

Preserving Fruit at Home

Preserving helps you make the most of your harvest or seasonal produce in markets, reduce waste and improve your household's resilience. But preserving also takes effort, energy and equipment, so it's important to choose simple, low-tech methods wherever possible. In Melbourne you can design your garden for year round harvest and use fresh fruit, or store fruit whole – avoiding the need to preserve altogether!

Bottling

A word on safety

Identify your preserving agent (e.g. salt, sugar, acid, temperature, removing air or water) and make sure there is enough of it to do the job. For example, a small amount of sugar as an ingredient does not necessary function as a preserving agent.



There are many types of spoilage organism, and correct preserving methods will prevent these. One of special concern is botulism, which is extremely rare but deadly, with no taste, smell or visual indicators. Botulism grows in low oxygen (e.g. bottled preserves, or produce under oil) and low acid environments, and is not destroyed by boiling. So to stay safe:

1. Only use foods that have enough acid (natural or added) when using low oxygen preserving methods
2. Use modern recipes from reliable sources and do not vary quantity or proportion of acidifying agents such as lemon juice, citric acid or vinegar
3. Use other methods like freezing, drying or pressure canning for very low acid fruits and vegetables

High acid fruits (pH <4.6)	Low acid fruits (close to pH 4.6)	Eg. Very low acid fruits (pH >5):
Apples	Pears (pH 3.5-4.6)	Figs (pH 5.05 - 5.98)
Berries	Apricots (pH 3.3 – 4.8)	Melon – honeydew (pH 6 - 6.67)
Cherries	Tomatoes (pH 4.3-4.9)	Mangoes (pH 5.8 - 6)
Peaches	Persimmons (pH 4.4 – 4.7)	
Plums		
Rhubarb		
No additional acid required	For safe preserving always add 2 tablespoons lemon juice or ½ teaspoon citric acid per litre.	These fruits are best preserved using other methods (or combined with other highly acid ingredients e.g. vinegar)

Other safety precautions

- Use only bottles and jars that are suitable for this method. Ensure they are clean and in perfect condition. Check rims for chips and replace dented, damaged and worn lids and rubber seals as needed.

- Heat bottles to the right temperature for the right time (NB: high altitude requires special adjustments - look these up)
- Sudden temperature changes will break glass. Cold fruit goes into cold bottles which go into cold water. Hot fruit goes into hot bottles which go into hot water. Pack bottles carefully with tea towels or cardboard so they don't knock together. Hot bottles should be placed on an insulated surface (e.g. towel, chopping board) not a cold benchtop.
- Be careful around hot ovens, glass and liquids. I highly recommend jar lifters with an insulated grip for safety.
- Mould, bulging lids, rising bubbles, off smells? Don't taste it! Discard and check your method.

METHOD 1: Cold pack bottling

Cold fresh fruit, cooled stewed fruit or juice is packed into unsterilised cold jars/bottles and capped with unsterilised lids. Jars are placed into a room temperature water bath that is brought up to temperature. When at a gentle boil, a timer is started for a prescribed time so that the jars and contents are sterilised together. Jars are removed and placed on an insulated surface. As the jars cool, the contents contract to form a vacuum seal.

For this method you can use a commercial preserving steriliser, or simply a stock pot with a rack in the base, as long as there is 2.5cm water circulating both under and on top of the bottles, and at least 5cm clear above this to avoid boiling water slopping out of the pot during processing. Pack the jars in carefully using tea towels or cardboard between them to avoid breakage during boiling.

Once the 'boiling water bath' is at temperature, start a timer. Technical references recommend 100C for approx 25 mins for most fruits, but I use a blanket rule of **45 mins processing time at a high simmer/very gentle boil (95-98C) for all small-medium jar sizes**. If unsure, check safe processing temperature and time for your chosen produce, jar size and altitude in a good technical reference, such as the NCHFP guide (see Resources below).

Cold pack bottling equipment

Jars and lids
 Acidic fruit
 Clean damp cloth
 Steriliser (commercial system OR large urn/ stockpot with rack in base)
 Teatowels or cardboard for packing
 Timer
 Jar lifter
 Wooden chopping board/towel
 Labels

In old recipes, a sugar syrup was used to fill air gaps around cold packed fresh fruit. At this concentration the sugar is not a preservative, but was added to maintain colour and texture and improve the flavour of fruit. Heating to create a vacuum seal is the preserving agent when bottling fruit, so it's safe to use water, fruit juice or a very light syrup of honey or sugar.

Cold pack bottling process

1. Inspect and clean jars/bottles and lids
2. Prepare produce and preserving liquid
3. Pour/pack produce tightly into jars/bottles, leaving 1.5cm headspace for expansion.
4. Wipe rim of jar with clean damp cloth if necessary. Screw on lid to finger tight.
5. Pack jars into steriliser using tea towels to separate to avoid breakage.
6. Fill steriliser with cold or warm water, 5cm over lids.
7. Turn on heat and bring to gentle boil.
8. When at temperature, start timer and process for 45 mins (or check times for your jar size in reference book)
9. Remove using jar lifter (or leave to cool in pot) and set on wooden board or tea towel. Avoid disturbing lids.
10. Monitor for 48 hours to check seals
11. Label and store in a cool, dark place

Hot pack bottling equipment

Acidic fruit
Oven and stovetop
Pot to fit produce
Jars and lids
Wide metal funnel to fit jars
Ladle
Bowl to fit lids
Clean damp cloth
Jar lifter and tongs
Wooden chopping board/towel x 2
Labels

METHOD 2: Hot pack bottling

Stewed fruit or juice is at a gentle boil on the stovetop. Jars/bottles are sterilised in a hot oven. Lids are sterilised in boiling water. The hot fruit is quickly ladled into hot sterilised jars and capped with a hot sterilised lid. As the jar cools, the content contract to form a vacuum seal.

NB: This method, also known as 'open kettle', is no longer recommended by the US National Centre for Home Food Preservation as there is a risk of spoilage using this method. For this reason you may prefer to use the cold pack method, or do a short boiling water bath as an extra step.

Hot pack bottling process

1. Inspect and clean jars/bottles and lids. Place in oven and set to 150C, keep lids separately in bowl on bench
2. Prepare fruit and bring to a high simmer/very gentle boil on stovetop
3. When jars/bottles and produce are at temp, lay out your equipment and pour boiling water through the funnel over the lids to cover

Then working quickly for steps 4-5:

4. Remove 1 or 2 jars at a time from the oven, placing on wooden board/teatowel. Insert funnel and test heat difference by dropping a tsp of hot fruit onto base. If rapid sizzle, wait a few moments for jar to cool slightly and test again. If no rapid sizzle, fill jar leaving 1cm headspace.
5. Wipe rim of jar with clean damp cloth if necessary. Screw on lid to finger tight
6. Move to second wooden board/teatowel. Avoid disturbing lids
7. Optional but technically recommended: process jars in boiling water bath
8. Monitor for 48 hours to check seals
9. Label and store in a cool, dark place

Bottled preserves will be safe as long as the temperature of the room stays below 35C, and will stay in good condition for at least a year. A cool and dark place between 10-20C will extend their quality. Which is the coolest room in your house? Do you have a room or cupboard on the southern side that stays cooler than your kitchen pantry? Be sure to clearly label your preserves and use the oldest first. I use masking tape for labels because it's cheap and leaves no sticky residue when removed.

For further bottling resources and recipes I recommend the National Centre for Home Food Preservation website (see Resources below). Canning is the US term for 'bottling'. In this workshop we have looked at 'boiling water canning'. Pressure canning is a different process involving special equipment.

Juicing

Very large quantities of fruit can be preserved by juicing. You can use a household juicer, a juicing press or a steam juicer. Juice can be stored for a week in fridge, frozen, or bottled for longer storage (see methods above). Remember to add acid for safety if you have made juice from low acid fruits.

Jam

Turning fruit into jam requires the perfect mix of fruit, sugar, acid, pectin and heat. Some fruits are low in acid and need to have lemon juice added. Some are low in pectin, which can be added by infusing citrus pips or with commercial jam setting sugar. Sugar is the preserving agent in jam and is also important for the jam to set, so reducing the sugar content of recipes will result in syrupy jam and affect storage life.

Pectin is highest in unripe fruit, so it's best so use just-ripe fruit or about a quarter of slightly underripe fruit to avoid runny jam. You can also blend fruits with high and low pectin together (eg. plum (high) and rhubarb (low)) or add apple juice. To add pectin, tie lemon pips in a muslin bag and add to the other ingredients – use a long string to remind you to remove it later! You can also use commercial jam setting sugar with added pectin, or Jamsetta. Some fruits that are low in acid will require added lemon juice to set.

Usually sufficient acid and pectin unless overripe	May require added acid or pectin	Always requires acid and pectin
Apples (sour) Quinces Blackberries (sour) Crabapples Lemon Grapefruit Blackcurrants Redcurrants	Apples (ripe) Blackberries (ripe) Cherries (sour) Grapefruit Loquats Oranges	Apricots Figs Peaches Pears Raspberries Strawberries
To increase acid, add 2 tablespoons lemon juice per kg fruit or ½ teaspoon of citric acid. To increase pectin add citrus pips in muslin bag or use jam setting sugar or Jamsetta.		

The best jam is made quickly! Aim to cook your jam at high temperatures in small batches – never more than 2kg combined fruit and sugar weight. This is because long, slow cooking or overboiling can reduce the gelling properties of pectin, and sugar can also begin to caramelize and affect flavour. Use a very wide, shallow heavy-based pan so that moisture can evaporate quickly.

Shocked by the amount of sugar it takes to make jam? A healthy alternative is to bottle your stewed fruit (with no sugar, or sweetener to taste if you prefer) and simply stir in chia seeds when the jar is opened. The chia seeds swell up and thicken the fruit to a spreadable ‘jammy’ consistency. Alternatively there are some (expensive) low sugar pectins available for purchase.

Sample Raspberry Jam Recipe

500g raspberries (fresh or frozen)

250-500g sugar (according to your preferences for firm set, sweetness, health etc)

half a lemon

Place a saucer in the freezer to chill. Place jars in oven at 130C to sterilise and pour boiling water over lids. Add raspberries and sugar to a wide, heavy-based pan. Add juice of lemon and add lemon pips tied up in muslin cloth. Stir together and bring to rolling boil. Use a pastry brush dipped in water to make sure all grains of sugar are dissolved from edges of pan and wooden spoon. Continue stirring for about 10 minutes then start testing for setting point. Pour into hot sterilised jars and seal. Makes 4-5 small jars

Drying

Drying/dehydrating fruit means removing moisture as quickly as possible to the point where mould cannot survive. It radically reduces the volume and weight and has a long shelf life.

Drying requires temperatures 40-70C and good airflow to draw moisture from the fruit before it goes mouldy. Electric dehydrators are the easiest option and are useful for autumn fruits when weather is cooling down. Some ovens can also function as dehydrators, usually with the door propped open. A low-tech option is to use a shadecloth screen on a corrugated iron roof in warm, sunny weather, however the trays will need to be moved indoors at night. There are also some excellent plans for more sophisticated DIY solar dehydrators on the web.



Slice your fruit to a standard thickness (5mm or less) for even drying. Fruits that discolour after slicing (e.g. apples) can be dipped in water with a little lemon juice or citric acid to avoid browning.

Drying can take anywhere from 24 hours at 60C in a commercial dehydrator/oven, to 3-4 days for opportunistic solar drying on a roof. Finished fruit should be leathery and tough – if in doubt give it a bit more time or it might go mouldy in storage. Dried foods can be tightly sealed and frozen for 2 days before longer storage to kill any insect eggs. Ensure package comes back to room temperature before opening to avoid condensation moisture absorption. Store dried fruit in airtight containers as they will re-absorb moisture from the air if left open.

Simple fruit leathers

1. Stew fruit with as little water as possible then puree. Some fruits with high water content (eg. berries) need to be mixed with another fruit (e.g. apple).
2. Line tray with parchment paper and pour a thin <5mm layer of puree across the tray
3. Dehydrate. When leather is firm enough to handle, carefully peel away parchment and turn over to finish drying
4. Cut into strips (or crazy shapes!) with scissors
5. Label and store in airtight jars in a cool, dark place

Freezing

Freezing needs no introduction! The quality of some vegetables is better if they are blanched before freezing to deactivate enzymes.

Resources and supplies

National Centre for Home Food Preservation guide: <https://nchfp.uga.edu>

Costante Imports (Preston), Bulleen Art and Garden (Bulleen – jars and lids), Fowlers Vacola (online), Cospak (Wantirna South - bulk jars and lids), Artisan's Bottega (West Melbourne)

Insta: @kat.lavers www.instagram.com/kat.lavers www.katlavers.com.au