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INDIAN SPICE NEWS

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Minister Urges Rating System for Spices Production Units Based on GMPs.

Shri Piyush Goyal, Hon'ble Minister for Commerce and Industry; Consumer Affairs, Food & Public Distribution, and Textiles, Government of India interacted with the stakeholders of the Indian spices sector on 06th June 2022 in a meeting organised at Spices Board Headquarters in Kochi, Kerala.

Hon'ble Minister Shri Piyush Goyal addressing the gathering

The Minister's interaction with the stakeholders focused on the concerns of the spices sector and ways to overcome the challenges to double the exports in the next couple of years. Referring to the theory of comparative advantage, he urged the exporters to take advantage of competitive products in the spices export basket to further augment the growth that the spices sector has been achieving since the last decade. "Many of the Indian spices have specific niche markets due to their unique qualities, especially the GI-tagged varieties. The emerging opportunities through Free Trade Agreements (FTAs) can also be realized for the advantage of the spices sector", the Minister added.

The Minister, while interacting with the stakeholders, urged the Indian spice industry to move towards organic and natural farming methods. " We must be willing to work with the world; the world is changing, it is moving fast and we have to move with the world" the Minister stressed.

Indian spices achieved a historic growth in production and exports during 2014-22. The latest statistics shows that spices worth USD 4.1 Bn was exported from India in 2021-22 to more than 180 countries registering a strident growth of 87% in volume and 123% in value (₹) and 81% in value (USD) during the exports between the period 2014-22. The spices export sector of India registered a CAGR of 8.16% in volume, 10.52% in value (₹) and 7.69% in value (USD) since 2013-14. Spices export contributes 9% to the country's total agri-export basket and over 40% of total horticultural exports.

While addressing the concerns raised by the industry representatives, the Minister prompted Spices Board to introduce a rating system for production units based on good manufacturing practices, good hygienic practices, and various components of total quality management practices adopted by them for each product line, in an exercise to build the Brand India reputation globally. He also suggested to explore the possibilities of developing a single window system to avoid the dichotomy that exists in mandatory analysis and certification of different products for various destinations. "This single interface which will integrate the certification procedures of different agencies would save a lot of time and resources further adding to ease of doing business", the Minister opined.

Shri A.G. Thankhappan, Chairman Spices Board and Shri D. Sathiyan IFS, Secretary, Spices Board presenting momento to Shri Piyush Goyal

The Minister offered necessary support from the Ministry in addressing the SPS/ TBT concerns that the sector is worried about. Referring to the stringent residue limits imposed by the buying countries, the Minister asked the spice industry to continue working with the Ministry of Agriculture to develop package of practices, that prescribes the use of natural bio-pesticides for the cultivation of spices, in line with the Integrated Pest Management and Organic Farming Practices. "The faster we adopt it, the better" the Minister remarked on the adoption of sustainable cultivation practices. "The world is moving towards food safety and quality compliant products, therefore, the farmer community must explore the potential of natural farming methods" the Minister added. He encouraged the spice community to continue maintaining the highest standards in production, processing, and value addition, so as to make Indian brand of spices shine globally, which he assured will help the spice growers across India in better price realization and also asked the spice exporters to strive to maintain the comparative advantage to sustain the growth in spices sector.

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Chairman, Secretary, Directors of Spices Board and stakeholders attending the interactive session with the Hon'ble Minister.

Shri D. Sathiyan IFS, Secretary, Spices Board welcomed the Hon'ble Minister and other dignitaries to the event and made a presentation on the functions and activities of Spices Board. Around 30 stakeholders, including representatives of spices exporters, associations, farmer producer organisations, exporters, and farmers, attended the interactive session and presented before the Minister the concerns and challenges affecting the industry.

Director's Message

Quality and Safety in Spices

Dr A. B. Rema Shree
Director (Research)
Spices Board

India is renowned as the land of spices. A variety of spices are produced across India owing to the diverse geoclimatic conditions prevailing in various parts of the country. India is the world's largest producer, consumer and exporter of spices. The consumption of spices has been growing steadily across the world over the years, and this is reflected in the continuous increase in global spice trade.

In tandem with this flourishing global spice trade, there has been increasing concerns about food quality and safety among consumers across the globe. Many importing countries have implemented increasingly stringent quality and safety regulations in food trade. Thus, future focus of global markets for spices will undoubtedly be on safety. From the Indian perspective, compliance with global food safety, quality and sustainability standards are important to preserve India's leading and long-standing position in the world spice trade.

Quality of Spices

Spices are dried parts of plants which are used in small quantities to impart flavour, colour and aroma to food. In spices, quality can generally be taken to mean cleanliness with high-value of intrinsic parameters.

The intrinsic quality parameters vary for different spices. In chillies, the colouring carotenoid content and the capsaicinoid content which give them the pungency determines the quality. Likewise, the main quality parameter in turmeric is its colouring pigment, viz. curcumin; in cardamom, it is the aromatic and flavouring essential oil; in black pepper, it is the main pungent factor piperine, and so on. Other general parameters that determine the quality of spices are moisture content, cleanliness parameters like, extraneous matter, filth, excreta, insect fragments, etc.

Many factors affect the quality of spices. Right from the initial stages of production to the time till the produce reaches the consumer, there are many unfavourable circumstances that have to be addressed. Pests which infest the farmland, microorganisms which infect the produce, incidence of foreign matters, poisonous substances or impurities which get into products from materials used in processing or through unhygienic practices of the people who handle the produce are all critical considerations.

Food Safety in Spices

Food safety can be defined as the absence or acceptable and safe levels of contaminants, adulterants, naturally occurring toxins or any other substance in food that may make food injurious to health on an acute or chronic basis.

All countries give top priority to the health of their citizens. The import laws with respect to items of food are meant to keep out of bounds inferior quality and contaminated food materials from reaching markets. Spices are recognized as high-value products and are sometimes adulterated like other agricultural commodities, which can pose a serious health risk and economic damage.

Important safety concerns in spices are contamination due to mycotoxins, synthetic dyes, microbial load and presence of pathogens, pesticide residues, allergens, etc.

Quality Standards and Regulations

The quality standards generally lay down minimum requirements for general and intrinsic quality parameters, and also define grades based on quality.

Developed countries are the major markets for spices. The USA, Japan, Canada, Australia and the European countries have their own stringent food laws and regulations, with the objective to protect the health and safety of their citizens. In India, the national reference standard is the regulations implemented by the Food Safety and Standards Authority of India (FSSAI). Worldwide reference standards like Codex standards, ISO, IPC standards etc. are also available in spices. The American Spice Trade Association's (ASTA) cleanliness specifications and European Spice Association (ESA) Quality Minima are some of the widely accepted private quality standards.

Quality and Safety Monitoring of Spices

Spices Board India is mandated with the regulation of spice exports and worldwide promotion of Indian spices, and has been undertaking mandatory inspection of spice export consignments for selected quality and safety parameters since 2003.

The growing concerns about food quality and safety among consumers have increased the need for food authentication. Therefore, rapid, precise, accurate and up-to-date sophisticated analytical methods are the prerequisite to detect adulteration in spices. Spices Board has nine state-of-the-art Quality Evaluation Laboratories (QELs) across India, mandated to carry out the analyses pertaining to the Board's mandatory inspection of spice export consignments.

Over the two decades, with the steady increase in the mandatory inspections of export consignments carried out by Spices Board through its QELs, rejections of Indian spices by importing countries have come down significantly.

The National Committee on Safety and Quality of Spices (NCSQS) is constituted by Spices Board to identify, evaluate and address new and emerging quality and safety issues in spices in a timely manner. The national level committee is constituted with regulatory agencies, export associations, research institutions, farmers and other stakeholders in the Indian spices sector.

With the concerted efforts by stakeholders across the spice value chain, the Indian spices sector is all set to leap ahead in the global export scenario and meet the target of achieving USD 5-billion worth of exports by 2025.

Editor's Message

Incubation Desired for Startups in Spices

Dr P.S. Sreekantan Thampi
Deputy Director (Retd)
Spices Board & Honorary Editor
Indian Spice News

The pretty long unexpected pandemic COVID-19 period has shocked the entire facet of life across the world. The repercussions of the virus regime were devastating in social and economic life. Besides throwing open a big challenge to the food availability, the incomes of families went out of gear. Employment opportunities and availability of jobs almost came to a standstill. Social mobility was also hampered. People without having permanency lost their jobs and the recession in industrial and social sectors has forced upcountry workforce to return to their homes. Daily wage earners will have to struggle hard and getting back to normalcy may take a long duration.

When future appeared bleak and dim, thoughts of finding alternate means were worrying. Many aspiring youngsters were dismayed at how to pull on. It is at this juncture, the concept of small business opportunities came surfacing. The near best option available was to think and plan setting up small business startups with available capital to sustain lives. Thus, tiny processing units started springing up. But many new entrepreneurs did not have the basic knowledge about the prerequisites like understanding of the commodities and the extent of scopes in all its dimensions. Lack of awareness of documentations, understanding of production lines and machinery, quality norms, and feasible value addition opportunities are deterring many new ventures.

The pandemic period was full of distress. The post-COVID recovery period is still getting prolonged. The uncertainty that prevailed was not conducive for startups. There was a big hitch and one would not dare to go for complicated sourcing of raw materials from distant supply sources.

Of the different choices from engineering and industrial manufacturing, food processing has been a generally acceptable choice for many. There seems to be a perceptible preference to start small businesses based on sourcing of raw materials locally, which is safer, besides depending on supply from sources that are connected to upcountry markets. Sorting, grading, peeling, powdering, milling & packing units and marketing of products were the easy options since food products and ingredients have comparatively easy marketability due to their daily recurring demand and easy access to markets within near vicinity. The potential of food products and food ingredients to cater to consumer demand is very big, irrespective of income groups. At least, some smart entrepreneurs would have visualized scaling up their business when life become normal and free of pandemic fear. In fact, many big business houses have started their operations as tiny ventures years ago adopting trial and error methods.

Spice based processing has come as the best bet. The products of local units were able to get acceptance because of the credibility and traceability of the product source. The biggest challenge for the investors was how and where to start. The must-have pre-requisites like technology, machinery required for processing, costs involved, documentation required for getting registration, good handling practices and packaging are not available ready hand.

Spices as an agricultural commodity is very important from the point of Indian perspective. Grown by small and marginal farmers across the country, lakhs of farmers and farm labourers are dependent on its cultivation besides thousands of traders and marketers. Lot many are engaged in running processing and manufacturing units of spices products of different range.

Sizeable quantities of these get marketed in Indian markets and around 15 per cent are exported meeting standards prescribed by overseas markets. Bulk and branded spices products throne the Indian retail market. India being the home for spices, is a sure market for spices products in its raw form and in the form of spice powders, mixtures, blends, seasonings and snack foods. The combinations of spices and powders also help in applications for a big array of snack foods. The opportunities are plentiful not only for exports but for domestic markets. The importance in Indian markets just can't be ignored. May be due to the vast potential of the domestic market, many small businesses started venturing into processing focusing on domestic consumers. From observation, it is evident that the big brands now in local and international markets have started their journey years ago as small ventures catering to local markets only. They have in due course upgraded their product profiles with sophisticated production floors using latest technology both from within the country and abroad.

Meeting local demand is the first step. That is why it has been a charming proposition for individuals, farm-based NGOs, farmer producer organizations, self-groups and women enterprises.

While the organized corporate groups are capable of acquiring and streamlining processing, value additions and newer technology to update process lines, the informal sector did not have any access to the nuances of business. The absence of professionalism and dearth of good handling practices were factors stalling the attempts for a sustained take-off.

There was a gap in showcasing interested entrepreneurs how business in spices processing and value addition, presentation and packing could be done. The basic knowledge on meeting quality standards from the view of food safety was also not known to new entrepreneurs of small and medium businesses. It is also important that the new venturing aspirants need to have basic knowledge of process flow, machinery and the layout of production lines. More important was to have hands on experience to understand the hurdles and problem areas. The opportunity to get real experiences in the real situation was not possible. Competition is such that big business houses are not willing to throw open their doors for learning on account of privacies.

It is in this context, the concept of incubation in entrepreneurship assumes importance as this will facilitate in identifying entrepreneurs' interest, showcasing live industrial processes, provide hands on experience besides offering technical support and customized services to help launch business enterprises. As the proverb goes 'Seeing is believing'. While the Government has favoured creating opportunities for new venture startups to see, study and experience the agro-based industrial opportunities, many research centers under the Indian Council of Agricultural Research (ICAR)/ IITs have started incubation centers in different core areas to ventilate opportunities. Business incubators help small businesses, startups and individuals to develop and grow their business. This is achieved by offering a number of services like management training, office space training and capital financing.

Incubation is a unique and highly flexible combination of business development processes, infrastructure and people, designed to nurture and grow new and small businesses by supporting them through early stages of development and change.

In the spices sector, the ICAR- Indian Institute of Spices Research located at Kozhikode, Kerala has created an infrastructure where farmers, farmers' groups, women groups, and tribal groups were given training besides hands on experience in spices processing and value addition with lots of success. Thousands of new entrepreneurs and farmers' groups are availing this incubation facility from different states.

Know your

GI SPICE

DALLE KHURSANI

Locally known as Dalle Khursani, Red Cherry Pepper (Capsicum annum var cerasiforme) is grown in Sikkim and is well known for its unique flavour and high pungency. The crop belongs to the family Solanaceae and genus Capsicum. The crop can be grown around the year under protected conditions, completely in an organic way of cultivation. Dalle Khursani has round cherry size and bright red colour when fully ripened. The Scoville score (measurement of pungency) for this chilli is rated in the range of 100,000 to 350,000 SHU (Scoville Heat Units).

The high flavour is the unique characteristic of this chilli. Besides capsaicin which produces pungency, it contains carotenoids and phenolic compounds and is being used as natural pigment and anti - oxidant. This chilli also has many medicinal properties. Dalle Khursani is high in vitamin A, vitamin E, and potassium, and low in sodium. Commonly used for chutneys and sauces along with momos, it is regularly consumed in winters as it keeps the body warm. Dalle Khursani has now become a widely used chilli in the North Eastern regions of India due to its addictive sweet-tingly taste.

MORE THAN JUST IN BIRIYANI

New Application Avenues for Cardamom

Dr A. B. Rema Shree
Director (Research)
Spices Board

Small cardamom, the Queen of spices, has been an inseparable part of Indian cuisine. Traditionally used as a culinary spice, its amazing health benefits made it a home remedy for respiratory diseases, indigestion, and often as a mouth freshener against bad breath. It continues to be used as part of many ayurvedic mixtures and *Chyawanaprash*. However, value addition of cardamom extracts bringing the benefit of the most abundantly available active compounds, 1-8 cineol and alpha terpineol acetate, has been scientifically studied during this pandemic. Most of the medicines in the modern-day practice may have antiviral action, but cannot take care of the main problems of COVID-19, namely intense inflammation, and the spectrum of respiratory symptoms. The published clinical trials and research studies have proven that cardamom extract possesses antiviral action against COVID-19 and has significant anti-inflammatory activities and relieves respiratory symptoms.

Dr Prashanth Varkey, a Plastic Surgeon who has been actively researching on cardamom extracts for use in burn and diabetic foot wounds re-purposed these extracts. His experience with cardamom extracts' already studied anti-inflammatory capability and traditional knowledge of its use in respiratory infections prompted him to venture into developing it as a nutraceutical and undertaking clinical trials to prove these benefits.

Zum Heilen Diagnostic and Therapeutics, a biotechnology start-up company that conducted registered clinical trials in COVID-19 patients has their study results reviewed and published in an international journal Inflammopharmacology. The highlights of this study were that in the group that consumed cardamom extract capsules (Recovereez Forte), sixty per cent of patients turned COVID negative in five days, with the inflammatory complications controlled better than oral steroids and none of them developed complications or became serious. These studies were conducted in Pune under the guidance of Science and Technology Park, Pune, a Government of India recognised incubator for start-up companies. The capsules under the name Recovereez Forte have combination of cardamom and rosemary extracts brought as a food supplement capsule with needed Food Safety and Standards Authority of India (FSSAI) approvals. Specific antiviral studies were conducted at the Indian Council of Medical Research (ICMR) and confirmed effective for COVID -19, including the Delta variant.

At a meeting with Spices Board, the product was showcased and Dr Prashanth Varkey said his company has entered into a formal agreement with Chennai based pharmaceutical manufacturer Swiss Garnier, who will undertake commercial scale production of this product for various potentially interested pharmaceutical companies. Collectively pooling the strengths of evidence-based research and commercial manufacture will help the export of this product as demand for such products proven by scientific studies is on the increasing trend. This would serve as a respiratory supplement that can be used for a variety of ailments such as sinusitis, bronchial asthma, allergic rhinitis and more as the first choice for cough and cold. According to Dr Prashanth, under the name 'Recovereez Forte', these capsules have been in use for COVID-19 and respiratory illness from the first wave onwards and have helped save many lives. It is available at their e-cart www.elakayre.life and also with Amazon and Flipkart.

Dr Prashanth Varkey and his father, who is a doctor too, have been active cardamom growers in Vandenmedu in Idukki district for more than 25 years. It took years of effort to bring cardamom as a body spray for burn and diabetic wounds where cardamom has been proven to be effective for multidrug resistant organisms.

The research by Dr Prashanth Varkey and his team at Zum Heilen Diagnostic and Therapeutics has thrown light into the unexplored potential of spices as nutraceuticals and health supplements, especially small cardamom. The present research highlights would help cardamom to get consumed in much larger quantities as such areas of application have great demand in modern world where drug resistant organisms in several medical illness are a major global problem and newer solutions are being looked for. Soon, with the backing of such scientific studies and many more to come, the demand for cardamom is anticipated to increase with the requirements of pharmaceutical industries becoming larger. More than being just a culinary spice, cardamom could become a spice for life if more researchers bring out diverse areas of application in disease management.

Spices Board has been working with researchers and institutions for scientific documentation and validation of medicinal, cosmetic, nutritional and health benefits of various spices. Efforts from the entrepreneurs, researchers, start-ups and incubations in developing new products out of the traditional Indian spices are welcomed and encouraged by the Board. The Board also provides assistance under its scheme 'Product Research and Development' for the formulation of novel products with sufficient documentation and scientific validation on the basis of trials and clinical evaluations, especially with respect to products that require a higher-level value addition including alternative medicines, functional foods, nutraceuticals, immunity-boosting products, etc.

Entrepreneurship Development in Spice Processing

Dr E. Jayashree
ICAR- Indian Institute of Spices Research
Marikunnu, Kozhikode

Due to liberalization of Indian economy, the spices industry of India has grown very rapidly. It is a source of livelihood and employment for large number of people in the country, especially for rural population. All this shows that spice production in India holds a prominent share in the world spice production. Entrepreneurs from all over the world are exploring the opportunities in this area. The government has also undertaken several measures and initiatives for development of the spices industry within the country.

To promote startups and entrepreneurship in spice processing, ICAR-Indian Institute of Spices Research (IISR), Kozhikode has set up incubation facilities for development of processed value-added products from spices available in Kerala.

I.Incubation Facility for Spices Processing

Indian Institute of Spices Research (IISR) established the spice processing facility at its experimental farm at Peruvannamuzhi in Kozhikode during 2013-14. It was set up with the objective of encouraging research and entrepreneurship in spice processing for product and process development. This facility was established to attract entrepreneurs in the spices sector by developing integrated processing facilities, hand-holding entrepreneurs, providing training and technical guidance on post-harvest operations and quality maintenance of major spices. The processing unit is equipped with state-of-the-art facility for primary as well as secondary processing of spices. The facility has three units, each for cleaning and grading black pepper, curry powder production and white pepper production. The facility has also obtained a manufacturing license from the Food Safety and Standards Authority of India (FSSAI) for commercial production of cleaned and graded black pepper, white pepper and spice powders. The facility house has three units:

i. Black pepper cleaning and grading unit

The pre-cleaning equipment installed in the black pepper cleaning cum grading unit includes a black pepper cleaner cum grader, spiral separator and a metal detector. Fully matured green pepper is harvested when one or two berries in the spike turn orange red. The berries are separated from the spike using a thresher and the separated berries are dried in the drying yard for about five days. In this process, there are chances of contamination by dust, dry leaves, sticks and other foreign matters. It is therefore necessary to clean black pepper before it is packed and used for consumption. The capacity of the cleaner cum grader, spiral separator and the metal detector is 200 kg/h. Once the black pepper is cleaned, it is graded according to size and then packaged in clean gunny bags. The machineries for black pepper cleaning and grading unit installed at ICAR-IISR are listed in Table 1.

Sl. No.	Machineries	Capacity	Cost (₹ Lakhs)
1	Cleaner cum grader	200 kg/h	5.50
2	Spiral separator	200 kg/h	2.50
3	Metal detector	200 kg/h	1.25
4	Filling machine	200 kg/h	4.50
5	Continuous band sealer	150 packs/h	0.30
6	Weighing machine	100 kg	0.50
Total			**14.55**

Table 1: Machineries on a black pepper cleaning and grading unit.

ii. White pepper production unit

White pepper is produced from fully matured and freshly harvested green pepper or from black pepper. The freshly harvested green pepper spikes are despiked/ threshed using a pepper thresher and the berries are graded in a rotary grader. Berries of size 4.0 mm and above are used for white pepper production. The fresh berries are washed in the drum washer and introduced into a fermentation tank where the pepper is fermented, with a daily change of water in the tank. After required days of fermentation, the fermented pepper is fed into the pulper-cum-washer for the removal of outer skin. The white pepper so obtained is washed and dried for a period of two to three days in a solar tunnel drier. The dried white pepper is cleaned, graded and packaged for commercial use. The machineries installed in the white pepper production unit at ICAR-IISR are listed in Table 2.

Sl. No.	Machineries	Capacity	Cost (₹ Lakhs)
1	Drum washer	200 kg/h	2.50
2	Fresh pepper grader	200 kg/h	2.00
3	Fermentation tank	250 kg/ batch	3.25
4	Pulper-cum-washer	200kg/h	2.50
5	Weighing machine	100 kg	0.50
Total			**10.75**

Table 2: Machineries on a white pepper production unit.

iii. Curry powder production unit

The curry powder production unit is equipped with facilities for powdering and packaging spices or spice blends. Spices brought to the unit are first checked for their moisture content and if the moisture content is found above 10 per cent, they are dried in the solar tunnel drier. The rotary drier can also be used for drying spices. Dried spices are then crushed in the plate crusher or finely powdered in the micro- pulverizer as per the material size of the powder required. The powdered spices are sieved in the vibro sifter and are filled in pouches and sealed. In the case of curry powder production i.e., spices blends, the dried spices are roasted to a definite temperature in a drum roaster for flavour enhancement and then powdered in the micro-pulveriser. The powder is sieved in the sieve shaker and then transferred to the blender for the homogeneous production of spice mix. The curry powder is then weighed automatically and filled in pouches and sealed. Machineries required for a curry powder production unit and which are installed at ICAR-IISR are listed in Table 3.

Sl. No.	Machineries	Capacity	Cost (₹ Lakhs)
1	Solar tunnel drier	100 kg/ batch	5.00
2	Roaster	10-25kg/ batch	1.50
3	Micro- pulverizer (Hammer Mill)	100 kg/h	4.50
4	Sifter	25 kg/ batch	1.50
5	Ribbon Blender	50 kg/ batch	1.35
6	Filling machine	200 kg/h	4.50
7	Continuous band sealer	150 packs/h	0.30
8	Weighing machine	100 kg	0.50
Total			**19.15**

Table 3: Machineries in curry powder production unit.

II.Incubation Facility for Development of Value-added Products from Ginger and Nutmeg Rind

With increasing competition in food processing sector, there is a need for mechanisation in processing of value- added products. Further, customers' requirement for tailor made products having newer tastes has opened ample opportunities for the use of nutmeg rind and ginger for product diversification. Any new entrepreneur venturing into agri business in the nutmeg growing areas can attempt to use this commodity. It is in this context that Government of Kerala has supported IISR Kozhikode and a fully functional incubation facility is made available since 2022 for the development of value-added products from nutmeg rind and ginger like jams, squashes, candies, dehydrated spice products, powders and other bakery items by adding spices. A brief description of the products and equipment used for their production are detailed here:

i. Nutmeg rind squash
Harvested and separated nutmeg rind is cooked in open kettle with equal quantity of water till the rind becomes soft. The water is drained and used for the preparation of nutmeg squash with the addition of 1.2 times sugar and concentrated to 65°Brix. (Degree Brix is the sugar content of an aqueous solution). Preservative at the rate 0.1 per cent and citric acid at the rate 20 g/ kg of rind used is added when the produce is in lukewarm condition. The squash is diluted at the rate 1:5 during consumption to obtain nutmeg juice of 16-18°Brix.

ii. Nutmeg rind jam
For the preparation of nutmeg rind jam, the cooked rind is transferred to a sautiner and about 1.2 times of sugar is added and stirred till the mass is concentrated to 68°Brix. The pectin in the fruit along with sugar and acid gives a jelly consistency which results in the formation of jam. It is then filled in sterilized glass bottles, sealed and stored under ambient temperature.

iii. Nutmeg rind candy
For the preparation of rind candy, nutmeg rind is sliced to a thickness of five mm having required length and cooked in open kettle. The water is drained and the nutmeg pieces are soaked in sugar syrup of 40°Brix and left overnight. The following day, the pieces are removed and the sugar syrup is concentrated to increase the TSS by 5° Brix (TSS means the total soluble solids. A refractometer is used to measure the TSS). The nutmeg pieces are dried for about three hours in a cabinet tray dryer at 55°C and then added to sugar syrup once again. This process is continued by increasing the TSS every day by 5°Brix till the TSS reaches 70° Brix. The entire process is completed in about six days. The pieces are dried and coated with dry sugar powder and stored in clean containers.

iv. Nutmeg rind pickle
A pickle blender is used for commercial production of nutmeg pickle by blending various ingredients to uniform proportion. The ingredients that are added include chill powder, cumin, fenugreek, mustard, gingelly oil and curry leaf.

v. Rind powder
Rind powder is prepared by drying rind slices in a multipurpose tray dryer at 70°C till the material is sufficiently dried. The dried slices are pulverised using a hammer mill to obtain fine powder.

vi. Rind powder for bakery items
A small quantity of rind powder can be added to the dough used for the preparation of confectionery products like cakes, biscuits, cookies, etc., and baked in a commercial baking oven. All the finished products are properly packaged, sealed and labelled for marketing. The product has an appealing aroma and taste of nutmeg which is very pleasant.

Equipment required for processing nutmeg rind and ginger

The details of machineries required for setting up a pilot plant for processing nutmeg rind and ginger are provided in Table 1.

Sl. No.	Equipment with brief technical specifications	Cost (₹ Lakhs)
1	Slicing machine	2.50
2	Cooking kettle (volume 150 litres) and bottom jacketed	2.75
3	Sautiner of 100 litres volume with mechanical stirrer and bottom jacketed	2.10
4	Thermic fluid boiler to support the kettle and sautiner using thermic fluid heating system with 25 kW heater coil, thermic fluid pump of 1.5hp	3.40
5	Pickle blender of volume 200 litres	2.10
6	Tray dryer provided with 6 kW heater coil and 1/2 hp circulation fan	3.00
7	Pulveriser of capacity 25 kg/h	0.75
8	Baking oven with 4 kW heater and 5 kg dough blender	1.50
9	Band sealing machine of 8 mm sealing width for packaging	0.40
Total		**18.50**

The scope for entrepreneurship in spice processing is enormous. IISR has established incubation facilities for primary and secondary processing, value addition and product development in spices. The facilities are established to attract entrepreneurs in the spices sector, hand-holding entrepreneurs, providing training and technical guidance on post-harvest operations and quality maintenance of major spices.

Further communication in this regard may be made to ICAR-Indian Institute of Spices Research. (Ph: 0495 2731410).

Value Addition and Spices

Sunil S
Senior Agriculture Demonstrator
Spices Board

The focus of overall interventions of the Spices Board has been to implement modules and schemes which are holistic in approach catering to the need of the industry as well as taking care in attaining quality of the produce and its producers' standard of living.. The pan India undertakings of the Board for benefit of the spice industry and its stakeholders have a single aim of sustainable spice cultivation and marketing. However, equipped with the understanding of needs of the national and international spice market and also in synergy with the local and regional socio-economical aspirations and agro-climatic factors, various interventions have been in place for a long time to ascertain that the supply chain of spices in various clusters and the states of India is strengthened. At the same time, the value chain of the product flow from farm to fork also takes place in due time. As such, various inventories like Quality Improvement Training Programmes, spice clinics, study tours, training in Good Agricultural Practices (GAP), etc. are in place which directly materializes the overall aptitude development of farmers towards scientific but market oriented farming practices.

The success of the soft touch interventions of the Board through training programmes, study tours, live demonstrations, extension activities, market linkage sessions, buyer seller meets etc. can be seen in the case of large cardamom industry in the North Eastern states of India, particularly Sikkim. Conventional supply chain had the base produce of large cardamom as capsules dried in traditional curing systems called "*bhattis*", where direct firing by burning of wood is practiced resulting in black soot over the capsule, as final product hence the name "black cardamom". However, with growing concern of wood as fuel and scarcity of wood, the Research department of Spices Board came up with the ICRI modified *bhatti* system, which uses a network of easily installable flue pipe system for curing the large cardamom capsules through the principle of convection. Thus, resulting in lesser usage of wood as fuel, less engagement of labour and above all value adding the physical as well as intrinsic properties of large cardamom at the farmers' field itself. The ICRI modified *bhatti* system retains the natural colour of large cardamom capsules from maroon to pinkish with more oil and oleoresin content. Initially, there were fewer takers for the natural pink cardamom in both aspects, the consumer was not aware and the farmers would not easily deviate from their traditional practice.

However, in recent times, through extensive extension at par with field demonstration of ICRI modified *bhatti* system and mechanical driers used for large cardamom, the scenario has changed the farming community and has accepted the curing system becoming popular among the large cardamom growing villages in North Bengal and Sikkim. With the advent of the cluster approach through the establishment of Farmer Producer Organizations (FPO), their empowerment and mobilization there have been a paradigm shift in this aspect of value addition. Many FPOs, individuals with support from the Spices Board and respective state government has now set up facilities for mechanized large cardamom driers and individual ICRI modified *bhatti* system. This has led many traders to initiate the marketing of large cardamom.

One such case study is that of Khechuperi Organic Producers' Cooperative Society Ltd (KOPCS FPO), an FPO under Mission Organic Value Chain Development (MOVCD) formed with assistance from the Sikkim government and is based on the West Sikkim district of Sikkim. The president of the organization Shri Tenzing Gaytso Bhutia (9434164408) who is also a progressive farmer and an agri-entrepreneur informs that pink large cardamom capsules cured by using the new technology has the ability to fetch a price of ₹ 300 to ₹ 400 more per kilogram than the traditional direct fire-cured black cardamom. He has established ICRI modified *bhatti* in his village of Yuksom and getting good results, also the state government has been instrumental in establishing a mechanical large cardamom drier for the FPO. This has helped the FPO with a membership of 500 plus farmers to not only value-add their produce but has also resulted in spice traders and dealers throughout India making queries for quotes and samples and some even making business visit to Yuksom. Thus paving way for brand promotion and addressing issues of market channelization and remuneration of conventional produce faced by the existing supply chain for large cardamom. For a Himalayan state like Sikkim, where transport, communication and logistic is a major hindrance for price realization of their quality produce, value addition at a single level of production process flow has brought the market stakeholders at their doorsteps. There are still miles to go in terms of mitigating a few more issues until the value-added produce from remote villages can attain full price realization but a start has begun. Other value addition like grading, polishing and retail packaging is taking place in a sporadic manner by groups and individuals with hand-holding from the Spices Board and the state departments. With KOPCS FPO and others leading the way and Spices Board playing a pivotal role as a hub for the spokes in the wheel, a new dawn for large cardamom farmers is underway.

Flue pipe system for curing large cardamom capsules

Space for stacking large cardamom in trays above flue pipes

ICAR modified *bhatti* system

Dried large cardamom

Students' Visit to Regional Office, Spices Board, Bodinayakanur

Students pursuing B.Sc. Honours in Horticulture at the Department of Agriculture, Annamalai University, Chidambaram visited the Regional Office, Spices Board, Bodinayakanur on 04 May 2022. The programme was coordinated by the officials of Spices Board. Nutritional and medicinal properties of spices and the status of spices cultivation in Tamil Nadu were discussed in detail. The problems and prospects of spices cultivation and the marketing opportunity for the spices produced in Tamil Nadu have been explained to the students. Integrated Pest Management (IPM) technologies for safe and quality spice production were also explained. General activities and the functioning of cloud-based e-auction system were also briefed to the students.

Students from Annamalai University at Regional Office, Spices Board, Bodinayakanur.

Awareness Programmes Organised by Divisional Office, Spices Board

Divisional Office, Spices Board, Kalimpong, West Bengal conducted awareness programmes on the activities of Spices Board at Lower and Sebjay village of Sittong 1 Gram Panchayat of Darjeeling district on 11 May 2022 in association with Water Use Association, Sittong.

Awareness programmes on the activities of Spices Board at Darjeeling.

Awareness Programme and Field Level Demonstration of Large Cardamom Replantation

Divisional Office, Spices Board, Tadong conducted an awareness programme on various activities of Spices Board and field level demonstration of large cardamom replantation and sucker nursery on 28 April 2022 at Machalakha and Tumin Dhanbari locations of East district, Sikkim.

Awareness programme on various activities of Spices Board and field level demonstration of large cardamom replantation and sucker nursery at East district, Sikkim.

Tarpaulin Sheets Distributed

Distribution of tarpaulin sheets to chilli farmers under Regional Office, Spices Board, Haveri, Karnataka.

Technical Session on 'Marketing and Export Prospects of Spices and Activities of Spices Board in Sikkim'

Deputy Director, Regional Office, Spices Board, Gangtok presented a technical session on "Marketing and Export Prospects of Spices and Activities of Spices Board in Sikkim" in a training programme on "Export Promotion of Agriculture and Horticulture Commodities in the North East" organised by APEDA and NIPHM in collaboration with the State Department of Agriculture, Sikkim at SAMETI Hall, Gangtok, Sikkim on 13 May 2022. Dr C. S. Gupta, resource person from NIPHM was the lead speaker. Shri Jagdish Pradhan, Additional Director, APEDA delivered the concluding remarks. Shri Tshering Norbu Bhutia, Joint Director, Marketing, Department of Agriculture, Government of Sikkim was the moderator of the programme. 55 participants from the Department of Agriculture participated in the programme.

Export Promotion of Agriculture and Horticulture Commodities in the North East organised by APEDA and NIPHM in collaboration with the State Department of Agriculture, Sikkim.

Spices Board in Sikkim Organic Food Summit

Regional Office, Spices Board, Gangtok participated in "Sikkim Organic Food Summit" organised by the Ministry of Small, Micro and Medium Enterprises (MSME), Commerce and Industries Department, Government of Sikkim in association with the Invest India, FINER supported by MOFPI, Government of India. The summit was inaugurated by Shri M.N. Sherpa, Honorable Minister of Power and Labour, Government of Sikkim. Economic Advisor from MOFPI delivered the keynote address. Shri H. K. Sharma, Commissioner and Secretary, Commerce and Industries, Government of Sikkim delivered the welcome address and vote of thanks was delivered by Director, MSME. Around 150 people participated in the summit. The inaugural programme was followed by technical sessions by the MOFPI, MSME, FINER, Invest India, NABARD and Spices Board India. Spices Board had set up a stall in the event and provided space for two newly registered exporters Kuldeep Agarwal, Rongli and Nature Gift, Rangpo along with an entrepreneur with brand name Radha Organic, Kokale from the East district and exhibited various value-added spice products. 30 stalls were put up by Self Helf Groups (SHGs) and budding entrepreneurs.

Glimpses of Sikkim Organic Food Summit.

Masters Training for Seed Spice Farmers in Ajmer

Spices Board organised a masters training programme on Good Agricultural Practices (GAP) and good hygiene practices in cumin and fennel for strengthening the spice value chain in India under the project 'Strengthening Spice Value Chain in India and Improving Market Access Through Capacity Building and Innovative Interventions' in collaboration with STDF under WTO and FAO, India during 18 – 20 May at NCRSS, Ajmer. Dr A. B. Rema Shree, Director, Spices Board delivered the keynote address. A field visit and various other activities were organised as part of the programme. Participants also visited a vermicompost unit. During the programme, Spices Board officials delivered lectures on quality standards of cumin and fennel; harvesting, post-harvesting, value addition etc. Certificates were distributed to the participants at the end of the programme.

Dignitaries at the masters training programme.

Training Programme on Organic Large Cardamom Production

An awareness-cum-training training programme on organic agriculture and large cardamom was conducted at Mangshila, North Sikkim on 20 May 2022. Dr S. S. Bora, Scientist–C, ICRI was the resource person. Shri M. S. Ramalingam, Deputy Director, Regional Office, Gangtok and Shri P. T. Lepcha, Assistant Director, Divisional Office, Mangan were present during the programme. Officials of the State Agricultural and Horticultural Department and an organic service provider were also present. The programme was attended by around 30 growers. Dr S. S. Bora described the importance of organic inputs and bio-agents for the sustainable growth of crops including large cardamom. Shri M.S. Ramalingam, Deputy Director during his speech emphasized on obtaining GI authorized user tag and procedure of application for better price realization by the farmers/farmers' group. The meeting was chaired by Smt. Meena Maya Limboo, President of Panchayat, Mangshila, Tibuk Grama Panchayat Unit.

Awareness cum training programme at Mangshila, North Sikkim.

Training Programme for University Students

A training programme was organised at Regional Research Station, ICRI, Tadong on 10 May 2022 for post graduate students from the Department of Rural Development, University of Science and Technology, Meghalaya (USTM) who visited the centre as a part of their course curriculum on training-cum-exposure visit to scientific institutes. A total of 15 students and two faculties visited the centre for getting training on "Organic Spices Cultivation Aspects – Special Focus to North East Region". The training started with a welcome address by Dr D. Ajay, Scientist- C and in-charge. Dr Shweta Priyamvada, Assistant Professor, USTM, Meghalaya spoke about the purpose of their visit. Dr S. S. Bora, Scientist – C delivered a presentation on 'Organic Spices Production: Focus to North East Region' followed by a lecture on 'Management of Insect Pests in Organic Agriculture' by Dr T. N. Deka, Scientist- C. Dr D. Ajay, Scientist- C and in-charge of the station delivered a lecture on 'Disease Management in Organic Agriculture'. There was a discussion with the participants and the programme ended with vote of thanks by Ms Gayatri Saikia, Assistant Professor, USTM, Meghalaya.

Training programme to post graduate students, Department of Rural Development, USTM, Meghalaya.

Field visit at Mangshila, North Sikkim.

Awareness cum Training Programme

Divisional Office, Spices Board, Tadong organised extension and awareness programmes at Tenkilakha and Ganchung villages in East Sikkim on 25-26 May 2022. Schemes and activities of the Board were discussed in general. Around 39 farmers participated in the programme.

Glimpses of extension and awareness programme organised at Tenkilakha and Ganchung villages.

Farmers Training Programme

One day training programme on organic cultivation of small cardamom was organised on 11 May 2022 by Jai Kissan Development Society, Nedumkandam. Dr K. Dhanapal, HOD (Crop Protection and Transfer of Technology), Dr M.A. Ansar Ali, Scientist-C (Entomology) and Dr John Jo Varghese, Scientist-C and HOD (Agronomy and Soil Science) were the resource persons for the training programme. Ms S. Sikha and Ms A.V. Swathi, Spice Research Trainees (SRT) also assisted in organising the programme. Detailed sessions on integrated nutrient management, integrated pest and disease management were explained to 30 farmers of the Jai Kissan Development Society, Nedumkandam who attended the training programme. The training came to an end with the vote of thanks by Shri Jose, Secretary of Jai Kissan Development Society, Nedumkandam.

Members from the Jai Kissan Development Society attending the training programme.

Mobile Spice Clinic at Kumily

Indian Cardamom Research Institute (ICRI), Myladumpara conducted a mobile spice clinic programme on 06 May 2022 at Anavilasam (Kumily zone). Dr John Jo Varghese, Scientist-C and HOD (Agronomy and Soil Science), Dr K. A. Saju, Scientist-C (Plant Pathology), Dr P. Thiyagarajan, Scientist-C (Entomology), Ms R. Sukanya, Spice Research Trainee (SRT), ICRI, Myladumpara visited six fields and Mrs Geetha, Senior Agriculture Demonstrator and Ms Harishma, Spice Extension Trainee (SET) from Development Department, Kumily zone also attended the programme. During the field visit, details of methods of soil collection, integrated nutrient management and integrated pest and disease management were explained to the farmers' group.

Officials of ICRI, Myladumpara at a cardamom field.

Spices Board Staffs in Powerlifting Contest

Shri Govindasamy, Assistant Library Information Officer, Spices Board, Kochi won silver medal in weight lifting and powerlifting and Shri Suresh Kumar, Security Staff, Spices Board, Kochi won silver medal in weight lifting and bronze medal in powerlifting in the IVth National Masters Games organised by the Masters Games Federation India held at Thiruvananthapuram, Kerala during 18-22 May 2022.

Shri D. Sathiyan IFS, Secretary, Spices Board with Shri Govindasamy, Assistant Library Information Officer and Shri Suresh Kumar, Security Staff.

Transfer Technology Activities at B R Hills and Thithimathi

Regional Research Station, ICRI, Sakleshpur organised training programme on black pepper production, processing and quality assurance for representatives of the tribal FPOs supported by the Coffee Board at B. R. Hills, Chamarajanagar district on 24 May 2022 and at Thithimathi (Gonikoppal area of Madikeri) on 26 May 2022. Shri I. R. Noolvi, Scientist in-charge, ICRI, Sakleshpur and Dr S. K. Bhat, Scientist-C, Crop Botany attended the programme as resource persons along with Joint Director, Coffee Board, Hassan and Deputy Director, Coffee Board, Gonikoppal. The first session of the programme dealt with black pepper for tribals and the second session witnessed demonstration on pest and disease management, Good Agricultural Practices (GAP) and other topics like identification of different diseases in black pepper.

Training programme at B R Hills, Chamarajanagara area organised by Regional Research Station, ICRI, Sakleshpur.

Programme on Organic Cardamom Certification

A one-day training programme on organic farming and certification was organised at Spices Park, Puttady by the Field Office, Spices Board, Puttady. The programme was organised for farmers who volunteered for organic certification in small cardamom. Officials and technical persons from INDOCERT handled the technical sessions on certification and formation of ICS and clarified the doubts raised by farmers. Around 25 farmers attended the training.

Training programme on organic farming and certification organised at Spices Park, Puttady by Field Office, Spices Board, Puttady.

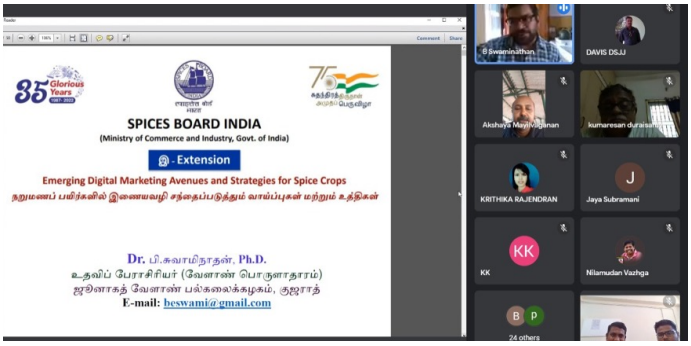
Exposure Visit for Sikkim Women Farmers

Divisional Office, Spices Board, Mangan, Sikkim organised an exposure visit for women's Self-Help Groups (SHGs) belonging to the tribal reserved area of Dzongu under Livelihood Enterprise Development Programme supported by NABARD, Gangtok and organised by Bhavishya Bharat Organisation on 25 May 2022. The women farmers were exposed to technical knowledge on various aspects of spice value addition, packaging, marketing etc., imparted by experts from the College of Agricultural Engineering and Post Harvest Technology (CAEPHT), Central Agriculture University Ranipool, Deputy Director, Spices Board, Gangtok and Scientist in-charge, Indian Cardamom Research Institute, Tadong. Positive feedback was received from the women farmers who expressed interest in undertaking value addition of their local produce like cardamom, ginger, turmeric etc., after the exposure visit.

Exposure visit for women's Self Help Groups organised by Divisional Office, Spices Board, Mangan.

Virtual Training Programme on "Emerging Digital Marketing Avenues and Strategies for Spice Crops"

The need for digital marketing and the various strategies for marketing the products of farmers through branding was explained to over 50 farmers from various districts of Tamil Nadu at a virtual training programme held on 27 May by Spices Board, Bodinayakanur. Use of Artificial Intelligence (AI)in digital marketing, government initiatives on digital marketing in farming sector such as ONDC (Open Network Digital Commerce) etc., and success stories of the developed mobile applications and websites which helps farmers nationwide were dealt with by Dr B. Swaminathan, Assistant Professor, Department of Agricultural Economics, Junagadh Agricultural University, Junagadh, Gujarat. The programme titled 'Emerging Digital Marketing Avenues and Strategies for Spice Crops' evoked good response from farmer participants. Shri Kanagadhileepan K., Assistant Director (Development), gave the introductory remarks and Shri S. Senthil Kumaran, Senior Field Officer delivered the welcome address.



Virtual training programme on 'Emerging Digital Marketing Avenues and Strategies for Spice Crops' organised by Field Office, Spices Board, Bodinayakanur.

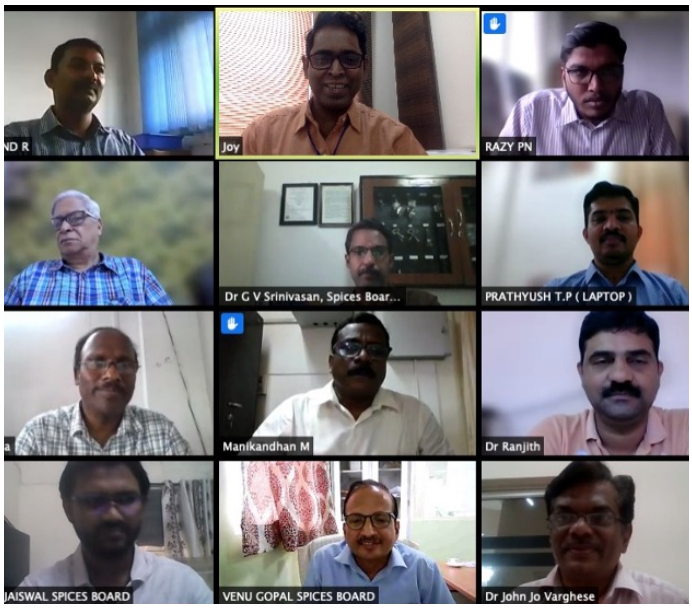
GAP Training for Bisonvalley FPO

Field Office, Spices Board, Rajakkad, Idukki conducted Good Agricultural Practices (GAP) training for members of Bisonvalley Spices Producer Society in association with INDOCERT.

Good Agricultural Practices (GAP) training organised by Field Office, Spices Board, Rajakkad.

Training of Lead Auditors

Spices Board, Kolkata, organised International Register of Certificated Auditors (IRCA) Certified Training for lead auditors as per ISO 22000:2018 Food Safety Management System during 19-23 May 2022 under the Collaborative Training Cell. The programme was conducted in online mode and around 10 officials of the Spices Board attended the programme.



Screenshot of lead auditor training.

Farmers' Awareness Programme at Meenachil

Spices Board and Krishi Vigyan Kendra jointly organised a Farmers' Awareness Programme during the inauguration of Kisan Service Society's new unit at Meenachil. Shri Mani C. Kappan MLA inaugurated the new unit of Kisan Service Society in the presence of officials from Meenachil Grama Panchayath, Spices Board and Krishi Vigyan Kendra. During the address, Shri Mani C. Kappan MLA said that the young generation should be introduced to farming. Shri John Jo Varghese, Scientist, Spices Board, ICRI, Myladumpara, Idukki and Dr Jayalekshmi, programme co-ordinator, Krishi Vigyan Kendra led the sessions.

Mani C. Kappan, MLA inaugurating the new unit of Kisan Service Society in Meenachil.

CIRCULARS AND NOTIFICATIONS

1. Mandatory Sampling and Testing of Export Consignments of Spices and Spice Products Under the Quality Evaluation System of Spices Board
   http://www.indianspices.com/trade/trade-notifications/notificationdetails.html?id=316
2. Schedule for Conducting E-Auction at E-Auction Centre at Puttady and Bodinayakanur from 30.05.2022 To 25.06.2022
   http://www.indianspices.com/trade/trade-notifications/notificationdetails.html?id=315
3. Issuance of Digitally Signed Online Test Report by Spices Board for Clearance of Export Consignments of Spices and Spice Products under Mandatory Testing
   http://www.indianspices.com/trade/trade-notifications/notificationdetails.html?id=314

स्पाइसेस बोर्ड
भारत

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