

FOOD PRESERVATION

FOOD PRESERVATION REFERS TO ANY
TECHNIQUE USED TO PREVENT FOOD FROM
SPOILING.

METHODS OF PRESERVATION



- **DRYING**
- **SMOKING**
- **COOLING**
- **FREEZING**
- **SALTING**
- **PICKLING**
- **CANNING**

DRYING METHOD OF PRESERVATION



**DRYING IS THE OLDEST METHOD .IT IS
DONE BY SUN DRYING OR AIR DRYING.IT IS
REMOVAL OF WATER FROM THE FOOD.**



- **ANYTHING CAN BE DRIED SUCH AS**
- **VEGETABLES**
- **DRY FRUITS**
- **FISH OR MEAT PRODUCTS**
- **DRIED PRODUCTS CAN BE KEPT FOR A LONG TIME.**

COOLING AND FREEZING



FREEZING IS KEEPING FOOD IN LOW TEMPERATURES (-4 C TO -18 C)



- ***ANYTHING CAN
BE COOLED AND
FREEZED SUCH
AS VEGETABLES,
FRUITS, MEATS
,FISHES ETC.***

SALTING AND PICKLING



SALTING STOPS BACTERIAL GROWTH AND IT IS OLDEST METHOD.



- ***BRINE SOLUTION IS MADE BY ADDING SALT AND VINEGAR IN PROPORTIONS. IT IS USED TO PRESERVE FISHES , MEATS , VEGETABLES ETC.***

EXAMPLES OF PICKLING AND SALTING

FISH IN BRINE SOLUTION



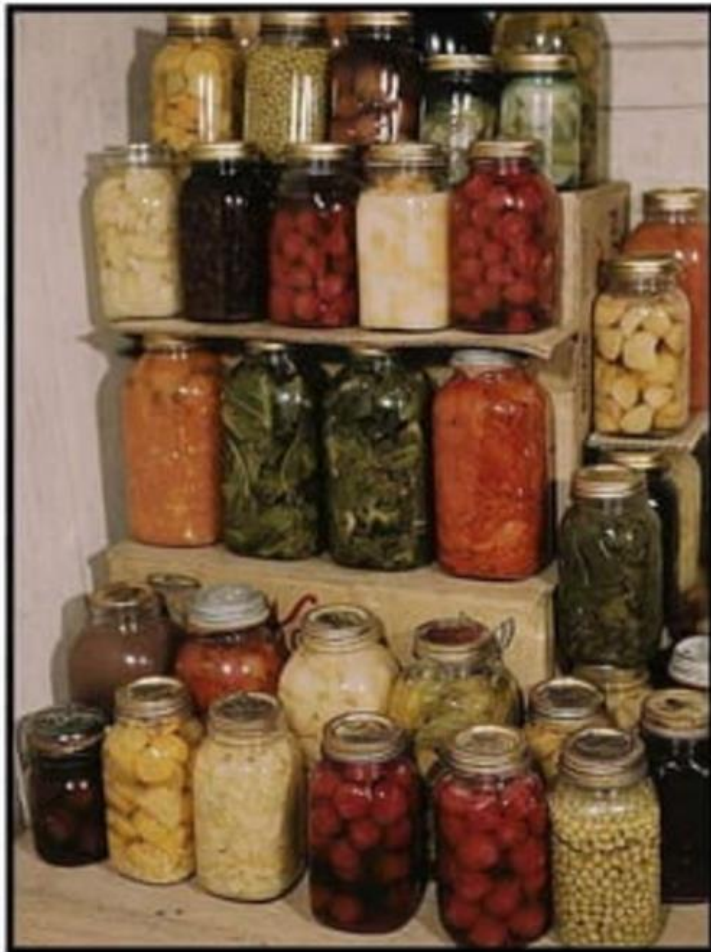
PICKLES



CANNING



CANNING IS KEEPING THE FOOD PRODUCTS IN GALVANIZED TINS



- ***CANNING CAN BE DONE TO MEATS, FISHES, FRUITS AND VEGETABLES.***
- ***CANNING MEANS TO KEEP FOOD IN CONTAINERS.***

PRESERVATION BY SUGAR SYRUP





**SUGAR PRESERVATION METHOD IS
MAINLY USED FOR PRESERVING
FRUITS FOR A LONG TIME.SUGAR
SYRUP STOPS THE MICROBIAL
GROWTH.**

SMOKING



SMOKING IS PRESERVING FOOD METHOD.



- *Smoking is the process of flavoring, cooking, or preserving food by exposing it to the smoke from burning or smoldering plant materials, most often wood.*

MATERIALS USED FOR
PRESERVATION ARE AS FOLLOWS
SUCH AS

1. SALT

2.SUGAR

3.VINEGAR

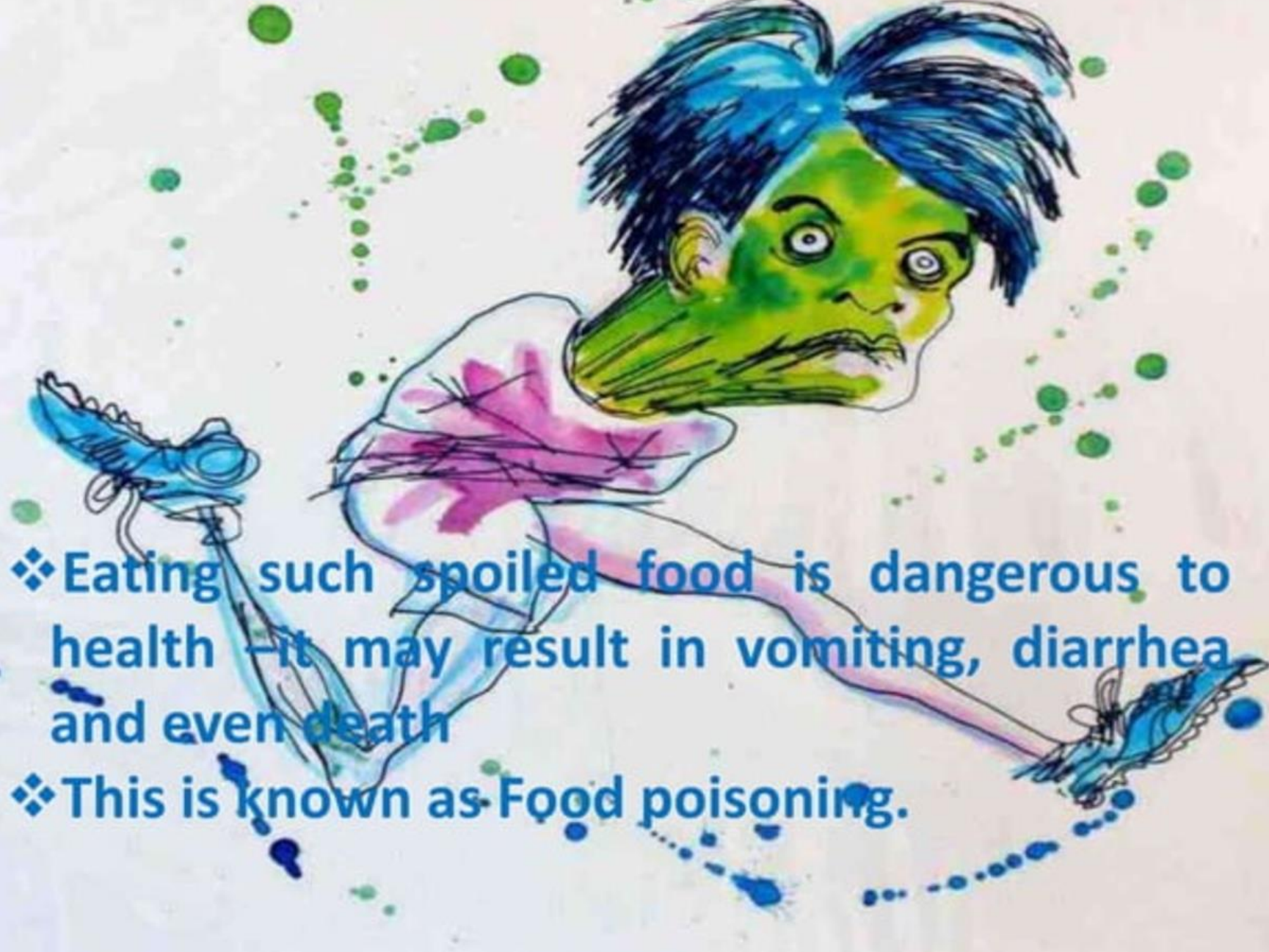
4.SODIUM BENZOATE


5.SORBIC ACID.

Storage and Preservation of Food



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- A close-up photograph of two apples. The apple on the left is yellowish-green and appears fresh. The apple on the right is brown and heavily covered in white and grey mold, illustrating the process of food spoilage. The background is blurred.
- ❖ Some micro organisms spoil the food material
 - ❖ The food material gets spoiled if not stored properly

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- ❖ Eating such spoiled food is dangerous to health –it may result in vomiting, diarrhea and even death
 - ❖ This is known as Food poisoning.



Reasons for storing food properly are-

❖ **Make them available through out the year.**

Reasons for storing food properly are-

- ❖ Make it easy for the distribution to distant places in the country



Reasons for storing food properly are-

- ❖ Reduce the wastage of food material.

OF FOOD
WASTE


❖ We will learn how to prevent spoiling of food materials by Micro organisms pests and rats.

- ☐ Bacteria and Fungi are the micro organisms which spoil both cooked and un cooked food materials.
- ☐ Souring of milk, curd and buttermilk is due to Bacteria.
- ☐ Bacteria grow rapidly if the food is stored between 20°C and 40°C.
- ☐ Some bacteria act on the food material and degrade them to simple compounds. Fats to fatty acids, Proteins to amino acids and Sugars to CO_2 and H_2O



❖ We will learn how to prevent spoiling of food materials by Micro organisms pests and rats.

❑ Some bacteria produce toxic substances which contaminate the food(Clostridium grows on fish)

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- ☐ Fungi grow in warm, dark and damp conditions.
 - ☐ Fungi grow rapidly if the food is stored between 20°C and 30°C.
 - ☐ Growth of Fungi on food can be detected by the white glistening filaments with grey or black or yellow dust like spores on the food material.



❑ Aflatoxin produced by the fungus on improperly stored ground nuts is poisonous and damage liver.

Aflatoxin

Sun drying:

- ☐ Micro organisms need moisture to grow.
- ☐ Moisture can be removed from food by drying or adding sugar or salt to it.
- ☐ Vegetables and fruits are washed, peeled and dried in the sunlight .
- ☐ During the drying process water content of the food material is reduced to 5% from 60%-70%.



Sun drying:

- ☐ Advantages

- ☐ Least expensive and very effective.



Sun drying:

- ☐ Disadvantages
- ☐ Possible when there is a bright sun (Seasonal)
- ☐ As food is exposed to dirt and insects, there is a risk of contamination and spoilage.



Mechanical Drying:

- ❑ Dehydrators and spray dryers are the devices, which control temperature and humidity, used for drying food materials in industries.





Mechanical Drying:

- ☐ Foods spoil if they are dried at high temperatures are dried using spray drying under sterile conditions. (Milk Powder making)

Smoking:

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- ☐ Foods dried by exposing them to smoke from burning wood.
 - ☐ Heat from the smoke helps to remove moisture from the food.
 - ☐ Smoke gives characteristic flavour to the food.
 - ☐ Fish and meat are preserved in this method

Salting:

- ❑ Food material is cut in to pieces and large quantity of salt is added to remove moisture.
- ❑ External moisture is removed by drying.

Salting:

- ☐ In some cases further processed to make pickles.
- ☐ Tamarind, Amla, Lemon, raw Mango, Fish etc. are preserved in this process.

Pickle

Freeze Drying:

- ☐ Microbial growth is retarded when food is stored at low temperature.



Freeze Drying:

- ❑ The lower the temperature, the higher the retardation.

Freeze Drying:

☐ Food is stored temporarily in cellars with temperature is about 15°C



Freeze Drying:

- ❑ At this temperature decomposition and the growth of micro organisms is slowed down considerably.



Freeze-Drying

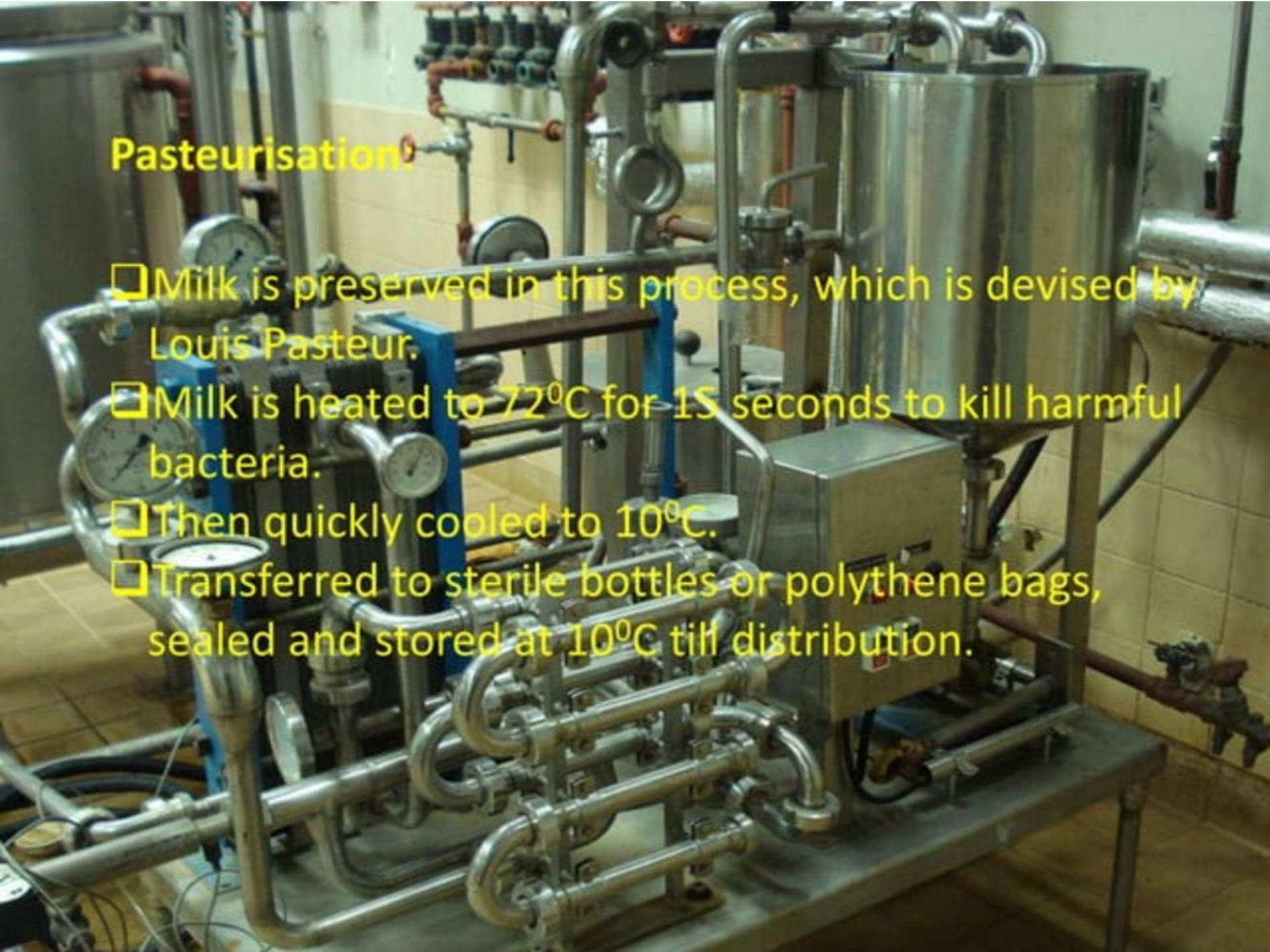
- Freeze-drying is a special form of drying that removes all moisture and tends to have less of an effect on a food's taste than normal dehydration does.
- In freeze-drying, food is **frozen** and placed in a strong **vacuum**. The water in the food then **sublimates** -- that is, it turns straight from ice into vapor. Freeze-drying is most commonly used to make instant coffee, but also works extremely well on fruits such as apples

Use of high temperatures:

- ☐ Application of heat leads to the destruction of micro organisms present in food.
- ☐ Temperature and duration depends on the type of food and the type of micro organisms to kill.
- ☐ Boiling of milk is an example for this process.

Pasteurisation:

- ❑ Milk is preserved in this process, which is devised by Louis Pasteur.
- ❑ Milk is heated to 72°C for 15 seconds to kill harmful bacteria.
- ❑ Then quickly cooled to 10°C .
- ❑ Transferred to sterile bottles or polythene bags, sealed and stored at 10°C till distribution.

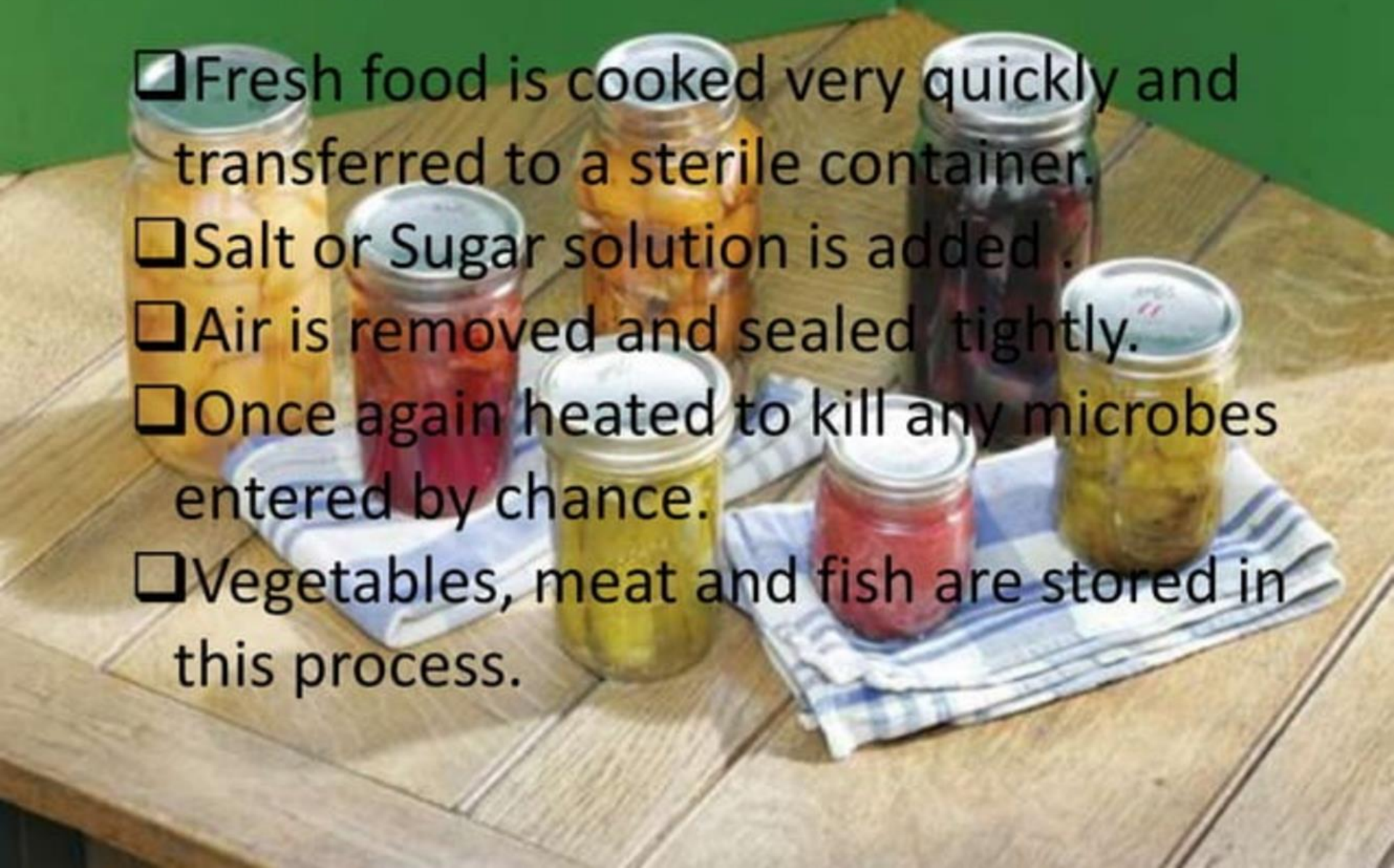


CANNING & PRESERVING



Canning:

- ☐ Fresh food is cooked very quickly and transferred to a sterile container.
- ☐ Salt or Sugar solution is added .
- ☐ Air is removed and sealed tightly.
- ☐ Once again heated to kill any microbes entered by chance.
- ☐ Vegetables, meat and fish are stored in this process.



Prevention of spoiling of food by pests:

- ☐ Worms, insects and rats damage food materials.
- ☐ Reduce their nutrient content.
- ☐ Make them unfit for human consumption.
- ☐ Some times transfer disease causing bacteria to food material.

Fruit fly



❑ Estimated damage to food grains by rats is 30%-40% of total production.

Insect pests are controlled by:

A) Spraying.

- ☐ The grain storage area is sprayed with insecticide like DDT, Malathion etc. before storing the food material.
- ☐ This will kill insects in the storage.



B)Fumigation.

☐ Pests present in the grains and storage

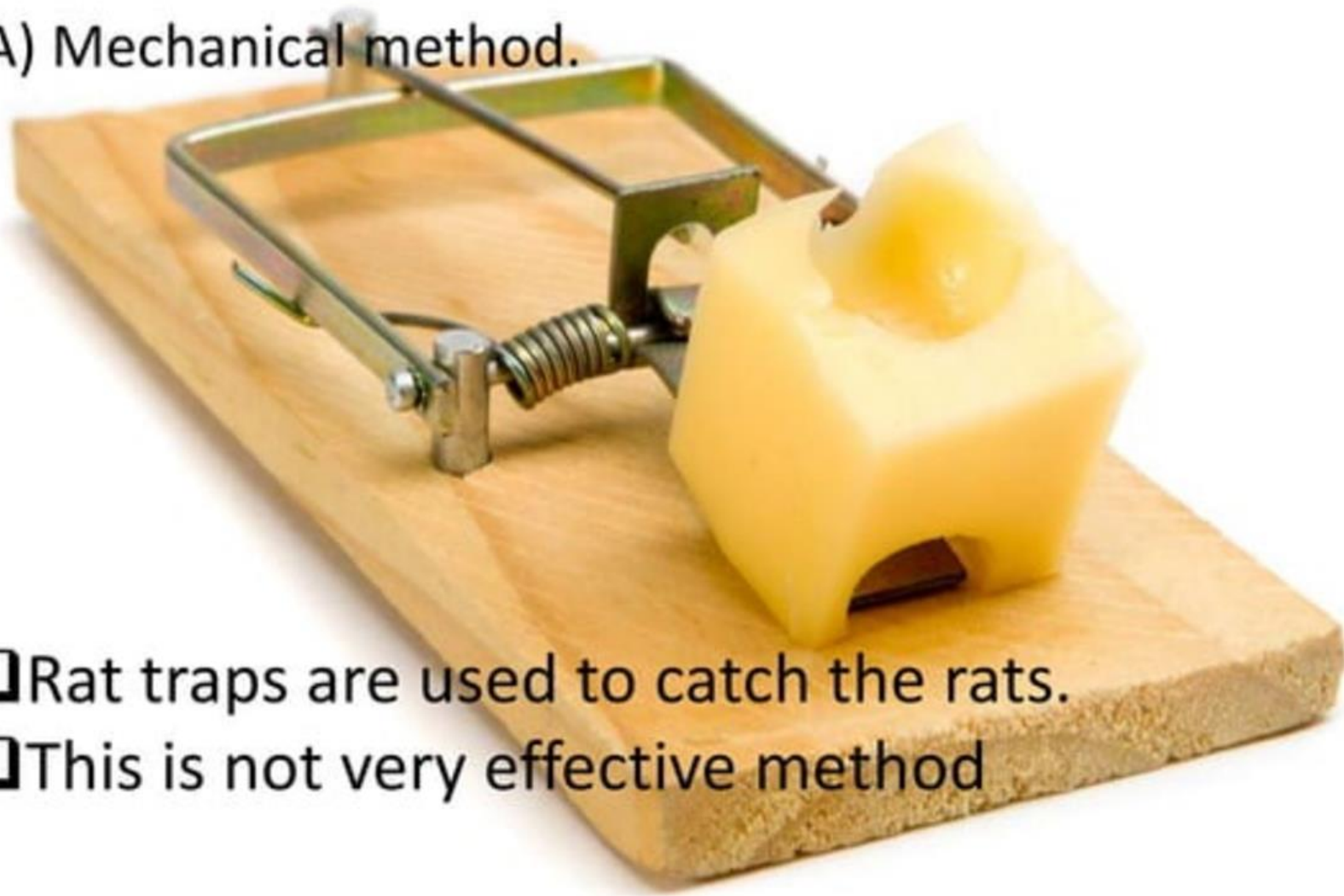
area are killed either by ethylene bromide or aluminum phosphide.

☐ These chemicals are kept in storage area react with moisture and form a poisonous gas.



Rat control:

A) Mechanical method.



- ☐ Rat traps are used to catch the rats.
- ☐ This is not very effective method

ZINC PHOSPHIDE

B) Chemical method.

- ☐ Rats are killed by chemicals like Zinc Phosphide and varafin which act as poison to rats.
- ☐ A bait of small balls is prepared with mixture of wheat flour, oil and sugar is kept near the storage for 7-10 days.
- ☐ Then poisoned bait is placed to kill the rats.
- ☐ Dead rats must be removed immediately.

