



PINEAPPLE JAM

Sri Lanka has two varieties of pineapple, Kewpine and Mauritius. Kewpine is the cooking pineapple, the fruits are larger and they give a better yield of juice. However, the flavour is not as good as the Mauritius variety which being sweeter is usually eaten fresh. We found that the Mauritius variety made a better jam (a better set, flavour and colour). The pulp from pineapple varies (core included) from pH 3.4-4.1. This means that, to give a jam with a good set the recipe has to be adjusted each time new pulp is used. The yield from whole fruit to usable fruit pulp from Mauritius is approximately 30% and for Kewpine 35%. Pineapple contains little or no pectin so pectin must be added when making jam. Pineapples contain the enzyme bromelain, which is a proteolytic enzyme (breaks down proteins). This can cause problems for operators' hands which are in contact with the juice for long periods during cutting operations, gloves should therefore be worn and washed each day. To make 200 x 1lb jars of pineapple jam requires approximately 62kg of sugar and 158kg of fresh pineapple.

Recipe

Sugar	38%	
Fruit pulp	49%	(starting recipe
Pectin (grade unknown)	1 %	before boiling)
Water	12%	
Citric acid	Added as required	

In most countries, preservative is not allowed to be added to the jam. Only a residue of preservative is allowed in jam made from fruit pulp that has been stored with chemical preservatives, (100ppm sulphur dioxide or 500ppm benzoic acid). Citric acid is not a preservative, it is added to adjust the pH. Jams give a gel when there is the correct ratio of pectin to water and the pH is between 2.5-3.45. The optimum pH to give a good gel is pH 3.0.

Method

Remove stalks and tops from fruits, cut off the outer cortex and pick out the 'eyes'. Cut the fruit into pieces, discarding any bad fruit.

Make the pieces into fruit pulp by liquidising, or passing through a Kenwood colander/sieve (large aperture). Liquidising the pieces gives a fruit pulp with a 'chunky' texture but contains a lot of pith and hard pieces. Using the colander/sieve will give a fruit pulp of a smooth consistency, which is good for making pineapple jelly. The residue that does not pass through the colander/sieve can be put into a muslin cloth and the juice squeezed out to get the maximum extraction of fruit pulp. The yield of fruit pulp from whole fruit is 30% (colander/sieve), 35% (liquidiser).

Adjust the pH of the fruit pulp by adding citric acid until it is pH 3.0. This can be measured with a pH meter, or less accurately with pH paper, (using Whatmans pH paper 1-5 pH range, the colour of the juice effects the result, so that a reading 2.5 pH is in fact 3.0 pH). Mix the pectin with a small portion of the sugar. The dry mixing of the pectin is important because pectin powder is very difficult to dissolve in water because it clumps together. If it is still a problem to dissolve, grind the sugar to a fine powder and then mix it with the pectin.

Mix the water, fruit pulp, and the remaining sugar in a stainless steel saucepan and start to boil. When nearing the 'end point' the dry mix of pectin and sugar is added. (The pectin should not be heated for longer than necessary because it will be broken down and then the jam will not set).

Jam should not be boiled for more than 12-15 minutes otherwise this can give rise to caramel flavours, over-sweetness and discoloration, apart from being a waste of energy. By reducing the amount of water in the starting recipe, the boiling time can be reduced.

The 'end point' is reached when the total soluble solids is up to 70%, this is measured with a refractometer. (In most countries the legal minimum sugar levels in jam, are 65% for jam in hermetically sealed jars, and 68.5% for jam in non air tight containers). 70% gives a safety factor. Jam with over 70% sugar can give problems during storage, as sugar will recrystallise out into large chunks. The 'end point' is usually reached around 106-108°C (depending on barometric pressure and height above sea level). When the jam has nearly reached this temperature samples are taken and tested on a refractometer, the sample must be cooled before being measured. This can be done by smearing on a cold dry plate or saucepan lid. All implements used to take the sample must be dry otherwise the reading will be reduced. It is important to stir the jam at all times otherwise burning will occur at the bottom of the saucepan, causing off flavours and discoloration.

When the 'end point' has been reached the jam should be filled into jars which have been cleaned and then steamed to sterilise them, and are still hot so that they do not crack. The jars should be filled as quickly as possible so that the jam is not heated for longer than necessary, or recontaminated because it has cooled down before the jars are sealed. The lip of the jar should be clean and dry (wipe with clean tissue paper) before placing the lid on it. The filled jars can be placed in water to cool down the jam so that it does not keep cooking in the jar, the water level should be kept below the lid of the jars.

Equipment list

- Jars, omnia lids, and labels
- Omnia capper
- Cooking facilities, gas ring, electric ring, etc
- Stainless steel saucepan
- Thermometer in protective jacket
- Stainless steel cutting knife and spoon
- Wooden spoon for stirring
- Refractometer
- Steam generator (optional)
- Cutting board
- Scales
- Measuring cylinder
- Funnel
- Liquidizer
- Muslin cloth

technical brief

Useful addresses and contacts

Note: This is a selective list of suppliers and does not imply endorsement by Practical Action

Kenwood Limited
New Lane
Havant
Hampshire
PO9 2NH
United Kingdom
Tel: +44 (0) 23 9247 6000
Fax: +44 (0) 23 9239 2400
Website: <http://www.kenwood.co.uk/>
Manufacture: Kenwood Chef, etc. Worldwide distribution

Bellingham + Stanley Ltd.
Longfield Road, North Farm Industrial Estate
Tunbridge Wells, Kent TN2 3EY
United Kingdom
Tel: +44 1892 500400
Fax: +44 1892 543115
E-mail: sales@bs-ltd.com
Website: <http://www.bs-ltd.com/>
Refractometers

Further Reading

Practical Action Technical Briefs:

[Passion fruit jam](#)
[Lime marmalade](#)
[Jams, jellies and marmalades](#)
[Strawberry jam](#)
[Watermelon jelly](#)
[Food labelling](#)
[Fruit waste utilisation](#)
[Juices and Drinks](#)
[Snack Foods](#)

[Technical manual on small-scale processing of fruits and vegetables](#), Food and Agriculture Organization of the United Nations (FAO)

[Setting up and Running a Small Fruit or Vegetable Processing Enterprise: Opportunities in Food Processing](#) CTA

[Starting a Small Food Processing Enterprise](#) by Peter Fellows, Ernesto Franco & Walter Rios
Practical Action Publishing/CTA 1996

[Small Scale Food Processing](#) 2nd Ed. P Fellows & S Azam Ali, Practical Action Publishing, 2003

[Fruit and Vegetable Processing](#) UNIFEM Practical Action Publishing, 1993

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