

# Classification of Vegetables

Dr. Muhammad Rashid Shaheen

THE ISLAMIA UNIVERSITY OF BAHAWALPUR

# Introduction

- Different parts of vegetables are used for consumption, which belongs to different botanical groups with varying cultural and climatic requirements
- No single method of classification would serve the purpose for different groups concerning vegetables like farmers, academic groups like horticulturists, agronomists, breeders, taxonomists etc.
- There are some methods of classification in general:
  - 1) Botanical classification
  - 2) Classification based on hardness
  - 3) Classification based on method of culture

# Botanical Classification

- Very useful for botanists and breeders who are interested to study their botanical relationship in respect of morphology, cytological similarities and dissimilarities and other taxonomic characters
- However, these may vary in their cultural requirements e.g. potato and brinjal belong to the same family but their cultural requirements are vary different
- But others like egg plant and chillies have similar cultural requirements. Most of vegetables of cucurbitaceae family have similar cultural requirements
- Taxonomists differ in their views to give scientific names to many of the vegetables

# Botanical Classification

- As might be expected that the group of plants that have studied the most are those in which there is greatest difference of opinion as to correct names
- While most of the species and generic names have been changed. In one case a genus has been placed in a different family i.e. Allium which was listed as member of the family liliace by early taxonomists is now placed in Amaryllidaceae
- So botanical classification is very important for the students of olericulture
- All vegetables belong to the division Angiospermae
- There are 5 families of monocotyledoneae and 12 families of dicotyledoneae to which most of the commonly cultivated vegetables belong

- Among monocots, Amaryllidaceae contains the maximum number of vegetables like onion and its allies
- Among the dicots, cruciferae, cucurbitaceae and leguminoseae comprise a large number of vegetable crops

# Classification Based on Hardiness

- Classification based on the ability of the plants to withstand frost and hence is basically a thermo classification
- It is used to know the season of cultivation for various crops
- Vegetables are classified as,
- **Hardy:** those which can tolerate frost. So essentially cool season or temperate crops
- **Non-Hardy:** also term as tender vegetables as these can not tolerate frost
- These are warm season or subtropical and tropical crops

# Classification Based on Hardiness

- Other than sweet potato and spinach most of the hardy crops are those whose edible parts are roots, stems, leaves, bulbs and immature flowers
- In most of the cases, edible parts of the non hardy crops are immature or mature fruits, except broad beans
- Some hardy crops like asparagus and rhubarb can withstand freezing temp.
- Cucurbits being non hardy thrive best under high temp. conditions (20-27C)
- This method of classification is particularly useful for farmers and growers

Hardy	Half Hardy	Non Hardy
Asparagus	Beet root	Amaranthus
Broccoli	Carrot	Okra
Brussels sprout	Cauliflower	Yams
Cabbage	Celery	Brinjal
Chives	Globe artichoke	Capsicum
Collards	Lettuce	Tomato
Garlic	Parsnip	Cassava
Kale	Potato	Clusture beans
Knol khol		Colocasia
Leek		Cow pea
Onion		Cucurbits
Parsely		Snap beans
Peas		Sweet corn
Spinach		Sweet potato
Turnip		



# Classification based on parts used

- Crops grown for their parts used, are placed in one group
- Thus crops are referred to as root crops, leafy vegetables, crops where immature flowers and mature fruits are used
- In each of these groups the crops cover a wide range of cultural requirements so that grouping them in this way is not of much practical utility

# Classification Based on Culture

- In this method all vegetable crops of similar cultural requirements are grouped together
- Members of one group may be different botanically or by other classification
- This method of classification is of much practical values for farmers and students of olericulture
- By this method, it is possible to generalize the cultivation practices based on their cultural and climatic requirements dealing them in groups rather than individually
- The vegetables are grouped under 11 classes and are detailed below

# Classification Based on Culture

- Group 1- perenial vegetables  
Asparagus, rhubarb, artichoke and kale
- Group 2- Greens  
Spinach, new zealand spinach, chard, mustard and amaranthus
- Group 3- salad crops  
Celery, lettuce and parsely
- Group 4- Cole crops  
Cabbage, cauliflower, broccoli, brussels sprouts, kholrabi, chinese cabbage
- Group 5- Root crops  
Beet root, carrot, parsnip, turnip, rutabaga, radish

# Classification Based on Culture

- Group 7- Bulb crops  
onion, leek, garlic, welsh onion
- Group 8- Tuber crops  
potato, sweet potato, cassava and yams
- Group 9- Peas and Beans  
Peas, cowpea, broad beans, common beans, lima beans, soybeans and winged beans
- Group 10- Cucurbits  
cucumber, muskmelon, pumpkin, squashes and gourds
- Group 11- Okra

# Thermo Classification

- Vegetables may be classified as cool and warm season crops
- **Cool Season** crops require cool weather for their proper development

Their edible parts are

- Roots
- Stem
- Leaf
- Immature Flower parts
- These are generally shallow rooted crops
- Require frequent irrigation and careful application of manure and fertilizers

# Thermo Classification

- Warm Season crops require warm weather.
- Their edible part is fruit
- Deep rooted
- Require less frequent irrigation
- Can absorb moisture from deeper layers of soils
- However there are few exceptions e.g. in pea and broad beans edible parts are fruits but these are cool season crops
- Similarly, sweet potato, (a root) and new zealand spinach (a leafy vegetable) are warm season crops

# Miscellaneous Classification

- Vegetable crops can also be classified as direct sown crops, transplanted crops and grown through cuttings
- These methods may be useful to growers only to certain extent as their cultural requirements widely differ within each group
- Direct sown crops- beet root, carrots, peas, beans, cucurbits and bulb crops
- Transplanted Crops- tomato, brinjal, peppers, cabbage, cauliflower and lettuce
- Planting vines and cuttings- sweet potato and cassava
- Bits of tubers and corms- potato and yam

# Classification according to lime requirements

- 1) may or may not require lime- potato, radish, tomato, turnip and watermelon
- 2) Require lime- pumpkin, cucumber, knolkhol, carrot and peas
- 3) Require more than 1 and 2- Cabbage, cauliflower and brinjal
- 4) Need much lime- turnip, celery, lettuce, onion, spinach, peppers, leek and parsnip



# Classification according to Forcing

- Cool Forcing vegetables- Asparagus, beet, carrot, cauliflower, celery, lettuce, onion, peas, radish and spinach
- Warm Forcing vegetables- beans, cucumber, egg plant, muskmelon, pepper and tomato

# Classification according to rate of respiration of the parts harvested for fresh market

- Vegetables with the lowest rate of respiration have the longest storage after harvested
- Very high rate- asparagus, broccoli, peas and spinach
- High rate- beans, lettuce and lime beans
- Moderate rate- beet. Carrot, celery, cucumber, muskmelon, pepper and tomato
- Low- cabbage, sweet potato, and turnip
- Very low- onion and potato

# Classification vegetable crops according to soil reaction

Slightly tolerant pH 6.8-6.0	Moderately tolerant pH 6.8-5.5	Highly tolerant pH 6.8-5.0
Asparagus	Beans	Potato
Broccoli	Carrot	Rhubarb
Cabbage	Cucumber	Sweet potato
Cauliflower	Brinjal	Water melon
Muskmelon	Garlic	
Spinach	Pea	
Chinese cabbage	Pepper	
Okra	Pumpkin	
Lettuce	Tomato, turnip	

# Classification based on salt tolerance

- Vegetables are classified on the basis of their salt tolerance
- This is particularly useful to choose the vegetables according to the saline conditions (of water and soil) of a particular locality
- Tolerance range (molar conc. of NaCl):
- **Sensitive**
- (0.25) tomato, snake gourd
- **Moderately tolerant**
- 0.50- chillies, okra, cabbage and sweet potato
- 0.75- amaranth, cauliflower, onion, radish and bottle gourd
- **Highly tolerant**
- 1.00- French beans and ribbed gourd
- 1.25- bitter gourd and ash gourd