New Agricultural Pests on Oahu

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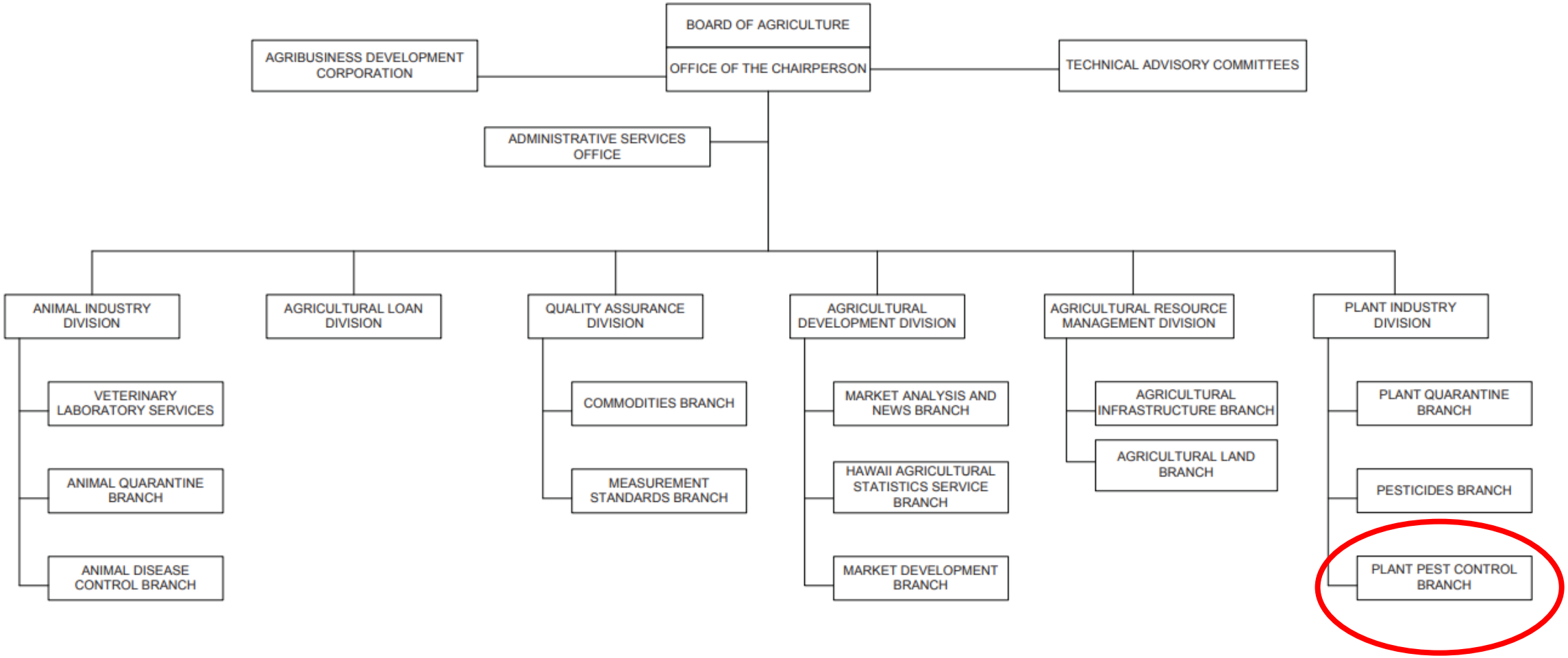
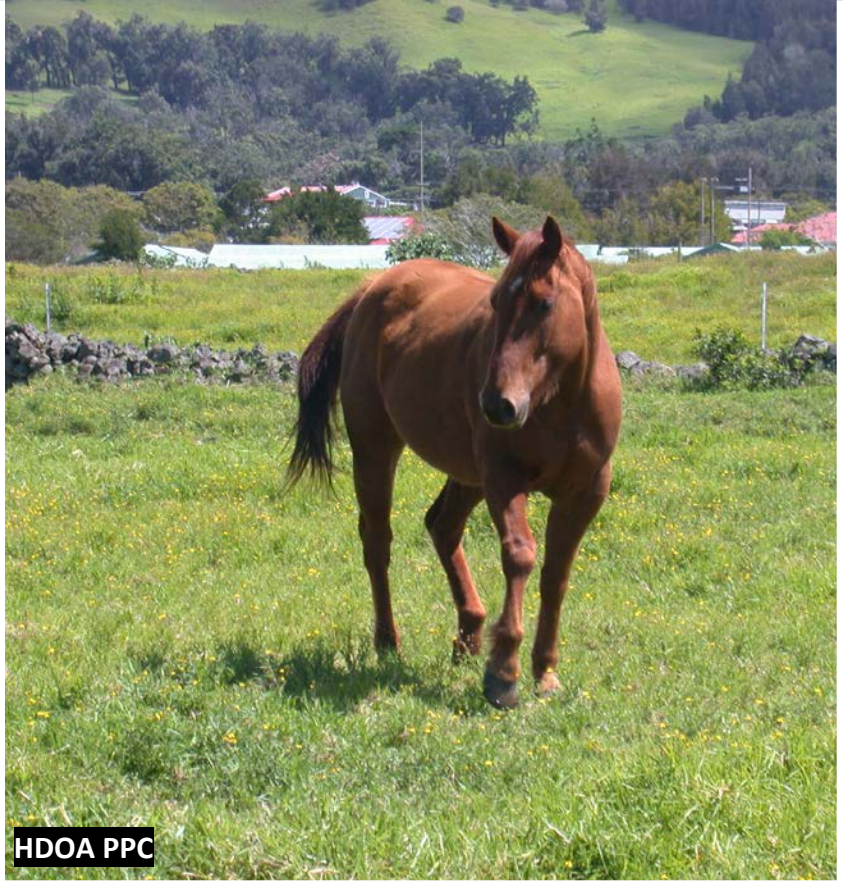
Plant Pest Control Branch, Hawaii Department of Agriculture

"CTAHR Ground Support:" Research-based Support for Oahu's Fast-Paced Edible Crop Industry Workshop

Leeward Community College, August 1, 2018

Hawaii Department of Agriculture
Plant Pathology Unit

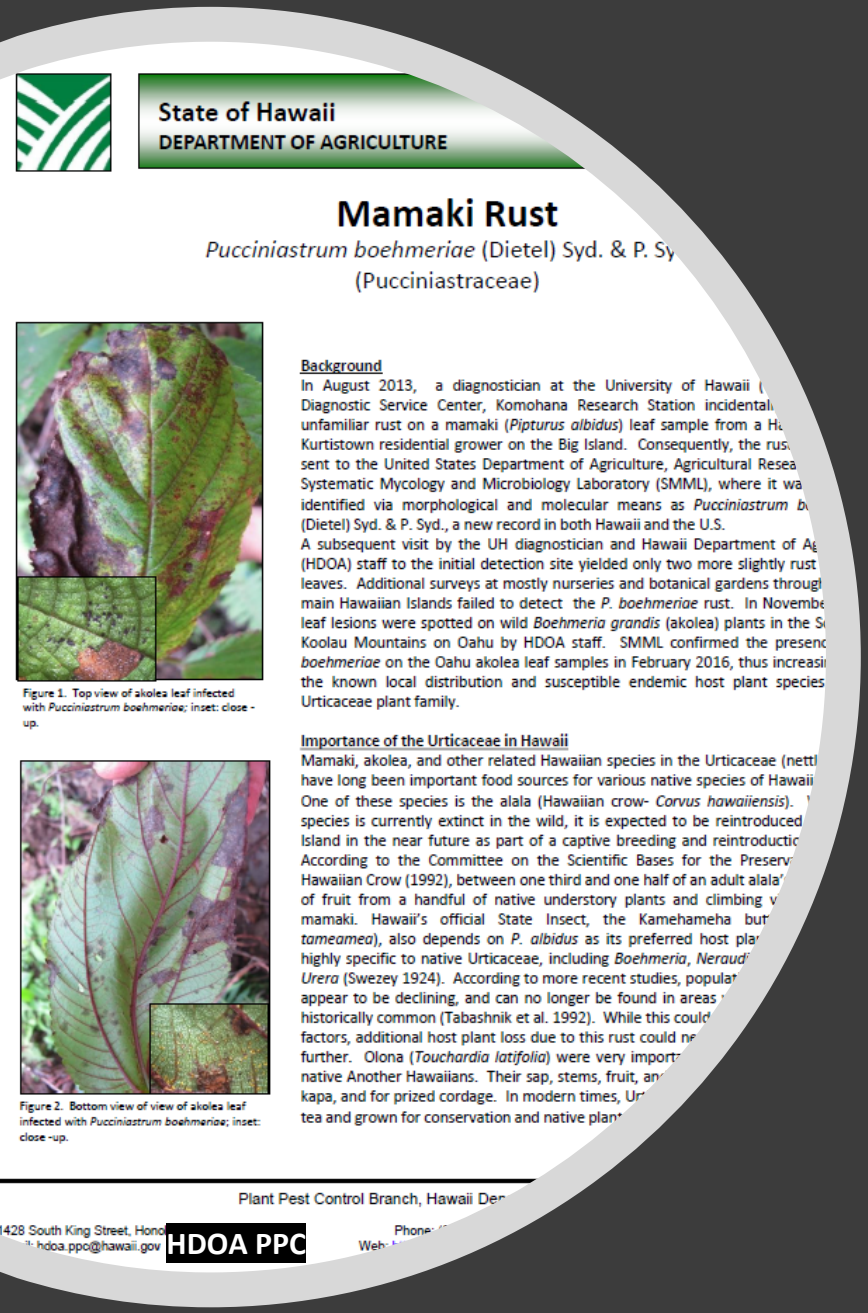




Plant Pathology Unit: **Biocontrol of Weeds**

Plant Pathology Unit:

Assisting the Plant Quarantine Branch with identifying diseases and providing expert information on diseases


State of Hawaii
DEPARTMENT OF AGRICULTURE

Mamaki Rust

Pucciniastrum boehmeriae (Dietel) Syd. & P. Sy
(Pucciniastraceae)

Figure 1. Top view of akolea leaf infected with *Pucciniastrum boehmeriae*; inset: close - up.

Figure 2. Bottom view of view of akolea leaf infected with *Pucciniastrum boehmeriae*; inset: close -up.

Background

In August 2013, a diagnostician at the University of Hawaii (Diagnostic Service Center, Komohana Research Station incidental unfamiliar rust on a mamaki (*Pipturus albidus*) leaf sample from a H Kurtistown residential grower on the Big Island. Consequently, the rus sent to the United States Department of Agriculture, Agricultural Resea Systematic Mycology and Microbiology Laboratory (SMML), where it wa identified via morphological and molecular means as *Pucciniastrum b* (Dietel) Syd. & P. Syd., a new record in both Hawaii and the U.S.

A subsequent visit by the UH diagnostician and Hawaii Department of Ag (HDOA) staff to the initial detection site yielded only two more slightly rust leaves. Additional surveys at mostly nurseries and botanical gardens throug main Hawaiian Islands failed to detect the *P. boehmeriae* rust. In Novembe leaf lesions were spotted on wild *Boehmeria grandis* (akolea) plants in the S Koolau Mountains on Oahu by HDOA staff. SMML confirmed the presenc *boehmeriae* on the Oahu akolea leaf samples in February 2016, thus increasi the known local distribution and susceptible endemic host plant species Urticaceae plant family.

Importance of the Urticaceae in Hawaii

Mamaki, akolea, and other related Hawaiian species in the Urticaceae (nettl have long been important food sources for various native species of Hawaii One of these species is the alala (Hawaiian crow- *Corvus hawaiiensis*). species is currently extinct in the wild, it is expected to be reintroduced Island in the near future as part of a captive breeding and reintroductic According to the Committee on the Scientific Bases for the Preserv Hawaiian Crow (1992), between one third and one half of an adult alala' of fruit from a handful of native understory plants and climbing v mamaki. Hawaii's official State Insect, the Kamehameha but *tameamea*), also depends on *P. albidus* as its preferred host pla highly specific to native Urticaceae, including *Boehmeria*, *Neraud Urera* (Swezey 1924). According to more recent studies, popula appear to be declining, and can no longer be found in areas historically common (Tabashnik et al. 1992). While this could factors, additional host plant loss due to this rust could ne further. Olona (*Touchardia latifolia*) were very import native Another Hawaiians. Their sap, stems, fruit, an kapa, and for prized cordage. In modern times, Ur tea and grown for conservation and native plan

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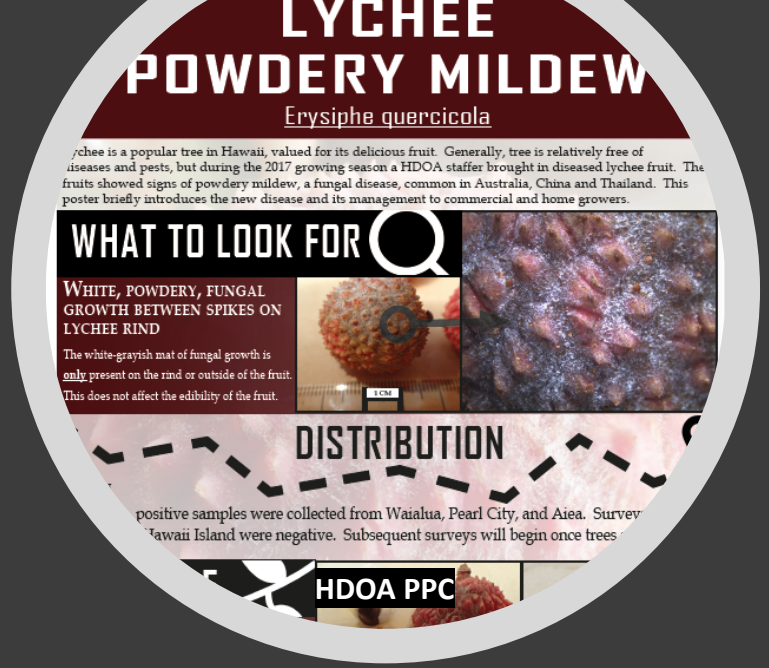
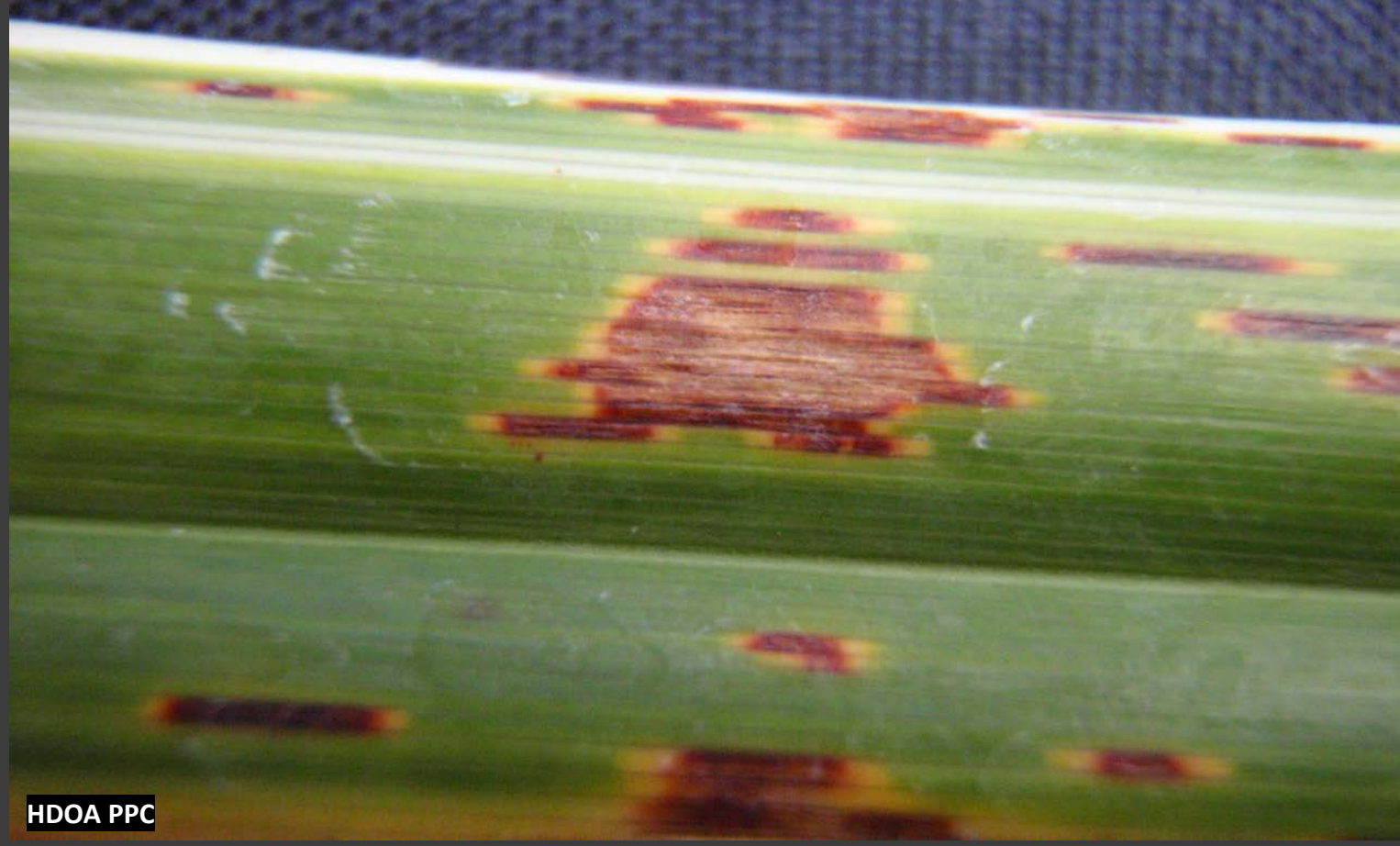


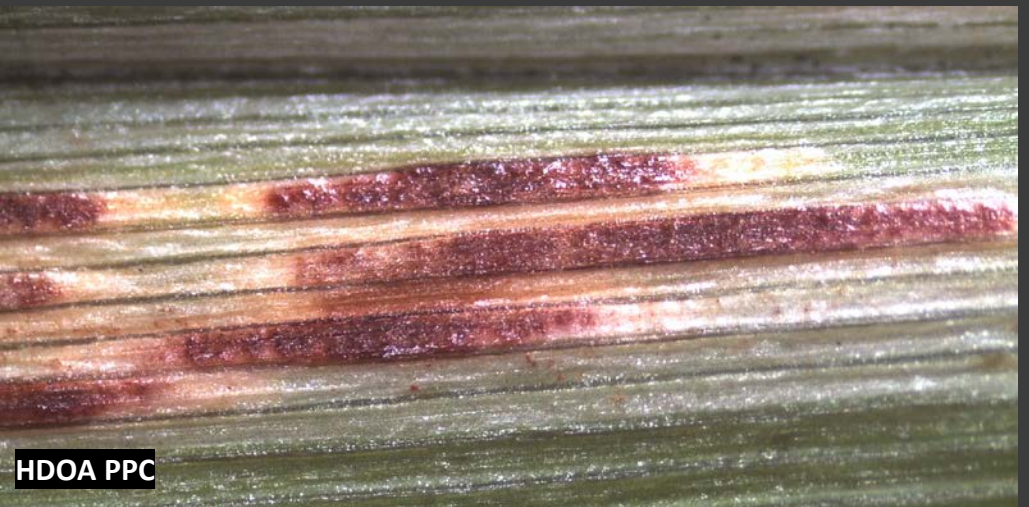
Plant Pathology Unit: Outreach

Plant Pathology Unit:
Surveying, detecting, containing, and eradicating new diseases

Dianella Rust

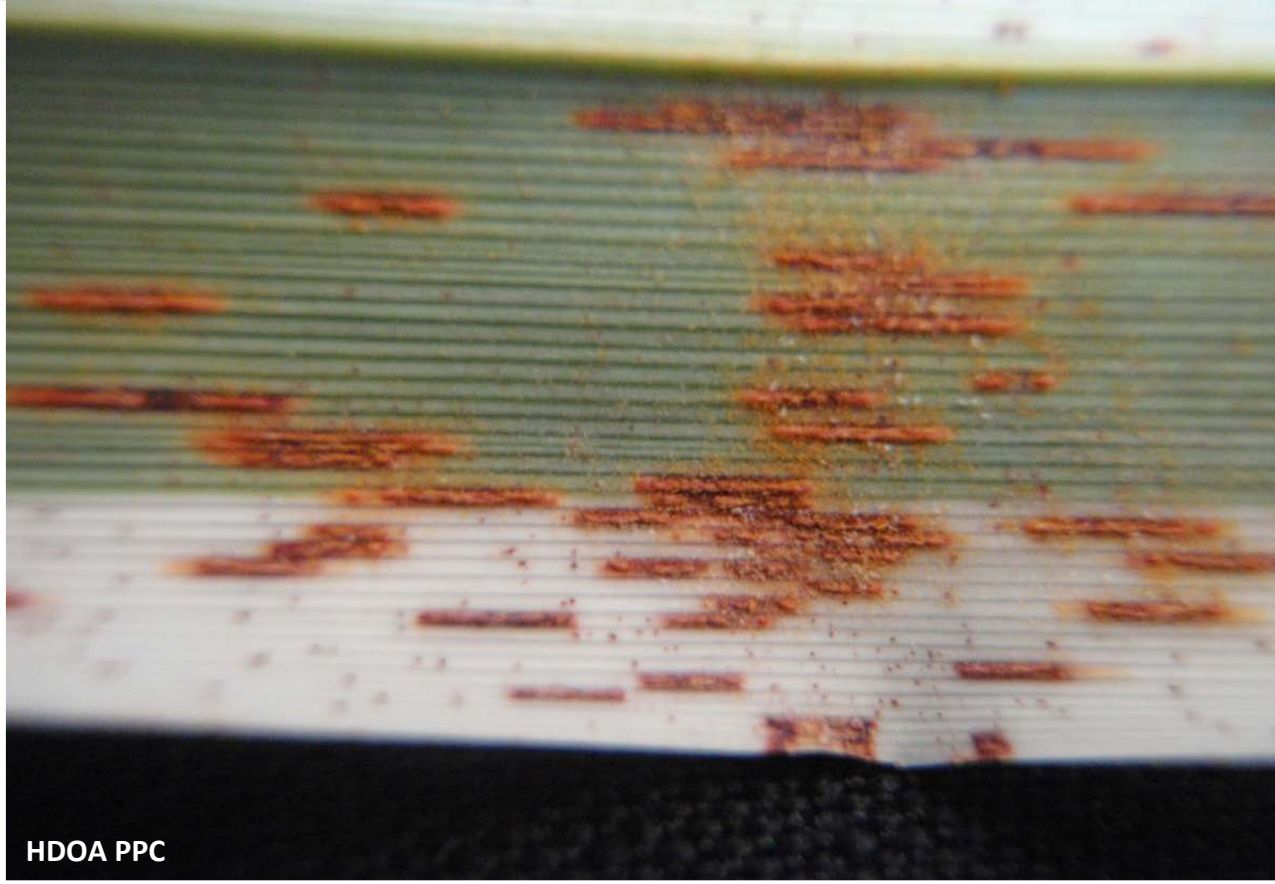
- Host: *Dianella tasmanica* “Variegata”
- Common Name: Tasman Flax Lily
- Pathogen: *Puccinia hemerocallidis*
- First Report: Oahu
- Distribution: Widespread
- Damage: Browning of leaves and leaf spots





Dianella Rust Symptom:

Brown leaf lesions with yellow borders



Dianella Rust Symptom:

Orange-Brown rust pustules on leaves

African Tulip Tree Powdery Mildew

- Host: *Spathodea campanulate*
- Common Name: Flames of the forest, fountain tree, or fireball
- Pathogens (2): Tentatively *Oidium* sp. and *Ovulariopsis* sp.
- First Report: Oahu
- Damage: Unthrifty growth and leaf drop

Tentatively *Oidium* sp.
Discolored patches,
No mottling or chlorosis

Tentatively *Ovulariopsis* sp.
Mottling and chlorosis

African Tulip Tree Powdery Mildew Symptoms

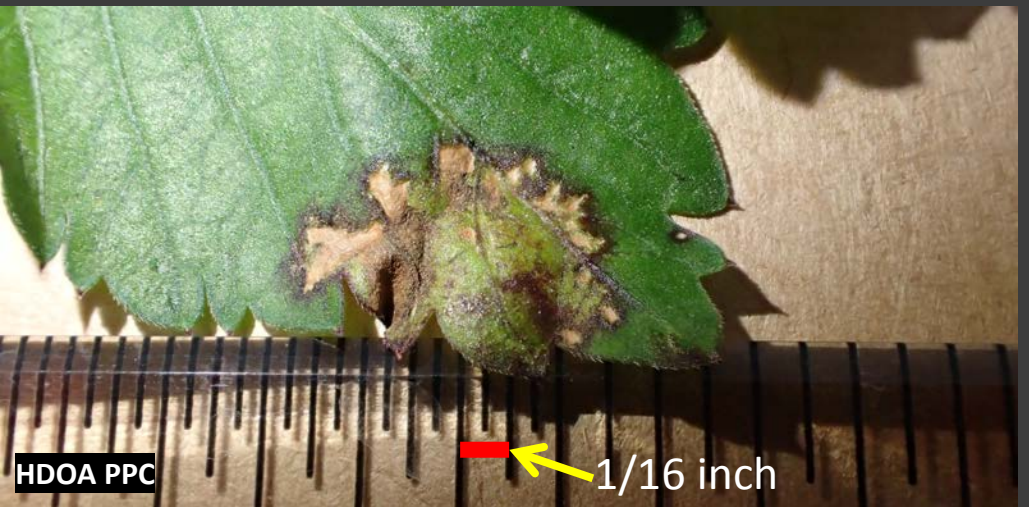
Tentatively *Oidium* sp.
White powdery growth on
upper and lower surface of leaf

Tentatively *Ovulariopsis* sp.
White powdery growth on
only under surface of leaf

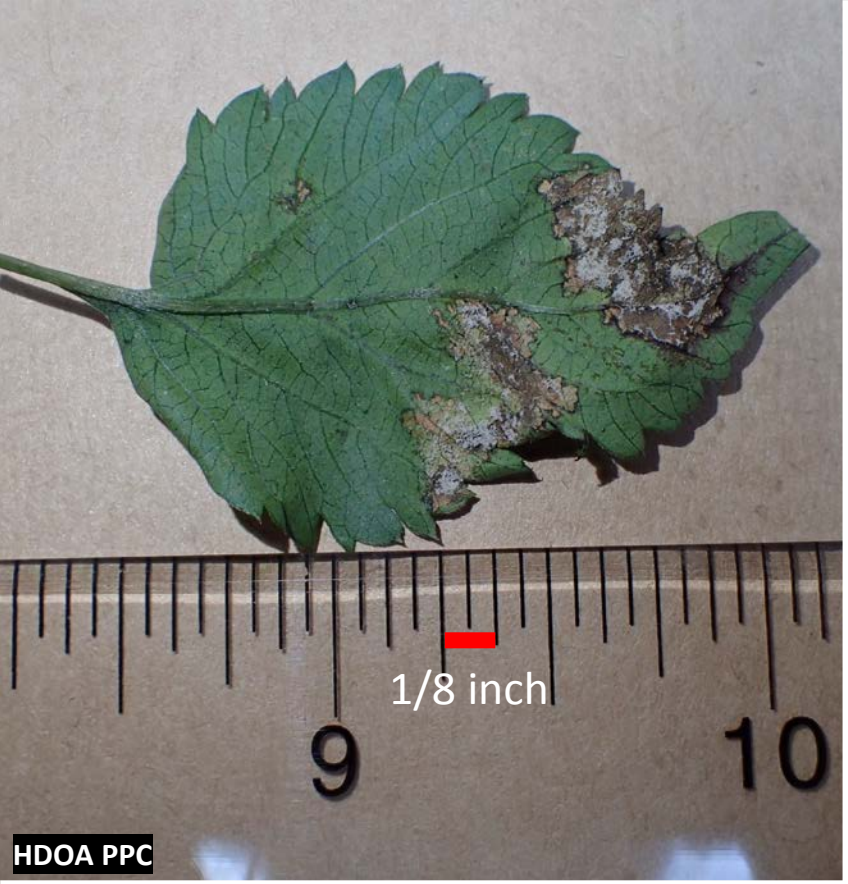
African Tulip Tree Powdery Mildew Symptoms

Bidens sp. Downy Mildew

- Host: *Bidens* sp.
- Pathogen: *Plasmopara halstedii*
- First Report: Maui
- Could possibly affect native, other *Bidens* sp., or closely related asteraceous species (e.g., sunflowers)



Bidens sp. Downy Mildew Symptoms: Chlorotic and necrotic lesions on upper leaf surfaces



Bidens sp. Downy Mildew Symptoms:

White fuzzy growth on lower leaf surface

Amaranth
White Blister Rust

- Host: *Amaranthus* sp.
- Common Name: Amaranth
- Pathogen: *Albugo bliti*
- First Report: Hawaii Island
- Damage: Reduces economic or aesthetic values of edible or floral species, respectively.

Amaranth White Blister Rust Symptom:

White rust pustules on upper and lower leaf surfaces


Amaranth
White Blister Rust
Symptom:
Leaf chlorosis
and necrosis


Amaranth White
Blister Rust Symptom:
Stunting and
leaf distortion

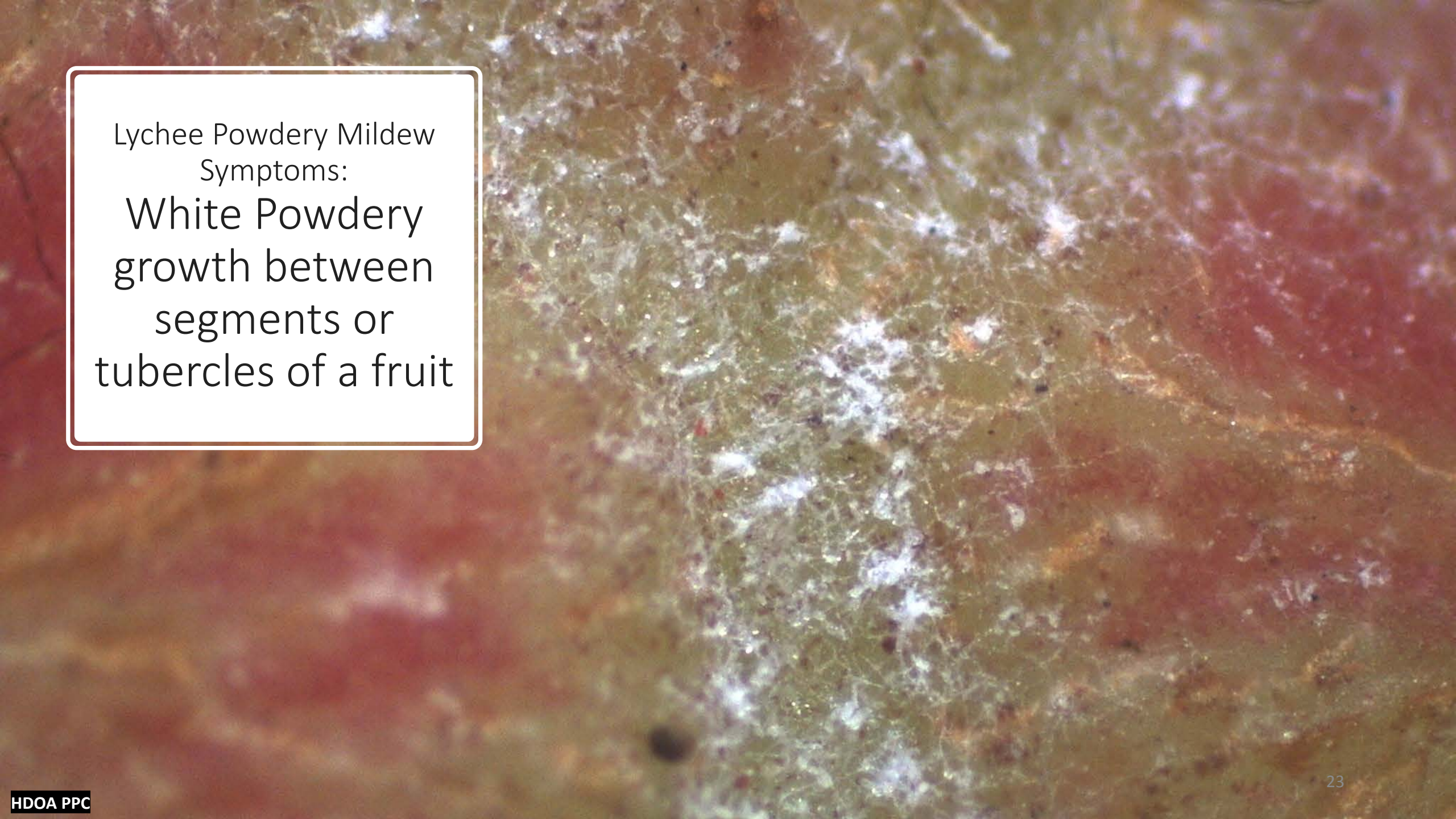
Lychee Powdery Mildew

- Host: *Litchi chinensis*
- Common Name: Lychee
- Pathogen: *Erysiphe quercicola*
- First Report: Oahu
- Damage: Reduces aesthetic value and shelf life of fruits


Lychee Powdery Mildew Symptom:
White powdery growth between segments
HDOA PPC

Lychee Powdery Mildew Symptom:

White powdery growth between segments



Lychee Powdery Mildew Symptoms:

White Powdery growth between segments or tubercles of a fruit


Unknown source


HDOA PPC

Healthy lychee tree

Thick fruit bunches

Fruits bright and blemish free

Infected lychee tree

Thin fruit bunches

Fruits dull and dirty-looking

MOST UNWANTED:
Okra Powdery Mildew

Okra Powdery Mildew

- Host: *Hibiscus or Abelmoschus esculentus*
- Common Name: Okra
- Pathogen: *Fibroidium abelmoschi*
- First Report: Oahu
- Damage: Possibly defoliation and yield reduction of marketable pods

Okra Powdery Mildew Symptom:

White powdery growth on upper and lower leaf surface

Generalized Means of Disease Spread

- Infected propagative plant materials, like seedlings and seeds
- Contaminated fields or soil
- Contaminated tools (e.g., trimmers or pruners; transportation vehicles)
- Wind, splashing rain and free running water
- Cool and humid weather
- Availability of susceptible weedy hosts and disease vectors nearby

Generalized Control Methods for Fungi

- Buy clean seeds or plants
- Field Sanitation (e.g., removal of infected plants, weeds and insect vectors)
- Sanitation of tools
- Reduce splashing water to reduce spread of disease inoculum; use drip irrigation rather than overhead
- Good spacing between plants that increases air flow
- Use of resistant cultivars if available
- Fungicides labeled for host and fungi at disease onset (Consult the County Extension Agent for licensed fungicides in Hawaii).

Questions?

Contact us:
HDOA.PPC@HAWAII.GOV

Department of Agriculture
STATE OF HAWAII