For B.Sc.Botany Honours students

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Introduction

- Citrus canker is a bacterial disease of Citrus Plant . Pseudomonas citri or Xanthomonas citri is the causal organism. Host is different species of Citrus.
- Fawcett and Jenkins(1933) first of all collected this disease in India in Dehradun in 1827, and then Java between 1842 and 1844. This suggests that the disease might have originated in India or Java and then spread to other countries.Now it is known to occur in every citrus growing area of the world.

Symptoms 2

- 1. Citrus canker may affect any part of the tree above the ground, although the leaves, twigs, young branches and fruits are the most susceptible part.
- 2.On the leaves, canker first appears as small, watery, translucent spots, usually of darker green colour, with a raised convex surface.
- 3.After that, the surfaces of the spots become white or greyish and finally rupture, exposing a light brown, spongy, central mass developed in a crater like formation. These spots usually become surrounded by a halo which persists in very old lesions.

Symptoms contd. 3

- 4. Old lesions become corky and brown.
- 5. On young twigs lesions are similar to those on leaves but on older twigs they are more irregular in shape.
- 6.The canker lesions on the fruits appear similar to those on leaves except that yellow halo is absent and the crater like appearance is more noticeble.
- 7. As the cankered tissue remains restricted to skin portions of the fruits, juice is not effected. But economic value of the fruits reduced.
- 8. In severe infection defoliation and broken twigs also occurs and lastly entire plant dies.

Symptoms on Citrus Leaves

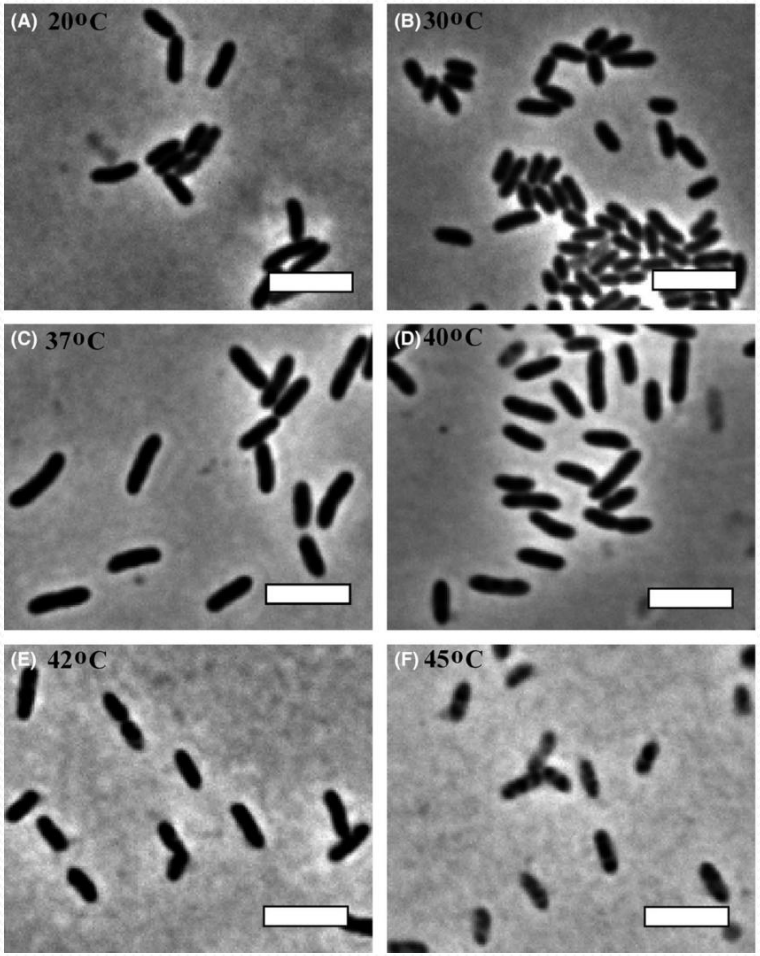
Symptoms on Citrus Fruit

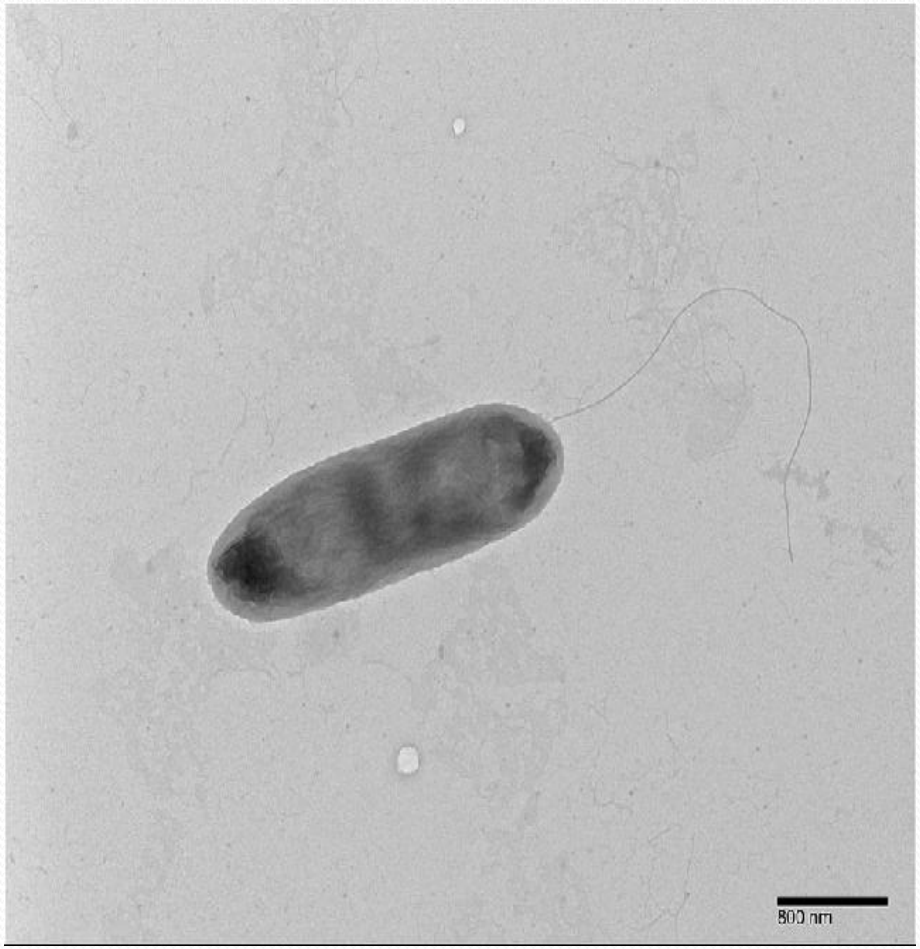
Symptoms on Citrus Twig and fruits 6

Causal organism

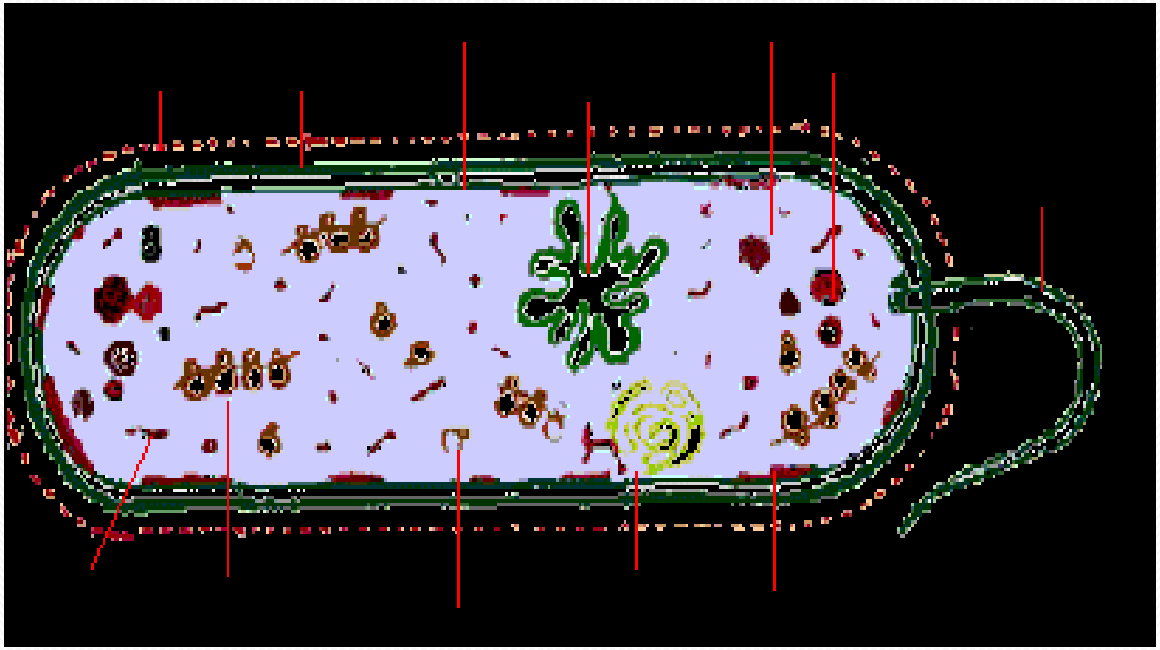
- Host is different species of Citrus. Hasse (1915) was first to establish the bacterial nature of the pathogen responsible for citrus canker disease and describe the organism as Pseudomonas citri or Xanthomonas citri .
- The organism was later studied by Breed et al(1957).
- It is a short, rod shaped bacterium, motile by means of a single polar flagellum. It is 1.5- 3u long and 0.5 – 1.5u broad and strictly aerobic.

Structure of Bacteria under Compound Microscope





Structure of Bacteria under Electron Microscope



Disease cycle

- The inoculum is provided by the diseased twigs and leaves. The pathogen enters the host through various types of wounds, natural openings etc.
- On penetration into the host it multiplies in the intercellular spaces, dissolves middle lamella, multiply and establishes itself in the cortex.
- The disease is chiefly disseminated by wind, rain and insects(chiefly leaf miners).
- Man is also chief agent of dissemination of the pathogen and transports the disease.

Control

- 1. Disease can be control by checking its movementby quarantine rule.
- 2. By eradication ie complete destruction of infected trees by burning or other methods.
- 3. By sanitary precautions.
- 4. By the use of resistant varieties.
- 5. Spraying of neem cake at the rate of about 7 kg per acre is highly effective in checking the disease.
- 6.Rangaswami et al.(1959a,b) said that spray of Streptomycin sulphate at 500-1000ppm and Phytomycin at 2500ppm at intervals of 15 days is effective in checking the disease.

THANKS EVERYONE