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# SPICE INDIA



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# SPICE INDIA

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INDIAN SPICE INDUSTRY



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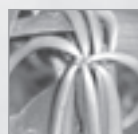


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## FLOURISH WITH NATURE or PERISH IMMATURE?

# *Sikkim Back To Nature*

**N**estling in the heart of the majestic eastern Himalayas and wedged between West Bengal, Nepal, China, Tibet and Bhutan, Sikkim, a real mystical wonderland has become an integral part of Indian Union since 1975. Lepchas, the inhabitants of this state called it “Nye-mae-el” which means heaven. The snow clad Kanchenjunga, situated on Sikkim’s western border with Nepal, dominates the land with its awe-inspiring beauty and, its splendid height of 28,208 feet makes it the third highest mountain in the world and the guardian deity of Sikkim.

### **Mega Biodiversity Hotspot**

Sikkim the kingdom of flowers has over 4,000 varieties of wild flowers, rare trees and shrubs including 550 species of rare orchids, nine species of conifers, 300 species of ferns, 144 species of mammals, 550 species of birds, 650 species of butterflies and rhododendrons blooming in its fragrant meadows. Forests consist of

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Assistant Director  
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Tadong, Sikkim

fir, oak, sal, chestnut, birch, maple etc cover almost a third of the state. This richness in flora and fauna bestow Sikkim the status of a mega biodiversity hotspot in the eastern Himalayas.

Sikkim’s economy is basically agrarian with more than sixty percent of the population depending on agriculture for their livelihood. The farming system

followed by farmers is mostly a mixed one. The geographical distribution, abundant biodiversity, the prevailing farming practices and inimitable lifestyle of the people untouched by external influences are conducive for moulding the agriculture system in the state to an ecologically sustainable one.

### **Kick-off to Chemical Phase out and Take-off to “Organic State”**

Since 2003 all chemical farm inputs have been banned in Sikkim by legislation. This was the first bell by the Government of Sikkim declaring its zero tolerance to chemicals and to convert the entire conventional practices into organic farming by 2009. Further, subsidy on pesticides and fertilizers was withdrawn which was followed by waving off transport and handling subsidy and commission to the retailer in the year 2006-07.

All these pricking exercises were for pioneering the state to the coveted status of the first ‘Organic State’ in the country by 2015. The efforts are on a fast track with meticulous planning, reviews, follow-ups, consultations and corrections.

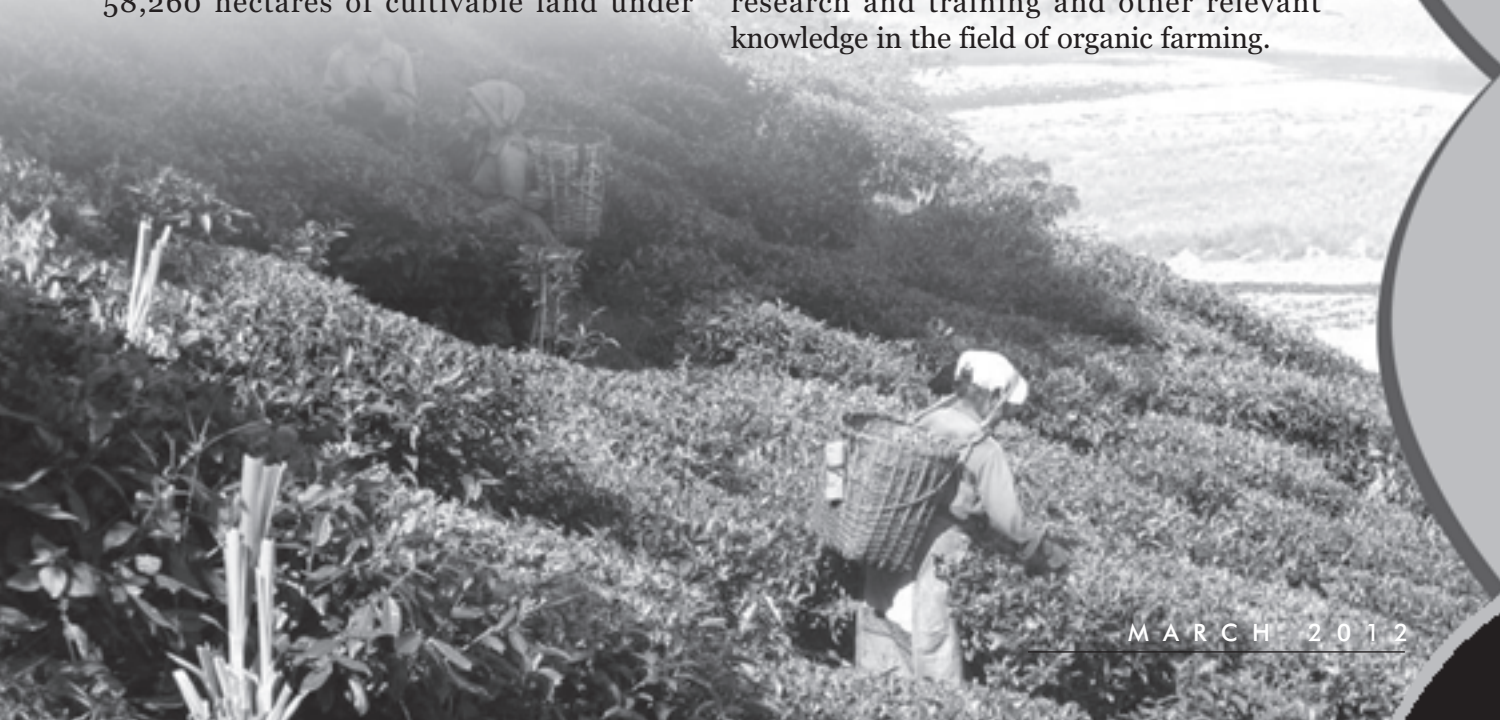
### **Sikkim Organic Mission (SOM)**

SOM is the apex committee headed by the Chief Minister constituted to oversee the implementation of organic farming in Sikkim. By 2015 the mission is to bring the entire 58,260 hectares of cultivable land under

organic cultivation. For this conversion, adoption of prescribed organic practices by the farmers has to be completed by 2013 and the targeted area will be brought under certification by 2015, as certification is the pre-requisite for making the product mobile in the global organic market.

The Secretary, Agriculture, Government of Sikkim opined that “since farmers have already stopped using chemical fertilizers, the agriculture land in Sikkim is practically organic’ and they only need a certificate to attest this fact”. He reported over press that an area of 18453 hectares spread out in the four districts have been issued C1 Certificate covering 12456 registered farmers, during the first week of December 2011 by the inspection and certification agencies. The process of organic conversion and certification is being carried out through various service providers entrusted for the work which are collecting field level data, arranging organic registration and training of farmers. Internal Control Systems (ICS) are also in place in the project area to facilitate certification.

A MoU was signed between FIBL Institute of Organic Research Centre Switzerland and The Agriculture Department of Sikkim for a long term partnership. This agreement helps the department to get the knowhow, technical expertise and support from the institute on research and training and other relevant knowledge in the field of organic farming.





**View of Kanchanjangha from Sikkim**

### **Early Birds with Glaring Performance**

Even though it is a big challenge to part with the traditional agricultural practices and follow new techniques, some farmers have started adopting organic farming quite well before the initiation of organic movement in the state and won accolades for themselves.

Dhanpati Sapkota is one such farmer who won cash prize of rupees 1.5 lakh in a vegetable growing competition during the international flower festival held at Gangtok. Sapkota had introduced horticulture crops in his two acres of land under organic means after undergoing training on organic farming at Uttaranchal.

Prakash Dhamala, a 28 year old youth from Sauney village in Singtam in South district who took the responsibility of the 1.5 acre farmland from his parents in 2002 has manifested that organic farming is a system that can be relied upon. In 2010 alone he harvested 130 quintals of

cucumber, 35 quintals of snakegourd, 27 quintals of bitter gourd, 19 quintals of ridge gourd, 16 quintals of lady's finger and 5 quintals of beans fetching rupees 1.50 lakhs as profit. Since the initiation of his farming practices in 2002, Dhamala has followed organic farming practices such as crop rotation, green manuring, composting and biological pest control measures.

### **Large Cardamom- "Practically Organic" to "Certified Organic"**

It is a well accepted fact that large cardamom cultivation in Sikkim is untouched by any artificial or inorganic means. This is mainly because the large cardamom growing tracts are naturally restricted from easy accessibility and transportation due to the undulating terrain and high gradient of slopes.

Large cardamom agro-forestry is almost a closed system that does not depend on external inputs. It is a crop that is well adapted to the local soil

conditions. When comparing with other cash crops, large cardamom is a low input crop, and the nutrient exit through agronomic yield also is very minimal making it an excellent crop for this fragile ecosystem. All these factors make large cardamom highly amenable to organic farming. The traditional practices followed by farmers are almost in line with "rules of the nature" on which the basic concepts of organic farming are built up. This is an added advantage for bringing large cardamom plantations under the programme for organic farming and conversion to certification, which is on the anvil under Organic Mission of the state.

Spices Board is shouldering development of the crop in association with the State Agri/Horti: Dept: by implementing programmes like production of quality planting materials through certified nurseries, replantation and rejuvenation, rain water harvesting etc. Board through its extension net work functioning in the state is also creating awareness on Good Agricultural Practices and organic practices of large cardamom ginger and turmeric- the major spices cultivated in the state. Auction for trading large cardamom is conducted by Spices Board at Rangpo through NERAMAC Ltd.

### **Voice of Sikkim in Bio-fach 2011**

World Organic Trade Fair, Bio-fach 2011 in Nuremberg Germany was attended by a team of Officers from the Agri/Horti Depts. and Farmers Welfare Board, Govt. of Sikkim. The objective of the participation was to showcase Sikkim as an Organic State of India

and also to probe on possible marketing tie ups. Large Cardamom and Temi tea were displayed in the India pavilion and the display and discussions evoked attention on the evolution of an organic state.

### Value Addition on Eco-tourism

Sikkim is blessed with all natural resources to become the most sought after destination by domestic as well as international tourists. Hence an exclusive organic status in the country will be a value addition to the tourism industry as Sikkim is transforming as a preserve of health and safe environment, offering wellness to all who falls to her lap. The General Secretary of the State Travel Agents Association observes that village tourism is improving and home stays in Sikkim are becoming more popular in pace with the progress of the organic

movement. According to him, home stays will have premium value once Sikkim gets the organic status, but home stay service providers should be trained in business planning and proper cooking since organic product is just one aspect and cooking it properly and hygienically is also vital in offering comfort and wellness to the guests coming in. The air port expected to be completed by 2015 in Pakyong in East Dist. will back up the industry with facility for easy transit.


### Organic Bloom 2015

The blossoming Organic State which occupies merely 0.22 per cent of the geographical area of the country with its thumping vision and mission mode approach to put across the challenge of turning fully organic, will shower quite a number of certified organic products from her bunch like large cardamom, ginger, turmeric,


garlic passion fruit, buckwheat, millet, mandarin orange, cherry powder, temi tea and vegetables.

So by 2015 the aroma of temi tea; flavour of large cardamom ginger and turmeric; sweetness of mandarin orange; flour of buck wheat and millet; freshness and greenness of vegetables from Sikkim the first "Organic State" of the country will out rank her counterparts in keeping us energetic, safe and healthy. These products from the organic basket of Sikkim will out sell in the market as they bear the price tag "Certified Organic from Organic Sikkim".


Let Sikkim flourish in the organic path synchronizing with nature and cherish the entire world with her everlasting beauty, never-ending heritage and unbeatable status of being the first organic state in the country within a short span of time. ☆




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# Problems and prospects of spice crops production in

# Kodagu

## Introduction

Kodagu district has its own unique culture and position in Karnataka. Though it has small area of 4,102 square kilo meter it is rich in biodiversity. The different altitude, topography and rainfall pattern has made it rich with flora and fauna. The altitude varies from 300 meters (Sampaje) to 1500 meters. The total rainfall varies from 1000 mm to 8000 mm (Karike, Galibeedu and parts of Pushpagiri). Because of its mild climatic conditions many plantation, fruit, spice and field crops are commercially grown in different parts.

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Biju C. N. and Senthil Kumar R.**  
Indian Institute Spices Research,  
Cardamom Research Centre,  
Appangala, Kodagu-571 201, Karnataka

Spice crops comprise of a number of low volume high value commercial crops which are of commercial importance to Kodagu. The increased production of spices like black pepper, cardamom and ginger has come to the rescue of planters in the years of failure of the main crop coffee. Like other

crops, spices also suffer from highly oscillating prices. The ever increasing labour cost, lack of mechanization and high cost production technologies are other major set backs for spices production. To increase the area under production there are not enough certified nurseries or other mechanisms to meet the planting material requirements. Traditionally black pepper, cardamom and ginger are major spices grown in Kodagu. The other crops of importance are garcinia, chilli, nutmeg and vanilla. The major production problems, production gaps and prospects are discussed below.

### Black pepper

Among the spices, black pepper (*Piper nigrum* L.) occupies a unique position. It belongs to the family Piperaceae. Presently it is grown in about 26 countries and occupies 4, 67, 708 hectares with productivity of 790.2 kg per hectare. India with more than 40 per cent share of area contributes about 23 per cent of the total production of the world. As it is mainly grown as mixed crop, the productivity of black pepper in India is around 310 kg per hectare. Its cultivation is mainly confined to Kerala, Karnataka and Tamil

Nadu. In Kodagu, it is cultivated in coffee based cropping system in an area of 1,02,225 hectare (approximately 15,802 hectare as pure crop with a production of 12,000 to 15,000 metric tones.

In Kodagu, about 75-80 percent of the black pepper area is covered by the high yielding variety Panniyur-1 and hence the productivity is high when compared to Kerala with a productivity range of 1 to 8 kg dry pepper per standard. Major area is coffee based mixed crop. The elite coffee growers are adopting recommended package of practices on large scale. Most of them are fertilizing coffee regularly in the process pepper vines were also fertilized. Though separate irrigation is not given to pepper vines, blossom and backing irrigation given to robusta coffee also benefit black pepper to some extent. It is also seen that small percentage of farmers are irrigating the pepper vines also. All the Arabica + black pepper mixed crop is rainfed and level of shade is also very high.

### Location specific production problems of coffee based mixed crop of black pepper

Based on survey and feed back from growers, the following are

identified as the major production constraints of coffee + black pepper mixed crop of different zones.

### Success story obtained from planter's field

#### 1) Management of foot rot in high rainfall zones

#### Ashoka plantation Pvt. Ltd., Biokeri

A plantation with 63 hectares as both mono and mixed crop black pepper with coffee. The Panniyur-1 variety planted in this estate constantly experienced anthracnose and spike shedding (87 per cent) for more than four consecutive years. Based on the lessons of some progressive growers of Saklespur (Diwan gudda estate, Mahesh Kumar estate) and leads obtained through on farm trials conducted in Biokeri zone, a schedule comprising of shade regulation in April, irrigation in March 4<sup>th</sup> week and prophylactic measures with first spray of 0.2 per cent carbendazim followed with two rounds of one per cent Bordeaux mixture was given on strict calendar basis. This was supplemented with adequate nutrition and other basin management methods. There was miraculous improvement in the

### Location specific production problems of coffee based mixed crop of black pepper

Locations	Major problems
High rainfall, misty, high elevations	Spike shedding, anthracnose, foot rot (more foliar infection and secondary spread)
High rainfall robusta coffee + black pepper	Foot rot of pepper
High rainfall Arabica coffee + black pepper	Foot rot, partial setting and spike shedding
Moderate rainfall robusta coffee + black pepper	Foot rot, partial setting, slipping of vines from standard due to termite attack, root mealy bugs and scales
Low rainfall Arabica coffee + black pepper and robusta coffee + black pepper	Partial setting, moisture stress, yellowing, slipping of vines from standard due to termite attack, foot rot, root mealy bugs and scales

**The production package recommended and implemented on calendar basis is as follows:**

Months	Agro-practices
April	Shade regulation of support trees, in the years of delayed monsoon basin irrigation 7-10 days intervals, first irrigation 80-100 litre per plant, 2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> irrigation 50 liter per plant
May	Earthing up, liming and removal of dead vines
June	Training of vines, application of compost and bio control agents, neem oil cake-0.5 to 1 kg/vine, opening/cleaning of drains, spraying with 1% Bordeaux mixture, spot application of 0.2 per cent copper oxy chloride and gap filling with runners/rooted cuttings
July	Spraying of one per cent Bordeaux mixture and drenching with 0.2 per cent copper oxy chloride in Moderate and low rainfall zones
September	Application of compost, spraying second round of one per cent Bordeaux mixture, application of bio control agents, phytosanitation
October	Earthing up
March /April	Harvesting after noticing 10-15 per cent ripened spikes

setting, yield and both spike shedding and anthracnose infection were effectively checked. After the analysis of the situation of whole area, the success was mainly attributed to timely shade regulation and basin irrigation. The cause of spike shedding in the earlier years was due to non pollination and low proportion of bisexual flowers in spikes which emerged after July. The yield levels improved from 2.8 to 14.7 metric tones.

**2) Farm trials - Impact of irrigation on spike shedding**

Growers participatory trials were conducted in different zones (Sri Laxmi estate, Paka estate, Biokeri estate, Sandalkad estate, Fair field estate, Hosakeri, Kalarical estate, Siddapur, SLN Plantations, Chettalli, Cowribetta estate, Sidapur, Devi Poonacha estate, Makkandur, Green valley estate, Hebbettageri). The schedule with shade regulation, four to five rounds of basin irrigation, two to three rounds of one per cent Bordeaux mixture

spray, one round of compost application, two rounds of recommended fertilizer application, liming/dolomite application once in two years, need based micronutrient application were followed in all the estates. Foliar infection of *Phytophthora* was controlled by timely spraying of 0.1 per cent Metalaxyl + Mancozeb. The loose setting, spike shedding, anthracnose infection and mortality and yellowing due to foot rot infection were effectively checked in all the plantations. The estate which never yielded in earlier years was brought to productive level by timely operation listed above. These trials gave leads of transforming unproductive and anthracnose infected pepper vines to productive levels.

**Murugarajendra estate, Madapur**

This estate comprises of 18 hectares land with Arabica and Robusta coffee and black pepper

as mixed crop at 4.25 x 4.25 meters spacing. In 2004-05 crop season severe foot rot incidents were noticed in Madapur zone which ultimately destroyed most of the pepper vines in Madapur zone. During the initial stage of the infection, the planter approached our centre for suggestion to contain foot rot. As the planter is knowledgeable and committed, the whole refined production technology was implemented through his active co-operation from 2005 crop season onwards. As a result the foot rot, which appeared in five independent spots, was effectively checked and anthracnose incidence was also reduced to manageable level. After experiencing the benefits of irrigation in 2007 crop season in small area, planter extended irrigation to 10 hectares area in ensuing crop season. The production of 22-25 tonnes is expected in the present crop season because of early pre monsoon showers, five rounds of basin irrigation, integrated

nutrient and disease management measures. This is the model plot which can enthuse coffee growers to take up profitable cultivation of black pepper as mixed crop. This estate has become a pilgrimage centre for interested planters and till date, over 500 growers had already visited the estate to see the impact of improved production technology.

Our centre is located in the plantation belt and during monsoon it is a common feature of planters to approach for technical know how after noticing the damage. As the black pepper gets only second priority, there is a tendency amongst growers to defer / post pone many operations particularly plant protection measures. This has resulted in the wide spread damage noticed in several pockets which became very severe in 2006 monsoon. However, by adopting integrated

disease management schedules any plantation can be rejuvenated in course of five to eight years of concentrated efforts.

Disseminating the technology across coffee and arecanut growers is the need of the hour and if transfer of technology is implemented effectively in all suitable coffee and areca based black pepper mix cropped area, the country's production and productivity can be doubled in next six to eight years.

### **Intensive foot rot disease management strategies**

Foot rot management is the main concern of the majority of planters. The general recommendations are not adequate to prevent the introduction, secondary spread and rejuvenation of plantations. In the affected plantations, fresh crop census was done and mortality

rate was collected. Areas were grouped to different categories based on disease intensity and specific intensive management strategies were formulated which are as follows.

Rejuvenation of foot rot affected blocks, progressive reduction of diseases, improvement of canopy architecture, sustenance of productivity and production achieved in misty hilly region are the major lessons obtained through large scale extension programmes. Two decades back many grower friends out of frustration used to tell that pepper will disappear from Kodagu in next 10 years time. Through adoption of improved production packages same estates are rejuvenated, production has increased and foot rot incidence has come down to less than two per cent. Another important

### **Prioritization of foot rot management measures**

<b>Location</b>	<b>Priority</b>	<b>Important agro practices</b>
Uninfected area	Preventing introduction of disease	Moderate shade regulation to maintain staggered umbrella canopy of shade trees Prophylactic foliar spray during early and mid monsoon period Integrated basin management measures
Infected area with less than 5 % mortality	Preventing rapid secondary spread of disease	Gap filling after 1-2 years of phytosanitation, Avoidance of excess shade regulation Spot drenching with 0.2 per cent COC2-3 rounds spraying with one per cent Bordeaux mixture Spot application of Metalaxyl to check secondary spread of foliar infection
Infected area with wide spread incidence of foot rot and yellowing	Protecting healthy vines with in infected area Prevention of secondary spread	Avoidance of excess shade regulation Two round drenching of all the vines with 0.2 per cent COC2-3 rounds spraying with one per cent Bordeaux mixture Spot application of Metalaxyl to check secondary spread of foliar infection
Heavily infected area with more than 50% death of vines	Protecting healthy vines with in infected area Prevention of secondary spread Suppression of soil born spread Rejuvenation	Avoidance of excess shade regulation, Replanting with 8-10 runners/ rooted cuttings per standard after one to two years in infected spot, Two round drenching of all the vines with 0.2 per cent COC, Two to three rounds spraying with one per cent Bordeaux mixture, Spot application of Metalaxyl to check secondary spread of foliar infection

## Area and production of black pepper under technology transfer of IISR Calicut

Category	No of plantations	Area (ha)	Production range (MT)	Foot rot incidence (%)	
				Initial	After adoption
Corporate sector	25	9202	970-1448	13-32	2-6.3
Dwaraka estate with integrated biocontrol system	1	65	8-14	23	5.6
Large holdings (>20ha)	8	518	120-158.5	8-52	3.0
Medium holding (<20ha)	3	67	24-32	1-17	2.0
Small holding (<10ha)	5	21	27.72-38.3	1-12	1.2
Total	42	9873	1149.7-1688.8		

lesson obtained in above implementation programme is strategies works only with sustained concentrated efforts and any lapse during heavy monsoon period can revert the most productive plantation to distress within three month time

### **Ginger (*Zingiber officinale* Rosc.)**

Ginger is one of the major spices of importance to Kodagu. It being an annual crop, production and area of production are highly influenced by price fluctuations. Kodagu comprises of 35,000 hectares of paddy land. Every year depending on the price situation, 5-10 per cent of the paddy land, some area of the bane land and first one to two years of newly planted coffee plantations are converted into ginger area. According to estimate an average of 2735 hectares of land particularly 1250 hectares in

Somawarpet taluk are utilized for ginger cultivation.

Small growers in Somavarpet taluk have shown keen interest to have portion of paddy land for ginger cultivation. Now Ginger in monsoon and chilli in summer has become their source of livelihood. The varieties grown are Rio-de-Janeiro, Himachal, Maran and a small area for Varada as well. The released varieties supplied by State Horticulture Department and IISR are yet to make an impact due to large volume of seed material requirement. The major factors affecting ginger cultivation in Kodagu are:

- (i) Shortage of disease free seed material
- (ii) Ignorance on integrated cultivation practices resulting in fertilizer and pesticide abuse
- (iii) High incidence of soft rot and

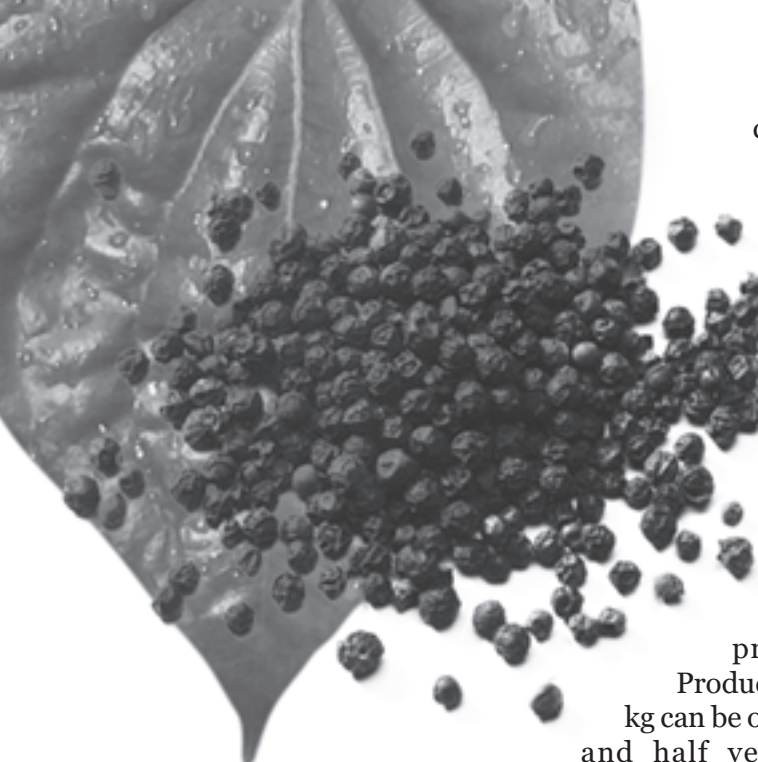
bacterial wilt

- (iv) Ginger leaf spot, Root knot nematode and shoot borer are other major pest and disease problems of ginger in Kodagu

Productivity varies from 16.5 to 82.5 metric tones per hectare and the whole quantity is sold as green ginger. The efforts to convert into other value added products are negligible. There is great scope for increasing the productivity by proper site selection and adoption of integrated cultivation practices. The mild climate and crop rotation with paddy adds great scope for organic cultivation of ginger by section of small growers.

### **Cardamom (*Elettaria cardamomum* Maton)**

Kodagu is home for famous "Coorg green" cardamom. Till 1960's large area in high rainfall



belt were the places of cardamom cultivation. It is the source of income to many small farmers in remote villages. At present it is the only crop which can be grown with least disturbance to natural tree flora. It is grown in humus rich forest soils which are replenished every year by mulch contributed by shade trees. Fluctuation in market prices, greed for timber and attraction towards Coffee, rise in cost of labour input, wide spread incidence of Katte and Kokke kandu and recurring drought in summer months have affected the area under Cardamom cultivation.

At present cardamom is grown in about 12,047 hectares and production is grown is around 747 metric tonnes. IISR, CRC, Appangala has developed several models suitable for mono, mixed and homsted cropping systems. The advent of new varieties, systems of planting and particularly the land race Njallani gold have revolutionized cardamom cultivation in Idukki (Kerala) and several parts of South India. Cardamom is the only spice

commodity in India where the productivity has improved over years. The production technologies are constantly changing and now the confident growers can convert their unproductive land to the most productive one.

Production of over 1000 kg can be obtained within two and half years by adopting improved production packages.

However, the major production problems of cardamom in Kodagu are

- i) Wide spread prevalence of 'Katte' and Kokke Kandu diseases.
- ii) Nematode, root grub, thrips and borer infestation.
- iii) Acute shortage of laborers.
- iv) Rise in the cost of inputs and cost of cultivation.
- v) Recurring drought, lack of irrigation infrastructure and power for irrigation during crucial summer months.
- vi) Rising curing charges for producing quality Cardamom.

Kodagu is the gateway for demonstrating new production goals in various cropping systems. Initially an average production of 494.5 kg per hectare was demonstrated against 63.21 kg per hectarea under conventional management. New trends in production of 1400-2626 kg/ha in

3<sup>rd</sup> year of planting were realized in Kodagu.

However, the drastic fall in prices even below the production cost badly affected the confidence of growers and they soon switched over to other remunerative crops like coffee.

The successive crop damage for Robusta coffee in 2006-2009 in several high rainfall areas which were once cardamom plantations is an eye-opener for growers. It is high time that small growers grow cardamom which was their lifeline for decades. Now Spices board offers attractive replanting schemes for interested growers for raising planting material and plantations. Concentrating on suitable small area with irrigation facilities is the best approach than expanding area under rainfed cultivation. With the award of GI for Coorg green cardamom (Coorg green extra bold, Coorg green bold and Coorg green superior) growers have the responsibility to produce quality cardamom to get premium price with GI tag.

### **Vanilla (*Vanilla planifolia* Andrews)**

Vanilla is another spice crop which has recently gained popularity among growers. The increasing health awareness all round the world, preference for natural products and rapid rise in demand for processed foods with new natural flavours had augmented the demand for vanilla especially in the US and European



markets. Vanilla is a highly compatible crop with existing cropping system of Kodagu and it is grown in about 425 ha and produces 61,471 Kg of green beans. However, the future of this crop is threatened by the drastic fall in price which has brought price to non- remunerative level.

*Fusarium* wilt, Virus infection and rise in wages of skilled workers are the major problems for sustenance of area under vanilla cultivation.

### Tree spices:

Among the tree spices, *Garcinia (Garcinia gummigutta* (L.) Robson) is very popular and it is a part of natural tree flora of cardamom, coffee plantations and natural forest system. The fruits are processed traditionally to get the Kachipuli. Now it has become a natural source for antiobesity capsules because of the presence of Hydroxy Citric acid (HCA) in the fruits. There is great scope to bring it under organized cultivation and processing with special brand names to get remunerative prices.

Nutmeg (*Myristica fragrans* Houtt.), Kokum (*Garcinia indica* Choisy) and Cassia (*Cinnamomum cassia* Presl.) can be part of homestead and small holder's crop to get additional income in the years of coffee failure. They are ideally suited for organic cultivation and there are not many pest and disease problems to these crops. Nutmeg cultivation in similar areas is on the rise and very remunerative price can be obtained by growing nutmeg which gives two spices viz., nutmeg and mace. Dioecious nature of trees can be corrected by growing grafts and there is scope for converting male trees to productive stage by top working.

### Prospects:

The ecological foundation for

sustained productivity such as soil, water, crop and biological diversity are under constant pressure. Input costs are increasing while productivity is either static or decreasing in many of the spice crops. The pre and early monsoon failure has great impact on the productivity of Black pepper and cardamom. Lack of adequate water harvesting and irrigation systems are severely hampering the spices cultivation. Large scale deforestation and change in rainfall pattern is the main reason for decline of Cardamom area in Kodagu. The prevailing gap between the potential yield and realized yield is wide and the resource flow to this sector is also meager. Even with all the above handicaps, there is great scope for increasing productivity and overall production of spices crops in Kodagu.

Crop diversification and whole farm approach with different spices, plantation, food, vegetable and fruit crops is the need of hour for small and marginal growers. Optimizing the black pepper production through rejuvenation, large scale replanting and adoption of integrated nutrition and plant protection practices it is possible to double the production in five to seven years time. Cardamom can be cultivated profitably in small area under intensive practices. The effort of small growers in Idukki has made them self reliant and has boosted the country's share in international market. Similar efforts by elite and small growers in Kodagu can make them self reliant and they can diversify their sources of agricultural income.

Many commodities like ginger, cardamom and garcinia suffer due to market intelligence and marketing facilities. Over dependence on traders, particularly in the case of crops

like ginger, growers are always at the receiving end. The increased efforts are required to produce several value added products like white pepper, green pepper, pink pepper, dry ginger, ginger paste, garcinia paste, garcinia concentrate, etc.

Tree spices like nutmeg, cassia, kokum, garcinia are long term alternatives to small, marginal and homestead gardens to reduce the cultivation costs. Instead of working for others they can work for their own farm which is already in practice in several Malnad zones. Diversification of chilli areas of north Kodagu with other vegetables and converting part of their produce to dry chilli are also required. With sustained efforts for 5-10 years, Kodagu's wonderful ecological beauty can become the Land of Spices.

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Goldin (India) Engineering company was founded by Mr. L.D. Patel, B.E.(Mech.) M.I.E., as back as in 1971 to manufacture machinery for Agro and Food industries.

He visited Europe & U.S.A. in 1984 to study new technology of cleaning processes of grains & seeds. He revisited U.S.A. in 1986 and arranged Technical Collaboration of Goldin (India) Engg. Co. with U.S.A. Company-Forsbergs International Corporation, to manufacture full range of Separation Machinery.

Thousands of cleaning process machinery manufactured by Goldin India Engg. Co. are working all

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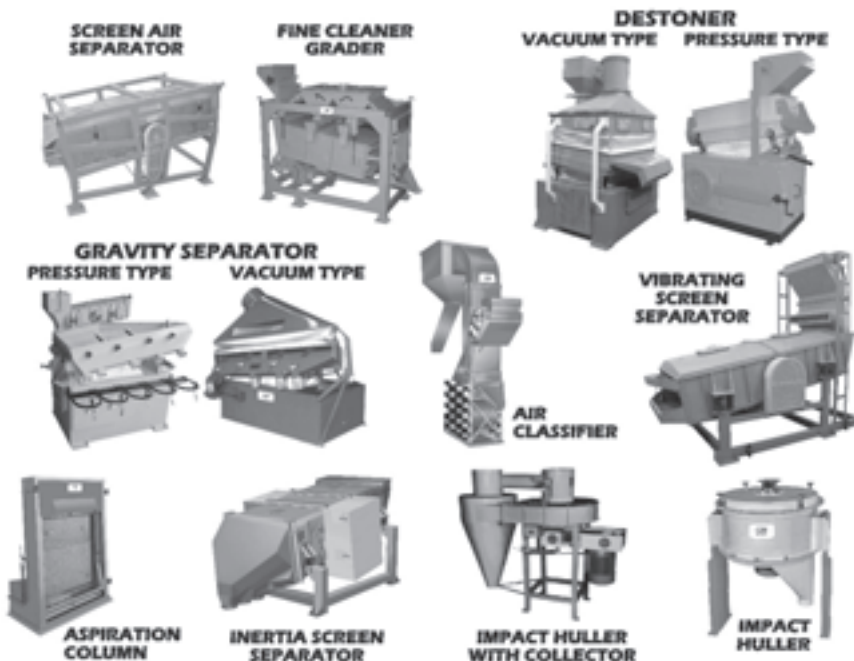
Again he visited Germany & UK in 2003, studied and obtained design and technology of Post Harvest Processing Machineries for Fruits & Vegetables.

Glob-Tech Engineering Co. founded by him in 1995, is assigned to manufacture these machineries.

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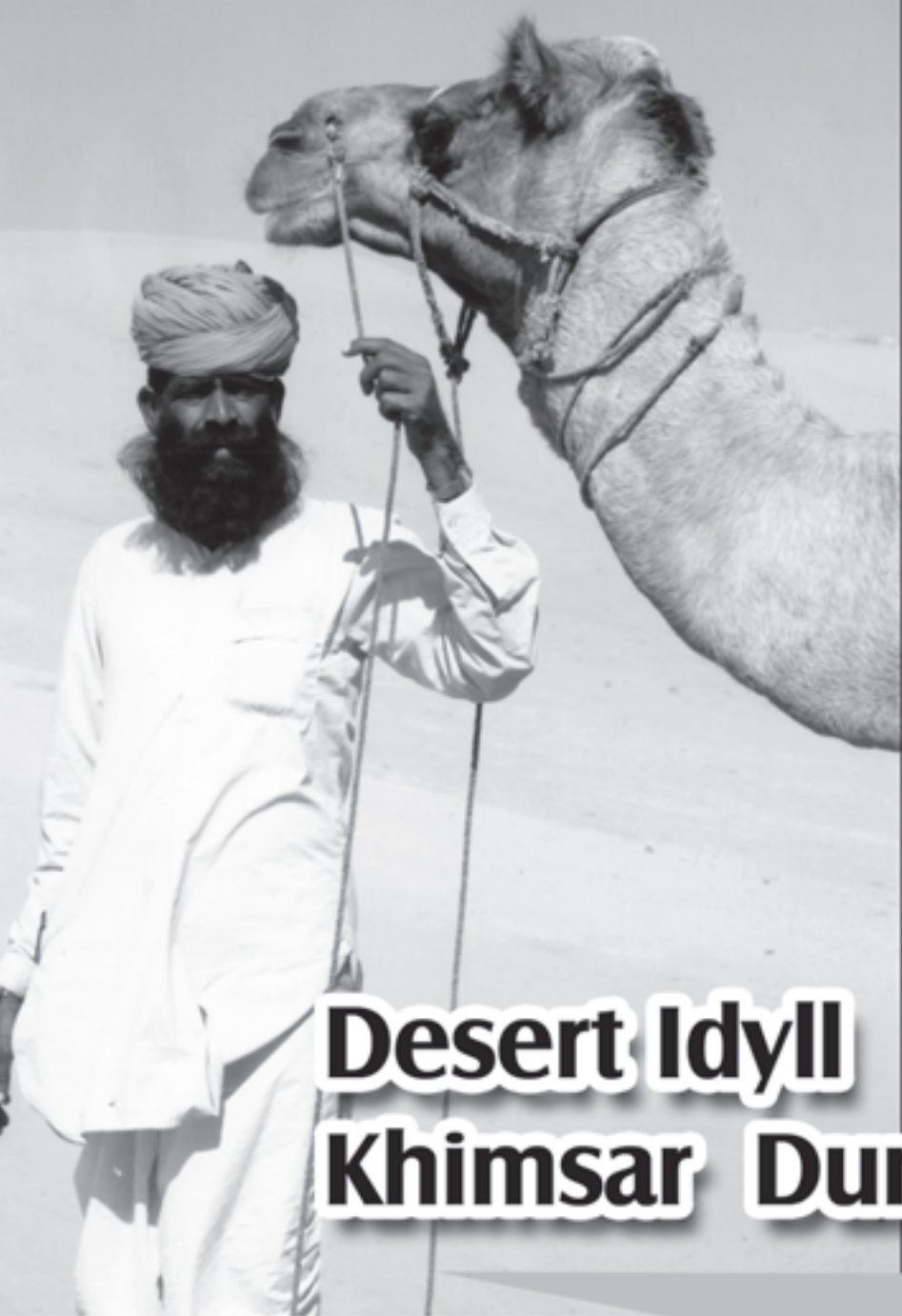
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cool, and very still. Light drifts down like a silver feather from the sky, touches the crests of the dunes. We breathed in the sounds of silence.

A whisper of a breeze touched the sand, brushed the surface of the small lake rippling it like blue velvet stroked the wrong way. From out of the glow of the sky a flock of grey rock pigeons materialized, settled at the edge of the lake, and began their formal cooing-bobbing-pouting ritual like a group of grey, polite, monks. The

Hugh & Colleen Gantzer

# Desert Idyll © Khimsar Dunes Village

Vir Singh our gracious camel driver

**T**here is a certain elegant austerity about the flavour of desert food.

The spices used are as much a fragrance as a taste, often with an evocative bitter resonance. It almost seems as if everything had been triple distilled to its bare essentials. The food of the desert dwellers of Rajasthan, as distinct from the opulence of the cuisine of the erstwhile Princes, is the

culinary expression of a desert dawn.

And if you feel that we're getting too sophisticatedly *foody-foody* then you, obviously, have not had the true experience we had. We spent a short and unforgettable time in a desert camp superbly attuned to the ambiance of the dunes.

The dawn comes up crisp and

light brightened, plated the lake with a metallic glint, gilded the dunes. An explosion of boisterous parrots burst in, scattering the pigeons in an indignant rustle of wings and feathers, fluttering away. The barging band of parrots settled in to indulge themselves in a riot of squabbling and spray-bathing. The light had touched the



**The Dune village : Very private, very secure**

far dunes in our lake-centred hollow. The tiny figure of the shepherd-in-residence, his red turban bobbing like a beacon, trudged across, opened the gate of the sheep-pen, stood back as a white, woolly wave of rams, ewes and lambs burst out, bustled down to the waters edge, dipped their heads in their reflections and tanked up for a day of grazing. The parrots took off with harsh screeches of anger, and sped away in a squadron, heading for the nearest fields. The shepherd gathered his flock, herded them over the dunes till they disappeared like puffs of wind-blown cotton wool.

Yesterday, before coming here, we had done a desert safari in a 4x4 jeep.

All deserts, particularly scrub deserts, host a rich web of life. In the soft sand our driver pointed out the embroidered tracks of Whip Tailed Lizards. These

curious creatures, some biologists say, are only female and yet the reproduce. A large stretch of rasping desert shrubs was honeycombed with burrows. We waited. Twitching noses and beady eyes appeared. Desert rats scamper around at dawn and dusk, hunting for grass-seeds, tender

shoots, insects. Retire into the comfort of their deep, interlinked, warrens, in the heat of the day. A family of fat partridges, disturbed by our passage, waddled away like desperate dowagers and then, when they felt safe, stretched their necks and went *kateetar-kateetar* broadcasting our presence. Alerted, a flock of quails exploded like a scatter of bird-shot and shot out over the scrub. They'd reassemble again when their feathered scouts found the safest grazing area. Our driver stopped and pointed: "Blackbuck!" We couldn't spot them at first: their dun-coloured bodies merged perfectly with the dusty, khaki, landscape. Then their stately lord-and-master appeared, holding his black, horned head high. Very slowly, very carefully, he began to manoeuvre his harem into the safety of the thorn trees. We followed them for a while, but when a second and a third jeep tried to join us, we veered off and threaded our way to the top of a



**The serenity of our oasis in the dunes**

bush-dotted hillock. There we were surprised to spot a small herd of heavy, slate-grey, nilghai. With no dark areas to hide them, they stood out clearly but they were unafraid. "They have no natural enemies here", our driver said. That is probably why they stared at us with a certain eye-ball-to-eyeball arrogance. The old myth that wild animals back away from the fixed gaze of a human is just that: a myth.

At the end of the safari we entered a narrow passage at the top of a dune and then a gem of an oasis opened before us. This was the Khimsar Dune Village.

In the centre of a broad valley in the dunes, a little blue lake sparkled, dotted with geese and ducks. In the middle of the lake was a tiny island supporting a

single tree. Around the lake, and rising up the gentle dunes, were more trees shading single huts, clusters of them, a sheep-pen protected by a thorn fence, and some large tents which, we learnt, were for dining, entertainment, and service facilities. We strode across to our hut. It was a mud-plastered and charming in its rustic simplicity. Behind the bed, glass pieces inserted in the plaster shimmered in decorative mirror-work, glittered on the ceiling like captive constellations. But for all its folksiness, an air-conditioner hummed softly, there was a bowl of fruit on the coffee table and the bathroom was as modern as any in a starred hotel. While we look forward to authentic experiences when we travel, we do like to return to comfort at the end of the day.

So clearly do our fellow guests. We met Ozzies and Brits and French at the bar set up on a camel cart, at the edge of the lake and under the stars. In the dining tent we assured a fastidious Belgian that Kabuli Channa was, indeed Chick Peas. And when the Kalbelia dancers began to swirl in the Entertainment Tent, an American woman wondered if they were related to the gypsies. It was all summed up by a tour leader. She said "Nowhere else in the world have we experienced such stillness and peace in such a beautifully exotic setting..."

That was yesterday. Now the other guests have begun to move out of their huts. Soon, there will be only us and the German and the ineffable peace of our Village in the Dunes.



A herd of black buck in the scrub wilderness

# SPICES BOARD PARTICIPATES IN THE INDO PAK SHOW IN LAHORE

Termed as “Indo-Pak Peace Project”, at the initiative of the Governments of both India and Pakistan, an India Show was held at Lahore, Pakistan from 11 to 13th February 2012. Spices Board showcased in this programme at short notice. The show was organized by the FICCI at Lahore International Expo Centre, Pakistan to showcase the capability of India in trade &

commerce and was inaugurated by Makhdoom, Md. Amin Fahim, Minister for Commerce, Government of Pakistan on 11th February 2012. The closing was done by Shri Anand Sharma, Honourable Minister of Commerce and Industry, Government of India. There was overwhelming response from the large business houses like Shaan, National Foods, etc. as



**Importers from Pakistan discussing with Shri. Sopal Ram, Assistant Director, Spices Board, for supply of spices from India.**

also from the public at large who were looking for spices. There was a clear interest to import/purchase spices from India realizing its inherent qualities. Official trade

between India and Pakistan during 2010-11 reported to be \$2.7 billion, while informal trade between these two countries is estimated to be about \$10 billion. Though Pakistan has kept some items under negative list but maintain a positive list of 1,938 items, which can be exported

from India to Pakistan. Due to huge consumption of non-veg items, demand of spices in Pakistan is very high; contrary to this it has very less production of spices (that too comprises only few seed spices, garlic, ginger and turmeric) and depends mainly on imports

from various countries. The Spices Board was represented by Mr Sopal Ram, Assistant Director, Spices Board in Lucknow.



**Makhdoom, Md. Amin Fahim, Minister for Commerce, Government of Pakistan at Spices Board stall being greeted by Shri. Sopal Ram, Assistant Director, with a spicy chocolate bar.**

# SPICES BOARD WINS COMMERCE MINISTRY'S RAJBHASHA PURASKAR AWARD



**Dr. A. Jayathilak IAS, Chairman, Spices Board receives the Rajbhasha shield from Shri Jyothiradithya M. Scindia, Minister of State for Commerce & Industry, Government of India.**

**T**he Spices Board has been awarded the Rajbhasha Shield for the year 2010-11 towards first place among the offices coming under the Department of Commerce, located in non Hindi speaking areas (C region) by way of recognition of its efforts and achievements in implementing the Official Language policy of the Government of India. This award is instituted by the Department of Commerce, Ministry of Commerce & Industry; Government of India for the offices coming under their control. It is for the first time that the Spices Board is selected for first prize.

Shri. Jyothiradithya M.

Scindia, Hon'ble Minister of State for Commerce & Industry, Government of India awarded the shield to the Board in the Hindi Salahkar Samiti meeting held in Udyog Bhavan, New Delhi on 7<sup>th</sup> February 2012. Dr.A.Jayathilak IAS, Chairman, Spices Board attended the meeting and received the shield from the minister. While reviewing the work done by various organisations, the honourable members of the Hindi Salahkar Samiti made a special reference on the Hindi publication, especially on Spice India (Hindi) and Sandesh, the Hindi house magazine published by the Board.

## PH.D AWARDED



Mr V. Sreekumar, Publicity Assistant of the Board has been awarded Ph.D by the Calicut University for his thesis on "Impact of Nattinpuram" [Agriculture programme of Doordarshan].

# KALIMPONG

Spices Board participated in the Krishi Mela exhibition organised by the Darjeeling Gorkha Hill Council, Darjeeling at Relli, Kalimpong from 11 to 13<sup>th</sup> January 2012. Dr.H.B.Chettri, MLA, Kalimpong inaugurated the Mela. Samples of export potential spices like Alleppey cardamom, Malabar pepper, Cochin ginger, Erode turmeric, Guntur chillies, seed spices, branded spice packs and oils and oleoresins were displayed in the Board's stall. Besides the models of traditional bhatti and modified bhatti for drying of large cardamom displayed attracted the farmers very much. Shri.M.S.Ramalingam, Assistant Director, Shri. C.M. Pradhan, Farm Manager and Shri.Sudhir Rai OTA of Zonal office Kalimpong manned the Board's stall.



A view of visitors keenly looking at the Modified Bhatti model displayed in the Board's stall for drying large cardamom in the Krishi Mela Exhibition held at Relli-Kalimpong.

## THODUPUZHA



Visitors in the Board's stall during the participation of Karshikamela 2012 held at Newman College, Thodupuzha from 26<sup>th</sup> December 2011 to 1<sup>st</sup> January 2012. Smt. Ambily Sadanandan, Field Officer, Spices Board, Thodupuzha organised the participation.

## HYDERABAD



Shri.Venkat Reddy Ram Reddy, Hon'ble Horticulture Minister of Andhra Pradesh is seen briefing the activities of the Board by Dr.G.Lingappa, Assistant Director, Spices Board, Warrangal during the Board's participation in Horti Expo 2012 held in Hyderabad from 26 to 30<sup>th</sup> January 2012.

# MP EMERGING AS SPICES PRODUCTION HUB



**Dr. Ramkrishna Kusmaria, Hon'ble Minister for Farmers Welfare and Agriculture Development, Government of Madhya Pradesh is seen in discussion with the Board's officials at the stall.**

**M**adhya Pradesh is emerging as a major chilli producing tract in the country as it appears from the development happening in the districts of Dhar and Khargon. Vast areas are brought under chilli cultivation and one can identify the entities involved in this operation. The Spices Board's participation in the Krishi Vikas 2012 organised by CPDO (WR), DADF-Ministry of Agriculture, Government of India, and Department of Animal Husbandry, Government of Madhya Pradesh from 16<sup>th</sup> to 18<sup>th</sup> February 2012 helped in understanding the rapid progress the State has been making in chilli production.

M/s Pratibha Syntex Ltd. is able to produce organic fennel, chilies, turmeric and other agri products in around 1,00,000 acres area at Indore. M/s. Bioseeds links

Mktg Service; Ujjain produces turmeric seeds in 200 acres. M/s. Lavanya green Orchids Pvt.Ltd, Bhopal produces organic spices and other agri products in 30 acres. Similarly, Burhanpur district of Madhya Pradesh also grows turmeric in around 300 acres.

The farmers in Malwa and Nimad regions of Madhya Pradesh are very much optimistic about growing coriander, other seed spices and chilies. And it is informed that there is a boom in production of Garlic from Ratlam and Mandsaur areas but the farmers are unable to market their produce.

Many farmers requested the Board to organize training campaigns on modern practices in spices cultivation. They also requested to provide platforms wherein farmers and exporters

could interact with each other for mutual benefit. There is excellent scope for organic production as many NGO's and professional organization across the State are already into it and seeking better marketing scope.

Dr. Ramkrishna Kusmaria, Hon'ble Minister for Farmers Welfare and Agriculture Development, who was present at the valedictory function of the event requested the farmers to adopt organic farming practices. The Minister also visited the Board's stall and was very much impressed by the presence of Spices Board in Madhya Pradesh. Information about prospects of Chindwara and progress of Guna - Spices Parks were briefed to the Minister.

Shri. B.N. Jha, Deputy Director (Mktg.), Guna and Shri. Gaurav Dwivedi, Assistant Director (Mktg), Rai Bareli of Spices Board, organized the event.

# TRAINING FOR CUMIN FARMERS IN JODHPUR

The Spices Board meeting on quality aspects in cumin organised in Balaarwa village near Jodhpur attracted the attention of farmers who turned up to interact on the various aspects of cultivation. The meeting was organised by the

Jodhpur regional office of the Board and the interaction was led by Dr Takhat Singh Rajpurohit, Professor retired of the Rajasthan Agricultural University. Over 50 farmers participated in the meeting which was also addressed by Mr P.C.

Gopalakrishnan, Deputy Director who briefed them on the facilities coming up for the cumin farmers in the Spices Park. The Village Sarpanch also attended the meeting. Sri.Gourav Surana, OTA, proposed a vote of thanks.



Dr. Rajpurohit, third from left seen interacting with the farmers. Mr P.C. Gopalakrishnan [first from left], Deputy Director, Spices Board is also seen.



A view of the farmers attending the meeting.

## STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS ABOUT THE NEWSPAPER


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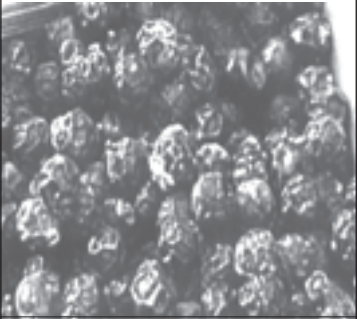






# CALENDAR OF OPERATIONS FOR IMPORTANT SPICES - APRIL 2012

Timely planning and execution of farm operations based on agroclimatic conditions of the area is important for successful farming for higher productivity and sustainability. To facilitate this a calendar of operations in respect of important spice crops for April is given below.

Name of the crop/ Type of operations	Details of operations to be carried out
<p><b>CARDAMOM</b></p> <p>I . Agronomic measures</p>  <p>II. Pest management</p> <p>III. Disease Management</p>	<p><b>NURSERY</b></p> <ul style="list-style-type: none"> <li>➤ Regular watering may be given to bed/polybag/ sucker nursery based on necessity.</li> <li>➤ To control damping off/seedling rot diseases in nursery, soil drenching with 0.2 per cent copper oxychloride or 0.2 per cent mancozeb may be taken up.</li> <li>➤ As bio-control measure, trichoderma or Pseudomonas or Bacillus species may be applied in the soil.</li> <li>➤ For controlling leaf rot disease, spray 0.3 per cent mancozeb and for controlling leaf spots, spray 0.25 per cent difoltalan or 0.2 per cent bavistin after noticing early symptoms.</li> </ul> <p><b>MAIN FIELD</b></p> <ul style="list-style-type: none"> <li>➤ Continue irrigation based on necessity wherever irrigation facility is available.</li> <li>➤ Light pruning may be done by way of removing only the hanging dry leaves and sheath. This will facilitate better pest control even at low spray volume of pesticide</li> <li>➤ For Integrated Pest Management prune dry leaves without removing green leaf sheath.</li> <li>➤ Apply chlorpyrifos @ 200 ml per 100 liters of water (spray may coincide shoot borer moth emergence).</li> <li>➤ Keep constant vigil for any katte virus/kokke kandu affected plants to uproot and destroy, if found.</li> <li>➤ For controlling leaf rust and chenthal &amp; leaf spots, if found, spray 0.25 per cent Mancozeb or Companion (two to three rounds – 30 days interval).</li> <li>➤ If symptoms of stem lodging are noticed, spray 0.2 per cent Bavistin on pseudo stem.</li> <li>➤ Root rot and leaf yellowing can be controlled by foliar spray and soil drenching with 0.2 per cent Bavistin or Carbendazim + Mancozeb.</li> </ul>

	<ul style="list-style-type: none"> <li>➤ If symptoms of capsule brown spot (Anthracnose) is noticed, spray with 0.2 per cent Bavistin.</li> </ul>
<p>IV. Harvest and post harvest operations.</p>	<ul style="list-style-type: none"> <li>➤ Continue harvesting with a gap of 25-30 days depending upon the maturity of the capsules in irrigated plantations.</li> <li>➤ Harvest only the matured capsules for getting better out turn.</li> <li>➤ Always store the cured cardamom capsules at 10 per cent moisture in 300 gauge black polythene lined gunny bags inside wooden box to retain green colour and quality.</li> </ul>
<p><b>LARGE CARDAMOM</b></p> <p>I Agronomic measures</p> 	<p>Nursery</p> <ul style="list-style-type: none"> <li>➤ Regular watering may be done in the sucker nursery with available water resources depending on moisture status in the soil.</li> <li>➤ Dried or powdered cattle manure / organic manure / topsoil may be applied in the nurseries for healthy growth of suckers if not applied so far.</li> <li>➤ Diseases/pests infested suckers may be removed and destroyed.</li> <li>➤ It is desirable for every large cardamom farmer to have their own large cardamom high yielding sucker nursery, for which selection of sites, collection of cattle manure, jungle soil, bamboo materials should be made immediately.</li> </ul> <p>Plantations</p> <ul style="list-style-type: none"> <li>➤ Large cardamom plants may be irrigated at regular intervals with available water resources, depending on rainfall and moisture status in the soil.</li> <li>➤ Chirke and foorkey infected plants may be destroyed by uprooting/burial at regular intervals in the pits.</li> <li>➤ Regular inspections may be carried out to observe caterpillar/shoot borer/shoot fly incidence if any and may be hand picked and destroyed mechanically.</li> <li>➤ Application of cattle manure/compost/organic manures will help in getting sustained production, improving productivity and quality of the crop.</li> <li>➤ One round weeding followed by mulching may be carried out to conserve soil moisture if it is not done earlier.</li> <li>➤ All the aged/diseased/unproductive cardamom plants may be uprooted and destroyed and the cardamom field may be kept ready for marking lines, opening pits, so that the timely replantation/gap filling operation can be taken soon after getting rains.</li> <li>➤ Soon after the receipt of rains, weeding may be attended for easy movement of pollinators &amp; for getting higher yield.</li> </ul>

	<ul style="list-style-type: none"> <li>➤ Arrangements may be made for getting good shade tree saplings for planting in the open/poor shaded areas.</li> </ul>
<p><b>PEPPER</b></p> <p>I Agronomic measures</p> 	<p>Nursery</p> <ul style="list-style-type: none"> <li>➤ Watering to be continued regularly to the pepper cuttings in polybags.</li> <li>➤ After summer showers, due to warm humid situation, there are chances for occurrence of leaf rot disease. If it appears spray the cuttings with 0.2 per cent Carbendazim or one per cent Bordeaux mixture and also remove the disease affected cuttings and destroy them.</li> </ul> <p>Main field:</p> <ul style="list-style-type: none"> <li>➤ If liming was not done in the past two years, lime @ 500 gram per vine may be applied after getting first summer rain.</li> </ul>
<p><b>VANILLA</b></p> 	<ul style="list-style-type: none"> <li>➤ Irrigation to be continued based on weather condition and necessity.</li> <li>➤ Tying of vines with the standard to be continued based on necessity.</li> <li>➤ Continue pollinating the flowers manually with the help of skilled labourers between 6.00 a.m. to 1.00 p.m. on the day of flower opening.</li> <li>➤ If mist or micro sprinkler irrigation facility is available it may be operated daily to ensure required humidity and supply of water to vines.</li> <li>➤ If any virus affected vines found in the vanillary, uproot them and destroy.</li> </ul>
<p><b>GINGER</b></p> 	<ul style="list-style-type: none"> <li>➤ Prepare the mainfield after getting summer showers and plough the field into fine tilth and form beds of one meter width, convenient length and 25 cm height.</li> <li>➤ Provide proper drainage channels to avoid water logging during the rainy season.</li> <li>➤ Apply 30 tonnes of well powdered farm yard manure or compost alongwith 310 kg of super phosphate and 40 kg of muriate of potash/ha. as basal dose and mix well with soil surface of the beds which were already prepared.</li> <li>➤ Planting of ginger may be done in first fortnight of April on receipt of summer showers with rhizome bits of about 20-25 grams in weight.</li> <li>➤ Before planting soak the rhizomes in 0.1 per cent quinalphos (400 ml/100 liters water) and 0.3 per cent dithane M 45 (300 grams/100 liters of water) solution separately for half an hour each.</li> <li>➤ Plant at a distance of 25x30 or 25x25 cm at not more than five cm depth with a hand hoe and then close it with powdered farm yard manure.</li> <li>➤ Then mulch the whole bed with about 15 tonnes of green leaves/ha.</li> </ul>

<p><b>TURMERIC</b></p> 	<ul style="list-style-type: none"> <li>➤ Prepare the main field after getting summer showers and plough the field into fine tilth and form beds of one meter. width, convenient length and 25 cm height.</li> <li>➤ Provide proper drainage channels to avoid water logging during the rainy season.</li> <li>➤ Apply 40 tonnes of well powdered farm yard manure or compost along with 185 kg of super phosphate and 50 kg of muriate of potash/ha as basal dose and mix well with soil surface of the beds which were already prepared.</li> <li>➤ Planting of turmeric may be done in second fortnight of April on receipt of summer showers with rhizome bits of about 20-25 grams in weight.</li> <li>➤ Before planting soak the rhizomes in 0.1 per cent quinalphos (400 ml/100 liters of water) and 0.3 per cent dithane M45 (300 grams/100 liters of water) solution separately for half an hour each.</li> <li>➤ Plant at a distance of 20x25 or 25x25 cm. at not more than five cm. depth with a hand hoe and then close it with powered farm yard manure.</li> <li>➤ Then mulch the whole bed with about 15 tonnes of green leaves per hectare.</li> </ul>
<p><b>CHILLI</b></p> 	<ul style="list-style-type: none"> <li>➤ Avoid application of pesticides just before picking.</li> <li>➤ Do not allow the pods to over ripe/dry on the plant itself. Periodical picking improve the yield and quality.</li> <li>➤ Dry the harvested chillies on clean polythene sheets or cement floors to avoid aflatoxin contamination.</li> <li>➤ Dry the produce till the moisture content reaches 10-11 per cent.</li> <li>➤ Prevent contamination with dust and other foreign material. While drying keep the dogs, cats and poultry away from the drying floor.</li> <li>➤ Store the produce in clean and dry gunny bags and stake them on wooden plank 40-60 cms away from the walls to prevent produce from moisture.</li> </ul>
<p><b>FENNEL, CUMIN FENUGREEK CORIANDER</b></p>	<ul style="list-style-type: none"> <li>➤ The field must be ploughed and kept open during summer. This will help for controlling the pest and diseases as well as absorption of the rain water.</li> </ul>
<p><b>CELERY</b></p>	<ul style="list-style-type: none"> <li>➤ Crop should be irrigated during first fortnight.</li> <li>➤ Harvesting of plants should be done when about 80 per cent umbels turn to light brown colour.</li> <li>➤ After harvesting crop should be dried on clean surface and threshed to separate the seeds.</li> <li>➤ Grading is done with the help of sieve or vibrator.</li> </ul>

## MONTHLY AVERAGE PRICES OF SPICES FOR FEBRUARY 2012

SPICE	CENTRE	GRADE	PRICE ₹/KG
Black Pepper	Kochi	Ungarbled	313.50
		Garbled	328.50
Cardamom small	Vandanmettu/ Bodinayakanur	bulk e-auction	651.05
Cardamom (L)	Siliguri	Badadana	775.94
		Chotadana	691.25
Chillies	Virudhunagar		-
		Guntur	56.38
Ginger(Dry)	Kochi	Best (New)	69.38
		Medium (Old)	76.25
Turmeric	Kochi	Nadan	59.88
		Salem	54.12
		Agmark	54.62
		Erode	50.25
Coriander	Chennai	Rajasthan Green	59.88
		Deluxe	50.12
		Ordinary	156.25
Cumin	Chennai		95.00
Fennel	Chennai		33.00
Fenugreek	Chennai		44.50
Mustard	Chennai	Small	18.62
Garlic	Chennai	Medium	929.17
Clove	Cochin		380.73
Nutmeg(with shell)	Cochin		684.69
Nutmeg(without shell)	Cochin		1252.08
Mace	Cochin		

Prices are collected from secondary sources like Agricultural Produce Market committees, Kirana Merchants Association, India Pepper and Spice Trade Association, 'Spices Review' from chhaganlal kalidas mehta, Licensed Cardamom Auctioneers etc.

### ALL INDIA CARDAMOM AUCTION SALES AND PRICES FOR FEBRUARY 2012 COMPARED WITH FEBRUARY 2011

PERIOD	FEBRUARY 2012		FEBRUARY 2011	
	Quantity sold (Kg)	Average price (₹/Kg)	Quantity sold (Kg)	Average price (₹/Kg)
First week	605586	593.56	172039	1193.11
Second week	584386	644.13	167053	1134.03
Third week	461847	658.12	160428	1115.22
Fourth week	463025	727.93	159106	968.98
<b>Total</b>	<b>2114844</b>	<b>651.05</b>	<b>658626</b>	<b>1105.01</b>

Source: Auction reports received from licensed cardamom Auctioneers

## AVERAGE INTERNATIONAL SPOT PRICES FOR FEBRUARY 2012

SPICE	MARKET	GRADE	(USD/KG)	(₹/KG)
Black Pepper	U.S.A	MG-1	7.25	356.41
White Pepper	U.S.A	Muntok	10.54	518.15
Cardamom(Small)	Saudi Arabia	India Asta Extra Bold	17.49	860.00
Chillies	U.S.A	India S4	3.20	157.31
		Chinese Small	3.86	189.76
Ginger(Dry)	U.S.A	Indian	3.95	194.18
Turmeric	U.S.A	AFT 5..25 Curcumin	5.62	276.28
Coriander	U.S.A	Canadian	1.39	68.33
Cumin	U.S.A	Syrian/Indian	3.84	188.77
Fennel		Egyptian fancy	2.82	138.63
Fennugreek	U.S.A	Ind/Turkey	1.10	54.08
Clove	U.S.A	Mad/Zan/Com	18.30	899.63

Exchange Rate 1 US \$ = ₹ 49.16

SOURCE:M/s.A.A. SAYIA & CO.INC HOBOKEN



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