



Traditional V/S Modern Methods of Storage In India

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ABSTRACT

Storage implies preserving. It is the process of carrying surplus production for future consumption. It includes all types of storage, whether traditional method or scientific methods of storage, whether controlled or ambient and maintained by the private or public agencies. On the other hand, warehousing means scientific facilities for storage of commodities, generally combined with the elements of trade and profit. The storage is, thus, a broader term and warehousing forms a part of it. In this paper traditional as well as modern methods of storage are discussed.

KEYWORDS

storage, warehousing, traditional ,scientific

Introduction:

Food grains form an important part of the vegetarian Indian diet. Grain production has been steadily increasing due to advancement in production technology, but improper storage results in high losses in grains. According to World Bank Report , post-harvest losses in India amount to 12 to 16 million metric tons of food grains each year, an amount that the World Bank stipulates could feed one-third of India's poor. The monetary value of these losses amounts to more than Rs 50,000 crores per year (Singh, 2010).

Natural contamination of food grains is greatly influenced by environmental factors such as type of storage structure, temperature, pH, moisture, etc (Sashidhar et al, 1992). Types of structure used, length and purpose of storage, grain treatment (eg parboiling) and pre-storage practices are all important variables affecting storage losses. The importance of these regional and crop variations immediately determines certain necessary characteristics of crop storage research (Greeley, 1978). micro-organisms. A large number of insect pests have been reported to be associated with stored grains. The occurrence and numbers of stored grain insect pests are directly related to geographical and climatic conditions (La1 and Srivastava, 1985).

Traditional grain storage structures

Grain storage plays an important role in preventing losses which are caused mainly due to weevils, beetles, moths and rodents (Kartikeyan et al, 2009). It is estimated that 60-70% of food grain produced in the country is stored at home level in indigenous storage structures. The percentage of overall food crop production retained at the farm-level and the period of storage is largely a function of farm-size and yield per acre, family-size, consumption pattern, marketing pattern, form of labour payment, credit availability and future crop expectations (Greeley, 1978).

The storage methods range from mud structures to modern bins. The containers are made from a variety of locally available materials differing in design, shape, size and functions. The materials used include paddy straw, wheat straw, wood, bamboo, reeds, mud, bricks, cow dung etc. Grains can be stored indoors, outdoor or at underground level (Channal et al, 2004).

Indoor storage involves grain containment in structures like Kanaja, Kothi, Sanduka and earthen pots. Kanaja is a grain storage container made out of bamboo. The base is usually round and has a wide opening at the top. The height varies. The Kanaja is plastered with mud and cow dung mixture to prevent spillage and pilferage of grains. The top is also plas-

tered with mud and cow dung mixture or covered with paddy straw or gunny bags.

Wooden boxes, also called as Sanduka, are used for storing pulses, seeds and smaller quantities of grains. These boxes have a storage capacity of 3-12 quintals. In some cases, partition is also made inside the box to store two to three types of grains. A big lid on the top with a small opening enables taking out the grains. To protect the grains from moisture, the box is kept 12 inches above the ground level with the help of stands/legs. The box has to be regularly polished for its maintenance.

Hagevu is an underground structure that is used to store grains. It is a simple pit lined with straw ropes to prevent damage from moisture. In some cases, hagevu is constructed as an indoor structure (with stones). After filling the structure fully, the paddy straw is spread on top as a thick layer and the structure is sealed with mud plaster.

It is however important to note that these indigenous storage structures are not suitable for storing grains for very long periods. Regular mud plastering is required for a variety of indoor and outdoor storage containers and structures for increasing their life span and ensuring safe storage of grains.

Improved grain storage structure

The modern methods of warehousing in India are;

- PAU bin
This is a galvanized metal iron structure. Its capacity ranges from 1.5 to 15 quintals.
Designed by Punjab Agricultural University.

- Pusa bin
This is a storage structure is made of mud or bricks with a polythene film embedded within the walls. The Pusa Bin was developed by Indian Agricultural Research Institute (IARI), New Delhi. It is a LDPE (Low density polythene sheet) sandwiched bin. About 10 MTs grain can be safely stored in this bin. Warehousing is the storage of goods for profit. The physical location, the warehouse, is a storage facility that receives goods and products for the eventual distribution to consumers or other businesses. A warehouse is also called a distribution centre. Warehouse management is the process of coordinating the incoming goods, the subsequent storage and tracking of the goods, and finally, the distribution of the goods to their proper destinations.

Hapur Tekka
It is a cylindrical rubberised cloth structure supported by bamboo poles on a metal tube base, and has a small hole in the

bottom through which grain can be removed.

- **CAP Storage (Cover and Plinth)**

It involves the construction of brick pillars to a height of 14" from the ground, with grooves into which wooden crates are fixed for the stacking of bags of foodgrains. The structure can be fabricated in less than 3 weeks. It is an economical way of storage on a large scale.

Silos

In these structures, the grains in bulk are unloaded on the conveyor belts and, through mechanical operations, are carried to the storage structure. The storage capacity of each of these silos is around 25,000 tonnes.

- **Paddy straw**

For storing paddy in eastern humid regions in India, dried paddy plants are used for making temporary structures which after filling the grains are further reinforced from outside by winding paddy straw ropes around the whole structure. These structures generally store 1-6 quintals of paddy grain. Sometimes, palm leaves are also incorporated in these structures to provide them extra strength and safety from heavy rains which are prevalent in these regions. Such type of structures are used in Jharkhand, West Bengal and Orissa

Safe and scientific storage – warehousing in India

Bulk storage of produce is done in warehouses. Warehouses are scientific storage structures especially constructed for the protection of the quantity and quality of stored products. The warehouses are owned by FCI, CWC or the SWCs. The Central warehousing corporation (CWC) was established as a statutory body in 1957. The Central Warehousing Corporation provides safe and reliable storage facilities for about 120 agricultural and industrial commodities. It is the largest public warehouse operator in the country. It also offers services in the area of cleaning and forwarding, handling and transportation, procurement and distribution, disinfection services, fumigation services and other ancillary activities ie safety and security, insurance, standardization and documentation (India Agronet, 2009).

Separate warehousing corporations were also set up in different States of the Indian Union. The areas of operation of the State Warehousing Corporations (SWCs) are centres of district importance. The total share capital of the State Warehousing Corporations is contributed equally by the concerned State Govt. and the Central Warehousing Corporation. Apart from CWC and SWCs, The Food Corporation of India (FCI) has also created storage facilities. The Food Corporation of India is the single largest agency which has a capacity of 26.62 million tonnes.

For safe and scientific storage it is important to carefully select the storage site, storage structure, undertake cleaning and fumigation, ensure proper aeration of grains followed by regular inspection of grain stock. Pest infestation in grains is affected by moisture content of grains, relative humidity, temperature, storage structure, storage period, processing, hygienic condition and the fumigation frequency followed.

The major pests of stored grains include beetles, weevils, moth and rodents. The control measures include two types of treatment – prophylactic and curative. The prophylactic treatment involves the use of pesticides like Malathion, DDVP and Deltamethrin (2.5% WP). Curative treatment involves use of fumigant aluminium phosphide to control infested stock or godown in airtight condition. For controlling rodents rat cages, poison baits and use of rat borrow fumigation is recommended (India Agronet, 2009).

Conclusion

The grain production has been on the rise with better facilities in terms of seeds, technology, fertilizers, pesticides and irrigation but associated is the loss of grains which has also increased. Around Rs 50,000 crores every year are lost due

to improper storage of food grains. Natural contamination of food grains is greatly influenced by environmental factors such as type of storage structure, temperature, pH, moisture, etc. At any given time 60-70% of grains is stored on the farm in traditional structures like Kanaja, Kothi, Sanduka, earthen pots, Gummi and Kacheri. However indigenous storage structures are not suitable for storing grains for very long periods. Here in lies the significance of improved storage structures and scientific storage of grains in form of warehouses. These provide safe and economical means of grain storage for long durations. Need of the hour is to strengthen traditional means of storage with modern inputs and to provide cheaper storage to farmers so as prevent enormous storage losses.

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