

For more information, write or call:

TECHNOLOGICAL SERVICES DIVISION

Industrial Technology Development Institute (ITDI-DOST)

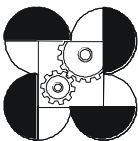
Telefax: 837-2071 loc. 2265 / 837-6156

e-mail: tsd@itdi.dost.gov.ph

ISSN 1656 – 6831

Livelihood Technology Series 2

VEGETABLE PROCESSING



Department of Science and Technology

INDUSTRIAL TECHNOLOGY DEVELOPMENT INSTITUTE

DOST Compound, General Santos Avenue

Bicutan, Taguig City, Metro Manila, PHILIPPINES

<http://www.itdi.dost.gov.ph>

‘Our Business is Industry...’

3rd edition 2013

Prepared by: **ELNILA C. ZALAMEDA**
TSD-ITDI

Ma. ELSA M. FALCO
FPD-ITDI

Edited by: **VIOLETA B. CONOZA**
TSD-ITDI

Cover layout by: **LUZMIN R. ESTEBAN**
TSD-ITDI

Adviser: **NELIA ELISA C. FLORENDO**
TSD-ITDI

ACKNOWLEDGEMENT

This brochure was made possible through the research efforts of the Food Processing Division (FPD), ITDI-DOST.

VEGETABLE PROCESSING

INTRODUCTION

Vegetables make up a major portion of the Filipino meal. Most herbaceous plants are served as viands. They also make good desserts and appetizers when processed into sweets or jams and pickles. They are dried for longer shelf-life particularly during peak seasons.

Contained in this brochure are simple processing techniques for various vegetable products.

SAYOTE-PIÑA JAM

1. Peel the *sayote* and slice into thin strips.
2. Peel rare ripe pineapple, remove eyes and chop finely. Crush the fruit (piña in cans can be used as substitute for fresh ones).
3. Mix one part of sliced *sayote* to one part crushed pineapple.
4. Add $\frac{3}{4}$ cups refined sugar for every cup of mixture, $1\frac{1}{2}$ tsp *kalamansi* juice for every 4 cups of *sayote-piña* mixture, and stir thoroughly.
5. Boil in a kettle with constant stirring until the mixture is thick.
6. Hot-pack in bottles and seal immediately.

EGGPLANT JAM

1. Boil the eggplant, peel then mash.
2. Add $1\frac{1}{2}$ cups refined sugar to $\frac{3}{4}$ cups mashed eggplant. Put vanilla flavoring and 1 tbsp *kalamansi* juice for every cup of mashed eggplant.
3. Add enough food color just to retain the color of eggplant.
4. Cook for 30 minutes until right consistency of jam (when it can be scooped out) is attained.
5. Hot-pack in bottles. Cool and store.

MIXED VEGETABLE PICKLES

Materials Needed

green papaya	cucumber (jerkins)	string beans
carrot	winged bean	salt
<i>singkamas</i>	red & green pepper	sugar
small onions	cauliflower	vinegar
		alum

Procedure

1. Wash vegetables very well, peel and cut into desired sizes.
2. Wash again, drain and pack in previously sterilized culture jars.
3. Prepare the brine solution* just enough to cover the vegetables.
4. Measure the brine solution added to each jar. Pour the brine solution into jars with vegetables. Cover with plastic.
5. The following day, add salt (2½ tbsp salt/4 cups brine used). Add the same amount of salt for three (3) consecutive days.
6. Wash vegetables until desired saltiness is attained.
7. Drain and pack into culture jars.
8. Pour cooled (previously boiled) sweet-sour solution (sss)** , enough to cover the vegetables. Cover jars with plastic.

* Brine Solution:

Dissolve $\frac{1}{3}$ cup salt into 4 cups water. Boil, cool and strain. Add $\frac{1}{4}$ tsp alum and mix well.

** Sweet-Sour Solution (sss):

2/3 cup sugar
3 cup vinegar
1 cup water

Mix the above ingredients together, boil and cool.

9. Add sugar (5 tbsp sugar/4 cups sss used) the following day. Add same amount of sugar for three (3) consecutive days. It is necessary to add the sugar gradually at intervals for several days to allow the product to absorb it slowly to prevent shriveling.
10. Harvest mixed vegetables pickles.
 - a. Pack (well-arranged) in previously sterilized preserving jars.
 - b. Boil sweet-sour solution.
 - c. Pour hot sweet-sour solution previously strained through clean cloth into jars with pickled vegetables.
 - d. Remove air bubbles, seal and process.

CANNED MUSHROOM

The mushroom commonly used for canning is the *L. voluacea* species. It looks like a tiny umbrella and its cap is white, occasionally tinged with gray, smooth in texture. This is the most popular mushroom not only in the Philippines, but in the entire Southeast Asian Region. Its growth is well suited to the tropical climate. It is best harvested at button stage and this is approximately on the 11th to the 14th day after spawn planting into bed. These, however, have a relatively short shelf life due to its high moisture content (85 to 95%). To preserve the produce for longer period the best known method applied is canning with 2% brine as medium. The canned product retains its fresh quality and has a shelf life of one year.

The technology for the production of canned mushroom involves the following steps:

1. Sorting for sizes and to remove buttons that do not meet the right specifications for canning; i.e., too mature, too dark or spoiled.

2. Trimming which involves cutting off portions of stem that contain soil or dirt and rather tough.
3. Washing in running tap water to remove all sorts of adhering dirt and clean up the buttons.
4. The buttons are then blanched in boiling water for 3-5 minutes prior to filling into cans with 2% brine.
5. Exhausting of the half-sealed is done to remove all entrapped gases.
6. Sealing is done with the use of an automatic can sealer and this is followed by sterilization at 1-psi for 17 minutes.
7. Cooling under running tap water follows and then the cans are wiped dry and stored.

DRIED CARROTS

1. Wash fresh firm carrots, then peel by using vegetable peeler to obtain smoother surface.
2. Cut into cubes or according to desired sizes and shapes.
3. Steam-blanch for 2-3 minutes in a steamer.
4. Spread singly in wire trays and dry in a forced draft drier set at $60\pm 5^{\circ}\text{C}$ for at least 5-7 hours or until it feels dry (with the finger).
5. Pack in clean, dry bottles, seal immediately and store in a dry place.

DRIED POTATO

1. Select fresh potatoes and wash thoroughly to remove adhering dirt, then peel.
2. Slice or cube the peeled potatoes.

3. Dip in boiling water for 2 minutes, or steam-blanch for 4 minutes in a steamer.
4. Dry in a forced draft drier set at 60°C for 8 hours.
5. When thoroughly dry, allow to cool for a few minutes, then place in a dry container, and store in a dry place.

DRIED SNAP BEANS

1. Wash snap beans and remove unnecessary trimmings, then cut into desired sizes.
2. Steam-blanch for 5-8 minutes.
3. Place in a wire tray and dry in a forced draft drier at 68°–71°C for 5-6 hours.
4. Allow to cool then pack in a dry clean bottle and seal. Store in a dry place.

DRIED GINGER

1. Wash fresh whole ginger and peel by scraping off the skin with a knife.
2. Slice into $\frac{1}{8}$ -inch thick pieces.
3. Dip in 0.1% metabisulfate solution (1 – 1¼ tsp powder of sodium metabisulfate per liter of water) for 5-10 minutes.
4. Spread singly on wire trays, then dry in a forced draft oven at 63°–66°C until the slices are crisp and dry.
5. Pack in air-tight sterilized bottles and store in a dry place.

DRIED SINGKAMAS

1. Wash the *singkamas* thoroughly to remove surface dirt. Peel the *singkamas* and cut into thin slices.
2. Place the sliced *singkamas* in cloth bag and dip for 3 minutes in a boiling brine solution (prepared by mixing 1 cup coarse salt to 12 cups water).
3. Spread the slices in single layer on the tray and dry in a forced draft drier set at 60°C for 7 hours or under the sun.
4. Place dried *singkamas* in a covered container and store in dry place.
5. To use, soak the dried *singkamas* overnight before cooking.

DRIED CABBAGE

1. Wash the cabbage thoroughly in running water to remove surface dirt.
2. Remove outer leaves, cut into quarters and remove the core.
3. Shred $\frac{1}{8}$ -inch thick, then steam-blanch for 5-8 minutes.
4. Spread singly in wire trays, then dry in forced draft drier at 66°C for 7-8 hours or until the cabbage is dry and looks rough and leathery.
5. Pack in clean, dry containers and seal immediately and store in a dry place.

DRIED ONIONS

1. Peel the onions and slice into $\frac{1}{8}$ -inch thick pieces.
2. Prepare 3% salt solution and dip the sliced onions for 2 hours.
3. Dry in a forced draft drier at 60°C for at least 7-8 hours.
4. Allow it to cool then pack in a dry container. Seal tightly.

DRIED STRING BEANS

1. Wash string beans and remove unnecessary trimmings. Cut into desired sizes.
2. Steam-blanch for 5-8 minutes.
3. Spread singly on wire trays and dry in a forced draft drier at 71°C until the beans become brittle.
4. Pack in clean, dry plastics or cans and seal at once. Store in a cool, dry place.