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immediately to ice cold water & keep for 5 mins. Dry the seeds on a soaking blotter in dark under a fan. Streptocycline or Agriomycin like antibiotics are some time used to prevent bacterial seed borne diseases.

⇒ Hot Air treatments.

For smuts of cereals & seed borne viral diseases of vegetables, Hot air treatment is effective. Spread the seeds in thick layer on sun heated cement floor or stone or on trays of Hot air oven with a fan inside at $60-70^{\circ}\text{C}$ for 30 mins or more followed by cooling gradually under a fan in room temp.

⇒ Heat therapy to control citrus

Gummosis:

Heat therapy is generally common in using virus infect-affected plants. Infection of lower trunks of citrus plant due to Phytophthora parasitica causes gummosis, bark ringing & death of the tree. Citrus paradisii commonly develops this disease after grafting. Hough et al., 1979 developed a technique of Heat therapy.

Select the tree with lesions & and actively exuding fresh gums. Remove the soil around the base of the trunks

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to expose the crown roots & examine the extent of lesion. Set a copper constant thermocouple in the effective bark to monitor the change in bark temperature during and after treatments. Connects the thermocouple wire to a portable potentiometer to measure the temperature. In the healthy bark 9cm away from the margin of the lesion drill a hole, ~~toward the~~ of 4mm x 1cm. Insert a thin narrow spatula between the bark and the wood from the drilled hole towards the margin of the lesions to separate the bark from the wood. Fold the tip of the thermocouple wire over the end of spatula & insert into the channel. For protection from the direct flame place a ceramic tube around the thermocouple wire leaving the tip exposed to measure cambium temperature. Flame the effected ~~bark~~ bark at the margin of the lesion by using the flame of a Kerocine ~~blow~~ blow ~~torch~~. torch. → continue. 22-10-19 practical

16-10-19

Theory

Physical methods that eradicate or Reduce the inoculum.

Physical agents:

- i) Temperature (max, min)
- ii) Dry air
- iii) Unfavourable light wavelengths,
- iv) Various types of radiations

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i) Soil sterilization:

through i) aerated steam ii) Hot water
& for those equipments like containers &
Soil sterilizers

If you increase temp. of soil to 50°C \rightarrow nematodes,
oomycetes fungi, water moulds killed.

If you increase temp. upto $60-72^{\circ}\text{C}$ \rightarrow fungi &
bacteria are killed.

If you increase temp upto 82°C , viruses, Heat
tolerant bacteria, weeds are killed.

If you increase temp. $91-100^{\circ}\text{C}$, Heat tolerant
viruses, Heat resistant bacteria | Heat tolerant
weeds are killed.

\Rightarrow If you give Aerated steam temp. at
 82°C for 30 mins through pipping transfer
to soil, the soil can be sterilized.

\rightarrow If this is used ^{for long time,} Concentration of these metals/minerals/
gas increases Manganese, Ammonia &
increase in ammonia cause Ammonification
& it kills the nitrifying bacteria or
Nodule forming bacteria.

ii) Soil solarization:

with 52°C By using polyethylene sheets, soil
temp. & of upper ~~5cm~~ are killed. all
pathogens of upper 5cm layer are killed.

iii) Hot water treatment:

Effective for those pathogen which are
present in embryos of seeds.

eg a nematode Ditylenchus dipsaci
at a temp. of 43°C for 3 hours is require
to kill it.