

Identifying Common Plant Diseases

Identifying Common Plant Diseases – Study Notes

1. Why Disease Identification Matters

- **Early detection** ? timely interventions, reduced crop loss.
 - **Accurate diagnosis** ? appropriate control measures (cultural, chemical, biological).
 - **Economic impact** ? protects yield, marketability, and farmer income.
-

2. General Diagnostic Approach

Step	Action	Key Tools / Techniques
1. Observation	Scan the whole plant and surrounding area.	Hand lens (10×–30×), smartphone macro camera.
2. Symptom Recording	Note type, location, and pattern of symptoms.	Field notebook, photo log, GPS tag.
3. Sample Collection	Take representative plant parts (leaf, stem, root, fruit).	Clean scissors, labeled bags, cool storage.
4. Laboratory Tests (if needed)	Microscopy, culturing, molecular assays.	Light microscope, PDA medium, PCR kits.
5. Compare	Match findings with reference guides or databases.	Extension bulletins, online portals (e.g., CABI, PlantVillage).
6. Confirm & Report	Validate diagnosis, document for future reference.	Diagnostic report, disease code (e.g., EPPO, USDA).

3. Major Categories of Plant Diseases

Category	Causative Agents	Typical Symptoms	Example Diseases
Fungal	<i>Botrytis</i> , <i>Fusarium</i> , <i>Puccinia</i> , <i>Rhizoctonia</i>	Spots, blights, wilts, rust pustules, powdery mildew	Gray mold (<i>Botrytis cinerea</i>), Wheat rust (<i>Puccinia</i> spp.)

Identifying Common Plant Diseases

Category	Causative Agents	Typical Symptoms	Example Diseases
Bacterial	<i>Xanthomonas</i> , <i>Pseudomonas</i> , <i>Erwinia</i>	Water-soaked lesions, ooze, wilting, cankers	Bacterial leaf spot (<i>Xanthomonas</i> spp.), Fire blight (<i>Erwinia amylovora</i>)
Viral	RNA/DNA viruses (e.g., TMV, CMV)	Mosaic, chlorosis, stunting, leaf curling	Tobacco mosaic virus, Cucumber mosaic virus
Nematode	Root-knot (<i>Meloidogyne</i>), cyst (<i>Heterodera</i>)	Galls, root knots, stunted growth, yellowing	Root-knot nematode disease
Phytoplasma / Mycoplasma	Wall-less bacteria	Yellowing, witches' broom, phyllody	Aster yellows, Peanut stunt disease
Abiotic Mimics	Nutrient deficiency, toxicity, environmental stress	Similar visual signs but no pathogen	Iron deficiency (chlorosis) vs. fungal leaf spot

4. Recognizing Common Diseases (Crop-Specific Highlights)

4.1. Cereal Crops (Wheat, Barley, Maize)

Disease	Pathogen	Diagnostic Clues
Septoria leaf blotch	<i>Zymoseptoria tritici</i> (fungus)	Small, angular brown lesions with pale halos; appears after heading.
Powdery mildew	<i>Blumeria graminis</i> (fungus)	White, powdery colonies on leaf surfaces; thrives in high humidity, moderate temps.
Northern corn leaf blight	<i>Exserohilum turcicum</i> (fungus)	Long, cigar-shaped lesions, gray-green to tan, often on