



SPICE VISION

NEWSLETTER OF THE INDIAN SOCIETY FOR SPICES

November 1999

FROM THE PRESIDENT'S DESK

The Indian Society for Spices (ISS) is venturing into the publication of a Newsletter - SPICE VISION - for the benefit of ISS members and spices fraternity. Though this is visualised as a house magazine, it will be available for any one interested in spices, aromatic and medicinal plants, their development and utilization. This will be a medium through which the ISS communicates to its members and benefactors. I hope the readers will be picking up lots of ideas and information from the pages of SPICE VISION, eventually enlarging their own 'Spice Vision'.

Through this column of Spice Vision, I am approaching the honourable members of the Society - especially the institutional members - for sponsoring the publication of this Newsletter. Your contribution will be prominently advertised on the Newsletter pages.

I solicit full cooperation from all members of the Society for this venture. Share your experience with other members through these pages. Help us, criticise us, and if you feel we are doing a good job, appreciate us - that will boost the morale of the people working behind, spending their time and

energy for the benefit of the members of ISS. Help us to help you, to serve you.

P.N. Ravindran
(President, ISS)

CENTENNIAL SPICE CONFERENCE

The ISS, in collaboration with Indian Institute of Spices Research, will be organizing a **Centennial Spice Conference** in Sept. 2000 at Calicut. This conference will provide a glimpse of the shape of things to come in the next century. *Please participate and support this centennial conference.* We would like to bring all spices fraternity together for this great event. Contact Dr. M. Anandaraj, Secretary ISS, at IISR address.

AWARDS SHOWER OVER IISR

A windfall of awards for IISR Scientists :- **The Prestigious Rafi Ahmed Kidwai Award** for 1996-98 is bestowed on Dr. K.V. Peter (Director, IISR) and Dr. A.K. Sadanandan, Principal Scientist (Retd.) in the area of Horticulture in recognition of their service to spices research and development. This is the highest award in the area of Agricultural Sciences in the country. Congratulations !

This issue is sponsored by :
Institute of Micronutrient Technologies, Poona - 411048

Jawaharlal Nehru Award for best Ph.D dissertation for 1998 was awarded to Dr K. Nirmal Babu, Sr. Scientist, (in Crop improvement) and to Dr V.S. Korikanthimath, Sr. Scientist and head Cardamom Research Center, Appangala, (in Horticulture). Congratulations.

The Best Annual Report Award - to IISR. This award for the year 1996-97 was awarded to the IISR. Director, Dr. K.V.Peter, received the award from DG, ICAR, during the Directors' Meet at Delhi on 8.10.'99.

FIRST SUGANDHA BHARATHI AWARD TO Dr J.S. PRUTHI

Dr J.S. Pruthi has been nominated for the **first Sugandha Bharathi Award**. *This award was instituted by the research staff of the Division of Crop Improvement & Biotechnology of Indian Institute of Spices Research through the ISS.* The Award will be given to a person in recognition of his/her contribution to spices research/development. A search committee constituted for selecting the awardee, has recommended unanimously Dr. Pruthi, in recognition of his lasting contributions to the area of spices technology. The award would be presented during the inaugural function of the AICRPS workshop on 19th November '99.

Dr J.S. Pruthi is a well known, globally recognised authority on post harvest technology and food technology. He was the founder director of the Agmark Laboratories, a distinguished scientist of CFTRI, and a consultant for UNDP/UNIDO.

HOW TO IMMORTALISE YOURSELVES - WE HELP

If you want to immortalise your organisation or someone dear to you - then

here is a chance. Sponsor an award in that name - any one of the following :

- ☞ An award for the best paper presented in the National Seminar / Conference organised by ISS.
- ☞ An award for an young Scientist (below 35) whose paper is adjudged as the best in the National Seminars / Conference organised by the ISS.
- ☞ An award for the best poster presentation during the National Seminar.
- ☞ If the members wish to institute award through ISS for any specific area (such as spices development, spices marketing, spices genetic resources work, innovative work in the area of processing / post harvest technology, plant protection etc.) may please write to the Secretary indicating the details.

By this way you are helping a cause while immortalising yourself.,

For your information, Dr. J.S. Pruthi has instituted '**J.S. Pruthi Award**' for the best paper published in the Journal of Spices and Aromatic Crops.

NEWS FROM ISS SECRETARIAT

Centennial Conference on Spices

The Executive Council met on 16 June 1999 and decided to organise a **Centennial Conference** on spices in collaboration with the Indian Institute of Spices Research in the year 2000 AD which marks 25 years of existence of this institute. This conference will be organised during September 2000 AD. It was decided to constitute a National Advisory Committee with Dr R.S. Paroda, D.G. (ICAR) and Dr K.L. Chadha, National Professor (Horticulture) as patrons, and Dr S.P. Ghosh DDG (Hort.) ICAR as

Chairman and Dr K.V. Peter Director, IISR as Convenor. The council nominated Dr. K.V. Peter, Director IISR, as the General Chairman of the Organising Committee, Dr. P.N. Ravindran, President ISS, as Vice Chairman and Dr M. Anandraj, Secretary ISS, as Convenor. The council entrusted the Convenor designate to do the required ground work and prepare the first circular of the conference by the end of this year.

Annual General Body

This year's general body meeting of ISS will be held on Nov. 19, 1999 at 6 PM at Calicut, during the time of the workshop of All India Coordinated Research Project on Spices. Separate notices have been issued to all members as per the rules and regulations. Amendments for the bye laws will also come up during this General Body meeting. A special lecture by Dr. J.S. Pruthi has been arranged during the General Body meeting.

Share Your Views - doubts, experience

The Society is bringing out SPICE VISION a medium to advice the farmers on many aspects of Spices, medicinal and aromatic plants. The members can share their experiences with the readers through the columns of this news letter. Information on various aspects of spices production will be given in a nutshell. Readers are requested to inform specific requirements or topic of interest, if any.

STARVING SYMPTOMS IN PEPPER

Pepper requires a balanced nutrient supply for proper growth and yielding. When the plant is starved for some nutrient, the effects appear on the plant. By looking at the 'starvation symptoms', it is possible to conclude which element is in short supply and then by supplying that element the deficiency can be corrected. The following are the major symptoms of starvation.

Nitrogen

Chlorosis of older leaves and later of younger leaves. Growth retardation and reduction in leaf size. Leaf tips and margins at lower end become necrotic and brown in colour.

Phosphorus

Bright green to bluish green colour of the older leaves which turn to bronze green. Necrosis of leaf tips and margins, stunted growth, downward curving at the leaf margins.

Potassium

Necrosis of older leaf tips that spreads towards leaf margins. Necrosis spread to younger leaves. Affected leaf will remain on the plant.

Calcium

Tiny brown necrotic pin head spots over chlorotic area near leaf margins in young leaves followed by mature ones. Interveneal chlorosis and die back of vine tips. Immature leaves remain attached to the plant.

Magnesium

Pale yellow discoloration of the leaf margins and tips. The major veins remain green and laterals turn yellow, necrosis and defoliation occur.

Sulphur

Younger leaves are chlorotic at later stages, which turn bright yellow in the interveneal areas, premature leaf fall and die back of growing tip, older leaves remain on the plant.

Iron

Interveneal chlorosis of younger leaves, the youngest leaves may be completely yellow or white.

Manganese

Reticulate pattern, green veins with a pale yellow or white back ground.

Chlorosis between main veins, later leaves turn yellow or white with only the main veinal areas remaining green and necrosis in mature leaves.

Copper

Interveinal chlorosis of young leaves, dark brown necrotic spots towards tip and margins, inward curling of necrotic margins.

Zinc

Shorter internodes, small leaves, interveinal chlorosis, puckering of leaf margins.

Boron

Brown necrotic lesions appear within the chlorotic area. Short internode, reduced branching, interveinal chlorosis of young and recently mature leaves at distal and central portion and necrotic lesion on main vein

(IISR)

WHAT LIES UNDER THE SKIN ?

The flavour, aroma and quality ingredients of spices all lie below the outer skin (fruit wall or seed coat). These ingredients can be separated by powdering the spice and extracting the powder with solvents or by steam distillation. Such extracts of spices were developed by processors to meet the new demands that have arisen in food processing industry. The spice extracts have the following advantages :

- Consistency in flavour;
- Not effected by bacterial contamination;
- Much longer shelf life;
- Easier storage and handling;
- Full release of flavour during cooking;
- Can easily be blended to achieve the desired characteristics.

The essential constituents of spices which provide the aroma, flavour, pungency and colour together make up about less than 10% of the whole. These constituents may be obtained by solvent extraction of spices, resulting in an extract called **spice oleoresin**. The volatile constituents of spices, known as the **essential oils**, which also form part of the oleoresin, are obtained directly from the raw material by steam distillation. The composition of the essential oils depends on

the spice, its quality and the distillation technique applied. These extracts are free of many of the disadvantages of the host spice from which they are prepared, and coupled with their consistent quality and strength. For use these extracts are dispersed into a selected carrier or encapsulated or made into an emulsion. In such forms the essential quality of the spice is provided free of all the disadvantages of the original spice, without losing any of the attributes.

Spice Oils

The essential oil obtained by steam distillation is endowed with most of the aroma bearing constituents and contains hydrocarbons, terpenes, esters and oxygenated compounds, which have boiling point ranging from 70-200°C. The total sensory perception of an oil is not judged by one compound but by a mixture of all the constituents.

Spice Oleoresins

The oleoresins containing all the volatile as well as non volatile constituents of the spices, most closely represent the total flavour of the fresh spice in a highly concentrated form. For this reason oleoresins are the preferred spice extract used for flavouring purpose. Oleoresin is produced by extraction of dry spices with an organic solvent or solvent mixture. Common solvents used are ethylene dichloride, acetone, hexane or alcohol. Special attention is required at final stage of preparation to remove the residual solvent (always less than 30ppm)

Super Critical Fluid Extraction Technology (S C F E)

SCFE system is the modern technology of making oils and oleoresins through carbondioxide processing. SCFE is a two-

step process which uses its critical pressure and temperature for extraction of various natural materials. The advantages of using this technique for oleoresins and oils are;

Delicacy and freshness close to natural, high potency of active components, excellent blending characteristics, longer shelf life, free of biological contaminants, simultaneous fractionation of extract, pollution free process, provides solution to international concerns, no residual solvent, no residual pesticide

(John T. Zachariah, IISR)

ON KEEPING THE FOOT HEALTHY

Among the diseases of black pepper, *Phytophthora* foot rot disease and slow decline, formerly known as 'quick wilt' and 'slow wilt' respectively cause severe economic damages. Although these two diseases were thought to be separate, recent studies have shed more light on the etiology and management of these two diseases. A thorough understanding of the nature of damage is essential for proper management of these disease.

Phytophthora foot rot disease : The foot rot disease is deadly, killing black pepper in large numbers every year. This is caused by the fungus *Phytophthora capsici* and the fungus damages all parts of the vine. If it occurs on the aerial portions, it results in defoliation of leaves, spikes and eventually death of vines. If the damage is on the root system it results in collar rot. If the infection is confined to feeder roots, it results in slow decline, wherein the vines show gradual yellowing, defoliation, reduction in the size of the bush and eventual death of the vines. Such symptoms are also caused by plant parastic nematodes, the burrowing nematode *Radopholus similis* and the root knot nematode *Meloidogyne incognita*. One

way to differentiate nematode damage from fungus is as follows.

- In case of damage by root knot nematode one can see bulges on the feeder roots resulting in knotting of the feeder roots.
- In case of burrowing nematode small brown lesions could be seen on the tender roots and if the tip of the rootlet is damaged small branches would come out from the healthy portions of such tender roots.
- Whereas, in case of infection by *Phytophthora*, rotting would be continuous and from feeder roots it would extend to major roots.

Disease management : An integrated approach has to be followed in order to contain this disease, which includes, phytosanitation, cultural practices, chemical and biological control. The foremost step in disease management is to avoid disease entry to the plot by planting disease free cuttings. **Phytosanitation :** The foot rot disease occurs randomly in the beginning and later tends to cluster around previously infected vines. So it is essential to prevent secondary spread by destroying the affected vines which form the main source and focus of secondary spread.

Cultural practices : Black pepper is usually cultivated as an inter-crop on live standards. The branches of shade trees and the standards have to be pruned in order to allow more sunlight and reduce humidity build up in the plot. Runner shoots on the ground are the potential susceptible tissue to get the disease first. These have to be either pruned or tied back to the standard.

Biological control : One of the eco-friendly way of managing the disease is by the use of beneficial soil organisms. Efficient strains of *Trichoderma* have been isolated and tested in the field. These isolates of *Trichoderma* are available at IISR and with many commercial firms. This may be applied in the recommended way along with lot of

organic matter. This would take care of the soil populations of disease causing *Phytophthora*. In order to protect foliage, a chemical has to be used.

Chemical control : There are two options for the farmers, either to start with biocontrol or with chemical control. Where biocontrol is used, the chemicals used must be compatible with biocontrol organisms. Fungicides like metalaxyl (Ridomil mancozeb) and Potassium phosphonate (Akomin) are compatible with *Trichoderma*. However these chemicals must be sprayed with 3-4 week intervals to protect the foliage in disease prone areas. In such areas where foliar infection is severe and spraying at frequent intervals is not feasible, copper fungicides like Bordeaux mixture could be sprayed on the foliage taking care not to spill the spray on soil where biocontrol organism is applied. A combination of Bordeaux mixture for the aerial portion and *Trichoderma* for the soil give good protection against *Phytophthora* foot rot disease.

South West monsoon is ideal for foot rot disease development, hence sufficient precautions must be taken to protect the crop.

(M. Anandaraj, IISR)

MEDICINAL PLANTS AROUND US

Phyllanthus amarus (Euphorbiaceae)

Sanskrit : Bhoomiamalake, Tamalake, (Syn. Bahupatra, Bahuphala); Bengali : Bhuiamala; Gujarati : Bhomya anmali; Hindi : Bhujanla; Kannada : Nela - Nelhi; Malayalam : Kizharvelli; Marathi : Bhuivali; Tamil : Keezha nelli, Kizhkay nelli; Telugu: Nela Uirika, Nela Vusari.

A herb, which grows up to 60cm height, is a weed through out the hotter parts of India. The plant is bitter in taste, astringent,

stomachic, febrifuge and antiseptic; used in gastric complaints including dyspepsia, colic, diarrhoea and dysentery; also employed in dropsy and diseases of the urogenital system. Infusion of young shoots is given in dysentery. Fresh juice is used as a remedy for jaundice. A decoction of leaves is used as a refrigerant for scalp, leaves and roots are made into a poultice with rice water for application on oedematous swellings and ulcers. Latex is applied to sores and ulcers, mixed with oil it is used in ophthalmia. Fresh leaves are considered a remedy for jaundice, but roots are more effective, often the juice of the whole plant is given for treating jaundice. Whole plant is crushed into a paste and administered in rice bran water for curing excess flow of menstrual blood.

The bitter constituent is phyllanthin, an alkaloid. Other constituents are hypophyllanthin and 4-methoxy-nor-securinine. Roots contain octocosanol, taraxeryl acetate, friedelin, epifriedelin, taraxerone, betulin, β sitosterol, glochidiol etc.

Central Institute of Medicinal and Aromatic Plants, Lucknow, has released a selection of *P. amarus* (Navyakrit) that gives 30% more biomass and 40% more phyllanthin content. Seeds are available from Director, Central Institute of Medicinal and Aromatic Plants, Lucknow - 226 016, UP.

(Note : *P. niruri* to which Bhumyamaleki was earlier identified is an American species, and does not occur in India. The Indian material earlier assigned to *P. niruri* was later identified as *P. fraternus* occurring in certain localities in northern India. Physicians in Kerala and elsewhere most commonly use *P. amarus* and *P. airy - shawii* (= *P. debilis*) as the source of the drug Bhomymalki or Tamalake)

(B. Sasikumar, IISR)

MALE TO FEMALE - MADE EASY

Nutmeg trees are dioecious producing male and female trees in the ratio 1:1 in the progeny. The sex of the trees cannot be identified at the seedling stage and can be determined only when the trees flower 7-8 years after planting. Since a single male tree is sufficient for pollinating about 20 female trees, the rest of the unyielding male trees can be converted to productive female trees by **top working** with scions from high yielding female trees. A simple method which assures 100 per cent success, developed at Indian Institute of Spices Research, Calicut, Kerala for top working nutmeg is described below.

Male nutmeg trees are beheaded about 30cm above the ground level in May, just before the monsoon and the cut end is smeared with Bordeaux paste to prevent fungal infection and decay. The decapitated trees are irrigated regularly till the onset of monsoon. New shoots develop from the main trunk within 45-60 days. The newly emerged shoots are ready for grafting when they attain about 20cm length. The top portion of the new shoots are decapitated with a knife retaining 8-10cm length of the shoot. A longitudinal cut of about 3cm is made from the top downwards on the retained stock. This slit gives a "V" shape when split open. Orthotropic (erect growing) scions of the same thickness as that of the stock are collected in water from high yielding female trees of nutmeg on the same day of grafting. Scions with two leaves are used for grafting. The lower end of the scion is shaped into a wedge by removing the bark with a little wood from both the sides of the scion with a sharp knife. The scion so prepared is inserted into the 'V' shaped slit of the stock and secured in place firmly with a 1.5cm wide polythene strip. The grafted shoot is covered with a polythene cover to maintain

humidity and to prevent the scions from drying. A temporary shelter is provided above the tree to prevent the harmful effects of rain or severe sun. The polythene cover is removed after 30-45 days when perfect union has taken place. Development of new leaves from the grafted scion is an indication of perfect union. After successful union all the other shoots are removed from the main trunk and Bordeaux paste is applied on the cut surface. In case the graft fails, regrafting can be done either on the same shoot or on a different shoot. This technique assures cent per cent success for top working of nutmeg.

(J. Rema, IISR)

MEALYBUGS CAN KILL - BEWARE

Infestation by insect pests is one of the reasons for the low productivity of black pepper in the country. Among the various insects recorded on the crop, *pollu* beetle, scale insects, top shoot borer and leaf gall thrips are important. In addition to these insect pests, infestation of black pepper vines by mealybugs, especially on roots, is being increasingly observed in many of the black pepper growing areas in Kozhikode and Wynad districts of Kerala.

Mealybugs are small, oval, soft bodied insects covered with a waxy coating. Mealy bugs are generally seen as encrustations on tender shoots, leaves, berries and roots. The mealybug recorded from the roots of black pepper have been identified to be a new species of *Planococcus*. Mealybugs feed on plant sap and no visible symptom of damage is generally seen on vines when the aerial parts are affected. However, when the pest infestation occurs on roots, the damage is more severe and the infested plants exhibit yellowing, wilting and defoliation of leaves and the plants succumb to the pest attack during the course of 2-3 years. The pest infestation is seen in nursery plants and also

on vines of all ages in the field. The main, secondary and tertiary roots are infested with mealybug colonies and sometimes they are covered with a mat of an unidentified fungus. The pest infestation is more severe during the monsoon and post monsoon periods. Many of the vines infested by mealybugs are often infected by *Phytophthora capsici* - the foot rot pathogen and in such vines the symptoms are more severe and they succumb to the pest and fungal attack in shorter period.

Preliminary trials conducted in the field indicated that drenching of affected vines with chlorpyrifos 0.075% is effective in controlling the pest infestation. The drenching may have to be repeated if the pest infestation persists. Adequate precautions are to be undertaken to ensure that the insecticide solution percolates down into the root zone while drenching the vines. It is also essential to undertake control measures against *P.capsici* in vines infected with this fungus along with mealybugs. Efforts are on at the Indian Institute of Spices Research, Calicut to study all aspects of mealybug infestation on black pepper and develop eco-friendly management schedules against the pest.

(S.Devasahayam and K.M.A. Koya, IISR)

CARING THE QUEEN

The queen of spices requires proper care for her proper growth and fruiting. The following are some tips.

Irrigation

Irrigate cardamom at an interval of 10-12 days beginning from second fortnight of January till the onset of monsoon so as to provide 25-37.5mm of water per round of irrigation. Over head sprinkler system is preferred.

Shade Regulation

Cardamom requires a well maintained shade in order to provide a congenial microclimate. Shade helps to regulate moisture loss, temperature and excessive weed growth. Regulate shade in May by lopping the branches of shade trees so as to provide 50% of sunlight to the crop.

Weeding

First round of weeding in May before the onset of monsoon. In sloppy lands do slash weeding. Herbicides such as paraquat, at the rate of 625ml in 500 l of water, is sufficient for one round of spraying.

Mulching

Mulch plant basins with dried leaves falling from the shade trees during the dry months in January, to reduce the ill effects of drought.

Earthing up

In December-January a thin layer of fresh fertile soil rich in organic matter may be provided at the base of the clump upto the collar region by scraping between the rows or collecting from staggered trenches or check pits.

Trashing

Old and dried shoots of clumps should be removed in the month of May just before the pre monsoon application of fertilisers.

Manuring and Fertilising application

A fertiliser dose of 120kg of N, 120kg of P and 240kg of K is recommended for the crop under irrigated condition. Half of the dose i.e., 60:60:120kg NPK should be applied in June just before the receipt of monsoon showers. Fertilisers should be placed at a radius of 30cm. from the base and covered with a thin layer of soil. During the same time organic manure like compost or farmyard manure should be applied at the rate of 5kg/clump. Application of 1kg of neem cake per plant is also desirable.

Dr. J.S. Pruthi's Column :

THE SPICY VISION

Spices in the Service of Man

Spices need no introduction since they have been mentioned in the *Vedas* and the *Bible* and the fame of Indian Spices is older than the recorded history. Spices occupy an important place in the lives of the peoples or nations since ancient times, when spices ranked with the precious stones in the inventory of royal processions, and were monopolised by the few. Spices determined the *Wealth* and *Policies* of nations. Besides spices also played an important role in the *Ancient Medicine*. Also they provided an incentive for discovery of new water-ways and new continents as are the well known cases of European sailors like Vasco-de-Gama who landed in Calicut in 1498 and thus discovered the land of spices-ie., INDIA !

Spices are also well known as appetisers and are considered essential in the culinary art all over the world. They add tang and flavour to otherwise insipid foods/dishes. Some of them also possess antiseptic and antioxidant properties, while others are used as preservatives in some foods like pickles and chutneys, etc. Some spices also possess fungistatic, antimicrobial and antibiotic activities. Many of them possess medicinal properties which have a profound effect on human health, since they affect many functional processes of man. For instance, spices intensify salivary flow and the secretion of amylase and other useful compounds. They help in the cleansing of our oral cavity from food adhesion and bacteria; they help us to check infection and caries, and also protect the mucous membrane against thermic, mechanical and chemical irritation. Spices increase the secretion of saliva in our mouth, which is rich in ptyalin which, in turn promotes starch digestion in the stomach, rendering

Pest control

Thrips, shoot, panicle and capsule borers and root grubs are the major pests of cardamom. Thrips can be controlled by spraying 0.025% monocrotophos or phosalone 0.07% in the months of March, April, May, August and September. The incidence of borer is higher during December-January and March-April. The practice of removing tillers showing 'dead heart' symptoms should be carried out. Spraying systemic insecticides like monocrotophos 0.075% will effectively control the pest. In the case of root grubs, the peak period of adult emergence coincides with the period immediately after the pre-monsoon showers. During this period beetles should be mechanically collected using hand nets and killed. It can also be controlled by applying Chlorpyrifos 0.05% or Phorate 10G during the month of May and September. To control nematode infestation, infested patches should be applied with Carbofuran 165g. or phorate 50g /clump during April-May. In secondary nurseries also the plants may be treated with 10kg/ha. of Carbofuran after transplanting and every three months thereafter.

Disease Control

Cardamom mosaic (Katte), panicle and capsule rot and rhizome rot are the major diseases of cardamom. Systematic tracing and rouging of Katte affected plants should be undertaken during January-May itself. Phytosanitary measures like trashing, removal of infected dead plants, capsules and inflorescence and burning them is important. A prophylactic spray of 1% Bordeaux mixture or 0.2% of Copper oxychloride should be given in May just before the onset of monsoon.

(Rajeev, Venugopal and Korimanthimath)
IISR (RC) Appangala

the meals which are rich in carbohydrates more easily digestible. Thus they play an important role in Human Health.

Their Role in World Economy

The Global Economic Importance of spices can be easily judged from the present Annual *World Trade* which is estimated to be over 400,000 tons valued at over 1.5 billion US dollars which is gradually increasing by about 5% annually. Thus spices play quite an important role in the national economies of numerous spice producing, exporting and importing nations of the world. According to the latest statistics, during 1998-99, India alone exported 2.13 lakh tons of spices and *value added spice products* worth about Rs.1,650 crores (Rs.16,500 millions), the highest record figure as compared to only Rs.16 Crores worth export of spices during 1960-61. Thus what a remarkable progress in annual foreign exchange earnings by spices for India (ie. 100 times).

Nature of Spices and Variability in their Quality

According to ISO (International Organisation for Standardisation), there are over 80 spices grown in different parts of world and about 50 spices are grown in India, however, there is considerable heterogeneity in shape, texture, size and colour, etc. as they comprise different plant parts or components. The following table shows the extent of wide heterogeneity in over 40 spices in 14 different forms.

Sl. No.	Spice Plant Components	Examples of such Spices
1.	Aril or Bracket covering seed:	<i>Mace</i>
2.	Barks (of tree branches)	<i>Cassia and Cinnamon</i>
3.	Beans or Pods	<i>Vanilla</i>

4.	Berries	<i>Allspice, Black pepper, Juniper etc.</i>
5.	Buds (Unopened flower-buds)	<i>Cloves</i>
6.	Bulbs	<i>Onion, Garlic, Leek and Shallots</i>
7.	Floral Parts (Pistil)	<i>Saffron</i>
8.	Fruits	<i>Cardamom, Chillies/Paprika</i>
9.	Kernels	<i>Nutmeg</i>
10.	Leaves or Leafy Spices	<i>Basil or Tulsi, Bay, Mint, Peppermint, Marjoram, Sage, Tejpat, etc.</i>
11.	Rhizomes (Underground stem)	<i>Ginger, Turmeric</i>
12.	Exudation products <i>Asafoetida</i> or latex oleo-gum resin from the rhizome	
13.	Roots	<i>Angelica, Horse-radish, Lovage</i>
14.	Seeds	<i>Ajowan, Aniseed, Caraway, Celery Seed, Coriander seed, Dill, Fennel, Fenugreek, Mustard and Poppy Seeds.</i>

Need for More Effective Quality Control

In order to boost further our annual export of spices, there is need for greater emphasis on their efficient quality control. In spices, the *quality control begins right in the field* itself, soon after their harvest. There are a gamut of post-harvest unit operations which are clubbed under the umbrella of Post-Harvest Technology, (PHT). These PHT Unit operations may comprise (i) Pre-Treatments after harvest such as washing, drying, peeling, pricking, bleaching, other chemical treatments, curing and other treatments, sun or solar drying, dehydration,

cleaning sorting, grading, packaging transportation and efficient storage, etc. In the next issues of this news letter, these aspects and related problems in post-harvest

technology of spices will be discussed individually along with the future R & D needs in each area.

PROFILE OF ISS MEMBERS :

KANCOR FLAVOURS & EXTRACTS : (SUSTAINING MEMBER OF ISS)

As the pioneers of India's spice extraction industry, Kancor has the experience of servicing international markets since 1970. **Kancor is recognised as one of the world's leading manufacturers of spice oleoresins, essential oils and natural colours, spice oils, botanical extracts, natural isolates and food seasoning.**

***Quality :** Kancor manufactures items to the most demanding standards of acceptability incorporating HACCP (Hazard Analysis & Critical Control Point Program) and GMP (Good Manufacturing Procedures), is registered under the BS EN ISO 9002-1994 regulations by the British

Standards Institution.

***Technological Developments :** Kancor's oleoresin and essential oils plant in Angamally, Kerala is a show piece of state of the art technology. The plant is designed to exclusively use a variety of non-chlorinated solvents under exacting standards for residual solvent levels.

Warehousing and storage facilities provide for the ready availability of standard products. Kancor also offers specialised services such as crop reports and economic scenario updates to help customers in arriving at strategic buying decisions.

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Directorate of Arecanut and Spices
Development, Cannanore Road
West Hill, Calicut - 673 005

M/s Hindustan Lever Limited
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Bangalore - 560 066

SUSTAINING MEMBER

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M/s India Pepper & Spices Trade
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M/s Harrison Malayalam Limited
Post Box No. 502
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M/s Indo-American Hybrid Seeds
P.O. Box No. 7099
17th Cross, 2-A Main
Banashankari II Stage, Bangalore - 560 070

M/s Indofil Chemicals Company
Nirlon House, Dr. Annie Besant Road
P.O. Box No. 9122, Mumbai - 400 025

Institute for Micronutrient Technology
I-A Kondhwa, Poona - 411 048
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Tumkur - 572106, Karnataka

The Mlamally Tea Estates Ltd.
P. B. No. 626, Mlamally Buildings
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Maharashtra Hybrid Seeds Co. Ltd
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To be continued in the next issue

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