Community, Farm Produced Processing and Storage.

Introduction

Farmers in India’s huge rural economy suffer severe financial distress each year due to chronic crop failure, poor incomes and financial debt. There are frequent reports of starvation and suicides particularly by small farmers. The hardships arise mainly due to the following causes:

- Lack of roofed covered processing and storage space
- Wastage of harvested crop produce due to unseasonal rainfall and adverse weather
- Pilferage and damage to crop produce due to inadequate pest control measures
- Mismatch of demand and supply, poor selling prices and distress sales in peak or rainy seasons
- Inefficient and costly use of farm machinery due to small farm sizes
- Debt trap due to borrowing from money lenders at high interest rates
- Rising input costs and labour wages with poor selling prices eroding margins
- Lack of support in warehousing, distribution, procurement and agricultural marketing

This is a proposal to build a processing and storage facility that is designed mainly to conserve crops and farm produce. This simple low-cost structure that embraces the criteria of sustainable construction maybe collectively owned and managed as a storage and distribution hub to serve a small community of farmers.
Some Facts & Why This Project Is Significant

- 1/4 to 1/3 of all food produced for human consumption is lost or wasted – World Bank
- Rs 50,000 crores worth of food produced wasted every year in India – Agriculture Ministry, India
- 190 million Indians go to bed hungry every night; India ranked 100th among 119 countries in 2017 – Global Hunger Index
- Food production is not a constraining issue as India needs 225-230 million tonnes of food per year while farm output hits more than 270 million tonnes in 2017 – World Economic Forum
- Central government informed Supreme court of India that, over 12,000 farmers commits suicide every year.

![Image of paddy stock being salvaged in Bhubaneswar, India]
The Solution – crop conservation and minimizing crop damage

This project addresses the cause of crop conservation, prolonging shelf life and minimizing crop damage by providing a roofed covered space for weather-proof storage of food grains, vegetables, fruit, seeds and any other farm produce.

Its design and layout enables separate spaces for each activity in processing and storage of farm produce such that it ushers in efficiency and productivity. The crop remains protected from rain, bad weather, pilferage and pests.

Safe all-season storage enables farmers to schedule and match supply with seasonal market conditions, avoid distress sales, remain unaffected by unseasonal rainfall and market fluctuations so that farmers enjoy better returns through better prices.

Storage and processing spaces may be organized farmer-wise or owner-wise or as a common pool for each agricultural product.
Meeting Target Criteria of Sustainable Construction

- Cooperative operation and maintenance of facility by the community, for the community.
- Enormous impact on crop conservation. Ample job opportunities
- Simple low cost structure. Use of local stones and bricks for construction of plinth and walls.
- Use of recycled tetra packed sheets as roofing material. Waste used plastic bags provide added water-proofing
- Use of local bamboo and waste material like leftover harvested ‘toor dal’ crop and long grass straw for construction of multiple horizontal; platforms for onion storage.
- It connects the technologically challenged farmers to market, government trading platforms through internet and also to formal banking system to avail loan.
- Potential to incorporate ‘Geothermal Heating and Cooling System’ for maintaining the required temperature.
- Easy to transfer, replicate and enhance and with more activities like marketing

Fig: External view of facility
Features, Components and Facilities

- **Weighing Platform**: Incoming Trucks loaded with farm produce entering into facility would be weighed here.

- **Office**: To manage inventories and undertake Farmer registration by filling a form with details of owner, nature and age of produce, quantity or net weight, type of space earmarked, e.g. processing or storage room offered, date of incoming and outgoing, special storage instructions needed, storage and processing fees etc.

- **Processing Space**: a roofed space offered to farmer to process his farm produce with protection from rainfall.

- **Storage Room**: a secured room for farmer to store his farm produce until he is ready to sell. Fees to be charged based on storage duration. Some semi-covered shaded spaces can also be created and offered outside.

- **Information Centre**: A communication room with internet and online connectivity to agricultural or grain market to inform farmers about daily market rates of their produce, crop advice, weather conditions and other details.

- **Machinery Hub**: This hub offers farm machines on hire at nominal rent or lease payment. Useful to small farmers with small farm sizes who cannot afford such machines.

- **WBM Road and Passages**: WBM (Water Bound Macadam) at entrance and Passages in roofed facility would provide hassle free access to trucks and vehicles.

- **Security Guard Surveillance**: Individual farmers will not need to protect their farm produce as there would be a common surveillance.
Advantages of facility

✓ It offers plenty of **storage and processing space** in a populous country like India where farm produce can’t be stored properly. Most farmers live in small houses with large occupant families and no storage space.

✓ **Management of supply with market conditions** of demand and prices enabling farmers to schedule sales at better prices and get better returns. Today lack of crop storage space leads farmers to make distress sales.

✓ **Avoid losses from damage and pilferage** of grain every year due to adverse weather, rain, pests, theft etc.

✓ **Secured storage rooms** with its one key with farmer and another with office and guard surveillance.

✓ This facility will **encourage the societal feeling** due to regular common gathering and thought exchange.

✓ **Employment opportunities** with jobs for handling, loading, unloading, processing, storing, transporting.

✓ Opportunity for small Farmers to use machines from a **common machinery hub** to promote productivity.

✓ The **Information Centre** enables Farmers to be better informed about daily market rates of different items such that they can make more informed sales and learn about new methods, and technical knowhow etc.

✓ Through the Information Centre Farmers can also benefit by joining existing government online trading platforms like ‘eNAM’, ‘Kisan Mandi’, etc. This platform brings farmer and buyer on one platform **avoiding middle man**.

✓ All of this would result in the farmer being able to enjoy better crop yield, crop conservation, better selling prices and better financial returns thus **leading to overall prosperity**. Hopefully we can see fewer and fewer reports of farmer distress and suicides.
Objectives of the Research

- To examine the **requisites of the ideal warehouse** for different regions, crops and climate conditions.
- To study **designs, layouts**, materials, costs and other requirements for foundations, floors, walls, doors and windows, ventilation, access, storage and stacking, work spaces
- To examine **best materials, techniques, local resources**, construction techniques, project cost and feasibility.
- **To study the basics of Geothermal Heating and Cooling System** (or exchange of heat with the ground shown in Fig.1) and explore the **feasibility and cost** involved. **To visit sites in India where it is in use.**
- And to see whether and how if it can be adapted. This can be very significant for the project

![Fig.1- Geothermal heating and cooling](Image)
Further research:

- To study the feasibility of using local materials such as ‘bamboos’, leftover of ‘toor dal’ (a pulse crop), long grass straws, etc. by use of which multiple horizontal platforms can be made within the same room for onion storage. (shown in Fig.2)
- To study the feasibility of recycled tetra pak sheets as roofing material.
- To learn about shelf life of various crop produce and types of storage conditions required for them.
- To learn ‘traditional knowledge’ of storage methods from local communities and studying its feasibility in project.
- To study the feasibility of storage receipt generated from office with respect to its tradability within formal banking system as collateral.
- To study the modifications required in facility for storage of various items like grains, crops, fruits, vegetables, seeds, saplings etc. for prolonged shelf life.
- Based on the above to shortlist a few models of designs and layouts for ideal structures
- To learn basic aspects of cooperatives and self help groups which can be useful to manage this project particularly as done by 3.6 million farmers in the Gujarat Co-operative Milk Marketing Federation Ltd.
- To study feasibility of setting up this facility as hub for storage and sale.
- To examine government schemes and financial assistance for such projects
- Finally to draft a detailed proposal to recommend a specific scheme with a prototype of the ideal model for use in my village in the state of Maharashtra where the farmer distress has been severe.
Project Methodology adopted:

✓ The project Methodology proposed is using information gathered from survey, in conversation with farmers and experts to learn about the problems, needs and demands of their agricultural produce.

✓ To take this research ahead, a case study is proposed in the district of Amravati’ (population 2.89 million and area 12,235 sq km) in Vidarbha region of Maharashtra which has witnessed large numbers of farmers’ suicide. (692 cases in 2017 – Amravati Division).

✓ The major crops in this district include Soybean, cotton, Wheat, Toor, Groundnuts, Jowar, Onion, Oranges. The special requirements of these crops with respect to processing and storage is to be studied.

✓ Availability of local Manpower, Material and skills to be assessed.

✓ Stated objectives of project the research exercise after which a proposal to construct the project will be prepared for submission to district authorities.

Nature has ripen the grains, now its our responsibility to protect it from adversities so that nobody will go hungry to bed and no farmer will hang himself to horrible suicide.
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Thank you..!

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