Major diseases of the rice plant in the Philippines

WHAT IS A DISEASE?

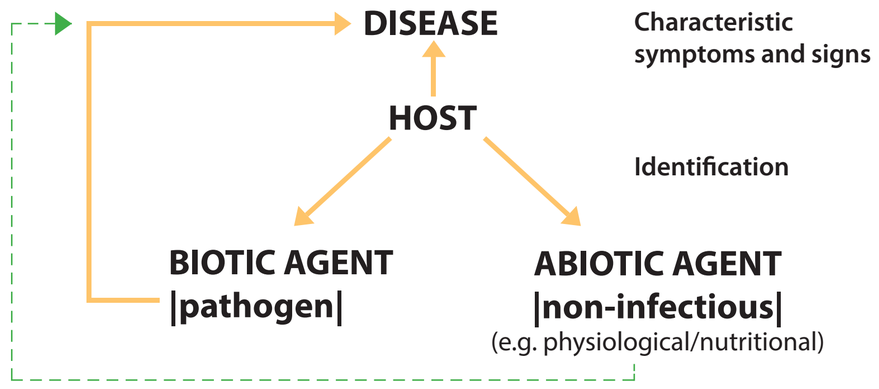
A disease is an abnormal condition of the plant, which interferes with its normal structure, function, and economic value.

HOW TO IDENTIFY A DISEASE AND ITS CAUSES

1. Find out what was done in the previous and present cropping season.
2. Regularly observe the field. See if there are observable patterns.
3. Compare diseased plants to healthy plants of the same variety from the same fields.

Also consider the following:

- Disease symptom distribution/spread
- Age of plant at disease onset
- Crop variety
- Condition of the field
- Cropping system
- Presence of other organisms and other toxic substances
- Farm inputs
- Farmers' account
- Field history



MAJOR DISEASES

BLAST

Local name: *mata-mata (Bisaya), agupaw (Waray), taya-taya (Cebuano in Mindanao)*

Symptoms:

Leaf	Elliptical and spindle-shaped spots with brown border and gray center; spots enlarge and band together resulting in drying of leaf
Node	Rots and turns black; when dry, it breaks killing all parts above the infected node
Collar	Lesion on base of flag leaf that leads to its drying
Neck	Lesion on the panicle base (neck rot); stem below the panicle snaps
Panicle	Dark, necrotic lesion on uppermost node resulting in partially filled or unfilled grains
Seed	Discolored grains with fungal cottony growth

Factors that favor the disease:

- Susceptible variety
- High relative humidity
- Long dew period
- Cloudy sky and intermittent rain
- Excess nitrogen and potassium fertilizers
- Aerobic rice environment; low soil moisture

Disease management:

- Plant resistant variety
- Raise seedlings in wetbed
- Avoid close or dense planting
- Proper fertilization
- Water management
- Soil amendment with silica (incorporate rice stalks into the soil)
- Use recommended fungicide when needed
- Destroy infected crop residues

TUNGRO

Local name: *tungro (in most dialects)*

Symptoms:

Rice Plant	Mottled young leaf, older leaves are yellow to yellow-orange; stunted growth with slightly reduced number of tillers.
Field	Sporadic occurrence of infected plants few weeks after establishment (primary infection); later, more infected plants appear crowded around the primary site of infection (secondary infection); clumping of diseased plants followed that finally reaches a uniform distribution as the disease spreads.

Factors that favor the disease:

- Susceptible variety
- Presence of infected field, especially with green leafhopper vectors
- Continuous and asynchronous planting
- Absence of fallow period
- Crop age (vegetative to tillering stage)

Disease management:

- Plant resistant variety
- Cultivar rotation
- One-month fallow period in affected areas
- Practice synchronous planting
- Early detection
- Plow severely affected field

SHEATH BLIGHT

Local name: *labhagsa pal-ak (Cebuano), masot (Pangasinan)*

Symptoms:

Leafsheath	Greenish-gray and oval spots near water line; later enlarge and become grayish white with brown margin; the lesion spread to the upper leafsheaths and on leaves that come in contact with infected plant part
Leaf	Banded brownish lesion with gray-white center; lesions coalesce leading to blighting of leaf; affects panicle exertion when flag leaf is infected

Factors that favor the disease:

- Susceptible variety
- Highly humid and warm temperature
- Frequent rains
- High rates of nitrogen fertilizer
- Dense or close planting

Disease management:

- Dry field after harvest and monitor proper fertilization. Use Leaf Color Chart and Minus-One Element Technique.
- Observe optimum seeding rate; wider plant spacing.
- Assess the field before maximum tillering and panicle emergence. Drain the field at maximum tillering for a few days.
- Use recommended fungicide when needed. Apply on sheaths and affected leaves.
- Ensure proper sanitation. Deep plow the field to bury infected stubble and weeds. Expose soil to intense sunlight.

BACTERIAL BLIGHT

Local name: *nauga nga dahon, natala nga tanum (Cebuano), nadurot nga tanum (Waray), naggapula (Ilonggo)*

Symptoms:

Seedling stage	Wilting of leaves of young plant; later entire plant dies (known as kresek)
Tillering to heading stages	Water-soaked stripes along upper leaf margins; lesions enlarge and turn yellow in few days affecting one or both sides of the leaf; later, lesions cover the entire leaf blade exhibiting white to grayish growth of saprophytic fungi; flag leaf may also be infected

Factors that favor the disease:

- Susceptible variety
- Excess nitrogen and magnesium increase disease incidence
- Phosphorous and potassium deficiency increase disease incidence
- Root and leaf injuries enhance bacterial invasion of plant
- Cloudy and humid conditions
- Wind and rain speed up the spread
- Continuously flooded field

Disease management:

- Plant resistant variety.
- Perform seed treatment, or use seeds from healthy plants.
- Keep beds and main fields from flooding. Maintain 2-3cm water level.
- Apply proper fertilizer rates.
- Reduce plant injury.
- Perform regular weeding.
- Fallow the field after harvest and allow it to dry.

RELATIONSHIP WITH NUTRIENT

FERTILIZER	IN EXCESS AMOUNT	DEFICIENT
Nitrogen	Increases incidence of blast, sheath blight, and bacterial blight	• entire field may appear yellowish • reduced tillering and reduced grain number
Zinc		• dusty brown spots on upper leaves of stunted plants • increased spikelet sterility in rice • chlorotic midribs • leaves lose turgor and turn brown • leaf blade size is reduced • similar symptoms as grassy stunt virus and tungro virus
Sulfur		• yellowing or pale green color of the whole plant • less resistance to adverse conditions

Source: www.knowledgebank.irri.org/training/fact-sheets/nutrient-management/beneficiaries-and-toxicities-fact-sheet

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