

WILT DISEASE OF ARHAR

By:

Dr Arun kumar singh
Associate professor in Botany
JLN College Dehri –on sone
Gmail:-arunsinghbot85@gmail.com

For:

B.Sc. Botany(Part-III)
Plant Pathology
Paper-VI

Lecture-03

Introduction:-

This is a very common disease in India, causing severe damage wherever the crop is grown especially in Bihar, U.P .etc.

Symptoms of wilt disease

1. Wilting of seedlings and adult plants.
2. The wilting is characterized by gradual, sometimes sudden, yellowing, withering and drying of leaves followed by the drying of entire plants or some of its branches.
3. The wilting is brought about by the plugging of the vascular tissue of the stem and roots of the host plant by dense masses of mycelia hyphae. The free flow of water to the leaves is thus interfered.

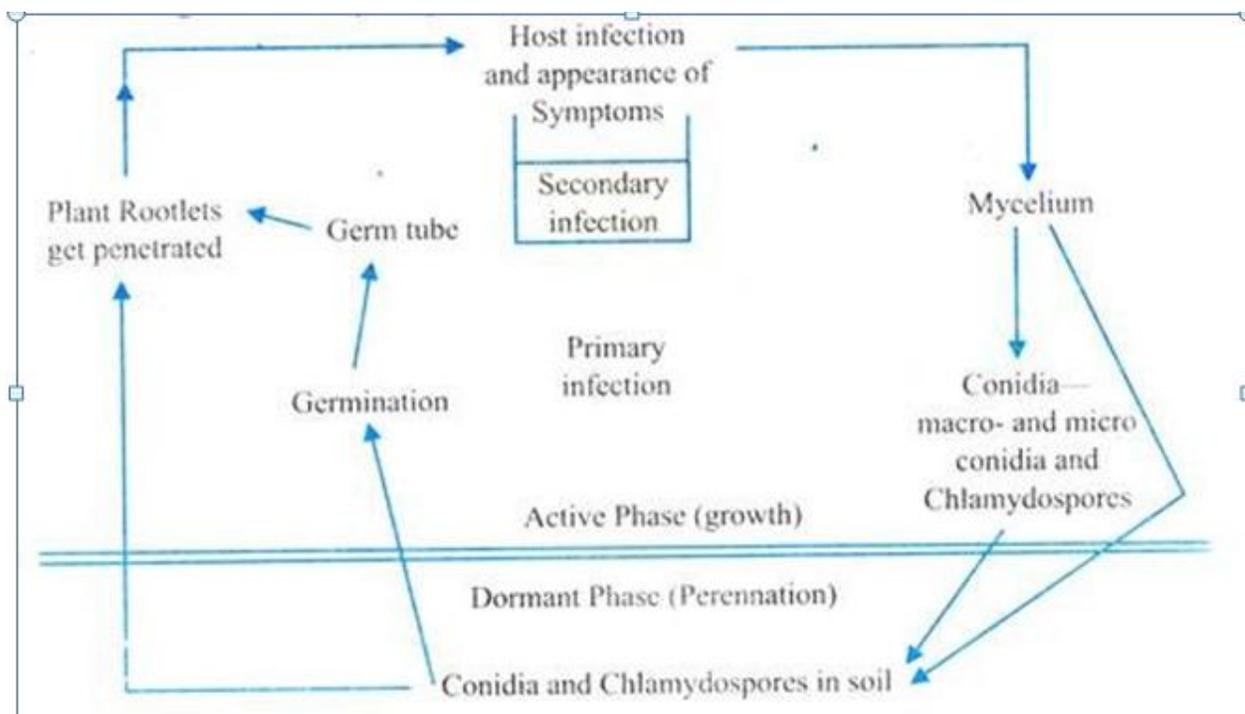
Causal Organism:

The causal organism is *Fusarium oxysporum* f. udum Butler

The mycelium is septate and branched. It is colourless. The hyphae are both intercellular and intracellular.

Disease Cycle:

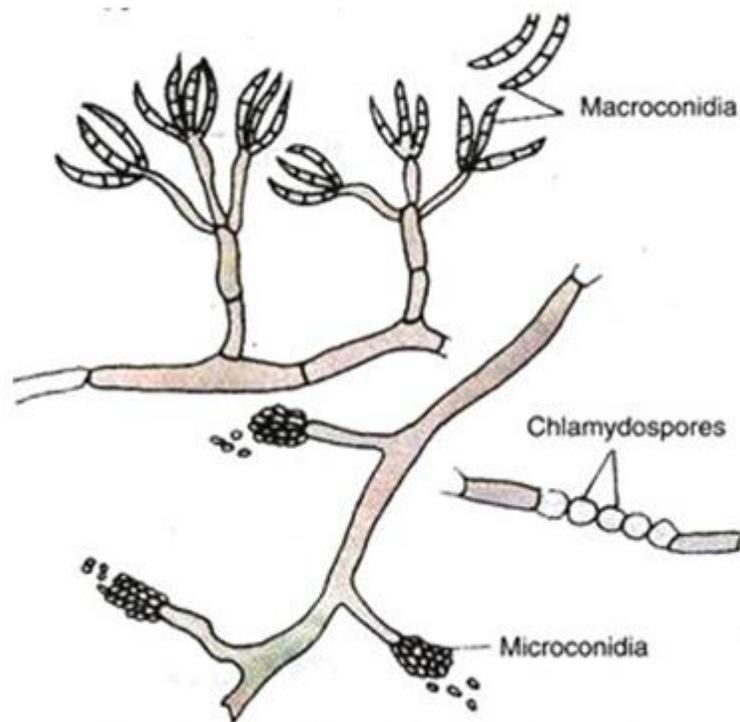
Asexual reproduction takes place by the formation of three kinds of spores, microconidia, macroconidia and chlamydospores.



Disease Cycle of wilt of Arhar

(i) The microconidia are generally tiny structures produced in large numbers from the tips of conidiophores which are indistinguishable from the vegetative hyphae. The spores may be rounded, curved or elliptical and are formed within the tissues of the host.

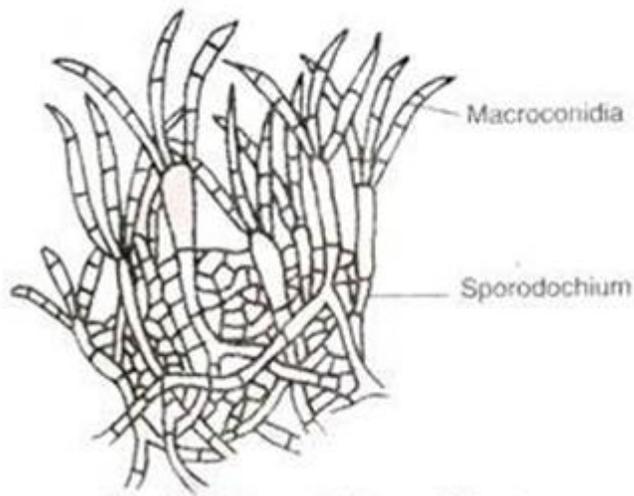
Usually the microconidia are unicellular, sometimes with one or two septa. In cultures they are held together in a ball or false head.



Fusarium, Asexual Reproduction

(ii) Macroconidia are long, sickle-shaped or crescent-shaped spores. They are septate (with 3-4 septa) and have pointed tapering ends. The macroconidia are produced at the tips of short conidiophores which arise from the upper surface of cushion-shaped stromatic mass of hyphae.

The whole fruit body is called the sporodochium. The macroconidia are shed as soon as they reach maturity.



Sporodochium of Fusarium

(iii) The chlamyospores are thick-walled, rounded or oval cells formed in the hyphae. They occur singly or in chains and may be terminal or intercalary. The chlamyospores become separated from the parent hypha after maturing. They function as resting spores.

Infection of Wilt Disease:

Wilt of arhar is a soil borne disease. The microconidia, macroconidia and chlamyospores remain viable in the soil. At the sowing time the spores germinate and initiate new infections.

Infection takes place through the young roots or rootlets possibly through the root hairs. Infection of the aerial parts of the plant through air-borne spores never takes place.

The fungus mycelium also exists in the soil as an active facultative saprophyte so long the dead host roots and other parts are present in the soil. It gains entry into the host through the rootlets and finally passes into the larger roots.

Control Measures of Wilt Disease:

1. Since the disease is soil borne several cultural methods like crop rotation is recommended for checking the severity of the disease.
2. Hot weather cultivation with deep ploughing in the summer is also recommended.
3. Mixed cropping with jowar has been found quite efficacious for controlling the disease.
4. Green manuring is efficacious in controlling wilt disease.
5. To sow resistant varieties N.P. 15 and N.P. 38 --fairly resistant to the disease
6. By the use of antibiotics and chemicals disease can be controlled.