

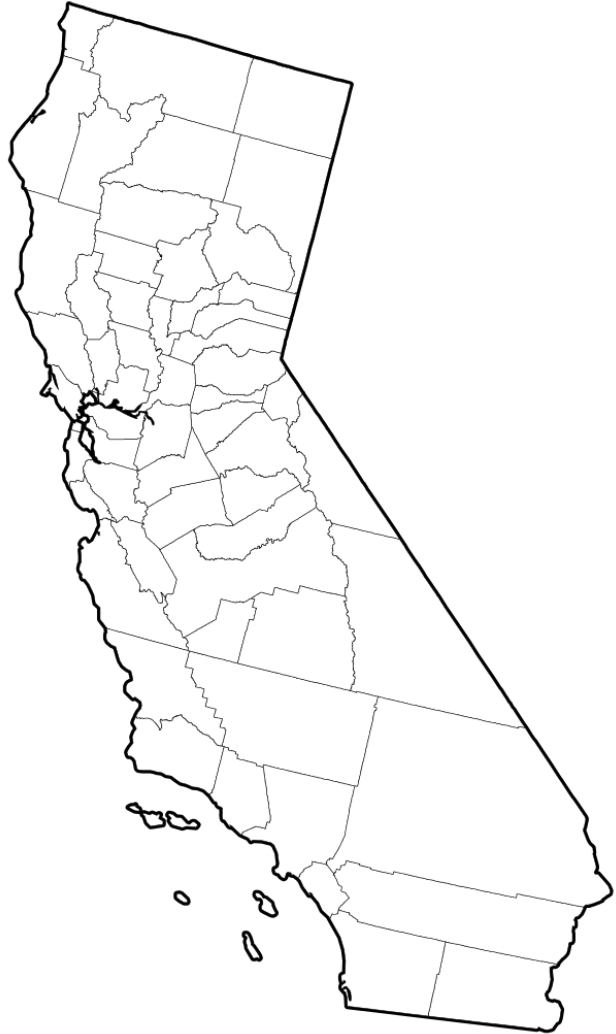
Disease diagnostics and monitoring of recurrent and new pathogens of the ornamental industry in California, Year 2

PCA Research Committee Meeting , Feb 17 2022

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Ornamentals crops in California



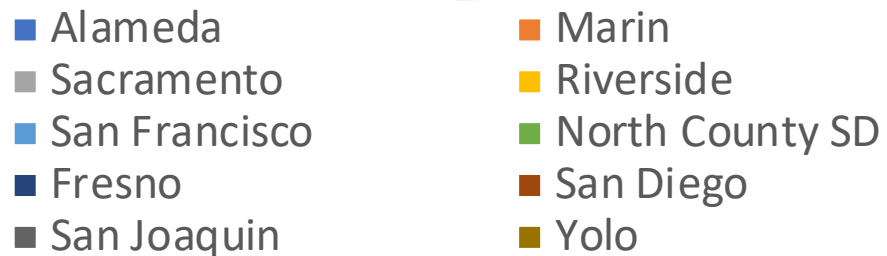
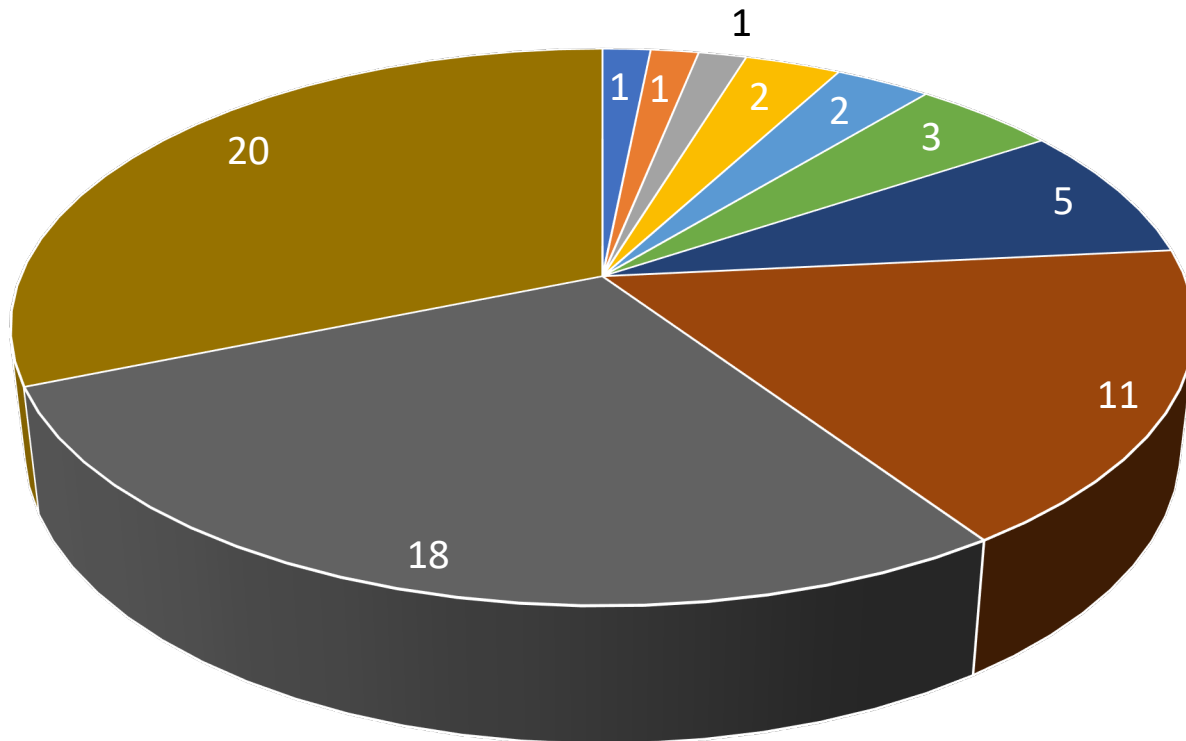
- 5th largest agricultural commodity in the state
- Valued in \$3.8 B (4th ranking in the state)
 - Flowers \$3.1 B
 - Foliage \$731M
- Leading industry in the country:
 - Bedding plants
 - Potted flowering plants



What are the main disease challenges for ornamental growers in the state?

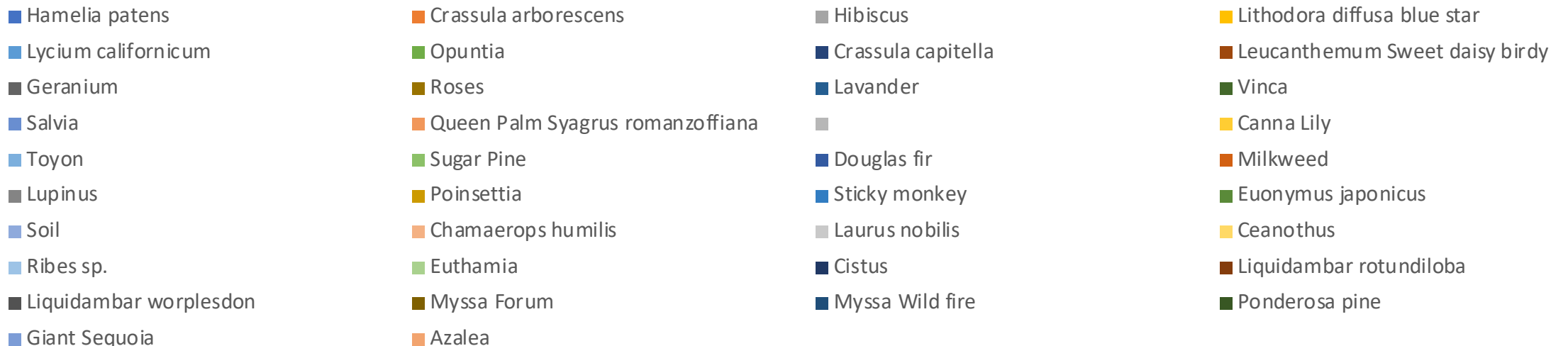
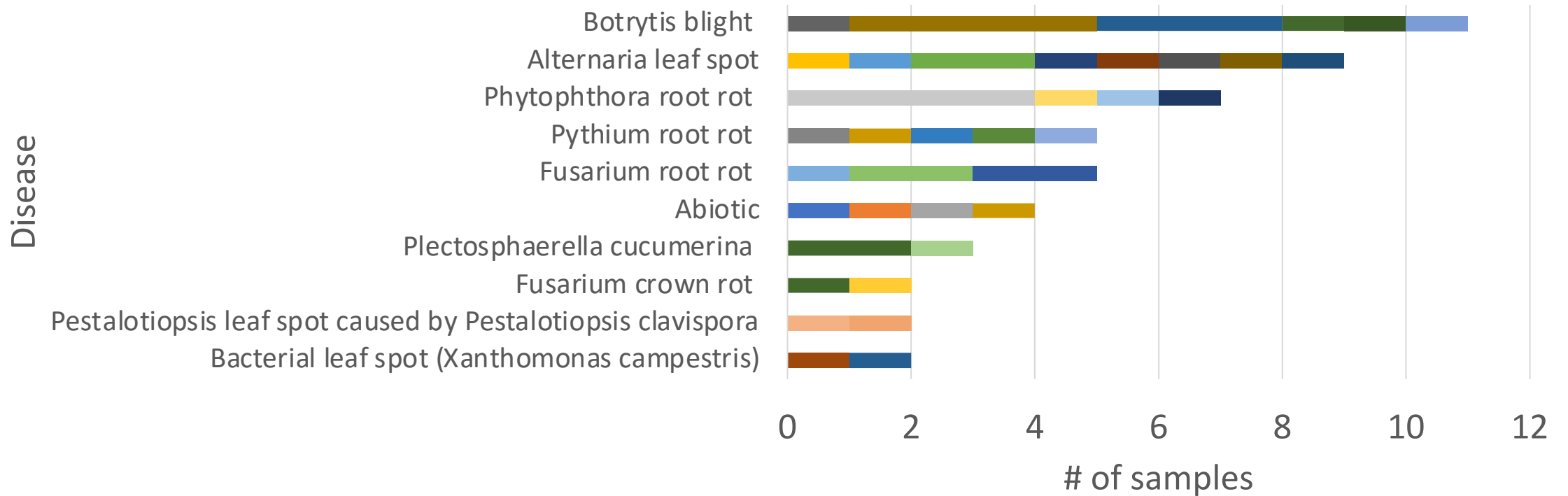
- Provide laboratory-based diagnostics service of plant diseases to ornamental nursery growers
- Monitor pathogen movement and emergence of new pathogens in nursery crops in California

Disease clinic 2020-2021

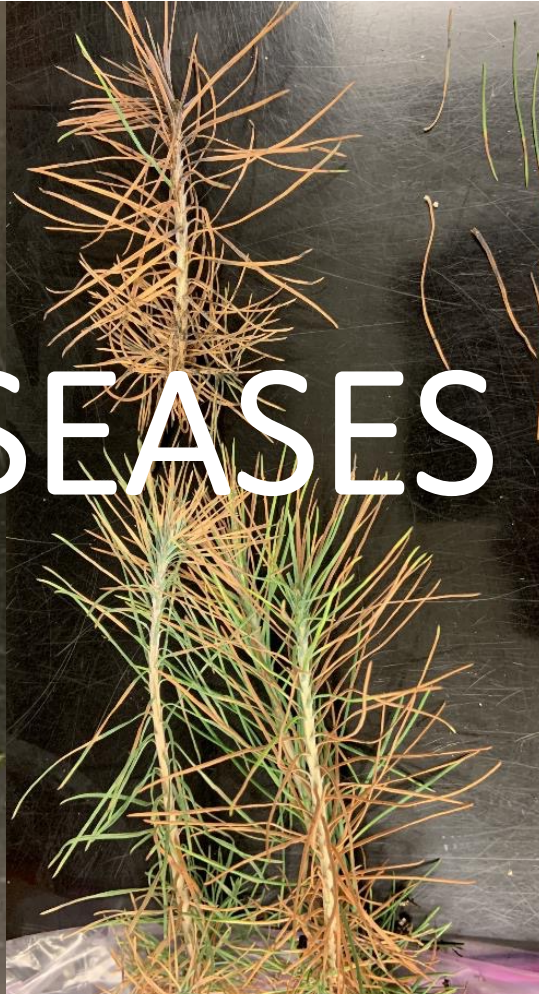


- Since June 2020 diagnosed 64 samples:
- From 10 Counties
- Diagnosed over 15 diseases
- From different 42 hosts

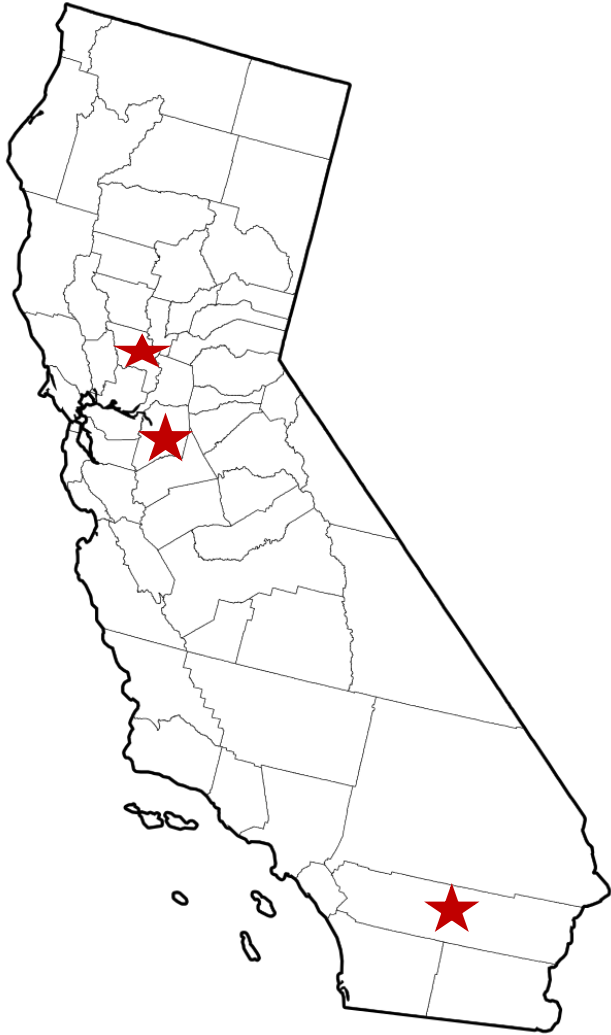
Most recurrent diseases



FOLIAR DISEASES



Botrytis blight (*B. cinerea*)



- Symptoms:
 - Black/brown leaf spots on the leaves, stem cankers, damping off
 - Signs: Gray fuzzy sporulations
- Hosts:
 - Roses, geranium, lavender, vinca, ponderosa pine and giant sequoia (seedlings)
- Counties: San Joaquin, Yolo, Riverside



Botrytis blight (*B. cinerea*) lesions



Ponderosa pine



Vinca seedlings

Botrytis blight (*B. cinerea*)

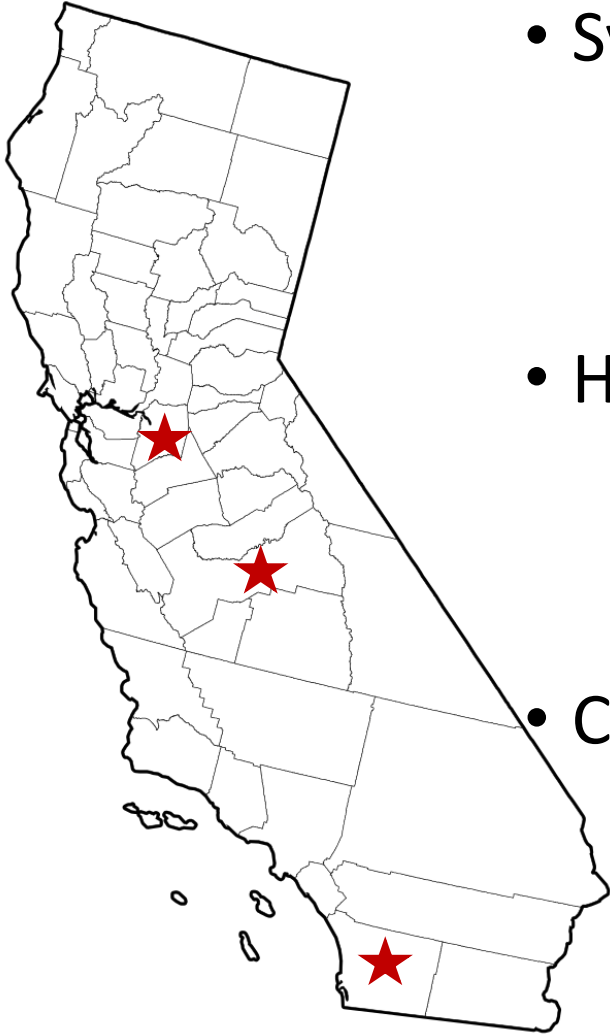


Lavender



Giant sequoia

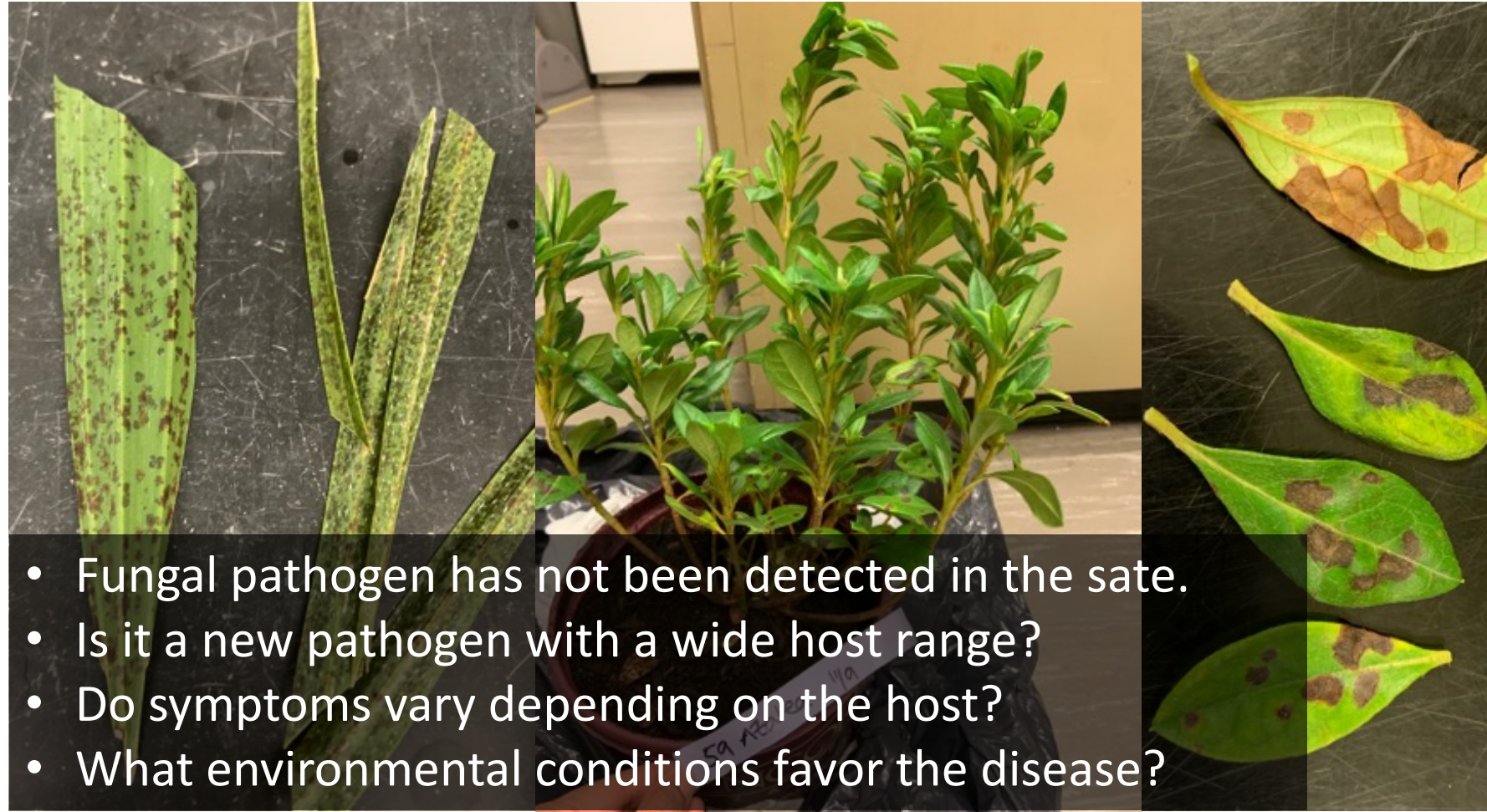
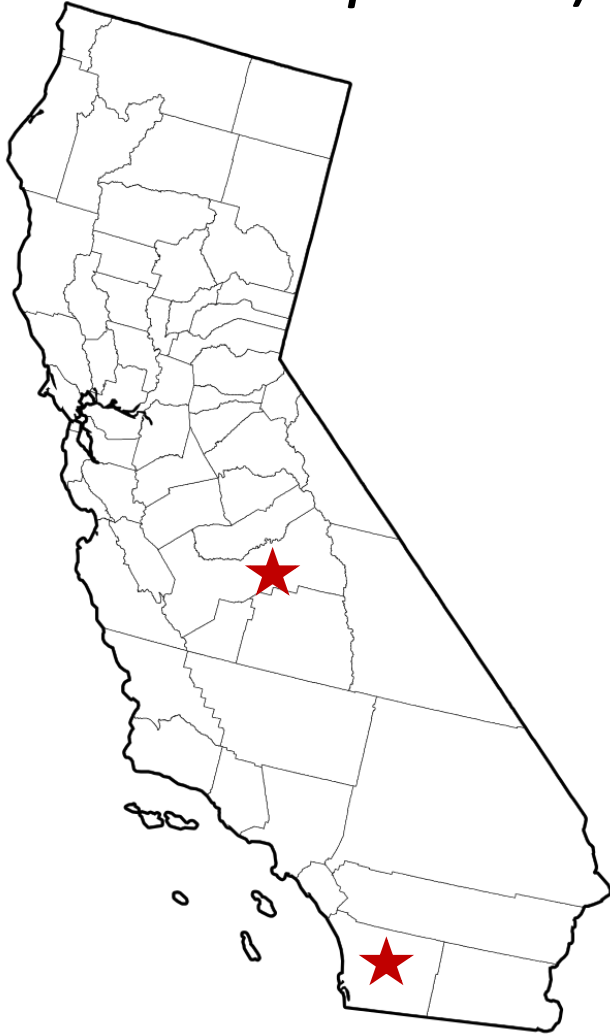
Alternaria leaf spot (*A. alternata*)



- Symptoms:
 - Circular, dark to brown and water soaked.
 - Observed on the older leaves
- Hosts:
 - Liquidambar, Myssa, Lithodora, Lycium, Opuntia,
- Counties: San Joaquin, Fresno, San Diego

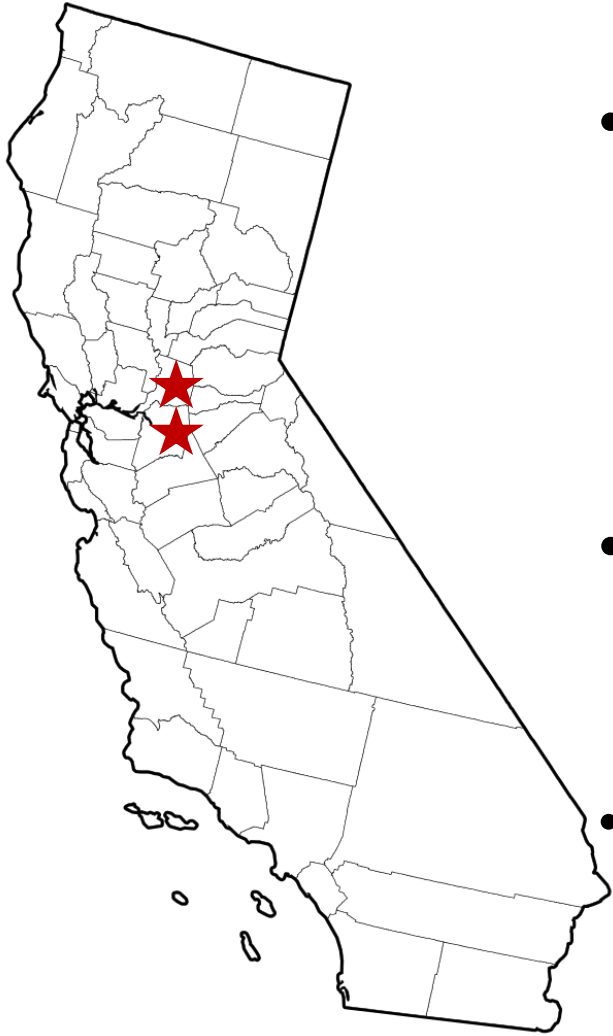


Pestalotiopsis leaf spot (*Pestalotiopsis clavispora*)



- Fungal pathogen has not been detected in the state.
- Is it a new pathogen with a wide host range?
- Do symptoms vary depending on the host?
- What environmental conditions favor the disease?

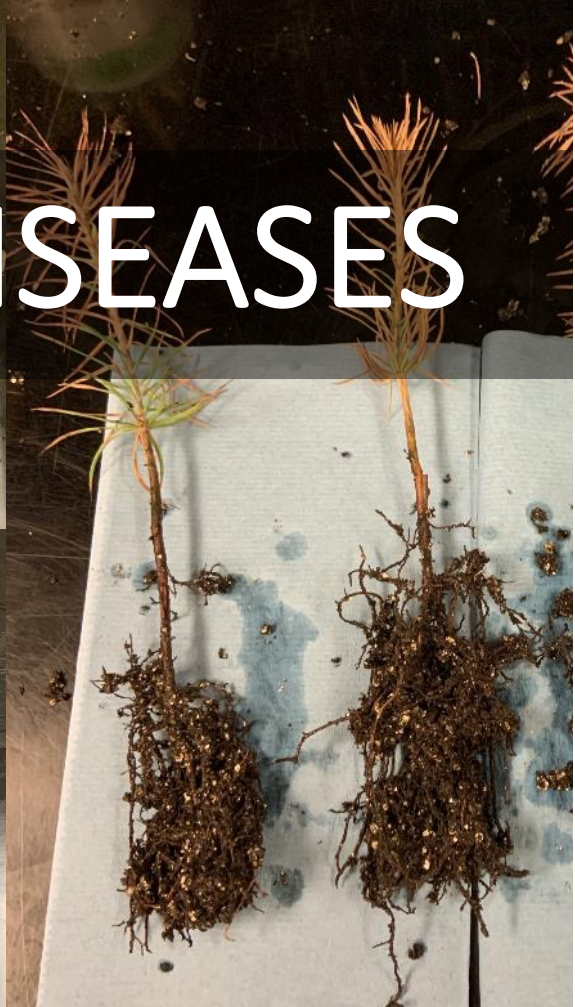
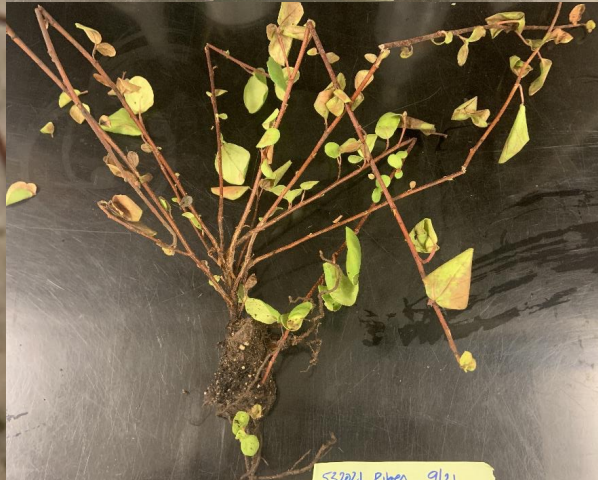
Bacterial spot (*Xanthomonas* sp.)



- Symptoms:
 - Brown-tan dry lesions
 - Enlarged black lesions at the margin of the leaves
- Hosts:
 - Leucanthemum, Lavender
- Counties: San Joaquin, Sacramento

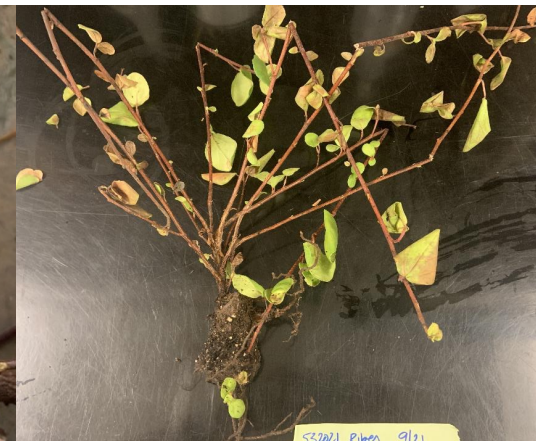
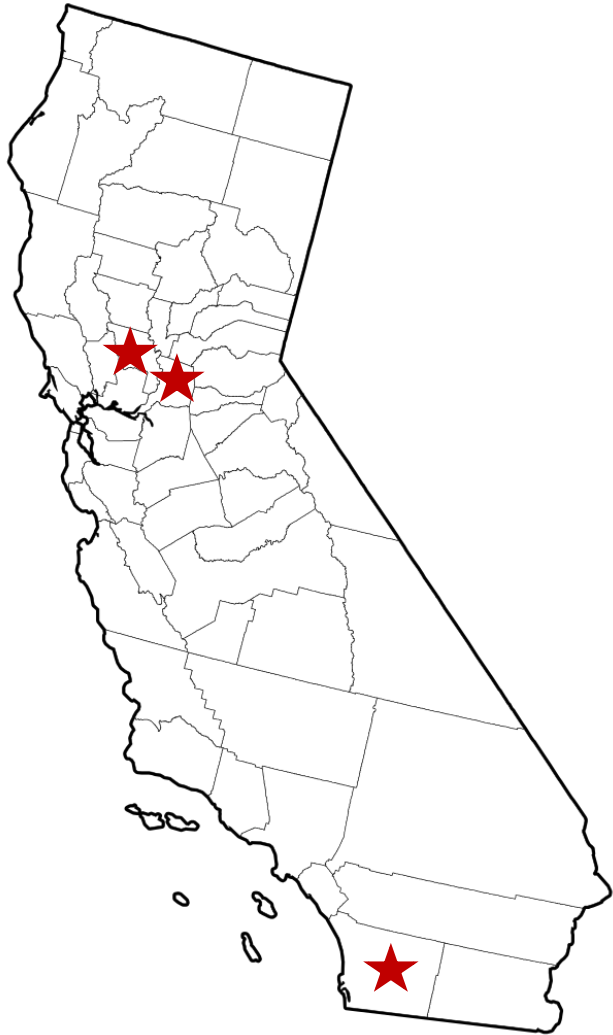


BELOW GROUND DISEASES

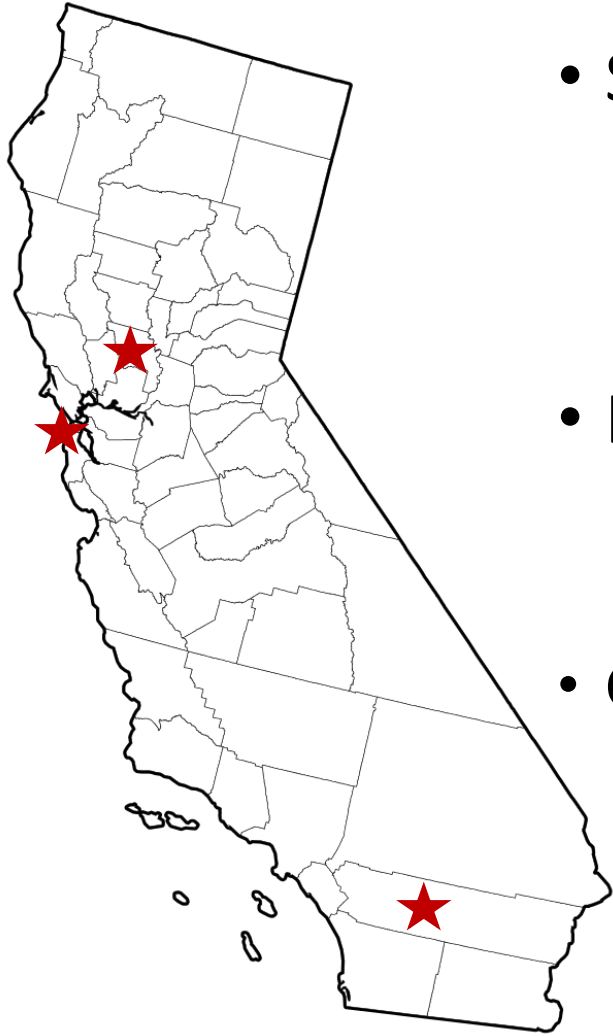


Phytophthora root rot

- Symptoms:
 - Die back, wilting, defoliation, root rot, crown discoloration
 - *P. cinnamomi*, *P. tropicalis*, *P. niederhauserii*
- Hosts:
 - Laurel bay, Cistus, Ceanothus, Ribes
- Counties: Sacramento, Yolo, San Diego



Fusarium root rot



- Symptoms:
 - defoliation, discoloration, root rot, crown discoloration (dark tissue)
 - *F. oxysporum*, *F. proliferatum*
- Hosts:
 - Sugar pine, Douglas fir, Canna Lily, Toyon
- Counties: San Francisco, Yolo, Riverside



Other diseases



Sansevieria
Bacterial soft rot caused by *Dickeya dadantii*

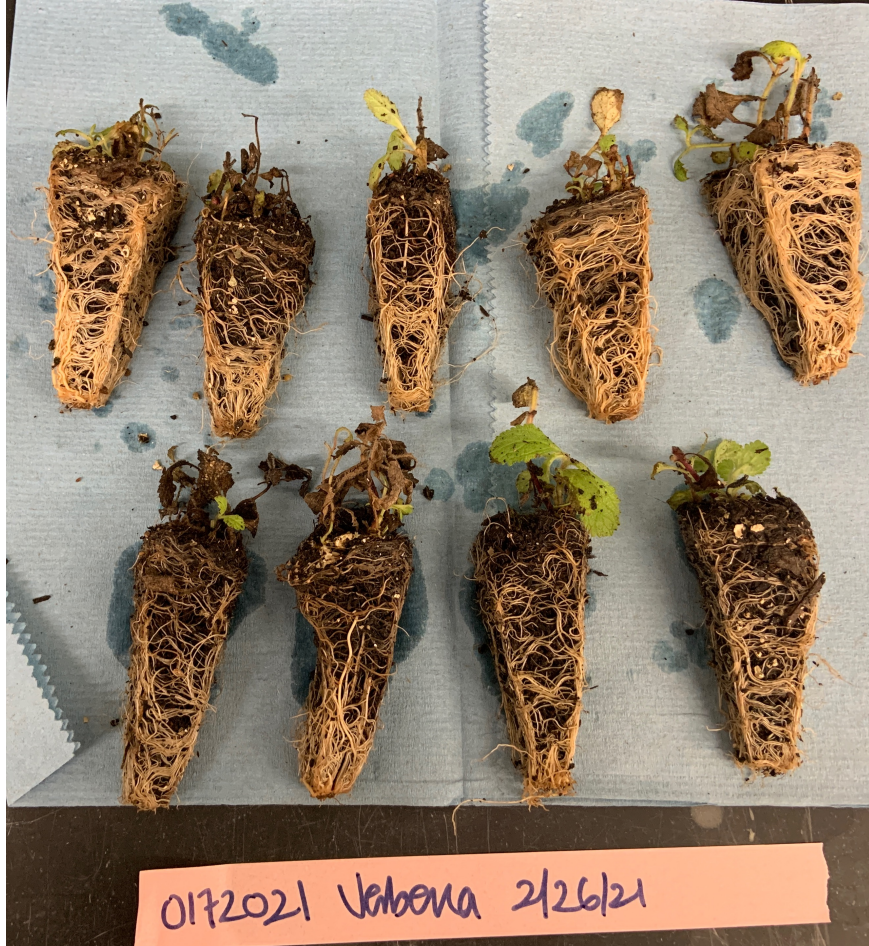


Needle cast caused by *Lophodermium pinastri*

Abiotic factors (no pathogen detected)



Undetermined (Factors that affect disease diagnostics)



- Sample quality:
- Completely death plants
- Soil (no crop history)
- Plants recently sprayed with fungicide

Are there New diseases in California ?



- *Alternaria alternata*, and *Cladosporium* spp. recovered from Opuntia (San Diego)
- Pestalotiopsis leaf spot: European fan palm, Azalea
- Phytophthora root rot caused by *P. tropicalis* in Laurel bay

Conclusions

- Diagnostics service allow us to have a better understanding of pathogens affecting the ornamental industry in the state
 - Pathogen distribution and frequency
 - Host range
- Guidelines to develop research projects:
 - Evaluating new diseases of ornamental crops in California (four new possible pathogens)
 - Evaluating environmental conditions that favor pathogens
 - Study development of fungicide resistance

Acknowledgement



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Please send us samples! 😊

