

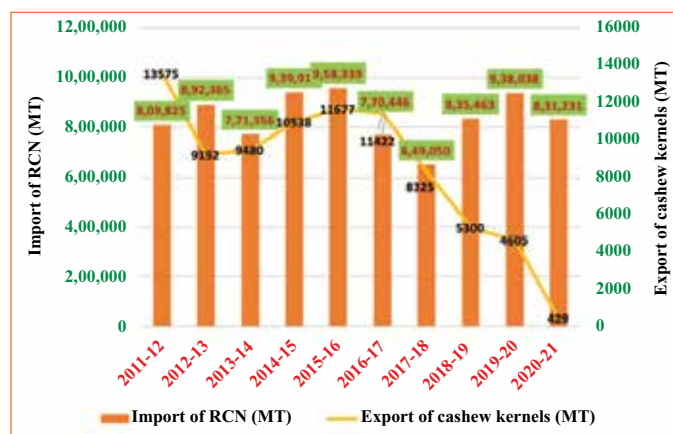
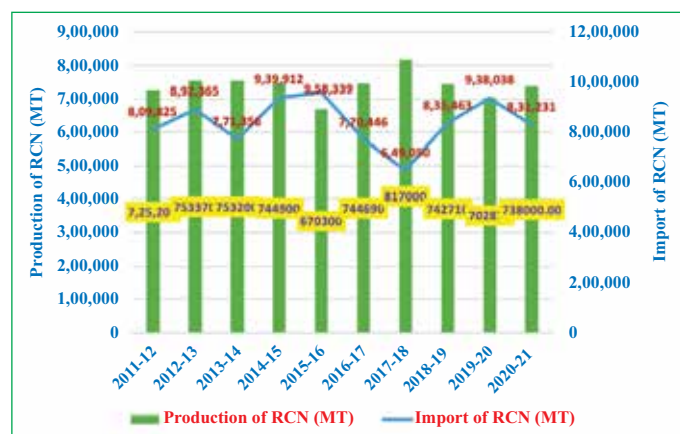
Cracking the tough nut in India: The way forward

Cashew (*Anacardium occidentale* L.) is an important commercial crop providing employment to more than 10 lakh people in India. Cashew was introduced in the country by the Portuguese in sixteenth century for controlling soil erosion, and it was found suitable for restoring degraded lands. However, India began processing the cashew nuts, giving the crop a commercial orientation. The crop has immense economic potential and there is a need to boost raw cashewnut (RCN) production to meet the growing demand for cashew kernels in the domestic and world market. Technological adoption and institutional support are important in bringing more area under cashew. The rapid and significant increase in non-traditional areas is an unexpected but welcome opportunity to revive the cashew economy of the country. However, it warrants a multi-pronged approach to strengthen the cashew value chain for the sustained growth of the sector.

INDIA was the first country to commercialize cashew as a horticulture crop, and since then, cashew is of immense importance to the Indian economy. The cashew industry employs more than 10 lakh people and the production mainly takes place on small landholdings highlighting the role of crop in poverty reduction. India exported 65,808 MT of cashew kernels worth US\$ 339 million in 2023-24. Popularly known as the poor man's crop, it is one of the most valuable processed nut traded in the global and domestic market (International Nut and Dried Fruit Council Foundation, 2020). The country has been a premier exporter of cashew nuts for long, however, neither the kernels nor the fruit has received the attention it deserves.

Cashew is no longer a crop limited to coastal areas of our country. It is rapidly spreading across the plains of different states with suitable climatic and edaphic

conditions. Cashew has become the farmers' choice in plains of states like Karnataka, Chhattisgarh, Andhra Pradesh, Maharashtra, Jharkhand, Odisha and Tamil Nadu due to the ease of growing cashew nut trees, the erratic rainfall and price volatility of other crops. The crop has immense economic potential and there is a need to boost raw cashewnut (RCN) production to meet the growing demand for cashew kernels in the domestic and world market. The cashew processing industries require 1.5 million tonnes of raw cashewnuts to function to their full capacity, however, only half of its demand is met by current production and the country relies on imported RCN. There is a decline in export of processed kernels compared to import of RCN due to the increased demand in the domestic market. The Government has made efforts to expand the area under cashew through various schemes such as the Mission for Integrated



Trend in production and import of raw cashew nuts (RCN) in India



Cashew plantation

Development of Horticulture (MIDH) and *Rashtriya Krishi Vikas Yojana* (RKVY). The rapid and significant increase in non-traditional areas is an unexpected but welcome opportunity to revive the cashew economy of the country. However, it warrants a multi-pronged approach to strengthen the cashew value chain for the sustained growth of the sector. This requires a clear retrospection into the experiences with the traditional areas and tackling the possible challenges ahead with sound interventions.

Adoption of high yielding varieties and scientific management practices

Technological adoption and institutional support are important in bringing more area under cashew. For years, the cashew tree has carried a perception baggage of a maintenance-free crop, resulting in lower yields from the

Table 1. Recommended cashew varieties for different cashew growing states in India

State	Recommended cashew varieties
Karnataka	Bhaskara, Ullal-1, Ullal-3, Vengurla-4, Vengurla-7, Nethra Ganga, Nethra Jumbo-1, Nethra Jumbo-2, Nethra Ubhaya
Kerala	Madakkathara -1, Amrutha, Dhana, Priyanka, Sulabha, Kanaka
Tamil Nadu	VRI (Cw) 5, VRI-3
Andhra Pradesh	BPP-8, Vengurla-4, BPP-9
Goa	Goa-1, Vengurla-4, Vengurla-7
Maharashtra	Vengurla-4, Vengurla-7, Vengurla-9
Gujarat	Vengurla-4
Chattisgarh	Vengurla-4
Odisha	Dhana, BPP-8, Vengurla-4, Jagannath, Balabhadra
West Bengal	BPP-8, Bidhan Jhargram-2
Jharkhand	Vengurla-4, BPP-8
North east region	Vengurla-4, Ullal-3

Source: Compiled information from AICRP centres.

cashew orchards. Farmers still lack information on high-yielding cashew varieties and it is important they adopt recommended packages of practice for better returns from the crop. Some of the popular cashew varieties in different

Table 2. Particulars of equipments used in various operations of cashew farming

Name of the unit operation	Equipment used	Description
Land preparation	M.B. plough	No. of bottoms: 2 - 4 Capacity (ha/day): 1.5-2.0 Power requirement (hp/kW): 30-40 /22.5-30, tractor
	Tyne type cultivator	Number of tynes: 7 - 11 Capacity (ha/h): 0.22-0.30 Power requirement (hp/kW): 25-60/18.75- 45, tractor
	Rotavator	Working width (mm): 1,200-1,720 Rotor speed (rpm): 210-240 Capacity (ha/hr): 0.38-0.5 Power source (hp/kW): 35-65 hp tractor (depending upon size)
Planting	Post hole digger	Auger diameter (mm): 250-450 Capacity (pits/h): 90 Power requirement (hp/kW): 35/26.5, tractor
Weeding	Self-propelled power weeder	Field capacity (ha/h): 0.18-0.25 Power source (hp/kW): 5-8/4.5-6.0, engine
Pruning	Shears pruners	-
	Tree pruners	The machine can prune trees of height 20 ft The machine is mounted to tractor and gets drive from hydraulic system Hydraulic motor 15 KW It can be attached to any tractor of size 40 hp and above
Pesticide application	Knapsack sprayer	Tank capacity (L): 9-22.5 Nozzle type: Hollow cone Capacity (ha/day): 0.7-1.0
	Aero blast sprayer	Spray swath (m): 13-15 Capacity (ha/h): 1.5-2 Power source (hp/kW): 35/26.25, tractor
Harvesting	Battery operated telescopic cashew fruit harvester	The overall length of the harvester is 18 ft. and weighs 2.79 kg. Harvesting capacity: 44 kg/h

Source: Compiled by the authors.

Table 3. Particulars and cost of machineries used for on-farm cashew nut processing

Name of the Machinery	Description	Approx. cost (₹)
Steam boiler	Capacity – 100 kg RCN/Batch Boiler pressure capacity - upto 12 Bar	60,000
Mechanised cashew shelling machine	Number of cutters - 2 Capacity – 22 to 28 kg/h Power required – 0.5 hp	90,000
Manual shelling machine	Capacity – Upto 10 kg/h	9,000
Cashew kernel dryer	Electric dryer (Capacity 60 kg/batch)	80,000
Grading table		10,000
Hand operated impulse sealing machine		2,000
Total cost		25,1000

Source: Compiled by the authors.

cashew growing states are given in Table 1. Efforts are made at the Directorate to supply quality cashew grafts through various schemes such as Tribal Sub Plan (TSP), Scheduled Caste Sub Plan (SCSP) and under NEH scheme. Grafts of varieties suitable to different regions are also supplied through the nurseries of 14 AICRP centres on Cashew and DCCD accredited private nurseries for area expansion in traditional and non-traditional areas. The cashew tree is expected to yield upto 25 kg of raw cashewnuts from 10th year of planting if managed well.

Mechanisation in cashew cultivation

Traditionally, cashew cultivation has mostly been done manually, especially on small farms. Planting, weeding, pruning, and applying fertilizers and pesticides are all routine procedures that are generally done manually. Cashewnuts are collected by hand, which is labour-intensive. Mechanization aims to improve efficiency, lower labour costs, and boost productivity. With labour becoming a costly affair in a majority of the states, technological interventions are required and key areas where mechanization can be implemented in cashew farming are given in Table 2. The details of the machineries used for raw cashew nut processing along with their approximate cost is given in Table 3.

Processing of raw cashewnuts

After harvest, the raw cashewnuts should be dried under sun for 2-3 days to reduce its moisture to safe levels (< 8%). Drying is assessed by rubbing raw cashewnuts between the palms of hand and sensing metallic sound indicates the end point, although it is not scientific approach. Processing of raw cashewnut involves grading of raw nuts, steam boiling, de-shelling, peeling, grading and packaging.

Handholding of subsidiary enterprises can also create more job opportunities in the cashew sector. With the cashew plantations slowly flourishing, subsidiary enterprises have also sprouted in these pockets. People have established nurseries to meet the growing demand for planting material. Apiary and value addition of cashew apple and cashew sprouts are two avenues that need to be explored.



Artificial nests for native stem nesting bees

Apiary

Apiary can be encouraged in cashew orchards as the benefits are two-fold. It increases the fruit set resulting in better yield and at the same time, farmers can sell honey and other bee products like bee wax, propolis, royal jelly etc. which further augments their income. Besides, several native bees pollinate cashew flowers leading to better quality fruits. Thus, artificial bee nests can be installed, for native bees like stem nesting bees which provide efficient ecosystem services. Conservation of these bees with local flora should be encouraged for sustained production.

Value addition of cashew apple and cashew sprouts

Large volumes of cashew apples are going waste, except in Goa where it is profitably used for the preparation of feni, an alcoholic beverage. Cashew apple processing provides a great opportunity in terms of value creation, employment and revenue generation. ICAR-Directorate of Cashew Research has developed and commercialized some cashew apple based value added products such as Cashew apple Jam, Jelly, Cashlime, Cider, Cashew apple crisp, Cashew apple pomace powder cookies and Cashew apple fruit bar. With much research in the pipeline, efforts are needed to mainstream cashew apple-based products into niche markets. There is also scope for cashew sprouts and its value addition considering the nutritional value and less processing required. Cashew sprouts are rich in amino acids, phenols, flavonoids, total antioxidants and in minerals such as calcium, iron, manganese, zinc and copper, compared to cashew kernels. It is important to



Cashew apple based products developed at ICAR-DCR

popularize these products and help farmers and processors to find a market.

Way forward

Farmers is the key group in the value chain and their commitment to increase production is crucial. A farmer cultivating cashew often faces difficulties in marketing, and with majority of cashew farmers being small and marginal exacerbates the situation. Middlemen operating

in the cashew value chains often exploit the farmers by not paying a fair price for the produce. On one hand, we have the processors in dire straits due to a shortage of raw cashew nuts and on the other, we have farmers not receiving remunerative prices for their produce. Given the gravity of the situation, institutional innovations such as farmer-producer organizations can facilitate easy access to markets and help increase the bargaining power of farmers. Inputs can also be provided to farmers at subsidized rates through such collectives. Cluster-based processing units are an alternative to the existing middlemen operating and processor operating marketing channels where farmers can turn entrepreneurs by collectively processing their raw cashew nuts and fetching higher price.

The growing impetus for cashew cultivation in non-traditional areas looks promising, when farmers in traditional areas are shifting to more lucrative crops. It therefore becomes important to adopt sound interventions and promote effective partnerships between the various stakeholders in the cashew value chains. Research institutions, development agencies and line departments need to be roped in for technology backstopping through the capacity development of farmers, providing timely and need-based advisories and extending financial assistance for the initial establishment of cashew orchards. A multi-faceted approach prioritizing the opportunities and constraints is required to make significant progress towards reviving the lost glory of the Indian cashew industry.

For further interaction, please write to:

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Profitable Nursery through “Mini-Shade Net”

Shri M. Sankara Rao is a marginal farmer, belonging to a remote village of Naiduvalasa of Rambadrapuram Mandal of Vizianagaram district in Andhra Pradesh. He is an ex-trainee of KVK, Vizianagaram. Having gained knowledge and skill in nursery, he established nursery unit with “*mini-shade net*” under the technical guidance of KVK faculty. He raised seedlings of different vegetables and papaya under *mini-shade net* (60 sq m) and produced high quality virus-free papaya seedlings (2,500) and vegetables seedlings, viz. Tomato (5,000), Brinjal (5,000), Chilli (5,000) during May 2021 to October 2021, with which, he received a net income of ₹ 25,700. Farmers from the neighbouring villages got attracted with the benefits gained by protected shade-net nursery production; and accordingly, approached KVK, Vizianagaram for further guidance to adopt the technology.



A view of nursery unit of Shri M. Sankara Rao with mini-shade net

Source: ICAR Annual Report 2022-23