

Lemon grass cultivation for enhancing farmer's income

Raghwendra Singh¹, Seema Yadav¹, S K Singh¹ and S K Dubey^{1*}

¹ICAR-Agricultural Technology Application Research Institute, Rawatpur, Kanpur, Uttar Pradesh 208 002

The rising human health consciousness has led to the use of side effect free natural product based molecule such as Lemon grass. The multiple uses of this aromatic plant such as pharmaceutical, perfumery, soap industry etc. has increased its demand in domestic as well international market, which has also paved the pathway of enhanced income and livelihood generation among Indian farmers. Moreover, cultivation of Lemon grass played an important role in livelihood security of tribal women. Cultivation of aromatic plants needs less input as compared to paddy cultivation as they can be grown with rain water and farmyard manure. For Indian farmer, Lemon grass cultivation is like gold earned from barren land and it also made many farm women socially empowered. KVK-Amroha has played an important role in enhancing production of Lemon grass and increased adoption rate of its farming by technology dissemination using high-yielding variety Krishna among Lemon grass cultivators.

Keywords: Aromatic plant, High yielding variety, Lemon grass, Livelihood generation

WITH the limited land holding and resources, the Indian farmers always try their best to increase the productivity of crops and livestock. The fact, however is, mono-cropping or raising single livestock species cannot help them to combat the present problems of lesser income in agriculture. They need to integrate the agriculture with livestock or diversify the agriculture production. Diversification of cereal crop production into aromatic crop like Lemon grass (*Cymbopogon citratus*) can be lucrative avenue to enhance farmer's income in the agricultural sector. Owing to the rising demand and limited production, Lemon grass has become a highly sought-after product in the national as well as international market. This versatile crop provides numerous health benefits, making it both expensive and popular among consumers. The high demand of this crop is due to multiple use and value addition. It can be sold as it is or may be dried and mixed with tea leaves to earn extra money. The oil extracted from Lemon grass also has huge demand for soap making, perfume industry to ayurvedic medicines, in the market. Many farmers including women farmers from Indian states like Jharkhand, Odisha, Bihar, Panjab, Haryana, Uttar Pradesh, Madhya Pradesh etc. are actively involved in Lemon grass farming for their livelihood security. In order to offer sustainable livelihoods to the rural

women, an innovative initiative under National Rural Livelihoods Mission (DAY-NRLM), has been taken up in the form of Lemon grass farming. There are cases like as in Odisha wherein to promote livelihood security, the vulnerable tribal group women are encouraged for Lemon Grass farming. Right from lemon grass cultivation and oil extraction, bottling and packaging of lemon grass oil, is done by the tribal women who make up 80% of the workforce and play a critical role in planting, harvesting, and processing, thus empowering the tribal women. A large number of women living in rural areas of Jharkhand are also transforming their lives and setting an example of livelihood entrepreneurship at the local level by cultivating the Lemon grass. The success stories of these rural women farmers become an inspiration and are so impressive that Hon'ble Prime Minister Shri Narendra Modi, highly praised their efforts in his monthly radio programme *Mann Ki Baat*.

Lemon grass: Brief description

This versatile grass belongs to family Poaceae and genus *Cymbopogon* consisting of approximately 140 species covering wide area of Asia, America and Africa continents. Some species of this aromatic plant are also found in Australia and Europe. The members of this genus also called aromatic grasses due to production

of volatile oils. Lemon grass is monocotyledon and grows up to height of 6 feet in clusters. It has a lengthy inflorescence which ranges from 30-60 cm. This aromatic grass has specific floral arrangement hence derived the name '*Cymbopogon*'.

Lemon grass cultivation: Low cost, high profit

The cultivation of lemon grass is proving to be beneficial for the farmers who are making profit of up to one lakh per year in one acre, compared to meagre one-time initial investment of ₹20,000. One of the important economic traits of Lemon grass is that once it is planted, the crop can be easily harvested for about five years. Its multi-cutting does not involve any cost except for additional irrigation. The composted cow dung is used as fertilizer and applied five times to the field. While applying manure, care should be taken that manure should be applied only near the roots of the plant. While preparing the field, 2 to 3 tonnes/ha of cow dung and additionally 1.5 tonnes/ha should be applied on each cutting. The field should be well ploughed and after ploughing cow dung should be spread well in the leveled field. While sowing in the field, 5 to 8 cm deep hoeing should be done with a small spade and transplanting should be done at the ridges. While transplanting, the distance between plant-to-plant and row-to-row of 7 to 30 or 7 to 45 cm should be kept. Regular watering is essential for optimal growth, approximately at 15 days interval. Water should not stagnate near the plant. This practice ensures a high yield. The production potential of Lemon grass ranges from 40 to 50 quintals per acre. Its market price ranges from ₹3-4/kg. Lemon grass husks can be harvested four to five times in a year. The price of lemon grass oil ranges from ₹1500-2000 per litre.

Lemon grass: A boon for farmers (benefits)

- Diversification of existing agriculture with Lemon grass cultivation requires only a little irrigation. Also it can grow easily with minimum input and care. With scant irrigation facilities, farmers can even harvest Lemon grass four-five times a year and earn up to ₹50,000 per acre per annum. The earnings from the conventional paddy or wheat crops is ₹10,000-15,000 per acre per annum which justify profitability of Lemon grass cultivation.
- The rising health consciousness among the urban people has led to a booming alternative market of natural herbs based products, as majority of consumers seek health in natural products. Natural products are known for their health and medicinal properties with little or no side effects. The Lemon grass having a wide array of bioactive compound and broad spectrum of secondary metabolites with health restorative capacity leading to high market demand and its cultivation at large scale. The use of lemon grass in Ayurveda is still relevant today due to its therapeutic value.
- Lemon grass contains 1-2% of essential oil on a dry weight basis. Lemon grass oil is also known as citronella oil. Essential oils extracted from the

Lemon grass are used in manufacturing of perfumes, soaps, cosmetics and detergent, fetching lucrative market price, making lemon grass cultivation more profitable.

- Lemon grass cultivation provides livelihood security to farmers as well as rural women. Lemon grass farmers can also set up their own FPO (Farmer Producer Organization) and Lemon grass oil extraction plant with the help of district administration.
- Lemon grass is also climate resilient plant as it requires little water, can grow on stony land, and helps in both soil and water conservation. It also improves soil health as it can be cultivated by applying farmyard manure.
- Lemon grass has capacity to convert large barren land into fertile land.

Role of Lemon grass cultivation in income generation and livelihood security

Because of multiple benefits and popularity of Lemon grass cultivation, KVK-Amroha attempted replacing farmer's practice with improved variety of lemon grass for enhanced income. Mrs. Hitesh, a farm woman of village Chakchhavi, district Amroha, was given demonstrations of high-yielding variety of Lemon grass 'Krishna'. She was regularly imparted knowledge regarding improved cultivation of Lemon grass starting from land preparation to harvesting. KVK, Amroha also encouraged her for soil testing and on the basis of results, she was advised for balanced dose of vermicompost with high yielding variety 'Krishna Lemon grass', which was sown in 2021 as per scientist's recommendation in external input regime covering nine hectares. The performance of traditional and high yielding lemon grass variety for oil production is given below in Table 1.

Table 1. Performance of high yielding variety of Lemon grass 'Krishna'

Particular	Traditional method	Scientific method (using improved variety)
1 st Cutting quantity	12 litre	20 litre
5 th Cutting quantity	60-70 litre	100-105 litre
Annual income (₹)	90,000-1,05,000	1,00,000-1,60,000
Increment		40%

Outscaling of Success

Considering the success achieved by Mrs. Hitesh, the cultivation of Lemon grass was spread across other nearby villages. Currently, 19 villages have adopted cultivation in 175 hectares of land and 300 farmer's field planted with scientific method using high yielding variety of Lemon grass 'Krishna'. The outcome of this technology dissemination motivated the farming communities to replace their traditional cultivation method with scientific method and high-yielding variety.



Sowing of Lemon grass



Standing crop of Lemon grass



Processing of Lemon grass



Lemon grass oil



Lemon grass tea

Mrs. Hitesh has become one of the progressive and learned farm women for others with regards to popularization of Krishna Lemon grass. This technology helped her for livelihood, empowerment, and made her enthusiastic for Lemon grass oil production. Now she became face of change and role model for many women farmer in her district after becoming a part of KVK,

Amroha despite her own development. Mrs. Hitesh is very happy with her improved production and set forth example for other farmers and farm women of the district.

Table 2. Economics of Lemon grass cultivation

Year	Produ ctivity (q/ha)	Produ ction of oil (L/ha)	Cost of cultivation (q/ha)	Gross income (₹/ha)	Net income (₹)	B:C Ratio
I st	60.5	120.00	75500.00	174000.00	98500.00	2.30
II nd	75.0	125.00	63500.00	187500.00	124000.00	2.95
III rd	86.50	129.50	65500.00	194250.00	128750.00	3.06
VI th	85.00	128.00	63500.00	192750.00	129250.00	3.04
Total	307.00	502.50	268000.00	748500.00	480500.00	2.79

SUMMARY

Enhancing or doubling the Indian farmer's income is always a major concern. Many government policies and scientific interventions are used to uplift the socio-economic status of marginal and small farmers. Diversification of cereal crops into aromatic crops like Lemon grass can be helpful for employment and livelihood generation as Lemon grass cultivation is low cost and high profit avenue due to its high demand in the market. With minimum input and care, this crop can be cultivated on wide range of soils. It is also helpful in control of soil erosion during rainy season because of its soil binding properties, thus maintaining the soil health. Furthermore cultivation of this crop with improved variety and package of practices can fetch more prices. Poor tribal communities can be benefitted by growing this aromatic plant as a source of income throughout the year. In this regard, KVK, Amroha has played its role in technology dissemination for improved cultivation of Lemon grass and made many farmers including woman empowered.

*Corresponding author email: skumar710@gmail.com