

Identification of Seeds of Vegetable Crops

Exercise 6.1: Identification of seeds of different vegetable crops

OBJECTIVE:

- To impart knowledge of prominent characteristics to identify seeds of different vegetable crops.

Delivery schedule: 01 period.

Student's expectations/learning objective:

- Criteria to be adopted to identify the seeds easily.

Handouts/material/ equipment's & tools required: Paper sheet and pen to note down the instructions, seed samples of different vegetable crops, petri dishes, hand lens *etc.*

Pre-learning required: Knowledge about different vegetable crops.

Introduction:

For every one who is associated with vegetable cultivation, it is of utmost importance that one identifies the seeds of different vegetable crops. For successful vegetable production, it is essential to maintain the quality by removing the undesirable or seeds of other crops. There are many crops with great similarity in their seed characters *e.g.* cole crops. For identification, the morphological characters such as shape, size, colour, glossiness *etc.* are the parameters to be studied. Therefore, knowledge of prominent seed characters is essential. Perfection in identification is attained by practice, interest and keen observation. Some of the morphological characters which are useful in identification of seeds are as under:

Seed coat: The testa or outer covering of the seed is known as seed coat which may be hard, thick, thin, papery or brittle and is developed from the integuments of the ovule.

Size: Seeds are identified as small, medium, or large (big or bold) *e.g.* seeds of cole crops are small and that of okra are medium sized whereas French bean and pea has bold or large seeds.

Shape: The shape of different seeds varies to a great extent. The shape may be spherical, oval, elliptical, rod like, flat, elongated, disc like, kidney shaped *etc.* This is a very important character in identification.

Surface: The surface of the seed may vary from smooth and glossy to dull or rough. There may be some wrinkles, reticulate markings, coloured spots *etc.* The surface may also be covered with some out growths in the form of spines, hooks *etc.* Presence of such marks on the surface makes the identification easy.

Colour: All parts of the spectrum may be represented in the colour of the seeds. The seed may be uniform in colour or may be mottled, streaked or spotted. The colour may be white, brown, dark brown, reddish brown, cream, amber, purple, yellow, tan, green, purple, black, brightly coloured or dull.

Hilum: It is a scar like structure where the seed breaks off from the funicle. Funicle is a short stalk which attaches the seed to the pod. In legume vegetables, it may be small, circular, oblong, cleft or wedge shaped. It is prominently visible in pea and bean seeds.

Some important morphological characteristics of seeds of different vegetable crops

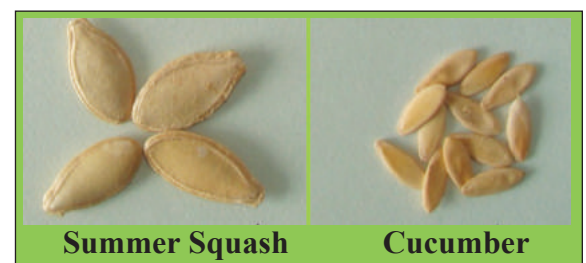
1. Solanaceous crops:

- a) **Tomato:** Seeds of tomato are yellowish in colour, flat and kidney shaped. Round with wavy flat body
- b) **Brinjal:** Seeds are small flattened pale brown, kidney shape with leathery seed coat.
- c) **Peppers:** A rounded, flat, wavy seed that is paper thin, light vanilla coloured.



2. Cucurbitaceous crops:

- a) **Cucumber:** Seeds of cucumber are whitish to pale tan in colour, long skinny flat in shape with smooth outer surface and tapering at both the ends.
- b) **Bitter gourd:** Seeds of bitter gourd are golden brown in colour, flat in shape and has indents on the surface, one end has pointed edge and the other end is flat.
- c) **Bottle gourd:** A long seed (7-20 mm), compressed with two flat facial ridges rather irregular and rugose/wrinkled.



- d) **Muskmelon:** A long skinny seed (5 mm long), covered with a sticky gelatinous coating with a smooth light brown skin.
- e) **Pumpkin:** A large seed with flat body, larger than a squash seed but otherwise very similar, uniform tan coloured.
- f) **Watermelon:** A long skinny seed with a shining black coat.
- g) **Summer squash:** Seeds are large with flat body with distinct edges. Uniform light tan in colour with yellowish opening.

3. Root crops:

- a) **Carrot:** A very fragrant seed, small and thin, have rough skin, light brown in colour. Mature seeds have one side flattened with five longitudinal ribs bearing bristly hair. The hair are usually removed by abrasion during milling and cleaning.



- b) **Radish:** The seeds are oval-shaped, slightly flattened and reddish brown.
- c) **Turnip:** Seeds are round in shape, blackish or reddish-brown in colour, 1.5-2 mm in diameter.

4. Cole crops:

- a) **Cauliflower:** Seeds are small, round, rose-coloured and very hard.
- b) **Cabbage:** Seeds are brown to deep red or black those are small and round in shape. There is a small dent down the entire seed.



- c) **Broccoli:** Perfectly round, hard and dark brown to reddish in colour.

- 5. **Bulb crop i.e. Onion:** Small and very black in colour, embryo is endospermic and crescent shaped.



6. Leafy vegetables:

- a) **Amaranthus:** Seeds of amaranth are very small (1-1.5 mm in diameter), spherical, lenticular, shiny, white, yellow, gold red, pink or black depending upon the variety of the plant.
- b) **Fenugreek:** Seeds are brownish in colour, small and stony, oblong, rhomboidal, with a deep furrow dividing them into two unequal lobes. Fenugreek seeds have a strong aroma and bitter taste.
- c) **Spinach:** Seeds are straw colored. Seed shape varies from round, smooth to prickly pointed.

7. Legume vegetables:

a) **Garden pea:** Seeds of garden pea are dicotyledonous. They are greenish, whitish or yellowish in colour depending upon the variety. They may be round, dimpled and wrinkled in shape.



b) **French bean:** Seeds are more or less kidney shaped, elongated or nearly globular or somewhat compressed; white, brown, red, purple blackish or mottled in appearance.

c) **Cowpea:** Seeds are variable in size and shape, square to oblong and variously coloured, including white, brown, maroon, cream and green.

d) **Guar or cluster bean:** Mature seeds are white or grey.

8. **Okra:** Spherical or ovoid seeds bearing minute warts in concentric rows.

9. **Lettuce:** Small seed with a pungent odour, long and very thin with a uniform blackish colour.



Exercise 5.1: Identify the given samples of seeds on the basis of their morphological characters and record your observations on the data sheet

Material required: Seed samples, petri plates, hand lens

Methodology:

1. Spread the seeds of different vegetable crops on a glass petri plate and observe them with lens.
2. Note size, shape, colour, surface and other identification marks particularly the location of the hilum, wrinkles, spots *etc.* on the seed surface.
3. Make sketches of all types of seeds.
4. Record your observations in the data sheet.

DATA SHEET

Crop	Size	Shape	Surface	Colour	Lustre	Any other specific character
Tomato						
Chilli						
Brinjal						
Garden pea						
French bean						
Okra						
Radish						
Turnip						
Carrot						
Cauliflower						
Cabbage						
Broccoli						