Traditional storage structures prevalent in Himachali homes

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Received 13 July 2005; revised 24 October 2005

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

IPC Int. Cl.: A01F25/00

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 season. It is estimated that 60-70% of food grains produced in the country are stored at home level in traditional storage structures. 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 market. 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, 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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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 crops.

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
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.

<table>
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<th>Characteristics of structure</th>
<th>Name of the district</th>
<th>Oval bamboo structure</th>
<th>Wooden box</th>
<th>Cylindrical mud structure</th>
<th>Bamboo basket</th>
<th>Pitcher</th>
<th>Structure fixed in wall/made in wall</th>
<th>Under-ground structure with roof</th>
<th>Bag made of sheep/goat/cow skin</th>
<th>Hat type structure with number of boxes</th>
<th>Rectangular/Oval shaped wooden container</th>
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Table 2—Vernacular names of Traditional grain storage structures of Himachal Pradesh

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 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 Peli

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 ground\(^5\). *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 -30º 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 structures\(^4\).

**Acknowledgement**
The authors are indebted to Indian Council of Agricultural Research, New Delhi for facilitating the research work under All India Co-coordinated Research Project on Home Science.
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