

College of Agriculture, Phaltan

Demonstration No.-2



Demonstration on zero energy cool chamber

DEMONSTRATION NO-2

DEMONSTRATION ON ZERO ENERGY COOL CHAMBER

- **Name of student:** Nale Sameer Bhanudas.
- **Registration No. :** CAP-2017/86.
- **Collage:** Collage of agriculture phaltan.
- **Centre to which attached:** Collage of agriculture phaltan
- **Name of host farmer:** Bhanudas Natha Nale.
- **Place of demonstration:** at Bhanudas Nale home.
- **Date of demonstration:** 17 August 2020.
- **No of farmer participated:** 7

Introduction :

1. In India quality deterioration of horticultural produce takes place immediately after harvest due to lack on-farm storage.
2. Maintenance of low temperature is great problem in a tropical country.
3. Refrigeration is energy intensive , expensive, not so easy to install and run in remote areas and not always environment friendly .
4. Due to lack of cold /cool storage space a substantial amount of fruit and vegetables are lost after production.
5. Considering acute energy crisis and lack of cool storage facility efforts made to develop low cost/low energy cool chambers.
6. It based on principle of direct evaporative cooling zero energy cool chamber have been developed .
7. Cool chamber can reduce the temperature by 10-15 c and ○ maintain high humidity of about 95% that can increase shelf life and retain quality of horticulture produce .
8. National Horticulture board is giving 1000% in aid for the benefit of the farmer.
9. Small and marginal farmers can store a few days harvest to avoid middle man.
10. Even unskilled labour can build the chamber , as it does not required any specialized skill.

Objectives:

- To aware farmer about zero energy cool chamber.
- To gave information about zero energy cool chamber to the farmer.
- To show the actual construction of zero energy cool chamber.

Principle:

- Based on the principle of direct evaporative cooling.
- Cooling effect obtained by evaporation of water and faster the evaporation greater is the cooling
- Cool temperature slow respiration process, allowing fresh produce for longer time and avoid spoilage.

Planning:

- 1) During demonstration on preparation of basundi some women and farmer said me that their horticulture produce are spoiled due to lack of refrigeration . that time I discussed with farmers about the demonstration of zero energy cool chamber .
- 2) Then I discussed with subject matter specialist of agril. ENGG. About the conducting demonstration of zero energy cool chamber .
- 3) Then I gave the information to farmers regarding time, place and date of demonstration.
- 4) Then I collected the required material for conduction of demonstration.

Material required:

- Bricks.
- Sand.
- Banana leaves.
- creates.

Planning

1. Firstly I selected site ,which is in shade ,well ventilated and away from direct sun light.
2. When all farmers gathered then I started actual demonstration. Initially I gave them primary information regarding demonstration to all farmers.
3. Firstly I was make the flour of size 1.5X1.5 M.
4. Then I build the double erect wall of a height 50 cm by leaving a cavity of 7.5 cm.
5. Then I drench the fine river sand in the leaved cavity by using ghamela.
6. Then I kept crates in the chamber.
7. Then I applied the water over the sand and bricks to make it wet.
8. Then I covered the zero energy cool chambers by using the banana leaves.
9. When all operation was done then I gave information to farmer regarding the cost of zero energy cool chambers and its importance.

Flow chart

Select the site having shade , well ventilated and near water source.



Make floor with bricks (1.5X1.5 M).



Erect a double wall of height 50 cm by leaving cavity of 7.5 cm.



Fill the cavity by using river sand.



Keep the crates along with fruits and vegetable.



Apply the water over sand and bricks .



Cover the chamber by using banana leaves.

● **Advantages :**

- Better marketability.
- Retain nutritive value.
- Environment friendly storage system with low pollution.
- Can be construct by unskilled labour.
- Ideal for house hold storage.
- Can be used for mushroom cultivation.
- No mechanical and electrical energy required.

- **Disadvantages :**

- Required significant capital investment .
- Operation relies on reliable source of water throughout the year.

Cost of zero energy cool chamber :

(Capacity 50 kg)

Bricks (100 nos.)	800
sand	150
Banana leaves/gunny bags	20
Plastic crates (2 nos.)	200
Labour charge	300
total	1470

Questions asked by farmers ?

1) What is the size of zero energy cool chamber?

Ans: the size of zero energy cool chamber is 1.5X1.5 m (l x b) and 50cm height .

2) What is temperature of zero energy cool chamber?

Ans : about 10^oc .

3) Why it is known zero energy cool chambers?

Ans: it known as zero energy cool chamber because it does not required any mechanical and electrical power.

4) Which type of fruits and vegetable can be store in zer energy cool chamber?

Ans: all types of fruits and vegetable can store in zero energy cool chamber.

5) Why watering is required for zero energy cool chamber?

Ans: for maintaining the humidity there is watering required.

6) What is the cost of zeo energy cool chamber ?

Ans: The rice of zero energy cool chambers is about 1500 Rs.

Farmers feedback:

- Farmers were satisfied with my demonstration.
- They told me that they were unknown about zero energy cool chambers before demonstration.
- Farmers were satisfied by getting the all information regarding the zero energy cool chambers.
- Farmer told me that they will defiantly made the zero energy cool chambers at their own home.

Student feedback:

1. I am also satisfied after conduction the demonstration.
2. I got the practical knowledge regarding the zero energy cool chambers.
3. I gave the all answers of farmer question they were asked.
4. Also my confidence level increased.

Follow up :

- I completed my demonstration according to my planning.
- Many farmers are built their own zero energy cool chambers at their own home for storing of fruits and vegetable.