PRESERVE FRESH FOODS

FRUITS AND VEGETABLES

Extend the Shelf-life of Fruits and Vegetables

Procedure:

1. Place moist sawdust in a big basin or pail. Take care to remove sharp or pointed pieces in the sawdust that will hurt the fruits or vegetables as it is in this way that rotting caused by bacterial organisms start.
2. Place the fruits and vegetables in this pail and cover with moist sawdust again.
3. Do not allow water to accumulate at the bottom of the pail. Within 11 days, the fruits/vegetables will lose only 2% of their weight while in the usual way of storage, the total loss of weight is 10% within the same period of time.

From:
Philippine Farmers' Journal
July-August 1983

Other Ways of Storing Fruits/Vegetables:

A. Moistened sawdust
   1. Wash very well in water with chlorox – 1 liter water for every tablespoon chlorox.
   2. If the sawdust has been used before, sterilize first by spreading under the sun.
   3. Remove all sharp pieces that might start bruising the fruits/vegetables.
   4. Moisten the sawdust and mix well – 1 liter water for every kilo sawdust.
   5. Arrange the vegetables in the moist sawdust and store in a cool place.

B. Fresh Banana Leaves
   1. Heat over the fire fresh banana leaves to prevent them from breaking apart.
   2. Wrap the vegetables in the leaves. Change the leaves when they crumple or lose the ability to keep the vegetables fresh.

      Winged beans kept in this way stay fresh for about one and a half weeks, but if not stored in this way, last only three days.

C. Earthen pot
   1. Pour water over the covered pot, wet the sides very well. Repeat the process when the pot shows drying.
   2. Place the pot on a basin or container with water at the bottom, but place a platform for the vegetables inside to keep from rotting because of wetness.

Vegetables such as cabbage, tomatoes, beans, eggplant, and mangoes can last for a week if stored in this manner.

From:
PCARRD Farmnews
April 1984

PRESERVE TOMATOES

Procedure:

1. Select tomatoes that are mature and ripe, but firm. Wash them very well.
2. Dip in boiling water for about one half to one minute or steam for 2-3 minutes.
3. Dip in tap water to remove the peel easily. Remove the core as well.
4. Arrange the tomatoes in a jar compactly, but with a spare of about one centimeter from the rim.
5. Do not add water. Add in ½teaspoon salt and teaspoon lime in the jar.
6. Remove the air from the jar – place this in a casserole and heat at 77^{o}C for about 15 minutes.
   The level of water should be only of the height of the jar to prevent the water from entering the jar.
7. Close the jar well and boil in water for 35 minutes.
8. Cool, store.

From:
FNRI (DOST)

EXTEND THE SHELF-LIFE OF TOMATOES

Research at the UPLB has shown that the ripening of tomatoes can be hastened or delayed:

1. Ripening can be hastened if the tomatoes are kept in DRY HULL ASH. This increase the ethylene gas which hastens ripening.
2. If this is placed in a cool place, it will have the red color of ripening.
3. If tomatoes are kept in moist ash, this will neither hasten nor delay ripening, but the ripening will be natural, and the tomatoes will be firm even if ripe, better than if stored in dry ash.

From:
Farming Today
July 1983

POWDERED TOMATOES

Procedure:

1. Dip the tomatoes in boiling water for a minute.
2. Dip in 500 ppm solution of sodium metabisulfite for 2 minutes.
3. Dry in the oven at 54^{o}C for 9 hours or until its moisture goes down to 7.5%.
4. Pulverized the dried tomatoes in a pestle.

   The resulting product is red in color and smells and tastes like fresh tomatoes.

   To cook, mix with water as needed.

From:
Selected R&D Completed Projects, NSTA 1982

DEHYDRATED CARROT

Carrot is rich in Vitamin A and C. It is good to store it during its abundance so as to make it available during scarcity.

Materials:

Carrots - mature, bright colored, fresh
Starch flour - 4 tbsp. in 4 cups water (stir continually while heating)

Procedure:

1. Wash carrots very well, slice into 4 x 10 x 10 mm. sizes.
2. Arrange on a sinamay or nylon cloth and dip in boiling water for 3 minutes.
3. Dip the carrots in the cooked starch for one minute.
4. Drain and arrange on a tray.
5. Dry in the oven at 60^{o}C-65^{o}C for 7-8 hours or under the sun until no juice can be extracted when pressed. If the carrots will be dried in the sun, do not expose them directly. Put them inside a box with black or dark cloth or plastic sheet.
6. When dried, pack in plastic bags and seal.
7. To reuse soak ¼ cup carrots in a cup of warm water for half an hour.
8. Cook in the usual way like fresh carrots.

From:
FNRI, Oct. 1989
Reprint

DEHYDRATED BELL PEPPER

Procedure:

1. Selected fresh, mature green pepper with deep green color. Wash them very well in running water.
2. Cut in halves, remove seeds, placenta and stems.
3. Slice into 2 cm. size thick before blanching.
4. Spread on a sinamay or nylon cloth (not thicker than 2 cm.) before steaming.
5. Dip in 5% salt solution for 30 minutes.
6. Blanch steam for 2 minutes.
7. Dry at 60°C-65°C for 6-7 hours.
8. Pack in plastic bags and seal.

From:
Selected R&D Completed Projects, NSTA

RIPENING OF FRUITS

One of the ways to hasten the ripening of fruits is by the RIGHT USE of calcium carbide. The fruits must be in a box with the right temperature and right humidity.

The wrong use of calcium carbide for artificial ripening of fruits is by wrapping the calcium carbide in paper and putting it among the fruits. This burns (hurts) the fruits.

When the fruits is mature and mad to ripen artificially, its ripening is no different from natural ripening, both in quality and in taste. And if calcium carbide is placed properly, the color of the fruit is stronger and the shriveling of its skin or peeling is delayed.

What hastens the ripening of the fruits is the ethylene gas that emanates from the calcium carbide, and not the calcium carbide itself. Ethylene gas is not poison to humans and gives no damaging effects.

From:
Philippine Farmers Journal
Nov.-Dec. 1983

HOW TO RETARD THE RIPENING OF FRUITS

According to researchers at the UP Los Baños, the ripening of fruits can be delayed from one to two weeks under the following conditions:

1. Don't pick the fruits very soon. Trees have a natural way of retarding the ripening of fruits.
2. Take care not to bruise the fruits in picking, transporting or changing containers. It is in these ways that microorganisms enter the fruits and causes rotting to start and lose weight.

3. Ripe fruits give off ethylene, a kind of gas that hastens ripening. Don't put together ripe and raw fruits.
4. Don't put together healthy and non-healthy fruits. Non-healthy fruits give off much ethylene.
5. Don't expose the fruits in the sun. This hastens ripening.
6. Keep the fruits away heat given off by motor or machine. They also give off ethylene gas.
7. Ripening is slow in low temperatures. If no refrigerator is available, put the fruits in the coolest possible place.
8. If a refrigerator is available, put the fruits in a plastic bag with small holes.
9. Put charcoal soaked in potassium permanganate or small pieces of cement or perlite in container with fruits.

From:
Farming Today
April 1982

RETARD THE RIPENING OF MANGOES
(Hot Water Treatment)

Hot water treatment (HWT) retards the ripening of mangoes without affecting its taste; makes the color of ripening brighter and evenly, and does not require the use of pesticides chemicals because the fruits are not infected by bacteria or pests.

Procedure:

1. Prepare two containers of hot water – this may be half of a drum or similar, according to the quantity of mangoes to be treated.
   - One drum that contains hot water will be for immersing the mangoes, and the other will be for maintaining the heat of the water used for immersing.
2. The heat of the water should be within $52^{o}C$-$55^{o}C$ range. To maintain this heat, it is necessary to use a bulb thermometer.
3. Immerse soonest the newly harvested mature mangoes for 10 minutes.
4. Cool the mangoes in running water after immersing.
5. Air dry the mangoes before storing in container.

From:
PCARRD-DA Farmnews
Mar.-Apr. 1991

ETHREL: RIPENS BANANAS AND TOMATOES

Fruits must not be picked when immature because they will not ripen naturally. However, there are instances when this is inevitable, such as during a storm or unavailable circumstances.

Researches were conducted at UP Los Baños have shown that immature fruits can somehow be made to ripen with the aid of a chemical, ETHREL.

Procedure:

Bananas

1. Fill with water up to ½a kerosene can (balde). Dissolve 10 tbsp. ethrel in this water.
2. Pour more water gradually until the can is full (19 liters) and stir well while pouring.
3. Transfer one-half of this to another container.
4. Immerse the bananas in the mixture for 5 minutes, then let it dry in the air. These will ripen in 5 days.
5. If the mixture will be used again cover it and store in a cool place.

   This can be used up to 15 days provided the fruits being immersed are clean and dry before they are immersed.

   It was seen by the researchers that if the fruits are immersed in ethrel on the fourth to the seventh day (4th-7th) after harvest, the bananas ripen in 2-3 days.

Tomatoes

1. For immature tomatoes, 90% of 21 day-old fruits ripen in 10 days after putting them in ethrel. Some of these didi not turn red.
2. If the ethrel solution is weak, tomatoes do not ripen well.
3. If the tomatoes are less than 21 days tomatoes are not edible.

Calcium chloride and ethrel:

Less ethrel is needed to ripen bananas, compared to calcium carbide. It requires 20 grams carbide for every liter of water.

From:
Agricultural & Industrial Life

KAKAWATE LEAVES RIPEN SABA BANANAS

Studies made at the UP Los Baños showed that when raw saba bananas are put in kakawate leaves, its ripening is hastened. This is because the kakawate leaves emit bioethylene, a gas that ripens fruits.

It was also seen that when bananas are ripened with kakawate leaves, the weight loss is only 5%, while those not treated loses 19% of its weight within 6 days.

Procedure:

Stack the banana bunches with kakawate leaves alternately.

From:
PCARRD (DOST)

DELAYING THE RIPENING OF BANANAS IN MALAYSIA

Researchers at the Malaysia University and of the Malaysia Agricultural Research and Development Institute have a way of delaying the ripening of bananas. This is not their present method of wrapping the fruits in a bag with polythene – this is good only until 11 days.

The news method is by the use of the chemical, BYNONYL, used to combat, molds, but is not harmful to humans. They tried this on raw bananas called "pisang emas". This method reduced the growth of molds and retards ripening besides improving the quality of the fruits.

Procedure:

1. Pack and seal the bananas in an air tight bag with bynonyl.
2. When the packing is removed, keep the fruits in temperature at 15^{o}C. It is only then that the fruits will start to ripen normally.

From:
PCARRD Farmnews
August 1987

RIGHT WAY OF STORING SWEET POTATOES

Sweet potatoes or kamote can last up to 2-3 months if harvested and stored properly.

Procedure:

1. When harvesting, use a container that can take only what is accommodated to avoid falling off and having bruises. It is in getting hurt that rotting of fruits begin.
2. Avoid using sacks for this reason.
3. The storage should be near the place of harvest or near the place of transport.
4. In places of storage, use bamboo, kogon grass or leaves of coconut as roof or walls.

RIGHT WAY OF HARVESTING FRUITS

1. Harvest fruits at the right season of maturity.
   For example:
   Mangoes: 82 days from flowering and bearing fruit.

When the fruits that are exposed are immersed in water, these grow further and become more darkly or strongly colored than those hidden (which grow slowly).

Tomatoes – if to be transported far – harvest when the end of the flower becomes pinkish, which are formerly green; if to be transported nearby-harvest them when the fruits are colored orange.

2. Mango and Citrus: pick the fruits with all care. Avoid excessive stain or sap on the skin, if they are to be harvested at the last hours of the morning or before 3:00 p.m.

   Sweet corn: pick early to retain its sweetness. When harvested late in the morning, its sugar turns into carbohydrates.
3. Arrange properly in containers to avoid bruises or crushing, and to allow fre circulation of air in containers.

   Use old newspapers, thin polyethene or plastic bubbles sheets as lining at the bottom of containers.
4. Transport quickly and carefully. Insert potassium permanganate in the container. This is dissolved and made to be absorbed by perlite blocks which in turn will absorb the ethylene emitted by the fruits.

   Perlite blocks
   - 1 part cement
   - 4 parts perlite beads

     water to make thin paste

   a. Allow this to dry and harden in 36 hours.
   b. Cut in small pieces depending on use

RIGHT SELECTION AND STORAGE OF FRUITS

Bananas – good, mature bananas are rounded, have no sharp edges. It can withstand only up to 14^{o}C storage.

Caimito – the green variety is sweeter than the purple ones. Choose slightly soft fruits (Hard caimito will not ripen). It can be stored at 7^{o}C temperature.

Mango – good mango of any variety has full "cheeks" and slightly yellow at the base (near the stem). Avoid sick, bruised mangoes or those with hard lumps. Keep in a cold place.

Melon – mature melon is sweet. The peel is yellow and a little soft near the stem. It cannot stand very cold temperature. Immature ones are not sweet and will not ripen.

Papaya – good papaya has streaks of yellow at the base and has deep lines lengthwise. It can be stored at 10^{o}C.

Watermelon – mature fruits are whitish to yellowish; it gives off a dull sound when knocked (filliped) with the thumb and index finger. They will not ripen and are not sweet. It can be stored at 5^{o}C.

From:
Agricultural & Industrial

Life, 1990

EXTEND THE STORAGE LIFE OF CORN

Weevils and mildew are the usual enemies of corn in storage. The grains attacked by these do not germinate.

One way of extending the storage life of corn is by:

1. Drying the grains of corn until moisture is reduced to 10%.
2. Put them in a can (5-gal. capacity) without leaks or hole.
3. Dry about 2 kilos charcoal (up to 4%-5% moisture) and pulverize.
4. Place the powdered charcoal at the bottom of the can; put a cardboard perforated with holes on top of the charcoal.
5. Put the grains of corn on the cardboard. They can accommodate about 6 kilos grains.
6. Close the can and seal with glue around the cover to keep air from entering and thus damage the grains.

To prepare glue:

Put 1 part pomade or grease in
1 part powdered clay or lime

If there are weevils present in the grains inside the can, the carbon dioxide that will emanate from the grains will kill them.

From:
PCARRD Farmnews
October 31, 1985

EXTEND THE STORAGE LIFE OF RICE

Rice can be stored without using pesticides. Instead, carbon dioxide which is not poison, is used as fugimant. Pesticides don't really control the insects in the rice sack as the spraying does not penetrate the interior of the sack. Thus, the pests in the middle part of the sack can keep on multiplying. And pesticides leave residues that are harmful to humans.

Procedure:

1. Pack carbon dioxide in a plastic bag and seal.
2. Put this bag in the sack of rice. Rice can be stored for as long as 15 months and still retain its good quality.

From:
PCARRD Farmnews
December 1988