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# A Comprehensive Survey of Groundnut Gardens in Pollachi Taluk of Tamil Nadu, India

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***Authors' contributions***

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

India is an abode of nine oilseeds *viz.,* groundnut, rapeseed-mustard, soybean, sunflower, safflower, sesame, niger, castor and linseed. Groundnut is called the 'King of Oilseeds' and is an important oilseed crop of Tamil Nadu with multifarious uses. A survey was undertaken by Coconut Research Station, Aliyarnagar among fifty groundnut growers gardens to comprehend the management strategies being adopted and the constraints faced by them in the farm front. About 80 % of the farmers sow TMV and VRI varieties especially during chithirai pattam. About 90 % of

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the respondents do hand weeding on 20 and 45 DAS and eighty percent of the farmers apply farmyard manure for their farms. About 60 % of the farmers apply either straight or complex fertilizers. All the respondents apply gypsum with varied doses and need based plant protection measures are being adopted by them. Yield from the surveyed gardens ranged from 1300 – 1500 kg $ha^{-1}$. Groundnut cultivation is vitiated by peacock damage and wild boar menace besides labour scarcity.

*Keywords: Groundnut; weeding; fertilizer; plant protection; resource constraint.*

## 1. INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is an important oilseed crop in India which occupies first position in terms of area and second in production as far as the oilseed scenario of the nation is considered (Anon, 2024a). Globally, China ranks first in groundnut production followed by India, Nigeria, USA, Sudan and Senegal. In India, groundnut cultivation spreads over an area of 6.10 m.ha with a production of 10.24 m.t and productivity of 1703 kg $ha^{-1}$ (Anon, 2024b). The production volume of groundnut showed an increase from 4.7 million metric tonnes (2013) to 10.18 million metric tonnes (2024) (Statista, 2024). The productivity of ground nut increased from 0.7 t/ha during 1961 to 1.7 t/ha during 2024. The top groundnut producing states in India are Gujarat, Andhra Pradesh, Tamil Nadu, Rajasthan, Karnataka, Madhya Pradesh, Telengana and Maharashtra. According to the Ministry of Agriculture and Farmers Welfare (2021-22), groundnut production in Tamil Nadu is 10.47 lakh tonnes (lt) with an area of 3.72 lakh hectares. Price of groundnut per quintal in Tamil Nadu is the highest compared to any other state of the nation (Statista, 2024). Major groundnut-growing districts in Tamil Nadu include Namakkal, Salem, Erode, Pudukkottai, Kachipuram, Cuddalore, Dharmapuri, Krishnagiri and Ariyalur. Nagging worry in groundnut cultivation is the declining productivity associated with poor soil fertility status. The information on production constraints will help rank them according to their importance including agronomic (e.g., variety, cultural practices), abiotic (drought), and biotic (e.g., late leaf spot, insect pests) constraints which will help formulate strategies to overcome them adopting scientific approaches. Hence it is imperative to understand the perception of farmers in groundnut cultivation and bottlenecks faced in groundnut farming.

## 2. MATERIALS AND METHODS

A survey was conducted in fifty groundnut gardens of Pollachi taluk by collecting primary data during kharif and rabi using a pre-structured questionnaire. The groundnut growers were identified with the help of the officials of the State Department of Agriculture. Details were gathered regarding the varieties cultivated, farmers' preferences, irrigation, nutrient management and plant protection measures being adopted by the farmers and the yield obtained.

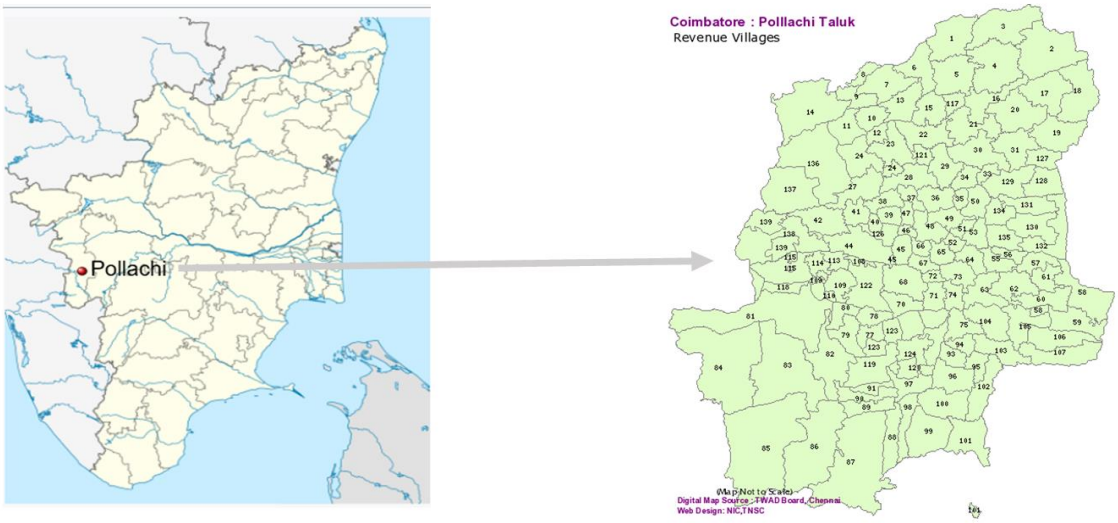


**Fig. 1. Location of the survey area and its villages**

Pollachi (10.662°N 77.0065°E) (Fig. 1) taluk comprises of three blocks *viz.,* Anaimalai, Pollachi (North) and South blocks. Pollachi is situated near the center of the South Indian Peninsula, surrounded by Western Ghats. It has an average elevation of 293 metres (961 ft) on the banks of Aliyar river. The area is hilly and rocky, drained by several rivers and is thickly forested with marsh lands and scattered patches of grass. The town receives majority of the rainfall from Southwest monsoon arriving through the Palghat gap and receives an average annual rainfall of around 1,274 mm (50.2 in). The economy of the town is predominantly dependent on agriculture. Coconut, jaggery, vegetables and cattle contribute to the agricultural output.

## 3. RESULTS AND DISCUSSION

### (i) Predominant Cropping Systems

The predominant cropping systems followed by Tamil Nadu farmers are Groundnut – maize / sorghum, Groundnut – cowpea / horsegram, Groundnut – vegetables and intercropping of groundnut in coconut gardens. Monoculture of groundnut increases the depletion of soil nutrients and reduces soil quality. Peanut crop is more susceptible to the continuous monoculture system (Li *et al*., 2021), while its cultivation under a long-term intercropping system is not recommended because of some drawbacks including the depletion of soil nutrients and poor soil quality, especially in dryland areas (Li *et al*., 2021). Intercropping legumes with maize has a significant potential to enhance agriculture sustainability through crop diversification (Stern, 1993; Maitra *et al*., 2021). Large differences in morphology and growth habits between maize and legume crops offers effective utilization of available resources, including sunlight and soil nutrients (Maitra *et al*., 2021), and ultimately more crop dry-matter production and grain yield. Intercropping legumes with maize has also been proposed as an approach to minimize C emissions (Raji and Dörsch, 2019; Maitra *et al*., 2021). Rotational cropping with pulses reduces the buildup of crop residues in the soil due to faster mineralization compared to groundnut – maize system. In the early years of coconut gardens (<3 years), it is cultivated as an intercrop in some of the gardens as it receives sufficient solar radiation before the development of crown region. Carbon-nitrogen ratio of maize stalks is wider and hence to get the desirable C:N ratio of 24:1, it is imperative that groundnut is included in crop rotation with cereals.

### (ii) Season

Groundnut is sown during kharif and rabi but 80 % of the crop is produced from kharif only. In Pollachi taluk, sowing is done during chithirai pattam (April), Aadi pattam (June) and Karthigai pattam (Oct). However, sowing during chithirai pattam is beneficial than other seasons.

### (iii) Seeds and Sowing

About 60 % of the groundnut growers adopt TMV 7 variety, 20 % of the farmers use TMV 13, VRI 6 and VRI 2 varieties, 10 % of the farmers adopt varieties distributed from other states by the sellers and 10 % of the farmers use CO 2 variety called as 'Local Pattani'. Sowing of seeds is done behind the country plough by 90 % of the farmers and only 10 % of the farmers use handhoe for sowing operation.

### (iv) Weeding

About 90 % of the farmers reported that hand weeding is done in their fields on 20 and 45 DAS. Hand weeding on 45$^{th}$ day is preceded by gypsum application. If the pods are to be stored for sowing during the next season, gypsum application is avoided as it may enhance the content of oil in the kernels. About 20 % of the farmers do hand weeding once on 30 DAS and 10 % of the groundnut growers adopt pre-emergence herbicides, specially when the crop is cultivated under irrigated condition. To achieve higher productivity in kharif groundnut, appropriate nutrient management, regular weed control and timely plant protection is imperative. Of the various factors of production, weeding is an essential operation which otherwise would pave way for drowning effect in yield and net returns in kharif groundnut cultivation (Sudhalakshmi *et al.,* 2024).

### (v) Nutrient Management

Groundnut is an energy rich crop but grown under energy starved conditions (Sudhalakshmi *et al.,* 2021). Eighty percent of the surveyed farmers apply farmyard manure and other organic manures for their fields and twenty percent of them donot apply organic manures. Almost all the farmers include either one or more chemical fertilizers for their cultivation. About 60 % of the farmers reported that they apply 50 kg each of SSP and MOP per acre and 40 % do apply complex fertilizers (17:17:17) per acre. About 80 % of the farmers apply 75 % of the

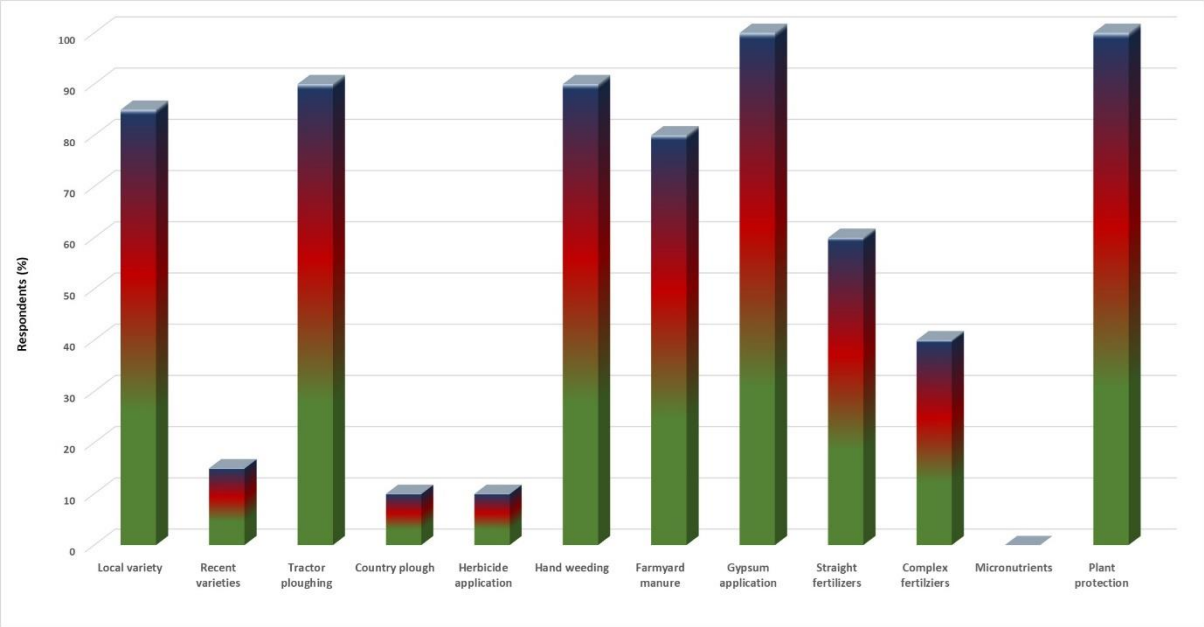


**Fig. 2. Results of survey of groundnut gardens of Pollachi taluk**

recommended dose of gypsum of 200 kg $ha^{-1}$ and 20 % of the farmers apply 25 % of the recommended dose. No farmer applied micronutrients and bio fertilizers for the crop.

## (vi) Plant Protection

Groundnut is the predominant leguminous oilseed crop of India which has turned out to be a sensitive victim to climate change episodes like rising $CO_2$ levels, erratic rainfall pattern, high temperature and moisture stress leaving deleterious imprints in physiology, disease resistance, fertility and productivity (Sudhalakshmi *et al*., 2022). Whenever the crop is hit by a pest or a disease, all the farmers follow plant protection strategies in consultation with the scientists of Coconut Research Station, Aliyarnagar or the officials of the State Department of Agriculture. Groundnut crop of Pollachi taluk is affected by diseases like leaf spot and rust and pests like leaf miner and thrips.

## (Vii) Harvesting

All the farmers execute manual harvesting of their produce at maturity. No farmer practices mechanization for harvesting. Yield of groundnut ranges from 1350 to 1525 kg $ha^{-1}$.

**Constraints faced:** Birds especially peacock menace and wild boar problems, labor shortage, higher cost of cultivation and less returns were the constraints pronounced by the respondents of survey.

## 4. CONCLUSION

Results of the survey undertaken in groundnut growers fields of Pollachi taluk is presented in Fig. 2.

- Predominant cropping systems adopted are groundnut-cowpea and groundnut – maize / sorghum.
- About 80 % of the farmers undertake sowing in kharif season only and about 60 % of the growers adopt TMV 7 variety
- Hand weeding is done on 20 and 45 DAS and the 45$^{th}$ day hand weeding is proceeded by gypsum application
- 80 % of the farmers apply FYM and about 60 % of the farmers apply SSP and MOP. None of the farmer surveyed applied micronutrients
- Need based plant protection measures are adopted by the farmers
- Yield of the crop realized at farmer's holdings ranged from 1350 – 1525 kg $ha^{-1}$
- Farmers spelled out peacock menace, wild boar problems, labour shortage, high cost of cultivation and less returns.

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models

(ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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