Pickles and relishes

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Pickling is the practice of preserving fruits and vegetables in a vinegar and/or salt solution. It is one of the oldest methods of food preservation.

Home pickling is becoming popular again. People are discovering how easy pickles and relishes are to prepare and how delicious they are to eat. Homemade pickles provide that special touch for any meal or snack.

Pickles and relishes

Prepared by Food Advisory Division

TYPES OF PICKLES

Pickles are classified into four different types depending on the ingredients and method used.

Naturally fermented pickles (e.g. dill pickles, sauerkraut)

Vegetables are covered with salt or brine for an appropriate length of time. The salt concentration must inhibit spoilage microorganisms without retarding the development of acid-producing bacteria necessary for fermentation. Salt draws the juices and sugars from the food and, with the help of naturally present lactic acid bacteria, produces enough acid for both flavor and preservation.

Fresh-pack or quick-process pickles (e.g. bread and butter pickles, pickled beets)

Vegetables are often brined a short time (several hours or overnight) to firm up the tissues, then drained and covered with a boiling vinegar solution. Vinegar (acetic acid) rather than lactic acid (as in fermented pickles) is the main acid for preservation. The flavor of these pickles is produced by adding spices or by using special vinegars. Pickles of this type require much less preparation time than fermented pickles.

Fruit pickles (e.g. pickled peaches, pickled pears)

These pickles are made from whole or cut-up fruits simmered in a vinegar-spice-sugar syrup. They are bright in color, uniform in size and tender without being watery.

Relishes

Vegetable relishes Corn, pepper and similar relishes are made from finely chopped vegetables, vinegar, sugar and spices cooked to the desired thickness.

Chutneys Chutneys are made from coarsely chopped fruits or vegetables, vinegar, sugar and spices cooked to a jam-like consistency.

Sauces and catsups These are made from chopped fruits or vegetables, vinegar and sugar. If catsup is desired this mixture is then strained. Both are highly seasoned.

INGREDIENTS

Fruits and vegetables

Remember that perfect pickles need perfect fruits and vegetables. To ensure the best quality, keep the following in mind.

Ideally, fruits and vegetables should be pickled within 24 hours of gathering. If buying your produce, begin pickling right away. In either case, if you are delayed, refrigerate the fruits and vegetables or spread them on newspaper in a cool, well ventilated place until you are ready.

Choose young and tender vegetables.

Use fruits that are firm and ripe. Underripe fruit is not as sweet, nor is the natural flavor as well developed.

Never use vegetables or fruits with signs of mold or bruising. The off-flavor often produced by mold growth is hard to get rid of.

Use pickling cucumbers for making pickles. Salad variety cucumbers are larger, have thick skins and produce soft pickles with tough skins. The salad variety can be used in relish recipes. However, they should be peeled because of their skins and the wax coating that sometimes covers them.

Sort cucumbers for uniform size. Small ones are best for pickling whole, while larger ones should be cut in pieces for pickles and chopped for relishes.

Use ripe cucumbers in recipes intended especially for them. Ripe cucumbers are yellow and have large seeds.

Remove cucumber blossoms. They contain fungi or yeasts that can soften the cucumber.

Let green tomatoes ripen in a warm place away from direct sunlight. Do not use tomatoes just starting to turn red in recipes that call for green tomatoes.

Use small white onions rather than mature onions for pickling.

Green or sweet red peppers can be interchanged in recipes, since they are just different varieties.

Most varieties of pears should be cut in half for making pickled pears, except Seckel pears which are small enough to be left whole.

Wash fruits and vegetables thoroughly under running water or through several changes of water, using a brush if necessary to remove soil. Clinging soil may contain bacteria that are hard to destroy.

Do not allow produce to soak too long in water, as this loses flavor and nutrients.

Vinegar

Vinegar plays an important role in pickle making. It replaces the acid produced by the natural fermentation process. Enough acid is necessary to kill bacteria, yeasts and mold. On the other hand, there should not be too much acetic acid in the

vinegar, as this will sour the pickles. Two strengths of vinegar, containing 5 and 7% acetic acid, are available on the market. Recipes in this publication have been tested using the 5% strength. Never use homemade vinegars in pickling recipes because of their unknown quality and acidity.

Recipes are developed so that the product has the correct acidity to prevent the growth of microorganisms. Because of this, never dilute vinegar unless specified in the recipe. If a less sour pickle is preferred, add more sugar to the vinegar, rather than diluting or decreasing it.

When preparing a recipe, remember not to heat the pickling liquid before needed, as the vinegar loses strength with long boiling.

Distilled white vinegar is the most popular for pickling. It is colorless, mild flavored and made by distilling other vinegars. Use it when a clear bright color is desired. Other types of vinegar available on the market are cider vinegar made from apple juice, wine vinegar made from grapes and malt vinegar made from malted barley. These contribute their own color and flavor to the pickle. Do not use them with light colored foods such as onions and pears or distinctively flavored pickles such as dills.

Flavored vinegars are also available. They are made from white distilled vinegar. Some examples are apple cider-flavored vinegar and wine-flavored vinegar.

Salt

Salt acts both as a preservative and as a flavoring. Do not tamper with the amount of salt in a recipe. Not enough salt will cause the pickle to become soft; too much will make it tough and shrivelled.

The amount of salt used in recipes depends on the type of pickle. For fermented pickles a weak brine is used, allowing the rapid formation of lactic acid. With quick process pickles, a stronger brine is used to withdraw excess water from vegetables before vinegar is added.

A pure salt should be used for pickling; buy the type specifically labelled 'pickling salt'. Free-running table salt is treated with anti-caking agents and should not be used, as it will make the brine cloudy. Never use salts of unknown purity.

Sugar

Sugar draws out juices from fruits and vegetables, firming the tissues, and contributes to the preservation process. It also provides the sweetness in certain pickles and relishes.

Use white sugar unless the recipe calls for another type. Brown sugar is often used in relishes and chutneys to get a darker color.

Spices

Always use fresh spices as they give the best flavor; if kept too long they lose their pungency. Use whole spices since ground or powdered spices may cloud or darken

the pickling mixture. Tie them in a cheesecloth bag, making sure it is large enough to let vinegar easily boil through. Remember to remove the bag before filling the jars.

For flavor and decoration, try adding whole spices directly to your jar of pickles. Examples are red chillies in pickled onions, mustard or celery seed in relishes and cinnamon sticks or cloves in pickled fruit.

Premixed 'pickling spice' is available on the market. It is a blend of 4 to 16 of the spices commonly used in pickling. Examples are red pepper, coriander, dill seed and chopped bay leaf. Experiment to find the right combination for you. Be careful though; using too much spice or boiling it too long with the vinegar may result in dark and bitter pickles.

Water

Use soft water for pickling. Minerals dissolved in hard water can darken and soften pickles. When only hard water is available, boil it for 15 minutes and let it stand covered for 24 hours. Carefully skim off any scum that has formed on the surface. Ladle the water from the container, being careful not to disturb the sediment on the bottom. An alternative method, although expensive, is to use bottled distilled water.

EQUIPMENT

For fermenting or brining, use crocks, unchipped enamel-lined pans, large glass or stainless steel bowls. Never use plastic containers unless the manufacturer specifically states that they are suitable for foods. Opaque plastic may have fillers, which can be leached out by boiling water or acid. Fit a heavy dinner plate or wooden board inside the container, then put a weight (such as a glass jar or plastic bag filled with water) on top to submerge the vegetables in the brine. Cover the container as well.

Containers (e.g. sauce pan, dutch oven) used for heating pickling liquids must be made of unchipped enamel ware, stainless steel, aluminum or glass.

Equipment made of copper, iron, zinc or brass must never be used. These metals react with acid and salt, causing undesirable color and flavor changes. Copper may turn pickles a peculiar shade of green; iron may turn them black. More important is the possible formation of harmful compounds when these metals react with the acid and salt.

Many small utensils are useful in pickle making. These include large and small measures, colander or sieve, vegetable brush and peeler, stainless steel knives, kitchen scales, wide-mouthed funnel and ladle, large wooden or stainless steel spoon, food grinder or processor, and cheesecloth to make a spice bag.

PREPARATION OF CONTAINERS

Choose containers such as home canning jars, commercial glass jars, or crocks. Use canning jars for light-colored pickles such as pickled peaches, since they tend to discolor if packed in containers that are not airtight. If using commercial jars, make sure the lids are plastic or have a plastic coating on the inside. Pickles made in crocks can be stored in a cool place in the crock in which they were made. As with brining, fit a weighted plate or wooden board inside the crock, keeping the pickles submerged to prevent spoilage.

Sterilizing jars

Sterilize jars and glass lids by one of the following methods:

Oven Wash in hot, soapy water. Rinse well. Set jars and glass lids on the oven rack. Heat 10 minutes at 100°C. Remove from oven as needed.

Boiling water Wash in warm, soapy water. Rinse well. Invert jars in 4 to 5 cm of water. Cover lids with water. Bring water to a boil and let boil 15 minutes. Leave them in hot water until needed.

Dishwasher Jars and glass lids can be washed, rinsed and sterilized in the dishwasher. Make sure the dishwasher cycle is set on the highest water temperature.

Metal lids must also be sterilized. If home canning jars with metal lids are used, sterilize them according to the manufacturer's instructions. If using commercial jars, boil the lids for 5 minutes.

Filling jars

Place the hot sterilized jar on a folded towel or wire rack to avoid breakage. Pack pickles loosely enough in jars to let the liquid surround them. Fill jars to within 1 cm of the top. After filling, remove air bubbles by running a knife blade down the inside of the jar. Be sure to wipe the mouth of the jar with a clean cloth to remove any food particles.

Sealing home canning jars

Screw-top jar with metal lid After sterilization, place the metal lid on the jar and screw the metal band on tightly.

Screw-top jar with glass lid Dip the rubber ring in boiling water, place ring flat on the jar and put on the lid. Screw the metal band on tightly.

Spring-top jar Dip the rubber ring in boiling water, place ring flat on the jar and put on the glass lid. Put long wire bail into groove on lid. Push down lower bail.

Sealing commercial jars

Use paraffin to seal products having a jam-like consistency, such as chutneys, that can support the melted wax. Allow jars to cool slightly before sealing with paraffin. When ready, melt the paraffin in an old metal teapot or sterilized tin can, placed in a saucepan of water over low heat. Never heat paraffin over direct heat as it is flammable. Melt wax in small amounts as needed. Pour a thin layer of hot paraffin (about 2 mm thick) over the surface. Carefully rotate the jar so the wax seals all around the inside rim. Prick any air bubbles in the paraffin. After the first layer has hardened, pour a second layer of wax in the same manner as the first. Two thin layers of paraffin expand and contract more easily than one thick layer and ensure a better seal.

Closing commercial jars

Wipe the inside rim of the jar with a clean cloth and screw the lid on tightly.

STORAGE

It is important to do this last step correctly to have successful pickles and relishes later on. Keep the following in mind:

Store pickles and relishes in a dark, dry, cool (approximately 10°C) place. Good examples are a root cellar or against an outside wall in the basement. If such areas are not available, then store the products in a kitchen cupboard furthest away from any heat source. Too warm a storage area can lead to flavor deterioration, while too cold an area where there's a risk of freezing can cause jars to crack or spoil the product's texture. Light can change the product's color.

Uncooked pickles will have a better flavor if they are left to stand about 4 to 6 weeks before opening; cooked pickles such as chutneys can be eaten a few days after preparation.

After opening, pickles should be kept in a cool place with the pickling liquid covering the fruits or vegetables.

Most pickles can be stored 1 year.

SPOILAGE

Microorganisms are the principal causes of pickle spoilage. Acid-forming bacteria, responsible for the normal fermentation in dills and other fermented pickles, may spoil fresh-pack pickles. Some yeasts, by causing vigorous gas production, favor the formation of bloaters (hollow cucumbers). In fermented pickles, molds metabolize the lactic acid formed during the brining process and cause spoilage.

Prevent spoilage by avoiding the conditions that lead to it. Only use good quality ingredients. Wash fruits and vegetables carefully and never tamper with the proportion of ingredients in a recipe (with the exception of spices).

Be alert for signs of spoilage. A bulging lid or leaky jar may signal the contents are spoiled. When opening a jar, look for spoilage signs such as spurting liquid, mold, disagreeable odor, color, or pickles that are slimy or mushy.

If there is even the slightest indication of spoilage, do not taste the product. Flush entire contents down the toilet so people or animals can't eat it. Wash the jar in hot soapy water and rinse. Sterilize the jar for 15 minutes in boiling water so it can be reused.

PICKLE PROBLEMS

Unless otherwise specified, the following problem pickles are safe to eat. There will be changes, however, in their texture, flavor and odor.

Problem: Soft, slippery pickle. Safe to eat, but wash first.

Causes: Generally, the result of microbial action which causes spoilage; once a pickle becomes soft it cannot be made firm again.

- — Acid content was too low. Always use vinegar of known strength and never reduce the amount called for in the recipe.
- — Not enough salt in the brine, allowing abnormal fermentation and spoilage bacteria to develop.
- — Too much salt in the brine, hindering proper fermentation.
- — Cucumbers were not covered with brine during fermentation, allowing bacteria to grow.
- — Scum was not removed from brine during fermentation. It may contain mold, yeasts and bacteria that break down the vegetable and weaken the brine's acidity.
- — Blossoms were not removed from the cucumbers before fermentation. They contain fungi or yeasts responsible for enzymatic softening of pickles.
- — Produce was improperly washed.
- — Overripe cucumbers were used.
- — Moldy garlic or spices were used.
- — Storage temperature was too warm.

Problem: Hollow pickles

Causes:

- — Cucumbers were not properly developed. Check whole pickling cucumbers while washing. The hollow cucumbers usually float and can be used for relishes or "chunk" style pickles.
- — Too much time elapsed between gathering and pickling. Refrigerate or spread cucumbers out where they will be well ventilated and cool if pickling cannot begin immediately.
- — Too strong or too weak a brine during fermentation.
- — Temperature was too high during fermentation.

Problem: Shrivelled, tough pickles

Causes:
- — Too much time elapsed between gathering and pickling.
- — Too much salt, sugar or vinegar used at the beginning of pickling. For very sweet or very sour pickles, start with a dilute solution and increase gradually to the desired strength.
- — Produce was overcooked. Cook more slowly at a lower heat.

Problem: Darkened pickles

Causes:
- — Hydrogen sulfide produced by bacteria or chemicals in combination with iron produces a black compound, iron sulfide. For this reason iron utensils and hard water should never be used in pickling.
- — Pickles were not covered with liquid.
- — The growth of a black pigmented bacteria, *Bacillus nifricanus*, which is favored by the presence of sugar, a low nitrogen content of cucumbers and a neutral or slightly alkaline brine.
- — Iodized salt used instead of pickling salt.
- — Ground or loose spices.
- — Metal lids that have corroded.
- — Pickles stored in an area exposed to light.
- — Exposure to air. This causes a darkened layer near top of jar. Product is safe to eat if there are no signs of spoilage (e.g. spurting liquid, moving bubbles, mold, disagreeable odor, slimy or mushy pickles).

Problem: Dull or faded color

Causes:
- — Poor quality cucumbers.
- — Sunburned cucumbers.
- — Overripe cucumbers.

Problem: Cloudy brine or white sediment

Causes: Clouding is normal in naturally fermented pickles; a white sediment at the bottom of the jar is a harmless residue from fermentation. If this occurs with fresh pack pickles and the pickles are still firm, they are safe to eat. Causes of cloudiness in fresh pack or quick-process pickles are:
- — Too little vinegar.
- — Storage in a warm place.
- — Hard water.
- — Free-running salt. Only pickling salt should be used.

Problem: Ropy, slimy brine or pickles

Causes: Bacteria acting on the natural sugar in the vegetable. As long as there are no off odors, the pickles are safe to eat.

Problem: Bitter pickles

Causes:
— Too much spice.
— Cucumbers that had a very dry growing season.

Problem: Moldy pickles

Causes:
— Produce was improperly washed.
— Storage temperature was too warm.

These pickles are spoiled and should be discarded.

Problem: Pink sauerkraut

Causes. Generally, the result of certain yeasts that develop on sauerkraut in the presence of air. The growth of pink yeasts is caused by:
— The temperature of fermentation was too high.
— The salt concentration was too high.
— The acid concentration was too high.
— The cabbage had a low nitrogen content.

Problem: Dark sauerkraut

Causes:
— Cabbage that was improperly trimmed or washed.
— Exposure of sauerkraut to air due to insufficent brine during fermentation.
— Uneven distribution of salt. High salt concentrations inhibit normal fermenters but not spoilage bacteria.
— High temperatures during fermentation that favor the development of abnormal types of bacteria.
— Storage period was too long.

Problem: Soft sauerkraut. Unsafe, and should be discarded.

Causes:
— Insufficient quantities of salt.
— An uneven distribution of salt.
— High temperatures during fermentation.
— Exposure to air. Air pockets may be caused by improper packing.

Problem: Rotted sauerkraut. Unsafe, and should be discarded.

Causes: Mold, yeast or bacterial growth. Spoilage is usually found at the surface where cabbage has not been sufficiently covered to avoid air exposure.

QUESTIONS AND ANSWERS

Q What does alum do?

A Alum was once added to make pickles crisp. Its use is no longer recommended. With the proper balance of vinegar and salt, alum is not necessary.

Q How does lime make pickles crisp? Can it be used?

A The type of lime used in pickling is calcium oxide. Calcium combines with the pectin in the vegetable to form calcium pectate, giving a firmer pickle. Its use is not recommended since lime has a tendency to make pickles slippery and reduces the acidity.

Q What causes green garlic?

A The garlic is either not fully mature or not thoroughly dry.

Q What causes garlic, onion and cauliflower to change color after pickling?

A They contain colorless pigments that easily become colored in an acidic environment. When vinegar (acetic acid) is added, garlic may turn blue or purple and cauliflower and onions may turn pink. They are still safe to eat, since this reflects a natural color change and not spoilage.

Q Can dill seed replace fresh dill in recipes?

A No, the seed does not give the distinctive flavor found in fresh dill.

Q What is the purpose of grape leaves found in some older recipes?

A They contain substances that prevent enzymes from softening brined cucumbers.

Q Can the amount of salt or sugar be reduced in pickle recipes?

A No, sugar and salt combine with vinegar to prevent spoilage and are also needed to develop the characteristic crispness and flavor of pickles.

Q What causes foaming of the brine during fermentation?

A It is caused by gases, normally produced during fermentation, that bubble through the brine to the surface.

Q Is it necessary to process pickles?

A No, unless your recipe calls for processing. Such recipes may not have sufficient salt or acid to prevent spoilage, therefore making processing a necessity. If the recipes in this publication are followed, using good quality produce and proper techniques, processing is not required.

Q Why do some pickle recipes call for bluestone?

A When chlorophyll (a green plant pigment) is in an acidic environment, such as that found in pickling, it loses magnesium and forms pheophytin. This compound gives the vegetable a dull olive-brown color. The copper in bluestone replaces the lost magnesium and restores the characteristic bright green color of chlorophyll. Bluestone is not allowed in the commercial preparation of pickles, nor is it recommended for home use.

BUYING GUIDE FOR VEGETABLES

vegetable	*quantity*	*weight (grams)*	*prepared volume*
Beans, wax and green	1.1 L (1 quart) basket	450	1 L, 2.5 cm long pieces
Beets	10 to 15 small (3 to 4 cm diameter)	450	1 small jar (500 mL)
	8 medium (5 cm diameter)	450	500 mL, chopped
Cabbage	1 medium head	1150	2.4 L, chopped
Carrots	15 to 20 small (5 to 7 cm long)	450	1 small jar (500 mL), whole
	8 medium (20 cm long)	450	500 mL, chopped
Celery	1 medium bunch	700	1.4 L, chopped
Corn	2 medium ears	450	250 mL, kernels
Cucumbers	2.27 L (2 quart) basket (60 to 70 small, 5 to 8 cm long OR 16 to 18 medium, 8 to 12 cm long)	1150	2 medium jars (1 L each) whole OR 2.5 cm pieces OR 1.4 L sliced
	1 large (20 cm long)	350	300 mL chopped, seeded
Cucumbers, ripe	1 large (20 cm long)	550	500 mL chopped, seeded
Onions, white	2.27 L (2 quart) basket	1400	4 small jars (500 mL each) whole
Peppers, green and sweet red	4 medium	450	700 mL, chopped
Tomatoes	2.27 L (2 quart) basket OR 12 medium	1400	1.9 L, chopped
Vegetable marrow	1 medium (25 cm long)	1000	1 L, 1.5 cm long pieces
Zucchini	3 small (15 cm long)	450	1.2 L, sliced

NOTE: small refers to pint jar; medium refers to quart jar

BUYING GUIDE FOR FRUIT

fruit	*quantity*	*weight (grams)*	*prepared volume*
Apples	4.55 L (4 quart) basket OR 15 medium	2300	2.9 L, chopped
Cherries	2.27 L (2 quart) basket	1400	4 small jars (500 mL each), whole
Crabapples	45 medium	1400	8 small jars (500 mL each), whole
Cranberries		450	1 L, whole
Peaches	4.55 L (4 quart) basket OR 24 medium	2700	4 medium jars (1 L each) whole OR 2.8 L, chopped
Pears	4.55 L (4 quart) basket OR 18 medium	2300	4 medium jars (1 L each) halved OR 2.6 L, chopped
Pears, Seckel		3600	4 medium jars (1 L each) whole
Plums, prune	4.55 L (4 quart) basket OR 100 medium	2700	8 small jars (500 mL each), whole
Rhubarb, stalks with leaves		650	800 mL, chopped

NOTE: small refers to pint jar; medium refers to quart jar

RECIPES

Naturally fermented pickles

SAUERKRAUT

5 kg cabbage 250 mL pickling salt

Select firm, mature heads of cabbage. Remove outer leaves and undesirable portions. Wash and drain. Cut in quarters and core. Shred cabbage into thin strips. Mix each shredded head with 25 mL salt and allow to wilt. Continue shredding and salting until half the cabbages are done. Pack salted mixture into clean earthenware crock; press down firmly and evenly. Continue to shred and salt remaining cabbage. Pack cabbage in crock leaving 6 to 8 cm at top of crock. Cover with damp, clean, thin cloth, tucking edges against inside of crock so no cabbage is exposed to air. Rinse cloth daily. Place double plastic bag filled with water on top of cabbage. When fermentation begins, remove scum and replace wet cloth, daily. Wash outside of plastic bag and replace water daily. Continue this for 5 to 6 weeks until crock contents look and smell like sauerkraut. Heat sauerkraut to simmering. Pack in hot sterilized jars and seal. Store in refrigerator.

To store at room temperature, sauerkraut must be processed. Prepare jars and lids in boiling water bath. Heat sauerkraut to simmering, adding water if necessary to prevent scorching. Pack into hot sterilized jars, leaving 2 cm space (head space). Cover with boiling liquid. Remove air bubbles. Readjust head space, if necessary. Wipe sealing edge of jar. Center lid on rim and seal. Process small jars (500 mL) for 15 min and medium jars (1 L) for 20 min in boiling water bath. Alternatively, process either size jar in pressure canner at 35 kPa pressure for 8 min. Remove jars from canner. Cool. Test for seals, label and store. Makes about 6 L. May be stored up to 4 months.

PIV'S FERMENTED DILLS

For each medium (1 L) jar:

- 7 to 9 cucumbers 8 to 12 cm long
- 2 sprigs fresh dill
- 25 mL pickling salt
- 5 mL pickling spice
- 1 clove garlic, chopped
- Soft water or distilled water

Wash cucumbers in cold water to remove soil. Do not scrub or use hot water or detergent. Place 1 sprig of dill in the bottom of a clean medium (1 L) jar. Pack cucumbers into jars and place a sprig of dill on top. Add salt, pickling spice and garlic. Fill jar to top with soft or distilled water. Screw lid on tightly and turn jar upside down so salt will be distributed. Turn upright and loosen lid about one-tenth turn. Place in a warm room (20 to 25°C) for 1 to 2 weeks to permit fermentation.* During fermentation period, at intervals of 2 to 3 days add additional brine (25 mL salt per 950 mL water) to replace liquid forced out by fermentation. Fermentation is finished when no more gas is produced. At this point fill the jar completely with brine, seal it tightly and store in refrigerator up to 9 months.

Vegetable pickles

PICKLED BEETS

- 2 L small beets (about 40 to 50), 2.5 to 4 cm diameter
- 1 L vinegar
- 375 mL water
- 250 mL sugar
- 10 mL salt
- 5 mL whole cloves
- 1 cinnamon stick, 8 cm long

Select small young beets. Leave 5 cm of stem and all of roots on beets. Cook until just tender (about 14 to 18 min). Dip in cold water and remove skins. Pack in sterilized jars. Tie cloves and cinnamon in cheesecloth bag. Combine vinegar, water, sugar, salt and spice bag, bring to boil and boil 5 min. Remove spice bag. Pour liquid over beets and seal. Makes about 1.6 L.

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*Depending on temperature, fermentation is completed in 1 to 2 weeks. When fermentation is finished, pickles are ready to eat or store.

BREAD AND BUTTER PICKLES

2 L small cucumbers
2.5 to 4 cm diameter
(about 1.2 kg)
500 mL onions,
thinly sliced
1 red pepper, chopped
50 mL pickling salt
15 mL mustard seed
3 mL celery seed
500 mL vinegar
500 mL sugar

Thinly slice cucumbers. Layer vegetables and salt. Let stand 3 h. Rinse and drain. Bring mustard seed, celery seed, vinegar and sugar to boil. Add vegetables and cook until tender crisp. Pack in hot sterilized jars and seal. Makes about 2 L.

SWEET PICKLED CARROTS

2.3 kg young carrots
500 mL boiling water
15 mL mixed pickling
spice
750 mL sugar
750 mL vinegar
500 mL water
5 mL pickling salt

Peel carrots. Cut in sticks or leave whole. Boil carrots 6 min in boiling water. Drain and pack into hot sterilized jars. Tie spices in cheesecloth bag and add to sugar, vinegar, water and salt. Bring to boil and boil 10 min. Cover carrots with syrup. Seal. Makes about 2.4 L.

DILL PICKLES

4 L cucumbers, 7 to
12.5 cm long (about 1.5 kg)
Fresh dill
Garlic
100 mL pickling salt
500 mL vinegar
1.5 L water

Wash cucumbers and cut in half lengthwise. Pack cucumbers into sterilized jars. In each jar place a sprig of dill and a split clove of garlic. Combine salt, vinegar and water and bring to boil. Pour hot liquid over cucumbers and seal. Makes about 4 L.

14-DAY GHERKINS

4 L cucumbers, 5 to 7.5 cm long
(about 2.7 kg)
5 L boiling water
250 mL pickling salt
1 L cider vinegar
1 L white vinegar
50 mL pickling salt
50 mL sugar
50 mL mustard seed
125 mL mixed pickling
spice
1750 mL sugar

Put clean cucumbers in crock. Make brine of boiling water and 250 mL pickling salt and pour over cucumbers. Cover and let stand overnight. Drain well. Combine vinegars, 50 mL salt, 50 mL sugar and spices and bring to boil. Pour over cucumbers. Each morning for next fourteen days, add 125 mL sugar, stirring well to dissolve sugar. When last amount of sugar has been added, remove pickles from liquid and pack into hot sterilized jars. Strain liquid to remove spices and cover cucumbers with liquid. Seal. Makes about 5 L.

PICKLED ONIONS

2 L small white onions (about 1 kg)
Boiling water
2 L boiling water
125 mL pickling salt
1 L vinegar
250 mL sugar
1 cinnamon stick (about 8 cm long)

Cover onions with boiling water, let stand 2 to 3 min, drain. Cover with cold water and peel. Make brine of 2 L boiling water and salt. Pour over onions and let stand overnight. Drain. Rinse thoroughly with cold water and drain. Bring vinegar, sugar and cinnamon to a boil, boil 5 min, then remove cinnamon. Add onions and bring just to a boil. Pack onions in sterilized jars, cover with liquid and seal. Makes about 1.6 L.

ZUCCHINI PICKLES

2.5 L thinly sliced zucchini (about 900 g)
500 mL thinly sliced onion
1.5 L ice water
50 mL pickling salt
500 mL vinegar
250 mL sugar
5 mL celery seed
5 mL mustard seed
5 mL turmeric
2 mL dry mustard

Combine zucchini and onion. Make brine of salt and water. Let stand 3 h and drain. Bring vinegar, sugar, celery seed, mustard seed, turmeric and dry mustard to boil, pour over vegetables and let stand 1 h. Bring mixture to boil and boil about 5 min. Pack into sterilized jars and seal. Makes about 2.2 L.

Fruit pickles

WATERMELON RIND PICKLE

Half watermelon (about 3.5 kg)
500 mL boiling water
50 mL pickling salt
Boiling water
2-3 sticks (8 cm long) cinnamon
500 mL cider vinegar
500 mL water
1 L sugar

Cut rind from watermelon. Remove green outer skin and discard. Cut rind in 2.5 cm squares. Use 2 L. Combine 500 mL boiling water and salt, and pour over rind. Allow to stand overnight. Drain and rinse with cold water. Cover with boiling water and cook until just tender (about 20 min). Drain rind. Tie spices in cheesecloth bag and add to vinegar, 500 mL water and sugar. Bring to boil and boil 5 min. Add rind and cook until clear (30 to 35 min). Remove spice bag and pack rind in sterilized jars. Bring syrup to boil and pour over rind. Seal. Makes about 2 L.

PICKLED CRABAPPLES

2.2 kg crabapples (70 small OR 60 medium)
Whole cloves
1 L vinegar
1 L water
2.5 L sugar
8 cinnamon sticks
50 mL whole allspice

Leave stems on crabapples but cut out blossom ends. Stick whole clove in blossom end of each crabapple. Combine vinegar, water, sugar and spices, tied in cheesecloth bag. Bring to boil. Add one layer of crabapples at a time and simmer until just tender (8 to 12 min). Pack crabapples into sterilized jars. Remove spice bag. Bring liquid to boil and pour over crabapples. Seal. Makes about 5.5 L.

PICKLED PEACHES

3.6 kg small peaches
9 cinnamon sticks, 8 cm long each (about 30 g)
25 mL whole cloves
2 L sugar
1 L vinegar
250 mL water

Peel and pit peaches, then cut in half. Place spices in cheesecloth bag and add to sugar, vinegar and water. Bring to boil 10 min. Add peaches to syrup and cook until tender. Place fruit in sterilized jars. Cover with hot syrup and seal. Makes about 3 L.

PICKLED PEARS

3 kg pears
3 L sugar
1.5 L vinegar
375 mL water
40 mL whole cloves
9 cinnamon sticks, 8 cm long each

Peel and core pears, then cut in half. Combine sugar, vinegar, water and spices, tied in a cheesecloth bag. Bring to boil and boil 10 min. Add pears to syrup and cook until tender. Place pears in sterilized jars. Cover with hot syrup and seal. Makes about 2.7 L.

Pickled Seckel pears Make as pickled pears but leave pears whole; do not core. Use 1.5 L sugar, 750 mL vinegar, 200 mL water, 20 mL cloves, 5 cinnamon sticks. Makes about 2.5 L.

PICKLED PLUMS

25 mL whole cloves
8 cinnamon sticks (about 30 g)
2 L sugar
1 L vinegar
250 mL water
3 kg prune plums

Tie spices in cheesecloth and add to sugar, vinegar and water. Bring to boil and boil 10 min. Prick skin of plums. Add to syrup and cook until plums are tender. Place fruit in hot sterilized jars. Cover with syrup. Seal. Makes about 5 L.

Relish

CHOW CHOW

30 medium green tomatoes (about 3.4 kg)
125 mL pickling salt
1 small cabbage (about 600 g)
3 sweet green peppers
2 sweet red peppers
3 medium onions
1.5 L vinegar
500 mL sugar
15 mL celery seed
15 mL mustard seed
7 mL whole cloves

Put tomatoes through food chopper using coarse blade. Combine tomatoes with salt and let stand 30 min. Place in cheesecloth bag and let drain overnight. Put cabbage, peppers and onions through food chopper and combine with tomatoes, vinegar, sugar and spices, tied in cheesecloth bag. Cook uncovered over low heat until vegetables are tender, about 20 min. Pour into hot sterilized jars and seal. Makes about 4 L. Store no more than 6 months.

Chutney

PEACH CHUTNEY

1.5 L peeled, chopped peaches (about 1.3 kg)
250 mL vinegar
25 mL mustard seed
15 mL finely chopped ginger root
125 mL chopped sweet red pepper
50 mL chopped onion
500 mL brown sugar

Cook peaches in vinegar until tender (about 7 min). Tie mustard seed in cheesecloth bag. Add to peaches with remaining ingredients. Bring to boil and cook until slightly thick (about 1 h), stirring frequently. Pour into hot sterilized jars and seal. Makes 1 L.

RHUBARB APPLE CHUTNEY

1625 mL rhubarb (about 1 kg trimmed)
1375 mL cooking apple coarsely chopped (about 800 g)
1125 mL brown sugar
5 mL whole cloves
25 mL finely grated ginger root
1 clove garlic, crushed
250 mL raisins
5 mL salt
5 mL cinnamon
375 mL vinegar
125 mL water

Cut rhubarb in 1 cm pieces and combine with apple and sugar. Let stand 1 h. Tie cloves in cheesecloth bag and add to fruit with remaining ingredients. Bring to boil and cook uncovered until thick (about 1 1/2 h), stirring frequently. Remove spice bag. Pour into hot sterilized jars and seal. Makes about 2.2 L.

PEAR CHUTNEY

- 2.5 L peeled chopped pears (about 2.5 kg)
- 125 mL chopped onions
- 500 mL brown sugar
- 10 mL grated lemon rind
- 1 lemon, thinly sliced
- 15 mL chopped crystalized ginger
- 3 mL crushed chillies
- 10 mL salt
- 5 mL ginger
- 250 mL cider vinegar

Combine all ingredients. Bring to boil and cook until thick (about 50 min), stirring frequently. Pour into hot sterilized jars and seal. Makes about 1.8 L.

APPLE CHUTNEY

- 3 L chopped unpeeled apples (about 1.5 kg)
- 750 mL chopped celery
- 125 mL chopped onion
- 250 mL raisins
- 500 mL cider vinegar
- 500 mL sugar
- 15 mL salt
- 5 mL ginger
- 5 mL cinnamon
- 2 mL pepper
- 0.5 mL cloves

Cook apples, celery, onion and raisins in cider vinegar 15 min, stirring frequently. Add sugar and seasonings, bring to boil and cook until thick (about 30 min more), stirring frequently. Pour into hot sterilized jars and seal. Makes about 2.8 L.

Sauces and catsup

FRUIT CHILI SAUCE

- 12 large OR 16 medium ripe tomatoes (about 2 kg)
- 50 mL whole pickling spice
- 250 mL peeled chopped peaches
- 250 mL cored, chopped apples
- 250 mL cored, chopped pears
- 250 mL chopped onion
- 250 mL chopped sweet red pepper
- 250 mL finely chopped hot red pepper
- 125 mL raisins
- 375 mL vinegar
- 375 mL sugar
- 20 mL salt

Blanch and peel tomatoes, then cut in pieces. Tie pickling spice in cheesecloth bag. Combine tomatoes and spices with remaining ingredients. Bring to boil and cook until thick (about 1½ h). Remove spice bag. Pour into hot sterilized jars and seal. Makes about 2 L.

TOMATO CATSUP

4 kg ripe tomatoes (about 36 medium)
250 mL chopped onion
250 mL chopped sweet red pepper
50 mL salt
250 mL sugar
375 mL vinegar
1 mL stick cinnamon
2 mL whole cloves
10 mL whole allspice
2 mL mustard seed
5 mL celery seed

Wash tomatoes, remove stem end and cut into pieces. Combine tomatoes, red peppers and onion and cook 20 min. Press pulp through fine sieve. Add salt, sugar and vinegar to pulp. Tie spices in cheesecloth bag and add to pulp mixture. Bring to boil and boil rapidly until thick (about 1½ h), stirring frequently. Remove spice bag. Pour into hot sterilized jar and seal. Makes about 800 mL. Store no more than 6 months.

KITCHEN METRICS

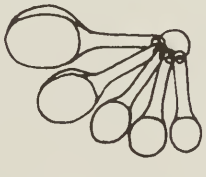
VOLUME

Use metric measures for metric recipes. Measures are marked in millilitres (mL) and are available in the following sizes:

1000 mL = 1L
500 mL
250 mL

250 mL
125 mL
50 mL

25 mL
15 mL
5 mL
2 mL
1 mL



TEMPERATURE

Most commonly used oven temperatures

°C	replaces °F	°C	replaces °F
100	200	190	375
150	300	200	400
160	325	220	425
180	350	230	450

Refrigerator temperature: 4°C replaces 40°F
Freezer temperature: −18°C replaces 0°F

MASS

1 kg (1000 g) is slightly more than 2 pounds
30 g is about 1 ounce

LENGTH

1 cm (10 mm) is slightly less than ½ inch
5 cm is about 2 inches