

Traditional storage structures prevalent in Himachali homes

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The Traditional knowledge of a community in a particular region is derived from the local people's farming experience and is handed down from previous generations to present generations. It entails many insights, perceptions, and intuitions, relating to agricultural practices, health, local environment, etc.

It is often stressed that traditional storage methods are the product of decades, if not centuries of development, perhaps by trial and error, but certainly as a result of experience of the users and their ancestors. Traditional storage methods based on local resources, at producer level are usually well adapted to all the types of grain and the environment in which they are employed. Consequently, storage losses are often already minimal. In this paper, traditional method of grain storing practices at producer level prevalent in Himachal Pradesh is briefly discussed.

Keywords: Traditional storage structures, Traditional grain storage methods, Traditional grain storage structures, Himachal Pradesh

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In hills, where the environment is harsh, slopes are steep, scattered and scarce land, the farm families toil very hard to raise a good crop. After the matured crop is brought at home, it is the homemaker who is primarily responsible for its safe storage and use for the following season¹. It is estimated that 60-70 % of food grains produced in the country are stored at home level in traditional storage structures². In Himachal Pradesh, the operational landholding size is 1.16 ha, thus the farm production in majority of the households is enough for household consumption only and very less to market³. Though improved storage structures are gaining popularity in Himachali homes, still traditional grain storage structures are prevalent in rural areas of the state. Effort has been made in this article to explore the status of traditional grain storage structures used in Himachal Pradesh along with opinion of people about their effectiveness.

Methodology

Information was documented by using Participatory Rural Appraisal (PRA) techniques like observation and discussion. All the four agro-climatic zones (Table 1) of Himachal Pradesh were surveyed to collect information regarding traditional grain storage structures used in rural areas.

Observations

It was observed that the traditional storage structures along with their vernacular names vary not only outside region, but within region also. The farming community is developing these storage structures gradually over the years through informal and trial error processes.

The vernacular names of these structures are Kothi, Kuthla, Matka, Peru, Peti, Tunn, Kanjaal, Kuthar, Lakolu, Chabri, Tanki, Sandook, Kotha, Bara, Datha, Yangdup, Cott, Shing dibba, Khach, Leyup, Khalari, Tandup, Khul and Khal which have been summarized (Table 2).

The basic materials used for the construction of these structures include wood, bamboo, mud, wheat straw, etc. The use of basic material depends upon local availability and specific property of the material. For example in districts of Kangra, Mandi and Bilaspur, *Peru* is used as grain storage structure and basic material used for making it is bamboo, which is available with almost every household.

The details of these traditional grain storage structures are as follows:

Kothi and Kuthla

A rectangular mud structure called *Kothi* is used for the storage of grains like wheat, maize, paddy (Fig. 1). *Kothies* are covered from the top and have a

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Table 1—Zone and district wise details of Himachal Pradesh

Zone	Height (m)	Districts
Low hill Sub-tropical zone	Up to 650	Una, Bilaspur, Hamirpur and parts of Sirmaur, Chamba, Kangra and Solan
Mid hill Sub- montane zone	651-1800	Kangra, parts of Mandi, Solan, Chamba, and Sirmaur district
High hill Sub- humid zone	1801-2200	Shimla district, parts of Kullu, Solan, Chamba, Mandi, Kangra and Sirmaur
High hill Temperate dry zone	Above 2200	Kinnaur, Lahaul-Spiti and parts of Chamba

small window of about 60 cm × 60 cm square from where grains are stored. They have an opening at the base to take out grains. The grains are usually stored for a period of 6-10 months and its storage capacity from 500-2000 Kg.

Kuthla

A small and cylindrical/ rectangular in structure (Fig. 2) is also commonly seen in this area. It is open from the top and generally covered with a lid. *Kuthla* may have partition in between to store two things at a time like wheat and maize flour. At the bottom, *kuthlas* may have an opening of approximately 23 cm diameter, which is used to take out grains with a capacity of 15 - 50 kg. Mostly it is used to store flour and jaggery, etc. In Kangra and Chamba districts, similar storage structures known by different names like *Kulhi* and *Kulha* are used. Small mud structure like *Matka* (Fig. 3) is also used for the storage of pulses, seeds, etc.

Kothies are fixed structures inside the room or in a courtyard whereas; *kuthlas* may or may not be fixed depending upon their size. These mud structures are prepared from loamy soil in which some amount of wheat straw is mixed which acts as a binding agent. The wheat straw and soil is soaked for two days after mixing properly to prepare uniform and thick mud mixture for construction of *kothies* and *kuthlas*. First of all, the base of *kothi* or *kuthla* is made and then the desired shape is given to the structure. At a time only about 15-20 cm structure is prepared and then left to dry. Gradually layer-by-layer mud mixture is added to complete the construction of the structure. Elderly and experienced women generally make these structures. Sometimes wooden sticks are also placed between the

layers to give strength to the structure. Once *kothi* / *kuthla* is dried, it is plastered with mud paste of flowing consistency from both outside and inside. It may be decorated with different colours and beautiful motifs. *Kothi* / *Kuthla* is kept about 30 cm high from the floor so that moisture does not affect it. Sometimes the *kothies* are so big that they are used as a partition between two rooms. These structures have a long life depending upon their maintenance, which require regular plastering of mud.

As reported by people, very less infestation of grains is found in these structures because mud regulates the temperature inside. For the storage of seeds, they still prefer mud structures because germination rate of seed stored is perceived to be high.

Lakolu

Lakolu is a fixed storage structure, which is planned at the time of construction of house. This structure is constructed in the centre of a wall of a room in such a way that it is out of reach of rodents and stored material is easily accessible. *Lakolu* can be made in *kutha* houses only where mud bricks are used. These bricks can be easily broken while preparing the structure. Usually the depth of *lakolu* is approximately 30 cm. It is especially used for the storage of seed but other things like candle, matchbox etc are also stored. Some people hang a small curtain to cover it while others fix doors to lock it.

Peru

Peru (Fig. 4) is a traditional bamboo structure, which is used for storage of grains in the areas of districts Kangra, Mandi, Hamirpur, Chamba, Sirmaur and Bilaspur. *Peru* is cylindrical or oval in shape. The basic material used to make *peru* is a special variety of bamboo called *Magar*. It is preferred to harvest bamboo in the month of December and January to ensure durability of bamboo structures. Bamboo is used with a view to maintain proper temperature for storage of a particular crop, to prevent crop infestation and thereby reducing spoilage of crops⁴.

To make *Peru*, bamboo is cut into 2 cm wide strips and then woven. The inside and outside of the *peru* is plastered with cow dung and dried in sunlight properly. After showing sun, the empty *peru* is kept inside the room for 1-2 days, so that it retains room temperature. It is a general belief that if grains are stored in *peru* without bringing it to normal

Table 2—Vernacular names of Traditional grain storage structures of Himachal Pradesh

Characteristics of structures Name of the district	Oval bamboo structure	Wooden box	Cylindrical mud structure	Bamboo basket	Pitcher	Structure fixed in wall/ made in wall	Under-ground structure with roof	Bag made of sheep/ goat /cow skin	Hut type structure with number of boxes	Rectangular mud structure	Oval shaped wooden container
Kangra	Peru	Peti	Kulhi								
Hamirpur	Peru	Tanki		Chabri		Lakolu					
Bilaspur	Peru	Sandook	Kuthla		Matka						
Solan	Peru	Kotha									
Mandi	Peru	Kotha				Tunn					
Kullu		Sandook									
Chamba	Peru		Kulha			Kanjaal		Khalari			
Lahaul & Spiti		Datha					Khach	Khal			
Kinnaur		Cott, Yangdup					Leyup	Khul, Tandup	Kuthar		Shing diba
Sirmaur	Peru		Kuthla		Ghara					Kothi	
Una					Ghara					Kothi	
Shimla		Bara									

temperature the grains get infested. A community known as *Dumna* prepares these structures. Peru is usually kept on a rectangular wooden frame locally called as *Tarein* to protect the grains from insect -pest infestation. If given proper care, life of *peru* is about 10-15 years. Some space is kept at the bottom for cleaning it and protecting it from rats. It is also kept away from the wall and floor to protect it from moisture. The structure is sealed with dung after storing grains.

Size of *peru* ranges from one fourth to 1000 kg with a cost of approximately Rs.100 - 500/- depending upon its size. Though use of *peru* is decreasing these days, however, it is perceived that grains stored in it do not get infested easily. Seeds are especially stored in *peru* (Fig. 5) because germination rate of stored seed is reported to be high.

Chabri

It is a basket with a lid, made of 2.5 cm wide bamboo strips interwoven in mat form and is circular in shape. The inside and outside of *chabri* is plastered with mud and is dried in sunlight properly before storage to prevent spillage and pilferage of grains. *Chabri* is a storage structure especially used for seed storage in Hamirpur district.

Peti

A wooden box called *Peti* (Fig. 6) is used for the storage of grains in hilly areas of Shimla, Kullu, Chamba, Sirmaur, Mandi, Hamirpur, Bilaspur, Kangra, Solan, Shimla, Lahaul & Spiti and Kinnaur

districts. These wooden boxes are made up of locally available wood called *Tuni* (*Cedrela toona* Roxb.) and *Akhrot* (*Juglans regia* Linn.). These woods are especially used for the purpose as these are known to have less chances of infestation by woodborers. These wooden boxes have a capacity of approximately 300-1200 kg. Pegs are fixed at the bottom of the box to keep it above the ground level to protect from moisture. There is a big lid on the top of the box to open it and a small outlet on the base to take out grains. In some cases, partition is also made inside the box to store two or three types of grains at a time. Boxes are kept sealed when the grains are not in use.

Peti is used in almost all the districts of Himachal Pradesh but is known by different names like *Tanki* in district Hamirpur, *Sandook* in Kullu and Bilaspur, *Kotha* in Solan and Mandi, *Bara* in Shimla, *Datha* in Lahaul & Spiti and *Yangdup* and *Cott* in Kinnaur.

Variation in the size of this structure is found in every district but the basic material used for its construction is wood except in Lahaul and Spiti where *datha* is prepared with wood along with slate. The frames of *datha* are made up of locally available wood, panels are of slate and the lids are made up of wood or slate.

Cott is specially designed for storage of various eatables in the farmhouse. The lid of the box is intentionally kept very heavy to protect the eatables from animals. *Cotts* are also found in the house but they are comparatively smaller in size and are used for storing small quantity of grains for household use.



Fig. 1 *Kothi*



Fig. 2 *Kuthla*



Fig. 3 *Matka*



Fig. 4 *Peru*



Fig. 5 Seed stored in a *Peru*



Fig. 6 *Peti*



Fig. 7 *Tunn* fixed in the wall



Fig. 8 *Kuthar* located in outskirts of house



Fig. 9 *Kuthar* located in outskirts of village

Shing dibba

In tribal areas of Himachal Pradesh, a small box called *Shing dibba* is used especially for storing honey, butter and ghee. The box is made up of locally available wood. It can store about 3-5 kg of material at a time. The container is cylindrical in shape with a lid.

Tunn

Tunn (Fig. 7), another type of wooden structure for storage of grains in the areas of Mandi and Chamba is fixed in the wall and is partitioned into two for storage of different grains. One more seed storage structure of the area, which is divided into three partitions, is known as *Kanjaal*. These structures have a capacity of about 50 - 200 kg. These are made up of Tuni or Deodar wood. The life of *Tunn* is reported to be about 40-50 years. It is believed that grains remain safe in these structures for about 4-5 months.

Kuthar

A traditional wooden outdoor structure locally called as *Kuthar* (Fig. 8) is used for the storage of multiple crops at a time. *Kuthar* is a hut type structure made up of Deodar (*Cedrus deodara* Loud.) wood. In this type of structure 6-8 open wooden boxes are prepared by giving partition. Each box is used for the storage of individual item like maize, dry apple pieces, dry apricot, rajmash, amaranths, etc. Each box has a capacity of about 400-500 kg. These boxes are arranged in a particular sequence to store different crops.

Kuthars are built outside the home to protect the stored grains from any untoward incidence. Moreover, these areas fall in seismic zone of Himachal Pradesh. In some of the areas, *kuthars* are located in out-skirts of the village also (Fig. 9). These structures are built on the raised platform of about 1 m from ground level, which restricts moisture absorption by grains. Similar type of outdoor grain storage structure called *Gummi* has been reported in Karnataka state also. *Gummi* is placed on a raised platform to prevent moisture absorption from the ground⁵. *Kuthars* may be as old as 70-80 years. Worm infestation is reported very less in these structures.

Khach

Khach is an underground room with a roof for the storage of vegetables like cabbage, potatoes, turnip, etc. This type of storage structure is used only in areas where the temperature falls up to -30° C, thus *khach* is

prepared to protect the vegetables from aboveground freezing temperature.

To store cabbage, *khach* is prepared outside the home. To keep the cabbage green during storage the cabbage heads are planted in the *khach*. To take out the cabbage there is a provision of small outlet in the roof. This outlet is made up of wooden frames. However, for storage of potatoes and turnip, a trench is dug inside the home. It is also known as *khach* but its depth is less than the room used for storage of cabbage. It is also covered with a wooden frame. In Kinnaur, it is known by a different name, *Leyup*.

Tandup / Khalari / Khul / Khal

Khalari is a structure used in Chamba district. It is a bag made by stitching skin of sheep or goat. In district Kinnaur and Lahaul & Spiti, similar bag is used but for different purpose. In Kinnaur it is known as *khul* or *Tandup* and in Lahaul and Spiti it is termed as *khal*.

Tandup is a bag made by stitching skin of animals. In district Kinnaur and Lahaul-Spiti, people use these bags to carry their grains to mill for grinding whereas in Chamba, *Khalari* is used for seed storage.

Conclusion

With the passage of time, traditional storage structures are diminishing and are being replaced by improved metal bins. Rural people feel that traditional storage structures are fixed, require regular maintenance and need local skilled persons for their construction, whose number is decreasing day by day. Moreover, improved grain storage structures are also status symbol for the rural family. They are also of the opinion that as the improved storage structures are airtight, the chances of infestation of grains are less, while it is a drawback of traditional storage structures. However, for the storage of seeds, farm families still prefer traditional storage structures/ methods over improved ones. As per their perception, seed stored in metal bins has low germination rate in comparison to traditional structures, may be because of the reason that metal bins do not maintain consistent temperature, which is not so in traditional storage structures⁴.

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