

Fruit bottling, jams, pickles & chutneys : what goes wrong- and points to watch / Stork Margarine Cookery Service.

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Why does jam go mouldy? The chief reason for jam going mouldy is because the amount of sugar used is not sufficiently high to inhibit or stop mould growth. In other words, the proportions of sugar to fruit and water are not correct.

The second chief cause is mould developing after the jam has been made, through contact with air, or jars not being thoroughly clean, or not tying the jam down properly and therefore letting air in. Jam should therefore be tied down immediately after filling the jars, and care taken to make sure your jam-pot covers render the jar airtight.

Mould will also grow easily in a damp atmosphere, and this can happen if the jam is stored in a damp place, e.g., a kitchen cupboard which may be affected by kitchen cooking. This dampness will weaken your cover, make it moist, and so eventually result in mould growth.

The average mould on jam is harmless. The jam can be eaten, providing the affected parts are thrown away.

Saccharine, Golden Syrup, etc.: We do not consider these products are suitable for jam-making. Saccharine only sweetens and does not help a jam to set as sugar does. Syrup is not all sugar, but contains some other properties, and therefore does not completely replace sugar.

PICKLES, CHUTNEYS AND SAUCES

Not so many things go wrong with this type of preserve, chiefly because they all need vinegar, which is a preservative, so we will deal with the queries we have had from housewives.

Cooking: Do all cooking with the lid off the saucepan, as the surplus water must evaporate the same as for jam-making.

Consistency of Chutneys: Chutneys should not be runny, neither should there be a separation of the vinegar. The liquid part of chutney should be thick and pulpy, but pourable. If vinegar separates and you get a layer of vinegar on top of some thin "runny" liquid, not enough water has been evaporated during the cooking of the vegetables or fruits. Cook slowly and longer than the time stated if the mixture still appears watery. This is because the water content of vegetables varies, such as tomatoes and marrows. Another reason for separation is that the vegetables and fruits have been cooked too quickly. This would harden them, and harder portions would never completely mingle with the mix.

PICKLES: The same rules apply to pickles, but additionally pickles are sometimes too dry—that is, not enough liquid for the vegetables. If this happens, add a little more vinegar during the latter part of the cooking time, so that you have enough liquid to cover all the vegetables when they are placed into jars.

EASY GUIDE TO MEASURING SMALL QUANTITIES

Pickles, chutneys and sauces often need very small quantities of spices or flavourings, and without scales, and very accurate small measurement scales, it is difficult to guess the correct amounts to use.

Here is our easy guide:—

NOTE: "Heaped" means as much above as in the bowl of the spoon. "Level" means the bowl of a spoon filled only, and the contents level with the edges of the spoon.

	1 oz.	¼ oz.
Allspice, whole ...	4 level dessertspoons	1 level dessertspoon
Chillies, whole ...	5 heaped tablespoons	2 heaped teaspoons
Cinnamon, powdered ...	2 " dessertspoons	1 " teaspoon
Citric Acid ...	—	3 level teaspoons
Gloves ...	2 heaped tablespoons	1 heaped teaspoon
Curry Powder ...	2 " tablespoons	1 " teaspoon
Ginger, powdered ...	6 " teaspoons	1 level dessertspoon
Ginger, root... ..	12 average pieces	3 average pieces
Mace, powdered ...	3 level tablespoons	1 heaped teaspoon
Mustard, powdered ...	1 heaped tablespoon	1 " teaspoon
Nutmeg, ground ...	1 " tablespoon	1 " teaspoon
Pepper or Cayenne Pepper	2 " dessertspoons	1 " teaspoon
Peppercorns, whole ...	2 level tablespoons	1 " teaspoon
Salt	1 heaped dessertspoon	1 level teaspoon
Sugar, Granulated ...	1 " tablespoon	—
Syrup, Golden	1 level tablespoon	—
Turmeric, powdered ...	2 heaped dessertspoons	1 heaped teaspoon



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 to help solve your present-day cooking problems.

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STORK MARGARINE COOKERY SERVICE

COOKERY NOTES No. 54

JUNE, 1944

FRUIT BOTTLING, JAMS, PICKLES & CHUTNEYS WHAT GOES WRONG—AND POINTS TO WATCH

When do we miss the lack of fresh fruit? During the winter and early spring months, of course, so we should plan to use our bottled fruit during that time. Jam is needed, too, all the year round, and so are pickles, chutneys and sauces. All these different ways of preserving have to be done when the fruit and vegetables are available, so it is essential that they keep well to give us a supply until the following year.

There are many easy ways and short cuts to the established methods, and often the results will keep for a short time, but most of us want to feel confident that our fruit bottling, our jams and pickles will keep in perfect condition for several months, and the best way of doing this is to know the cause of failures. In this leaflet we are going to deal with "things which go wrong" and how to avoid them, and we point out all these tips to watch to make sure your bottling, jams, etc., will keep.

Detailed recipes were given in the following Cookery Notes:—
 No. 28a—Bottling Summer Fruits and Vegetables for Winter Use.
 No. 42—Jams.
 No. 43—Pickles, Chutneys and Sauces.
 No. 44—Tomato Bottling and Cookery.

FRUIT BOTTLING

The technical name for bottling is "sterilisation," which is why we refer to sterilising by the water method or sterilising by the oven method. First we must understand why fruit has to be sterilised in order to keep it. We know that as soon as fresh fruit ripens it will go bad within a fairly short time. This is because all fruit contains hidden growths, or bacteria, as they are called, and, in turn, this bacteria increases and produces seeds or spores. In bottling, none of the usual preservatives is used, or used in any quantity, such as sugar, salt, or vinegar, so this bacteria must be killed by sterilisation. Sterilisation means subjecting the fruit to a certain heat, then maintaining this heat, in order to achieve the following:—

- (1) Killing hidden growths by bringing the fruit up to a certain heat (see Temperature Chart in Cookery Notes No. 28a).
- (2) Maintaining the fruit at this heat for the correct length of time in order to destroy seeds or spores.
- (3) Preventing any further trouble developing by making the jars completely airtight, and doing this immediately the sterilisation process is finished.

If these three processes are not done properly, the hidden growths or bacteria will produce fermentation and cause the bottled fruit to go bad, in the same way as we know happens to fresh fruit after it has ripened.

Uncooked fruit is always sterilised, but there is some doubt about what to do when dealing with fruit juice, puree, pulped or stewed fruit. First we will describe them:—

Fruit or Tomato Juice: The fruit is covered with water and cooked gently until it is soft. It is then allowed to drip through a fine sieve or muslin overnight, in order to obtain the clear fruit juice, and the extract is ready for bottling.

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Purée: The fruit is covered with water and cooked gently until soft, and then pressed through a sieve, so that only pieces of skin or pits or cores are left. The purée is then ready for bottling.

Pulp or Stewed Fruit: The pulp left over from making fruit juice, and also a clear jelly, such as apple or crab-apple jelly, can be bottled and used for puddings, etc. Also the good parts of windfalls, etc., can be stewed in a little water until soft, and bottled in the same way.

It will be seen that the fruit for all these types of preserves has only been cooked for a comparatively short time—10-30 minutes. If it is intended to use these preserves up fairly quickly, a quick bottling method is to bring the final juice, purée or stewed fruit to the boil, warm some jars, and pour the bubbling hot fruit into the jars, immediately affix the rubber bands, clip or screw tops, and leave to cool. When cold, test for sealing in the usual way, and if any have not sealed the jars must then be sterilised like uncooked fruit.

From experience, the Cookery Service has found that fruit purée, etc., bottled in this way without sterilisation will not keep for long, and we recommend, for long keeping, sterilisation at the start. It is then not necessary to boil the fruit extracts again, but after sieving or stewing fill up the jars and follow the usual instructions.

If you use the oven method, only fill up about two-thirds of the jar, otherwise the liquid will boil over. Then, when the sterilising is finished, fill up the jars to the top from a spare one. For instance, 4 jars, each two-thirds filled, would make 3 completely filled jars.

General—Sterilising times and temperatures: The principle to apply to all fruit bottling, whether by the water method or in the oven, is not to hurry it. Follow the times and temperatures given in Cookery Notes No. 28a.

Filling jars, water method: To avoid air bubbles and having jars not completely filled when sterilised, fill them this way. Put in fruit up to one-third of the jar, then cover with water, add some more fruit, again cover with water and continue in this way until jar is full. The fruit should come within 1 inch of the top, and then the water should completely cover the fruit. Also use the end of a wooden spoon or a smooth piece of wood to arrange the fruit, so that large gaps are not left. This must be done gently, otherwise the fruit will be bruised.

Saucepan lids, on or off—water method: Some people use buckets for taking the larger sized bottles, or saucepans are used which are not deep enough to take the jars, and then put the lid on. The Cookery Service is of the opinion that it does not affect the sterilising whether a lid is used or not, but it does affect the fuel consumption, because if the steam escapes it takes longer for the water to heat. Therefore, always try and put on the saucepan lid, or rest a piece of wood or other big cover on the top if a bucket is used.

Depth of water—water method: It is recommended that jars should be covered entirely with water, and certainly only the neck of the jar which contains no fruit or liquid should be left out of the water. In other words, the entire contents, fruit as well as liquid, must be covered by the water, otherwise you will not be sterilising the fruit properly.

Temperature of water—water method: The water in which jars of fruit are sterilised should never reach boiling point. Boiling point is 212° F., whereas fruit should be sterilised at heats varying from 185° F. to 190° F., or approximately at simmering point. If you do not possess a cooking thermometer, a guide to this heat is when bubbles start appearing at the sides of the saucepan, breaking very gently, whereas boiling point is when large bubbles appear all over the surface, bursting in quick succession.

Temperature of oven: The average time for oven bottling fruit is 1-1 1/2 hours, with the exception of tomatoes, which need 1 1/2 hours, but be sure the time is reckoned from when the oven has reached the heat required. Therefore, turn on your oven first, and then put in your jars when the oven temperature is correct, and then start your timing.

Remember the rule—a very moderate oven for fruit bottling (Regulo Mark 4-1, or No. 1-2 if your oven heat starts at No. 1, or 250° F.). Too hot an oven will also overcook the fruit and make it lose shape, and cause it to rise to the top when the boiling water is poured on. This is because the fruit is full of steam, which will make it float. This is not important, and the fruit will sink again as the liquid cools.

Fruit rising to the top, after jars have cooled: Providing the jar has sealed well this fault is not important. It invariably occurs when the fruit has skins, such as plums, greengages, tomatoes, and rarely happens with the berry type of fruit like blackberries, raspberries, etc. The reason is that there is very slight fermentation in the fruit. This produces a gas which is just sufficient to make the fruit lighter than the water, and therefore rise. A way to overcome this is to prick the fruit with a knitting needle, or make a cut with a knife, before bottling. This lets the gas escape from the fruit into the liquid, when it will rise

to the top of the jar and be rendered harmless. Watch jars of fruit when the fruit continues to stay at the top, and use these first.

Fruit bottled in syrup (that is, sugar and water mixture instead of plain water) is also inclined to rise in the jar, and in this case the cause may be due to the presence of the sugar in addition to the above reason. When the sugar causes it, the reason is because the liquid in the jar has a higher concentration of sugar than the liquid or juice inside the fruit.

Screw-band jars—water method: Tighten the screw band immediately the jars are removed from the water, and give them another tightening up as they cool. Use a duster or gloves, as the jars will be very hot.

Storing Bottled Fruit: Store in a dry cool atmosphere and not where sunlight can penetrate. Inspect the jars at intervals, particularly during the first 7-10 days.

Clip-top jars: Do not leave the clips on, as the long strain will weaken them and render them unsuitable for further use.

Screw-band jars: Trouble is sometimes experienced in removing the metal screw band which covers the glass top of this type of jar. This is easily avoided. When the jar has been tested for sealing, and the metal screw band is put on again, do NOT screw it down tightly. It is not necessary, because it is not the screw band which keeps the jar airtight; that has already been done by the sealing of the glass top and rubber band.

Re-sterilising Failures: We are prompted to advise—don't! And if you have only an odd jar out of several which has failed to seal, we do recommend that the fruit is used straight away, as it is not worth the fuel to sterilise it again, unless you are using your oven for some other purpose or you have more fruit ready to sterilise by the water method.

If you do have a second try, empty the fruit into another jar and use another rubber band and screw or clip top, because the fault is most likely to be a weakness in these utensils, providing you have followed all the correct instructions.

When re-sterilising by the oven method, use the same oven heat again and keep in the oven the same length of time, but pour off one-third of the juice first to stop it boiling over. Then boil up this juice and use for filling up the jars again when they are ready. Have a kettle of boiling water ready, too, in case a little more liquid is needed.

We recommend that re-sterilising is best done by the water method, as the second cooking does not seem to overcook the fruit so much as a second time in the oven.

Mould and fermentation: These are two distinct troubles; mould generally develops on top of the fruit, whereas fermentation affects the whole jar. A little mould is not harmful. The fruit should be used directly the mould is noticed, just throwing away the affected parts, providing the remainder of the fruit has no unpleasant taste.

Fermentation is more serious and, depending on the type, may be dangerous, and means that some form of bacteria is still present in the liquid or in the fruit which has not been killed by the sterilising process. The signs, which usually appear about a week after bottling, are discoloration, small bubbles all over the fruit, and a pronounced taste like wine or vinegar. If the fermentation is very active, producing a kind of gas, it will blow off the jar lid, and has been known to explode the complete jar. It is recommended that fruit affected by fermentation should not be used.

Tomatoes: More people have trouble with bottled tomatoes than anything else, so special care should be taken. Tomatoes need a longer period of sterilisation than most fruits, and although this is generally

made clear in the times and temperatures given for the water method, it is not always realised that tomatoes should stay in the oven longer when that method is used. We have not stressed this point ourselves previously, and are taking this opportunity of doing so.

Golden Syrup for sweetening the liquid: Golden Syrup can be used to replace sugar, if fruit is bottled in sweetened liquid, but more Golden Syrup must be used than sugar to get the same degree of sweetness. For instance, if you use 4 ozs. of sugar to 1 pint of water, you will need 6 1/2 ozs. of Golden Syrup to 1 pint of water, or 1 lb. Golden Syrup to 2 1/2 pints water. The same process should be followed as when sugar is used, i.e., dissolve the Golden Syrup in the water, and when it has completely melted bring to the boil, boil for 3 minutes, then strain through muslin before using. This solution should be cooled before adding to fruit sterilised by the water method, but should be poured over the fruit while boiling hot for the oven method.

No other substitute for sugar is recommended except Golden Syrup. **Vegetables:** We are again repeating the Ministry of Food's warning that it is not safe to bottle vegetables unless a Pressure Cooker is used.

JAM-MAKING

Making: There are four golden rules for jam-making if you want it to keep well:

- (1) Do not economise in sugar, but use the amount stated in your recipe, as it is better to make less good jam than a lot which may not keep. Some jams are satisfactory using 1 lb. sugar to 1 lb. fruit, 1 1/2 lb. sugar to 1 lb. fruit also is generally satisfactory if the jam is to be eaten fairly soon, but if in doubt use 1 lb. sugar to 1 lb. fruit.
- (2) Use dry, good quality fruit, which is not over-ripe.
- (3) Do not hurry the first part of jam-making—the cooking of the fruit. Too great a heat hardens the fruit or makes it too mushy. Use always a fairly low heat, stir occasionally, and cook the fruit gently before adding the sugar. (See later notes also on why fruit rises.)
- (4) After sugar has been added, do not leave the stove. Stir the jam occasionally as the sugar melts, then, when the jam bubbles, do not leave off stirring until it is finished. This is important these days when saucepans are wearing and difficult to replace, and this stirring will help to prevent sticking and burning. For the final stage the jam should boil fairly fast, but not so fast that the bubbles spit and splash the stove. Too fast boiling darkens the jam, is wasteful, as too much jam evaporates, and the final jam will go "sugary."

Clivic or Tartaric Acid: These acids help a jam to set, and are useful to add to the poor-setting fruits, particularly strawberries or rhubarb. Add 1 level teaspoonful to each 4 lbs. of fruit. A word of warning, however. These acids are in fairly short supply, and if they cannot be obtained do not try and make jam from the poor-setters alone, but mix them with other fruits as recommended in Cookery Notes No. 42.

Lemon Juice: It is doubtful whether any lemons will be available by the time we are thinking of jam-making, but, if there are any about, lemon juice is a very good aid to jam-setting. Use 1 tablespoonful of lemon juice to each 2 lbs. of fruit.

Why does fruit rise to the top of jam? Fruit will rise to the top if it has been hardened through too quick cooking in the early stages, or is hard because it was not cooked sufficiently in the early stages. The fruit, and particularly the skin to fruit, must be softened sufficiently so that when the sugar is added and melted the liquid sugar can penetrate evenly into the fruit. If this happens, the juice inside the fruit will contain as much sugar as the liquid, but if the fruit contains less sugar than the surrounding liquid it will be lighter and will rise. **Testing for setting:** When the mixture ceases to drop from the spoon like water but is a little thicker and syrupy, make your first test. First lower the heat so that the jam is left just gently simmering. Put a spoonful on a cold saucer and stand in a cool place. In a few minutes (about 5) tilt the saucer, and if the jam wrinkles it is ready. If it still remains quite smooth and liquid as you tilt the saucer and moves easily, it wants more cooking. Raise the heat again, and boil fairly fast for another 5 minutes, and test again.

Always lower the heat while waiting the result of each test, otherwise if the jam is ready, and you leave it boiling fast while the test sets, the jam will be over-boiled.

Lids Off: If you use a saucepan, all jam-making is done with the lid off; this enables the surplus water to evaporate.

Do not overcook pans: Do not fill pans more than half-full, but give the jam space in which to rise after the sugar has dissolved.

Storing: Store jam in a dry but cool cupboard.

COUPON

Send this coupon in an unsealed 1d.-stamped envelope to The Margarine Cookery Service, Unilever House, London, E.C.4. If you want copies of the following Cookery Notes:—

- No. 28a—Bottling Summer Fruits and Vegetables for Winter Use.
- No. 42—Jams.
- No. 43—Pickles, Chutneys and Sauces.
- No. 44—Tomato Bottling and Cookery.

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* Please cross out Cookery Notes NOT wanted.