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Production Technology of *Kaempferia galanga* (Aromatic Ginger): A Practical Guide to Cultivation and Uses

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Abstract

Kaempferia galanga (aromatic ginger or kacholam) is a valuable medicinal and aromatic plant from the ginger family, widely used in Ayurveda for its anti-inflammatory, antimicrobial, and pain-relieving properties. It grows well in warm, humid tropical regions, especially in well-drained loamy soils, and is usually propagated using healthy rhizomes. For a good crop, proper land preparation, correct spacing, and balanced nutrition are important particularly the use of organic manures along with fertilizers. Regular irrigation, timely weeding, and eco-friendly pest and disease management also play a key role in maintaining healthy plant growth. The crop is ready for harvest in about 6–8 months. Careful harvesting and proper post-harvest handling help maintain quality and extend shelf life. With growing demand in the medicinal, cosmetic, and pharmaceutical sectors, kacholam is becoming an increasingly attractive option for farmers looking for a sustainable and profitable crop.

Key words: Kacholam, *Kaempferia galanga,* Aromatic ginger, Medicinal plant, Rhizomes

Introduction

Kaempferia galanga, commonly known as Indian crocus, aromatic ginger, sand ginger, or kenchur is an important medicinal and aromatic plant widely used in traditional systems of medicine such as Ayurveda. It is a monocotyledonous plant in the ginger family Zingiberaceae and is valued for its rhizomes which contain essential oils and bioactive compounds with therapeutic properties. Kaempferia galanga is believed to have originated in the southern Asian region, particularly in Indonesia, Malaysia and Thailand.

It is a perennial herbaceous plant that grown from underground rhizomes, which are thick, fleshy and aromatic. The plant typically reaches a height of about 30-90 cm (approximately 12-35 inches). The leaves are long, lanceolate (lace-shaped) and have a dark

green colour with prominent veins. The underground rhizome has one or more prominent, vertically oriented tuberous root stock and many small secondary tubers and roots, their tips becoming tuberous.

The plant is known for its anti-inflammatory, analgesic, nematicidal, mosquito repellent, larvicidal, vasorelaxant, sedative, antineoplastic, antimicrobial, anti-oxidant, antiallergic and wound healing properties. In addition, it is used in the preparation of herbal formulations, perfumes, and cosmetic products. The most abundant essential oil constituents include propanoic acid, pentadecane and ethyl-p-methoxycinnamate (Umar *et al.,* 2011).

For generations, indigenous communities in Northeast and South India such as the Kuruma, Malayali, Kurichiya, Mullu Kuruma and tribes from Manipur and Meghalaya have relied on this plant as part of their everyday healing practices. They use it to care for common problems like ear infections in children, indigestion, stomach pain and cough, as well as more serious conditions like vomiting blood and intestinal issues. It is also valued for women's health, helping with menstrual pain, and is even used in certain traditional practices as an abortifacient. People turn to it for relief from toothache, headaches, rheumatism and body aches and for treating issues like mouth sores, dandruff, sore throat, diarrhea and runny nose. In some cases, it is even used as a remedy for snakebites (Yao *et al.,* 2018).

Types of galanga

1. ***Alpinia galanga*- Greater galanga**
   Commonly known as Thai galangal, Siamese ginger, Lengkuas. Strong, citrusy flavour. Best known culinary galangal.
2. ***Alpinia officinarum*- Lesser Galangal**
   Commonly known as Chinese galangal. Sharp, pungent flavour. More medicinal than culinary.
3. ***Kaempferia galanga*- Aromatic Galangal**
   Commonly known as Sand ginger, Kacholam (India). Mild, aromatic flavour. Used in medicine + cosmetics.
4. ***Boesenbergia rotunda*- Fingerroot / Chinese Ginger**
   Mild, slightly sweet flavour. Cooking and medicinal purpose.

Alpinia

Alpinia officinarum

Kaempferia galanga

Boesenbergia rotunda

Climate and Soil Requirements

Kaempferia galanga thrives in warm and humid tropical climates. It prefers temperatures ranging between 20°C and 35°C for optimal growth. Fertile loamy soil having good drainage is ideal for the crop. Laterite soil with heavy organic manure application is also well suited. Proper drainage is essential, as waterlogging can lead to rhizome rot and poor plant development. Planting is done during the month of May with the receipt of pre-monsoon showers. Maintaining adequate soil moisture without excess water is crucial for healthy growth.

Varieties

In many regions, cultivation of *Kaempferia galanga* is based on locally available cultivars. The selection of disease-free, well-developed rhizomes plays a critical role in ensuring uniform growth and higher productivity. Using certified or carefully selected planting material helps reduce the risk of diseases and improves overall crop performance.

Rajani and Kasthuri are high yielding varieties with an yield potential of more than 2 tonnes dry rhizomes per ha and have good aroma and flavour. Local types are also under cultivation.

Propagation and Planting Material

Kaempferia galanga is propagated vegetatively through rhizomes rather than seeds. Select well developed healthy and disease-free rhizomes. The mature rhizomes are selected and cut into small pieces, each containing at least one healthy sprout. Rhizomes can be stored in cool dry place or pits dug under shade, plastered with mud or cowdung. Before planting, rhizomes are often treated with fungicides or organic solutions such as neem extract to prevent fungal infections and improve sprouting.

Land Preparation and Planting

The land should be prepared thoroughly by ploughing two to three times to obtain a fine tilth. This is followed by levelling the field to facilitate uniform irrigation. On receipt of

pre-monsoon showers in April, prepare beds of 1 m width 25 cm height and of convenient length with spacing of 40 cm between beds.

Take small pits in the beds in rows with a spacing of 20 x 15 cm and at a depth of 4-5 cm and plant rhizomes with at least one viable healthy bud facing upwards. Proper spacing ensures better aeration and reduces the chances of disease occurrence. One hectare requires 700-800 kg of seeds.

Nutrient Management

Apply FYM or compost as basal dose at the rate of 20 t/ha, either by broadcasting and ploughing or by covering the rhizome in pits after planting. Farmyard manure or compost is commonly used and applied during land preparation at the rate of 20 t/ha.

Apply equal amounts of nitrogen, phosphorus, and potassium (50 kg per hectare each) by dividing them into two doses one during the first weeding and the other during the second weeding so the crop gets nutrients at the right stages of growth (KAU). Organic cultivation practices can also be adopted, including the use of biofertilizers and vermicompost, which enhance soil fertility and sustainability.

Irrigation Management

Irrigation plays a crucial role in the successful cultivation of *Kaempferia galanga*. Light irrigation is provided immediately after planting to facilitate sprouting. During the growing period, soil moisture should be maintained at an optimal level. The frequency of irrigation depends on climatic conditions and soil type. In rainfed areas, natural rainfall may be sufficient, while in dry periods, supplemental irrigation is required. Excessive irrigation should be avoided, as it can lead to waterlogging and increase the risk of rhizome diseases.

Weed Management

Effective weed management is essential for achieving good yield. Apply fertilizers and earth up the crop during the first and second weeding (45 and 90 days after planting). Avoid water stagnation in the beds. Further weeding will not be necessary because of the spreading of leaves on the soil surface in the beds. Mulching is highly beneficial in this crop, as it suppresses weed growth, conserves soil moisture, and improves soil health.

Pest and Disease Management

Although *Kaempferia galanga* (kacholam) is generally a hardy crop, it can still face some issues, especially during heavy rains. Under such conditions, leaf spot disease is quite common. This can be managed by drenching the beds with 1% Bordeaux mixture**,** and if needed, spraying Thiram at 0.2% to keep the infection under control. Nematodes like *Meloidogyne incognita* and *Radopholus similis* may also affect the crop. To manage them

effectively, treat the rhizomes before planting with *Pseudomonas fluorescens* at 3% (by weight)**.** In addition, applying green leaf mulch using Neem and Gliricidia at about 5 kg per square meter around 30 days after planting can help suppress nematodes and improve overall soil health.

Harvesting

The crop is usually ready for harvesting within 6 to 8 months after planting. Harvesting is done when the leaves start turning yellow and drying, indicating maturity. Rhizomes are carefully dug out from the soil using hand tools to avoid damage. Proper handling during harvesting is important to maintain quality and reduce post-harvest losses.

Post-Harvest Processing

After harvesting, the rhizomes are cleaned thoroughly to remove soil and impurities. Washing is followed by drying, which reduces moisture content and enhances shelf life. With sharp knife, chop the rhizomes into circular pieces of uniform size except the end portion, which has to be cut separately. Spread the cut rhizomes uniformly on clean floor and allow drying for four days. On fourth day, heap the rhizomes and keep it overnight. On the next day it is again spread and dried. Clean the dried produce, bag and store in cool dry place or market it. Prolonged storage can cause insect and fungus attack.

Conclusion

The cultivation of *Kaempferia galanga* presents a valuable opportunity for farmers to diversify their cropping systems and increase income. With proper production technology, including suitable climate selection, quality planting material, balanced nutrient management and efficient irrigation practices, farmers can achieve good yield and quality produce. As the demand for natural medicinal and aromatic products continues to rise, *Kaempferia galanga* is expected to gain further importance in both domestic and international markets. Adoption of scientific cultivation practices will play a key role in maximizing its potential and ensuring sustainable production.

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