Pecan Disease Management

2021 Beginner's Pecan Production Course

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Pecan Diseases

- What is the concern?
- Why are we concerned?
- What to do?

Pecan Diseases

- Scab
- Bacterial leaf scorch
- Downy spot
- Zonate leaf spot
- Powdery mildew
- Anthracnose
- Phytophthora shuck rot
- Many other minor diseases

Pecan Scan

- Caused by the fungus *Venturia effusa* (*Fusicladium effusum)*
- a known problem since 1888
- Polycyclic epidemics.
- Rain frequency is important.

Pecan Scab Symptoms

On current-season twigs

- Infected in the rapid growth stage
- Lesions are elongated
- Dieback is uncommon except in very susceptible cultivars
- Will serve as inoculum source in following years

Pecan Scab Symptoms

On immature, expanding leaves

- black spots (1-5 mm)
- appear velvety or rough
  when sporulating
- More common on lower surface
- Upper & lower lesions
  do not always match.

Pecan Scab Symptoms

- Leaves are most susceptible 7 – 21 days after bud-break
- New leaves & shoot elongation for ~ 90 days
- March – April – May

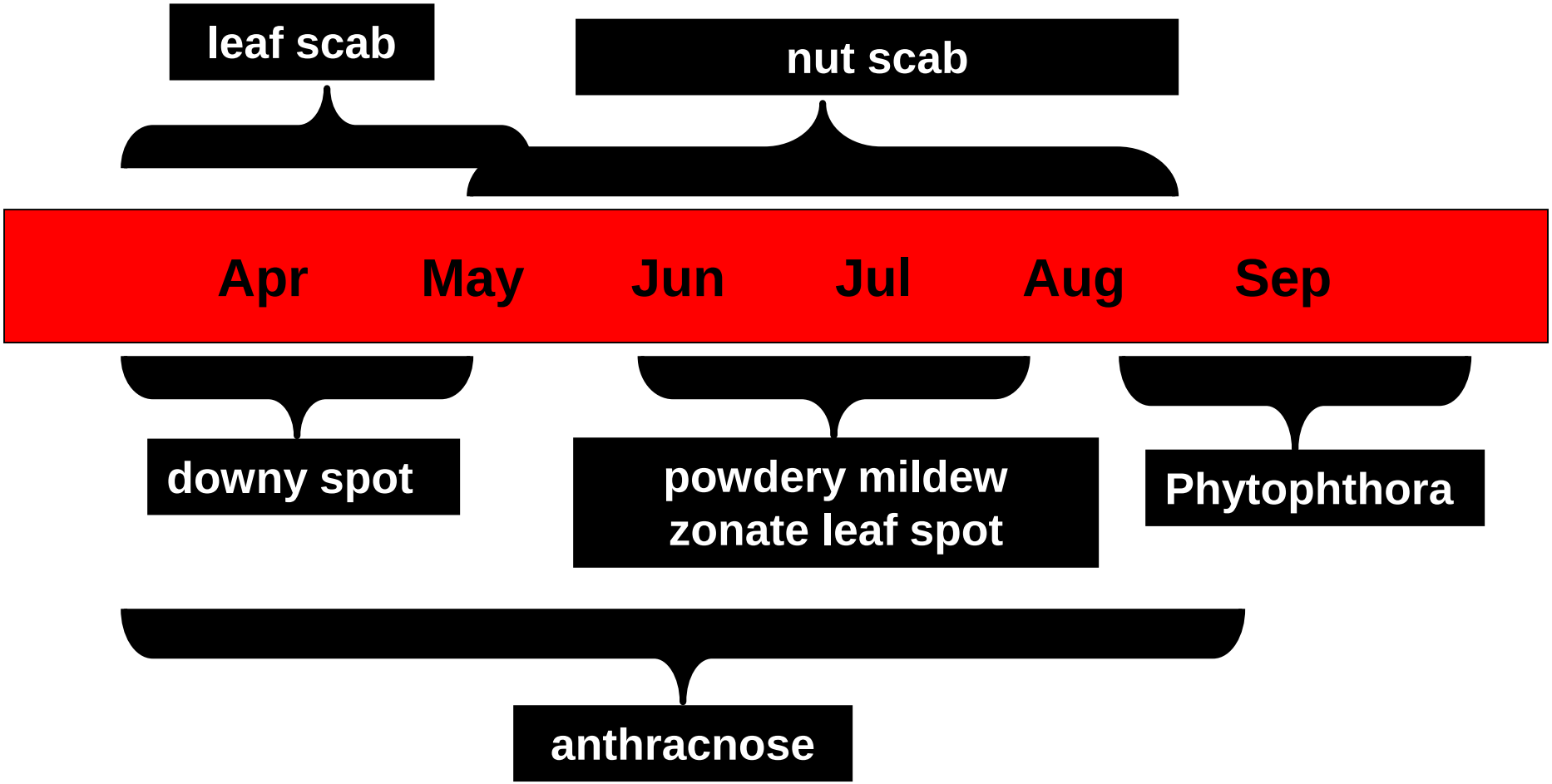
Pecan Scab Symptoms

On shucks

- lesions are circular (2-8 mm)
- Once the shell hardens,

subsequent infection is apparently more cosmetic then damaging.

Pre-pollination Post-pollination



Pecan Diseases

- What is the concern?
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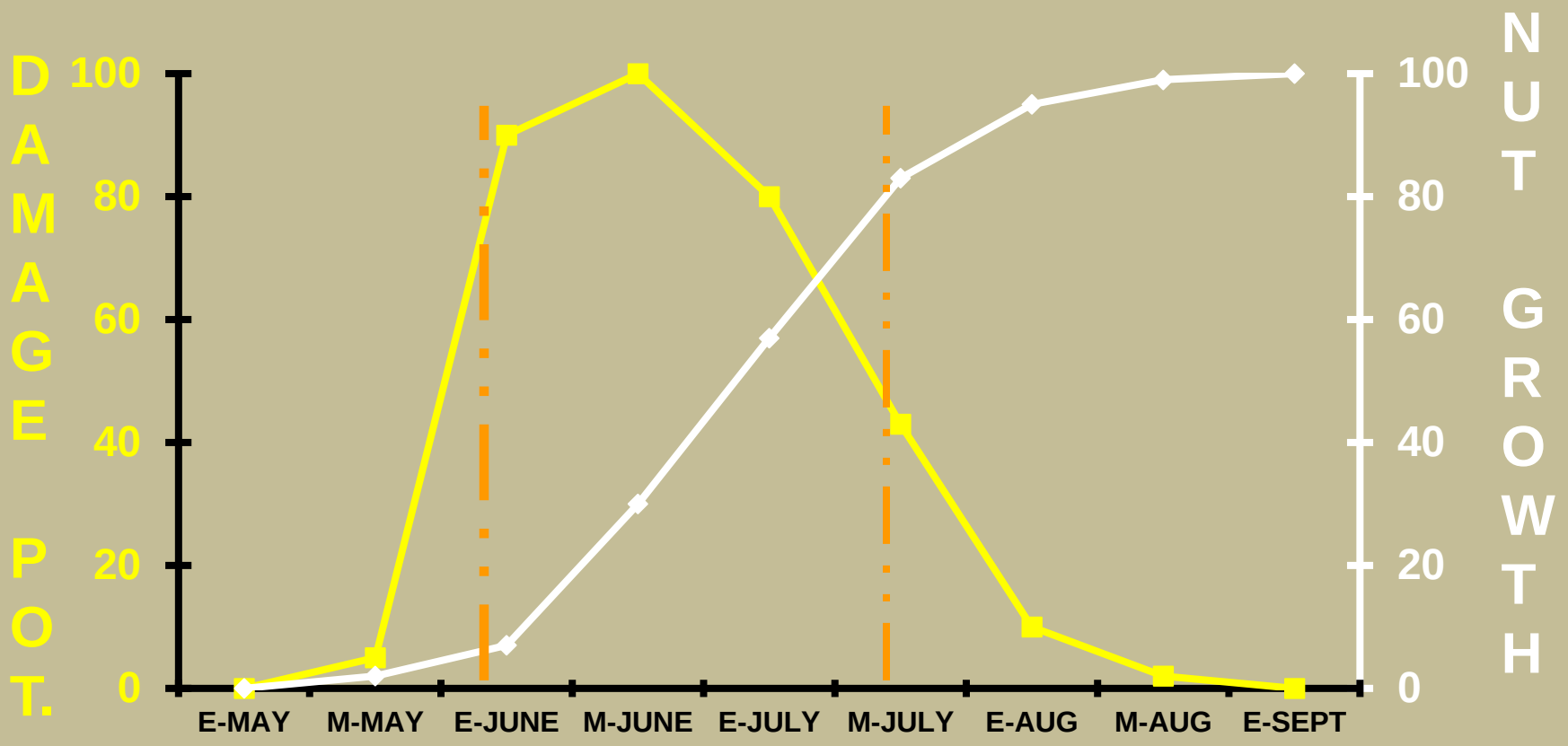
Leaf Scab Damage

- Reduced photosynthesis
- Defoliation (when scab is severe)
- Leaf retention in the fall
- Source of inoculum

Nut Growth & Damage Potential



Pecan Scab Symptoms

- Early infections
  - tremendous yield and crop quality reductions
- Late infections
  - less damaging to both yield and quality.
- Critical period = early June - early August

Nut Scab Damage

- Reduced size
- Early drop
- Lower % kernel

Pecan Scab Symptoms

UGA extension

extension.uga.edu | 1-800-ASK-UGA1

Pecan Scab Symptoms

Pecan Diseases

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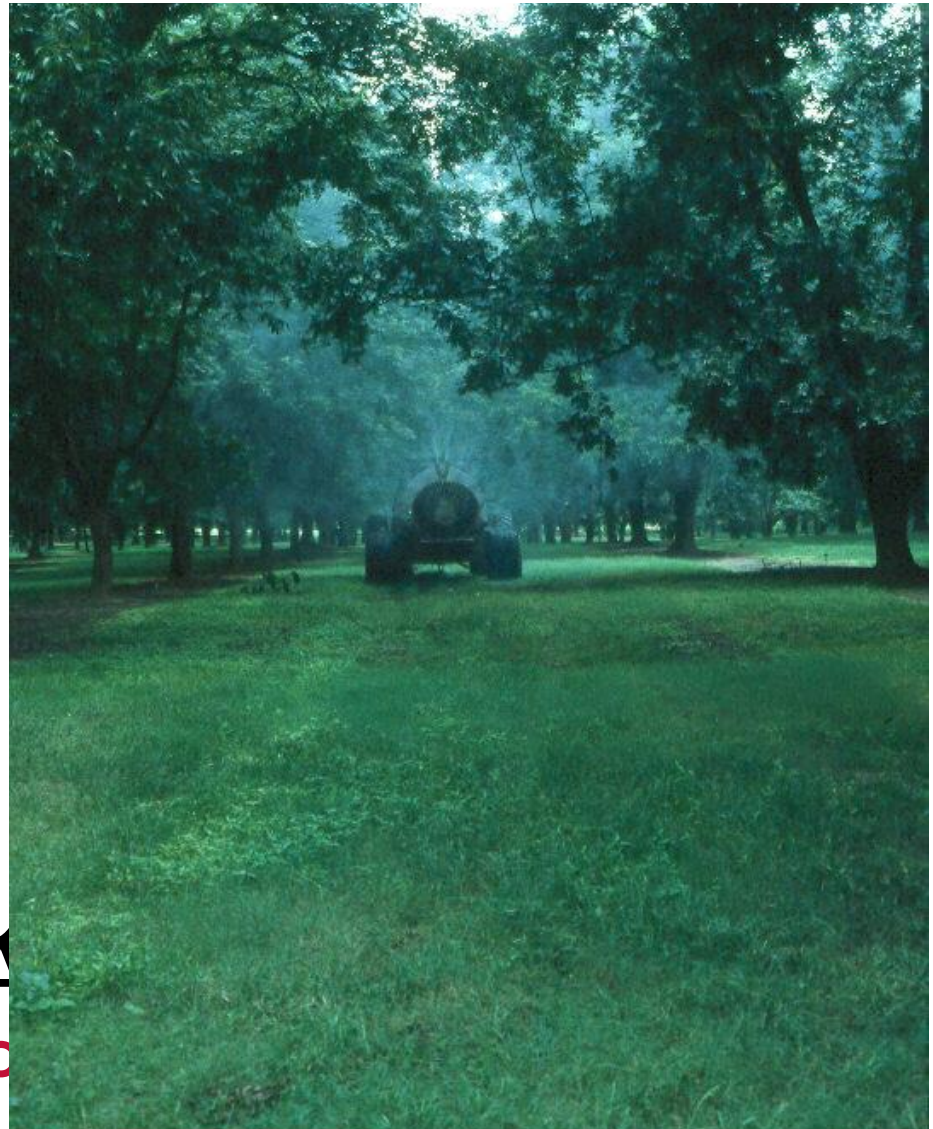
Pecan Disease Management



Pecan Disease Management

- Cultural considerations
  - Plant more resistant cultivars
  - Increase cultivar diversity
  - Improve air flow
    - Spacing
    - Thinning
    - Pruning
  - Maintain tree health

Pecan Disease Management

- Resistant Cultivars
  - Scab has multiple races
  - Most economical and practical measure
  - Host resistance is not always durable
  - Cultivar recommendations are available.

Scab Susceptibility Groups

Low	Moderate	Mod/High	High
Avalon	Creek	Caddo	Byrd
Elliott	Kiowa	Cape Fear	Carroll
Excel	Oconee	Hoffman	Desirable
Kanza	Sumner	Schley	Morrill
Lakota	Zinner	Stuart	Pawnee
McMillan		Tanner	Treadwell
		Tom	
		Whiddon	

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		Whiddon	

0 – 3 sprays

5 – 7 sprays

≥ 8 sprays

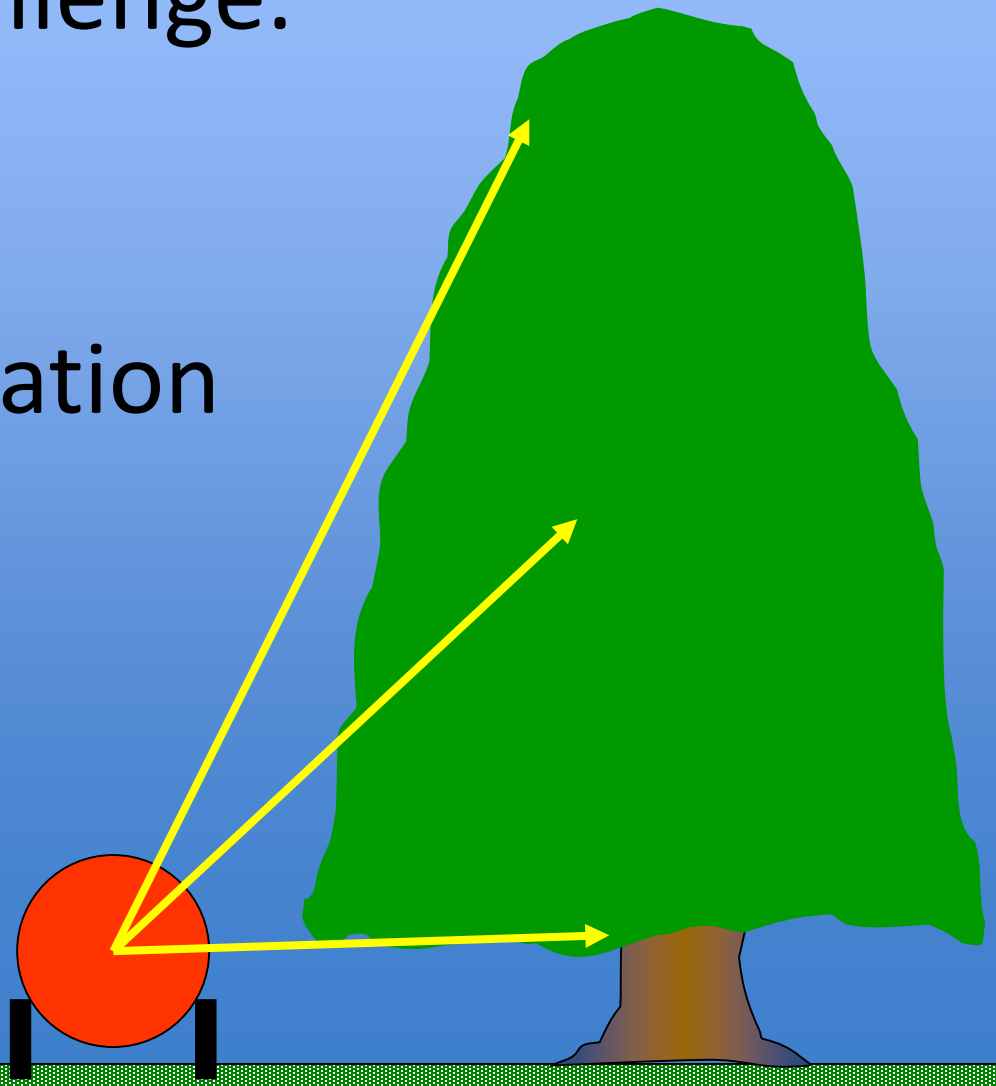
Pecan Disease Management

- Fungicide Applications – young trees
  - Benefits from air movement & sunlight
  - Fewer fungicide applications
  - Shorter protection window
    - Protect leaves & new growth

Pecan Disease Management

- Fungicide Applications – producing trees
  - Budbreak (early April) through shell hardening (mid August)
  - 7 to 11 sprays possible (15-20 not uncommon)
  - Air blast sprayers

- Coverage will become the biggest challenge.
  - Tree size
  - Tree spacing
  - Sprayer operation



Pecan Disease Management

- Fungicide Resistance Risk
  - Fungicide mode of action (FRAC group)
    - All fungicides have SOME risk
    - Some have higher risk based on MOA
  - Fungicide use
    - Cumulative amount of fungicide with the sample MOA
    - Rate of fungicide used

Pecan Disease Management

- Fungicide Resistance Management
  - Use formulated mixtures or tank mixes
  - Alternate different MOA
  - Maintain effective rates
  - Use low-risk fungicides when possible
  - Use when most effective

FRAC Code	common name	Trade Names
1	thiophanate-methyl	Topsin; T-methyl
3	fenbuconazole	Enable
3	metconazole	Quash
3	propiconazole	Orbit, Bumper, Propimax, Tilt
3	tebuconazole	Folicur, Monsoon, Orius, Tebuzol, Toledo
3	tetraconazole	Andiamo, Domark
3	mefentrifluconazole	Cevya
11	azoxystrobin	Abound, Azaka
11	kresoxim-methyl	Sovran, Narvos
11	pyraclostrobin	Headline
11	picoxystrobin	Aproach
30	triphenyltin hydroxide (TPTH)	Super Tin; Agri Tin
P7	phosphite	Fosphite, FungiPhite, K-Phite, Phiticide, Phostrol, ProPhyt, Rampart, Reliant, Topaz
U12	dodine	Elast
M	ziram	Ziram
3 + 1	tebuconazole + thiophanate-methyl	Topsin XTR
3 + 7	pydiflumetofen + difenoconazole	Miravis Top
3 + 11	difenoconazole + azoxystrobin	Quadris Top, Amistar Top
3 + 11	flutriafol + azoxystrobin	Topguard
3 + 11	propiconazole + azoxystrobin	Quilt
3 + 11	tebuconazole + trifloxystrobin	Absolute
3 + 11	tebuconazole + azoxystrobin	Custodia, Helmstar
3 + 11	tetraconazole + azoxystrobin	Brixen
3 + 30	tetraconazole + TPTH	Minerva Duo
3 + P7	tebuconazole + phosphite	Viathon
3 + 46	difenoconazole + tea tree oil	Regev

PECAN DISEASE CONTROL

Jason Brock and Tim Brenneman, Department of Plant Pathology

DISEASE	CHEMICAL & FORMULATION	MOA	RATE/ACRE	REI/PHI (Hours or Days)	COMMENTS
	PRE-POLLINATION APPLICATIONS: Every 10-14 Days From Bud Break Through Nut Set				
Scab; Downy Spot	*azoxystrobin* Abound Azaka	11	6-12 fl oz	4 H/ 45 D	See info below: MOA Group 11.
	difenoconazole + azoxystrobin Quadris Top	3 + 11	10-14 fl oz	12 H/ 45 D	See info below: MOA Group 3. See info below: MOA Group 11.
	difenoconazole + azoxystrobin	3 + 11	8-14 fl oz	12 H/ 21 D	See info below: MOA Group 3. See info below: MOA Group 11.
	dodine Elast 400F + FRAC group 3 fungicide	U12 + 3	25 fl oz + half rate	48 H/ Do not apply after shuck split	See info below: MOA Group 3. For any tank mix combination of Elast, TPTH, or a group 3 fungicide, the rates provided are the lowest recommended and will provide excellent control of scab under most conditions. When disease pressure is elevated, the rate of either mixing partner can be increased.
	dodine Elast 400F + TPTH	U12 + 30	25 fl oz + half rate	48 H/ Do not apply after shuck split or within 30 D of harvest	For any tank mix combination of Elast, TPTH, or a group 3 fungicide, the rates provided are the lowest recommended and will provide excellent control of scab under most conditions. When disease pressure is elevated, the rate of either mixing partner can be increased. See info below: MOA Group 30. See info below: MOA Group U12.
	fenbuconazole Enable 2F	3	8 fl oz	12 H/ Do not apply after shuck split or within 28 D of harvest	See info below: MOA Group 3.
	kresoxim-methyl Sovran	11	2.4-3.2 fl oz	12 H/ 45 D	See info below: MOA Group 11.
	metconazole Quash	3	2.5-3.5 oz/A	12 H/ 25 D	See info below: MOA Group 3.
	phosphorous acid Phostrol ProPhyt FungiPhite Reliant	33	2-5 pt 2-3 pt 2-3 pt 4 pt	4 H/ –	See info below: MOA Group 33.

MOA Group 3: Resistance risk is moderate. For best results, tank mix tebuconazole with a surfactant. Do not add a surfactant if mixing with other fungicides. Increasing the rate of a Group 3 fungicide will be important if reduced sensitivity is known or suspected. Stand-alone use is not recommended where reduced sensitivity is known or suspected.

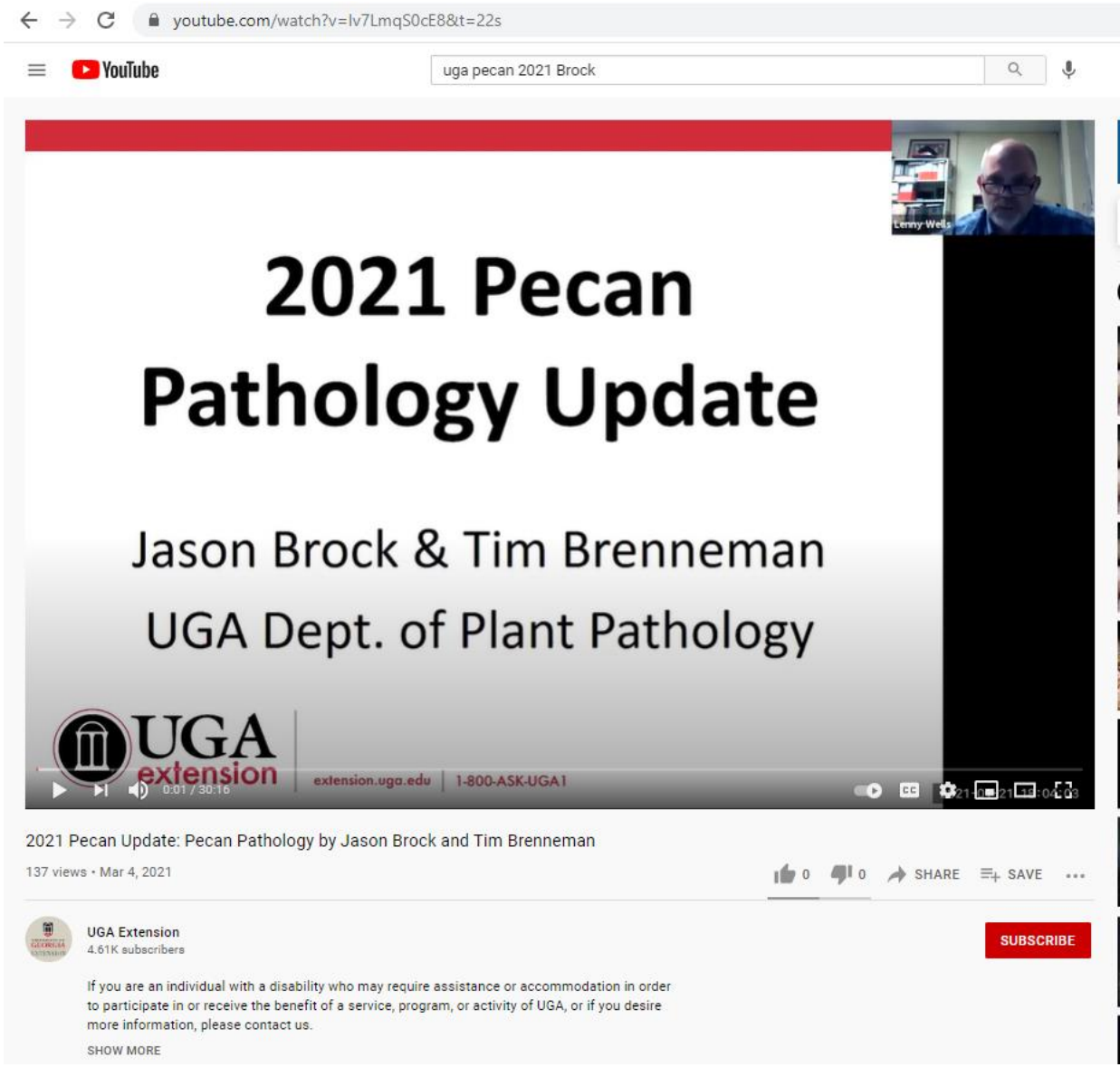
MOA Group 11: Resistance risk is moderate. Do not make more than 2 sequential applications. If only using solo products, group 11 fungicides should not be used in more than 1/3 of the total number of fungicide applications. If using group 3 tank-mixed with other modes of action, they should not be used in more than 1/2 of the total number of fungicide applications.

MOA Group 30: Resistance risk is low.

MOA Group 33: Resistance risk is low. For best control apply in 100 gpa by ground. Do not apply in consecutive applications. Three to five applications are generally recommended. There is currently an unresolved issue regarding potential residues of these products in tree nuts exported to the EU. Growers who know their crop is going to that market should avoid use until the issue is resolved. Check labels for potential limitations on maximum number of applications or amount of active ingredient allowed per season. Do not use when there is a phosphate deficiency.

MOA Group U12: Resistance risk is low. Do not use on Moore, Van Deman, Barton, or Shawnee. Do not use a surfactant. Do not use with foliar zinc treatments.

More information on fungicides is available online.



Take Home Messages

- Scab is the major concern.
- Cultivar selections
- Fungicide classes and resistance management