PROJECT REPORT FOR

ONION STORAGE

Prepared for

Promoter Name:

xxxxxxxxxxxxxxxx

Project Location:

Xxxxxxxxxxxxxxxxxxx

Prepared by

DownloadProjectReport.com
1187/67, Gruhalaxmi, J.M.Road, Pune-400005
support@downloadprojectreport.com
www.downloadprojectreport.com
Mob.9922708398

Prepared under

Integrated Scheme for Agricultural Marketing (ISAM)
Sponsored by NABARD

C O N T E N T S

CHAPTER - I

ABOUT THE PROMOTER

PARTICULARS	ABOUT THE PROMOTER

1. Name : xxxxxxxxxxxxxx
2. Address : xxxxxxxxxxx
3. Contact number : xxxxxxxxxxx
4. Date of birth : xxxxxxxxxxx
5 Adhar No : xxxxxxxxxx
6. Educational Qualification: xxxxxxxx
7. Project Location : xxxxxxxxxxxxx
8. Constitution : xxxxxxxxxxx
9. Experience : xxxxxxxxxxx

CHAPTER – II

PROJECT DESCRIPTION

Introduction

India has become self-sufficient in food grains and achieved a remarkable growth in the production of pulses, oil seeds and fibres to meet the requirements of the country. Although our farming community toiled hard, the small and marginal segment of farmers could not get real benefit of the growth in the economy due to either non availability of adequate storage infrastructure within the vicinity of production areas poor access to the godowns. This situation has forced them to dispose the produce at farm gate at a price determined by the middlemen/merchants/commission agents. Only a handful of influential farmers who have the infrastructure to overcome the market fluctuations, could derive the benefits.

Further, as the small and marginal farmers, who generally remain outside the purview of formal financing institutions depends heavily on the borrowed money from money lenders for the agricultural operations. Not only the borrowings are at an unreasonably high rate of interest but they are forced to sell their produce immediately after the harvest at very low rate. Thus, the farmers lose heavily on their investments. This vicious cycle is recurring year after year making the farmers poorer. The creation of small storage facilities, through construction of grain godowns, in villages may be a remedy for the farmers, who not only can store their own produce, but also provide storage space for rentals.

Therefore, the model scheme for setting up rural godown of small sizes in rural areas needs to be financed by the banks on larger scale so as to provide relief to the small and marginal segment of farmers, who remain vulnerable not only to the climate vagaries, but also to the market fluctuations.

REQUIREMENTS OF STORAGE STRUCTURE

The object of an storage structure is to control and reduce the storage loses from rodents, insects and micro-organisms, birds, moisture and heat to a minimum. In designing and constructing a storage structure following points will be borne in mind:

1. All holes, pipes and ducts and other openings will be guarded by suitable means, such as gratings, etc., in order to prevent the entry of rats and other vermin.
2. The structure will have smooth, crack free internal surfaces and will have no unnecessary cavities and projections to prevent the lodgment from insects and vermin. Periodical fumigation and other treatments would be done to eliminate infestation of grains by insects, fungus etc. The structure will be designed so as to facilitate its sealing for fumigation or have facility to seal a portion where fumigation has to be carried out, or it may be made completely airtight if required.

3. Godowswill have good ventilation arrangement to prevent moisture accumulation in pockets.
4. The structure will be designed to make it possible to control moisture. Moisture may be controlled by adopting methods of construction using non-hygroscopic material, by sound wall, roof and floor construction, by the use of vapour barriers, and by the use of aeration.
5. The structure will be so oriented that it will receive the minimum solar radiation. Reflective external surfaces, insulating materials, sun shades, a minimum of glass surfaces, controlled ventilation and aeration, to reduce the internal temperature may be used.

1. Introduction of Onion Storage

India is one of the largest producers of onion in the world second only to China, accounting for 16 percent of total area under cultivation in the world and 10 percent of total production. In India, onion is cultivated in 0.39 million hectares with production of 4.30 million tonnes per annum (FAO,1995). The current year's (2013-14) production is estimated at 4.7 million tonnes. Most of the onion produced in India comes from the state of Maharashtra, Madhya Pradesh, Karnataka, Andhra Pradesh, Bihar, Gujarat and Haryana.
Lack of adequate and appropriate storage facility is one the major constraint which enforces distress sale on farmers. The present storage capacities are either inadequate or unscientific. As a result of glut situation the price variability has been too high in the recent past. To improve the situation, GOI desired to create appropriate storage structures for onion, both at farm level as well as at market places. It drew a capital subsidy programme for the infrastructure development in which NABARD has been playing a pivotal role. It has been planned to create a storage capacity of 4.5 lakh tonnes of onion during 1999-2000 and 2000-2001 through capital investment subsidy programme. Subsidy to the extent of 25% of the investment cost subject to a maximum of 500 per tonne has been proposed to be routed through NABARD for the credit delivery system.

2. Status of Onion Storage Structures and its Potential in India

The present storage capacity for onion is about 4.6 lakh tonnes. This is quite inadequate compared to our total production. Even most of the structures available are traditional and unscientific. If 40 % of the stocks are earmarked for scientific storage the potential for new storage structures is about 12.6 lakh tonnes. However, it has been projected by the Expert Committee on Cold Storage and Onion Storage that about 1.5 lakh tonnes on-farm capacity in production areas and 3.0 lakh tonnes capacity at APMCs and other market places are required in next 5 years. Thus there remains a vast potential to be tapped.

3. Extent of Storage Losses

The onion bulbs are generally stored from May to November for a period of four to six months. However, 50-90 per cent storage losses are recorded depending upon genotype and storage conditions. The total storage losses are comprised of physiological loss in weight (PLW) i.e. moisture loss and shrinkage (30-40%), rotting (20-30%) and sprouting (20-40%). The PLW can be minimized by harvesting at right time, proper curing of onion bulbs and subsequent storage at desired temperature

and humidity conditions. Generally, the rotting losses are at peak in initial months of storage, particularly in June and July, when high temperature coupled with high humidity result the

losses. However, proper grading and selection of quality bulbs and good ventilation conditions can reduce the rotting losses. Application of post harvest fungicidal sprays can also reduce the rottings. But this is not a practice in India. Sprouting losses are usually recorded at the end of storage period or when exposed to high temperature of humid air. Noticeable sprouting losses are observed because of storage of poor quality bulbs having less rest and dormant period and also having thick neck. Comparatively, more sprouting losses are recorded in dark red and white onion cultivars than the light red onion cultivars

4. Onion and its Physiology for Storage

Every agricultural commodity is required to be stored properly to prolong the availability with minimum qualitative and quantitative losses. Onion is not an exception. The onion bulb is a natural food store for the plant, but it is a living system undergoing a process of development towards sprouting, and is subject to decay by various disease causing organisms. The objective of storage technology is to maintain the bulbs for as long as possible in an unchanged sound condition with longer shelf life, and allow them to transport and market after removal from store without much losses.

It is necessary to have the knowledge of the physiology of dormancy and epidemiology of storage disease while thinking of long term storage. Systems to provide long dormant condition and suitable condition which is unfavorable for disease development can be engineered using the physical principles of temperature and humidity control. Also in this process economic and technological constraints will have to be looked into. For this, two basic strategies i.e. high temperature dormancy of onion bulbs and maintaining storage temperature at around 300 C need to be exploited.

The physiological and pathological processes that proceed within a store of onion bulbs interact with the physical process of heat and water vapour exchange so as to mutually influence the environment within the store. Main factors which influence onion storage and bring change in the bulbs are summarized as under in sequence:

- With time, sprouting and internal root development proceed.
- Sprouting and internal root development change bulb shape, tension of skins and crack the skins.
- This increases the conductivity of skins to water vapour and ultimately rate of water loss from the bulbs.
- Increase in sprouting increases respiration.
- Increase in respiration increases outputs of heat, CO2 and water loss from the bulb.
- Diseases are developed in store when there are favorable conditions and bulbs thus get deteriorated.
- Bulb deterioration due to diseases will also increase respiratory outputs. The onion skins has vital role in the physical and physiological processes in the storage, as it is the main barrier to water loss and to CO2 exchange. 65-70% relative humidity is desirable to maintain the skin fairly flexible and elastic. At lower RH, the skin become very brittle and gets easily cracked notably when skin moisture content falls below 20%.
- Ventilation is needed to maintain humidity between 65-70% and lack of this often adversely affects the quality and quantity by increase in water loss and respiration.
- Ventilation is also needed to dissipate heat produced by bulbs.
- With time, requirement of ventilation for the above will also increase.
- Design of store should, therefore, match the requirements.
- High humidity with high temperature favours spread of pathogens within the store.

It is necessary to counter the above changes by proper monitoring of internal environment. Heat and water vapour must be removed or introduced as necessary either by using heating or refrigeration or ventilation or a combination of all the mechanisms depending upon the economics. However, under Indian conditions in onion growing states designs to exploit natural ventilation is most economical.

5. Onion Storage Structure Requirements

For effective long storage of onion the parameters essential to be looked after are the bulb size, choice of cultivars, cultivation practices, time of harvest, field curing, removal of tops, drying, grading, packing, storage conditions (optimum storage range of relative humidity 65% to 70% with the temperature ranging between 25°C to 30°C).
Salient Features of Improved Storage Structures are:

1. Construction of structure on a raised platform to prevent moisture and dampness due to direct contact of bulbs with the soil.
2. Use of Mangalore tile type roof or other suitable materials to prevent built up of high inside temperature.
3. Increased centre height and more slope for better air circulation and preventing humid micro climate inside godown.
4. Providing bottom and side ventilations for free and faster air circulation and to avoid formation of hot and humid pockets between the onion layers.
5. Avoid direct sunlight or rain water falling on onion bulbs to reduce sun scald, fading of colour and quality deterioration.
6. Maintenance of stacking height to avoid pressure bruising.
7. Periodical disinfection of structures and premises to check rottage.
8. Cost effectiveness of structures is based on utilization of locally available material for the construction.

III. ECONOMICS OF THE PROJECT

A. PROJECT PROFILE (Financial)

Sr. No.	Parameters	Value
1	Unit Size (MT)	1,300
2	Services	Onion Storage
3	Cost of the project	40,81,500
4	Bank loan	30,61,125
5	Margin money	10,20,375
6	Financial Indicators	
	B C R	1.57 :1
	N P W 15% (Rs.)	34,39,747
	I R R %	47.94
	Average DSCR	2.8
7	Interest Rate (% per annum)	11.65
8	Repayment	10 years plus one year grace period

B. BASIS & PRESUMPTIONS

Sr. No.	Particular
I.	**Assumptions for financial analysis**
1	25% capacity shall be used for storage of own produce or own trading
2	70% capacity for rent
3	Maximum capacity utilisation at 95%
4	Maximum storage for 10 months
5	Financial analysis is considered for agri produce storage
6	Cost of construction – Rs.1300 per MT
7	Bank Loan – 75%
8	Interest rate – 11.65 %
9	Repayment period – 10 years plus one year grace period

C. TOTAL COST OF PROJECT

Sr. No.	Particular	Unit	Unit Rate	Quantity	Amount
I.	**Capital Cost**				
1	Land				Own
2	Site development				1,00,000
3	Civil Structures for construction of Rural Godown (1300 MT capacity)	Rs./MT	2,500	1,300	32,50,000
4	Preliminary & Preoperative expenses	%	5		1,67,500
					35,17,500
II.	**Recuring Cost** (For 1st year)				
1	Salaries (Self managed)	Per Annum	60,000	4	2,40,000
2	Maintenance/insurance expenses	Rs./month	15,000	12	1,80,000
3	Transportation	Rs./month	12,000	12	1,44,000
					5,64,000
	TOTAL COST OF PROJECT				**40,81,500**

D. MEANS OF FINANCE

Sr.No.	Particular	Unit	Quantity	Amount
1	Term loan	%	75	30,61,125
2	Own contribution	%	25	10,20,375
			TOTAL	**40,81,500**
3	Subsidy Entitlement Under NABARD @ 25%			**10,20,375**

E. PROJECTION OF PERFORMANCE & PROFITABILITY

Sr. No.	Particular	Unit	I Year	II Year	III Year	IV Year	V Year	VI Year	VII Year	VIII Year	IX Year	X Year	XI Year
I.	**Income**												
a	Capacity	MT	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
b	Capacity Utilization - Own Produce	%	25	25	25	25	25	25	25	25	25	25	25
c	Capacity Utilization - For Rent	%	40	60	70	70	70	70	70	70	70	70	70
d	Capacity Utilization - Own Produce	MT	375	375	375	375	375	375	375	375	375	375	375
e	Capacity Utilization - For Rent	MT	600	900	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
f	Price margin from own produce (@ Rs. 1800/ MT)	Rs.	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000	6,75,000
g	Rental Charges (@ Rs. 1000/ MT)	Rs.	6,00,000	9,00,000	10,50,000	10,50,000	10,50,000	10,50,000	10,50,000	10,50,000	10,50,000	10,50,000	10,50,000
h	Interst on Subsidy (@ 6%)		61,223	61,223	61,223	61,223	61,223	61,223	61,223	61,223	61,223	61,223	0
i	Subsidy from NABARD		0	0	0	0	0	0	0	0	0	0	10,20,375
		TOTAL (A)	**13,36,223**	**16,36,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**27,45,375**
II.	**Expenditure**												
a	Salaries (Self managed `	Rs.	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000	2,40,000
b	Maintenance/insurance expenses (@ Rs. 15,000 per month)	Rs.	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000	1,80,000
c	Transportation (@ Rs. 12,000 per month)	Rs.	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000
		TOTAL (B)	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**
III.	**Net Income**	**TOTAL (A-B)**	**7,72,223**	**10,72,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**21,81,375**

F. Financial Analysis

Particulars	I year	II year	III year	IV year	V year	VI year	VII year	VIII year	IXyear	X year	XI year
Capital Costs	35,17,500										
Recurring cost	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000	5,64,000
Total Cost	**40,81,500**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**	**5,64,000**
Benefit	13,36,223	16,36,223	17,86,223	17,86,223	17,86,223	17,86,223	17,86,223	17,86,223	17,86,223	17,86,223	27,45,375
Depreciated value of buildings etc. @ 10%											19,02,875
Total Benefit	**13,36,223**	**16,36,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**17,86,223**	**46,48,250**
Net Benefit	**-27,45,278**	**10,72,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**12,22,223**	**40,84,250**
Discounting Factor@ 15%	0.87	0.76	0.66	0.57	0.50	0.43	0.38	0.33	0.28	0.25	0.21
NPV cost at 15% DF	35,50,905	4,28,640	3,72,240	3,21,480	2,82,000	2,42,520	2,14,320	1,86,120	1,57,920	1,41,000	1,18,440
NPV benefits at 15% DF	11,62,514	12,43,529	11,78,907	10,18,147	8,93,111	7,68,076	6,78,765	5,89,453	5,00,142	4,46,556	9,76,133
NPW at 15% DF	**34,39,747**										
BCR at 15% DF	**1.57 :1**										
IRR %	**47.94**										

G. Term Loan Repayment

Rate of interest - % per annum **:** 11.65
Opening balance of term loan **:** 30,61,125

Year	Loan Outstanding	Net Income	Principal	Interest	Total Repayment	Net Surplus	DSCR
1	30,61,125	7,72,223	0	3,56,621	3,56,621	4,15,601	0.0
2	30,61,125	10,72,223	3,06,113	3,56,621	6,62,734	4,09,489	1.6
3	27,55,013	12,22,223	3,06,113	3,20,959	6,27,071	5,95,151	1.9
4	24,48,900	12,22,223	3,06,113	2,85,297	5,91,409	6,30,813	2.1
5	21,42,788	12,22,223	3,06,113	2,49,635	5,55,747	6,66,475	2.2
6	18,36,675	12,22,223	3,06,113	2,13,973	5,20,085	7,02,137	2.4
7	15,30,563	12,22,223	3,06,113	1,78,311	4,84,423	7,37,799	2.5
8	12,24,450	12,22,223	3,06,113	1,42,648	4,48,761	7,73,462	2.7
9	9,18,338	12,22,223	3,06,113	1,06,986	4,13,099	8,09,124	3.0
10	6,12,225	12,22,223	3,06,113	71,324	3,77,437	8,44,786	3.2
11	3,06,113	21,81,375	3,06,113	35,662	3,41,775	18,39,600	6.4
						Avg. DSCR	**2.8**