Chapter-6

CLASSIFICATION OF VEGETABLE CROPS

OBJECTIVES

After studying this chapter, the students will be able to understand:

- Importance and criteria of classification of vegetables
- Different types of classifications of vegetables
- The most appropriate method of classification of vegetables

INTRODUCTION

Vegetable crops consist of 1200 species out of which 78 are familiar. Among the 1200 species more than 860 species belong to 59 families and are dicotyledonae and remaining belongs to the monocotyledonae. In the tropical and sub-tropical parts of the world about 90 species of vegetables are cultivated but hardly 15 species are of commercial importance. This grouping or classification is mainly done to show the relationship between the individual vegetables based on their botany, growing season, suitability to grow in a particular climate and the economic part consumed as a vegetable. This classification also helps in avoiding repetition while describing their cultural operations. If the method of growing each is dealt with in detail, it is likely to make things complicated and cause a lot of repetition. It is desirable to classify the vegetables in some groups to eliminate this avoidable repetition.

Methods of classification

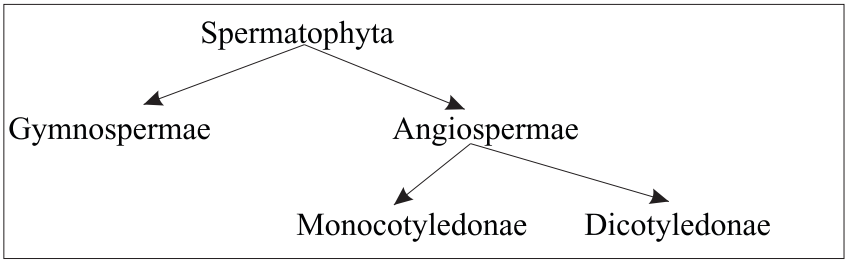
There are different methods of classification of vegetables *e.g.*

1. Botanical classification.
2. Classification based on climatic zones
3. Classification based on the growing seasons.
4. Classification based on economic parts used as vegetables.
5. Classification based on method of cultivation

Botanical classification: Plants are divided into four great groups or sub-communities *e.g.*

a) Thallophyta: Thallophytes
b) Bryophyta: mosses
c) Pteridophyta: ferns
d) Spermatophyta: seed plants

Spermatophytes are further divided into two divisions Gymnospermae and Angiospermae. Gymnosperm produces naked ovule or ovules are not enclosed in the ovary. Angiosperms produce ovules enclosed in an ovary. All vegetable crops belong to division Angiosperms of sub-community spermatophyte. Angiospermae is further divided into two classes Monocotyledonae and Dicotyledonae.



Most of the vegetables belong to the class Dicotyledonae. These classes are further divided into family, genus, species, sub-species, and finally botanical variety. The cultural operations of the vegetables belonging to the same family are not always similar *e.g.* potato and tomato belong to the same family but their cultural requirements are very different.

Table : Botanical classification of some of the important vegetables

Common name	Family	Genus	Species
A. Monocotyledonae			
Onion (Piyaj)	Alliaceae	*Allium*	*cepa*
Sweet corn (Makki)	Poaceae	*Zea*	*mays*
B. Dicotyledonae			
Tomato (Tamatar)	Solanaceae	*Solanum*	*lycopersicum*
Brinjal (Baingan)		*Solanum*	*melongena*
Bell Pepper (Shimla Mirch)		*Capsicum*	*annuum*
Okra (Bhindi)	Malvaceae	*Abelmoschus*	*esculentus*
French bean (Frasbean)	Leguminosae	*Phaseolus*	*vulgaris*
Cucumber (Khira)	Cucurbitaceae	*Cucumis*	*sativus*
Bottle gourd (Ghiyya)		*Lagenaria*	*siceraria*
Bitter gourd (Karela)		*Momordica*	*charantia*
Musk melon (Kharbuja)		*Cucumis*	*melo*

Water melon (Tarbooj)		*Citrullus*	*lunatus*
Garden pea (Matar)	Fabaceae	*Pisum*	*sativum*
Cauliflower (Phool gobhi)	Brassicaceae	*Brassica*	*oleracea var. botrytis*
Cabbage (Band gobhi)		*Brassica*	*oleracea var. capitata*
Carrot (Gajar)	Umbelliferae	*Dacus*	*carota*
Radish (Mooli)	Brassicaceae	*Raphanus*	*sativus*

Classification based on climatic zones:

I. **Tropical vegetables:** Tomato, brinjal cucumber, okra, French bean, cowpea, most of cucurbits, amaranthus, cluster bean.

ii. **Sub-tropical vegetables:** Okra, cucumber, brinjal, chilli, tomato, gourds (all), ginger, turmeric, cowpea.

iii. **Temperate vegetable crops:** Cauliflower, cabbage, broccoli, radish, carrot, turnip, spinach, onion, garlic, pea, fenugreek, potato, asparagus and rhubarb.

Classification based on growing season:

i. **Summer or warm season vegetable crops**: These vegetables need optimum monthly average temperature of 20-27°C for better growth and development. However, they can tolerate minimum temperature of 15°C. *e.g.* tomato, brinjal cucumber, okra, French bean, cowpea, most of cucurbits, amaranthus, cluster bean.

ii. **Winter or cool season vegetable crops**: Optimum monthly average temperature for better growth and development of these vegetables is 12-17°C though they can tolerate minimum temperature of 5°C. *e.g.* cauliflower, cabbage, broccoli, radish, carrot, turnip, spinach, onion, garlic, pea, fenugreek, potato etc. Asparagus and Rhubarb can tolerate even temperature of 1°C.

Classification based on economic parts used as vegetables:

Leaves	Flower	Fruits	Modified stem	Under ground (plant parts)
Cabbage, palak, fenugreek, amaranthus, lettuce, celery, parsley	Broccoli, Globe artichoke	Tomato, brinjal, chilli, beans, okra, and all cucurbits	Knolkhol, cauliflower, asparagus	Carrot, turnip, beet, radish, potato, sweet potato, taro, ginger, garlic, onion, elephant foot yam, cassava

From the above classifications, the vegetables categorized in a particular group have different method of their cultivation. This means that these groups are unable to avoid repetition with respect to their method of cultivation. Therefore, there is necessity to classify the vegetables in such groups where they have almost similar cultivation techniques.

Classification based on methods of culture: This is the most convenient method of classification. In this classification, vegetable crops having same cultural requirements are placed together. As a consequence, it is possible to give the general cultural practices for the group without the necessity of repetition while describing the individual crop. Some groups like cucurbits, cole crops, solanaceous and bulb crops not only have similar cultural requirements for the group but the crops belonging to each group also have the same family. Most of the crops belonging to bulb and salad group have similar temperature requirements. Therefore, this method of classification even though not in all but in the majority of cases fulfill the basic requirements of classification of vegetables.

Group 1: Potato

Group 2: Solanaceous fruits *e.g.* Tomato, brinjal, capsicum, chilli *etc.*

Group 3: Cole crops *e.g.* cabbage, cauliflower, broccoli, knolkhol and kale.

Group 4: Cucurbits *e.g.* cucumber, bottle gourd, bitter gourd, ridge gourd, snake gourd, water melon, pumpkin, summer squash and winter squash.

Group 5: Root crops *e.g.* Radish, carrot, turnip and beet.

Group 6: Bulb crops *e.g.* Onion, garlic, and leek.

Group 7: Salad crops *e.g.* Lettuce, celery and parsley.

Group 8: Greens and pot herbs *e.g.* Spinach, coriander, fenugreek, palak, beat, leak and amaranthus.

Group 9: Peas and beans *e.g.* Pea, Frenchbean, asparagus bean, lima beans, cluster bean, cowpea *etc.*

Group 10: Tuber crops other than potato *e.g.* (Colocasia (Taro), yam and elephant foot yam.

Group 11: Sweet potato.

Group 12: Okra.

Group 13: Pointed gourd.

Group 14: Temperate perennials *e.g.* Globe artichoke and Rhubarb.

Group 15: Tropical perennials vegetables *e.g.* Curry leaves and drum stick.

Group 16: Chow-chow (Chayote).

Activity 1

Visit some vegetable market/garden and make a list of different vegetables. Classify these vegetables on the basis of their plant parts consumed.

References

1. Bose TK, Som MG and Kabir J. *Vegetable Crops*. Naya Prokash.
2. Choudhary B. Vegetables. National Book Trust, India.
3. Fageria MS, Choudhary BR and Dhaka RS. *Vegetable Crops: Production Technology*. Vol. II. Kalyani Publishers.
4. Swarup V. Vegetable Science and Technology in India. Kalyani Publishers.

Check your progress

Short answers

1. What is the importance of classification of vegetables? Enlist different methods of classification.
2. Write families and botanical names of five vegetable crops
3. Classify vegetable on the basis of their growing season.
4. Enlist those vegetables whose fruits and underground parts are consumed as vegetable.
5. Which method of classification is the most convenient from farmers point of view and why?

Match the followings:

1	Temperate vegetable	A	Okra (Bhendi)
2	Summer season vegetable	B	Radish
3	Solanaceae	C	Cucumber
4	Flower	D	Tomato
5	Fruit	E	Broccoli

Objective (one word answer):

1. Grown during winter season
2. Underground part is consumed
3. Belongs to the family Brassicaceae
4. Leaves are consumed
5. Monocotyledonous vegetable