



## Package of Practices and Performance of Groundnut (*Arachis hypogaea* L.) Variety Jyoti under Organic Cultivation

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A field experiment on groundnut cultivation was conducted to study the growth, development, and yield performance of groundnut variety Jyoti under organic management practices. The crop was grown in an experimental area of 41.8 m<sup>2</sup> during February to May 2026. Healthy seeds were sown at a spacing of 30 × 10 cm and a depth of 5 cm. Organic nutrient management was followed using only well-decomposed Farm Yard Manure (FYM). Irrigation, weeding, and plant protection measures were carried out at appropriate stages of crop growth. Observations related to germination, plant height, leaves, branches, flowering, pod formation, and yield were recorded at regular intervals. The crop showed satisfactory germination up to 95%, healthy vegetative growth, timely flowering, and proper pod development. A total pod yield of 7 kg was obtained from the experimental area, which was equivalent to approximately 1674 kg/ha. The study indicated that groundnut can be successfully cultivated under organic farming practices with proper crop management.

**Keywords:-** Groundnut, Organic cultivation, Jyoti variety, Germination, Yield, FYM.

### Introduction

Groundnut (*Arachis hypogaea* L.) is one of the most important oilseed crops cultivated in India and many tropical and subtropical regions of the world. It belongs to the family Fabaceae and is popularly known as peanut. Groundnut seeds are rich in oil, protein, carbohydrates, vitamins, and minerals, making the crop economically and nutritionally important. It is widely used for edible oil extraction, confectionery products, animal feed, and soil fertility improvement through nitrogen fixation. Groundnut is an important cash crop for farmers because of its high market demand and adaptability to different climatic conditions. The crop performs well in warm climates with well-drained sandy loam soils. Proper agronomic management practices such as suitable variety selection, timely sowing, nutrient management, irrigation, weed control, and plant protection are essential for obtaining higher yield and better quality pods. In recent years, organic farming practices have gained importance due to increasing concerns about soil health, environmental safety, and sustainable agriculture. Organic cultivation reduces the excessive use of chemical fertilizers and pesticides while improving soil fertility and microbial activity. Therefore, the present study was conducted to observe the growth and performance of groundnut variety Jyoti under organic cultivation practices.

### Materials and Methods

Experimental Details

Particular	Details
Crop	Groundnut
Scientific Name	<i>Arachis hypogaea</i> L.

Family	Fabaceae
Variety	Jyoti
Crop Duration	90–100 Days
Sowing Date	10/02/2026
Spacing	30 × 10 cm
Sowing Depth	5 cm
Experimental Area	41.8 m <sup>2</sup>

**Land Preparation:** Proper land preparation is one of the most important operations in groundnut cultivation, as it provides a suitable environment for seed germination, root growth, peg penetration, and pod development. In the present experiment, the field was prepared carefully before sowing to ensure favorable soil conditions for healthy crop growth and better yield performance. Initially, the experimental field was cleaned thoroughly by removing all weeds, stones, stubbles, previous crop residues, and other unwanted materials present in the field. Cleaning of the field is essential because weeds and residues may act as alternate hosts for insect pests and diseases, which can negatively affect crop growth. Removal of stones and hard materials also helps in smooth field operations and proper development of underground pods in groundnut.

After cleaning, the field was subjected to deep ploughing with suitable agricultural implements to a depth of approximately 15–20 cm. Deep ploughing helps in loosening the soil and improving soil structure, which is beneficial for better root penetration and aeration. It also exposes harmful insects, weed seeds, and soil-borne pathogens to sunlight, thereby reducing their population naturally. Proper ploughing further improves water infiltration and drainage capacity of the soil, which is highly important in groundnut cultivation because the crop is sensitive to water logging conditions. Following ploughing, harrowing was carried out to break large soil clods into smaller particles and to obtain a fine, loose, and well-pulverized seedbed. In some portions of the field, repeated harrowing was performed to achieve a uniform and smooth soil texture suitable for sowing. A fine tilth is necessary for proper seed placement, good soil-seed contact, and uniform germination. It also facilitates easy peg penetration into the soil during pod formation stage in groundnut.

After harrowing, the field was properly leveled using a leveller. Leveling of the field ensures uniform distribution of irrigation water throughout the experimental area and prevents water stagnation in low-lying portions. Proper leveling also helps in maintaining equal soil moisture conditions across the field, which supports uniform crop establishment and growth. In addition, it reduces soil erosion and facilitates easy intercultural operations such as irrigation, weeding, and fertilizer application. Finally, rows were prepared carefully according to the recommended spacing of 30 × 10 cm (row-to-row and plant-to-plant spacing). Maintaining proper spacing is essential to provide adequate sunlight, air circulation, moisture, and nutrients to each plant. Proper row arrangement also minimizes competition among plants and facilitates intercultural operations like hand weeding, irrigation, and plant protection measures. Thus, proper land preparation created favorable conditions for successful groundnut cultivation and contributed to better crop growth and development throughout the experimental period.



Land Preparation For Groundnut Cultivation

**Seed Rate and Sowing:** Healthy and well-developed seeds of groundnut variety Jyoti were selected for sowing. A total of 350 g seed was used for the experimental area of 41.8 m<sup>2</sup>. Sowing was carried out manually in rows at a depth of 5 cm. Proper soil moisture was maintained during sowing to ensure better germination and crop establishment.



**Sowing of Groundnut**

**Nutrient Management:** Only organic nutrient sources were used during the experiment. Well-decomposed Farm Yard Manure (FYM) was applied before sowing to improve soil fertility and water-holding capacity. No chemical fertilizers were applied during the crop period. The use of FYM helped in maintaining soil health and promoting sustainable crop growth.



**Manure application in groundnut**

**Irrigation Management:** Irrigation was applied according to crop requirement at different growth stages. Light irrigation was given immediately after sowing for proper germination. Subsequent irrigations were provided during flowering, pegging, and pod development stages. Proper drainage was maintained to avoid water logging.

#### **Irrigation Schedule**

S. No.	Irrigation Stage	DAS	Date
1	After Sowing	0 DAS	10/02/2026
2	Germination Stage	7 DAS	17/02/2026
3	Early Vegetative Stage	20 DAS	02/03/2026
4	Pre-Flowering Stage	30 DAS	12/03/2026
5	Flowering Stage	45 DAS	27/03/2026
6	Pegging Stage	55 DAS	06/04/2026
7	Pod Development Stage	70 DAS	21/04/2026



**Irrigation in groundnut field**

**Weed Management:** Weed management was carried out regularly to keep the field free from weeds during the critical stages of crop growth. Manual weeding and hand weeding were performed at regular intervals to reduce competition for nutrients, water, sunlight, and space. The first weeding was done at 20–25 DAS, while the second weeding was carried out at 40–45 DAS. Light hoeing was also performed to improve soil aeration and root development. No chemical herbicides were used during the experiment, and only eco-friendly manual methods were adopted for weed control.



**Weeding operation in groundnut field**

**Plant Protection Measures:** Eco-friendly plant protection measures were adopted during the cultivation period. Neem Ark and Dashparni Ark were used for the management of insect pests. Regular crop monitoring helped in early detection and control of pest infestation. No chemical pesticides were applied.



**Plant Protection Measures**

## Results and Discussion

**Germination Observation:** Seed germination was satisfactory under the given conditions. About 70% germination was observed on 14/02/2026, which increased to 95% by 18/02/2026. Good germination indicated the use of healthy seeds and favorable soil moisture conditions.

**Plant Height Observation:** Plant height increased gradually with crop age, indicating healthy vegetative growth.

Plant	15 DAS (25 /02 /2026)	30 DAS ( 10/03/2026)	45 DAS (25/03/2026)
P1	6 cm	12 cm	20 cm
P2	7.5 cm	15 cm	24 cm
P3	8 cm	13 cm	22 cm
P4	5.5 cm	14 cm	23 cm
P5	7 cm	16 cm	25 cm

The increase in plant height at different stages indicated proper nutrient availability and favorable environmental conditions.

### Number of Leaves Observation

Plant	15 DAS (25/02/2026)	30 DAS (10/03/2026)	45 DAS (25/03/2026)
P1	3 leaves	7 leaves	12 leaves
P2	4 leaves	8 leaves	14 leaves
P3	5 leaves	9 leaves	15 leaves
P4	3 leaves	6 leaves	13 leaves
P5	4 leaves	8 leaves	16 leaves

### Branches Observation

Plant	15 DAS (25/02/2026)	30 DAS (10/03/2026)	45 DAS (25/03/2026)
P1	1 branch	2 branch	4 branch
P2	1 branch	3 branch	5 branch
P3	2 branch	4 branch	5 branch
P4	1 branch	3 branch	4 branch
P5	2 branch	5 branch	6 branch

**Flowering Observation** The first flowering in the groundnut crop was observed at 27 DAS on 07/03/2026. The appearance of flowers at the expected stage indicated healthy crop growth and favorable environmental conditions. Proper irrigation, nutrient availability, and field management practices supported timely flowering in the crop.

**Pod Formation Observation:** The first pod formation was observed at 44 DAS on 24/03/2026. Proper peg penetration and favorable soil moisture conditions helped in successful pod initiation and development. Healthy pod formation indicated good crop establishment and effective management practices during the reproductive stage.



## Observation recording in Groundnut

### Harvesting and Yield

The crop was harvested in two stages:

- First harvesting: 11/05/2026 (90 DAS)
- Final harvesting: 21/05/2026 (100 DAS)

A total pod yield of 7 kg was obtained from the experimental area of 41.8 m<sup>2</sup>.

### Yield Calculation

#### Seed Rate:

- Seed used in 41.8 m<sup>2</sup> = 350 g
- Calculated seed rate = 83.7 kg/ha

#### Yield:

- Yield from 41.8 m<sup>2</sup> = 7 kg
- Yield per hectare = 1674 kg/ha (1.67 t/ha)

The obtained yield was satisfactory under organic cultivation conditions and reflected effective crop management practices.

## Conclusion

The present study showed that groundnut variety Jyoti performed well under organic cultivation practices. The crop exhibited high germination percentage, healthy vegetative growth, timely flowering, and satisfactory pod development. The application of Farm Yard Manure (FYM), timely irrigation, manual weed management, and eco-friendly plant protection measures contributed to better crop growth and yield. The crop produced approximately 1674 kg/ha yield under the given conditions, which indicates that organic cultivation of groundnut can be a sustainable and profitable farming practice. The experiment also provided practical knowledge regarding different growth stages and agronomic management practices of groundnut cultivation.

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