

Cultivation of Lemongrass: A Lemon-Scented Grass

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Lemongrass (*Cymbopogon citratus*), an aromatic perennial grass native to tropical and subtropical regions, is renowned for its distinctive lemon fragrance and wide range of uses in culinary, medicinal, and industrial sectors. It is widely cultivated for its essential oil, which is rich in citral, the compound responsible for its lemony scent. This guide provides a detailed insight into the cultivation practices, climatic requirements, soil conditions, and economic aspects of growing lemongrass.



Lemongrass offers several benefits to farmers and cultivators

- High demand in the essential oil, cosmetics, and culinary industries.
- Hardy nature, making it easy to cultivate in different types of soils and climates.
- Minimal pest problems compared to other crops.
- Medicinal properties: Lemongrass has antioxidant, antimicrobial, and anti-inflammatory properties.
- Low-maintenance crop, with relatively less water and fertilizer requirements.
- No grazing animals like Neel gay, goat, sheep, pig etc. eat it so no need to protect it day and night.
- Crop can tolerate Saline soil up to 8.0 pH and water up to 2500 TDS.
- It can continue for 5-7 years once planted.
- One can Harvest 3-4 cuttings per year.
- Nearly free from all diseases.
- Requiring less water than other crops, it can also be grown rain-fed.
- No one can cut and take away the grass as cow and Buffalo do not eat it.
- Away from problem of handling Bulk produce from Farm to market.
- Need less labour compared to rest crops.
- No tension of local theft of crop as oil has no straight application in daily life.
- With proper irrigation practices it can be also grown and recommended for undulant and barren lands.

Species of Lemongrass

There are two primary species of lemongrass cultivated for their commercial and medicinal value:

1. **East Indian Lemongrass** (*Cymbopogon flexuosus*): Cultivated mainly in India, Sri Lanka, and parts of Southeast Asia, this species is primarily used for oil extraction.

2. **West Indian Lemongrass** (*Cymbopogon citratus*): Native to South Asia, this species is primarily used in culinary applications and herbal remedies.
3. *Cymbopogon nardus*
4. *Cymbopogon khasianus*
5. *Cymbopogon winterianus*
6. *Cymbopogon refractus*
7. *Cymbopogon ambiguus*
8. *Cymbopogon procerus*
9. *Cymbopogon jwarancusa*
10. *Cymbopogon tortilis*
11. *Cymbopogon martinii*
12. *Cymbopogon distans*
13. *Cymbopogon obtectus*
14. *Cymbopogon coloratus*
15. *Cymbopogon caesius*

Improved varieties

Lemongrass “CKP-25, **Krishna, CIM-Shikhar, Jor Lab-L8**, Lemongrass “CPK-F2-38, RRL-16, Jama Rosa, Pragati, OD-19, OD-408, Praman.

Major chemical constituents: Citral (70-85%), CIS-Ocimene, Geraniol butyrate.

Climatic Requirements

Lemongrass thrives in tropical and subtropical climates but is quite adaptable. It can be cultivated across a variety of regions if the following conditions are met:

- **Temperature:** Optimal temperatures range between 20°C and 35°C, though it can tolerate up to 40°C in warmer regions. Prolonged exposure to cold or frost can severely damage the plant.
- **Rainfall:** It requires moderate rainfall (600-1200 mm annually) for optimal growth, but excess water can lead to fungal infections and root rot. In areas with less rainfall, supplemental irrigation is necessary.
- **Sunlight:** Lemongrass needs plenty of sunlight and should be planted in open fields that receive full sun throughout the day.

Soil Requirements

Lemongrass grows well in a wide range of soils, but for best results, follow these guidelines:

- **Soil type:** Well-drained loamy or sandy loam soils are ideal. Avoid waterlogged areas as they can lead to root decay.
- **pH range:** The preferred pH for lemongrass cultivation is between 5.0 and 8.0. It can tolerate slightly acidic to alkaline soils.
- **Nutrient content:** Lemongrass benefits from organic matter and nutrient-rich soil. Organic compost or farmyard manure should be incorporated into the soil before planting.

Propagation

Lemongrass is primarily propagated through vegetative methods since seeds are less effective for large-scale cultivation.

1. **Division of Root Clumps:** The most common method is by dividing well-established root clumps. These clumps are separated into smaller sections (slips) each containing a one or few tillers and roots. Quality planting material required for transplantation in one acre of area is 25,000 and for one hectare 62,000 slips are sufficient.
2. **Transplanting:** The rooted divisions (slips) are transplanted into the field once they develop a strong root system. This can be done directly in the field or in nurseries, depending on the climatic conditions.

Planting Techniques

- **Spacing:** Proper spacing between plants is essential for their healthy growth. For large-scale farming, plants should be spaced 40 cm apart in rows with the distance of 40-60 cm.
- **Time of planting:** Planting is generally done at the beginning of the rainy season or during months with adequate moisture to ensure successful root establishment. But it can be transplanted in any season of the year.



Irrigation

Lemongrass requires moderate water levels, especially during its early stages of growth. During dry periods, irrigation should be provided to maintain soil moisture. Irrigate the crop at intervals of 15–20 days, depending on the soil type and weather conditions.

Nutrient Management

To maintain optimal plant growth and oil production, a balanced supply of nutrients is necessary:

1. **Organic Fertilizers:** Incorporate organic matter such as farmyard manure (10–15 tons per hectare) before planting to improve soil fertility.
2. **Chemical Fertilizers:** Nitrogen-based fertilizers like urea (150–200 kg per hectare) are recommended in split doses, with one-third applied at the time of planting and the rest applied during subsequent growth stages.
3. **Micronutrients:** Supplement with micronutrients such as zinc and boron if soil tests indicate deficiencies. This ensures healthy growth and higher oil yields.

Weed Control

Weeding should be done manually or chemically during the first few months after planting, as young lemongrass plants are susceptible to weed competition. Mulching around the plants can also help in controlling weeds, retaining soil moisture, and reducing erosion.

Pests and Diseases

Though relatively hardy, lemongrass can be affected by a few pests and diseases, such as:

- **Leaf Blight:** Caused by fungi, it leads to yellowing and browning of leaves. Prevent by applying appropriate fungicides and maintaining good field hygiene.
- **Red Spider Mites:** These small pests suck the sap from the leaves, causing them to dry up. Regular irrigation and organic pesticides can help manage mite infestations.
- **Nematodes:** Soil-borne nematodes can affect the root system, stunting growth. Treat the soil with organic amendments like neem cake to control nematode populations.

Harvesting and Yield

1. **Harvesting Time:** Lemongrass can be harvested about 4–6 months after planting. The leaves and stalks are harvested when they reach a height of around 1–1.5 meters. Subsequent harvests can be done every 3–4 months.
2. **Method:** The leaves are cut 10–15 cm above ground level using sharp tools. Care should be taken to avoid damaging the lower part of the plant, which will regrow after harvest.
3. **Yield:** On average, a well-maintained crop can yield around 30–40 tons of fresh leaves per hectare per year (>50 tons in case of variety CKP-25) with oil recovery percentage of 0.4 to 1.0 and the average oil yield ranges between 200–300 kg per hectare.

Post-Harvest Management

After harvesting, the lemongrass leaves are processed to extract essential oil or used fresh/dried for various applications.

1. **Essential Oil Extraction:** Lemongrass essential oil is extracted using steam distillation and hydro-distillation methods. Freshly harvested leaves are chopped and placed in a distillation chamber where the oil is extracted. The oil is collected, cooled, and filtered for impurities.
2. **Drying:** If the leaves are intended for herbal teas or other culinary uses, they should be air-dried in the shade to preserve their aroma and flavor.



Economic Aspects and Market Potential

1. **Investment and Costs:** The initial investment in lemongrass cultivation includes costs for land preparation, planting materials, fertilizers, and irrigation setup. However, once established, the crop requires minimal maintenance and offers multiple harvests over several years.
2. **Income:** Lemongrass is a highly profitable crop, especially for farmers who engage in oil extraction. The essential oil is used extensively in the pharmaceutical, cosmetic, and perfumery industries, making it a high-demand product.
 - Oil recovery percentage from fresh herbage ranges from 0.4% to 1.0%.

We can produce annually 250 to 320 liters of oil per hectare.

 - Normally, Essential oil of lemon grass sells approximately Rs. 1200 to Rs. 1500 Per liter.
 - Depending on the cultivation, we can earn net profit Rs. 200,000 to 2,50,000 per hectare in the first year. In the improved variety, CKP-25 profits from Rs. **2,50,000–3,40,000 per year/hectare** in the 2nd and subsequent years.
3. **Market Opportunities:** There is an increasing global demand for natural essential oils and herbal products, creating ample market opportunities for lemongrass farmers. In addition to the essential oil market, dried lemongrass is also sold for herbal teas, culinary uses, and traditional medicine.

Some common uses of lemon grass herb/leaves

		
Lemon tea	Dried leaves for culinary uses	Lemon soap
		
Lemon grass perfume	Mopping/Cleaning	Room Freshener

Lemongrass cultivation is predominantly practiced in states like Kerala, Tamil Nadu, Karnataka, Maharashtra, Andhra Pradesh, Odisha and Gujarat etc. It is important to note that specific practices may vary depending on the region, climate, and farming conditions.

Glimpses of lemon grass farm

