exchange rate adjustments, and to the sector reforms begun in the mid-1990s, which eliminated the monopoly of the Cashew Nut Marketing Board (World Bank OED 1998).

The different unit operations involved in small scale cashew nut processing mill in the context of Konkan region of Maharashtra, India (70_170 to 74_310E Longitude 15_370 to 20_200N Latitude) was elucidated by conducting the randomized sample survey of registered 122 small scale cashew processing mills in the region. The survey covered the unit operations performed, level and pattern of energy consumption and technologies in use for cashew nut processing.

This study examines the performance of cashew nut industry in southern Tanzania under the current policies of market liberalization. It looks at the activities in the crop output market. Since the inception of liberalization to the cashew sector in Tanzania, stake holder are expressing divergent views as to how the markets for both inputs and output have performed. The specific objective of the study were to assess production performance of cashew nuts after liberalization.

The globalization has provided dual impact as one is with inculcating number of opportunities to various countries but another is with throwing challenges before developing countries as well as underdeveloped countries. The globalization has made an impact on the trade of different agricultural commodities like cashew. The cashew trade has an important contribution in India’s international trade. India is major player in the international cashew market.

Due to increased area and production of cashew in the Konkan region, cashew nut processing industry has gained much importance. Looking to the employment and income generation potential of the industry, many cashew nut processing units of different capacities have been established in the region. Some of them are functioning successfully, while some are
sick. The reasons thereof need to be understood. Besides, there are few questions that need to be answered, What is socio-economic condition of the cashew nut processors?,

Cashew is an important horticultural crop, has gained status of commercial crop from that of a forest component through technological advancements with respect to propagation, production and management. This has been possible as a result of increasing demand for raw cashew nuts and enhanced interest for its commercialization. It is being cultivated by as many as 28 countries in Asia, Africa and Latin America. In India, it is cultivated in an area of 8.54 lakh ha with a production of 6.20 lakh tonnes and productivity of 820 kg/ha (2006-07). The cashew cultivation in the country mainly confines to the peninsular region. It is grown in Kerala, Karnataka, Maharashtra and Goa along the West Coast, whereas in Tamil Nadu, Andhra Pradesh, Orissa, West Bengal along the East Coast region.

Chavan et al, (2009), the paper entitled “Prospects of Farm Processing in Cashew”, studied how the farm processing unit is useful for farmers to get more benefit. The farm processing units eliminate the intermediaries between the farmers & Processors. It is mentioned how much cost is required for the home scale machinery. It discussed the performance of household level cashew processing units against large scale cashew processing units in Sindudurg districts of Maharashtra.

The steaming of raw cashew seeds prior to shelling is adopted widely in small-scale cashew nut processing mills with the help of baby boiler. The wide variations in energy intensity of these mills reveal the scope for energy conservation. The baby boiler coupled with cooker commonly used for steaming of raw seeds was evaluated. The variation in steam pressure, temperature and operating time with respect to fuel was observed along with thermal efficiency of a boiler. The energy intensity to produce the steam using different fuel sources determined.

Cashew apple is considered as a waste in cashew nut processing industry. An undistilled alcoholic beverage (wine) was prepared by fermenting cashew apple juice with wine yeast, Saccharomyces cerevisiae var. bayanus. The wine was slightly yellowish, acidic in taste (titratable acidity [1.21 ± 0.0 g tartaric acid/100 mL]), high in tannin (1.9 ± 0.22 mg/100 mL) and low in alcohol (7%) concentration. Although sensory evaluation rated the cashew apple wine as quite acceptable as an alcoholic beverage, significant differences (P _ 0.01) exist between the cashew wine and the commercial grape wine particularly in taste, aroma, flavor and aftertaste because of probably high tannin content in the cashew wine.
India is largest producer, processor, exporter and second largest consumer of cashew in the world with annual production of 6,20,000 MT (Anon 2007). India processed about 1.18 million MT of raw cashew seeds through 3650 cashew processing industries scattered in many states of country provided employment to over 0.5 million people, 95% of these are women (Nair, 1995). The cashew industries in India employed different unit operations/ methodology for processing depend on variety of raw material, location, technological mechanization and availability of secured energy supply.

Cashew (Anacardium Occidentale L.) is one of the important tropical crops. India processed about 11,80,000 metric tons of raw cashew nut seeds through 3650 cashew processing industries scattered in many states of country. The cashew nut processing industries are typically located in the rural and backward areas. The most significant difficulty in processing cashew nuts is that the hard outer shell, which contains the edible kernel, contains a caustic oil which can burn the skin and produce noxious fumes when heated. More recently, smaller scale factories use the steaming and cutting method.

This paper explores the global financial crisis responses within the agriculture sector in Tanzania in the Sub Saharan Africa and Vietnam in South East Asia. Vietnam and Tanzania as many other export dependent economies were also affected by the economic crisis. A case study of cashew industry is adopted to understand the responses undertaken by both countries. This paper aims to look at the different macroeconomic variables and monetary policies responses that were adopted in Tanzania and Vietnam to arrest tightening of credit and decline in international trade. Stimulus packages to assist the productive sectors were invoked. In Tanzania the raw cashew nut is traded through the warehouse receipt system.

by the Portuguese explorers during the 15\textsuperscript{th} and 16\textsuperscript{th} century (Olher, 1967). In early 1950’s cashew was on large scale production with the establishment of commercial plantation of about 8,000 hectares at Oghe, in Anambra state and Mbala in Imo state while about 824 hectares were also established in Oyo state (Oluinloyo 1996). In Nigeria, cashew produce had been exported for foreign currency which had been depressed due to the advent of oil boom in the 70s and 80s (Raw materials and Development council, 200) in 1994, cashew nut accounted for N743m (U.S$7.43m) in 1995 (Central Bank of Nigeria Annual Report, 1997).

Cashew is familiar in most households of several countries of the world today because of its delicious, pleasant taste and nutritive value. Botanically, it is Anacardium occidentale L.,
belonging to family Anacardiaceae. The production of cashew nut is very low as compared to its increasing demand in India as well as in Maharashtra. There are many constraints attributed to low yield. The attack by insect pests is one of them. About 151 insect pests have been reported to inflict damage to cashew during different stages of its growth. The thrips are one of the most destructive pests of cashew. Present Investigation during PG studies at Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, (Agricultural University) Dapoli, Dist. Ratnagiri (M.S.) during 1999-00 revealed that four species of thrips occurred on cashew in the Konkan region.

Temporal dynamics of water fluxes and relative contributions from stand components were examined in a young, widely spaced, cashew orchard in Ghana. Using cross correlation and a simple functional technique, time lags between tree xylem flow and evapotranspiration were estimated. Similarly, lags between both fluxes and atmospheric variables (incoming solar radiation and vapor pressure deficit) were determined.

The cashew plant, Anacardium occidentale L, is a small to medium sized tree belonging to the family Anacardiaceae (Cobley and Steele, 1976). The fruit is a kidney-shaped achene about 3 cm long with a hard greygreen pericarp. The seeds are the source of cashew nuts and they are normally removed from the pericarp after the fruits are roasted, a process which burns off shell oil and cooks the seeds. Worldwide, cashew nuts are an esteemed and highly priced food delicacy because of their pleasant taste and flavour.

Cashew is commercially grown in the tropics and extensively spread in the sea-coasts, adapting to a wide range of soil and climatic conditions, with a temperature range between 25 to 30 C. Once established, the plants become drought-resistant; but depend upon uniform rainfall distribution for about five months and then demanding light over its entire foliage during flush and fruiting season to give a satisfactory yield. Cashew, being a highly cross-pollinated crop, produces heterogenous plants when sexually propagated by seeds; resulted in non-uniform in growth, low yielding ability with poor nut character and hence vegetative (asexual) propagation from the elite mother plant is advocated to produce a 'true to type' plant which starts bearing early with good quality produce.

The cashew tree, Anacardium occidentale L, is a botanical species native of eastern Brazil and was introduced into other tropical countries such as India, Africa, Indonesia and South East Asia in the 16th century. The true fruit of cashew is the nut, a kidney shaped structure of approximately 2-3 cm in length which is attached to the end of a fleshy bulb, generally called the
cashew apple. The shell comprises some 50% of the weight of the raw nut, the kernel represents 25% and the remaining 25% consists of the natural cashew nut shell liquid.

The cashew (Anacardium occidentale), belongs to the Anacardiaceae family, which is composed of some 60 to 74 genera and 400 to 600 species. This family is characterized by resinous conduits in the cortex and wood, where resin is produced, although exudation also occurs from the leaves, flowers and fruits. The discussion of cashew's origin involves circumstantial evidence, such as that based on the oldest bibliographic references, geographic distribution, ecological behavior, variation patterns of the species, and human usage, among others. In the literature, however, there is no clear distinction between the natural and cultivated dispersion of the plant. Even though the Amazon and the Cerrados of central Brazil are centers of dispersion for the Anacardium genus (Mitchel and Mori 1987), the greatest diversity of the species with economical potential exists in the northeast of Brazil.

Cashew nut was brought to India primarily as a soil conservation crop. Slowly India realized the commercial relevance of the nut and emerged as the largest producer of cashew. India plays a major role in the international trade on cashew nuts and kernels. Orissa holds a strong position in the cashew economy of the country by accounting for nearly 14 per cent of the area as well as production of cashew nuts in the country. The cashew sector has immense potential for income and employment generation in rural and tribal India. Cashew plantations have been used an instrument to reduce poverty by distributing cashew plantations among the poor households.

This paper identified entrepreneurial competencies required by Secondary School graduates for processing cashew nuts to kernel for poverty reduction in Enugu State. This study is significant to the secondary school graduates, their parents, skill acquisition centres, Enugu State Government and future researchers. Three research questions and three hypotheses guided the study. The study adopted a survey research design. It was carried out in Enugu State. The population for the study was 134 made up of 102 female teachers of agriculture and 32 traditional women cashew nut processors. The entire population was involved for the study. Questionnaire was use for data collection. The internal consistency of the instrument was 0.81. The data was analyzed using the mean, standard deviation and t-test. The findings include, among others, the total of 27 competencies. Recommendations were made.
Cashew apple or Cashew pseudo fruits (Anacardium occidentale L.) are rich source of vitamin C, organic acids, antioxidants minerals and carbohydrates. As these fruits contains many medicinal properties and have long been used in traditional medicine for the treatment of many diseases. In this study, variation in the physicochemical properties such as juice volume, residue wet weight, pH, protein, reducing sugars, total sugars and sugar identification of two varieties of cashew apple (red and yellow) collected from 5 agro fields of Katchiperumal village, Ariyalur District were investigated.