



FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES

**DISEASES OF FIELD&HORTICULTURAL CROPS&
Management 1 PPA - 312**

LECTURE 01

1. NAME OF DISEASE – WILT OF GUAVA

Introduction

Guava (*Psidium guajava* Linn.) (family- Myrtaceae) is an important fruit of subtropical countries. It is hardy crop and is cultivated successfully even in neglected soils.

There are number of pathogens, mainly fungal which affect guava crop besides few bacterial, algal and some physiological disorders or deficiencies. About 177 pathogens are reported on various parts of guava plant or associated with guava, fruit of which, 167 are fungal, 3 bacterial, 3 algal, 3 nematodes and one epiphyte. About 91 pathogens are reported on fruits, 42 on foliage, 18 on twig, 18 on root and 17 fungi are isolated with surface wash of fruits. These cause various diseases viz. pre and post harvest rots of fruits (dry rots, wet rots, soft rots, sour rots, anthracnose, brown rots, ripe rots, scab, styler end rots, ring rots, pink rots and waxy fruit rots etc.), canker, wilt, die back, defoliation, twig drying, leaf spot, leaf blight, anthracnose, red rust, sooty mould, rust, seedling blight and damping off etc. (Misra and Prakash, 1990).

Casual organism -*Fusarium oxysporum* f.sp. *psidii*, *F. solani*, *Macrophomina phaseolina*, *Cephalosporium* sp., *Gliocladium roseum* and *Verticillium alboarum*.

Economic importance:

It was first reported in 1935 from Allahabad. Jhoty et al., in 1984 reported that seven thousand acres of land in A.P under guava cultivation was reduced to half the land value by the presence of the disease.

Symptoms

- The affected plants show yellow colouration with slight leaf curling at the terminal branches, becoming reddish at the later stage and subsequently premature shedding of leaves takes place.
- Twigs become bare and fail to bring forth new leaves or flowers and eventually dry up. Fruits of all the affected branches remain underdeveloped, become hard, black and stony.
- The entire plant becomes defoliated and dies. A few plants also show partial wilting, which is very common symptom of wilt in guava.
- The finer roots show black streaks which become prominent on removing the bark. The roots also show rotting at the basal region and the bark is easily detachable from the cortex.
- The cortical regions of the stem and root show distinct discolouration and damage. Light brown discoloration is noticed in vascular bundles. Bark splitting can be seen in wilted plants in later stages.

- The disease can be categorized into slow wilt and sudden wilt. In slow wilt, plant takes several months or even a year, to wilt after the appearance of initial symptoms and in sudden wilt, infected plant wilts in 15 days to one month.

Favourable conditions:

- pH 6.0 is optimum for disease development. Both pH 4.0 and 8.0 reduces the disease.
- Disease is more in clay loam and sandy loam compared to heavy soil. $\frac{3}{4}$ Higher disease incidence in monsoon period.
- Disease appears from August and increases sharply during September-October.
- The presence of nematode, *Helicotylenchus dihystra*

Management

Cultural:

- Proper sanitation of orchard.
- Wilted plants should be uprooted, burnt and a trench of 1.0-1.5m should be dug around the tree trunk. Treat the pits with formalin and cover the pit for three days and then transplant the seedlings after two weeks.
- While transplanting seedlings avoid damage to the roots.
- Maintain proper tree vigour by timely and adequate manuring, inter-culture and irrigation.
- Intercropping with turmeric or marigold.
- Soil solarization with transparent polythene sheet during summer months.
- Application of oil cakes like neem cake, mahua cake, kusum cake supplemented with urea. Apply 6kg neem cake + 2kg gypsum per plant. $\frac{3}{4}$
- Judicious amendments of N and Zn.

Host Plant Resistance:

- Resistant variety: Apple guava
- Guava species, *Psidium cattleianum* var. *lucidum* and *Syzigium cumini* (Jamun) are resistant to wilt.
- *Psidium cattleianum* (*P. molle*), *P. quianense*, Chinese guava (*P. friedshthalianum*) and Philippine guava are recommended as resistant root stocks

Biological:

- *Aspergillus niger* strain AN 17, *Trichoderma viride*, *Trichoderma harzianum* and *Penicillium citrinum* can be used as biocontrol agents

Chemical:

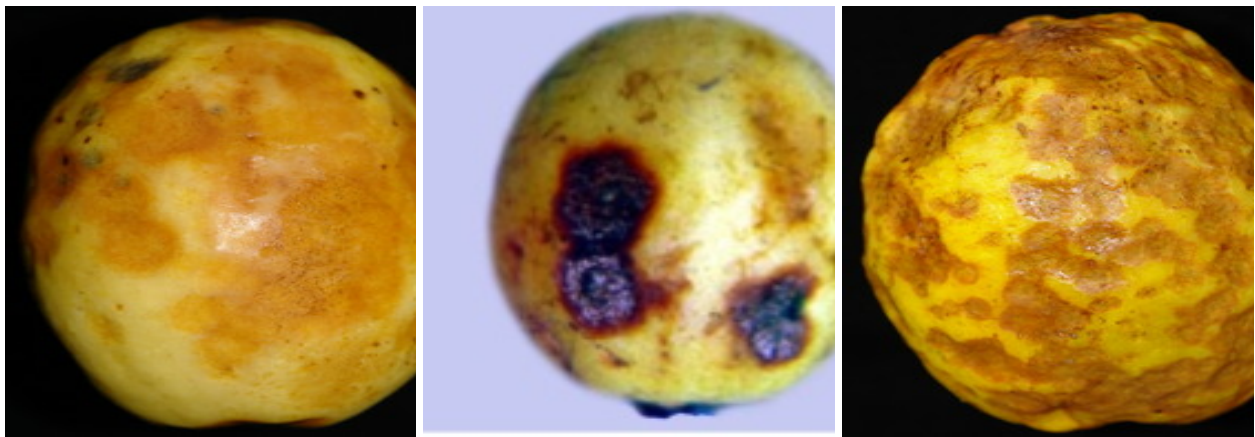
- Stem injection with 0.1% water soluble 8-Quinolinol sulphate
- Drench with 0.2% Benomyl or Carbendazim, four times in a year and spray twice with Metasystox and Zinc sulphate.
- Disinfection of soil with Metam-sodium at 252 ml/10m² area to control nematodes.

2. NAME OF DISEASE – ANTHRACNOSE OF GUAVA

Pathogen: *Gloeosporium psidii*

Symptoms:

- The most characteristic symptoms appear during the rainy season as small pin-head sized spots on the unripe fruits.
- They gradually enlarge to form sunken and circular, dark brown to black spots.
- The infected area of the unripe fruits becomes harder and corky.
- Acervuli are formed on fruit stalks.
- The pathogen remains dormant for about three months in the young infected fruits.
- In moist weather, acervuli appear as black dots scattered throughout the dead parts of the twigs.
- The conidia are spread by wind or rain.



Primary spread

Air borne spores develop on dead leaves, twigs and mummified fruits.

Secondary spread

Infected plant materials.

The disease occurs in two phases

- i. Die back phase
- ii. Fruit and leaf infection phase

Management

- a. Use resistant varieties- apple guava
- b. Proper canopy management
- c. Pruning of diseased twigs
- d. Application of *Streptosporangium pseudovulgare* on fruits before the symptom
- e. Spraying with copper oxychloride 50 % WP @ 4 gm/lit