



**MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT
PROGRAMME
OCTOBER 2020**

GRADE: 8

SUBJECT:

Agricultural Science

Week 4

Lesson # 2

Topic: Cultivation of Crop

Sub-Topic: Cultivation of Cabbage

Objectives:

Students will:

- identify and discuss the different signs and symptoms of insect pest that affects cabbage cultivation correctly.
- identify and discuss the signs and symptoms of diseases that affect cabbage cultivation accurately.
- describe how harvesting of cabbage is done without hesitation.

INSECT PEST OF CABBAGE

➤ CABBAGE LEAF MINER (*Liriomyza brassicae*)

- ❑ The adults are minute flies.
- ❑ The larvae live between the upper and lower surfaces of leaves.
- ❑ The leaves show grey, colourless, winding lines with a maximum width of 1.2 cm (1/2 in).

- ❑ It is popularly called 'Chinese writing'.
- ❑ The damaged leaves are rendered unattractive and unsaleable.
- ❑ Some young plants, when severely infested, may die.

CONTROL

- ❑ Spray plants with malathion or dimethoate.

INSECT PEST OF CABBAGE

CRICKET (*Acheta spp.*)

- ❑ It is a major pest of cabbage.
- ❑ The adult insect is dark brown or black in colour with a body length of 2-3 cm.
- ❑ The cricket lives under clods in the soil or in grasses around the cultivated plants.
- ❑ At nights it attacks the plants eating parts of leaves during seedling and transplanting stages.
- ❑ As a result, seedlings may have to be replaced.

CONTROL

- ❑ Soak beds with aldrin solution before transplanting.
- ❑ Mix 2 tbs of aldrin 4% EC in a gallon of water and apply the mixture with watering can or spray can.
- ❑ If the damage continues spray the solution around the seedlings or lightly dust the soil surface with 5% aldrin dust at 20lbs per acre.

INSECT PEST OF CABBAGE

CUTWORM (*Agrotis spp.*)

- ❑ The adult is a moth with brownish grey body, grey forewings with dark brownish-black markings, the hind wings are almost white basically, but with a dark terminal damage.
- ❑ The larvae live in the soil during the day and at night they climb the seedlings and denude them of leaves.
- ❑ Stems below ground may be completely hollowed out.
- ❑ The attacked plants first wilt and then die.

- ❑ A few greenish black excreta pellets may be seen below the seedlings.
- ❑ These worms feed for about 3-4 weeks and then pupate in the soil.

CONTROL

- ❑ Deep ploughing will bring larvae and pupae to soil surface for exposure to predators and the sun.
- ❑ Dusting soil with 5% aldrin dust at the rate of 20 lbs per acre.

INSECT PEST OF CABBAGE

Diamond Back Moth (*Plutella xylostella*)

- ❑ The adult is a small grey moth.
- ❑ There are 3 pale triangular yellowish marks along the hind margin of each forewing and when the wings are closed these marks form a diamond pattern which gives the moth its common name.
- ❑ The hind wings are grey and narrow, with long fringe of hairs.
- ❑ Larvae are greyish green in colour with black heads when hatched, when mature the head turns to a light yellow and the body, a light green.

- ❑ The body of the larva is widest in the middle.
- ❑ The larvae feed on the underside of the leaf and make holes.
- ❑ Sometimes they feed on the lower epidermis of the leaves and only the transparent upper epidermis is left.

CONTROL

- ❑ Larvae could be controlled by spraying ambush, carbaryl or malathion at recommended rates.

INSECT PEST OF CABBAGE

➤ Cabbage Leaf Miner



➤ Diamond Back Moth



INSECT PEST OF CABBAGE

➔ Cricket



➔ Cutworm



DISEASES OF CABBAGE

► CLUBROOT (*Plasmodiophora brassicae*)

- The casual organism is a fungus.
- It is prevalent in acid soils.
- Its attacks the roots causing characteristics swellings.
- The malformed roots are club-like in appearance near the stem of the plant.

CONTROL

- Keep the soil alkaline (pH 7.2).
- This can be done by applying slaked lime at the time of land preparation.
- Practice crop rotation.



DISEASES OF CABBAGE

➤ **BLACK ROT (*Xanthomonas campestris*)**

- It appears at any stage of plant growth.
- The disease is first indicated by yellowing of the leaves and blackening of the veins.
- Later the plants show dwarfing and one-sided heads.
- If the disease attacks the plants early no heads will be formed.

CONTROL

- Use clean seeds, as the disease-causing organisms is carried over by seeds.
- Practice crop rotation.
- Field sanitation is important.



DISEASES OF CABBAGE

➤ ROOT KNOT (*Meloidogyne spp*)

- ❑ The disease is caused by a parasitic eelworm (nematode) which attacks the roots of plants producing irregularly shaped galls.
- ❑ As infection increases the plants become stunted and eventually die.

CONTROL

- ❑ Soil should be treated with nematodes e.g. nemagon or soil fumigants such as vapam, methyl bromide or shell DD prior to planting.
- ❑ Rotation with crops with small grains, corn or soybean should be practiced.



HARVESTING OF CABBAGE

- ❑ Cabbage should be harvested when the heads are mature into a firm white head.
- ❑ It takes 2-4 months depending on the variety.
- ❑ Harvesting should be done early in the morning or late evening to prevent water loss.
- ❑ Cabbage is harvested with about 2-3 wrapper leaves attached to the head.
- ❑ Care should be taken not to bruise the head as this makes it unattractive.
- ❑ When the crop cannot be sold within 48hrs refrigeration is necessary.
- ❑ <https://www.youtube.com/watch?v=mSDMyA96ip4>



VIDEO ON PEST AND DISEASES OF CABBAGE

<https://www.youtube.com/watch?v=QGhb1KgOeO8>



REVIEW

Answer the following questions.

- Cabbage should be harvested _____ months old.
- What time of the day cabbage should be harvested and why?
- Cabbage should be harvested with _____ green wrapper leaves.
- Identify 3 insect pest affecting cabbage.
- Describe how any 2 of the insect pest identified can be controlled.
- With the named organism that caused Root Knot, discuss the extent of damage and control measures.

REFERENCE

Book

1. Weever, et al (1993), Agricultural Science for Secondary Schools in Guyana, BK 2, Ministry of Education National Center for Educational Resource Development, Georgetown, Guyana. Chapter 2, pages 46-48.

Internet

<https://www.youtube.com/watch?v=QGhb1KgOeQ8>

<https://www.youtube.com/watch?v=mSDMyA96ip4>