2024 Pre-planting considerations

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Twitter: KSUCropdiseases

Frog eye leaf spot

- Cercospora sojina
- Lesions are gray to brown surrounded by narrow, dark reddish-brown margins and circular to angular in shape



2022 Frog Eye Leaf Spot Survey

- . Collected 10 symptomatic leaves per field
- . 5 fields per county
 - County name
 - **GPS** coordinates
 - Field ID per sample



Frog Eye Leaf Spot. Onofre, R.



Qol fungicides have a high risk of selection for fungal strains with resistance

- Frac Code 11
- Single-specific mode of action
- Acropetal penetrant (upward)
- Inhibiting mitochondrial respiration
 - Interrupting electron transport
- Azoxystribin, fluoxastrobin, pyraclostrobin, trifloxystrobin





Qol fungicide sensitivity assay

- Polymerase chain reaction (PCR) assays
- Target Mutations: G143A, F129L, and G137R
- Cytochrome *b* gene was sequenced (Mut4-F/Mut4-R)
- Identify QoI-sensitive and QoI-resistant isolates



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First time that *C. sojina* isolates resistant to QoI fungicides are present in soybean fields in Kansas.



84.7 % of Kansas isolates had G143A mutation;

Neither F129L nor G137R mutations were found.



Dr. Carl Bradley Professor University of Kentuky



Despite low disease severity was observed in the 2022 soybean season, Qol-resistant isolates is present in all counties tested



	Fungicide Efficacy for Control of									(Bod	
1	Soybean Foliar Diseases Table (02/2022)								- and		
		Active ingredient (%)	Product/Trade name	Rate/A (fl oz)	biid Aer	Ant	Ba	ĒĒ	<u>e</u> a	Dia	
		Azoxystroom 200	Quadris 2.08 SC,	6.0 - 15.5	VG	VG	PC		Р		
	11	Fluoxastrobin 40.3%	Aftershock 400-50, Evito 490-55		VG	G	P-G	Р	Р		
		Picoxystrohin 22 Feb	Aproach 2.08 SC	6.0 - 12.0	VG	G	1.4	D	Р		
		ryraclostrobin 23.6%	Headline 2.09 EC/SC	6.0 - 12.0	VG	VG	P-G	Р	P		
1		Cyproconazole 8.9%	Alto 100SL	2.75 - 5.5	U	U	VG	F	F		
		Flutriafol 11.8%	Topguard 1.04 SC	7.0 - 14.0	U	VG	VG	P-G	G-VG		
	3	Propiconazole 41.8%	Tilt 3.6 EC, multiple generics	4.0 - 6.0	Р	VG	G	NL	F		
		Prothioconazole 41.0%	Proline 480 SC	2.5 - 5.0	NL	NL	NL	NL	G-VG		
		Tetraconazole 20.5%	Domark 230 ME	4.0 - 5.0	NL	VG	VG	P-G	F-G		
		Boscalid 70%	Endura 0.7 DF	3.5 - 11.0	U	NL	VG	U	Р		
	/	Inpyrfluxam 31.25%	Excalia SC	2.0	E	NL	NL	NL	NL		
	1	Thiophanate-methyl	Topsin-M, multiple generics	10.0 - 20.0	U	U	U	F	VG		
	29	Fluazinam 40.0%	Omega 500 DF	0.75 - 1.0 pts	NL	NL	NL	NL	NL		
ſ	11 3	Azoxystrobin 25.3% Flutriafol 18.63%	Topguard EQ 4.29 SC	5.0 - 7.0	VG	U	VG	U	G-VG		
	11 3	Azoxystrobin 18.2% Difenoconazole 11.4%	Quadris Top 2.72 SC	8.0 - 14.0	U	U	G-VG	P-G	VG	1	
	11 3	Azoxystrobin 19.8% Difenoconazole 19.8%	Quadris Top SBX 3.76 SC	7.0 - 7.5	VG	U	G-VG	P-G	VG	I	
	11 3	Azoxystrobin 7.0% Propiconazole 11.7%	Quilt 1.66 SC, multiple generics	14.0 - 20.5	U	U	G	F	F	F	
	11 3	Azoxystrobin 13.5% Propiconazole 11.7%	Quilt Xcel 2.2 SE	10.5 - 21.0	E	VG	G	F	F		
	7 11 3	Benzovindiflupyr 2.9% Azoxystrobin 10.5% Propiconazole 11.9%	Trivapro	13.7 – 20.7	E	U	G-VG	P-G	F-G		
	3 11	Cyproconazole 7.17% Picoxystrobin 17.94%	Aproach Prima 2.34 SC	5.0 - 6.8	VG	U	G	P-G	F-G		
	7	Fluopyram 17.4% Prothioconazole 17.4%	Propulse 3.34 SC	6.0 - 10.2	NL	NL	U	NL	U		

Fungicide Efficacy for Control of Soybean Foliar Diseases Table (02/2022)

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	Active ingredient (%)	Product/Trade name	Rate/A (fl oz)	B i	Ā	Ba	E E	F E
7	Bixafen 15.5%	Lucente 4 17 SC	3.0 - 5.5	VG	п	VG	E.G	VG
3	Flutriafol 26.47%	Lucento 4.17 Sc		Vu	U	Vu	1-u	Vu
11	Fluoxastrobin 14.84%	Fortiv CC Broomstor CC	4.0 - 6.0	U	U	G-VG	P-G	G-VG
3	Flutriafol 19.3%	rorux sc, rieemptor sc						
11	Trifloxystrobin 13.7%	Dolaro 225 SC	8.0 - 11.0	VG		VC		6.46
3	Prothioconazole 16.0%	Delato 323 SC		10		N.		0-10
7	Fluopyram 10.9%		8.0 - 11.0	U	U	VG	U	U
11	Trifloxystrobin 13.1%	Delaro Complete 3.83 SC						
3	Prothioconazole 14.9%							
7	Pydiflumetofen 6.9%	Miravis Ton 1 67 SC	13.7	VG	п	VG	F-G	VG
3	Difenoconazole 11.5%	milders top 1.07 Sc		10		VU	1.0	10
11	Pyraclostrobin 28.58%	Priavor 4 17 SC	4.0 - 8.0	F	VG	6.46	P-G	P_F
7	Fluxapyroxad 14.33%	Fliakor 4.17 SC			10			
7	Fluxapyroxad 14.33%	Priaxor D 4.17 SC, 1.9 SC	4.0 each VG					
11	Pyraclostrobin 28.58%			VG	U	VG	P-G	F-G
3	Tetraconazole 20.50%		component					
11	Trifloxystrobin 32.3%	Stratego VI D & 18 SC7	40 - 46	VG	VG	6	F	E-G
3	Prothioconazole 10.8%	Stratego TED 4.10 SC	4.0 - 4.0	Vu	VU	u u	· ·	1-0
11	Azoxystrobin 9.35%	Affiance 1.5.5C	10.0 - 14.0		VG	VG	F	F-G
3	Tetraconazole 7.48%	Andree 1.5 Se		Ŭ			·	
11	Fluoxastrobin 17.76%	Zolera FX 3 34 SC	44 - 68	U I	u	u	U I	F-6
3	Tetraconazole 17.76%	Euler A Stor Se	1.1 0.0	Ľ	Ŭ	Ŭ		
1	Thiophanate-methyl 21.3%	Acronolis	20.0 - 23.0	NI	п			VG
3	Tetraconazole 4.2%	Actopolis	20.0 25.0			0		VG
7	Fluxapyroxad 7.74%		8.0 – 15.0 VG					
11	Pyraclostrobin 15.49%	Revytek		VG	U	VG	F-VG	VG
3	Mefentrifluconazole 11.61%	6						
11	Pyraclostrobin 17.56%	Veltyma	7.0-10.0		п	п	II.	п
3	Mefentrifluconazole 17.56%		7.0 10.0		0	0	v	0

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Uniform Foliar Fungicide Trial

FRAC code	Product/Trade Name	Rate/A (fl oz)	Active ingredient (%)		
11	Tonguard EQ	E	Azoxystrobin 25.30%		
3	Topguard EQ	J	Flutriafol 18.63%		
7	Lucanta	F	Bixafen 15.55%		
3	Lucento	5	Flutriafol 26.47%		
7			Benzovindiflupyr 2.9		
11	Trivapro	13.7	Azoxystrobin 10.5%%		
3			Propiconazole 11.9%		
11	Quadric Tap 2 72 SC	G	Azoxystrobin 7.0 %		
3	Quadris Top 2.72 SC	0	Difenoconazole 11.4%		
11	Valtuma	7	Pyraclostrobin 17.56%		
3	veityma	/	Mefentrifluconazole 17.56%		
7		8	Fluxapyroxad 7.74%		
11	Revytek		Pyraclostrobin 15.49%		
3			Mefentrifluconazole 11.61%		
7			Fluopyran 10.9%		
11	Delaro Complete	8	Trifloxystrobin 13.1%		
3			Prothioconazole 11.6		
7			Pydiflumetofen 7.0%		
11	Miravis Neo	13.7	Azoxystrobin 9.3%		
3			Propiconazole 11.6%		

Parsons (dryland)





Parsons (dryland)





Scandia (irrigated)



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Scandia (irrigated)

6.1 bu * \$12.28 = **\$74.908**



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2024 Soybean Fungicide Decisions

- Avoid QoI fungicides (group 11)
 - Azoxystribin, fluoxastrobin, pyraclostrobin, trifloxystrobin\
- Despite low levels of foliar disease, some products resulted in positive yield return
- Under dryland and irrigated conditions, Lucento (7+3) resulted in ~4 bu/a higher than the non-treated control
- Revytek (7+11+3) provided best yield results (~6 bu/a) under irrigated conditions



Sudden Death Syndrome (SDS)



- Fusarium virguliforme
- Yield losses of up to 100%
 - Flower abortion
 - Reduced number of pods and seed size
 - Premature defoliation
- Survives in the soil and crop residue



Sudden Death Syndrome (SDS)



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Early planting date, the perfect storm for SDS



59°F to 63°F high soil moisture

Root infection & colonization

~77°F Rain/Irrigation

Foliar disease symptoms Yield losses





Multistate Seed Treatment Evaluation for Soybean Sudden Death Syndrome in 2022

 Indiana, Iowa, Kansas, Michigan, Minnesota, Ohio, South Dakota, Wisconsin and Ontario, Canada

Objective

 Evaluate the impact of seed treatment on SDS using resistant and susceptible soybean cultivars







Treatment list

	Treatment list	a. i/rate				
1	Untreated check	-				
2	Base	– Allegiance FL, Stamina, Systiva XS, Poncho 600, and Flo Rite 1706				
3	Base + ILEVO	– Fluopyran (0.15 mg A/seed)				
4	Base + Saltro	– Pydiflumetofen (0.075 mg A/seed)				
	Base+Thiabendazole (TB7) +	– Thiabendazole (0.64 floz/cwt)				
E	Headsup +Biost 2 nd Gen + Ascribe SAR	– Saponins extract of <i>Chenopodium quinoa</i> (0.16 floz/cwt)				
5		<i>– Burkholderia ssp.</i> Strain A396 (0.4 floz/cwt)				
		– Ascribe SAR (0.5 floz/cwt)				
		– Pydiflumetofen (0.075 mg A/seed)				
6	Base + Saltro + Ataplan	- Bacillus velezensis strain RT1301 and Bacillus subtilis strain RT1477				
		(0.32 floz/140k seeds)				
7	Base + CeraMax	– Natamycin (2.46 floz/100 lbs)				
8	Base + ILEVO + CeraMax	– Fluopyran (0.15 mg A/seed)+ Natamycin (2.46 floz/100 lbs)				



SDS management starts by choosing resistant cultivars



Although all the seed treatments provided a positive yield difference average in comparison with the NTC, Ilevo (alone) and Saltro (alone) had the strongest responses across all the environments





Ilevo+Ceramax and Saltro (alone) provided a significant reduction on SDS root rot

2023 season



Are you planting soybean before corn?

- Select a resistant cultivar
 - Our data shows +10 bu/a yield advantage over the susceptible cultivar
- Considerer adding a seed treatment
 - Treatments including a biological and non-biological combination resulted in more consistent SDS control and lower variability.



How do row spacing and plant population influences SDS development?



**SDS preliminary data - Topeka





At-planting fungicide: soy research update

• Xyway LFR Fungicide

- Liquid Fertilizer Ready
- Flutriafol (Group 3)
- Rate: 15.2 fl oz/a
- At-plating (2x2)
- Water volume: 9 GPA

Two seasons

- 2022 & 2023
- Four sites total
 - Rossville, Scandia, and Parsons
- Low disease levels





Feel free to contact me!

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