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# SPICE INDIA

स्पाइसेस बोर्ड भारत

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# SPICE INDIA

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TO THE PROMOTION OF
INDIAN SPICE INDUSTRY


## IN NOVEMBER ISSUE

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# GARLIC AS A PESTICIDE

Garlic (Allium sativum) has long been known to have uses in pest control for it repellent effects. Garlic's primary use is in flavouring foods. There is strong evidence to show it has great medicinal value for its antibiotic, antibacterial, anticoagulant, and antiseptic properties (it was called Russian penicillin in World War I and II) and it is often used as a cold, sore throat, and flu remedy. Used as pesticide garlic has a non-toxic mode of action. Garlic is not persistent in the environment since it degrades rapidly, and has had no adverse effects on humans. Formulated as a powder, distilled extract from garlic cloves, or as an oil spray, garlic may be useful for pest control in some situations, however it should not be used as a general use pesticide, since it may have adverse effects on beneficial insects.

Garlic oil exhibits antibacterial antifungal, amebicidal and insecticidal qualities. Garlic oils kill pest insects and some pathogens familiar to our gardens.Organic gardeners have long been familiar with the repellent or toxic affect of garlic oil on pests. When it is combined with mineral oil and pure castile soap, it becomes and effective insecticide. Some studies also suggest that a garlic oil spray



has fungicidal properties. Repellent, insecticidal, nematicidal, fungicidal and antibiotic properties of garlic has proved scientifically. Few scientifically proved insecticide/pesticide preparations by using garlic and their target pests were described as follows.

## 1. Garlic bulb extracts

**Materials:**

85 grams of chopped garlic

50 ml of mineral oil (kerosene or vegetable oil)

10ml of soap

950 ml of water

Bottle container

**Method of preparation:**

Add chopped garlic to vegetable oil. Allow mixture to stand for 24 hours. Add water and stir in the soap. Store in bottle container.

**How to use:**

Dilute one part of the emulsion with 19 parts of water ( for example 50ml of emulsion to 950 ml of water). Shake well before spraying. Spray thoroughly on the infested plant, preferably early in the morning.

**Target pest:**

Bollworm, Armyworm, Cotton strainer, Onion thrips, Potato tuber moth, Rootknot nematode, Sugarcane borer, Bacterial diseases, Anthracnose Downy mildew, Rice blast, Black spots Blights, Fruit rots, Mildew Rusts (Vijayalakshmi et al, 1999)

## 2.Garlic Oil spray

Materials: 100 grams of garlic

2 table spoon of mineral oil

10.5 liters of water

10ml of soap

Covered container

**Methods of preparation:**

Chop garlic finely. Soak garlic in mineral oil for a day. Add half liter of water and soap. Blend well by stirring thoroughly.

**How to use:**

Dilute the filtrate with 10 liters of water. Fill the sprayer. Shake sprayer from time to time to avoid oil from floating. Spray on the infested plant thoroughly.

**Target pests:**

Cabbage worm. Leafhoppers, Squash bugs, Whitefloy (Prakash and Rao, 1997)

**3.Garlic Oil emulsion:**

**Materials:**

50ml of garlic oil

950 ml of water

One ml of soap

**Methods of preparation:**

Add soap to oil. Blend well by stirring thoroughly. Add water. Stir.

**How to use:**

To prevent oil from floating, immediately spray extract on infested plants and shake sprayer from time to time. Spray early in the morning or late afternoon.

**Target pests:**

Bollworm,Potato tuber moth, Rice blast, Rice brown leaf spot, Root knot nematode

( Vijayalakshmi, et al 1999)

**Kate Hemphill**

Kate Hemphill is a chef and proprietor of a cooking school in London, Love to Cook. She is the daughter of spice expert Ian ëHerbieí Hemphill and represents Herbieís Spices in the UK.
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# GRAINS OF PARADISE

Grains of Paradise are the seeds from a plant that is a member of the ginger and cardamom family, although nowhere near as well known. Similar to cardamom, flowers emerge from the leafy shrub, bearing long red fruits which contain the seeds which are cultivated. The taste is initially pine-like, then peppery and hot with a lingering camphorous flavour.

Also known as Melegueta pepper, grains of paradise are indigenous to the West Coast of Africa, parts of which have been known as the 'Grain Coast' and 'Pepper Coast' after this spice. Between the 13th and 15th century, grains of paradise found popularity in Europe as explorers had yet to find a sea passage to India to discover pepper.

Grains of paradise have been used medicinally, to spice wine and spirits, and most commonly used as you would use pepper to flavour food. Since there isn't any organised cultivation, procuring grains of paradise can be tricky, but worth the effort. To make a reasonable substitute, pound together in a mortar and pestle six seeds from a cardamom pod, four black peppercorns and one mountain pepperberry.

Some cooking suggestions for tamarind:

- Add to bread with fennel and caraway seeds
- Grind over freshly cooked meat
- Add some to your pepper grinder along with peppercorns

**Recipe: Seared Cod with Grains of Paradise**

- One large fillet of cod or other firm flesh fish, cut into two pieces
- One tablespoon peanut oil
- 1/4 teaspoon grains of paradise, coarsely ground with a mortar and pestle
- Juice of ½ lemon and ½ lime
- Tomato and coriander salad, to serve

Heat a pan or grill to high. Season cod on both sides with salt. When pan is hot, add peanut oil, then cod. Saute until crisped and brown. Then turn, saute for two more minutes, until just cooked through. Remove from oven, and place on serving plates. Drizzle with olive oil, and sprinkle grains of paradise on top. Squeeze a little lemon and lime juice over fish. Serve with a fresh tomato and coriander salad. Serves two.

☆



# GINGER IN GUYANA

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Ginger (*Z.officinale* R.) is an important non traditional crop grown especially in regions 1,4 and 5 of Guyana . As the organic movement is catching up in the country, organic ginger production too is gaining momentum. The Amerindian communities of Guyana who used to raise ginger along with other crops like cassava, yam, sweet potato, vegetables etc. under 'slash and burn' practice is now shifting to settled cultivation of ginger and other crops , organically. A women's group in the North west region of the country informally called' Kamwatta Backdam Group'is venturing in to organic ginger powder production from their home grown ginger.

The package of practices of ginger production is yet to be perfected in Guyana.At present the crop is raised in flat or raised beds under rain fed condition. Both inorganic and organic production practices are there differing from region to region.

Basically there are two types of ginger: Plumby, smooth skinned, non compact, less fiber type and small, slenderrhizme type. The later is characterized by dwarf stature and narrow leaves. Farmers are not aware of distinct varieties.

Ms.Peters Edgar, an elederly woman farmer of Horosoroo, Region 1, who grows ginger 'without any fertilizers' (organically),says her crop is usually free from diseases except minor incidence of leaf damaging insects. However, few other farmers report incidence of rhizome rot.

The yield levels are rather low, about 7000-9000 kg per hectare only.

Half a kilo of ginger is priced about US D 0.5 -0.6 in the local markets in Guyana

The country exported 2.39 metric tones of fresh ginger worth USD 5,736 during 2005,mainly to other Caribbean countries.

Ginger dry, ginger powder, fatless ginger, ginger beer are some of the value added forms in Guyana. ☆

# PROBLEMS AND PROSPECTS OF INDIAN PAPRIKA

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**Introduction**

Paprika, *capsicum annuum* L (family *solanacea*) is the high coloured low pungent chilli. This is mainly used for its rich red colour although this spice in fresh form contributes a special delicate flavour. It does not contribute to the hotness of food preparations. The hot cultivars of chillis also belong to the same species. Together they represent over one million tonnes of produce in India.

While Indians like the hot taste, people in the West and other developed counties do not like excessive hotness in food. In recent years export of hot chilli has increased considerably with estimated 1,48,500 metric tonnes being exported in 2006 – 2007. In comparison the corresponding figures for black pepper is 28750 metric tonnes, turmeric 51,500 metric tonnes and ginger 7,500 metric tonnes. However, export of whole and ground paprika from India was negligible. This is because Indian paprika has significant level of hot principle. In fact in earlier days our paprika was refered to only as "colour chilli"

**Indian Varieties**

In the eighties the only low pungent variety of colour chilli grown extensively in India was the *Byadge* variety grown in Karnataka between Shimoga and Hubli.

With the introduction of improved and appropriate technology for oleoresin extraction developed by Central Food Technology Research Institute, Mysore and subsequent fractionation technology for separating capsaicin and colour constituents by RRL (CSIR) Trivandrum, production and export of paprika oleoresin made a determined entry by Nineties. This enabled a variety of colour chilli called "Tomato chilli", grown mainly in Warangal district of Andhra Pradesh, to be an effective raw material for making oleoresin. It can be seen that thanks to these home grown raw materials, oleoresin paprika became one of the major items

of export from India.

A recent variety that has came up in Andhra Pradesh is "Wonder hot". This variety has more red pigments that are required for chicken feed industry.

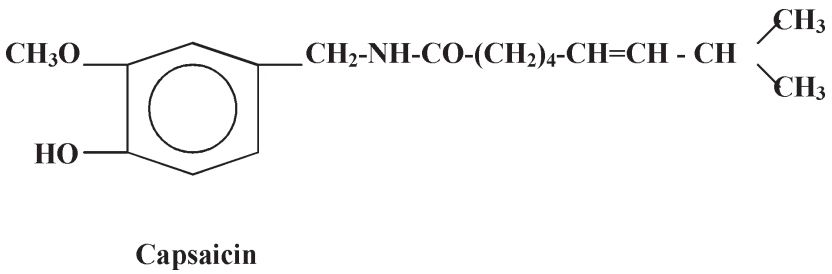
**Hotness of Indian Paprika**

Indian paprika raw material has higher than acceptable level of hotness caused by capsaicin. (Fig 1). While capsaicin is the main principle, there are allied compounds that have pungency. The more abundant of these are dihydro capsaicin and *nor* - dihydro capsaicin. But because of the technology developed for removal of pungency, India is able to produces oleoresin paprika with less than 200ppm of total capsaicinoids. Not only now India produces "sweet" oleoresin comparable to Spanish paprika oleoresin, it also gets capsaicin as a by-product. All these have contributed to make India as a dominant player of paprika oleoresin.

Present export of oleoresin paprika can be estimated to be above 2000 metric tonnes valued at over Rs 300 cores. Indian market consumes about 50 to 60 metric tonnes.

**World Scene**

While this is so, as far as oleoresin paprika is concerned, in the case of fresh, whole and ground paprika, India is as good as not there. The main reason is high heat while lower colour intensity is the other reason. Paprika produced in Zimbabwe, South Africa, Spain and Morocco are sweet and have high colour content. Hungary and Central and East European countries produce high quality table variety for whole and ground paprika. Isreal also produce some quantity of the above type. These are high priced and cannot be used as a raw material for extraction industries. There is commercially significant quantity of paprika in Mexico and USA. While Mexican oleoresin has a poor record quality-wise, USA produce oleoresin from their own crop successfully. China also has started growing paprika and could develop as a supplier for both table variety and extraction variety. An emerging producer of paprika is Peru but the raw material may be more suitable for extraction purpose. Both China and Peru are developing as producers of oleoresin paprika.




Capsaicin

**Fig 1. The Main Hot Constituent**

**Pesticide Residue**

A major problem with Indian Paprika is excessive use of pesticide. Farmers tend to use even irrelevant chemicals. Pesticide manufactures often push their products on uninformed farmers, whereas the requirement may be a different pesticide for the specific infection or infestation. Even those that are required may be dumped at a much higher dosage than is required. All these leave a dangerous level of pesticide residue. There is no doubt that more than required levels of organochloro, organophosphorus and pyrethroid pesticides are used. Even DDT and BHC are seen in copious amount. One of the recent one to enter is cypermethrin which is believed to be a cheaper pesticide. There is need to examine whether this

much of pesticide application is really necessary.

Out of over one million tonnes of chillies produced in India only less than 20 per cent is exported including those used for production of oleoresin. Unfortunately it is only in export, pesticide residue is objected to. Farmers can afford to ignore the export market. It is time that we recognize the dangers of pesticide residue for people of India. Legislation towards this only can save consumer from menace of high level of pesticide in chillies. That way export also will be benifited.

**Other Residues**

Because of the special structure of the chilli pod, during drying there is considerable chance for the growth of *Aspergillus* fungus which produce mico toxins. Even during the drying, the wet inside has rich nutrients, for soil micro organism to enter and thrive inside. There is need to use clean sheets for spreading the pods during sun drying. Also the drying should be as far as possible continuous without interruption. In the past aflotoxins, including $B_1$ were noticed at a high level. But thanks to the extension work carried out by Spices Board, this threat is well under control. Luckily heavy metal residue are usually within approved level. It is reliably understood that E.U. is planning a limit for ochratoxin also.

**Units of Colour**

Strength of oleoresin paprika (O/R P) is expressed as colour value-CV (or colour unit-CU). The value is empirical, originally intended to represent the highest dilution at which colour is just noticable under a standard condition. But the subjective determination is now replaced by a spectrophotometric reading at 460 nm multiplied by a factor. The most traded grade is O/R P 100,000 cv followed by 40,000 cv. O/R P is also traded in 60,000 cv, 80,000 cv, 120,000 cv and 160,000 cv.

In USA the colour is expressed in terms of ASTA (American Spice Trade Association) units. 1 ASTA unit is 40.2 cv and therefore O/R P 100,000 cv is equivalent to 2488 ASTA units. In international trade the colour intently of paprika pods is generally expressed on ASTA units unlike oleoresin which is described in colour value

Nearly 40 per cent of paprika oleoresin is used to blend in chicken feed. There the red pigment and *trans* capsanthin expressed as percentage of the total carotenoids estimated by spectrophotometer and HPLC respectively, are significant. But a similar factor to know the red pigment is the absorption ratio which is the ratio of absorption at 470nm over absorption at 455nm read in spectrophotometer. Higher the value, like near 1, higher is the red pigment, while a value of 0.96 show low level of red pigment.

**Colour Quality of Indian Paprika**

Table 1 shows the various pigments and their basic colour. While hydrocarbon carotenes are yellow in colour, the oxygenated derivatives, xanthophylls, show orange and red colour. Capsanthin and capsorubins are the red pigments that get deposited in the egg yolk when chickens take in along with feed. Their chemical structures are presented in Fig 2.

Table 2 represents the analysis of some paprika varieties. In each category there are top, medium, low grade especially based on colour. The values should therefore be considered for trends than as absolute values. It can be seen that low level of capsaicin is present in sweet paprika from Zimbabwe, South Africa, China (e & e d), Spain and Azerbaijan. In comparision Indian varieties have high level of capsaicin. In

**Table 1: The Colour of Individual Carotenoid Pigments of Paprika**

| | |
|---|---|
| Chlorophyll a<br>Chlorophyll b | Green |
| Beta carotene<br>Beta carotene 5-6 epoxide<br>Beta carotene 5,6,5'6' diepoxide<br>Beta crypotaxanthin, mono and diepoxide<br>Mutotoxanthin<br>Antheraxanthin<br>Violaxanthin<br>Luteoxanthin – a<br>Luteoxanthin – b<br>Neoxanthin | Yellow |
| Beta cryptoxanthin<br>Lutein<br>Zeaxanthin<br>Cryptocapsin | Orange |
| Capsanthin<br>Capsanthin epoxide<br>Capsanthin isomers<br>Capsanthin isomers<br>Capsorubin | Red |

**Table 2: Capsaicin and Colour Content of Paprikas from Different Regions**

| Variety | Capsaicin Content % | ASTA Colour of Chilli | Yeild of 100,000cv O/R | Absorption Ratio of O/R |
|---|---|---|---|---|
| Byadge | 0.1 | 198.8 | 6.5 | 0.975 |
| Tomato Chilli (India) | 0.08 | 133.4 | 4.0 | 0.982 |
| Wounder Hot (India) | 0.07 | 118.5 | 3.1 | 0.998 |
| South Africa | 0.03 | 221.0 | 6.3 | 0.968 |
| Zimbawe | 0.007 | 288.0 | 7.6 | 0.960 |
| China I | 0.08 | 107.0 | 3.5 | 0.981 |
| China II | 0.04 | 212.4 | 7.1 | 0.980 |
| China III | 0.05 | 164.2 | 5.3 | 0.978 |
| Spain (Low Grade) | 0.02 | 100.7 | 4.4 | 0.974 |
| Peru | 0.06 | 188.0 | 5.7 | 0.974 |
| Ethiopea | 0.06 | 161.4 | 5.2 | 0.965 |
| Mozambic | 0.05 | 171.0 | 4.4 | 0.960 |
| Afganistan | 0.09 | 177.7 | 5.5 | 0.974 |
| Azerbaijain | 0.04 | 156.0 | 4.7 | 0.962 |

O / R = Oleoresin. 1 ASTA unit of colour = 40.2 cv.

the matter of colour content, "*Byadge*" compares well with good samples from outside India. But the absorption ratio of "*Byadge*" is low indicating lower level of red pigment. "Wonder hot" in particular and "Tomato chilli" have good absorption ratio. But lower yield

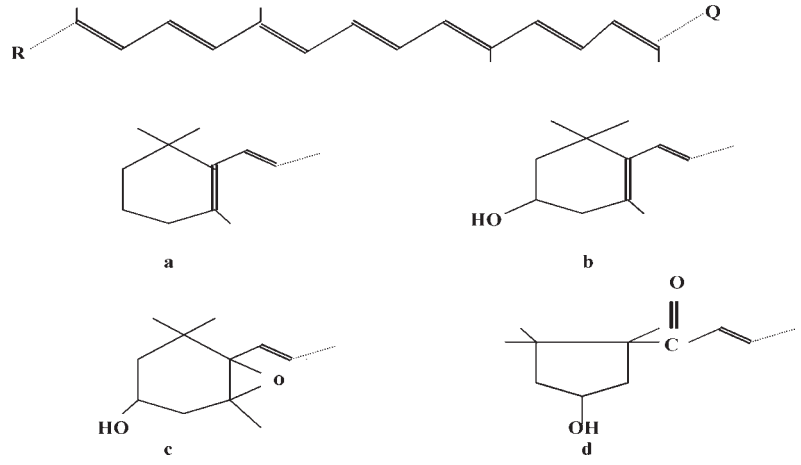



**Fig 2. Carotenoid Pigments of Red Pepper**

| | | | | | |
|---|---|---|---|---|---|
| ***Capsanthin*** | ***b*** | ***d*** | ***Cryptocapsin*** | ***a*** | ***d*** |
| **β Carotene** | **a** | **a** | **Zeaxanthin** | **b** | **b** |
| **Violaxanthin** | **c** | **c** | **Antheroxanthin** | **b** | **c** |
| **Cryptoxanthin** | **a** | **b** | **Capsanthin epoxide** | **c** | **d** |
| **Capsorubin** | **d** | **d** | **Lutein** | **b** | **b** |
| | | | **Violaxanthin** | **c** | **c** |

of oleoresin and total colour make "Wonder hot" an expensive raw material. The data clearly show that because of high capsaicin content, Indian paprika cannot be used as fresh and dried sweet paprika.

**Conclusion**

Pesticide residues of Indian paprika are high. It is possible that farmers are using excessive doses and in some cases unwanted chemicals. It is necessary to have an integrated pesticide management to get paprika acceptable to international market. Indian standards for pesticide residue should be brought to safe level, so that health of the people are protected.

The yield per unit area should be increased to reduce the cost. Indian paprika should have low hotness to be used for fresh, whole and ground products. Capsaicin content should be much less than half of the present level. Paprika with a bright red colour will have a great appeal for use as fresh, whole and ground paprika. Farmers should be encouraged to dry uninterrupted for use as dry paprika. This is necessary to control aflatoxins and to give uniform attractive colour.

For use as raw materials for oleoresin industry, yield of extract and total colour should be increased. For oleoresin in chicken feed industry the content of *trans* capsanthin and red pigments should be increased. These can be achieved by promoting the right cultivars. ☆

# MENTHE TO MENTHA
# THE STORY OF MINT

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In Greek mythology, "Menthe" a nymph was Pluto's lover. She angered Pluto's wife Persephone, who in a fit of rage turned Menthe in to a lowly plant to be trod upon. Pluto, unable to undo the spell, was able to soften it by giving Menthe a sweet scent, which would perfume the air when her leaves were stepped on - thus aromatic herb the mint. Lesser known compared to the king and queen of spices, mint stands next in place to Vanilla and citrus for its most sought after flavour.

Native to the Mediterranean and Western Asia, mints interbreed often, making it difficult for even an expert to distinguish all the varieties. All mints contain the volatile oil menthol, which gives mint that characteristic cooling, cleansing feeling.

There are about 26 pure species of mints available. Some of them commonly called as Japanese peppermint, Asian mint, Australian mint, corn mint, field mint, wild mint, garden mint as this list is not exhaustive. Apart from this, the mint family has a large group of recognised hybrids. Botanically, ***Mentha*** (**mint**) is a genus of about 25 species in the family Lamiaceae (Mint Family). Species within Mentha have a sub cosmopolitan distribution across Europe, Africa, Asia, Australia, and North America. Mints are aromatic, almost exclusively perennial, rarely annual, herbs. They have wide-spreading



underground rhizomes and erect, branched stems.

All mints prefer, and thrive, in cool, moist spots in partial shade. In general, mints tolerate a wide range of conditions, and can also be grown in full sun.They are fast growing, extending their reach along surfaces through a network of runners. Due to their speedy growth, one plant of each desired mint, along with a little care, will provide more than enough mint for home use. Some mint species are more invasive than others. Even with the less invasive mints, care should be taken when mixing any mint with any other plants, lest the mint take over. To control mints in an open environment, mints should be planted in deep, bottomless containers sunk in the ground, or planted above ground in tubs and barrels. Some mints can be propagated by seed. Growth from seed can be an unreliable method for raising mint for two reasons: mint seeds are highly variable, one might not end up with what one presupposed was planted; some mint varieties are sterile. It is more effective to take and plant cuttings from the runners of healthy mints.

The most common and popular mints for cultivation are peppermint (*Mentha* × *piperita*), spearmint (*Mentha spicata*), and (more recently) apple mint (*Mentha suaveolens*).Mints are supposed to make good companion plants, repelling pest insects and attracting beneficial ones. Harvesting of mint leaves can be done at anytime. Fresh mint leaves should be used

## Different species of Mint

| Scientific name | Common name |
|---|---|
| *Mentha aquatica* | Water mint, or Marsh mint |
| *Mentha arvensis* | Corn Mint, Wild Mint, Japanese Peppermint, Field Mint, Pudina |
| *Mentha asiatica* | Asian Mint |
| *Mentha australis* | Australian mint |
| *Mentha canadensis* | |
| *Mentha cervina* | Hart's Pennyroyal |
| *Mentha citrata* | Bergamot mint |
| *Mentha crispata* | Wrinkled-leaf mint |
| *Mentha cunninghamia* | |
| *Mentha dahurica* | Dahurian Thyme |
| *Mentha diemenica* | Slender mint |
| *Mentha gattefossei* | |
| *Mentha grandiflora* | |
| *Mentha haplocalyx* | |
| *Mentha japonica* | |
| *Mentha kopetdaghensis* | |
| *Mentha laxiflora* | Forest mint |
| *Mentha longifolia,* | |
| Mentha sylvestris | Horse Mint |
| *Mentha pulegium* | Pennyroyal |
| *Mentha requienii* | Corsican mint |
| *Mentha sachalinensis* | Garden mint |
| *Mentha satureioides* | Native Pennyroyal |
| *Mentha spicata* | Spearmint, Curly mint |
| *Mentha suaveolens* | Apple mint |
| *Mentha vagans* | Gray mint |

immediately or stored up to a couple of days in plastic bags within a refrigerator. Optionally, mint can be frozen in ice cube trays. Dried mint leaves should be stored in an airtight container placed in a cool, dark, dry area.

The main producers of mint in India are Jammu and Kashmir, Punjab, Karnataka and Andhra Pradesh. It is produced as a garden crop in Ooty, Tamil Nadu. Indian export of mint mostly consists of essential oils, which have more commercial value than leaves.

As diverse in its use like any other spice the uses of mint can be classified in to **culinary, medicinal cosmetic and even insecticidal.**

The leaf, fresh or dried, is the culinary source of mint. Fresh mint is usually preferred over dried mint when storage of the mint is not a problem. The leaves have a pleasant warm, fresh, aromatic, sweet flavor with a cool aftertaste. Mint leaves are used in teas, beverages, jellies, syrups, candies, and ice creams. In Middle Eastern cuisine mint is used on lamb dishes. In British cuisine, mint sauce is popular with lamb. Mint is a necessary ingredient in Touareg tea, a popular tea in northern African and Arab countries. Alcoholic drinks sometimes feature flavor of mint, namely the Mint Julep and the Mojito. *Crème de menthe* is a mint-flavored liqueur used in drinks such as the grasshopper.Mint has an important place in Indian cuisine. A few dishes prepared with mint leaves are mint-coriander chutney, rasam, sambar, meat, fish, poultry items and biryanis. Being a carminative, mint is often used in dishes made with peas, dals and other food stuffs which is difficult to digest. Both fresh and dried leaves of mint are used.

Mint essential oil and menthol are extensively used as flavorings in breath fresheners, drinks, antiseptic mouth rinses, toothpaste, chewing gum, desserts, and candies; and mint chocolate. The substances that give the mints their characteristic aromas and flavors are menthol (the main aroma of Peppermint, and Japanese Peppermint) and pulegone (in Pennyroyal and Corsican Mint). The compound primarily responsible for the aroma and flavor of spearmint is *R*-carvone.

Mint was originally used as a medicinal herb to treat stomach ache and chest pains. To cure stomach aches, put dried mint leaves in boiling water, then, when it cools

drink it. This tea is called monstranzo. During the middle ages, powdered mint leaves were used to whiten teeth. Mint tea is a strong diuretic. Mint also aids digestion. Menthol and mint essential oil are also much used in medicine as a component of many drugs, and are very popular in aromatherapy. Another common use is as an antipruritic, especially in insect bite treatments (often along with camphor). Menthol is also used in cigarettes as an additive, because it blocks out the bitter taste of tobacco and soothes the throat.

Mint oil is also used as an environmentally-friendly insecticide for its ability to kill some common pests like wasps, hornets, ants and cockroaches. Mint leaves are often used by many campers to repel mosquitoes. It is also said that extracts from mint leaves have a particular mosquito-killing capability.

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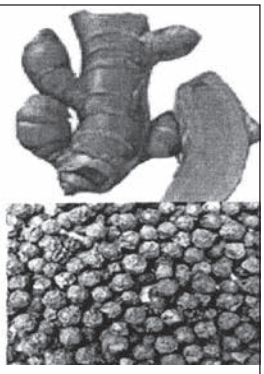
# GREENCOVER OVERSEAS



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**We have a vast network of farmers across four (4) states of this region growing naturally organic andcertified organic produce in the exotic hills of this region, abundant in freshness, ingredients, aroma and purity (no-chemicals).**

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| **Ginger (Moran)** 2.10% Oil (Vol) | **Bay Leaves** |
| **Ginger (Thingria)** 1.85% Oil (Vol) | **Large Cardamom** Bada Dana |
| **Chilli (Birdís Eye)** 1.20 % Capsaicin | **Large Cardamom** Chota Dana |
| **Chilli (King or Raja)** 3.50% Capsaicin | **Lichens** (Wood & Store) |

| FRESH SPICES |
|---|
| **Ginger (Nadia)** Fibreless |
| **Ginger (Bhola)** Fibreless |
| **Chillies (Birdís Eye)** |

| SEED MATERIALS |
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| **Turmeric rhizomes** **Curcumin content -** 6.5%, 7.3% & 9.0% |
| **Ginger zhizomes** Oil content - 2.1% & 1.8% |
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## GREENCOVER OVERSEAS

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# HEALTH BENEFITS OF SPICES

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Spice refers to parts of plants that are used to flavour food products.

They not only improve palatability but also perform a very important task of preserving foods for longer periods. This is attributed by the anti-bacterial properties of spices. It is a well known fact that aroma of spices stimulates salivary and gastric secretion and hence helps in digestion. Spices in general are carminative. The indigenous system of medicine has given a special place to spices because of their unique medicinal properties. Pharmacological effects of spices are being recognized worldwide and researches in the field are studying the benefits of the active ingredients of various spices to tackle chronic diseases.

The health benefits of major spices produced in our country are reviewed in the article.

**Part 1 – Turmeric**

Turmeric, the rhizomes of *Curcuma longa* belonging to family zingeberaceae has been used in south Indian culinary for centuries. It is a popular golden yellow spice used worldwide for colouring food. Turmeric is a perennial shrub native to Southern Asia, cultivated in tropical countries like India, China, Burma, Japan , Indonesia, Taiwan, Thailand, Java and through out African continent[1,2,3]. It is extensively cultivated in many parts of India. India is the world's leading producer and consumer of turmeric. Kerala, Tamil Nadu, Andhra Pradesh and Maharashtra are the states prominent in producing good quality rhizomes. Well known Indian varieties are Alleppy finger, Madras finger and Erode turmeric. In medieval Europe, turmeric was known as Indian saffron.

In the indigenous system of medicine, turmeric enjoys the reputation as a stomachic, blood purifier, useful in common cold, leprosy, intermittent fevers, ailments of liver, dropsy, purulent ophthalmia, wound healing and inflammation[4]. Turmeric,being anti-microbial, is used extensively for cosmetic applications. It is a practice for south Indians to use fresh



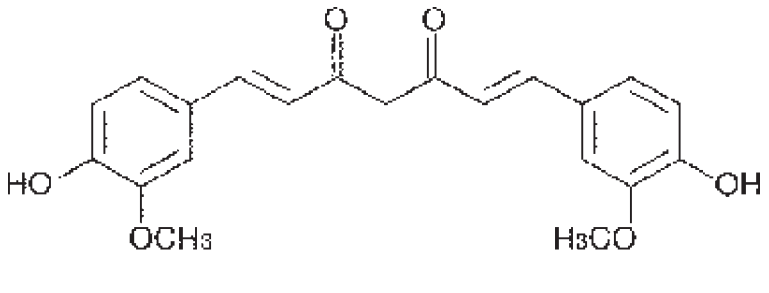
turmeric paste for body massage during pregnancy, after child birth and also for new born babies. This rejuvenate the body, kills germs and also improves skin colour and texture.

Turmeric is the only spice which finds application in all the three segments of life - food, cosmetics and health.

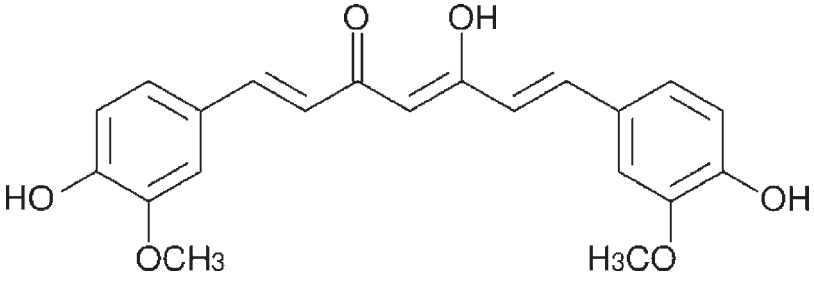
Composition of dried turmeric –The rhizomes contain volatile oil, curcuminoids, turmerin(a water soluble peptide), proteins, fibre, starch (mainly polysaccharides like arabinogalactans), minerals like potassium, carotene, vitamin C etc.

Active ingredients include essential oil (bisabolene, ar turmerone, alpha, beta curcumenes and zingiberene are the major terpenic components of the essential oil) and curcuminoids, the yellow coloured pigments.

Curcuminoids is a mixture of three components namely curcumin, demethoxy curcumin and bis demethoxy curcumin generally in the ratio 50-65: 18-26 : 17-28 respectively. The ratio changes slightly depending on the cultivar and geographical origin. In the pure curcuminoids isolated from the rhizomes, the above components are generally found in the ratio 70-80: 15-20: 2-5 [5].




**Curcumin keto form**




**Curcumin enol form**

The curcuminoids are polyphenols and are responsible for the yellow color of turmeric. Curcumin can exist in at least two tautomeric forms, keto and enol. The enol form is more energetically stable both in solid phase and in solution[6]

IUPAC name of Curcumin is (1*E*,6*E*)-1,7-bis (4-hydroxy 3-methoxyphenyl ) -1,6-heptadiene-3,5-dione. It is also called diferuloylmethane, C.I. 75300, Natural Yellow 3,

E 100. CAS No. [458-37-7], Molecular formula $C_{21}H_{20}O_6$, Molecular weight 368.38, Melting point : 183 deg C

While the chemistry of turmeric is well studied, its mechanism of action inside the body is not fully understood. Apart from the volatile oil and curcuminoids, turmerin, a peptide, is also found to be effective as anti-oxidant, DNA protectant and shows anti-mutagen actions.[7,8].

Turmeric is used extensively in the Indian systems of medicine like Ayurveda, Unani, and Siddha . It is listed official in the *Ayurvedic Pharmacopoeia of India* [9]. In Ayurvedic medicine, turmeric has a long history of use for its anti-inflammatory and anti-arthritic effects. Turmeric is also used extensively in traditional Chinese medicine. It is included

in the *Pharmacopoeia of the People's Republic of China* [10] as well as in the *Japanese Herbal Medicines Codex* [11]. As in India, it is used in China, Japan, and Korea for ailments including abdominal fullness, kidney pain, and amenorrhea[12].

**Medicinal properties of curcuminoids :**

Curcumin acts as a free radical scavenger and antioxidant, inhibiting lipid - peroxidation and is a well known hepatoprotective[13] protects the liver from damages caused due to alcohol consumption. Recent studies proved the benefit of curcumin for the control of cancer, alzheimers and HIV virus. Curcumin can be of use in reducing or controlling diabetes, multiple sclerosis, septic shock, multidrug resistance, immunosuppresssion, cardiovascular diseases, cardiotoxicity, cataract formation, liver injury, nephrotoxicity, inflammatory bowel disease, arthritis, lung fibrosis, muscle cell proliferation [14] etc.

Curcumin is well researched for its antitumor[15,16] antioxidant, antiarthritic, anti-amyloid and anti-inflammatory properties[17]. Anti-inflammatory properties may be due to inhibition of eicosanoid biosynthesis[18]. In addition it may be effective in treating malaria, prevention of cervical cancer, and may interefere with the replication of the HIV virus[19]. In HIV, it appears to act by interfering with P300/CREB-binding protein (CBP). A 2008 study at Michigan State University showed that low concentrations of curcumin interfere with Herpes simplex virus-1 (HSV-1) replication[20]. The same study showed that curcumin inhibited the recruitment of RNA polymerase II to viral DNA, thus inhibiting the transcription of the viral DNA[19]. This effect was shown to be independent of effect on histone acetyltransferase activities of p300/CBP[20]. A previous study performed at University of Cincinnati indicated that curcumin is significantly associated with protection from infection by HSV-2 in animal models of intravaginal infections[21].

For the last few decades, extensive work has been done to establish the biological activities and pharmacological actions of curcumin. Curcumin is probably the "best" of the herbal colon cancer chemopreventatives - as such, it seems to have generated a lot of interest in the scientific community. Clinical trials (Phase I) have been run which indicate curcumin is apparently safe in doses up to 8 grams / day. Its anticancer effects stem from its ability to induce apoptosis (cell death) in cancer cells without cytotoxic effects on healthy cells. Curcumin can interfere with the activity of the transcription factor NF-êB, which has been linked to a number of inflammatory diseases such as cancer[22].

A 2004 UCLA-Veterans Affairs study involving genetically altered mice suggests that curcumin might inhibit the accumulation of destructive beta-amyloid in the brains of Alzheimer's disease patients and also break up existing plaques associated with the disease[23]. In Alzheimer's disease, a peptide called amyloid-beta forms aggregates (oligomers), which accumulate in the brain and form deposits known as amyloid plaques[24] Inflammation and oxidative damage are also associated with the progession of Alzheimer's disease[25]. Curcumin has been found to inhibit amyloid beta oligomer formation in vitro[26] When injected peripherally, curcumin was found to cross the blood brain barrier in an animal model of Alzheimer's disease[27]. Dietary curcumin has been found to decrease biomarkers of inflammation and oxidative damage and to decrease amyloid plaque



burden in the brain and amyloid beta-induced memory deficits in animal models of Alzheimer's disease[26-29]. It is not known whether curcumin taken orally can cross the blood brain barrier or inhibit the progression of Alzheimer's disease in humans. As a result of the promising findings in animal models, several clinical trials of oral curcumin supplementation in patients with early Alzheimer's disease are under way [30]. Alzheimers is less common in India , compared to US , may be attributed to the fact that Indians have the habit of consuming turmeric on a regular basis.

Numerous studies have been done on the bio-availability of curcumin. Curcumin has very poor bio-availability. The bio-absorption of curcumin can be enhanced when supplemented with piperine, the alkaloid in black pepper[31].

It is advisable to use ground pepper along with turmeric, to improve the absorption of curcumin in the stomach.

Recently, a polymeric nanoparticle encapsulated formulation of curcumin - "nanocurcumin" has been synthesized which has the potential to bypass many of the shortcomings associated with free curcumin, such as poor solubility and poor systemic bioavailability. Nanocurcumin particles have a size of less than 100 nanometers on average, and demonstrate superior efficacy compared to free curcumin[32]. Researchers have developed a number of other curcumin analogs that appear to have greater bioavailability, but these analogs have not been tested broadly, either in vitro or in vivo, for medicinal purposes.

Another method to increase the bioavailability of curcumin has recently been patented that involves a simple procedure creating a complex with soy phospholipids(33)and a compostion of curcumin with the turmerone rich volaitle oil fraction of turmeric for enhancing the bio-availability (34). In yet another study[35] , natural biodegradable polymers like bovine serum albumin and chitosan, were used to encapsulate curcumin to form a depot-drug delivery system. Microspheres were prepared by emulsion-solvent evaporation method coupled with chemical cross linking of the natural polymers. In vitro release studies indicated a biphasic drug-release pattern , characterised by a typical burst effect followed by a slow release that continued for several days. It was evident from the study that the curcumin-biodegradable microspheres could be successfully employed as a prolonged –release drug-delivery system for better therapeutic management of inflammation as compared with oral or subcutaneous administration of curcumin.

We should be thankful to nature for gifting such a wonderful - all purpose spice.

**References**


1. Leung,A.Y and S.Foster(1996), *Encyclopedia of common Natural Ingredients used in Food, Drugs and Cosmetics*, 2nd Ed. New York, John Wiley and Sons Inc., 499-51
2. Kapoor L.D, (1990), *CRC Hand Book of Ayurvedic Medicinal Plants*, Boca Raton, CRC Press 149-150
3. Yen, K.Y. (1992), *The iiiustrated Chinese Materia Medica-Crude and Prepared*. Taipei, Taiwan, SMC Publishing, Inc.82.
4. Chopra.R.N, Chopra.I.C, Handa.K.L and Kapur. L.D, Indigenous Drugs of India, U.N Dhar and Sons, Calcuytta, (1958), p. 235.
5. US Patent 6942881
6. Kolev, Tsonko M.; et al. (2005). "DFT and Experimental Studies of the Structure and Vibrational Spectra of Curcumin". *International Journal of Quantum Chemistry* 102 (6): 069–79. Wiley Periodicals. doi:10.1002 / qua.20469.

7. Srinivas L, V.K. Shalini, M.Shylaja (1992).*"Turmerin a water-soluble antioxidant peptide from turmeric(Curcuma longa*). Arch Biochem.Biophy 292(2) : 617-623

8. Selvam,R etal(1995).*"The antioxidant activity of Turmeric (Curcuma longa )"*. J.Ethnopharmacol 47(2): 59-67

9. *"Ayurvedic Pharmacopeia of India(API)"*.(1989) , New Delhi: 45-46

10. Tu,G(ed) (1992), "*Pharmacopeia of the People's Republic of China*".Beijing Guangdong Science and Technology Press 202-203

11. "*The Japanese Standards for HerbalMedicines(JHSM*)"(1993). Tokyo Yukuji Nippo Ltd. 279

12. But,P.P.H etal(eds) (1997). "*International Collation of Traditional and Folk Medicine*" Singapore , World Scientific. 207-208

13. Marotta, F.; et al. (October 2003). "*Hepatoprotective effect of a curcumin/absinthium compound in experimental severe liver injury*". *Chinese Journal of Digestive Diseases* 4 (3): 122–7. Blackwell Publishing. doi:10.1046/j.1443-9573.2003.00133.x.

14. Aggarwal, Bharat B.; Kumar, Anushree; Aggarwal, Manoj S.; Shishodia, Shishir. 2005. "Curcumin derived from turmeric (Curcuma longa): A spice for all seasons." *Phytopharmaceuticals in Cancer Chemoprevention*, 349-387

15. Aggarwal, BB.; Shishodia S. (May 2006). "Molecular targets of dietary agents for prevention and therapy of cancer". *Biochemical Pharmacology* 71 (10): 1397–421. Elsevier. doi:10.1016/j.bcp.2006.02.009.

16. Choi, Hyunsung; et al. (July 2006). "Curcumin Inhibits Hypoxia-Inducible Factor-1 by Degrading Aryl Hydrocarbon Receptor Nuclear Translocator: A Mechanism of Tumor Growth Inhibition". *Molecular Pharmacology* 70: 1664–71. American Society for Pharmacology and Experimental Therapeutics. doi:10.1124/mol.106.025817. PMID 16880289.

17. Stix, Gary (February 2007). "Spice Healer". *Scientific American*.

18. Srivastava, KC; Bordia A; Verma SK (April 1995). "Curcumin, a major component of the food spice turmeric (Curcuma longa), inhibits aggregation and alters eicosanoid metabolism in human blood platelets". *Prostaglandins Leukot Essent Fatty Acids* 52 (4): 223–7. doi:10.1016/0952-3278(95)90040-3. PMID 7784468.

19. Padma, TV (2005-03-11). "Turmeric can combat malaria, cancer virus and HIV", *SciDev.net*.

20. Kutluay SB, Doroghazi J, Roemer ME, Triezenberg SJ (January 2008). "Curcumin inhibits herpes simplex virus immediate-early gene expression by a mechanism independent of p300/CBP histone acetyltransferase activity". *Virology* 373: 239. doi:10.1016/j.virol.2007.11.028. PMID 18191976.

21. Bourne KZ, Bourne N, Reising SF, Stanberry LR (1999 July). "Plant products as topical microbicide candidates: assessment of in vitro and in vivo activity against herpes simplex virus type 2". *Antiviral research* 42 (3): 219–26. doi:10.1016/S0166-3542(99)00020-0. PMID 10443534.

22. Aggarwal BB, Shishodia S. Suppression of the nuclear factor-kappaB activation pathway by spice-derived phytochemicals: reasoning for seasoning. Ann N Y Acad Sci. 2004 Dec;1030:434-41. PMID 15659827.

23. Yang, F; Lim GP; Begum AN; Ubeda OJ; Simmons MR; Ambegaokar SS; Chen PP; Kayed R; Glabe CG; Frautschy SA; Cole GM (February 2005). "Curcumin inhibits formation of amyloid beta oligomers and fibrils, binds plaques, and reduces amyloid in vivo". *Journal of Biological Chemistry* 280 (7): 5892–901. American Society for Biochemistry and Molecular Biology. doi:10.1074/jbc.M404751200. PMID 15590663.

24. Gandy S. The role of cerebral amyloid beta accumulation in common forms of Alzheimer disease. *J Clin Invest*. 2005;115(5):1121-1129. Pub Med.

25. Cole GM, Morihara T, Lim GP, Yang F, Begum A, Frautschy SA. NSAID and Antioxidant Prevention of Alzheimer's Disease: Lessons from In Vitro and Animal Models. *Ann N Y Acad Sci*. 2004;1035:68-84. Pub Med.




26. Yang F, Lim GP, Begum AN, et al. Curcumin inhibits formation of amyloid beta oligomers and fibrils, binds plaques, and reduces amyloid in vivo. *J Biol Chem*. 2005;280(7):5892-5901, Pub Med

27. Frautschy SA, Hu W, Kim P, et al. Phenolic anti-inflammatory antioxidant reversal of Abeta-induced cognitive deficits and neuropathology. Neurobiol Aging. 2001;22(6):993-1005. Pub Med.

27. Lim GP, Chu T, Yang F, Beech W, Frautschy SA, Cole GM. The curry spice curcumin reduces oxidative damage and amyloid pathology in an Alzheimer transgenic mouse. J Neurosci. 2001;21(21):8370-8377. Pub Med.

28. Ringman, John M.; Frautschy, Sally A.; Cole, Gregory M.; Masterman, Donna L.; Cummings, Jeffrey L. "A potential role of the curry spice curcumin in Alzheimer's disease." *Current Alzheimer Research*, 2(2), 131-136. PMID 15974909

29. National Institutes of Health. Clinical Trials.gov. 2005. Available at: http:/ clinicaltrials.gov/.

30. Shoba G; Joy D; Joseph T; Majeed M; Rajendran R; Srinivas PS (May 1998). "Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers". *Planta Med* 64 (4): 353–6. doi:10.1055/s-2006-957450. PMID 9619120

31. Bisht; et al. (2007). "Polymeric nanoparticle-encapsulated curcumin ("nanocurcumin"): a novel strategy for human cancer therapy". *Journal of Nanobiotechnology* 5 (3): 3. BioMed Central. doi:10.1186/1477-3155-5-3. PMID 17439648.

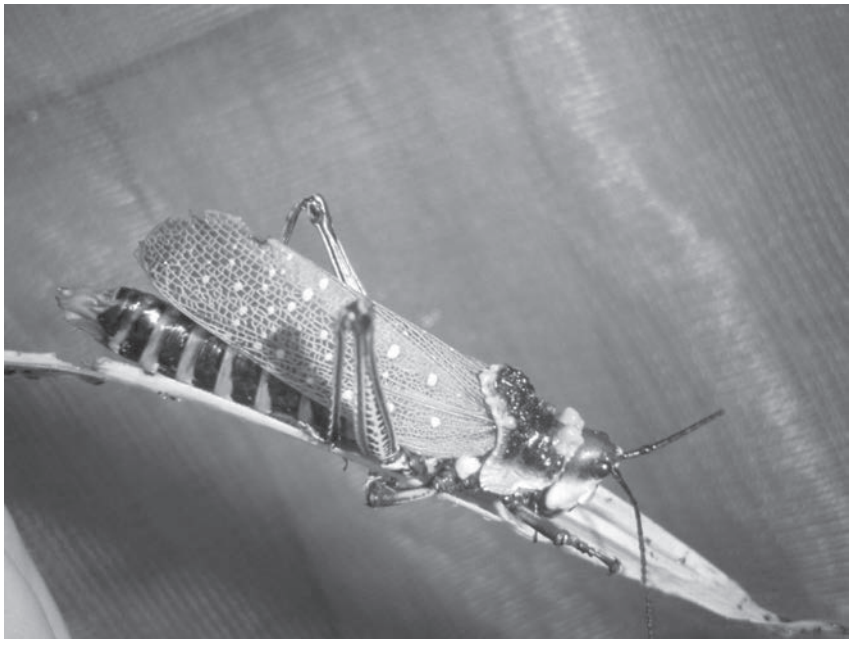
32. European patent EP20060004820

33. IPC, Wo/2006/129323

Kumar etal, "Biodegradable microspheres of curcumin for treatrment of inflammation", *Indian J.Physiol.Pharmacol.* (2002) 46(2). 209-217



# YELLOW SPOTTED GREEN GRASSHOPPERS IN CARDAMOM DO NOT PANIC



**Yellow – spotted green grasshopper (*Aularches miliaris*)**

**S.S.Chandrasekar,**
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**M.A. Ansar Ali**
**and B.Gopakumar**
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Spices Board, Myladumpara

The grasshopper, commonly called as spotted locust, has been noticed in certain cardamom growing pockets of Idukki district during 1983, 1994, 2003 and 2005. This year also farmers from Rajakkad area reported to have seen the insect in October. Every time it has been reported as an alarming pest by media (newspapers). After having seen the insect in field and heard the news, planters become panic thinking that they are going to destroy cardamom. But, **so far (from 1983) it never caused serious damage, which warranted any action.**

**What are they?....**

The green coloured spotted grasshopper (*Aularches miliaris*) has been reported as a pest of many crops (polyphagous) *viz.*, coffee, coconut, arecanut, cashew, black pepper, teak, jack, dadeps, banana, etc. Since it occurs in large numbers (swarms) in forests and nearby plantations, one may naturally become panic and concerned on the possible crop loss.

**The adults…**

Adult hoppers have pretty green wings with yellow spots over it. It measures about 4.5 to 5.8 cm in length; female is larger than male. Its head is black with a pale yellow band on lateral sides. When disturbed the adults have the habit of emitting a white frothy secretion, which has a repulsive odour. Most of the adults are seen in pairs and in copulation.

The adults are sluggish and incapable of flying to great distance, and the theory that it has appeared in these areas by migrating from somewhere else, is easily refuted. Though the adults are seen damaging the cardamom leaves by

nibbling, cardamom has not been a favourable host (food) for this grasshopper. If the spotted grasshopper has preference on cardamom plants to other vegetations, the large population of the insect present in plantation could have finished off the entire cardamom plants within a few days. Since the adult grasshopper is seen in this plantation, the nymphs (young ones) would also be in the vicinity, and had these nymphs preferred cardamom plants to other vegetations, the crop loss would have been throughout the year. *So, cardamom is not a preferred host for adult and young ones, and hence it is not a pest on cardamom.*

**The young ones**

The grasshopper adults are seen in October / November mostly on top of shade trees basking in sunlight. The adults climb down for laying eggs; they dig (excavate) the soil to a depth of six cm by its egg-laying organ (ovipositor). Mated females thrust their entire abdomen to a depth of five to eight cm in the soil and lay about 59-82 eggs in cluster in creamy white pods, 2.5 to 5.3 cm below ground level. Eggs are pale-white at the time of egg laying, which turns to dark brown. After about three to four months small wingless young ones (nymphs) emerge. Its pinkish body is intermingled with red dots and white up and down (longitudinal) stripes. Larval stage lasts for 86-221 days. Females live for about 80-85 days while male only for 5-30 days. A brief report of its life history is available from a record as coconut pest. According to this, female lays eggs during mid-November; eggs hatch in three to four months and there are six nymphal stages taking three months to form adults.

The young ones of spotted grasshopper feed on cardamom leaves also like its adults by nibbling; but its damage is insignificant. Earlier, the planters imposed various insecticides for controlling this insect, which increased the cost of cultivation and in many occasions lead to outbreak of minor pests like whitefly, red-spider mites, etc. This kind of indiscriminate use of insecticide imposition, without knowing the ecology of insects, killed the natural enemies and increased other pests in cardamom.

**Eco-friendly management strategy (if warranted)**

The best strategy is to ignore the insect, as its damage is unlikely to be of economic scale. It does not damage the panicles or capsules in any way.

The detailed study by scientists at I C R I, Myladumpara, on the ecology, feeding- and reproductive-behaviour, etc. of the grasshopper have given the following strategy for managing this insect.

1. Taking into consideration the congregating nature of the adult insect during October / November, an easy and economic way to reduce the number of insect would be to hand pick the insects and destroy. The grasshoppers may not be seen throughout the field but they are seen on patches climbing down from a few trees like *Ficus*, *Dadeps*, jack, etc. If such areas are concentrated for collection of adult, then there may not be much labour and time to be spent.

2. In endemic areas, where adult grasshoppers are seen, it is doubtless that several lakhs of eggs have been deposited in the soil by the females. The emerging young ones may feed on the weed vegetation and hence there is a possibility to increase the population in the area. Hence it is advisable to find out the egg deposited areas, rake the soil well, and smash thoroughly to expose the eggs, so that the eggs may be destroyed.

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# AMERICAS SHOW YIELD GOOD TRADE ENQUIRIES

Participation of the Board in the 11th Americas Food & Beverage Show held in Miami, Florida, USA during 24-26, September 2008 yielded several enquiries for spices and spices extracts. The small and medium scale dealers and traders located in and around Miami are currently meeting their requirements from major importers located in North America. However the requirements are not so big for specific items. The preference is to get break bulk loads. Perhaps the Indian exporting companies can fix up trade contacts who could provide regular supplies on a consistent basis.

**Mr. P. Jagadeesan, Deputy Director [right] with a visitor at the Spices Board stand at the Americas show**

The Spices Board stand at the fair held at the World Trade Center Miami had visitors from many destinations. The visitors from the Caribbean Islands showed much interest in Indian curry as they use lot of curry mixes that are similar in taste profile in their cuisines. Great potential for spice powders and mixes are found for both bulk as well as retail packing of their brands to these markets.


**Mr. P. Jagadeesan, Deputy Director [right] and Sri. Mangat Ram Sharma, Director, Ministry of Commerce & Industry [right] with a business visitor.**

Some of the manufactures of seasonings and blends in and around Miami were much enthused about Indian spice extracts displayed in the stall. They have a preference to have extracts for their seasoning manufacturing since quality of spices imported in whole/ground form are lack consistency in quality. Shri. Mangat Ram Sharma, Director, Ministry of Commerce & Industry and Shri. P. Jagadeesan, Deputy Director, Spices Board took care of the participation of the show at the fair. Representative of M/s. Pepper India Corporation, Kottayam, Kerala, Shri. Kurian Abraham also participated and held discussions with buyers.

The Board's stand put on display several samples of spices and spice products of exporters. The fair was jam packed with over 5,000 products from around the world, new product pavilions and learning opportunities. More than 5,800 retailers, distributors, importers, foodservice professionals and exhibitors from 87 countries featured the largest America's focused food and beverage trade event.

# FOODBIZ AFRICA YIELDS TRADE ENQUIRIES

Spices Board participation in Africa Big Seven 2008, Foodbiz, in Midrand, Johannesburg resulted in generating substantial enquiries for different spices. The fair held during July 20 to 22, 2008 had wide participation from different countries. The Board was represented by Director (Dev), Mr.R. Chandrasekhar and Sr.Scientist, Dr.K.Dhanapal. Mr.Abraham Mathew of Synthite Industrial Chemicals, Kolencherry, Mr.Santhosh Kumar of Sara spices, Kizhakkambalam and Mr. Balamurugan of Jothi Trading Company, Virudhunagar also participated through the Spices Board stand.


**(From left) Shri.R.Chandrasekhar, Director (Development) Shri.Balamurugan of Jothi Trading Company, Dr.K.Dhanapal, Senior Scientist and Shri.Abraham Mathew of Synthite Industrial Chemicals at the stand. Shri.Santhosh Kumar of Sara Spice is at the back.**

**(From left) Dr.K.Dhanapal, Senior Scientist and Shri.R.Chandrasekhar, Director (Development) attending to a visitor at the stand.**

# INDIAN SPICES PAVILION IN BIOFACH GERMANY

The Spices Board will be setting up an Indian spices pavilion at the Organic Food Show in Nuremberg, Germany during February 19th to 22nd, 2009. This fair, 20th in the series will be held at Nuremberg Messe and will focus organic food, other natural products, organic agriculture and marketing. The last edition of the Biofach in February 2008 witnessed participation of over 2700 exhibitors who were visited by over 46,500 trade visitors from 124 countries. Market experts from Organic Detailed information is available on the internet www.biofach.de / products on display.

The Board will be participating in an area of 40 sq.mts. along with Agricultural and Processed Food Products Export Development Authority (APEDA). Indian organic exporters, organic farmers, organic farmer groups etc. can participate in the Spices Board pavilion. This is one of the exclusive shows for organic food products and is visited by all those who matters in the international organic food business.

The Spices Board has been regularly participating in this fair and substantial enquiries used to be generated. This fair will definitely provide good deals in developing international business in organic trade.

Monitor & IFOAM have projected a world trade turn over in organic food worth more than 40 billion US Dollars during 2007. The country of the year in Biofach 2007 is Denmark.

Those who are interested in participating in this exhibition are requested to contact the Deputy Director(Publicity) of the Board. Participation in this fair is being coordinated by Director Research, Dr.J Thomas.

# ISO MEETING IN SPAIN

The 25th Meeting of ISO/TC 34/SC 7 on various ISO Standards, Specifications and Test methods was held at Madrid, Spain during 8 to 10 October 2008. The meeting deliberated on the various options prepared by the member countries and appropriate decisions were taken after detailed discussions.

Chairman, Spices Board, Mr V J Kurian.I A S, presided over the meeting. Mrs. Madhulika Prakash, Scientist-F & Deputy Director General , BIS, New Delhi, acted as the secretary to the committee.

Delegates from France, Greece, India, Iran, Morocco, Spain and Sweden attended the meeting. The meeting approved the ISO/DIS 6465 Cumin- Whole and ground Specifications- prepared by India and adopted as FDIS(Final Draft ISO Specification). The Document ISO/DIS 927 Spices and Condiments- Determination of extraneous matter and foreign matter content - was also accepted as FDIS.

The following committee draft (CD) was also accepted as DIS(Draft ISO Specification).

ISO/CD 3632-1- Saffron - Part I specifications.

**(From left) Sri. Firdos Ahmad Nephvi, Associate Professor, Sher-e-Kashmir University of Agriculture Science and Technology, Smt. Madhulika Prakash, Scientist-F & Deputy Director General , BIS, New Delhi (Secretary- ISO/TC 34/SC 7 Committee), Sri. V J Kurian. I A S, Chairman, Spices Board (Chairman - ISO/TC 34/SC 7 Committee ) and Sri. K R K Menon, Senior Scientist(QC), Spices Board at the meeting.**

ISO/CD 3632-2 -Saffron - Part 2 Test methods.

The following Standards are confirmed by the committee.

ISO/NWIP- Revision of ISO 1237:1981 Mustard Seed-Specification

ISO 2254:2004 Cloves, Whole and ground(powdered)-Specification

ISO 6577:2002 Nutmeg, whole or broken and mace whole or in pieces-Specification.

For the following Standards, Technical Corrigendum is accepted by the committee.

ISO 3493:1999 Vanilla-Vocabulary

ISO 7540:2006 Ground Paprika - Specifications.

And for the following Standards Technical Corrigendum is called for by the committee for the updation and acceptance of the Standard.

ISO 6538:1997 Cassia, Chinese type, Indonesian type and Vietnamese type

ISO 6539:1997 Cinnamon, Srilanka type, Seychelle type and Madagascan type.



# SPICES BOARD PAVILION AT SIAL PARIS

The Spices Board has put up a pavilion at the SIAL fair in Paris held during October 19 to 23, 2008. There was a good presence of Indian exporters in the pavilion of which some were provided with individual slots.

A good number of visitors including buyers and traders visited the pavilion and held discussions with the Indian team. Dr. YS. Rao, Senior Scientist and Mrs MR Vijayalakshmi, Assistant Director coordinated the Indian pavilion. There were serious enquiries for organic spices besides for curry powder, mixes and whole spices. The pavilion had representation from Orient Spices, Kottayam, Sri Chakra, Kottyam, Vidur Exports, Mumbai, Grover Sons, Mumbai, KM Ganatra, Mumbai, Green Bowl, Mumbai, AG Exports, Chenai, MM Poonjiaji, Mumbai, Garlico, Indore and Ann Impex, Kalady, Cochin.

**Visitors at the Spices Board pavilion in SIAL Paris**

**Dr. Y.S. Rao, Sr Scientist [second from left] and Mrs MR Vijayalakshmi [Third] seen in discussion with buyers**

# HONORARY RUSSIAN CONSULATE THIRUVANANTHAPURAM

Mr. Rateesh C Nair has been appointed Honorary Consul of Russian Federation in Thiruvananthapuram. The address is as follows:

**Honorary Consulate of Russian Federation**
Gorki Bhavanam
S.Roerach Road
University P.O.
Thiruvananthapuram 695 034
Tel: 0471 2338399, Fax: 0471 2338766
E-mail: russiancatre@eth.net

# SMALL UNITS CATEGORY: GOVT. DE-RESERVES GROUND, PROCESSING OF SPICES

The Government of India has dereserved "Ground and Processed Spices other than Spice Oil and Oleoresin Spices" (Product code 21920101) under the Food and Allied Industries with effect from 10th October, 2008.

This is in accordance with the request of the Spices Board to Government of India to de-reserve spices and spice products from the list of items reserved for exclusively manufacturing in the Small scale. This request was made to develop the Indian spice industry as a processing hub and to enhance development in the processing and value addition sectors. It is for the spice industry now to make use of the deservation for expanding the processing capabilities.

## Cardamom meetings

# REGIONAL SEMINAR ON CARDAMOM AT ATTAPADY HILLS

A Regional Seminar on cardamom was organized on 23rd September 2008 at AHADS Seminar hall at Agali. Shri T K Ravi, Joint Project Director, Attapady Hill Area Development Society (AHADS), Agali presided over the seminar. Dr J Thomas, Director (Res), ICRI, Myladumpara delivered the inaugural address and an overview of cardamom production in India. Dr K M Kuruvalla, Scientist, ICRI took a class on varieties in cardamom and nursery management practices. Dr Vadiraj, Scientist, ICRI detailed the soil fertility management practices in cardamom. Dr S S Chandrasekhar, Scientist, ICRI narrated the IPM / IDM practices in cardamom. In the afternoon, Smt Lovely Augustine, Deputy Project Director, AHADS explained the integrated pepper management practices. Shri M S Ramalingam, Senior Field officer, Spices Board, Coimbatore briefly outlined the developmental schemes of the Board. Shri. V J Joseph, Assistant Director, Spices Board, Rajakumary welcomed the gathering. Shri V K Kurian, a progressive farmer delivered the vote of thanks.


**Dr.J.Thomas, Director (Research) ICRI, delivering the inaugural address at the Regional seminar on cardamom held at Agali .**

**A view of audience attending the cardamom seminar**

# KANNIMARCHOLA


**Shri.E.K.Jose, Field Officer, Spices Board, Peermade explaining the aspects of quality improvement in cardamom to the farmers of Kannimarchola on 23rd September 2008.**

# PLANTERS – SCIENTISTS INTERFACE AT NELLIYAMPATHY

Planters – Scientists Interface was held on 25th September 2008 at Nelliyampathy in association with the Nelliyampathy Planters Association. Shri Devadas, Manager, AVT Estate and Executive Member, Nelliyampathy Planters Association welcomed the gathering. Dr J Thomas, Director (Res), ICRI, Myladumpara emphasis the necessity for production of quality cardamom for exports. A presentation on quality cardamom production was made. Scientists of ICRI viz. Dr K M Kuruvalla,, Dr Vadiraj, Dr S S Chandrasekhar participated in the Interface and answered the planters' queries on cardamom cultivation . Shri M S Ramalingam, Senior Field officer, Coimbatore proposed the vote of thanks.

**A view of cardamom planters participating in the seminat at Nelliyampathy**

# SPRING VALLEY

**View of cardamom planters attending the meeting of quality improvement of cardamom in Spring valley organized by the Peermade Field Officer of Spices Board on 24th September 2008**

# VAZHAVEEDU

**View of cardamom planters attending the quality improvement training programme of cardamom held on 18th September 2008 in Vazhaveedu organized by the Field Office, Spices Board, Vandanmedu**

# KAKKABE


**Dr.M.N.Venugopal, Principle Scientist, IISR, Appangala addressing the growers in the cardamom training programmes held at Kakkabe in Karnataka.**

**A view of cardamom growers in the cardamom training held in Kakkabe**

# KALOOR

**Shri.M.Y.Honnur, Senior Field Officer, Spices Board, Somwarpet taking class on cardamom nursery management to the farmers in Kaloor in Karnataka.**

**A view of training programme**

# RAJAKANDOM

**Cardamom planters of Rajakandom attending the class on quality improvement training programme of cardamom on 30th September 2008 organized by the Field Office, Spices Board, Vandanmedu**

# MADENADU

**A view of cardamom growers attending the training at Madenadu**

# BHAGAMANDALA


**View of cardamom growers attending the practical training of acid treatment of cardamom seeds at Bhagamandala. Shri.T.S.Rajagopal Achar, Talakaveri Trust (middle) inaugurated the training programme.**

# BIRUNANI

**View of cardamom planters attending the class on cardamom nursery management at Birunani**

# KRISHI MELA –2008


**The members of Sthree Sakthi Sangh from Maharashtra visited the Boards's stall organized inconnection with the Krishi Mela 2008 held at UAS ,Dharwad from 4-7th October 2008. Shri.P.K.Suresh, Deputy Director, Shri.T.S.Ravindra, Extension Assistant and Shri.S.N.Dharmappa, SGFM Spices Board organized the participation of the exhibition.**

**The heads of various NGO's in Dharwad district visited the Board's stall in the Krishi Mela.**

# FI INDIA 2008


**Business visitors at the Board's stall organized during Fi India 2008 held at Bombay Exhibition Centre, Mumbai from 3 to 4th October 2008. Shri.K.Nanjundeswaran, Assistant Director (Mktg), Spices Board, Mumbai (extreme right) organized the Board's participation in the exhibition**

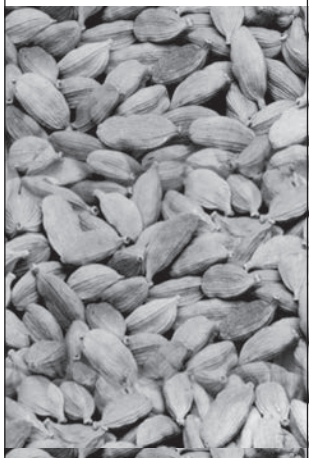
# HINDI FORTNIGHT CELEBRATIONS SAKLESHPUR

**Kum.Athmika D/o Shri.Srikrishna Bhat participating in the number counting competition in hindi inconnection with the hindi fortnight celebrations held on 18th September 2008 at RRS, ICRI, Donigal in Sakleshpur, Karnataka.**

**View of staff and children participated in the programme.**

# CALENDAR OF OPERATIONS FOR IMPORTANT SPICES - DECEMBER 2008

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 December is given below.

| Name of the crop/ Type of operation | Details of the operations |
|---|---|
| **CARDAMOM**<br>I Agronomic measures<br>  <br>  | NURSERY<br>➢ Observe for germination of seeds sown during previous months.<br>➢ Once sprouting observed remove the mulch material and cover interspaces thinly with sliced mulch materials.<br>➢ Overhead pandal to be erected to protect the seedlings from direct sunlight.<br>➢ Irrigation may be done to bed nursery / polybag nursery / sucker nursery based on necessity.<br>➢ 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.<br>➢ As bio-control measure, trichoderma or Pseudomonas or Bacillus species may be applied in the soil.<br>➢ 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.<br>MAIN FIELD<br>➢ Mulch the base of the plants with organic waste materials.<br>➢ In areas where weeding is not carried out, clean weeding at the base of the plants and slash weeding in the inter spaces can be adopted and use the weeded material as a mulch. |
| **II Pest management** | ➢ To check incidence of root grubs, beetles may be trapped by nets.<br>➢ Towards Integrated Pest Management, dry leaves may be pruned and spraying of Profenofos 150 ml per 100 liters of water may be taken up during the month in rainfed as well as irrigated areas.<br>➢ Spray should coincide with shoot borer moth emergence. |
| **III Disease management** | ➢ Adequate drainage facility to be provided wherever necessary to avoid incidence of fungal disease if North East monsoon continues.<br>➢ Keep constant vigil for any katte virus affected plants to uproot and destroy, if found.<br>➢ If leaf blight disease is observed, spray one per cent Bordeaux mixture or 0.4 per cent Akomin. |

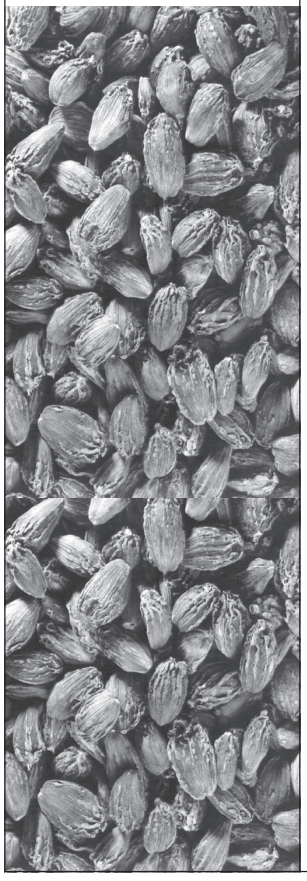


- For controlling leaf rust and chenthal & leaf spots, spray 0.25per cent Mancozeb or Companion.
- If symptoms of stem lodging are noticed, spray 0.2 per cent Bavistin on pseudo stem.
- Root rot and leaf yellowing can be controlled by foliar spray and soil drenching with 0.2 per cent Bavistin or Carbendazim + Mancozeb.
- If symptoms of capsule brown spot (Anthracnose) are noticed, spray with 0.2 per cent Bavistin.

**IV Harvest and post harvest operations**

- Harvesting can be continued with a gap of 25 to 30 days depending upon the weather conditions and maturity of capsules. Ensure always, right maturity for better out-turn.
- Wash harvested capsules thoroughly before drying in curing chamber.
- Timely removal of water vapour from curing chamber and maintaining proper temperature during curing will result in better green colour of the produce.
- Clean and store the cured cardamom at 10 per cent moisture level in black polythene lined gunny bags and inside wooden boxes.

**LARGE CARDAMOM**

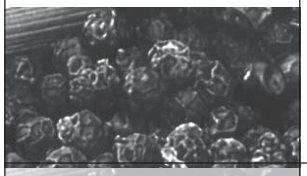


NURSERY

- Weeding may be attended in sucker nursery depending on the necessity. The nursery beds may be mulched properly with dried leaves to prevent weed growth and as soil moisture conservation measure.
- If any symptoms of disease / pest infestation are noticed, it may be controlled immediately.
- Depending on the rain fall condition, irrigation may be provided.

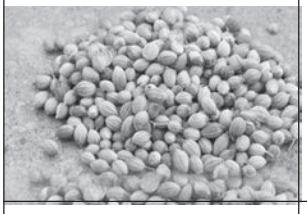
MAINFIELD

- Harvesting may be continued in high altitude areas.
- The mother clump after harvesting can be collected and destroyed by dumping it in pit or by burning in isolated place to minimize the infection of pest & diseases.
- The harvested spikes may be heaped overnight and capsules may be separated for curing.
- The cured capsules may be rubbed on wire mesh for cleaning and removal of calyx (tail).
- After removal of tails from the capsules, the dried cardamom should be kept in polythene lined jute bags and stored on wooden platform to avoid absorption of moisture.
- After processing, the moisture percentage in the dried capsules should not be more than 10 per cent for better shelf life.
- Chirke and Foorkey infected plants may be destroyed by uprooting / burial at regular intervals.
- Regular inspections may be carried out to observe caterpillar / shoot borer incidence, if any may be hand picked and destroyed mechanically.

| | |
|---|---|
|  | ➢ If sufficient moisture is not available in the soil, the cardamom plants may be irrigated. |
| **PEPPER**<br>**I Agronomic measurers**<br>  | ➢ Selection and labelling of good mother vines for collection of planting materials can be continued.<br>➢ Wherever shade is inadequate, provide temporary cover with dry arecanut / coconut fronds or tree twigs for young vines to protect from direct sun light.<br>➢ Mulch the base of the vines with organic waste materials like dried leaves, weeds etc., to conserve the soil moisture.<br>➢ The growing vines may be tied to the standard and trained properly. |
| **II Disease management** | ➢ Vines affected by little leaf or phyllody may be uprooted and destroyed. |
| **III Harvest and Post harvest Operations** | ➢ Continue harvesting. Harvest when the spike attains the right maturity by watching for colour change in one or two berries in a spike from green to orange or red.<br>➢ Always ensure threshing of pepper by hygienic means either manually or using mechanical pepper thresher.<br>➢ For drying use only clean drying yards, clean bamboo mats or polythene sheets. |
| **VANILLA**<br>**I Agronomic measurers**<br>  | ➢ Provide individual shade to newly planted vines / seedlings with arecanut / coconut fronds or tree twigs to avoid the effect of direct sunlight.<br>➢ Irrigate the vines wherever necessary based on weather condition.<br>➢ Always ensure adequate mulch material with organic debris.<br>➢ Tying of vines to the standard to be continued based on necessity.<br>➢ If flowering observed in lower elevations, pollinate the flowers manually with the help of skilled labourers between 6.00 a.m. to 1.00 p.m. on the day of opening of the flower. |
| **II Disease management** | ➢ Vanilla vines exhibiting any viral symptoms are to be immediately removed and destroyed. |
| **III. Harvesting and post harvest operations** | ➢ Continue harvesting. Harvest when light yellowing is observed at the distal end of the bean to ensure better quality of cured beans.<br>➢ Adopt Bourbon method for processing the beans or sell green beans immediately after harvest. |
| **GINGER**<br>  | ➢ Drying of shoots indicates the maturity of ginger rhizomes.<br>➢ If ready for harvest already marked plants may be harvested separately for using them later as seed rhizomes.<br>➢ The remaining plants can be harvested on seeing the indication of maturity. |
| **II Storage of seed rhizomes** | ➢ Seed rhizomes may be soaked in 0.3 per cent dithane M 45 and 0.1 per cent malathion solution for 30 minutes. Then drain and dry under shade. |



| | |
|---|---|
|  | ➢ Store them in pits under shade with alternate layers of sand or saw dust with ginger rhizomes. Leave some gap over the top layer and close the pit either with a wooden / earthen lid with holes or coconut fronds. |
| **III Post harvest management** | ➢ For making dried ginger, the harvested rhizomes are thoroughly washed in water.<br>➢ Then outer skin is removed with sharpened bamboo splits.<br>➢ Soaking the rhizomes overnight in water will help easy pealing of the outer skin.<br>➢ The pealed rhizomes are spread uniformly on clean drying yards / bamboo mats / polythene sheets and allowed to dry for seven to nine days with occasional turning. |
| **TURMERIC**<br>**I Harvesting**<br>  | ➢ Drying of shoots indicates the maturity of turmeric rhizomes.<br>➢ If ready for harvest already marked plants may be harvested separately for using them later for seed purpose.<br>➢ The remaining plants can be harvested on seeing the indication of maturity. |
| **II Storage of seed rhizome** | ➢ Seed rhizomes may be soaked in 0.3 per cent dithane M 45 and 0.1 per cent malathion solution for 30 minutes. Then drain and dry under shade.<br>➢ Store them in pits under shade with alternate layers of sand or saw dust with turmeric rhizomes. Leave some gap over the top layer and close the pit either with a wooden / earthen lid with holes or coconut fronds. |
| **III Post harvest management** | ➢ Cure the finger and mother rhizomes separately for better quality of the produce.<br>➢ Curing is to be done by boiling rhizomes in fresh water and drying in sun.<br>➢ After cooking sun dry the rhizomes by spreading in five to seven cm thick layers on clean bamboo mats or cement yards for 10-15 days for proper drying.<br>➢ Polish the dried turmeric using a mechanical polisher. |
| **CHILLI**<br>  | ➢ Apply fertilizer @ 50:25 kg / hectare of nitrogen & potash.<br>➢ Irrigate once in 20-25 days in black soils & 10-15 days in red loamy soils.<br>➢ Spray captain 1.5 grams or mancozeb 2.5 grams or copper oxychloride three grams per liter of water to control die back & fruit rot diseases.<br>➢ For monitoring pod borers change the lure of Pheromone traps and apply N.P.V. @ 200 liters per acre or acephate One gram per liter. |
| **FENNEL**<br>**(Kharif transplanted)** | ➢ Crop should be irrigated at an interval of 15-20 days if optimum moisture is not available in the soil.<br>➢ To control ramularia blight spraying of 0.2 per cent mancozeb 75 w.p. may be done. |

| | |
|---|---|
| | ➢ Spray any systemic insecticide to control aphid, if observed. |
| **FENNEL**<br>**(Rabi transplanted)** | ➢ Irrigation should be given as per need.<br>➢ Top dressing of 22.5 kg. nitrogen per hectare may be done.<br>➢ Intercultural operation and hand weeding may be done during first week and earthing up may be done during second fortnight.<br>➢ To control ramularia blight spraying of 0.2 per cent mancozeb 75 w.p. may be done.<br>➢ Spray any systemic insecticide to control aphid. |
| **FENNEL**<br>**(Rabi drilled)** | ➢ Irrigation should be given as per need.<br>➢ Top dressing of 22.5 kg. nitrogen per ha. may be done around 15th December.<br>➢ Intercultural operation and hand weeding may be done during first week.<br>➢ While doing interculture harrow should be adjusted in such a way that sufficient soil is thrown near the stem of plants to supplement the earthing up operation.<br>➢ To control ramularia blight spraying of 0.2 per cent mancozeb 75 w.p. may be done.<br>➢ Spray any systemic insecticide to control aphid, if observed. |
| **CORIANDER**<br>  | ➢ Second weeding may be carried out during second fortnight and crop may be irrigated.<br>➢ Last dose of 20 kg. nitrogen per hectare recommended for irrigated crop may be top dressed.<br>➢ To control powdery mildew dust 300 mesh sulphur powder @ 25 kg / hectare in the early morning hours.<br>➢ Spray any systemic insecticide to control aphid, if observed. |
| **CUMIN**<br>  | ➢ Weeding and hoeing may be done during second week. 15 kg nitrogen per ha. may be top dressed one month after germination of seeds.<br>➢ Irrigation may be given at an interval of 15 days.<br>➢ To control blight disease spraying of 0.2 per cent mancozeb 75 w.p. may be done during 2nd week and thereafter three more spraying at an interval of 10 days. |
| **CELERY** | ➢ One to two round weeding may be done in nursery.<br>➢ Irrigations in nursery may be continued at an interval of 10-15 days till seedling become ready for transplanting. |
| **FENUGREEK**<br>  | ➢ Thinning of plants may be done to maintain the plant spacing at about 8-10 cm. in broadcasted crop.<br>➢ Weeding and hoeing may be carried out during first week and repeat after 20-25 days. After thinning & weeding crop may be irrigated.<br>➢ 20 kg. nitrogen per hectare may be top dressed during first week.<br>➢ Second irrigation may be given 20-25 days after first irrigation. |



# MONTHLY AVERAGE PRICES OF SPICES FOR OCTOBER 2008

| SPICE | CENTRE | GRADE | PRICERS / KG |
|---|---|---|---|
| Black Pepper | Kochi | Ungarbled | 124.91 |
| | | Garbled | 130.91 |
| Cardamom small (Auction) | Vandanmettu | e-auction | 574.36 |
| | Bodinayakanur | e-auction | 554.96 |
| | Saklaspur | | 464.51 |
| | Sirsi | | 454.62 |
| | Maharashtra | | 705.63 |
| Cardamom (L) | Siliguri | Badadana | 144.00 |
| | | Chotadana | 133.00 |
| Chillies | Virudhnagar | | 49.83 |
| Ginger (Dry) | Kochi | Best | 91.25 |
| | | Medium | 86.25 |
| Turmeric | Kochi | Alleppey Finger | 46.88 |
| | Bombay | Rajpuri Finger | 71.00 |
| | Bombay | Duggirala | 40.63 |
| Coriander | | Indori | 78.50 |
| | | Kanpuri | 86.00 |
| Cumin | Bombay | 4% | 103.91 |
| Fennel | Bombay | - | 55.25 |
| Fennugreek | Bombay | - | 32.19 |
| Mustard | Chennai | - | 33.14 |
| Garlic | Bombay | - | 12.50 |
| Celery | Bombay | - | 63.00 |
| Clove | Cochin | - | 280.00 |
| Nutmeg(with shell) | Cochin | - | 136.52 |
| Nutmeg(without shell) | | | 230.00 |
| Mace | Cochin | - | 404.78 |
| Cassia | Chennai | - | 69.86 |
| Vanilla* | | | 825.00 |

SPICES SOURCES

Average FOB export price -August 2008

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

# AVERAGE INTERNATIONAL SPOT PRICES FOR OCTOBER 2008

| SPICE | MARKET | GRADE | (USD/KG) | (RS/KG) |
|---|---|---|---|---|
| Black Pepper | U.S.A | MG-1 | 3.51 | 170.73 |
| White Pepper | U.S.A | Muntok | 5.31 | 258.28 |
| Cardamom(Small) | Saudi Arabia | India Asta Extra Bold | 15.62 | 759.76 |
| Chillies | U.S.A | India S4 | 2.43 | 118.20 |
| | | Chinese Small | 3.64 | 177.05 |
| Ginger(Dry) | U.S.A | Chinese Sliced | 1.92 | 93.39 |
| Turmeric | U.S.A | AFT 5..50 Curcumin | 1.87 | 90.96 |
| Coriander | U.S.A | Canadian | 1.83 | 89.01 |
| Cumin | U.S.A | Indian | 3.04 | 147.87 |
| Fennel | | Egyptian fancy | 1.68 | 81.72 |
| Fennugreek | U.S.A | Ind / Turkey | 1.15 | 55.94 |
| Clove | U.S.A | Mad / Zan / Com | 5.42 | 263.63 |

AVERAGE IMPORT PRICE OF VANILLA IN TO USA

| GRADE/ORIGIN | MARKET | AUGUST' 08 US $/KG |
|---|---|---|
| Madagascar | USA | 22.48 |
| Indonesia | USA | 22.18 |
| India | USA | 25.46 |
| Uganda | USA | 11.23 |

Exchange Rate 1 US $ = Rs. 48.64

SOURCE: 1.A.A. SAYIA & CO.INC.HOBOKEN



Nani leverages 30years in delivering the finest in Indian Turmeric for domestic and international markets, combining the right mix of traditional expertise and research with dollops of creative thinking to offer complete qualitative Turmeric Whole and Ground at best competitive markets.

Nani's production facilities and headquarters are located in Erode, Tamilnadu, India - the heart of India's largest production area for turmeric crops. From an area that accounts for more than 70% of India's finest turmeric. Nani's merchandising activities reach producers all over the world.

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