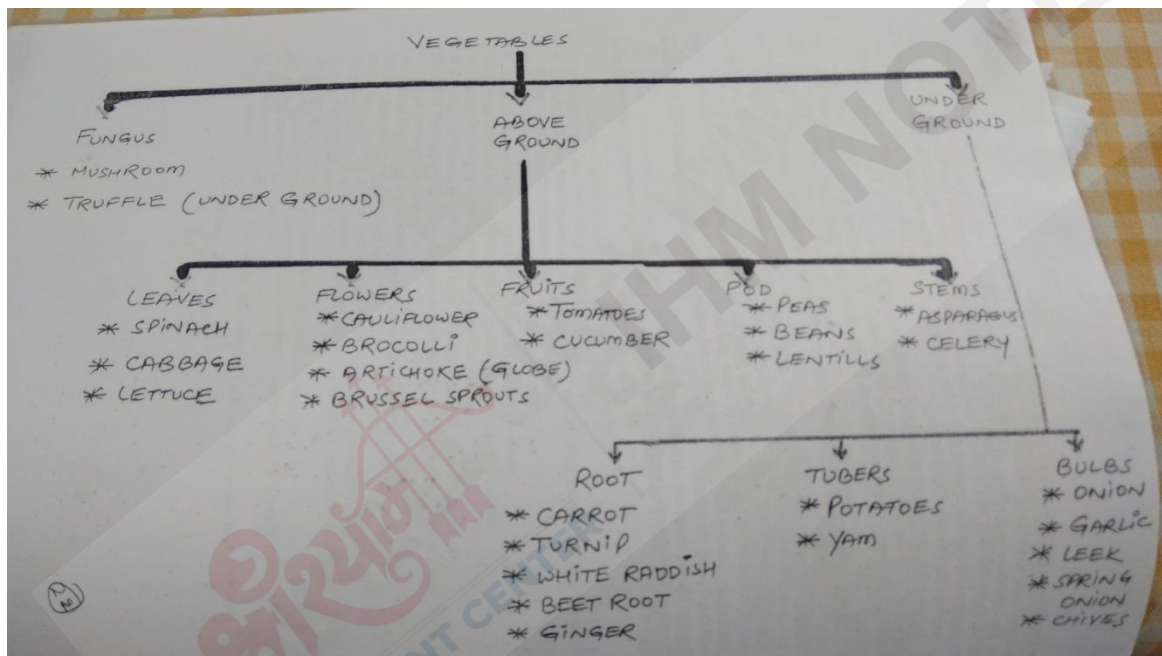


BASIC PRINCIPLES OF FOOD PRODUCTION

A. VEGETABLE AND FRUIT COOKERY

Vegetable: vegetables refers to all plants or plants which can be eaten raw, cooked or preserved in some form. Vegetable are of great importance in our diet and especially with regard to the present trend when the people are shifting towards the vegetarian side. This plays a very important role in our diet to: properly choose, properly cooked or raw. They make an invaluable contribution towards the supply of vitamins and minerals whenever possible. We should serve two vegetable in our diet, also salads should be given the importance and hence must be included in both the meals. Generally vegetables have high water content, which ranges from 70-90%.



The various components of vegetables are:

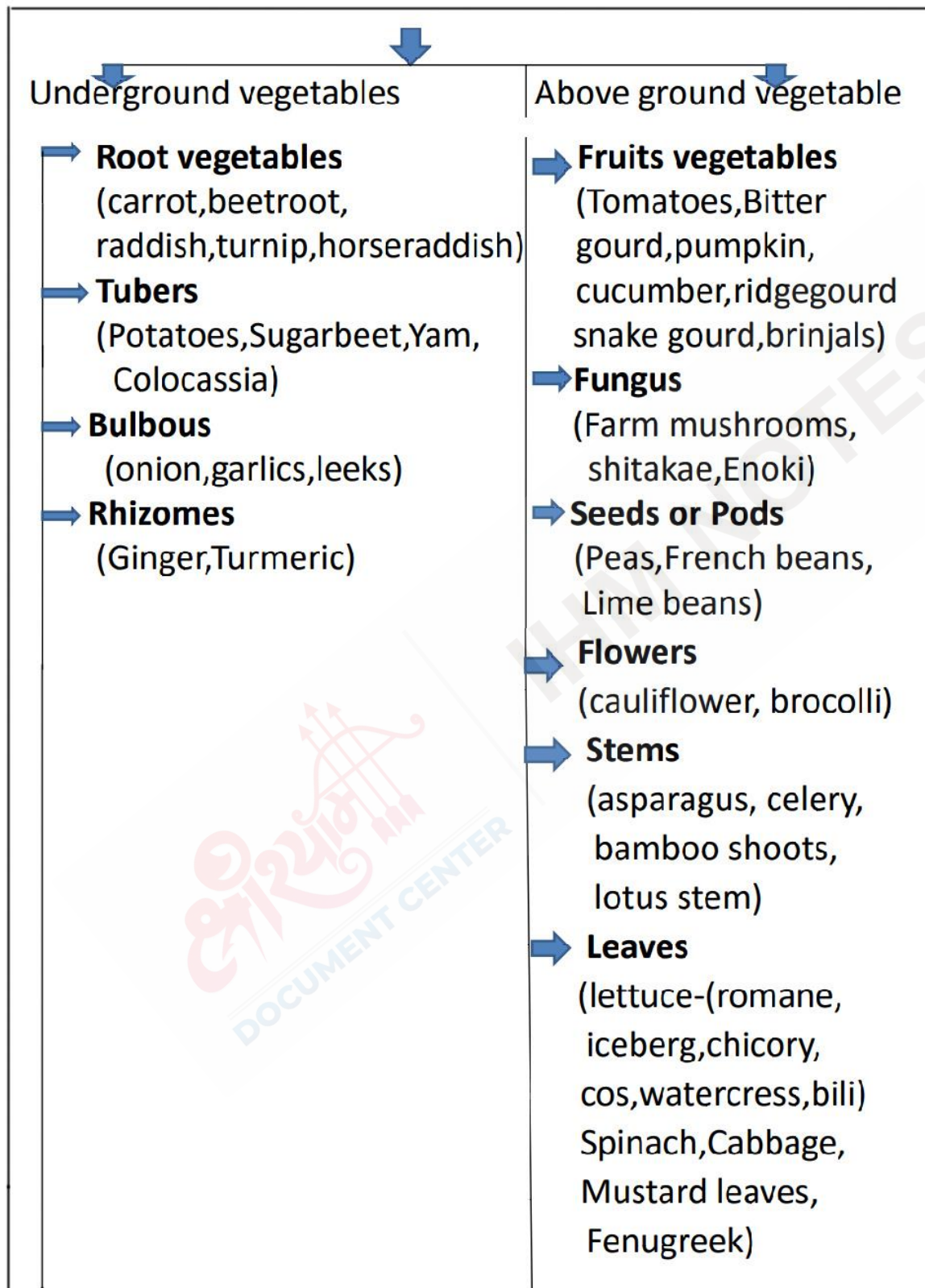
- Carbohydrates: carbohydrates are present in the form of starch, sugar, cellulose & pectin substances. Starch is the chief nutrients of roots & tubers. The content of sugar is the highest in beetroot, carrots & turnips. Cellulose is a source of roughage and become coarse & tough with age.
- Minerals and vitamins: also the vegetable contain minerals and vitamins.
- There are certain elements in the vegetables which do not have a food value but constitute an important part of vegetables.
- Flavouring substances: many volatile and non-volatile acids contributed to the flavour.
- Pigments: four pigments are in the vegetables:

- 1) Chlorophyll: it is present in all green coloured vegetables such as cabbage, spinach, green beans, broccoli, peas, etc.
 - 2) Carotenoids: it is present in orange coloured vegetables such as carrots, pumpkins, sweet potatoes, corns, tomatoes etc
 - 3) Flavons: it is present in white coloured vegetables such as cauliflower, turnips, potatoes, onion etc.
 - 4) Anthocyanins: it is present in red & purple coloured vegetables. Beetroot, red cabbage(not tomatoes)
- Tannins : tannins are the complex organic compounds which are widely distributed in plants. They are responsible for astringent (sharp flavour) properties. Tannin is also responsible for discolouration in vegetables when they are cut or cooked.



IHM NOTES

CLASSIFICATION OF VEGETABLES



NUTRITIONAL AND OTHER BENEFITS OBTAIN FROM VEGETABLES

Vegetables contains good amount of vitamins and minerals. All the green,yellow, orange vegetables are rich source of calcium, magnesium,potassium, vitamin B complex, vitamin C, vitamin A and vitamin K.

Vegetable contain soluble as well as insoluble dietary fibres like cellulose,gums,pectin etc.

- Green beans : low in calories an contain no saturated fat but good source of vitamin, minerals and fibres.
- Cauliflower: low in calories, low in fat and no cholesterol.
- Bell pepper: fresh bell pepper is rich source of vitamin C and also contains good level of vitamin A.
- Beetroot: low in calorie and fat but rich in dietary fibres, vitamins, and minerals.
- Bitter gourd: rich in dietary fibres, minerals, vitamins and anti oxidant.
- Carrot: rich source of carotenes and vitamins A.
- Cucumber: it is very good source of potassium.

Reasons for which vegetables are cooked

- to soften the product
- to improve the flavour
- to increase the digestibility
- to preserve the vegetables

PIGMENTS

NAME OF PIGMENT	COLOUR	HEAT	HEAT	ALKALI	METALS
CHLOROPHYLL	GREEN	OLIVE GREEN	OLIVE GREEN	BRIGHT GREEN	COPPER BRIG HT AND IRON- DARKNESS
CAROTENOID	RED AND ORANGE	BRIGHTNESS	ORANGE	ORANGE	
ANTHOCYANIN	BLUISH, PURPLE, DEEP RED	NOCHANGE	RED	BLUE AND GREEN	IRON-BLUE TIN- PURPLE
FLAVON	WHITE	DARKNESS	WHITENESS	YELLOW	AL-YELLOW IRON- BROWN

Effects of heat on vegetables

Cooking is the application of heat to food in order to make it safer to eat, digestible and more palatable. cooking also change the appearance of the food. heat breaks down the starches present; changes and blend flavour with in the food, and also destroy bacteria in order to make food digestible.

- CARBOHYDRATES: CARMELIZATION AND GELATINIZATION. Both sugar and starch are carbohydrates. Carmelization is browning of sugars and vegetables get softened by the gelatinization of the starch.
- VEGETABLE FIBRES : Fibres are a group of complex substances that give structure and firmness to plant. They cannot be digested. Heat break down the fibers. Alkali makes fibres softer but makes them mushy and loses essential vitamins.
- MINERALS, VITAMINS, PIGMENTS, AND FLAVOUR COMPONENTS: minerals dissolve in water during cooking. Vitamins and pigments may also be destroyed by prolonged cooking. Pigment and flavour may also determine whether the food is appetizing enough to eat or not.
- PROTEIN: when heat is applied to protein they become firm or they start to coagulate with heat. Protein becomes tough and dry when exposed to high heat.

VARIOUS RULES FOR VEGETABLE PREPARATION

- Do not let the vegetables soak in water unless necessary.
- Wash the vegetables just before peeling.

- Cook or bake the vegetable in their skin.
- Use the minimum amount of liquid during boiling.
- Use the water in which the vegetables are boiled (pot liquor).
- Use the correct cooking medium which can be acidic, alkali or neutral.
- Cut the vegetable as near to the cooking time as possible.
- Serve the food as soon as it is ready for the service.
- Keep the oxygen away from the vitamin rich foods by covering them with water.
- For uniform doneness, cut into uniform sizes before cooking.
- If vegetable must be cooked in advance, slightly undercook them, cool rapidly in cold water, drain and refrigerate, then reheat to order.

SHELF LIFE:

LEAFY VEGETABLES	:	2 DAYS
ROOT VEGETABLES	:	2- 3 DAYS
TUBERS	:	1 WEEK
BULBS	:	2 WEEKS

Suggestive cooking for different vegetables

- Boiling : this is the most common method of cooking vegetables. For green vegetables such as peas, French beans etc. The vegetables are put in boiling water and cooked for minimum time and refresh to avoid over cooking. Green vegetables while boiling should not be covered; otherwise their colour will be changed to olive green. Root vegetables should be placed in cold water and the pot should be covered by a lid, the water is brought to boiling point then simmered till the vegetables are cooked.
- Steaming : vegetables are cut into even size after washing and placed in steamer for cooking. This method helps in the maximum preservation of the nutrients and good for peas, beans, cauliflower, cabbage etc.
- Braising : vegetables after blanching are laid on aromatic to be braised such as cabbage, onion etc.
- Baking : vegetables baked in baking oven suitable for potatoes, tomatoes, pimentos etc.
- Roasting : some vegetables can be roasted. They are placed in hot pan containing oil and condiments suitable for potatoes, onions and parsnips etc.
- Shallow frying: it is applicable for mushrooms, onions, pepper, tomatoes etc.
- Deep frying: vegetables such as potatoes, brinjals and onions can be deep fried but loss of vitamins takes place in this method of cooking..
- Grilling: small potatoes can be grilled to give colour.
- Stewing: vegetables such as marrows, peas etc. Can be stewed.

How to retain the colour of green vegetables

- 1) CABBAGE FAMILY: consist of vegetables used for their head, leaves or flowers also known as BRASSICA. E.g. cabbage, Brussels sprouts, cauliflower, kohlrabi, broccoli etc.
- 2) STALK VEGETABLE: Stalk vegetables are plant stems that are high in cellulose. e.g. asparagus, celery, bok choy etc.
- 3) LEAFY VEGETABLES: leafy vegetables are plant grown specifically for their edible leaves. E.g. spinach, kale, sourel etc.
- 4) SALAD GREENS: endive, lettuce.
- 5) SEEDS, EDIBLE PODS AND YOUNG SHOOTS: this is a broad category of vegetables it includes peas, snow peas, all types of beans, bean sprout, corn etc.
- 6) VEGETABLE FRUITS: botanically vegetable fruit are considered fruits; however they are used in the kitchen as vegetables. E.g. cucumber, okra, egg plant, tomatoes, pepper, squash etc.
- 7) BULBS: bulbs are stems holding a food reserve in the fleshy, overlapping which give shape to the vegetable. E.g. onion, scallion, green onion, shallots, garlic etc.
- 8) FUNGI: mushrooms are not actually vegetables. They are an edible fungus. There are over 38,000 kinds of mushrooms. Three quarter of these is edible. E.g. mushroom, morel, truffles etc.
- 9) TUBERS: these are formed from underground stems, which extend from the root of the plant. E.g. Jerusalem artichoke, carrot, potatoes, radish, turnips etc.
- 10) SPECIALITY VEGETABLES: there are vegetables which do not fit it any other category. E.g. artichoke, rhubarb etc.

STANDARD VEGETABLES CUTS

- 1) Brunoise : vegetables are cut into fine dices.
- 2) Macedoine : vegetables are cut into ½ cm dices.
- 3) Julienne: vegetables are cut into very thin strips (1 ½ "long)
- 4) Jardinière: vegetables are cut into baton shape (1" x ¼ " x ¼ ").
- 5) Paysanne : vegetables are cut into small triangles, circles and squares- uniform shape.
- 6) Wedges : tomato or lemon cut into four or six pieces.
- 7) Mirepoix : vegetables mixed (onions, carrots, celery, leeks) cut into rough dices.
- 8) Chiffonade : shredded leafy vegetables.
- 9) Matignon : evenly cut root vegetables.
- 10) Chateau : turning of vegetables into barrel shape.

VEGETABLE YIELDS: yield percentage and quality of some

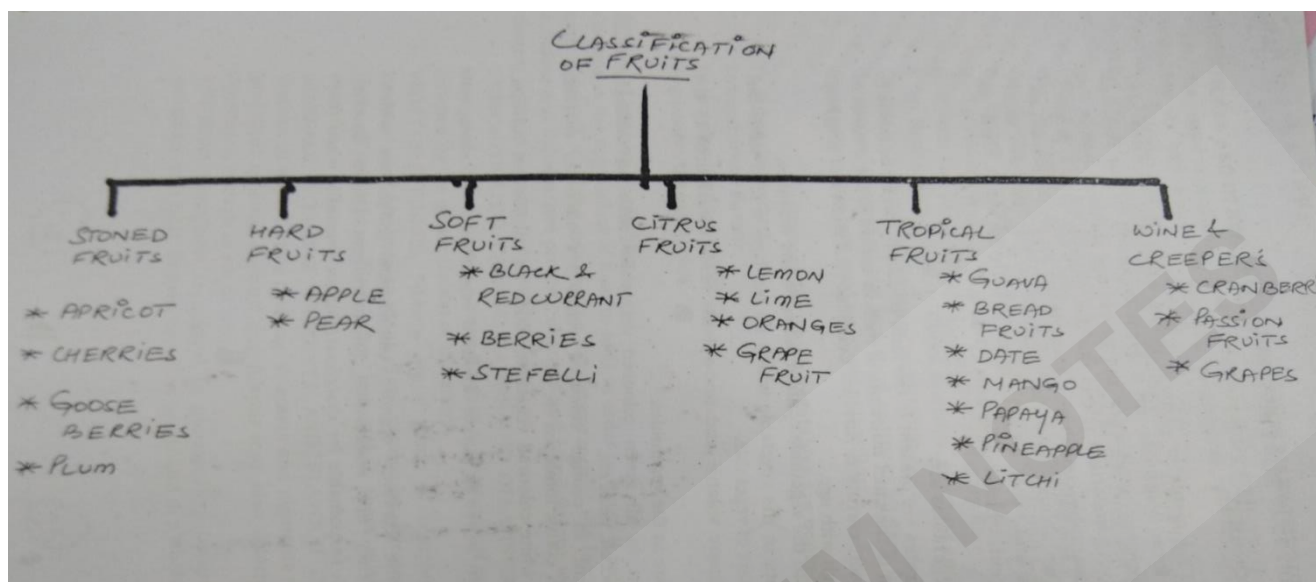
vegetables:-

s.no	vegetable	Yield%	quality
1.	French beans	85%	Firm, evenly green & break at 90* bent.
2.	Beetroot	45%	Firm, small, round & leaves on head.
3.	Cabbage	80%	Firm & heavy

4.	Celery	60%	Bright green, tender & have a green leaf.
5.	Corn	25%	Moist & green husk.
6.	Cucumber	70%	Firm & crisp.
7.	Brinjals	90%	Dark, purple & heavy.
8.	Garlic	80%	White firm & dry skin.
9.	Leeks	80%	Outside should be green & fresh.
10.	Cauliflower	50%	Should have tight buds & white in colour.
11.	Mushrooms	90%	White cap, firm
12.	Lady finger	90%	Small bright green.
13.	Onions	90%	Firm & bright skin.
14.	Herbs	80%	Bright green & crisp.
15.	Peas	40-50%	Fresh & firm pods.
16.	Capsicum	80%	Bright green & shiny.
17.	Radish	90%	Firm, tender & crisp.
18.	Potatoes	80%	Pale, yellow, dry skin.
19.	Spinach	50%	Dark green.
20.	Tomatoes	90%	Bright red, firm & heavy.
21.	Turnips	65%	Small, firm & heavy.
22.	Lettuce	60%	Outer leaves should be fresh & green.
23.	Spring onions	70%	Bright, unblemished green ends & firm bulbs.
24.	Pumpkin	60%	Heavy firm & hard rind.
25.	Carrots	70%	Fresh, crisp, hard & not too big.

FRUITS

Fruits are pulpy in character, often juicy & generally developed from flowers of plants & consist of a ripened seed or seeds with some edible tissues attached.



Types of fruits

Type of fruit	Main characteristics	e.g	uses
Stoned fruits	These have got a single prominent seed present in the middle	Apricots, cherries, peaches, plums.	Used in jams, pies, puddings and sweet dishes.
Hard fruits	These have got hard layer of fibres & generally firm when touched.	Apple, pears, etc	Used in pastries, apples are used for garnishing meat dishes, salads, sauces etc, waldorf salad, apple sauce serve with roast meat etc.
Soft fruits	These have got soft layer of fibres and should be handled very carefully	Black & red currants, berries etc.	Generally stewed and are used in pies and puddings. Also used for jams and as flavouring
Citrus fruits	These are the fruits which have got acids present in them.	Lemons, limes, oranges, grape fruit etc.	They are not cooked usually but are generally used for flavouring and garnishing purposes. They are used to prepare fruit salad.

Tropical fruits	These are generally grow in the hot region where the temperatures might sore 50*c.	Guavas, bread fruit, bananas, dates, figs, mango, papaya, pineapple, litchis etc.	They are used to prepare fruit salad, flavouring and garnishing. Mango used for jams.
Other fruits <ul style="list-style-type: none"> • Wine fruits • Creepers 	These are the fruits which do not fall into any category given above.	Cranberries, melons,grapes, passion fruits etc.	They are used to prepare fruit salad, flavouring and garnishing.

STORAGE OF FRUITS

- hard fruits such as apples should be stored in boxes.
- Soft fruits such as strawberries, raspberries, should be left in their own punnets.
- Stoned fruit are stored in tray and must be individually placed so that any damaged fruit can be discarded easily.
- Peaches and citrus fruits are left in the delivery tray only.
- Bananas should not be stored in cool places because their skin turns black.

QUALITY AND PURCHASING POINTS FOR FRUITS

- Soft fruits should not be damaged or overripe.
- Soft fruits should appear fresh without signs of mould, writing and shrinkage.
- Certain fruits are purchased on the basis of appearance such as strawberries.
- Hard fruits should not be bruised.

PRESERVATION OF FRUITS

- DRYING: it is used for apples, apricots, bananas, figs, peaches, plums etc. (dried plumes= prunes and dried grapes =currants, sultanas, raisins)
- CANNING: almost every fruit can be canned except apple which is packed in water.
- BOTTLING: it is mainly used for cherries bottled in maraschinos.
- CANDIED FRUITS: fruits are put in the sugar syrup and then dried for e.g. pineapples, oranges and lemon peel.
- QUICK FREEZING: it is preserving food by dropping the temperature to 0*c for e.g. strawberries, apples, plums, grapefruit etc.
- SULPHURING: it is carried out by spraying fruits with sulphur dioxide (so₂) and blocking the contact with air for e.g. it is used for grapes before preparing wine.
- JAMS AND JELLIES: it is prepared by making a puree of boiled fruits along with flavouring.

FRUITS ARE CLASSIFIED INTO THE FOLLOWING GROUPS

- Berries- strawberries, gooseberries, raspberries, blueberries
- Citrus fruits- lime, lemon, orange, sweet lime
- Drupe- apricot, sweet cherry, peaches, plums
- Melons- muskmelon, watermelon
- Pomes- apple, pears
- Tropical and sub-tropical fruits- avocado, banana, mango, pomegranate, pineapple

USES OF FRUITS

- Fruits are eaten both as fresh and jam marmalade and other preserves as they have nutritional value.
- Fruits are used in many manufacturing foods like cookies, muffins, ice creams, cakes etc.
- Fruits are used to make beverages
- Fruits are used to make desserts
- Many fruits are also used as vegetable preparation
- Apples are used to make vinegar
- Fruits are also used as gifts like in fruit basket
-

SALADS

A salad is derived from the Italian word “insalata”. Insalata means a dish steeped in salt or brine solution. Salads are made up of meat, poultry, fish, game, shellfish, eggs, vegetables, fruit and milk products and normally serve cold. They can be made out of single ingredients or a combination of ingredients. Salads are generally served as an accompaniment to a dish but can be served as a course itself, an appetizer, sweet course(fruit salad).

THE SALAD COMPRISES OF FOUR PARTS

1. **THE UNDER LINER OR BASE:** these are generally greens either shredded or in large pieces. The greens must be crisp and chilled. This can be done by storing them in refrigerator. E.g lettuce leaves, cabbage leaves, watercress leaves etc. The main purpose is to keep the plate or bowl from looking bare and to provide contrast colour to the other parts of the salad.
2. **THE BODY OR HEART OF THE SALAD:** this is the major component and can be made of one ingredient or a combination of ingredients. Ingredients should be fresh. Body constituents are the major portion of the salad. The salad gets its name from the ingredients that are used for the body.
3. **GARNISH:** the purpose of garnish is to give eye appeal to the salad, though it often adds to the flavour as well. It should not be elaborate or dominate the salad. Garnish should harmonize with the rest of the salad ingredients and, be edible. Any of the fruit and vegetable, cut into simple, appropriate shapes, may be used as garnish.
4. **DRESSINGS:** these makes the salad more appetizing, although diet conscious people today eat salad without dressing. Various kinds of dressing are used in the preparation of salad depending upon the kind of salad to be made. It adds flavour, provides food value, helps in digestion and improves palatability and appearance. A dressing is in a liquid or semi liquid form.

SALAD DRESSINGS

1. Vinaigrette can be made by three ways:-
 - French: 3 parts of oil 1 part vinegar, French mustard and seasoning.
 - English : 1 part oil 2 parts vinegar, mustard and seasoning.
 - American: equal quantities of vinegar and oil, seasoning and sugar.
2. Lemon dressing: same as vinaigrette dressing using lemon juice instead of vinegar.
3. Acidulated cream: 3 parts cream 1 part vinegar and seasoning.
4. Mayonnaise.
5. Thousand island dressing: mayonnaise, hard boiled eggs, tomato ketchup, chopped gherkins, chopped onions, pimentos, olives and paprika powder.
6. Russian dressing: mayonnaise, chilly sauce, horseradish, minced onion.
7. Roquefort dressing: French dressing with cheese.

8. Piquant dressing: fench dressing, dry mustard, chopped onion and paprika powder.
9. Anchovy dressing: French dressing with chopped anchovies.
10. Honey lemon dressing: honey with lemon juice.

Salads are of two types:

1. Simple salad: generally consist of a single kind of vegetable one or two ingredients are used for garnish.

Examples:

- Celery salad: chopped celery with vinaigrette.
- Cabbage salad: shredded cabbage with vinaigrette.
- Cucumber salad: cucumber roundels with vinaigrette.
- Potato salad: dice/roundels(parboiled) with vinaigrette or mayonnaise.
- Tomato salad: sliced tomato with parsley and vinaigrette.

2. Compound salad:

These are elaborate salads consisting of more than one ingredient which are sub divided into four groups:

- Vegetable based: coleslaw, andalouse, nicoise, aida.
- Poultry , game, meat based: Carmen,hongroise, bagration.
- Fish based: parisienne, fish mayonnaise, favourite.

Fruit based: creole, japonnaise, dalila,eve, waldrof.

