

Beekeeping

Beekeeping or apiculture is a thriving activity in areas with abundant natural vegetation and consistent, diverse flowering periods. It provides dual benefits for farmers by enhancing crop yields by 20%–30% due to increased pollination and generating income from the sale of honey, beeswax, and other byproducts. Suitable for small, marginal, and landless farmers, women-based self-help groups (SHGs), and rural youth, beekeeping requires a small space and can be easily integrated with existing horticultural crops. In India, two types of honeybees are commonly used for honey production. For small-scale production, *Apis cerana indica* (Indian honeybee) colonies are used, while large-scale commercial apiaries use the European honeybee (*Apis mellifera*), which has significantly higher yields.

In Odisha, the State Horticulture Department or the local krishi vigyan kendra (KVK) provides guidance on species selection based on cropping patterns, climate, and access to healthy bee colonies.

Apiaries in the state are commonly placed near crops such as niger (*ramtil*), mustard, sunflower, Sesamum, pigeon pea (*arhar*), and cucurbit vegetables, as well as near fruit crops such as mango, litchi, and guava, which provide abundant nectar and pollen during their flowering period. In many tribal and forest fringe areas, flowering trees such as mahua, tamarind, and neem further support honey production.

Step-by-step guide to beekeeping

The best season to set up a beehive in Odisha is during the post-monsoon and Spring months (September–November and February–April, respectively), when climatic conditions are favourable, and many crops and trees are in the flowering stage. Here is a step-by-step guide to setting them up.



Select a suitable location

Find a dry, well-drained land protected from strong winds and close to flowering crops, orchards or trees, and a clean water source. Ensure it is partially shaded, especially in hot climates.



Setting up the beehive

Install a Langstroth hive (a stackable rectangular wooden box with removable frames where bees build their comb).



Introduce the bee colony

Introduce a healthy bee colony during the flowering season. Ensure the colony includes a **queen bee, worker bees, and drones**. Source colonies from KVKs, agricultural universities, certified private apiaries, and reputed agricultural product suppliers.



Drones



Queen bee



Worker bees



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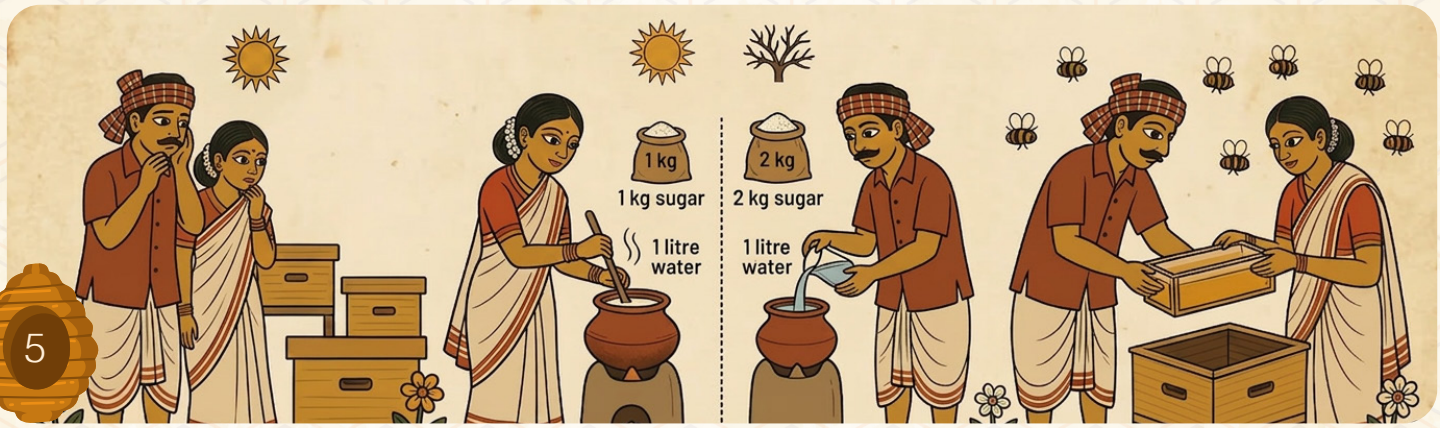
Inspect the hive regularly

Inspect each hive at least once a week during the active season to check for:

(a) Queen health: Look for freshly laid eggs in a neat, compact pattern.

(b) Brood development: Confirm the presence of larvae (young bees) in various stages of growth. A healthy brood is pearly white and evenly distributed.

(c) Pests and diseases: Watch for dead bees near the entrance, deformed wings, unusual behaviour, or mites attached to bees. If such symptoms are observed, clean the hive, remove and safely dispose of any affected comb or frames as needed, and maintain proper hive hygiene to prevent further spread. Immediately seek guidance from the local KVK, State Horticulture Department, or trained apiculture experts for appropriate treatment.



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Provide supplement feed

Feed sugar syrup if natural flowers are scarce. During spring/summer, mix sugar and water in a 1:1 ratio (1 kg sugar: 1 litre water), while mix sugar and water in a 2:1 ratio (2 kg sugar: 1 litre water) in the winter. Prepare syrup by gently heating water to dissolve sugar. Feed syrup after cooling.



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Harvest honey

Harvest honey when at least 80% of the comb is sealed (capped with wax). Remove frames carefully with the right tools/machines to avoid harming the honey colony, disturbing the brood, or injuring the queen. Use a honey extractor to remove the honey, then filter it and store it in clean containers. For marketing, partner with local SHGs, develop local branding, and explore value-added products.

Benefits of beekeeping

- **Higher crop yields:** Improves pollination efficiency, increasing crop yields by 20%–30%.
- **Additional income source:** Generates revenue from honey, beeswax, pollen, propolis, and other value-added products.
- **Low resource requirement:** Requires minimal labour and investment.
- **Biodiversity support:** Enhances pollination of wild and cultivated plants, contributing to ecosystem health.
- **Compatible with agriculture:** Can be integrated seamlessly with existing farming activities.
- **Stable market potential:** Honey has a long shelf life and stable market demand, ensuring reliable market opportunities.

Investment, support, and profitability

Initial cost



Small unit: INR 3,000–6,000 (for 5–10 colonies)
Non-recurring cost: INR 27,500 for 50 colonies or INR 550/colony

Government schemes



Mission for Integrated Development of Horticulture (MIDH), Rashtriya Krishi Vikas Yojana (RKVY), Pradhan Mantri Formalisation of Micro Food Processing Enterprise (PM-FME), Scheme of Fund for Regeneration of Traditional Industries (SFURTI), Odisha Horticulture Mission, and Odisha Apiculture Development Programme (subsidy for bee boxes /colonies via the State Horticulture Department)

Return on investment



~100%–110% (operating cost per colony: INR 264; income per colony: INR 545; profit: INR 281)

Institutional support



Central Bee Research and Training Institute; Odisha University of Agriculture and Technology, for state-level technical training; and local KVKs and the State Horticulture Department for schemes and distribution of bee boxes /colonies.

**AI tools were used to optimise images.*