Physiological Disorders in Mango

1. Mango malformation:

Growing of thick vegetative shoots at the growing tip and transformation of floral parts into compact mass of sterile flowers and giving appearance like “bunchy top”

**Two types:** Vegetative and floral malformation

- A physiological disorder affecting inflorescence (floral malformation) and shoots (vegetative malformation).
- Involvement of mites (*Acaria mangiferae*) and fungus (*Fusarium moniliformae*) is also highlighted.
- Biotic and Abiotic stress reported for causes
- Incidence is severe in North India.
- Spraying of 200 ppm NAA with a fungicide and acaricide in October followed by deblossoming at bud-burst stage is known to give control over this melody. Cyclohexamide at 50 ppm can be used for deblossoming.

2. Irregular bearing or Alternate bearing or Biennial bearing:

- Mango tree heavily bear fruits in one year (on year) and a much reduced crop in the following year (off year).
- Draining out of CHO and N reserves during ‘on year’ is known to lead to a lean crop in the ‘off yer’ as they are important for fruit bud initiation e.i high C/N ratio helps for fruit bud initiation
- Varieties with axillary fruit bearing habit posses less than terminal bearing
- Many commercial varieties are irregular bearers.
- Totapuri, Neelum, and hybrids in which Neelum is involved as one of the parents are regular bearers.

**Measures to control alternate or biennial bearing**

- Proper up keeping and maintenance of orchard
- Deblossoming
- Girdling and ringing the bark
- Smudging
- Chemical regulation: Paclobutrazol (Cultar) @ 5ml a.i, dissolved in 10lit of water and drench along the basin 90cm apart from stem.

3. Causes for low fruit set and fruit drop

- Lack of pollination
- Low stigma receptivity
- Defective perfect flowers
- Poor pollen transfer
- Occurrence of self incompatibility
- Drought or lack of irrigation during fruit set & growth period
- Winds and hail storms
- High incidence of disease (Powdery mildew & Anthracnose)
- Peak pests like hopper and mealy bug

Remedies

- Regular irrigation during fruit set and development
- Use of growth regulators
  - Example: NAA, 2,4-D & GA3
  - 200 ppm NAA spray helps in increase the bisexual flowers

4. Black tip:

The distal end of the fruit first exhibits etiolated patches, later running black followed by discolorations and necrosis of the mesocarp.

Symptoms:

- Gases like SO$_2$, Ethylene and CO affect the fruits.
- The distal end of the fruit turns black and get hardened.
- Affected fruits become ripe pre maturely and unmarketable.
- Exuding a brown gummy substance
Remedies:

- Brick kilns should be allowed to establish at least 2 km away from the mango orchard.
- Chimney height should be increased to at least 18 to 20 m.
- Spray borax (0.6%) + caustic soda (0.8%) thrice
  
  (a) Before flowering.
  
  (b) During flowering
  
  (c) At fruit-set stage.

5. **Spongy tissue or soft nose:** Non edible sour patch develops in the mesocarp of mango fruit called as spongy tissue.

- Normal and attractive fruits on cutting reveal spongy development in the flesh.
- This malady increase with increased nitrogen application
- Fruits with low calcium content are affected
- Heat arising from the soil inactivate the ripening enzymes
- The fruits have a bad odour and become unmarketable.

Remedies:

- Harvest fruits at $\frac{3}{4}$th maturity stage.
- Apply calcium containing fertilizers like calcium ammonium nitrate.
- Use of sod culture

  Varieties susceptible: Alphanso, Olour, Totapuri
  
  Varieties resistant: Arka Puneet