

# Reviving Traditions, Transforming Lives: Exploring the Unique Indigenous Technique of Ginger Processing

Dr. Kiran Pant Dr. A.K. Sharma and Dr. Bijeta

ICAR-Krishi Vigyan Kendra, GBPUA&T, Dehradun

\*Corresponding Email: [kiranpant17@gmail.com](mailto:kiranpant17@gmail.com)

## Introduction:

Kalsi Block, located in the Dehradun district of Uttarakhand, spans approximately 270 square kilometers and is predominantly inhabited by tribal communities, including the Jaunsari tribe. Situated in the foothills of the Himalayas, the region experiences a subtropical climate marked by hot summers and cold winters. The area receives an average annual rainfall of around 1,500 mm, primarily during the monsoon season from June to September. Temperatures typically range from a peak of 35°C in the summer months to a low of 5°C during winter (District Statistical Handbook, Dehradun, 2021).

The soil profile of the region is largely loamy, interspersed with sandy and clay loam in certain areas. These fertile soils, however, are vulnerable to erosion and depletion, particularly in sloped terrains (ICAR-IARI, 2020). Agriculture is the backbone of the local economy, with staple crops such as rice, wheat, and maize forming the foundation of food security. Vegetable cultivation—including tomatoes, cucumbers, and potatoes—is also common, alongside fruit orchards of mango, litchi, and guava (KVK Dehradun Annual Report, 2022). Livestock rearing, especially dairy farming, complements crop production and plays a critical role in rural livelihoods. Within this diverse agro-ecological setting, indigenous practices such as traditional ginger processing have emerged as valuable techniques for enhancing income and ensuring cultural continuity. These time-tested methods, deeply rooted in tribal knowledge systems, are now being recognized for their role in sustainable rural development and economic empowerment (Sharma & Pant, 2024). Cattle rearing is also an important part of the local economy, with dairy farming being a major activity.

## How the Indigenous technique of ginger processing became a boon to the tribes of Kalsi area:

Here starts the story of Ginger processing, which is unique and has changed the economy of Domat and other surrounding villages of Kalsi block of Dehradun District. Ginger growing in Domat village of Kalsi block of Dehradun district is of great importance for several reasons. Firstly, ginger is a high-value crop that provides farmers with a good source of income. It has a high demand in the local and international markets and is used for various purposes, such as culinary, medicinal, and cosmetic. Secondly, ginger is a hardy crop that can be grown in a range of soil types and agro-climatic conditions, making it suitable for cultivation in the hilly areas of Kalsi block. Thirdly, ginger cultivation is a sustainable farming practice that helps to improve soil fertility

and reduce soil erosion. The crop has a deep root system that helps to break up compacted soil, allowing for better water retention and nutrient uptake. Fourthly, ginger has several medicinal properties and is used to treat various ailments such as nausea, colds, and inflammation. Fresh ginger contains a high amount of moisture content (85–90% wet basis), which is one of the most common problems of plant-originated products (Majumder et al., 2021). Among all the methods of ginger preservation, drying is one of the most popular and traditional methods used for the preservation of edible commodities (Huang et al., 2021). The local population of Domat village also uses ginger as a traditional medicine. Finally, ginger cultivation provides employment opportunities for the local population, particularly during the harvesting season when there is a high demand for labor. Overall, ginger growing in Domat village of Kalsi block of Dehradun district is a valuable agricultural activity that contributes to the local economy and promotes sustainable farming practices. Ginger drying in Domat village of Kalsi block of Dehradun district is a unique process that involves the use of traditional methods.

## The Process:

The process involves harvesting the ginger rhizomes from the field and cleaning them to remove any dirt or debris. The rhizomes are then cut into small pieces and spread out on bamboo mats, which are placed in a well-ventilated area. Ginger is a versatile and widely used spice in Indian cuisine, known for its unique flavor and various health benefits. However, the raw form of ginger can be tough, fibrous, and challenging to consume for some people. Therefore, processing ginger can improve its palatability and increase its usability in culinary and medicinal applications. Ginger processing can improve its taste, nutritional value, and usability in various applications. However, it's important to note that some processing methods, such as adding sugar or salt, can negate the health benefits of ginger. Therefore, it's essential to choose processing methods that preserve the natural integrity of ginger and avoid adding unnecessary ingredients. The two indigenous methods followed by the rural community of Domat village of drying ginger which makes this unique are Panjhol and Sujhol. These are unique in the sense that the product comes out after processing is unique in quality and is very much in demand. The Punjhol and Sukhhol methods of drying ginger are the traditional methods commonly used in the northern parts of India, including Uttarakhand. To use this method, the ginger roots are first harvested, washed, and cleaned to remove any dirt or debris.

Why ginger processing is essential:

1. **Improves digestibility:** Raw ginger can be challenging to digest for some people, causing discomfort and bloating. Processing ginger by grating, slicing, or cooking it can break down the tough fibers and make it easier to digest.
2. **Increases bioavailability of nutrients:** Processing ginger can increase the bioavailability of its active compounds, including gingerols and shogaols, which have potent anti-inflammatory and antioxidant properties.
3. **Enhances flavor and aroma:** Processing ginger can enhance its flavor and aroma, making it more palatable and enjoyable to consume. Cooking ginger can also develop deeper and more complex flavors.
4. **Enables storage and preservation:** Processing ginger can extend its shelf life and enable easier storage and preservation. Drying or pickling ginger, for example, can prevent spoilage and allow it to be stored for long periods.



Fig. 1. Farmers Cleaning the rhizomes manually

**Sukhjhoh Method of Drying Ginger:** According to the villagers this method is better compared to punjhoh as it needs less labor. The steps followed are:

**Sorting and Grading**

- The ginger is then pre-graded in the field for any unripe, damaged, or diseased rhizomes.
- Damaged bulbs are kept separately. The remaining good quality bulbs are sorted by size and overall appearance.
- The surface of the ginger should be clean, bright yellow-brown, and fresh looking.
- This is kept in mind that there should not be any wilting or sprouting.

**Washing/Rinsing**

- Freshly plucked ginger rhizomes are washed thoroughly in water two or three times and dried in the shade for a day. Ginger is rubbed by hands in clean water.

- Care is needed during cleaning to avoid breaking the bulb, which leads to decay and shrinkage.

**Drying Ginger with the help of a machine developed by the villagers itself**



Fig. 2. Motor operated Drying Machine

A very special rotary drying machine that has been cast by the villagers is a unique method of drying ginger. The uniqueness is that it has the capacity of drying ginger at the rate of 1qt/hour which not only saves time but is a ruggedry-saving device. There are two types of machines, one which is operated manually and the other one where a motor of 2Hp has been installed to enhance the speed and capacity of drying the ginger.

- The washed and graded ginger is dried in shady areas to dry up for a few days.
- After natural drying in sunlight the ginger is dried in a machine which they have designed by themselves.
- This is a unique type of machine that can be operated manually and with the help of a motor also. This is a horizontal rotary drum-shaped machine that has holes to drain the water coming out of the ginger while rotating at a fast speed.
- This process completely dries the ginger.
- This process also helps in grading ginger, the outer layer of the ginger which comes out while rotation is kept separately and used while making ginger spice powder.

**Drying Ginger in sunlight**



Machine-dried ginger is now dried in sunlight for some more time and now they call it "Gilti". This is the final product that is sold out in the market.

**Punjhol Method of Drying Ginger:**The Punjhol method of drying ginger is a sustainable and eco-friendly method that does not require any additional energy sources, making it a low-cost and environmentally friendly way of preserving ginger. The only difference in both methods of drying is in Sukhjhol we need not peel off the ginger prior to drying while in the case of Punjhol we need to peel off the rhizome. The steps from washing to sorting and Grading are done in a similar way as in Sukhjhol method. After the ginger is graded, the following method is used to bring it into the final product:

**Peeling of Ginger**

**Peeling**

- Peeling facilitates the removal and drying of the scaly epidermis. Fully mature rhizomes are peeled by scraping off the outer skin with sharp knives very gently.
- Deep scraping with the knife is avoided to prevent damage to the oil-rich cells just below the outer skin.
- Excessive peeling reduces the amount of essential oil in the dried product. The rhizomes are peeled only from the flat surface, and most of the skin between the fingers is left intact.



**Fig. 3. Peeling the Ginger Rhizomes by the farm women Drying Ginger with the help of a Machine developed by the villagers themselves.**

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- After natural drying in sunlight the ginger is dried in a machine which they have designed by themselves. This is a unique type of machine that can be operated manually and with the help of a motor also. This is a horizontal rotary drum-shaped machine that has holes to drain the water coming out of the ginger while rotating at a fast speed.
- This process completely dries the ginger and in common language, this is now called “Gilti”.
- This process helps in grading ginger, the outer layer of the ginger which comes out while rotation is kept

separately and used while making ginger spice powder.

**Drying of Ginger (Gilti)**

- The ginger clusters are left to dry for several days until they are completely dehydrated. Solar drying is one of the most appropriate and attractive ways of drying as it provides adequate control over the drying conditions and eliminates the requirement of fossil fuels thereby minimize the pollution (Kumar et al., 2016). The drying time may vary depending on the humidity and temperature of the area.
- The Punjhol method relies on air circulation, and the shaded area helps to prevent direct sunlight from reaching the ginger, which can cause discoloration and loss of flavor.

**Economic Upliftment of Ginger Growers of Village Domat:**

To analyze the role of ginger processing on the economic status of the tribal community a study was conducted by the Krishi Vigyan Kendra and the results were amazing. The village comprises nearly 100 families among them 80 families has adopted this crop as a cash crop and processing ginger. Both the Punjhol and Sukhjhol methods are being followed to make the saunth “gilti”. These gilties are sold in nearby mandi where they get a good price. According to them, 25000 Kg of good quality dried ginger is sold by this village @ Rs. 3000-Rs.5000/Kgs. The second and third grades are also sold @ Rs.1500/kgs to Rs 2000/kgs. The average overall earning from dried ginger is approximately 8 crores, which is a huge amount they get only from one crop, and that is ginger.

The whole story of Village Domat can be analyzed in a way that the Economic empowerment of villagers through ginger processing can be a viable option to improve their income and livelihoods. Dried ginger has a high demand in the market due to its health benefits and culinary uses.

**Path for further Development**

To harness the best from it the villagers can form a cooperative society or FPO. FPOs can facilitate access to credit and investment by collaborating with financial institutions and government programmes. Additionally, FPOs can invest in shared processing facilities that benefit all (Catherine et.al, 2024) . The cooperative society can pool its resources to set up a reservoir of these dried gilties and store them in warehouses. This will help them to negotiate the price with other interested agencies who can provide them with better pricing facilities. The processed ginger products can be sold in local markets or exported to other regions or countries. Diversifying into processed and packaged ginger products also helps reduce waste and supports sustainability by utilizing the entire ginger rhizomes (Anonymous, 2023a). The villagers can also create their own brands and market the products under their brand name.

Apart from generating income, ginger processing can also create employment opportunities for the villagers. The processing plant or machine requires operators, technicians, and other support staff. By employing local people, the villagers can contribute to the economic development of their community. Thus, the economic empowerment of the tribal community through ginger processing can have a positive impact on their livelihoods and the community's economy.

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