

Cost and Profit in Storing Agricultural Produce

D S Chauhan & CS Raghubanshi

(Continued from previous issue and concluded)

DIFFERENT types of structures are used to store agricultural commodities. They differ in shape, size, and capacity. In villages of western UP, wheat, gur, paddy, barley and gram are stored in Kachcha Kothas or huts in earthen pots, bins or receptacles made of matting, mud, and wicker work and in some villages, in large earthen cylinders. But in important markets, they are stored in kothas, godowns, kachcha and pucca khattis. The most common types of structures used to store different commodities found in western UP are: 'Bhaaroli', 'Kuthala' 'Kothi', 'Thekka', Kothas (kachcha and pucca), kachcha and pucca khattis, as they are called in the local language, and in proper godowns. Wheat, gur, mustard, cotton barley and gram are stored in kothas and godowns, wheat is also stored in kachcha and pucca khattis.

The cost of construction of some of the structures estimated by expert stockists in mandis and villages are shown in Table 1.

From Table I it will be seen that kothis are the cheapest of all structures, but their capacity is the smallest. The cost of construction of cold storages is the highest and their capacity, in proportion to the cost, is also considerable. In the case of kachcha khattis of 750-800 mds capacity, the cost relative to capacity, and also as compared to that of kothi, is smaller. Kachcha kotha is cheaper to construct as compared to pucca kotha, while both the structures are of the same capacity. But it is not only the cost of construction which has to be taken into account. Losses incurred during the period of storage have also to be considered. And when we consider losses, it is found that the losses in kachcha kotha are more than those in pucca kotha. Godowns are not expensive to construct when we think in terms of their capacity and smaller losses. They are really the best form of storing food grains and other agricultural commodities. The minimum capacity should, however, be about 1,000 or 1200 mds, but larger godowns will prove more economical.

The average duration of storage was found to be 143 days in wheat, 136 days in mustard, 135 days in potato, and 130 days in gur. Thus it was longest in wheat and shortest in gur, though the difference was small. On an average the duration was 4 to 5 months. The total quantity stored was 8358 mds in gur, 7480 mds in wheat, 8663 mds in mustard, and 3300 mds in potato*. The small quantity of potato stored indicates the limited facilities of cold storage in this region.

In no case was the total stock purchased in one lot, nor was it sold in one lot. Again, there was considerable difference both in the purchasing price and in the selling price of different lots of each commodity.

The total storage cost was Rs 10,729-12-1 in the case of gur, Rs

* The relative differences in the total quantities in gur, wheat and mustard should not be taken as the representative figures for the total stocks of these commodities in all the markets of western U P taken together. This is because the proportion of the samples in the case of different commodities is not exactly the same if the total area is taken into account.

In the case of all the commodities, adjustments have been made for the loss of weight while calculating the total selling prices. It was very significant, in the case of notato.

7,209-7-10 in the case of wheat, Rs 13,751-9-11 in the case of mustard, and Rs 23,119-11 in the case of potato. These figures do not give any idea of the relative costs of storage in the case of different commodities since there was considerable difference between their quantities. For a comparative study they are reduced in terms of cost of storage per md per month, the average cost of storing 100 mds of the specific commodity for the total duration and the average cost of storing Rs 100/- worth of commodity for total duration. Out of these three sets of figures, the cost per md per month provides the best basis for comparison. The other two figures are, however, useful to the stockists for knowing the total investment and thus for calculating the rate of return. The first and the last, particularly the first, can be utilised by the public bodies in the determination of the prices and the margins between the purchasing and the selling prices, particularly for transferring the benefits to the producers (or even to the consumers as the case may be) when they do not get fair prices or their due and a major part of the difference between the consumers' price and the producers' price goes to middlemen or is usurped in the trade channel as is the case in our country. Talking of the comparative storage costs in the case of different commodities it was found to be highest in the case

Table I—Cost of Construction of Different Types of Structures

Types	Capacity (mds)	Total Cost (Rs)	Cost Remarks
Kothi	80-100	16-20	Village women labour charged @ As 12 per day.
Kachcha Khatti	750-800	25-40	Taking into consideration the wage of labour
Kachcha Kotha	250-500	500-800	Wooden poles used as beam, for roofing charges @ Rs 110 per hundred.
Pucca Kotha	250-500	2,000-3,000	Pucca bricks charged @ Rs 22-8-0 per thousand.
Godown	800-1,600	5,000-6,000	Cost of site and levelling is put at Rs 110/-.
Cold storage	12,000-15,000	15,000-16,000	Cost of building racks (wooden) insulation, refrigerating machinery, wiring etc included.

Table II—Cost of Storage

Particulars.	Gur	Wheat	Mustard	Potato
Average duration (days)	130 0 0	143 0 0	136 0 0	135 0 0
Total quantity stored (mds)	8,358 30 0	7,480 0 0	8,663 0 0	3,300 0 0
Purchase price (Rs per md)				
Minimum	9 8 0	9 8 0	13 4 0	4 0 9
Maximum	12 8 0	11 9 0	15 4 0	4 12 0
Average	10 13 4	10 6 10	14 3 10	4 6 4
Total (Rs)	90,576 11 0	79,006 5 0	123,372 0 0	14,500 0 0
Sale Price (Rs per md)				
Minimum	8 0 0	12 3 0	18 12 0	14 0 0
Maximum	13 0 0	15 8 0	21 0 0	15 0 0
Average*	11 1 10	13 13 1	20 0 1	14 10 7
Total (Rs)	93,061 10 0	103,481 14 6	173,313 8 0	42,975 0 0
Storage Cost				
Total cost of storing (Rs)	10,729 12 1	7,209 7 10	13,751 9 11	23,119 11 0
Cost per md per month (Rs†)	0 8 1	0 4 5	0 5 10	0 15 11
Average cost of storing per 100 mds for total duration (Rs)	102 2 2	96 7 6	157 2 10	699 15 2
Cost per Rs 100/- worth of commodity for full duration (Rs)	12 2 2	9 3 10	11 2 4	159 7 1

* Weighted average

† Average sale prices have been calculated after adjusting the losses in weight.

of potato, being Rs-15-11 or about one rupee per md per month. It is primarily due to the high charges made by the owners of the cold storage. They can safely be termed as monopolistic charges because of the highly inadequate facilities for cold storages. These charges are rather unjust and must be reduced. The lowest charges are in the case of wheat. This is primarily due to the saving on bags while storing in Khattis, as is mostly done in Hapur.

Breakdown by Items

A further study of the cost of storage has been made in relation to the various items of cost. A breakdown of storage costs has been

attempted in Table III with a view to locate the places or items where economy could be made.

Table III shows that the case of potato is very much different from that of the other three commodities. In the case of potato, about three-fourth the total storage cost is the cold storage charge, which is very unjust. There is considerable room for economy in this regard. Besides, the actual shrinkage was found to be much less than it was charged for. These charges should be to the extent of actual shrinkage and not at a presupposed percentage which is higher than the actual. In the case of gur, wheat

and mustard, the most important items (costing maximum) are bags and accessories, 'staff and records' and the 'interest' charges. Of these three interest is related to the investment and therefore affords little scope for economy. The remaining two items form 65.6% of the total storage cost in the case of gur, 54.3% in the case of wheat, and 57.3% in the case of mustard. Economy is, however, possible and desirable on these two items particularly. The methods of economising can be the construction of proper types of structures and expansion in the volume of stocks. Other items are however minor;

Table III

Breakdown of the Average Cost of Storing (Rs per 100 mds and %)

Items of cost	Gur		Wheat		Mustard		Potato*	
	Rs	%	Rs	%	Rs	%	Rs	%
1. Material used for lining	0-11- 3	.5	1-12- 3	1.7	6-12- 4	4.2	—	—
2. Bags & accessories	40- 1- 7	39.2	14-13- 3	15.2	46-14- 1	29.6	44- 4- 0	6.3
3. Labour in handling	2-11- 1	2.6	2-13- 7	2.7	4-13- 1	3.0	67- 0- 7	9.7
4. Rent & repairs of stores	9- 0-11	8.8	12- 7- 8	12.5	6- 9- 1	4.8	—	—
5. Interest	22- 9- 2	22.5	26-10- 3	28.8	48- 9- 6	30.7	—	—
6. Staff & records	27- 0- 2	26.4	37-14- 6	39.1	43- 8-10	27.7	—	—
7. Cold Storage charge	—	—	—	—	—	—	519-11- 1	74.1
8. Shrinkage charge	—	—	—	—	—	—	43-15- 0	6.2
9. Other expenses	—	—	—	—	—	—	25- 0- 2	3.7
Total	102- 2- 2	100.0	96- 7- 6	100.0	157- 2-10	100.0	699-15- 2	100.2

* In the case of potato three items (Nos 4, 5, 6) are not being separately calculated. Such charges are not made separately, but one charge is made by owners of cold storages which is inclusive of all such things.

and there are differences in their magnitude in the case of different commodities. These differences arise on account of the types of structures commonly used and the nature of the commodity e.g., in the case of rent and repairs the percentage is highest in wheat and lowest in the case of mustard which is due to the higher cost of repeated repairs of kachcha khattis at Hapur where huge quantities of wheat are stocked. Besides, at Hapur the rent for khattis is higher; and in the case of gur and mustard, very few stores were taken on rent, and hence the costs were lower.

Taking a comparative view of the first three commodities we found that in the case of 'bags and accessories', the highest percentage (39.2%) was on gur and the lowest (15.2%) on wheat. It is because wheat was stored in khattis to a very large extent and gur invariably requires the use of bags and other accessories. Labour charges are roughly the same for all the three cases. Rent and repair charges were highest in the case of wheat and least in the case of mustard. It was due to the difference in the types of stores used to store these two commodities. The interest charges, however, are highest in the case of mustard. This was due to the high investment. The charges for staff and records are highest in the case of wheat because of the longer duration of storage, particularly at Hapur; they are lowest in the case of mustard, because of the greater volume of business.

Storage Cost by Types of Structures

The average storage cost per md per month in the case of the different types of structures in different commodities in the markets of western U P as shown by the present study is summarised in Table IV.

In the case of gur and potato, where only one type of structure was found to be in use, i.e., kotha in the former and cold storage in the latter. Therefore, the question of comparative cost in these two cases did not arise. However, suggestions for economising storage costs can be made from the present study in these two cases also. In the case of gur, storage costs can be minimised considerably simply by a change in the physical form in which gur is prepared by producers, i.e. in the form of 'Bhelas' of bigger

size instead of 'Bhelies' of small size. In the case of potato the cost can be minimised by establishing more cold storages at suitable places and thus breaking the monopoly of owners of present cold storage plants which are very inadequate in number.

In the case of wheat and mustard, however, different types of stores were found to be used. For storing wheat the average cost is lower in the case of kachcha khattis than in that of kotha. It is because of the lower cost of construction and bags not being used. But this difference should not be the deciding factor in the choice of types of storage, since deterioration in the quality of the stock is also an important consideration. In the case of mustard there was little difference in costs of storage in kothas and in godowns. But the average costs of storing can be further minimised by constructing pucca kothas and concrete khattis particularly of bigger size.

Profit (or Loss) and the Rate of Return

(a) Loss During Storage. Table V shows the extent of quantitative loss suffered during the period of storage in the case of different commodities stored in different types of structures.

The losses are largest in khattis and least in kothas. Pucca khattis found in Hapur market are less expensive in construction as compared to godowns, and losses in pucca khattis are also smaller; it is nearly equal to that in kothas. Therefore, pucca khattis are economical from both the points of view, i.e., the extent of losses and the cost of construction. In kachcha khattis losses are larger on account of seepage of water from sides. The loss can, however, be reduced by care in the use of material for lining, but it cannot be eliminated completely. Losses are highest in the case of gur since some quantity is turned into molasses. They are lowest in the case of mustard because loss of moisture, or deterioration in quality, or damage by pests, etc are least in their case.

(b) Profit and the Rate of Return. Profit and loss are calculated on annual basis and at the rate of Rs 100/- worth of commodity. The rate of return is also calculated on annual basis on the total investment. Table VI brings together the final results.

In the case of gur, there was a loss of about 16% on the total investment or of Rs 1.6-2.8 on Rs 100 worth of commodity. There was profit in the remaining three commodities: the highest profit being

Table IV—Storage Cost by Types of Structures

Commodity	Type of structure	Cost of Storage (Rs)		
		Maximum	Minimum	Average
Gur	Kothas	0-10-7	0-2-4	0-8-4
Wheat	Kothas	0-4-11	0-4-1	0-4-4
	Kachcha Khattis	0-12-2	0-0-3	0-3-6
Mustard	Kothas	0-7-0	0-5-0	0-5-10
	Godowns	0-11-4	0-3-8	0-5-9
Potato	Cold Storage	1-1-7	0-12-11	0-15-11

Table V—Loss During Storage

Structures	Commodity	Loss per bag	
		Maximum	Minimum
1. Kothas	Wheat	6 to 8 chh	2 to 3 chh
	Mustard	3 to 4 chh	1 to 2 chh
	Gur	3 to 4 seers	1 to 1.5 seer
2. Kachcha khatti	Wheat	2 to 3 seers	8 to 12 chh
3. Godowns	Mustard	6 to 7 chh	2 to 4 chh

Table VI—Profit and Loss

	Gur	Wheat	Mustard	Potato
Total Profit (+) or Loss (—)	Rs 12,543-3-1	+ 19,447-13-8	+ 36,191-9-6	+ 5,335-5-0
Profit or loss per Rs 100/- annual (Rs)	— 16-2-8	+ 5-4-5	+ 6-8-7	+ 50-12-9
Annual rate of return on total investment (%)	— 16.2	+ 4.8	+ 5.9	+ 24.7

on potato, nearly 25% and the lowest on wheat being 4.8 or roughly 5%. In the case of mustard, the profit was 5.9 or about 6%. Taking all the four, and all the 40 cases, the rate of return was 15.8 or about 16%.

These figures should not be taken as an indication of profits and losses to the stockists in the case of different commodities, since the final results have been influenced particularly by the price variations for different commodities during the specific period under study. They can however, serve as lab specimen. The results suggest that:

(i) The total rate of return is quite high, indicating that storing is quite a lucrative business proposition in this area. But in the consideration of a fair share to the producers in the consumer's price, or a fair price to the consumers such a high margin does not seem to be just.

(ii) The high profits in potato should attract private or public investment to cold storage plants in this area*.

*The investigation was done by C S Raghubanshi under the guidance and supervision of Dr D S Chauhan. The former processed the data and made the final calculations. But the form in which the present paper appears and the interpretation of the data are, however, given by the latter.

Engineers for Steel Plants

The Tata Iron & Steel Company Limited will provide a six week orientation course to over 400 young graduate engineers who have been selected by the Union Public Service Commission for the three Government steel plants at Rourkela, Bhilai and Durgapur.

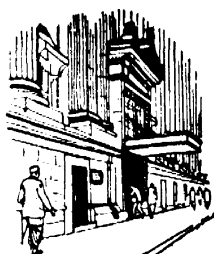
This orientation course is a preliminary to the foreign training arranged for the engineers by Government of India in the UK, USA, Canada, Australia and the USSR. The course at Jamshedpur, arranged at the instance of the Union Ministry of Iron & Steel, will consist of lectures, visits to various departments of the works and general training in the departments to which the trainees have been assigned.

The Call To Save

As citizens of India, you are called upon "to work wholeheartedly for the full and timely realisation of the tasks, targets and aims of the Second Five Year Plan."

The Plan has been embarked upon. Its success depends upon your providing capital for its working. In this effort no amount is too small—the man who saves a rupee and the man who saves hundreds—both are rendering national service.

Save as much as you can and entrust your savings to the nearest office of your Bank. In doing so you will help to build a new India and also create a valuable estate for yourself and your family.



The State Bank's local head office at Bombay, one of the more than five hundred offices waiting to take care of your savings throughout India.

STATE BANK OF INDIA
INDIA'S LEADING BANK