

## Study Guide for Hospitality Students



# Creating impact

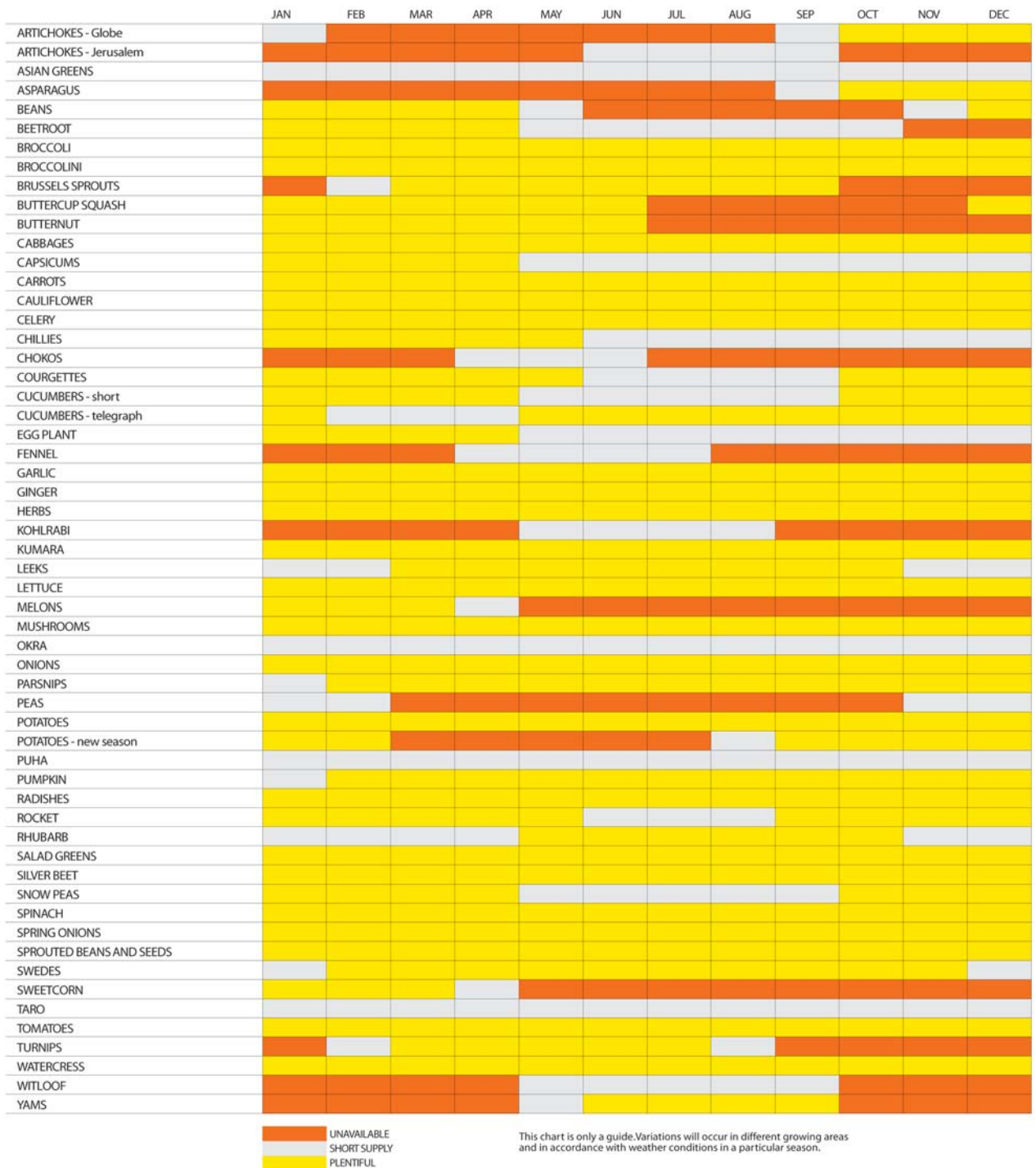
*New Zealand grows some of the best tasting, highest quality vegetables in the world. Without a doubt meals that include an abundance of fresh New Zealand grown vegetables will be more delicious, more visually appealing, more nutritious and more economical.*

*Broaden your vegetable experiences by enjoying our vast range of produce. Try innovative ideas with the well known vegetables and delight in the tastes and textures of the ever increasing range of newer ones.*

*Well prepared and cooked vegetables, served as either a classic or in a new style, are always well received and deserving of a place on your menu.*

# availability

Introduce variety to your menus by making the most of the seasons.



# classifications

Vegetables are classified according to which part of the plant is eaten. Some vegetable may fall in to more than one classification when more than one part of the plant is eaten e.g. roots and leaves of beetroot can be eaten.



<b>Bulbs</b>	Usually grow just below the surface of the ground and produce a fleshy, leafy shoot above ground. Bulbs usually consist of layers or clustered segments.	e.g. garlic, onion, leek, shallot, spring onion, fennel
<b>Flowers</b>	The edible flowers of certain vegetables.	e.g. cauliflower; broccoli, gai lan (Chinese sprouting broccoli), broccoflower, globe artichoke
<b>Fruits</b>	The fruits of vegetable plants. Vegetable fruit are fleshy and contain seeds. Sometimes the seeds are eaten with the fruit.	e.g. egg plant, capsicum, tomato, cucumber, pumpkin, courgette, okra, scallopini
<b>Fungi</b>	When referring to vegetables, fungi are commonly known as mushrooms.	e.g. button, flats, shitake, oyster, gourmet brown, enokitaki, wood ear, truffle
<b>Leaves</b>	The edible leaves of plants.	e.g. spinach, lettuce, Brussels sprouts, witloof, puha, bok choy, cabbage
<b>Roots</b>	Although this is the name given to all vegetables that grow underground, a root vegetable is actually the root of the plant and is usually a long or round-shaped tap root.	e.g. carrot, parsnip, turnip, swede, radish, parsnip,
<b>Tubers</b>	Vegetables which grow underground on the root of a plant. Tubers are usually high in starch.	e.g. potatoes, kumara, yams, taro, Jerusalem artichokes, Maori potato
<b>Seeds</b>	Also known as legumes, seeds are usually obtained from pods. The pod is sometimes eaten along with the seed.	e.g. peas, beans, snow pea (mange-tout)
<b>Stems</b>	The edible stalks of plants when the stalk is eaten as the main part of the vegetable.	e.g. celery, asparagus

## *maintaining quality...*

Even after harvest vegetables are alive. The best that can be done is to slow down the rate at which they are dying - it can't be stopped completely. Deterioration of vegetables is caused by both chemical and biological reactions.



## Biological

Vegetables are subject to biological deterioration because they are composed of living tissues and they continue to respire after harvesting. Vegetables are alive and breathing, with a continued need for oxygen. In respiration, stored food such as sugar is used for energy and the product loses food value quickly. Vegetables that respire fast, perish soon after picking. Respiration is slowed by refrigeration.

Vegetables are also covered with micro-organisms, which will cause decay in the right conditions, of warmth and humidity. Damage, which breaks the skin and allows the entrance of organisms, will result in decay. Refrigeration is the best method of reducing decay, as most micro-organisms will slow down at low temperatures.

## Chemical

Ethylene is a natural product gas, given off by vegetables which hastens both ripening and deterioration. Different vegetables respond differently to ethylene. Some vegetables produce ethylene and some are sensitive to ethylene. Ethylene producing and ethylene sensitive vegetables need to be stored separately.

Ethylene producing: apples, tomatoes, passion fruit, stone fruit, bananas, avocados, pawpaw, kiwifruit, pears, melons.  
Ethylene sensitive: Asian greens, globe artichoke, asparagus, beans, broccoli, Brussels sprouts, corn, cabbage, carrot, cauliflower, celery, courgette, cucumber, egg plant, kumara, lettuce, parsley, peas, potato, rhubarb, silverbeet, spinach.

Refrigeration also slows deterioration caused by chemical and biological reactions. For example, sweetcorn may lose 50% of its initial sugar content in a single day at 21°C, while only 5% will be lost in one day at 0°C. With certain exceptions the best temperature for retarding deterioration by biological reactions is 1°C above freezing point.

Many colour changes associated with ageing and ripening can also be delayed and slowed by refrigeration.

Loss of moisture, with consequent wilting and shriveling, is one of the obvious ways in which freshness is lost. This water loss in the vapour state from living tissues is known as transpiration. Moisture losses from 3 - 6 % are enough to cause a marked loss in quality for many vegetables.

The effect of rough handling is cumulative. Bruising stimulates the rate of respiration and hence shortens the potential shelf life. Damage also results in more moisture loss and flavour changes.

## **Buying vegetables...**

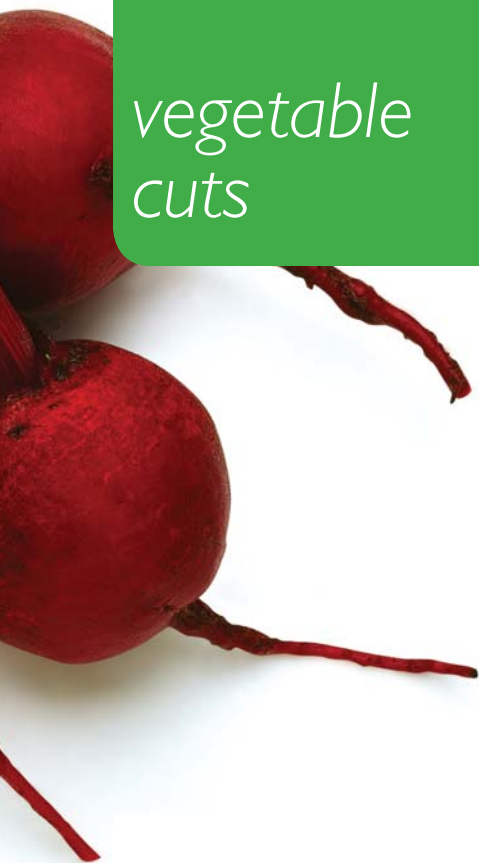
- **Choose a reputable supplier who you can rely on.**
- **Buy regularly. Every 2 - 3 days if possible, it is better to buy smaller quantities more often as there is no doubt, fresher does taste better!**
- **Reject and return inferior quality.**

## Storing vegetables...

- Handle with care. Bad handling accelerates deterioration; all vegetables should be handled as if they are as fragile as eggs.
- Store vegetables correctly. Storage conditions greatly affect shelf life. As soon as possible after purchase and transit the produce should be transferred to the correct storage conditions e.g. greens refrigerated, potatoes to a cool dark place. Each hour with produce sitting at inappropriate temperatures decreases shelf life dramatically.
- Use the chiller properly. Air must be able to circulate around the vegetables, hot spots will develop if over-packed.
- Keep all storage areas clean. Decaying or rotting produce releases ethylene.
- Store ethylene producing and ethylene sensitive produce separately if practical. While separate storage is preferable, some smaller operations may not have the facilities to do this. Ensure that the store room is ventilated regularly to avoid ethylene build up. Low temperatures retard ethylene damage.

*"No matter how clever you are as a chef or cook, you can't produce quality if you don't start with it."*

# vegetable cuts



The vegetable cut must complement the dish. For example, a robust casserole would require larger pieces than a light consommé. Many other loose descriptions exist i.e. strips, bite-sized pieces, chunks. The following are the traditional cuts and whilst these definitions may vary slightly, these are the accepted generalisations.



## Brunoise

This is a very small diced cube, sized between 1 – 3mm square. It is often used as a garnish for consommé. Typical vegetables used are carrot, onion, turnip and celery.



## Matignon

Roughly cut vegetables, normally including carrot, onion and celery, which are cooked in butter with ham, thyme and bay leaf. Cooking is finished by deglazing the pan with Madeira. Matignon vegetables are used to add flavour when cooking large pieces of meat. Can be used as a base to place the meat on when roasting.



## Chiffonade

Finely sliced or shredded green leafy vegetables, usually lettuce or spinach, which is used as a base, garnish or in soups.



## Jardinière

A long thin baton, about 2cm long and approximately 3mm wide and 3mm thick. In more recent time these are often slightly larger, but this depends on end use.



## Macedoine

This is diced cube 5mm square, which is larger than the brunoise cut. Typical vegetables used are carrot, onion, turnip, beans and celery.



## Julienne

Long thin match-stick shaped pieces about 4cm in length.



## Mirepoix

A mixture of roughly chopped vegetables which are used as the base of sauces or to enhance the flavour of meat, fish and shellfish dishes. Normally onion, celery and carrot are used and these are slowly cooked in butter until they are very tender. Thyme and bay leaves are often added.



## Paysanne

This cut may be either squares, triangles, circles or half rounds. In order to cut economically, the shape of the vegetable will decide which shape to choose. All are cut thinly, about 1 – 2mm thick.

# cooking guide

Dense vegetables require longer cooking times e.g. carrots, potatoes, kumara. Vegetables with higher water content cook faster e.g. capsicum, leafy greens.

## Baking

- Preheat the oven to 200°C.
- Some vegetables need special attention e.g. seeds are removed from pumpkin.
- Bake until softened when tested with a fork.
- As a guide, a medium sized potato will take 45 – 55 minutes.
- Vegetables can be baked in a glaze, marinade or sauce.
- Remove seeds and stuff vegetables prior to baking e.g. marrow, pepper, tomatoes and pumpkins.

Most vegetables suit many different cooking methods. Versatility of preparation, cooking and serving are fantastic attributes of vegetables.  
**Think variety, think vegetables.**

These preparation guidelines apply to all cooking methods:

- Select the best quality
- Store correctly until use
- Wash thoroughly
- Cut into evenly sized pieces
- Leave skin on if suitable
- Prepare as close to cooking time as possible
- Cook until tender but still slightly crisp.

## Boiling

- Cover base of a saucepan with 2 – 3cm water and add vegetables.
- Cover tightly and bring to the boil as quickly as possible, reduce heat and simmer gently. Cook green vegetables without a lid for vibrant colour.
- Cook until tender when tested with a fork. Vigorous boiling will cause some vegetables, especially potatoes, to break up. Add extra boiling water if necessary. Drain and serve.

*As a general rule, if the vegetable grows above the ground place into boiling water, if it grows below the ground start in cold water. The exception is corn on the cob which is placed in cold water.*

## Braising

- Choose a braising pan with a close fitting lid.
- Add vegetables to the pan and a flavoursome liquid or stock to come half way up the vegetables, cover tightly.
- For best results braise slowly, add extra liquid if required.

## Deep Frying

- Always use fresh clean oil, check the smoke point of the oil to ensure it is suitable for deep frying.
- Heat the oil to correct temperature before adding vegetables. (Chips should be cooked at 180°C for 3 - 4 minutes – see [www.vegetables.co.nz](http://www.vegetables.co.nz) for more details on Tips on Chips.)
- Coat or batter vegetables, except chips before adding to the oil.
- Batch cook vegetables and ensure the oil returns to temperature before adding the next batch.
- Drain on absorbent paper.

## Grilling, chargrilling or barbecuing

- Preheat the grill or plate.
- Cook under, or over; direct heat, turn during cooking.
- Cooking times vary depending on the intensity of the heat and the size of the pieces of vegetables.
- Pre or partly cook dense vegetables, e.g. kumara, carrot or potato, if you want to save cooking time, alternatively just slice thinly.
- During cooking the vegetables may be basted with oil, flavoured oil or marinade.



## Microwaving

- Cut all pieces to a uniform size to ensure even cooking – very important.
- Use only a small quantity of water. Usually the water left clinging to the leaves after washing is sufficient.
- Pierce whole or unpeeled vegetables before cooking to prevent bursting.
- Cook vegetables on high power (100%) or automatic function, if possible, to remove guesswork.
- Cover the dish with a plate, lid or plastic film to speed cooking and to keep the vegetables moist.
- Arrange vegetables with the thickest stalks or spears, which need the most cooking, towards the outside of the dish.
- Microwaved vegetables continue cooking for an extra 2 – 4 minutes after the cooking period is finished. Allow for this to avoid overcooking.
- Season vegetables after cooking. Salting may cause vegetables to lose moisture during cooking.

Microwave ovens cook food by using microwaves which penetrate the food and cause the moisture molecules to vibrate and heat up. The more water in the food the more quickly it cooks. Most vegetables are more than 90% water so they cook quickly. The power supply to microwave ovens varies; consult your manual for specific cooking times. Cooking times also depend on:

- size of vegetables
- quantity being cooked
- their density and moisture content
- the characteristics of your oven
- any power fluctuations in your area.

## Roasting

- Preheat the oven to 200°C.
- Using different cuts, such as thin slices of kumara or pumpkin, not only shortens cooking time but adds variety and interest.
- Wash and dry vegetables.
- Use only a small amount of vegetable oil.
- Place in a roasting dish or on a tray.
- Roast until tender.
- Cook the vegetables in a separate pan from meat and they won't soak up the fat.

*Slow roasting, at around 150°C, is a popular cooking method that intensifies flavours. It is particularly good with tomatoes and some of the less traditionally roasted vegetables such as asparagus and peppers. Drizzle with olive oil, perhaps with a dash of balsamic vinegar, and sprinkle with black pepper. Roast until the product is shriveled, but not dried out. Slow roasted vegetables are great as is, or tossed through leafy greens.*

## Salads

- Use a sharp knife.
- When using salad greens, make sure they are well dried after washing. Water left on the leaves after washing will result in diluted dressings, hence diluted flavour.
- Dress salads with dense vegetables ahead of time to allow the flavours to be absorbed.
- Leafy salads need to be dressed just before service.

## Sauteing

- Small pieces of vegetables are pan fried in hot oil. They are tossed during cooking.

## Shallow frying

- Season foods before frying.
- Use the correct size pan for the food being cooked e.g. don't overcrowd, fry in batches.
- Heat oil to the correct temperature before adding vegetables.
- Drain on absorbent paper if necessary.

## Steaming

- Place in a steamer over rapidly boiling water. Avoid the water touching the vegetables. Cover and adjust the heat to a steady simmer. Cook until tender. Add more boiling water if necessary.
- If using a combi oven, follow the manufacturer's instructions.

## Stir-frying

- Prepare all vegetables before starting to cook.
- Shred, dice or thinly slice the vegetables into pieces the same size.
- Have the oil in the pan very hot before adding the vegetables.
- When the oil dries out add a sprinkling of water. Best results are achieved if the vegetables are 'hot and steamy'.
- Cook the dense vegetables first (those that take longer to cook e.g. carrot) and add the less dense ones towards the end of cooking (e.g. cabbage).
- Stir-frying vegetables is quick. Prepare the rest of the meal first and serve immediately after cooking.

*Stir-fried vegetables are cooked rapidly in a minimum of liquid, or oil, so fewer nutrients are lost or destroyed.*

*Meals with generous quantities and a variety of vegetables look and taste more appetising.*

## vegetables at their best

Vegetables are classified according to which part of the plant is eaten. Some vegetable may fall in to more than one classification when more than one part of the plant is eaten e.g. roots and leaves of beetroot can be eaten. For best results and to minimise nutrient loss:

- Peel the skin thinly or leave it on. Nutrients are often at their highest concentration just beneath the skin. Peeling can mean the best part is thrown away.
- Rinse vegetables.
- Use a sharp knife when cutting vegetables to minimise cell damage. Damaged cells release enzymes which destroy vitamin C.
- Cook vegetables as soon as possible after preparation. Do not soak them. Vitamin C is destroyed when cut surfaces are exposed. Water soluble vitamins (B & C) will be lost in soaking water.
- Use a small amount of water when cooking. The water soluble vitamins will leach into the cooking water which is often thrown away. Save vegetable water for use in soups, stocks and gravies.
- Take care not to overcook vegetables. Most should be tender but still slightly crisp; this will vary with personal preference. Starchy vegetables, such as potatoes and kumara, should be tender throughout.
- When stir-frying, cook at a high temperature for a short time and use as little oil as possible. Try using water in place of oil, or start with oil and sprinkle on water as the pan dries out.
- The addition of baking soda to vegetables should be avoided. Whilst it does make the vegetables look 'greener', it destroys valuable vitamins.
- Eat vegetables as soon as possible are cooking. Heat sensitive vitamins will be destroyed if held at a high temperature for prolonged periods.

## Maximise your profit

- By using lots of vegetables your servings will look more generous. Your costs will be lower if you use more vegetables and less meat, fish or chicken.
- Include a vegetable dish on the menu for those seeking a meat-less alternative.
- Buy vegetables which are in season. Locally grown will taste better and are usually more competitively priced.
- Buy regularly, store correctly and practice good stock rotation (first in – first out) to ensure produce is retained in excellent condition and waste is minimised.



For more information on specific vegetables visit [www.vegetables.co.nz](http://www.vegetables.co.nz) or consult *Vegetables – A Users Manual*

Reference: The New Zealand Chef, Lesley Christensen-Yule, Hamish McRae, Pearson Education, 2002

**vegetables.co.nz**



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