

# Ginger (Zingiber Officinale) An Ayurvedic Medicinal Plant

## Abstract

Zingiber officinale, commonly called as Adrak. This plant cultivated in India along with Kerala region. The rhizome used by all Indian to cure various diseases and disorders, it is also used to kills the entire pathogenic microorganism. It is specially use in control of Cough, Constipation, Diarrhoea, Condiment and Digestive. 70% production of Adrak is produce in Kerala.

Tribal peoples throughout India fully depend on the plant for furnish their all basic and other needs which are essential for their life. In remote area villagers depend upon the folk medicine and house hold remedies. Adrak is very important to cure several diseases of rural peoples and domesticated animals. The observations were confirmed with that of the standard literature.

**Keywords:** Wild Plant, Ginger, Medicinal Uses.

## Introduction

Ginger grows well in warm and humid climate and is cultivated from sea level to an altitude of 1500 m above sea level. Ginger can be grown both under rain fed and irrigated conditions. For successful cultivation of the crop, a moderate rain fall at sowing time till the rhizomes sprout, fairly heavy and well distributed showers during the growing period and dry weather for about a month before harvesting are necessary. Ginger thrives best in well drained soils like sandy loam, clay loam, red loam or lateritic loam. A friable loam rich in humus is ideal. However, being an exhausting crop it is not desirable to grow ginger in the same soil year after year.

## Varieties

Several cultivars of ginger are grown in different ginger growing areas in India and they are generally named after the localities where they are grown. Some of the prominent indigenous cultivars are Maran, Kuruppampadi, Ernad, Wayanad, Himachal and Nadia. The exotic cultivar 'Rio - de - Janeiro' have also become very popular among cultivators. The improved varieties of ginger and their salient features are given below. The variety IISR Varada is suited for fresh ginger, dry ginger and making candy while, IISR Rejatha is rich in essential oil.

Kerala region is one of administrative divisions of Kerala in India. It consists of four districts viz., Kanoor, Kalpetta, Kocchi, Kottayam. It extends from 74.5 to 78.2 east longitude Kocchi taluka is rich with wealth of medicinal plants, timber, aromatic, fuel, ornamental, fibres, food plant, oil plant, cereal plant, beverages plant etc. Plants are collected from forest and information is collected from tribes those have well knowledge.

Zingiber officinale commonly called as adrak. This plant cultivated in India including Kocchi taluka Kerala. It is used by tribals and all Indians to cure various diseases and disorders. Ginger plant kills the entire pathogenic microorganism. It is specially used in control dysentery, cough, stomachic, headache, asthma, blood purifier, skin diseases, diabetic, ulcer, piles, jaundice, wound, carminative, cholera, condiment etc. (Acuta 2010 Agrawal 1986 Ahmed 2010).

<b>Botanical name</b>	–	<b>Zingiber officinale</b>
Family	–	Zinziberaceae
Local name	–	Adrak

## Description

## Organic production

## Conversion plan

For certified organic production of ginger, at least 18 months the crop should be under organic management i.e. only the second crop of ginger can be sold as organic. The conversion period may be relaxed if the organic farm is being established on a land where chemicals were not

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previously used, provided sufficient proof of history of the area is available. It is desirable that organic method of production is followed in the entire farm; but in the case of large extent of area, the transition can be done in a phased manner for which a conversion plan has to be prepared.

Ginger as a best component crop in agri-horti and silvi-horti systems, recycling of farm waste can be effectively done when grown with coconut, arecanut, mango, Leucaena, young rubber plantation etc. As a mixed crop it can also be grown or rotated with green manure/ legumes crops or trap crops enabling effective nutrient built up and pest or disease control. When grown in a mixed cultivation system, it is essential that all the crops in the field are also subjected to organic methods of production.

In order to avoid contamination of organically cultivated plots from neighboring non-organic farms, a suitable buffer zone with definite border is to be maintained. In smallholder groups, where the holdings are contiguous, the isolation belt is needed at the outer periphery of the entire group of holdings. Ginger grown on this isolation belt cannot be treated as organic. In sloppy lands adequate precaution should be taken to avoid the entry of run off water and chemical drift from the neighboring farms. Proper soil and water conservation measures by making conservation pits in the interspaces of beds across the slope have to be followed to minimize the erosion and runoff. Water stagnation has to be avoided in the low lying fields by taking deep trenches for drainage.

#### **Management practices**

For organic production, traditional varieties adapted to the local soil and climatic conditions that are resistant or tolerant to diseases, pests and nematode infection should be used. All crop residues and farm wastes like green loppings, crop residues, grasses, cow dung slurry, poultry droppings etc. available on the farm can be recycled through composting, including vermicomposting so that soil fertility is maintained at high level. No synthetic chemical fertilizers, pesticides or fungicides are allowed under organic system. Farmyard manure may be applied @ 25-30 t/ha along with vermi compost @ 4 t/ha and mulching with green leaves @ 12-15 t/ha at 45 days intervals. Further, supplementation of oil cakes like neem cake (2 t/ha), composted coir pith (5 t/ha) and suitable microbial cultures of Azospirillum and phosphate solubilizing bacteria will improve the fertility and yield. Application of PGPR strain of *Bacillus amyloliquifaciens* (GRB 35) is also recommended for growth promotion and disease control. Based on soil test, application of lime/dolomite, rock phosphate and wood ash may be done to get required quantity of phosphorus and potassium supplementation. When the deficient conditions of trace elements become yield limiting, restricted use of foliar application of micronutrient mixture specific to ginger is recommended (dosage @ 5 g/L) twice, 60 and 90 DAP, for higher yield as per the limits of standard setting or certifying organizations. Use of biopesticides, biocontrol agents, cultural and phytosanitary measures for the management of insect pests and diseases forms the

main strategy under organic system. Integrated strategy involving pruning and destroying freshly infested shoots during July- August (at fortnightly intervals) and spraying Neemgold 0.5% or neem oil 0.5% during September-October (at 21 day intervals) is effective against the shoot borer.

Selection of healthy rhizomes, soil solarization and incorporation of *Trichoderma*, seed treatment and soil application of biocontrol agents like *Trichoderma*, PGPR or *Pseudomonas* multiplied in suitable carrier media such as coir pith compost, well rotten cow dung or quality neem cake may be done at the time of sowing and at regular intervals to keep the rhizome rot disease in check. To control other foliar diseases spraying of Bordeaux mixture 1% may be done restricting the quantity to 8 kg copper per hectare per annum. Application of quality neem cake mentioned earlier along with the bioagents *Pochonia chlamydosporia* will be useful to check the nematode population.

#### **Certification**

Certification and labeling is usually done by an independent body to provide a guarantee that the production standards are met. Govt. of India has taken steps to have indigenous certification system to help small and marginal growers and to issue valid organic certificates through certifying agencies accredited by APEDA. The inspectors appointed by the certification agencies will carry out inspection of the farm operations through records maintained and by periodic site inspections. Documentation of farm activities is must for acquiring certification especially when both conventional and organic crops are raised. Group certification programmes are also available for organized group of producers and processors with similar production systems located in geographical proximity.

#### **Harvesting**

Ginger attains full maturity in 210-240 days after planting. Harvesting of ginger for vegetable purpose starts after 180 days based on the demand. However, for making dry ginger, the matured rhizomes are harvested at full maturity i.e. when the leaves turn yellow and start drying. Irrigation is stopped one month before harvest and the rhizome clumps are lifted carefully with a spade or digging fork. In large scale cultivations, tractor or power tiller drawn harvesters are also used. The dry leaves, roots and soil adhering on the rhizomes are manually separated. Late harvest is also practiced, as the crop does not deteriorate by leaving it for some months underground. In India, domestic market prefers fresh green ginger for culinary use while two types of dried ginger i.e. bleached and unbleached are produced for export purpose. The most important criteria in assessing the suitability of ginger rhizomes for particular processing purposes is the fibre content, volatile-oil content and the pungency level. The relative abundance of these three components in the fresh rhizome is governed by its state of maturity at harvest.

This plant is found in tropical region it is a perennial rhizome. Rhizome is thick and jointed. It bears bud and fibrous root. Leaves are sheathed and

form pseudostem. Fruit are loculicidal capsule. Plant is recorded in India from ancient time. Rhizome of plant chiefly used in medicine & other purpose. (Deshpande 2011).

#### **Material and Methods**

To make a survey of medicinal important plants of Kocchi taluka of Kerala several field trips were arranged during study period.

The data gathered of Ginger plant in particular area were repeatedly confirmed in other area of Kocchi. Some of them are recorded in stranded literature; plant was identified with the help of flora (Naik et., al 1998). The present paper deals with the 01 plant species commonly used by the people in and around Kocchi taluka. The information received was confirmed several times from peoples of different tribes.

#### **Processing of ginger**

Processing of ginger to produce dry ginger basically involves two stages- peeling of the ginger rhizomes to remove the outer skin and sun drying to a safe moisture level.

#### **Peeling**

Peeling serves to remove the scaly epidermis and facilitate drying. Peeling of fully matured rhizomes is done by scrapping the outer skin with bamboo splits having pointed ends and this accelerates the drying process. Deep scraping with knives should be avoided to prevent the damage of oil bearing cells which are present just below the outer skin. Excessive peeling will result in the reduction of essential oil content of the dried produce. The peeled rhizomes are washed before drying. The dry ginger so obtained is valued for its aroma, flavour and pungency. Indian dried gingers are usually rough peeled when compared to Jamaican gingers, which are clean peeled. The rhizomes are peeled only on the flat sides and much of the skin in between the fingers remains intact. The dry ginger so produced is known as the rough peeled or unbleached ginger and bulk of the ginger produced in Kerala are of this quality.

#### **Drying**

The moisture content of fresh ginger at harvest is about 80-82 per cent which is brought down up to 10 per cent for its safe storage. Generally ginger is sun dried in a single layer in open yard which takes about 8 to 10 days for complete drying. The sun dried ginger is brown in colour with irregular wrinkled surface. The yield of dry ginger is about 19-25 per cent of fresh ginger depending on the variety and climatic zone.

#### **Polishing, cleaning and grading**

Polishing of dried ginger is done to remove the dry skin and the wrinkles developed on the surface during drying process. It is generally done by rubbing against hard surface. Cleaning of dry ginger is done manually to remove the extraneous matter and the light pieces. Once the ginger is cleaned and it is graded manually based on size of the rhizome, its colour, shape and the extent of residual lime (in the case of bleached ginger).

#### **Storage**

Dry ginger, packaged in gunny bags are highly susceptible to infestation by insects like *Lasioderma serricone* (cigarette beetle) during storage. Fully dried rhizomes can be stored in airtight containers such as high density polyethylene or similar packaging materials. Long term storage for more than two years would result in deterioration of its aroma, flavour and pungency.

#### **Bleached ginger**

Bleached ginger is produced by dipping scrapped fresh ginger in a slurry of slaked lime,  $\text{Ca(OH)}_2$ , (1 kg of slaked lime/120 kg of water) followed by sun drying. As the water adhering to the rhizomes dry, the ginger is again dipped in the slurry. This process is repeated until the rhizomes become uniformly white in colour. Dry ginger can also be bleached by the similar process. Liming gives ginger a better appearance and less susceptibility to the attack of insect pests during storage and shipping.

#### **Plant Protection**

##### **Diseases**

##### **Soft rot**

Soft rot is the most destructive disease of ginger which results in total loss of affected clumps. The disease is soil-borne and is caused by *Pythium* spp. among which, *P. aphanidermatum* and *P. myriotylum* are widely distributed in the country. The fungus multiplies with build up of soil moisture with the onset of south west monsoon. Younger sprouts are most susceptible to the pathogen. The infection starts at the collar region of the pseudostem and progresses upwards as well as downwards. The collar region of the affected pseudostem becomes water-soaked and the rotting spreads to the rhizome resulting in soft rot with characteristic foul smell. At a later stage root infection is also noticed. Foliar symptoms appear as light yellowing of the leaf margins of lower leaves which gradually spreads to the leaf lamina. In early stages of the disease, the middle portion of the leaves remain green while the margins become yellow. The yellowing spreads to all leaves of the plant from the lower region upwards and is followed by drooping, withering and drying of pseudostems.

#### **Result and Discussion**

##### **Medicinal uses**

The rhizome of plant used as raw or after drying, rhizome used by tribals and all Indians to cure various diseases and disorders; Adrak plant kills the entire pathogenic microorganism. It is specially used in control dysentery, cough, stomachic, headache, asthma, blood purifier, skin diseases, diabetic, ulcer, piles, jaundice, wound, carminative, cholera, condiment etc. (Acuta 2010 Agrawal 1986 Ahmed 2010, Ainslie-1813 Govindachari-1983).

##### **Conclusion**

Rural people of Kocchi taluka use the plant which grows nearby them or cultivated as a source of medicine, veterinary medicine, furniture, building, agriculture tools animal fodder etc. A number of plants grow naturally in forest of studied area and tribes use them to recover their diseases and disorder like cancer, acidity, asthma, T.B. Cholera, dysentery, diarrhoea, piles, fissure and several others diseases.

Kocchi forest is rich in flora but due to unawareness of common people and government of India. The plants now under go endanger species. It's a responsibility to save and cconserve and improve cultivation practices for the important plant for healthy and safe India. Present paper studied limited plant (01) and maintained its record.

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