

Indigenous practices of post harvest storage among tribal communities of central India

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Central India especially Madhya Pradesh, has a large ratio of tribal population, such as, *Gond, Korku, Baiga, Bharia, Bhil, Bhilala* and *Saharia*. In general, it is believed that the tribal farmers are unskilled and have primordial knowledge of agriculture. This 'myth' has also perhaps hastened disappearance of indigenous wisdom. Contrary to general belief, the tribal farmers, such as those of central India, have been the custodians of practical knowledge based on their experiences and continued experimentation. Farming on highlands, undulating terrains and hostile topographic landforms provides the ground for tribal farmers to perform their experiments and to evolve the best-adapted technology and practice, which suits location-specific circumstances.

Growing crops is a daily routine; but, when the crop matures, farmers become alert for safe harvesting of the crop and its storage. Inaccessibility to developed market centers and the imperfect pricing of commodities in local rural markets have created the necessity to store the agricultural produce. This necessity of storing the produce gave rise to innovative indigenous methods of post harvest storage.

Indigenous methods of post harvest storage among *Gond, Korku* and *Baiga* tribes were documented in Hoshangabad and Chhindwara districts of Madhya Pradesh. The villages studied included Khutian, Kheri Kalan, Chhilod, Birji Khapa, Badkachhar, Jhiriya and Chatter in Hoshangabad district, and Guldubba, Sopatia and Ratania in Chhindwara district. It was noticed during field investigations that post harvest storage is particularly practiced, if the grain/ produce is not immediately consumed. In these villages, the storage methods vary from crop to crop. They are being described as methods for cereal crops, methods for vegetables and methods for forest produce.

a) Storage methods for cereal crops

Grains are mechanically taken out from dry plants of many crops like wheat, paddy and coarse millets. Such grains are stored in round, rectangular or square shaped containers made up of earth or in bamboo baskets woven in the shape of earthen containers. These containers are usually lined inside with neem leaves or with the leaves of any wild plant having preservative properties. The bamboo baskets are generally layered from outside with dung. In this way, the stored grains remain protected from all insects, fungi and pests.

In the case of crops like maize and pearl millet, the grains are not singled out from their panicles or straw. The kernels of maize, the major *kharif* crop, are tied into bundle and left hanging to a pole, in front of the house. The bundles are left to hang, till the next season of sowing. Height of plant material from the ground remains at least 2-3 meters, so as to keep the soil away from spoiling it. Sometimes in place of single pole, 3-4 poles are erected at half a meter distance from each other,

in the form of a square or a triangle. The available space in between the poles is filled with plant material. For giving support to the plant material lying between the poles, the ropes are tied from above. For further protection, the thorny twigs of bushes are covered around these 3 or 4 standing poles so that the cattle and birds do not damage the stored plant material.

To protect the stored plant material from perpetual rains, the hanging kernels are wrapped by teak leaves or gunny bags, or otherwise removed from the poles and stored in a shed. It secures the plant material from getting wet. Cattle can also not easily reach the material. Moreover, the fungi, moss and microorganisms also do not invade the grains inside. Villagers claim that their method of storing the maize and pearl millet is far superior than other chemical intensive methods.

b) Methods of vegetable storage

Tribal farmers store seeds of many vegetables such as bean, brinjal, pumpkin, chilly, lady's finger, ginger, onion, garlic, potato, cucumber and other cucurbits. Except that of onion and potato, the fruits of these vegetables are allowed to fully ripe on plants, right on the field. Later, the sun-dried fruits are stored properly by different methods depending on the type of vegetable. For instance, the bean pods are tied tightly in a cotton cloth and hung from the roof, while the cucurbits are hung bare from the roof. In case of brinjal, the fruit is cut into pieces and dried in the sun; the pieces of brinjal are then kept in a cotton cloth. Like brinjal pieces, the chilly fruits are dried in sun before wrapping them in a cotton cloth. As the fruits of lady's finger rupture on ripening, they are first dried in the sun and later put in a cotton cloth. Similar to cucurbits and beans, cloth containing brinjal pieces, chilly or lady's finger is, hung from the roof. All such hanging fruits incessantly get exposed to smoke emitted from cooking operations. Evidently, the household smoke from domestic fuels like fuelwood or dung cake, has properties of killing the germs.

Methods of storage employed by tribal farmers for onion and potato vary as tubers of onion and stem of potato require comparatively low temperatures throughout the year. As soon as the harvesting of plant material is over, it is either spread usually over a slab-like structure in the house, or is kept in bamboo basket to be hung from the roof. Notably, the room in which onion or potato is kept, has to be relatively cool and away from fire or smoke. Therefore, a room or house built by mud, thatch or bamboo is chosen for this purpose. Reportedly, this method inhibits the potato or onion from vegetative propagation. Quite often, the onion and potato are stored together or placed just side by side. This practice has a meaning, as onion having germicidal properties, saves the potatoes from fungal or bacterial attack.

In case of garlic, the whole plant is uprooted from the soil and is tied in a bundle with the help of a rope or garlic leaf. The bundle is hung from the roof. It can or cannot get exposed to smoke. In case of ginger, it is put in a pit and covered with

grass. Mouth of the pit is closed with soil. As a result, adequate moisture content and low temperature are maintained inside the pit. As ginger has germicidal and pest-repellent properties, the rhizomes are rarely attacked by any disease or pest.

c) Storing forest produce

The forest products are of high importance for the poor and tribal people. In normal conditions, either the various forest products are procured and kept for household use or sold off in the market. Particularly for the products used at home there are some methods of storage. Usually, the fruits and seeds are kept in a container made up of mud or bamboo. Whenever the material is required for consumption or sale, it is taken out of the container. On the contrary, it is relatively difficult to store the flowers and leaves, such as mahua. Mahua flowers are carefully stored in bags and kept in a room having low temperatures. Periodically, the mahua flowers are kept out and dried in the sun for making them free of moisture and germs. Also, the mahua leaves are tied in a bundle and hung from the roof, to save the leaves from getting spoilt.

Conclusion

Tribal communities of central India are endowed with indigenous wisdom to survive in fragile environments and inhospitable market economies. The post harvest storage methods documented for cereal crops and vegetables may or may not be endemic to these cultural territories, but they certainly teach us how the farm produce can be stored through locally adapted methods. These methods avoid the use of chemicals and are inexpensive. These methods are easily replicable in similar environments.

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Indigenous storage structures of Karnataka



Photo: AMEF Bellary

Vadevu – cylindrical structure made of mud. Used to store grains like ragi, paddy and sorghum with a capacity of 3 quintals



Photo: AMEF Bellary

Kacheri, is a traditional storage structure made from either paddy straw or wheat straw

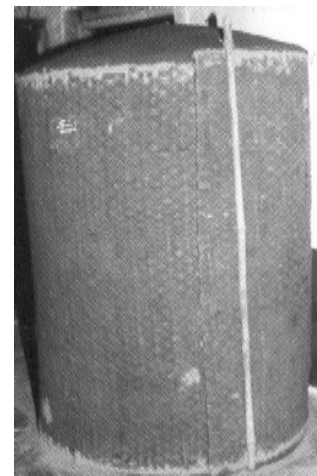


Photo: Geeta Channal

Kanaja is a grain storage container made out of bamboo and plastered with mud and cow dung mixture to prevent spillage and pilferage of grains



Photo: Geeta Channal

Gummi is an outdoor structure made with bamboo strips or reeds. The structure is placed on a raised platform



Photo: Geeta Channal

Karchi-made up of bamboo-suitable for storing food grains upto 10 quintals

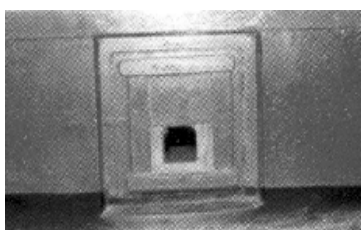


Photo: Geeta Channal

Kothi is a room with a large door and a small outlet.

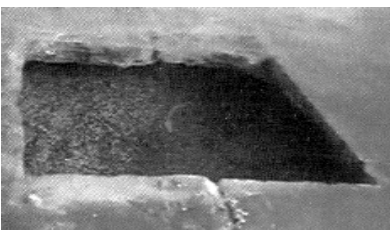


Photo: AMEF Bellary

Hagevu is an underground structure used for storing grains for a long period



Photo: AMEF Bellary

Madike is used to store pulses

AMEF-Bellary Photos – photodocumentation by Mr. Shyam S. Kulkarni, APO, AMEF, Bellary