Community Farm Produced Processing and Storage.
Name:- Shubham Haridas Bayskar.
Amravati District, Maharashtra State, India.

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
- Pilemart 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

This is a project 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 may collectively owned and managed as a storage and distribution hub to serve a small community of farmers.

Ground reality – specifies project significance

- 14 to 1.3 of all food produced for human consumption is lost or wasted – World Bank
- 65,0,000 crores worth of food produced wasted every year in India – Agriculture Ministry, India
- 100 million Indians go to bed hungry every night; India ranked 10th 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.

Sustainable features of Project

- Cooperative operation and maintenance of facility by the community, for the community.
- Enormous impact on crop conservation. Simple job opportunities.
- Simple low cost structure. Use of local stones and fly ash 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 ‘towel’ crop and long grass straw for construction of multiple horizontal platforms for onion storage with Rice straw for orange storage.
- It connects the technologically challenged farmers to market linkage, 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, replicable and enhance and with more activities like marketing

Materials Used in the Design

- Use of Local stones till plinth level and fly ash bricks onwards.
- Using local materials such as ‘bamboo’ leftover of ‘towel’ crop (a pulse crop), long grass straw and multiple horizontal platforms can be made within the same room for onion storage, (shown in Fig.1)
- Use of recycled tetra pack sheets as roofing material.
- Use of Rice / Wheat Stubble for orange storage and WBM road.
- Geothermal Heating and Cooling System: exchange of heat with the ground

Advantages of Facility

- It offers plenty of storage and processing space in this populous country with small houses.
- Management of supply with market conditions of demand and prices enabling farmers to schedule sales at better prices and get better returns.
- Avoid losses from damage and pilemart of grain every year due to adverse weather, rain, pests, 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.
- Common machinery hub to promote productivity.
- The Information Centre enables Farmers to be better informed about daily market rates of produce.
- Joining existing government online trading platforms like eNAM, ‘Kisan Mandi’, etc. through information centre to avoid middle man.

Project Location

- 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 Soyabean, cotton, Wheat, Tort, Groundnut, Jowar, Onion, Oranges. The special requirements of these crops with respect to processing and storage is to be studied.

Facilities Offered

- Weighing Platform: Trucks loaded with farm produce entering into facility would be weighed here.
- Office: To manage inventories and owner details.
- 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.
- 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.
- WBM Road and Passages: WBM (Water Bound Macadam) at entrance and Passages in rooftop 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.

Geothermal Heating and Cooling

A geothermal heat pump is central heating and cooling system that transfer the heat to or from ground. It uses the earth all the time as a heat source (in winter) or a heat sink (in summer).

The solution through project

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 achieves efficiency and productivity. The crop remains protected from rain, bad weather, pilemart and pests.

References

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Contact Information

Shubham Haridas Bayskar
Civil & Environmental Engineering, VJTI, Mumbai University, India.

State, Maharashtra, India

Email: shubham1422@gmail.com

Phone No: +917507040496