
Modernizing Honey Processing for Better Quality and Higher Farmer Incomes- A Success Story

Sandeep Mann*, Navjot Kaur, Renu Balakrishnan, Lakhwinder Singh, Manju Bala, Surya Tushir

ICAR- Central Institute of Post- Harvest Engineering and Technology, Ludhiana, Punjab, India.

*Corresponding author's e-mail: sandeep_mann76@yahoo.com

Published on: August 31, 2026

ABSTRACT

Beekeeping has become a potential source of income for small farmers and also enhancing the employment opportunities in rural areas. However, traditional processing method using wooden fired system often led to deterioration in quality, appearance and low market value. Addressing the gap, under FARMER FIRST project of ICAR-CIPHET, Ludhiana, a modern temperature-controlled unit at farm level was introduced to improve the processing efficiency and quality of honey. The farmers were provided with technical hands-on training, and equipment support to promote the processing of honey under controlled and hygienic conditions. The modern technology was adopted by a farmer in the village Bandi, Bathinda and he also launched his own brand by the name of "PURE HONEY". The shift from a bulk seller to brand owner by the adoption of modern honey processing unit, built a confidence and also improved the quality of honey which effectively improved the consumer trust and market value. This initiative also inspired other neighbouring farmers to adopt similar technology to boost their traditional bee keeping into a profitable enterprise.

INTRODUCTION

Honey is a natural and nutritious sweetener produced by honeybees from the floral nectar. The nutritional composition of honey varies depending on the geographical area and floral variety.

Honey is a highly valued product due to its nutritional value and therapeutic properties. It holds a significant importance in rural livelihood especially among small farmers involved in bee farming as a source of income. Although, honey is a nutritional and natural product, the processing practices of honey followed on rural level by using traditional wooden-fired heating system pose a negative effect on product itself as well as on environment. The uncontrolled and excessive exposure to heat during the honey processing could leads to the dark coloured honey due to caramelization, and deterioration of its nutritive components such as bioactive compounds and enzymes, which causes a direct negative effect on the organoleptic properties and market value of the honey. It also poses several environmental challenges and smoke emission which also increases air pollution and respiratory problems. Hence, despite of the production of high value product, the farmers still struggle to sale it at premium price due to the low-quality standard.

To address these challenges, ICAR-CIPHET, Ludhiana, under FARMER FIRST project, introduced a modernized honey processing intervention that aimed to process honey under controlled heating system. The modern system was a controlled temperature and energy efficient unit composed of electric double jacketed stainless steel honey processor along with temperature regulator. This unit ensures uniform and high-quality honey by maintaining temperature and hygienic conditions in comparison to conventional wooden-fired system. This improved heating system also reduces processing time, increase operation efficiency and does not contribute to air pollution.

Under the project, the training programmes were organised to aware the farmer with advantages of the modern honey processing technology and effect of adoption on the quality and market value of honey. In order to motivate the fellow farmers, a success story is mentioned below. These success stories highlight the role of scientific technology and modern interventions to strengthen the rural income sources and sustainable value addition in the apiculture sector.

PROCESSING OF HONEY AT BANDI, BATHINDA

Beekeeping has emerged as a promising income source for rural farmers. However, the potentiality remains underutilized due to traditional post harvest processing method that compromises product quality and market value.

Mr. Avtar Singh, a progressive and innovative beekeeper from Bandi, Bathinda, Punjab, has over eight years of practical experience in bee farming. He efficiently manages a network of more than 300 bee colonies. These colonies are strategically located across diverse agro-climatic zones, enabling optimal and continuous foraging all over the year. His bee colonies primarily collect nectar from a rich diversity of flora such as mustard, shisham, eucalyptus, and ajwain, producing high-quality, naturally aromatic honey mainly valued for its medicinal and nutritional properties. Initially, he sold raw or unprocessed honey in bulk at low prices of Rs. 80–120 per kg, significantly lower than its retail potential and market value. This situation not



only restricted Mr. Singh's profitability but also limited the scope of branding and marketing of his honey in premium markets.

To improve his sale and income, he started processing small quantity of honey using a traditional wooden-fired heating system. But due to the limitations of uncontrolled and uneven heating system, the product quality was not high as uneven heating resulted in overheating and dark coloration of the honey, which reduces its market value.

In search of exploring different ways to process honey, he came to know about ICAR- CIPHET, Ludhiana, and its initiative FARMER FIRST Project. He visited ICAR-CIPHET and discuss about the problems faced by him in honey processing. From ICAR-CIPHET, FARMER FIRST team visited his bee farm and guided him to make a group a member to provide them with hands-on training on honey processing method by modern technique using electric stainless steel honey processing unit. The practical training was provided to the group at ICAR-CIPHET, Ludhiana. After evaluating their interest, a temperature- controlled stainless steel honey processing unit with a capacity of 25-30kg/h was installed at his farm. The modern technology provided them with the temperature-controlled processing of honey which ensures uniform heating and preservation of high quality of honey.



OUTCOME & IMPACT

The modern technology in honey processing adopted by Mr. Avtar Singh led to a significant transformation of his honey processing enterprise. His journey from a bulk honey seller to branded product owner represents a remarkable example of rural enterprise development driven by scientific intervention and advancement in technology from manual to electric processing method. This initiative demonstrated substantial socio-economic impact and highlighted the outcomes that how modern technology at the farm level can enhance the product quality.

- **Brand establishment:** - Launched his own brand "Pure Honey".
- **Value addition:** -Honey was processed and packed under hygienic conditions and marketed in sealed bottles at Rs. 380-400/kg.
- **Increased Throughput:** - Under improved condition, the processing efficiency of honey increased to 30-35 quintals per month.

- **Income enhancement:** Achieved a rise in annual income by Rs. 4–5 lakhs per season.
- **Profit Margin Boost:** Value addition and direct marketing to consumers increased profit by 50–55%.
- **Market Expansion:** Establish marketing presence by retail distribution in local markets, exhibitions, and agro-fairs.
- **Community Impact:** Become a source of inspiration for over 15 neighbouring farmers to think on the installation of modern honey processing unit.

BRANDING AND PACKAGING

Additionally, comprehensive assistance is provided to enhance the attractive branding, labelling, and market positioning strategies that enables the Mr. Singh to present his product with improved quality characteristics, extended shelf life and consumer trust. His honey enterprise was also brought under formal compliance through the acquisition of FSSAI registration (Reg. No. 22123008000182), ensuring food safety standards and enhancing credibility in the retail market. This empowered Mr. Singh, not only to preserve the natural purity, aroma and nutritional value of his honey while significantly improving its market competitiveness and value. The intervention set him on a path to become a successful model honey entrepreneur, inspiring other beekeepers in the region to adopt scientific processing practices to improve income and long-term sustainability.



TECHNOLOGY INTERVENTION: HONEY PROCESSING UNIT HIGHLIGHTS

The key components of the support provided by ICAR-CIPHET, Ludhiana are given as:

- ✓ **Technical training:** Mr. Singh received hands-on guidance and trainings in a scientific manner for honey extraction, filtration, and hygienic handling methods to ensure quality preservation from hive to bottle.
- ✓ **Modern equipment support:** Introduction of advanced, temperature-controlled double jacketed honey processing units made up of stainless steel (Food Grade) to control overheating and maintain the natural characteristics of the honey. A mechanized honey processing unit with a 25–30 kg/h capacity was installed in Bandi, Bathinda, Punjab, tailored to meet both quality standards and local farmer needs. The total cost of the modern honey processing system is 1.25 lakhs. The modern processing system includes following units: -

- Controlled heating & filtration unit to retain flavor, aroma, and enzymes
- Moisture reduction system for extended shelf life
- Food-grade stainless steel storage tanks
- Hygienic and attractive bottling line (Glass & PET bottles)
- Thermal regulator (maintaining 55–65°C) to prevent over-processing

CONCLUSION

The success story of Mr. Avtar Singh introduced a potential of scientific intervention, and modern technology adoption at farm level in improving the rural livelihood. Under FARMER FIRST project of ICAR-CIPHET, Ludhiana, the modern temperature-controlled honey processing technology intervention at farm level, along with the hands-on practical training, enabled a transformative shift from bulk seller to value added brand owner with a brand name “PURE HONEY”.

This technology not only enhanced the color, quality and safety of the product but also improved the marketability and consumer appeal. Beyond individual benefits, Mr. Avtar Singh also motivated the fellow farmers to adopt modern practices that can add value to their product and increases market visibility along with consumer trust.