Mosaic of Beans:

- Virus: Bean mosaic virus, Yellow bean mosaic virus or Bean virus-1, Bean virus-2
- RNA-a) Bean common mosaic-cowpea, cluster bean, soybean, etc.
- DNA-b) Golden mosaic (Gemini vinus)- field bean, horse gram, etc.
- **Symptoms:**Infected leaves show yellow and green patches of irregular size on the leaf lamina in mosaic fashion. Pods generally show no signs but under certain conditions, chlorosis of immature pods is noticed. The plant growth is reduced, blossom tends to drop and pods are shorter than normal.

- Transmission: a) Common mosaic: by Aphis sp.

  b) Golden mosaic and Yellow bean mosaic: by white flies (Bemisia Bean common mosaic is also transmitted by infected seed.

Control measures:1. Use seed from disease free plant.

2. Remove and destroy the infected plants.

3. Grow resistant varieties.

4. Control of insect vectors by spraying proper insecticides, e.g., diamethoate or endosulfan (0.03 -0.05%) + Neem oil 0.5% 3 times at interval of 10-15 days.

Bacterial Blight of Beans

- **Symptoms:** The disease is characterized by irregular sunken, red to brown leaf spots surrounded by yellow halo. Several spots coalesce to form irregular patches causing the distortion of leaf, shrivelling and cause premature defoliation. Cankerous spots are observed on pods.
- **Causal organism-** *Xanthomonas axonopodis pv. phaseoli (E. F. Smith) Dowson.*
- **Etiology**: The bacterium is rod shaped with single polar flagellum, Gram-negative, aerobic, non-spore former.

- **Perpetuation**: Primary source of infection is through seed and infected plant parts. Secondary spread of infection is through wind, water.
- **Control measures**:1. Use healthy seed.

2. Field sanitation.

3. Crop rotation.

4. Spray the crop with Streptomycin sulphate (150-200 ppm) + copper oxychloride (0.25%) at an interval of 15 days.V) BACTERIAL WILT OF SOLANACEOUS CROPS

Alternaria Blight:

- The chief symptom is blight or rot at leaf bases and around nodes, which are girdled. Spots on leaves are ashy white. The centres of old spots are covered with dark brown to blackfungal growth. Leaves may be constricted and twisted and the tip may be killed. Branches dieback at the girdled area and black crusts of conidia are formed on the cankers.
- **Causal organism**: *Alternaria dianthi Stevens and Hall.*

- **Etiology:** Conidiophores are straight or flexuous, geniculate (bent like a knee), olivaceous-brown conidia multi celled, muriform (with several transverse and longitudinal septa), constricted at septa, smooth, beaked, beak swollen at the tip and measure 18 to 110 x 7 to 30,4 µm.

- **Perpetuation**:Conidia spread through irrigation or rains, enter through wounds, stomata or directly through the cuticle. The conidia are carried on cuttings. The disease is widespread in humid weather.

Management:

1. To reduce the disease incidence, humidity may be kept low by providing proper aircirculation.

2. Disease free planting material should be used.

3. Planting material should be sterilized with formalin 5.0 per cent solution.

4. During propagation of planting material, spraying with carbendazim 0.1 per cent ormancozeb 0.2 per cent controls the disease.