

Diagnosing tree disorders

Gather information:

- ü identify abnormalities
- ü assess symptoms
- ü look for patterns
- ü look for signs, contributing factors
- ü assess site conditions, disturbances
- ü cultural practices
- ü identify species, species traits and key pests



Site conditions:

soil

irrigation

drainage

topography

exposure: sunlight, wind, salt spray

competition

mulch or leaf litter

planting







What's needed?

knowing what's normal/abnormal?

knowledge of local plants, tree biology, soils, climate, pests and diseases, as well as the cultural practices











Stunting

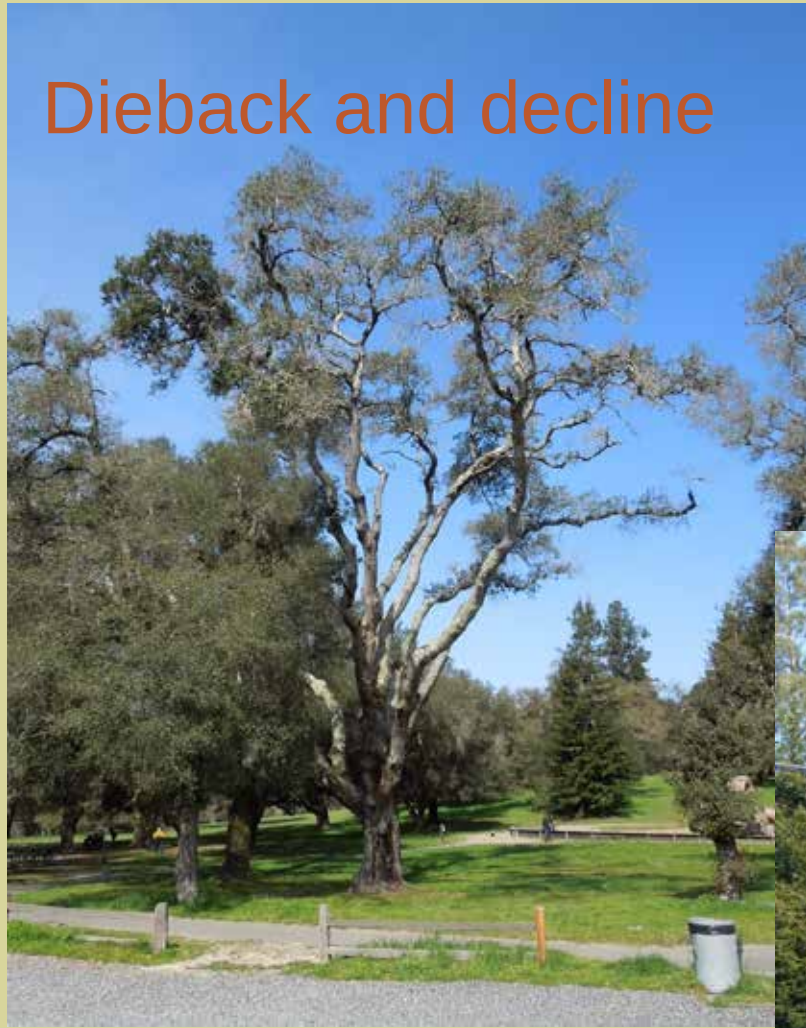




Death



Dieback and decline



Signs/Symptoms:

SYMPTOMS: changes in normal growth and appearance

SIGNS: evidence of pest activity



symptoms/signs (insect pests):

defoliation

leaf browning,
spotting

distortion

bleeding

wilt

dieback/decline

honeydew, sooty mold

fecal specks, frass

webbing

cottony, waxy material

cast skins

the pest

exit holes



Symptoms/signs: (plant pathogens):

dieback/decline

yellowing, spotting

leaf death

leaf-tip dieback, marginal
burn

wilt

thinning, small leaves

distortion

bleeding

cankers

wood decay

mushrooms, etc.

powdery mildew, rust

mycelium, rhizomorphs,

wood discoloration





Abiotic factors

temperature extremes

drought, flooding (poor soil aeration)

mineral imbalances, salinity, salt spray, pH

soil characteristics

shade

air quality

wind, humidity

Soil compaction



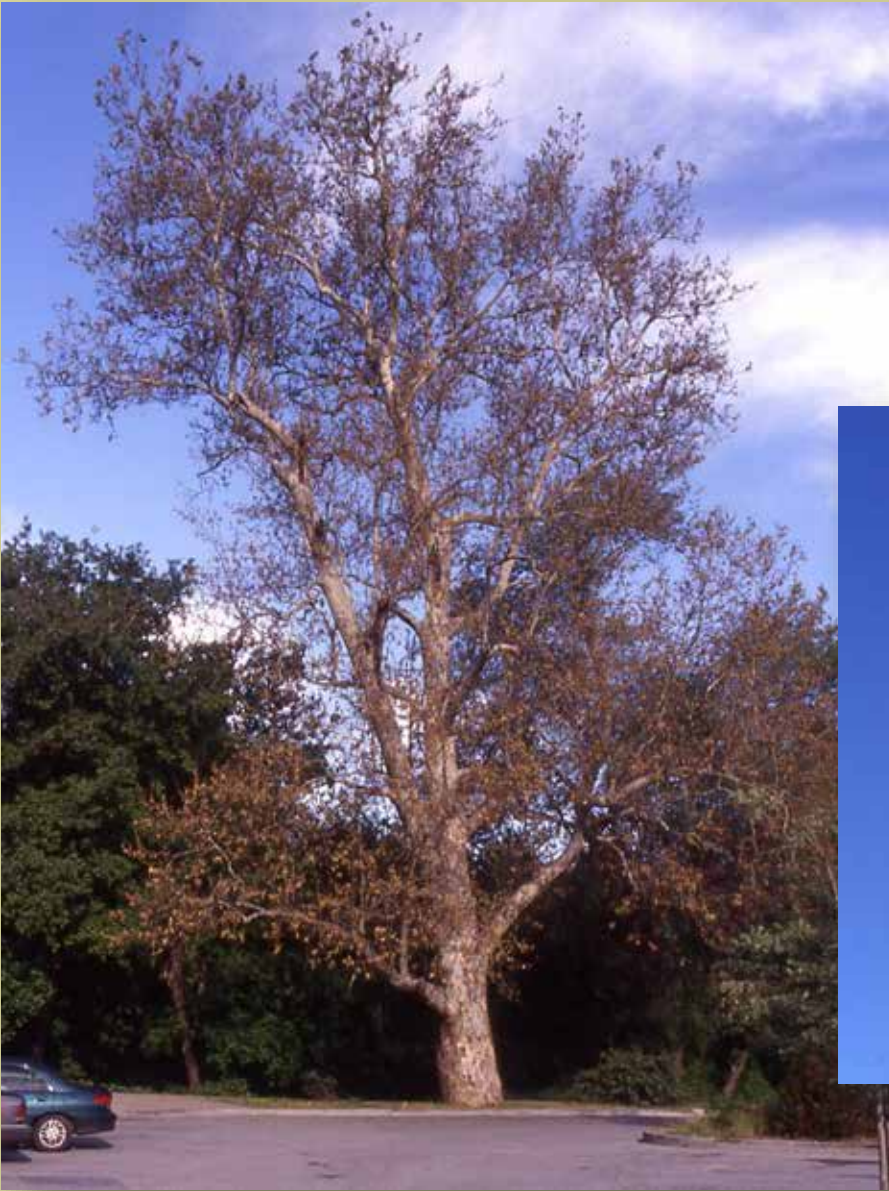




Foliar symptoms:



Leaf death



Defoliation







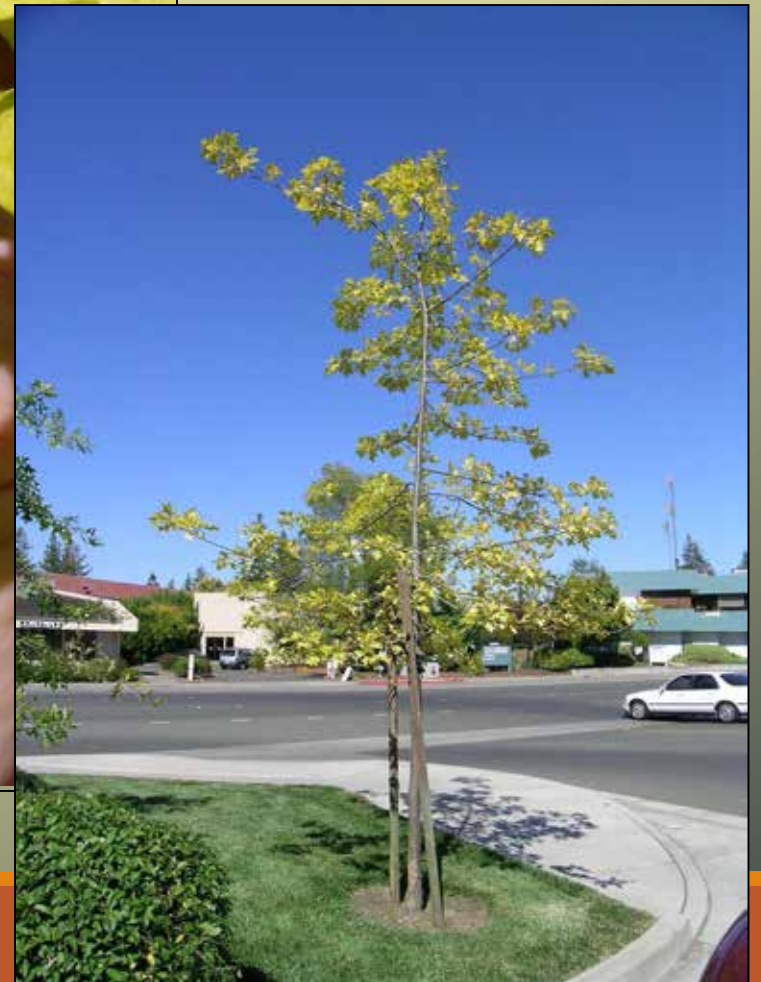
Leaf distortion











Leaf chlorosis



Potassium deficiency, Scot Nelson



Leaf stippling





Leaf spotting







Marginal browning





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Dieback, decline







Verticillium wilt





PEST ALERT



Rapid Ohia Death (forests of Puna)
thought to be a *Ceratocystis* fungal infection,
also found on Okinawan sweet potato and
taro.

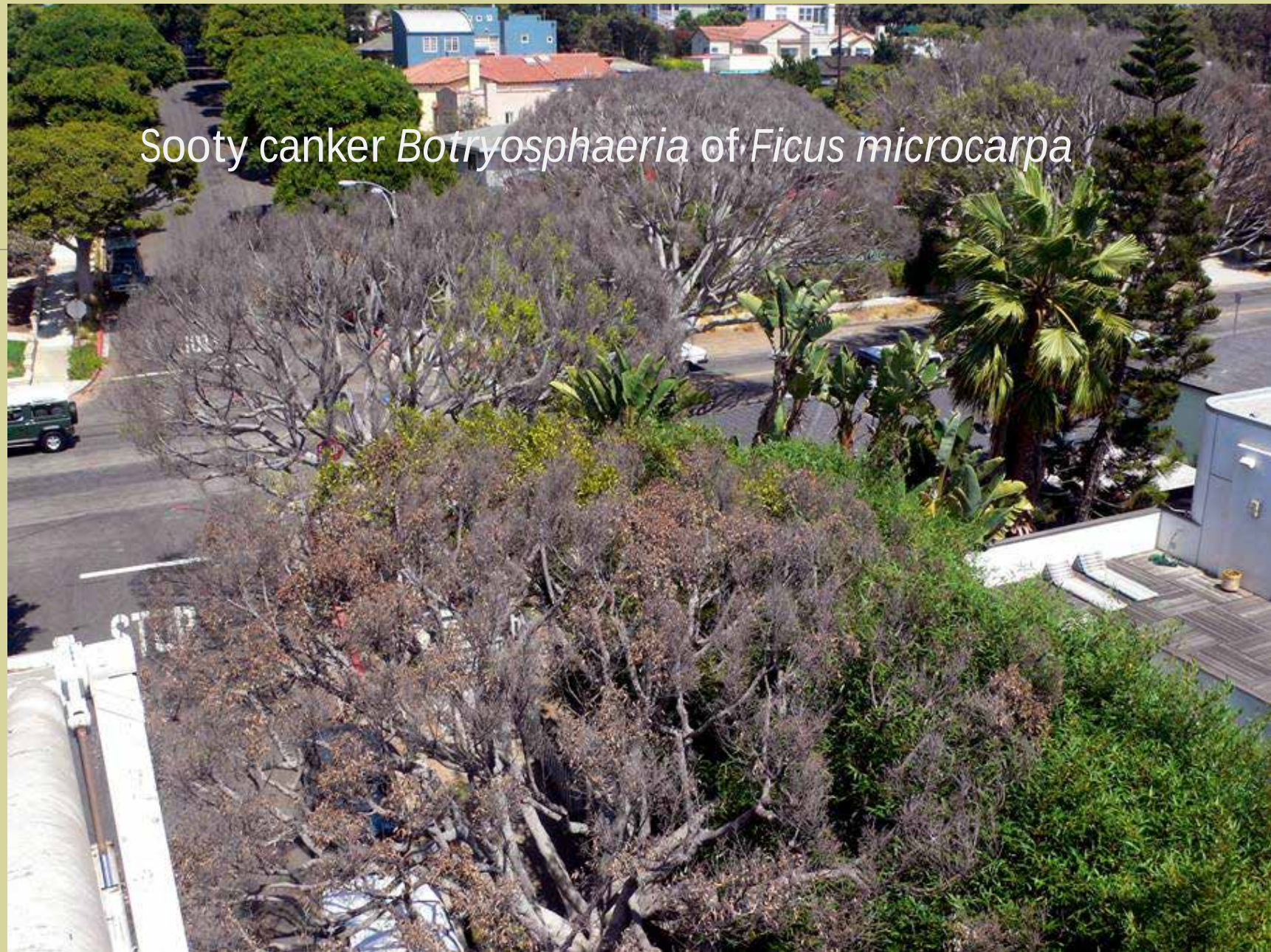
Lobate lac scale, Banyan stem gall wasp, leaf gall wasp, Cuban laurel thrips



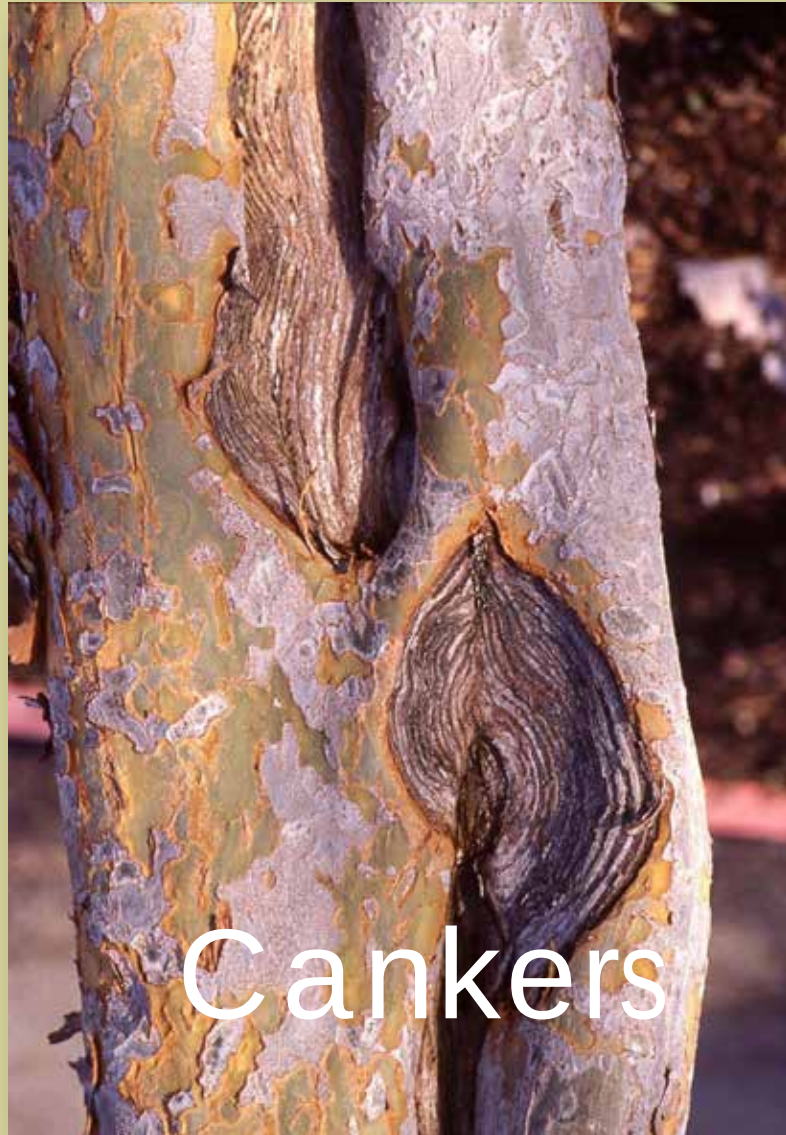




Sooty canker *Botryosphaeria* of *Ficus microcarpa*







Cankers









Corymbia citriodora canker









Symptoms development:

widespread or restricted ?

one species?

when did it start?

sudden or gradual?

chronic or acute?

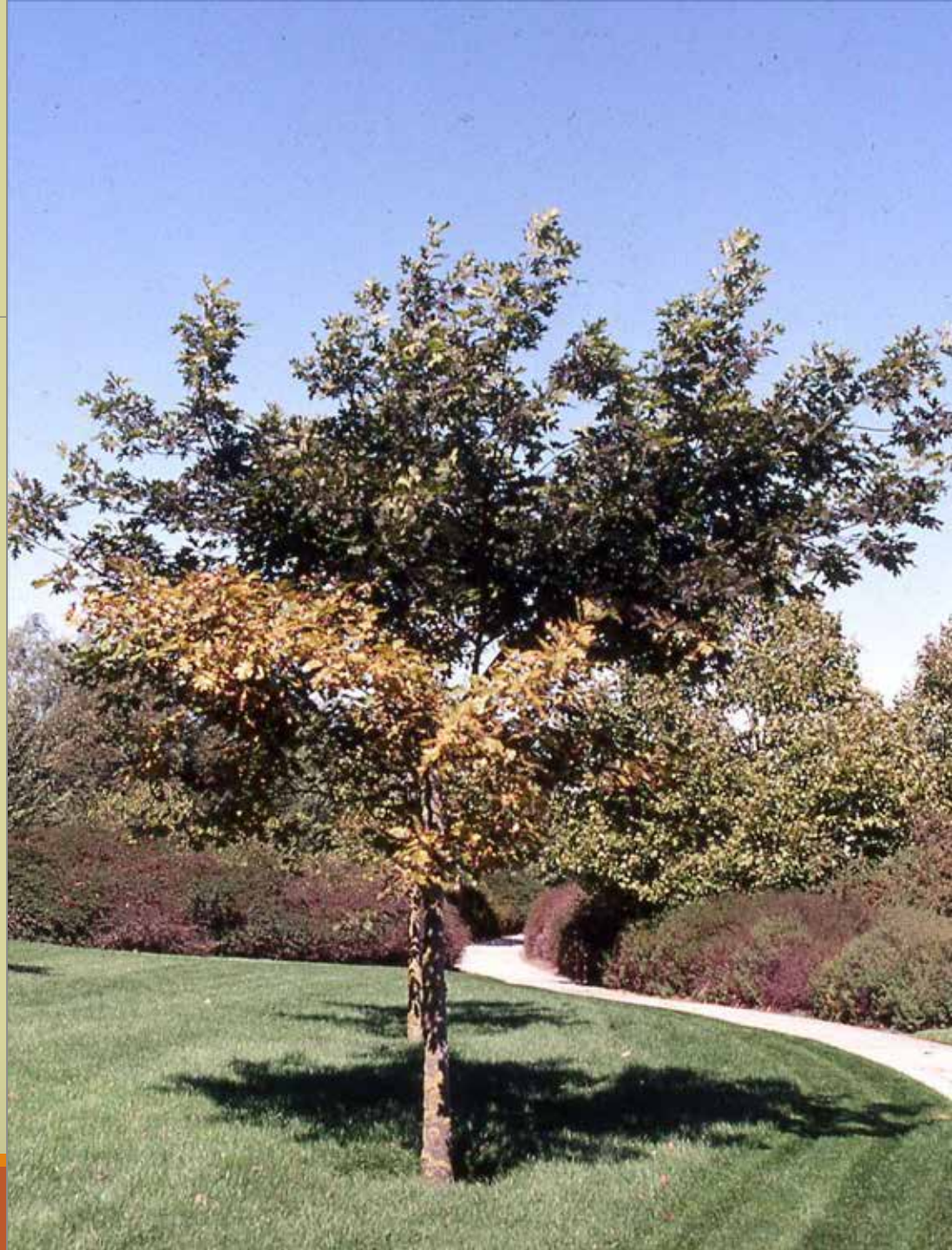
increasing?

patterns: patchy, uniform, random?

climatic events?









Contributing factors?



Drought

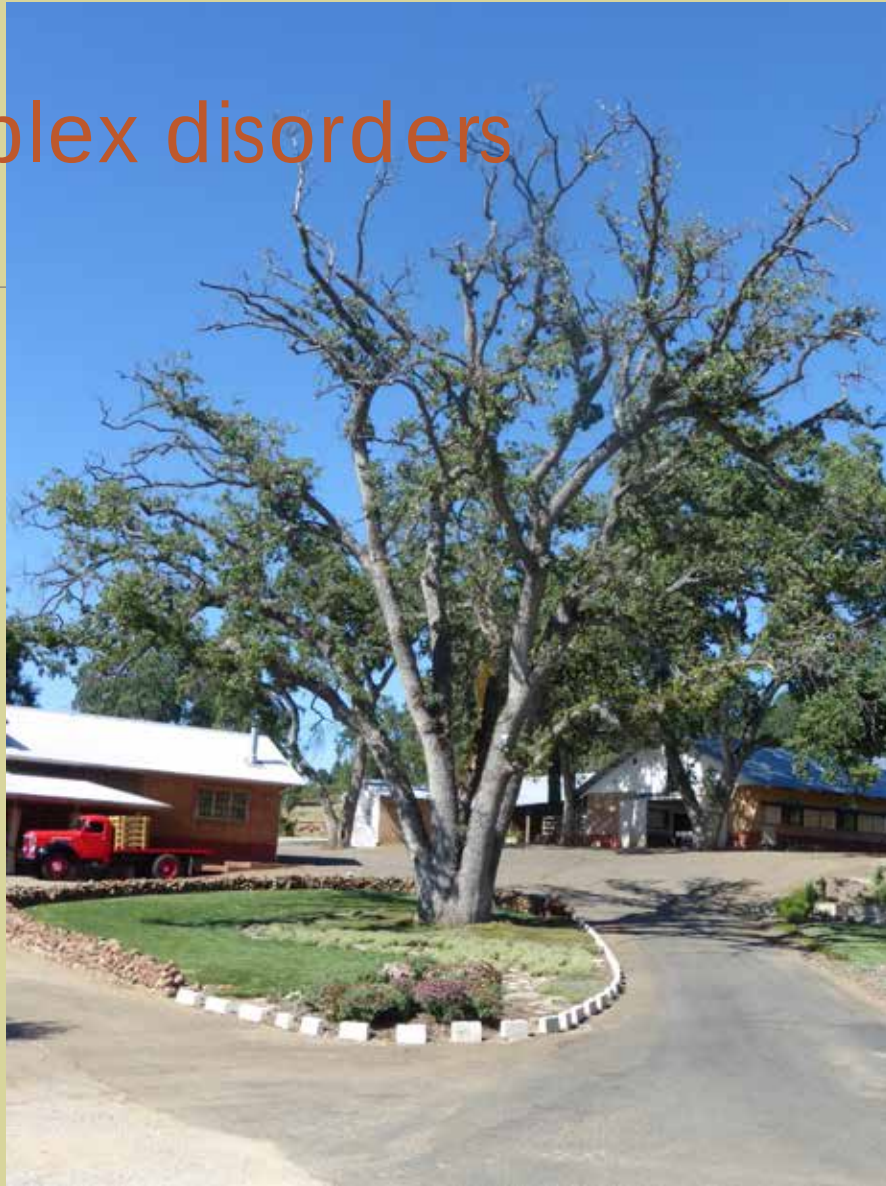


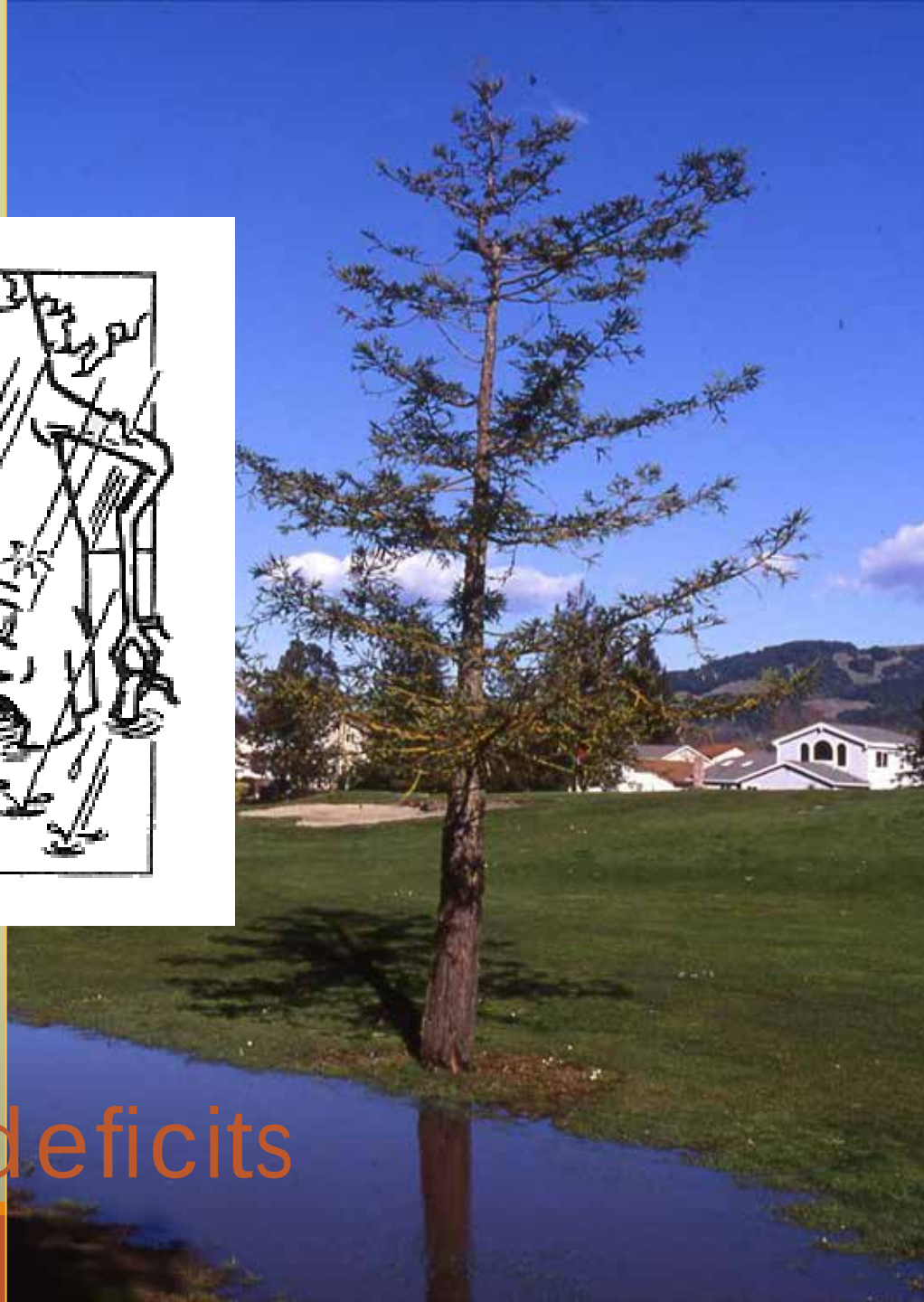
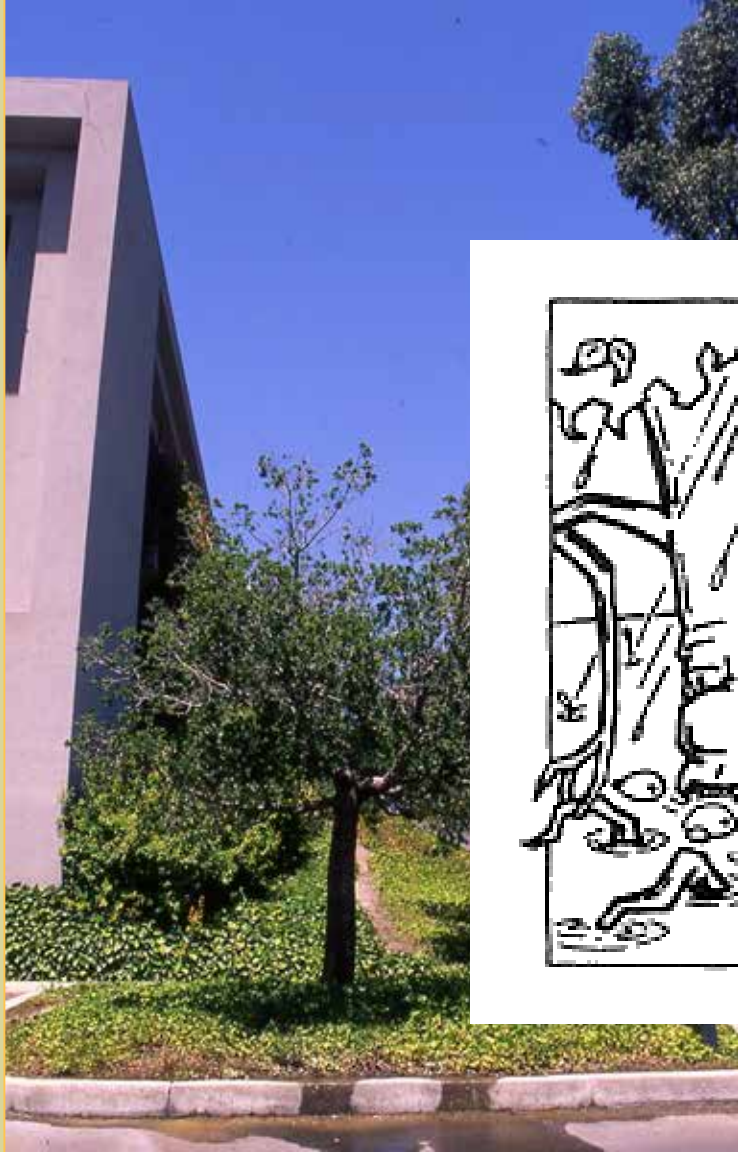


Remediation

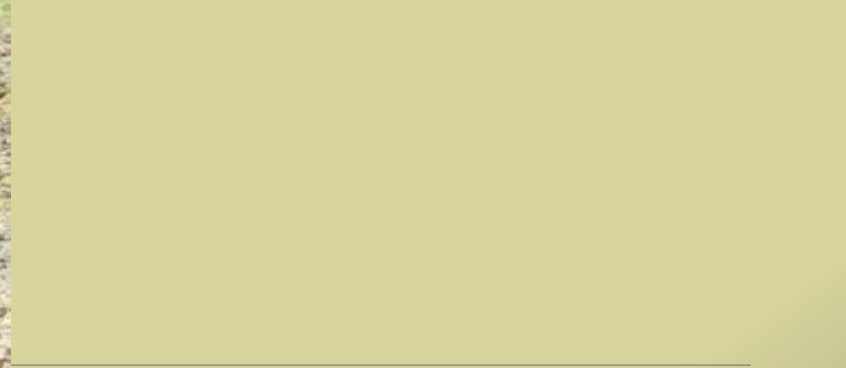


Complex disorders





Soil aeration deficits















Drainage: Scot Nelson







Root rots:







Courtesy: Torrey Young

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Galling



Signs: evidence of causal agent















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Rhinoceros palm beetle



Bleeding



Eucalyptus longhorned borer



Thielaviopsis rot Scot Nelson





Determining cause(s)



know your plants

check references

consult knowledgeable resources

review horticultural practices

ask questions

practice skepticism

submit specimens or samples

take photos

Summary:

Look: define the problem

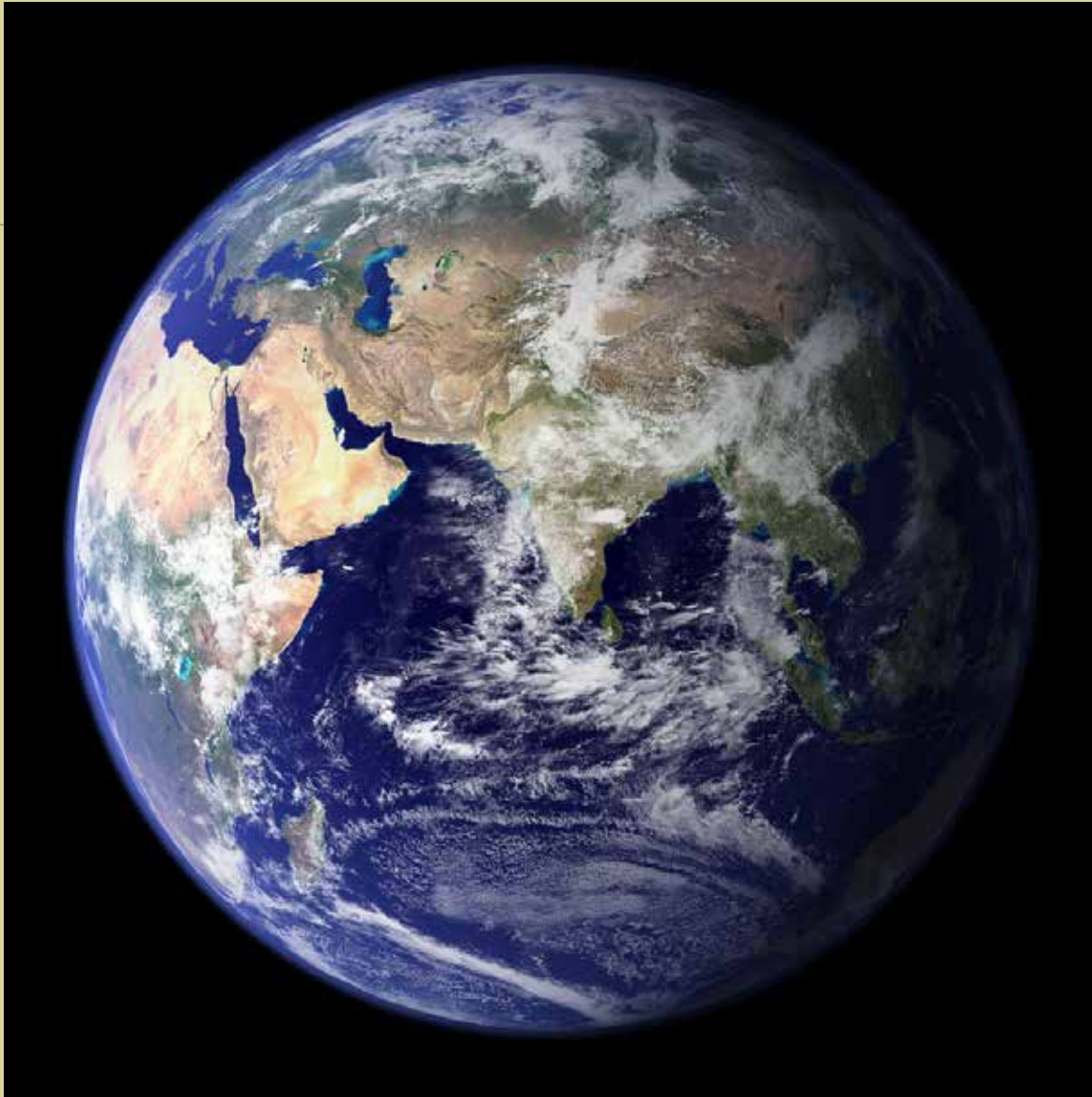
Gather information: distinguish among living and nonliving factors

Read: consult references, internet

Compare and contrast: with what you've read or know, eliminate

Ask questions: specialists, extension agents, universities

Put it all together: to determine most probable cause



Diagnostic Labs:

Fallbrook Ag Lab Inc. (Carolyn Wells) 619.728.4828 433 S. Main St., Fallbrook, CA 92028, ornamental plant diagnostics

Plant Disease Diagnosis (Louellen Pierce) 510.937.3841, 780 Palmer Rd., Walnut Creek, CA 94596 turfgrass and plant disease diagnostics

Pacific Plant Health (Don Ferrin) 909.342.0224, 1485 Spruce, St. Suite D, Riverside, CA 92507 plant disease diagnostics

San Diego County Dept. of Agriculture (Pat Nolan) 619.694.2753, San Diego County of Ag., 5555 Overland Ave. Bldg. #3 San Diego, CA 92123 plant disease diagnostics

Tree Associates (John Lichter) 916.795.1517 3963 Central Lane, Winters, CA 95694, tree and landscape problem diagnostics (N. Sac. Valley)

Orange County Dept. of Agriculture (Richard Tiffer) 714.447.7100 Orange County Dept. of Agriculture 1010 S. Harbor Blvd. Anaheim, CA 92805 plant disease diagnostics

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