

SYSTEMIC APPROACH TO DIAGNOSING PLANT DAMAGE

- I. **DEFINE THE PROBLEM** (Determine that a “real” problem exists):
 - a. **PLANT IDENTIFICATION and CHARACTERISTICS.** Establish what the “normal” plant would look like at this time of year. Describe the “abnormality”: Symptoms & Signs.
 - b. **EXAMINE THE ENTIRE PLANT AND ITS COMMUNITY.** Determine the primary problem and part of the plant where initial damage occurred.

- II. **LOOK FOR PATTERNS:** On more than one plant? On more than one plant species?
 - a. **NONUNIFORM DAMAGE PATTERN** (scattered damage on one or only a few plant species) is indicative of LIVING FACTORS (pathogens, insects, etc.).
 - b. **UNIFORM DAMAGE PATTERN** over a large area (i.e., damage patterns on several plant species) and uniform pattern on the individual plant and plant parts indicates NONLIVING FACTORS (mechanical, physical, or chemical factors).

- III. **DELINEATE TIME-DEVELOPMENT OF DAMAGE PATTERN:**
 - a. **Progressive spread of the damage on a plant**, onto other plants or over an area with time indicates damage caused by LIVING ORGANISMS.
 - b. **Damage occurs, does not spread** to other plants or parts of the affected plant. Clear line of demarcation between damaged and undamaged tissues. These clues indicate NONLIVING DAMAGING FACTORS.

- IV. **DETERMINE CAUSES OF THE PLANT DAMAGE:** Ask questions and gather information.
 - a. **DISTINGUISH AMONG LIVING FACTORS**
 - i. **PATHOGENS** – symptoms and signs
 - ii. **INSECTS, MITES, and OTHER ANIMALS** – symptoms and signs
 - b. **DISTINGUISH AMONG NONLIVING FACTORS**
 - i. **MECHANICAL FACTORS**
 - ii. **PHYSICAL FACTORS**
 1. Temperature extremes
 2. Light extremes
 3. Oxygen and moisture extremes
 - c. **CHEMICAL FACTORS**
 1. Analyze damage patterns in fields and other plantings
 2. Injury patterns on individual plants
 3. Pesticide-pollutant phytotoxicities – damage patterns
 4. Nutritional disorders – key to nutritional disorders
 - d. **REFERENCES** (check reports of damaging factors on identified plant); may need LABORATORY ANALYSES to narrow range of probable causes.

- V. **SYNTHESIS OF INFORMATION TO DETERMINE PROBABLE CAUSES.**



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