PLANT HEALTH DIAGNOSTICS

agriculture
& rural development

Department:
agriculture
& rural development
PROVINCE OF KWAZULU-NATAL

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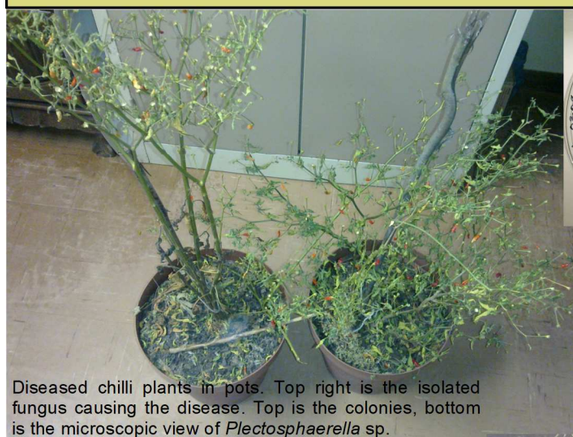
INTERNET LINKS:

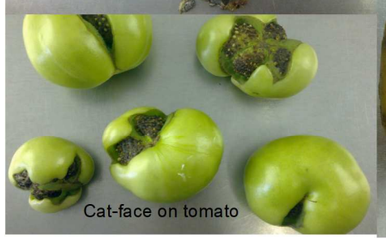
Prices:
http://www.kzndard.gov.za/images/Documents/RESOURCE_CENTRE/FORMS/ANALYTICAL_SERVICES/Plant-Health-Diagnostics-Price-List.pdf
Plant form:
http://www.kzndard.gov.za/images/Documents/RESOURCE_CENTRE/FORMS/ANALYTICAL_SERVICES/Diagnosis-of-a-Diseased-Plant.pdf
Water & baits:
http://www.kzndard.gov.za/images/Documents/RESOURCE_CENTRE/FORMS/ANALYTICAL_SERVICES/Detection-of-Pathogens-in-Water-Plant-Baits-Seedlings-or-Cuttings.pdf
Nematode form:
http://www.kzndard.gov.za/images/Documents/RESOURCE_CENTRE/FORMS/ANALYTICAL_SERVICES/Quantification-or-Detection-of-Nematodes-in-Soil-or-Plant-Tissue.pdf

1. Plant Disease Diagnostic services

By symptoms for some diseases and physiological disorders
By microscopy of diseased tissue
By isolation from diseased tissue.
By PCR on DNA extracted from plant tissue

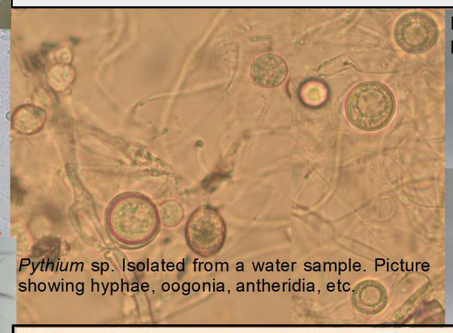


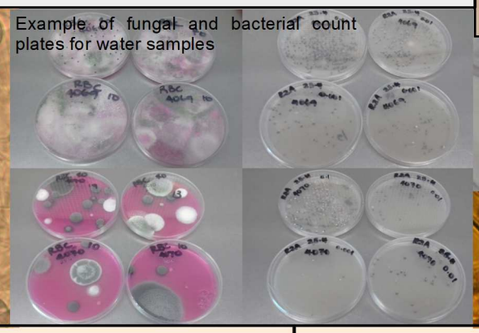
Diseased chilli plants in pots. Top right is the isolated fungus causing the disease. Top is the colonies, bottom is the microscopic view of *Plectosphaerella* sp.



2. Plant pathogen detection tests for water

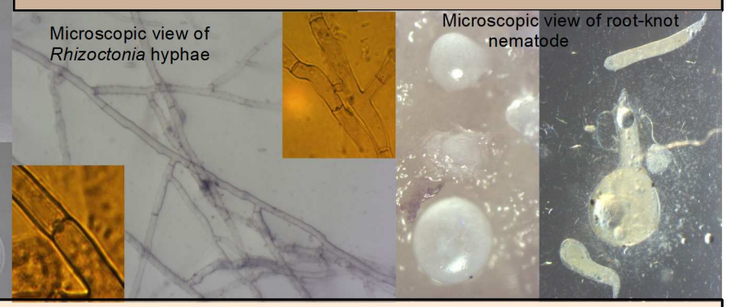
Pythium:
Pythium tests are done by MPN method with 3.3L (=3x(1L, 0.1L, 0.01L) using popcorn as baits; which are later plated on Pythium selective medium.
Phytophthora:
Phytophthora tests are done by baiting 4L with surface-sterilized lemon, camelia and rhododendron leaf discs. Baits are plated on PARPH medium OR their extracted DNA tested by PCR using *Phytophthora* genus-specific primers.
Fungal counts:
By making a 1/10 and 4/10 dilutions on Rose Bengal Chloramphenicol medium
Bacterial counts:
By spread plate technique on R2A medium using: 10x, 100x & 1000x dilutions





3. Plant pathogen tests for soil and growing media

Pythium:
By mixing 200g soil sample with 2L sterile water and baiting with popcorn. Baits plated with Pythium selective medium.
Phytophthora:
By mixing 200g soil sample with 2L sterile water and baiting with surface sterilized leaf discs of lemon, camellia and rhododendron. Baits plated with PARPH or PCR-processsed.
Rhizoctonia:
By incubating sterile toothpick pieces in 200g soil sample before plating with KHP medium.
Nematodes:
By centrifugal extraction in $MgSO_4$ or Seinhorst elutriation



4. Specific Pathogen Tests by PCR

Phytophthora genus specific primers
Pythium genus-specific primers
Bacterial barcoding primers
Some PCR amplicons sequenced by Inqaba Biotechnology

PCR done on baits for *Phytophthora* for tests on water and soil
DNA extraction using bead-beater maceration and selected protocols
Real-time PCR using Biorad Mini-Opticon
Confirmations by melt curve analysis, gel electrophoresis and sequencing