



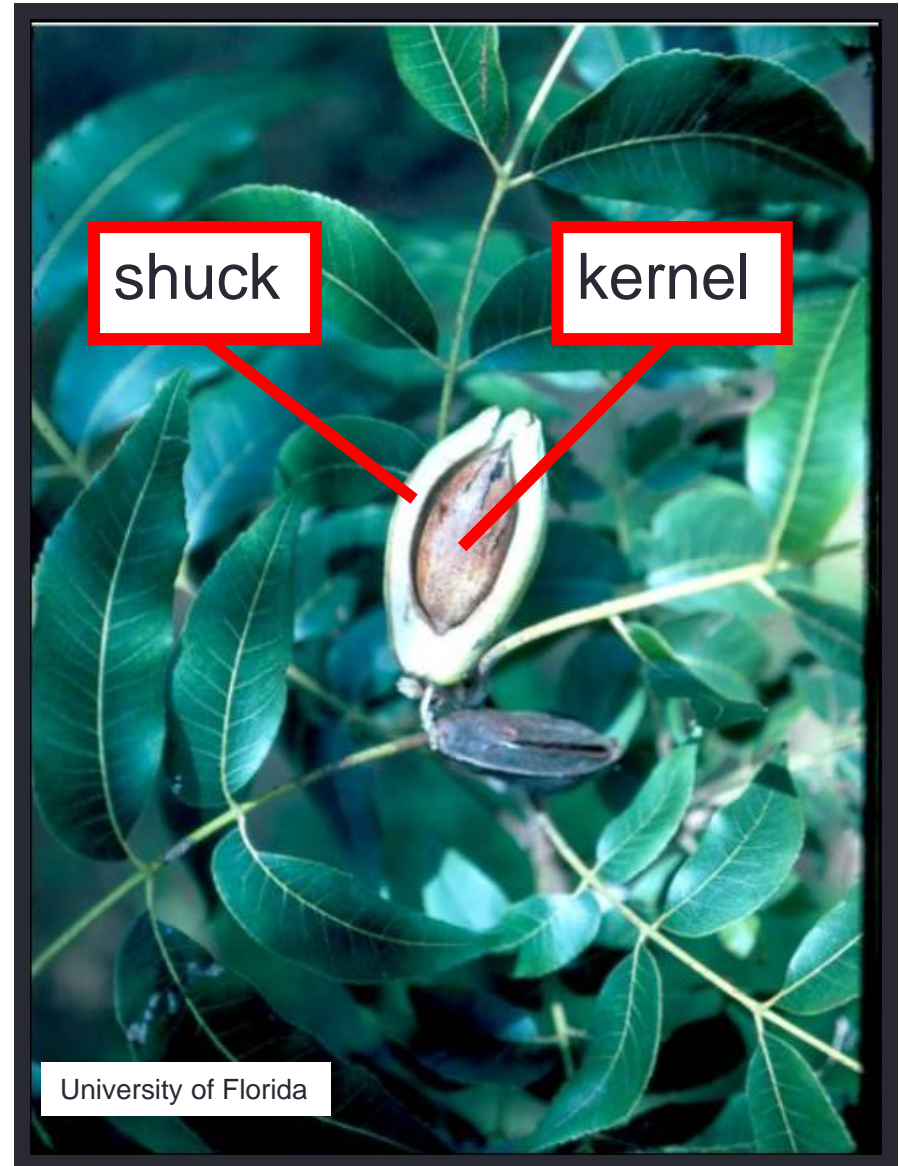
PECAN DISEASES

**2013 Pecan
Scout School**

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Plant Pathology**









pecan scab

(Cladosporium caryigenum)

Pecan Scab

more common on lower leaf surface.

Upper & lower lesions do not always match.

Older lesions dry out & crack.

**most susceptible 7 – 21 days after budbreak;
new leaves & shoot elongation for ~ 90 days**



Pecan Scab

Timing of infection is important.

1st 2-3 weeks = moderately susceptible

Mid-Jun to Mid Jul = most susceptible



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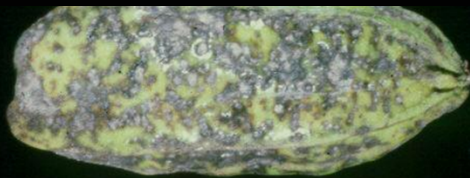
REDUCED NUT SIZE

EARLY NUT DROP

Reduced % KERNEL

LEAF DROP

TWIG DEATH





downy spot

(Mycosphaerella caryigena)

Downy Spot



Lower in the tree.

Faint spot on underside of leaflets.

Visible on upper surface 6-8 weeks later.

premature defoliation





zonate leaf spot

(Cristulariella moricola)

Zonate Leaf Spot

Develops during July or August.

More obvious on lower leaf surface.

Sporulation on lower leaf surface.

Cool (<81°F), wet periods.





powdery mildew

(Microspheera alni)

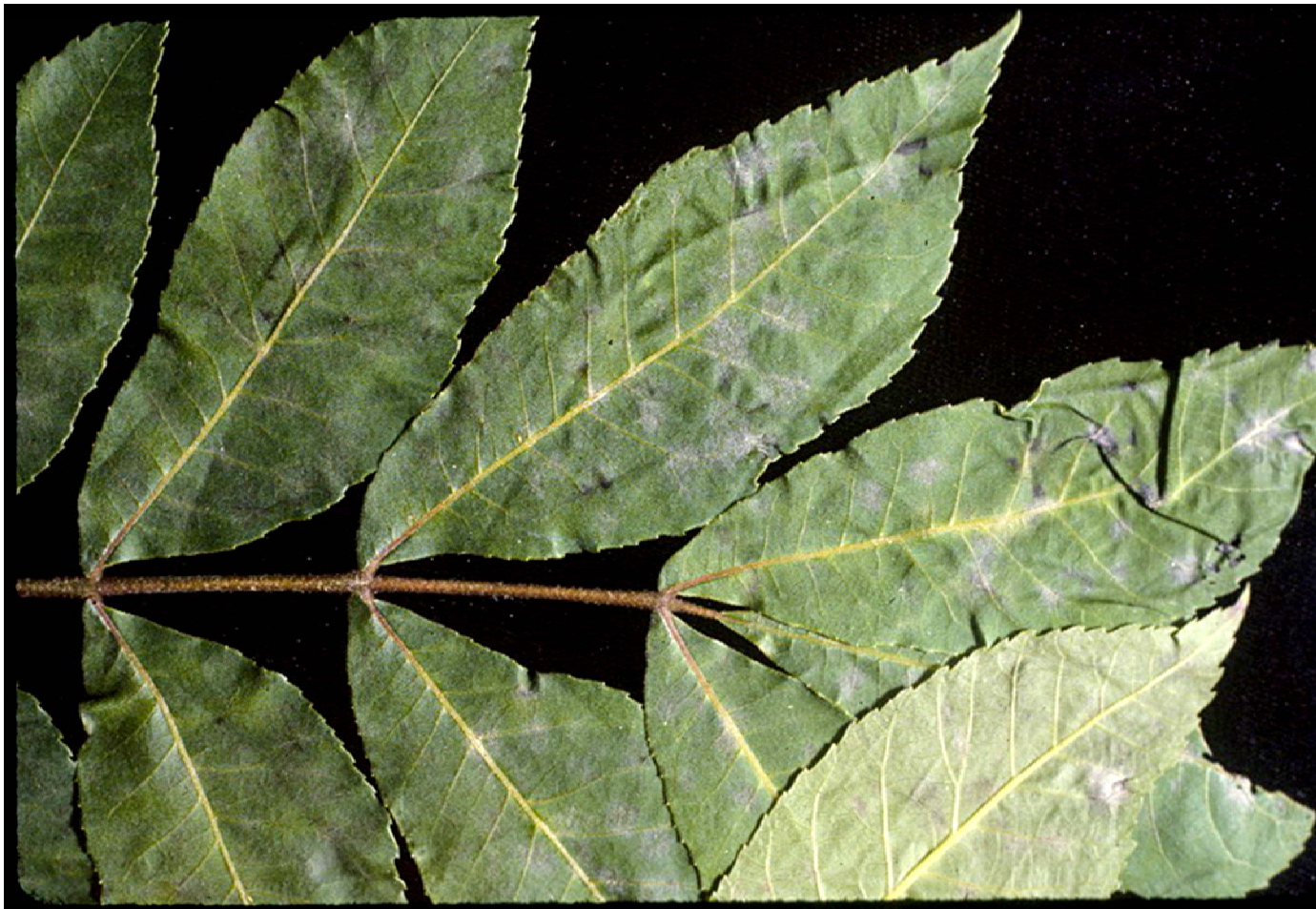
Powdery Mildew

Appears midseason – to – late

White 'powdery' sporulation.

Irregular faded areas..

Misshapen leaves possible.



Powdery Mildew

More common fruit than leaves.

Dusty white spots.

Russeted spots.





Phytophthora shuck and kernel rot

(Phytophthora cactorum)

Phytophthora Shuck & Kernel Rot

Dark brown, but does not collapse.

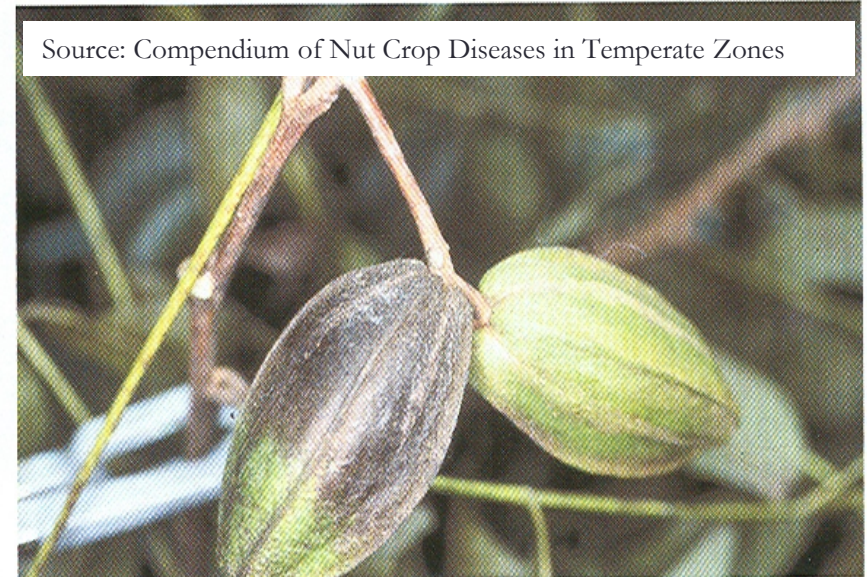
Shucks can become rotten within 4 days.

Timing of infection is a factor.



Phytophthora Shuck Rot

- ❑ Orchard History
- ❑ Temperature and Rain Events
 - ❑ mid to late August, early September
 - ❑ temperature highs of < 87F
 - ❑ frequent or extended rain events.



120. Phytophthora shuck and kernel rot of pecan fruit.
(Courtesy C. C. Reilly)

- ❑ Fungicide - Apply before a rain and make all applications prior to shuck split.



anthracnose

(Glomerella cingulata)

Anthracnose

Large brown lesions, typically from margins.

Premature defoliation.

Cultivars differ in tolerance.

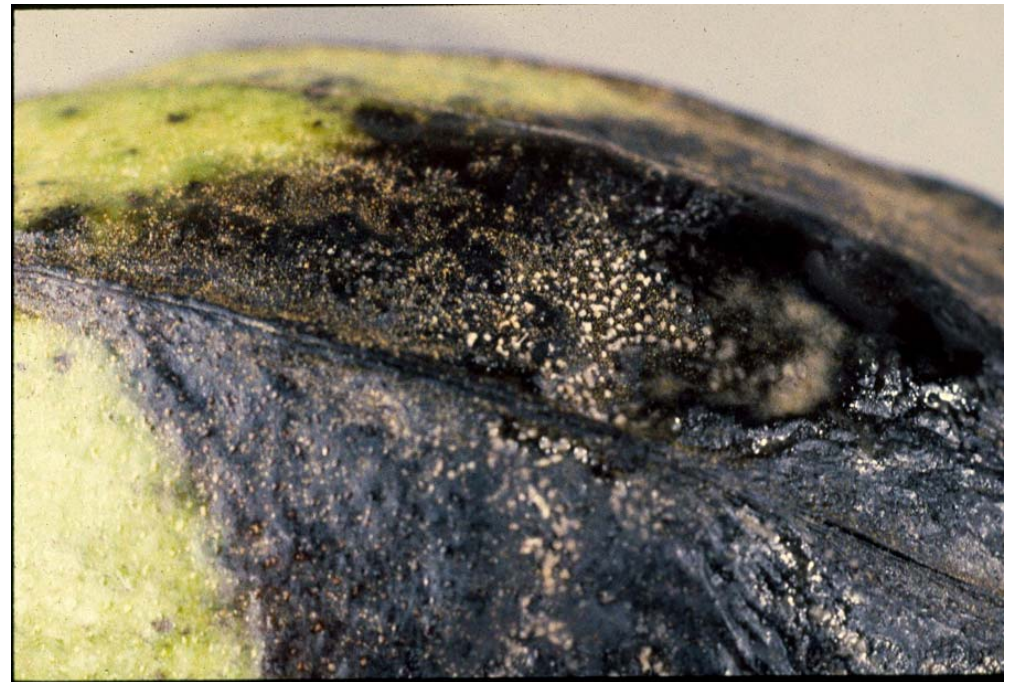


Anthracnose

Lesions near end of fruit or along sutures.

Can enlarge and cover entire shuck.

Salmon-colored spores within lesions.





bacterial leaf scorch

(Xylella fastidiosa)

Bacterial Leaf Scorch

Normally develops in August.

Transmitted by xylem-feeding insects.

More severe with heavy crop load.

Generally associated with Cape Fear



Leaf Scorch – Similar symptoms

- ❑ Fungal leaf scorch
 - ❑ *Phomopsis* sp.
 - ❑ Anthracnose (*Glomerella cingulata*)
- ❑ Bacterial leaf scorch (*Xylella fastidiosa*)
- ❑ Scorch due to nutrient imbalance (Desirable)
 - ❑ High [N] & low [K]
- ❑ Mites

Bronzing



Phosphite burn



09/21/2010

More common on lower leaf surface.

Control of Pecan Scab

Resistant cultivars

Costly to convert an orchard to a new cultivar

Most susceptible cultivars were once thought to be scab resistant.

Control of Pecan Scab

□ Resistant cultivars

In 1957, J. R. Cole suggested that growers plant cultivars with good horticultural characteristics and expect to control scab with a good spray program.

Control of Pecan Scab

- Resistant cultivars

UGA Pecan Breeding Program

Control of Pecan Scab

- ❑ Resistant cultivars
- ❑ Fungicide applications
 - ❑ From 5 to 12 applications
 - ❑ Bud break through shell hardening
(Early April through mid-August)

Common Name	Trade Name	FRAC Code
thiophanate-methyl	Topsin-M	1
dodine	Elast	M3
fentin hydroxide (=TPTH)	Super Tin, Agri Tin	30
phosphite		33

Fungicide Class	Common Name	Trade Name	FRAC Code
QoIs (strobilurins)	azoxystrobin	Abound ½ of Quilt ½ of Quadris Top	11
	kresoxim-methyl	Sovran	
	pyraclostrobin	Headline	
	trifloxystrobin	½ of Absolute	
DMIs (triazoles, sterol inhibitors)	propiconazole	Bumper, Orbit Propimax ½ of Quilt	3
	tebuconazole	Monsoon, Orius, Tebuzol, Toledo ½ of Absolute	
	metconazole	Quash	
	fenbuconazole	Enable	
	difenoconazole	½ of Quadris Top	

Know Your Orchard

- Cultivars
- History of scab pressure
- History of other diseases
 - e.g. downy spot; zonate leaf spot, powdery mildew; Phytophthora shuck & kernel rot
- How long to complete application?
- When your schedule is tight, hit trouble areas first.

Three Part Season

Pre-pollination

- Bud break through nut set
- 10-14 day intervals

Post-pollination

- Nut set to shell hardening
- 10-21 day intervals

After shell hardening

Topsin	DMIs	Strobilurins	Dodine	TPTH
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leaf scab

nut scab



downy spot



powdery mildew
zonate leaf spot



Phytophthora

Any scab program

Topsin
DMIs
Strobilurins ?

Strobilurins

TPTH

Topsin
DMI

Phosphites

Topsin	DIMs	Strobilurins	Dodine	TPTH	

leaf scab

nut scab

Apr May Jun Jul Aug Sep

anthracnose

Topsin

Strobilurins

Phosphites

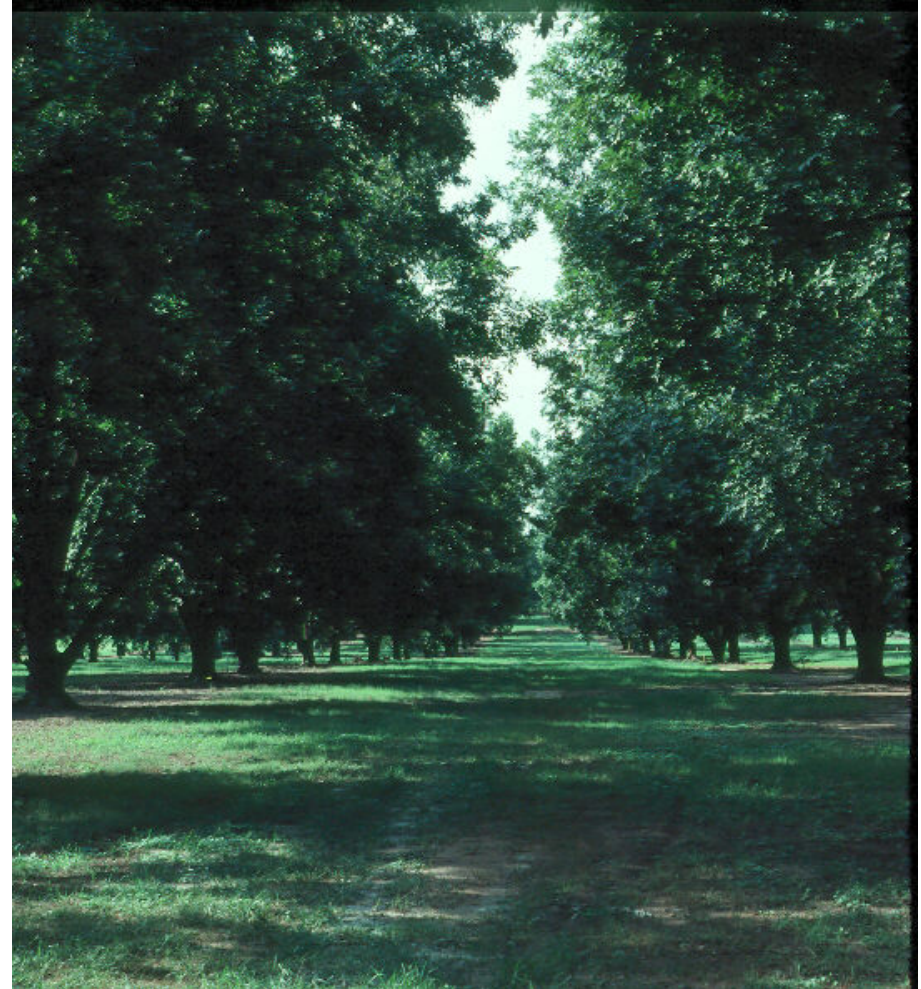


SPRAY

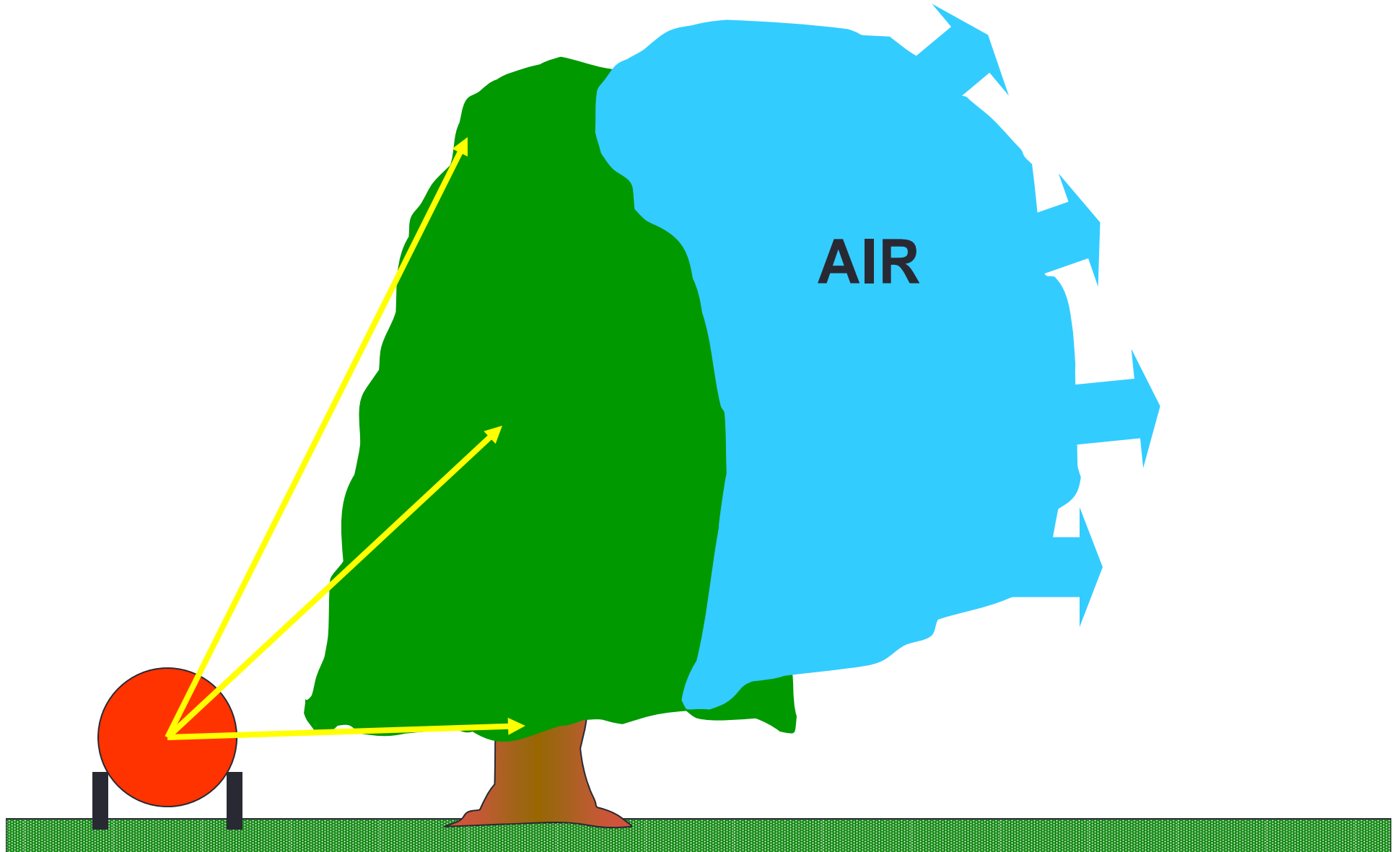
COVERAGE

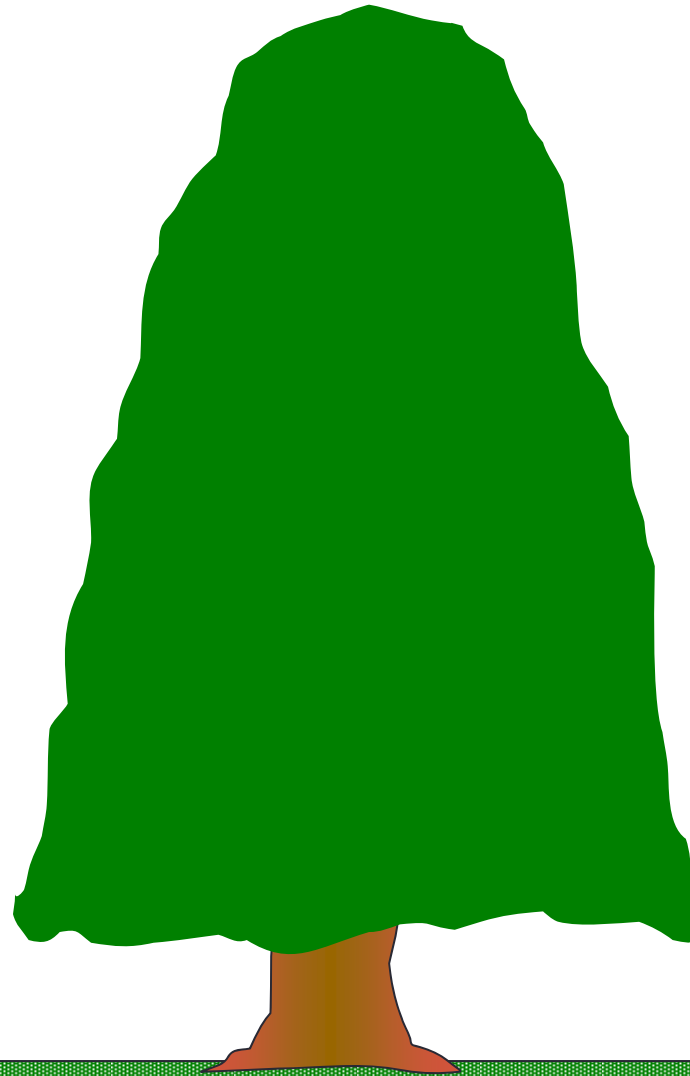
FUNGICIDE COVERAGE

- **Tree Size**
- **Tree Spacing**
- **Sprayer Operation**
 - Wind
 - Speed (~1.5 mph)
 - Misdirected or weak air blasts



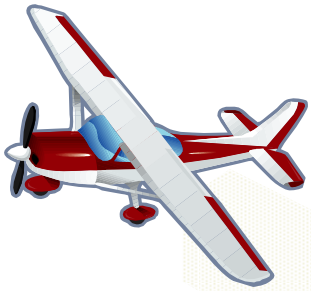
AIR BLAST SPRAYING





**UNIFORM
COVERAGE
Top to Bottom
&
Side to Side**

Aerial Application



- Not a substitute for ground application
- Useful when ground application is difficult or impossible

