Disease Management of Ginger and Turmeric

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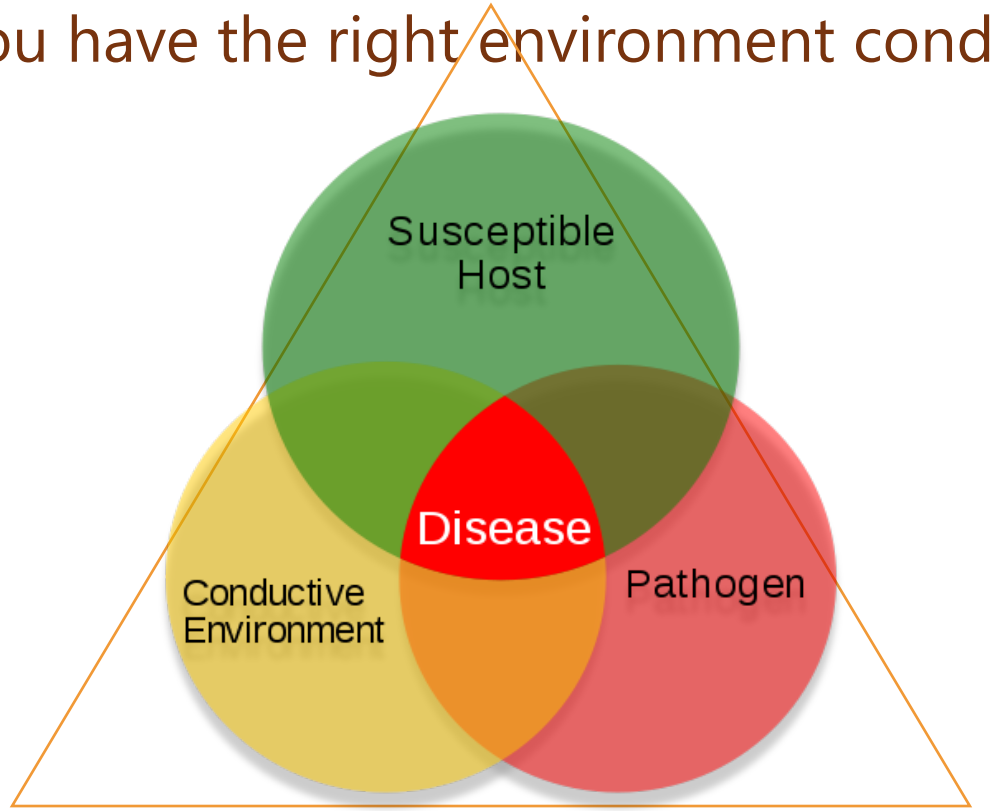
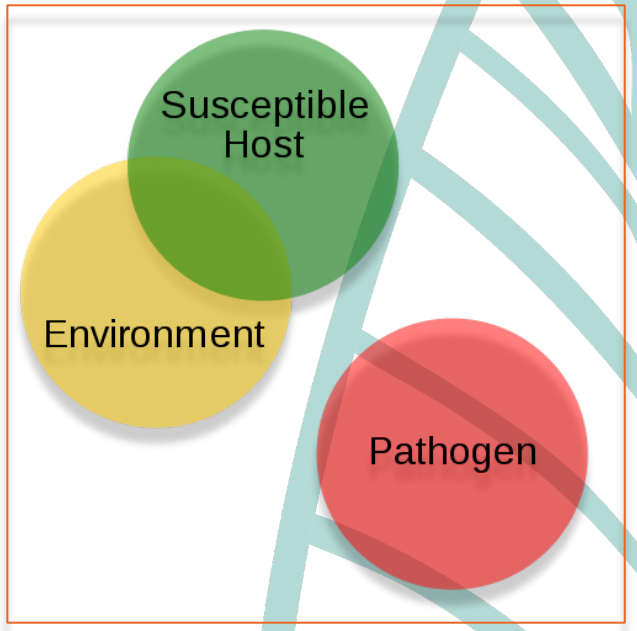
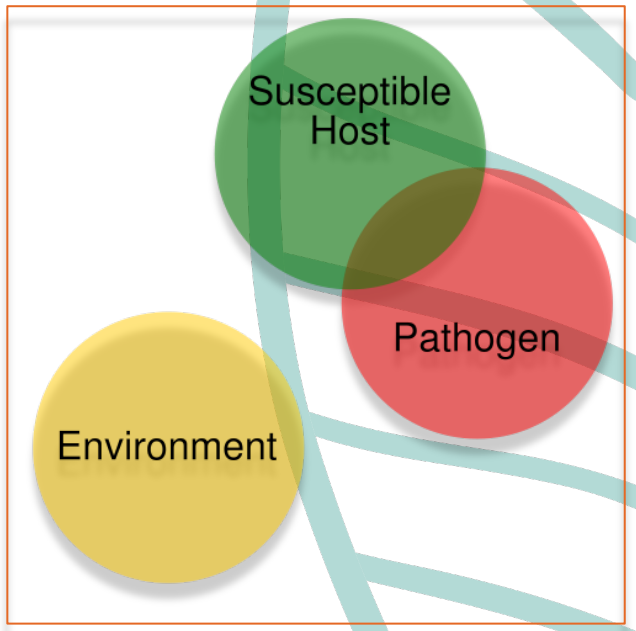
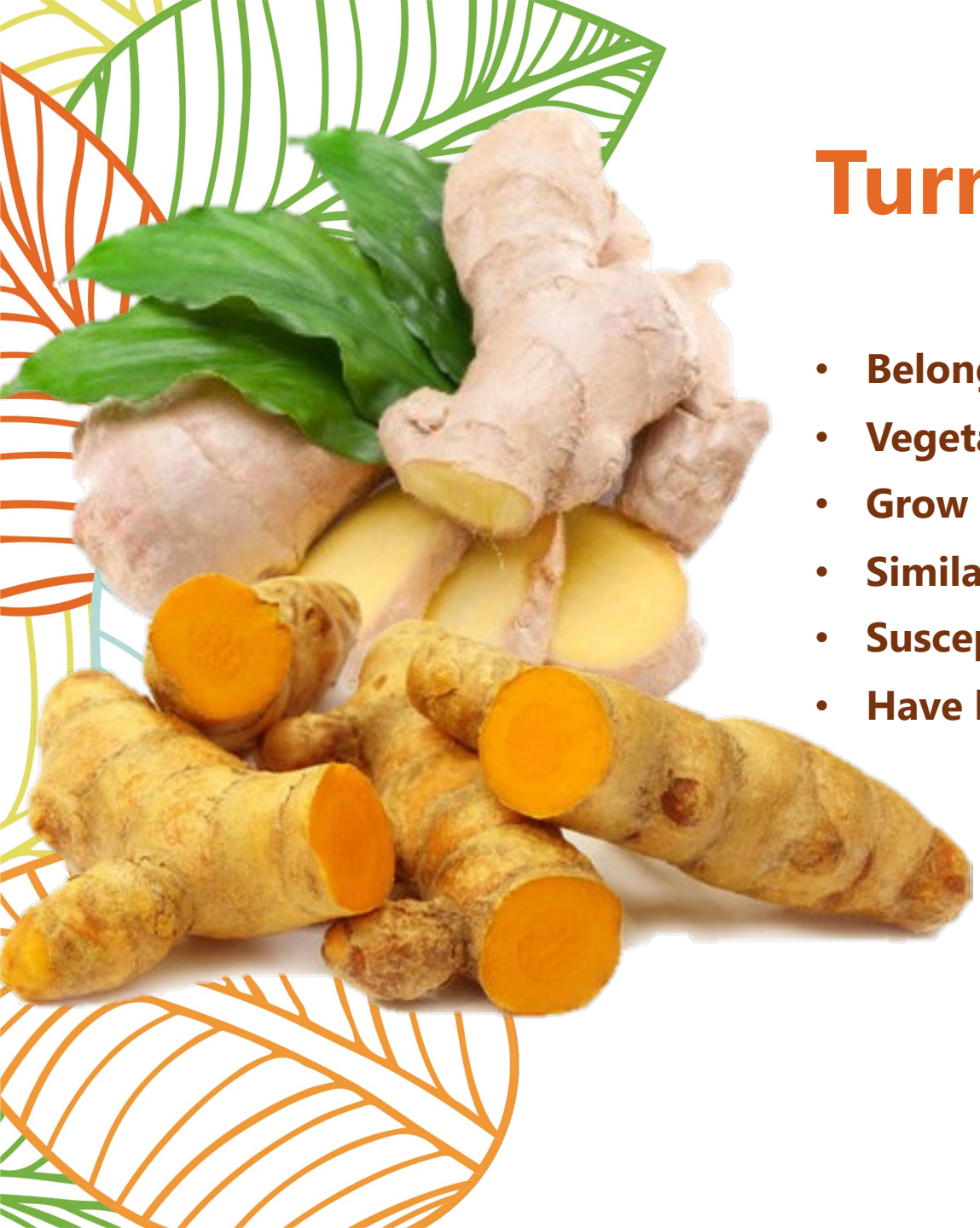
How does disease happen?

1. You have a susceptible host
2. You introduce or acquire the pathogen
3. You have the right environment conditions









Turmeric and Ginger

- Belong to the Zingiber family
- Vegetatively propagated
- Grow well in Hawaii and the tropics
- Similar growing and harvest seasons
- Susceptible to soil-borne diseases
- Have limited chemical control methods for disease

Important Cultural Practices

Pest and Diseases on Ginger and Turmeric in Hawaii

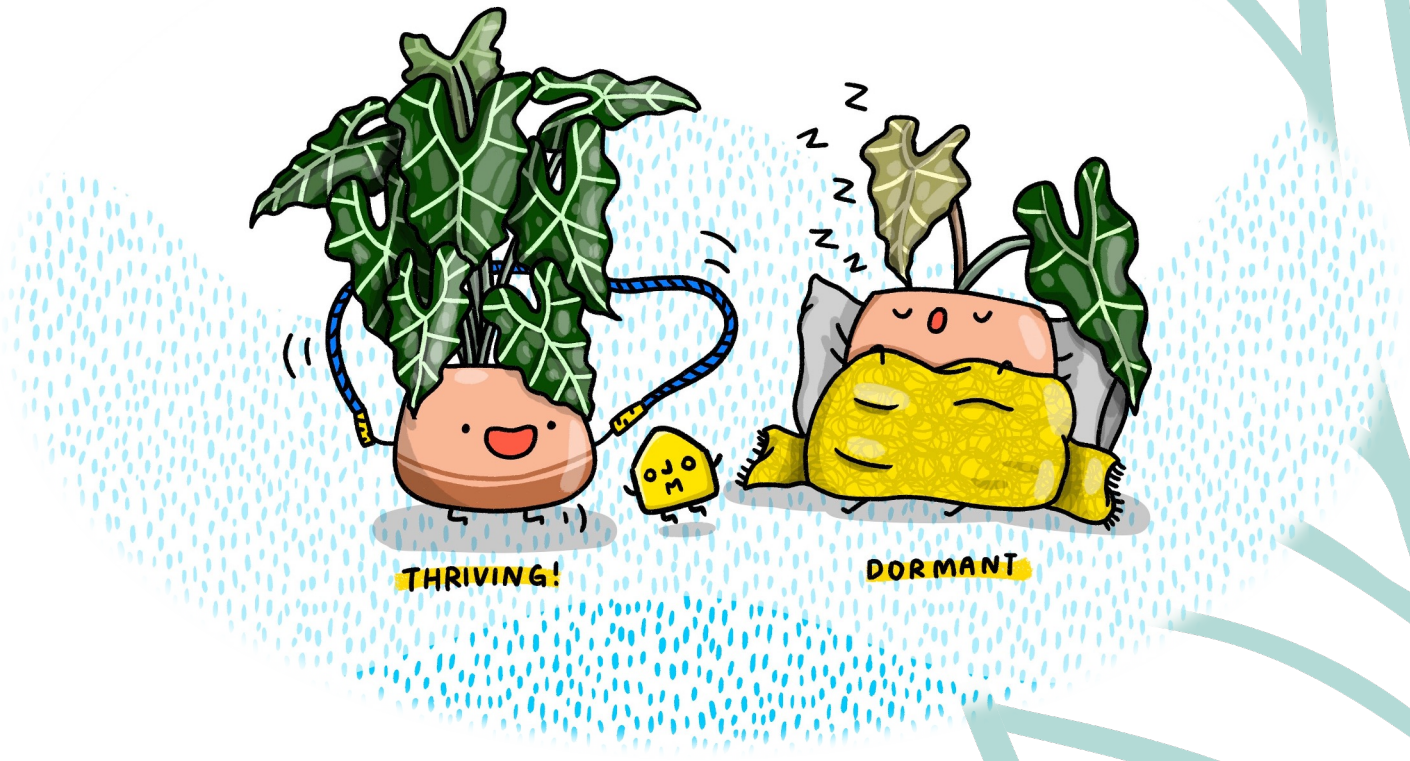
Bacterial Disease	Fungal Disease	Pests
Bacterial Wilt-Ralstonia solanacearum	Fusarium Wilt-Fusarium oxysporum Rhizoctonia spp. Pythium spp.	Root knot nematode

Disease Management

- Seed selection
- Site selection
- Cultural practices
- Rouging & Sanitation
- Harvest time

Know What is the Norm?

- Life cycle (annual, biennial, perennial)
- Life stage (young vs old)
- Size
- Shape
- Color



Collecting Disease Samples

- Examine the entire plant for symptoms
- Collect the entire plant whenever possible
- Collect several plant specimens
- Do not collect dead plants or plant organs
- Provide as much background info as possible
- Preserve plant samples until you submit

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Collecting Plant Disease and Insect Pest Samples for Problem Diagnosis

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Most plants in Hawaii are prone to attack by various insect pest and plant disease organisms. Pest outbreaks and diseases must be identified accurately to enable their efficient management. In this article we describe the basic requirements for collecting, preserving and submitting plant insect and disease samples to the Agricultural Diagnostic Service Center (ADSC), a branch of the Cooperative Extension Service, College of Tropical Agriculture and Human Resources (CTAHR), University of Hawai'i at Mānoa. If you need to collect a soil sample to eliminate the possibility that the problem is due to physiological causes (nutrient deficiency or toxicity), see the CTAHR publication "Testing Your Soil: Why and How to Take a Soil-Test Sample," on the Web at http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-9.pdf.

Collecting plant samples

It is important to gather the best plant samples possible and to record all pertinent background information for the diagnostician. Following are general guidelines for collecting plant samples.

Examine the entire plant for symptoms

Diseased plants generally have been infected by one or more pathogenic microorganisms, although they may also have an abiotic disease that does not involve a plant pathogen. Plants affected often display a range of symptoms—visual signs of the infection. Often, not all symptoms of a particular disease will appear on any one plant within a diseased crop, and more than one plant organ may be affected by a given disease.

Examine all of the main plant organs for disease symptoms: roots, stems, leaves, and blossoms. Collect samples from various plant organs as needed. Plants may suffer from more than one disease simultaneously. Segregate different types of symptoms into different samples.

Collect several plant specimens

A single plant sample may not be enough to allow a correct diagnosis of the problem; several plant samples showing the range of symptoms may be needed. If possible, select samples with various stages of disease development (early and late stages). Samples should be as typical or representative of the overall problem as possible. The best plant tissues for diagnosis are the ones showing the symptoms in various stages of disease development, and adequate amounts of them are important, but submitting excessive amounts of leaves or soil should be avoided.

Do not collect dead plants or plant organs

Dead plants or plant organs may not be useful for diagnosis. Often their tissues have been invaded by decomposing fungi and bacteria and the original pathogens are no longer detectable. Always select plant samples from living tissues and focus your attention on plants or plant

Handout

Mahalo