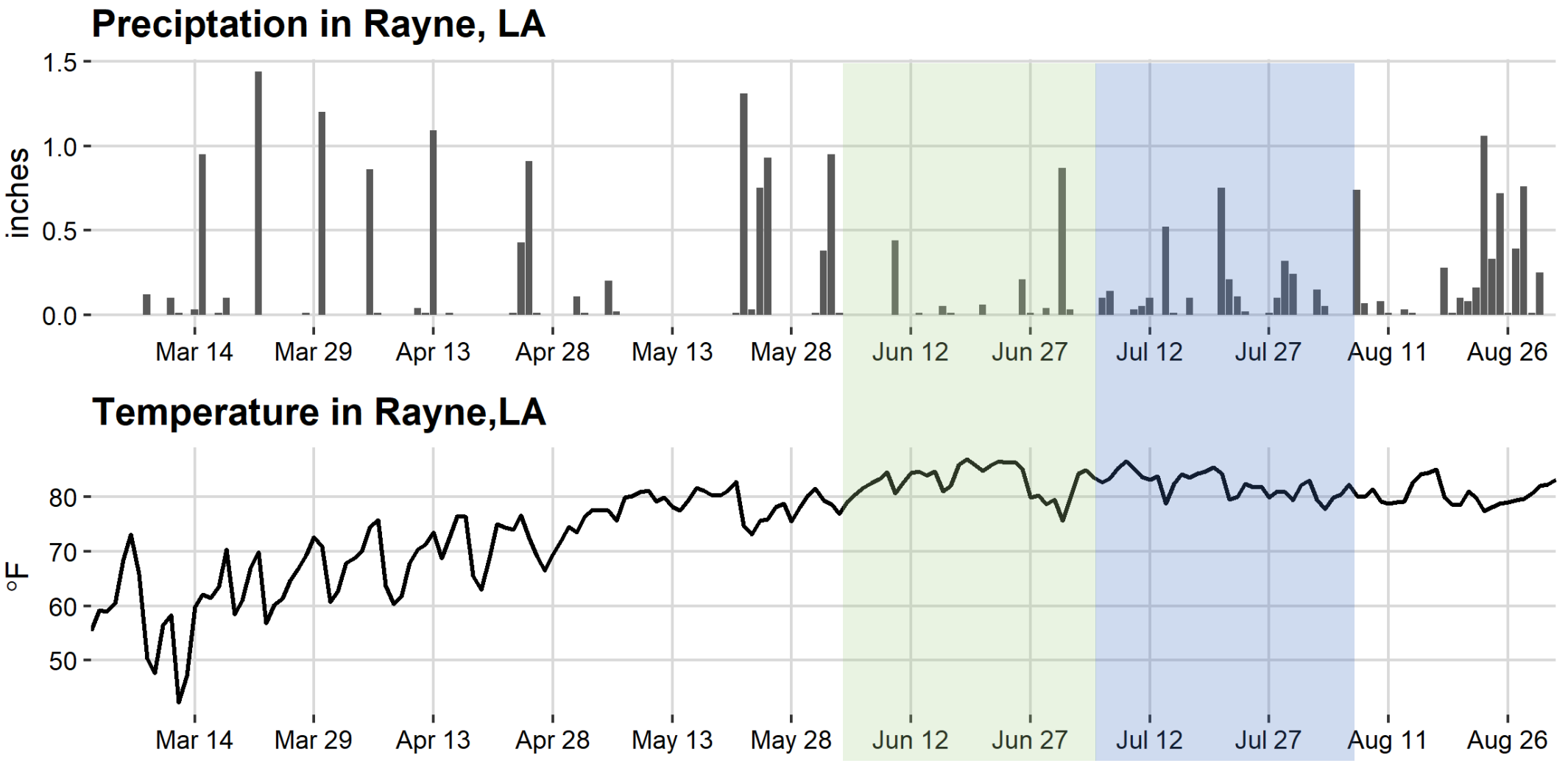
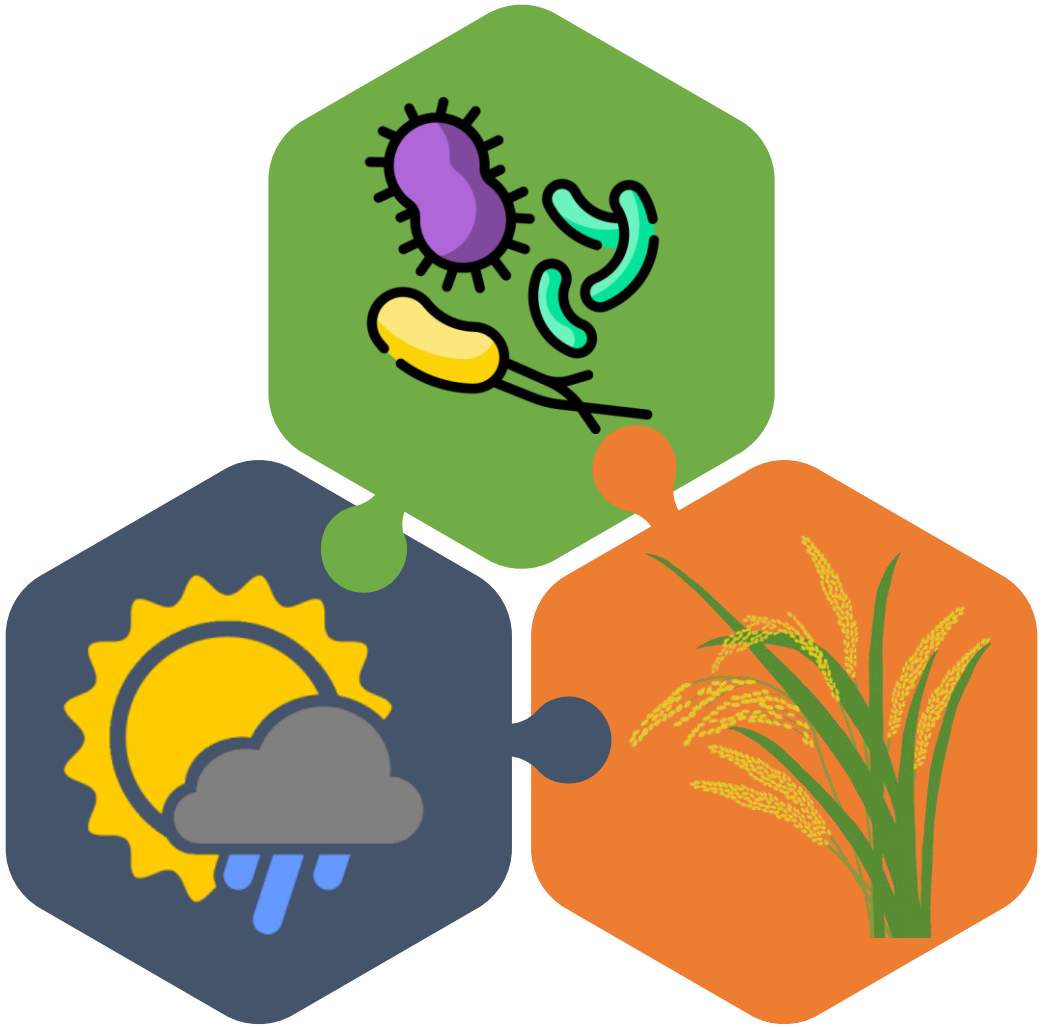
Sheath Blight Management update

Felipe Dalla Lana
Rice Pathologist
LSU AgCenter

Season at the RRS



The disease triangle



Pathogen

Presence of a virulent pathogen and how aggressive it is

Environment

Conduciveness to the disease development

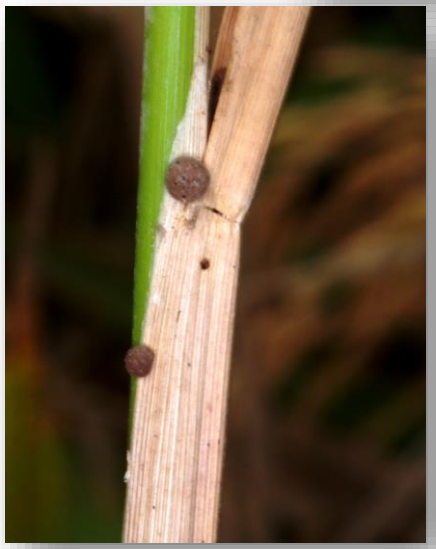
Host

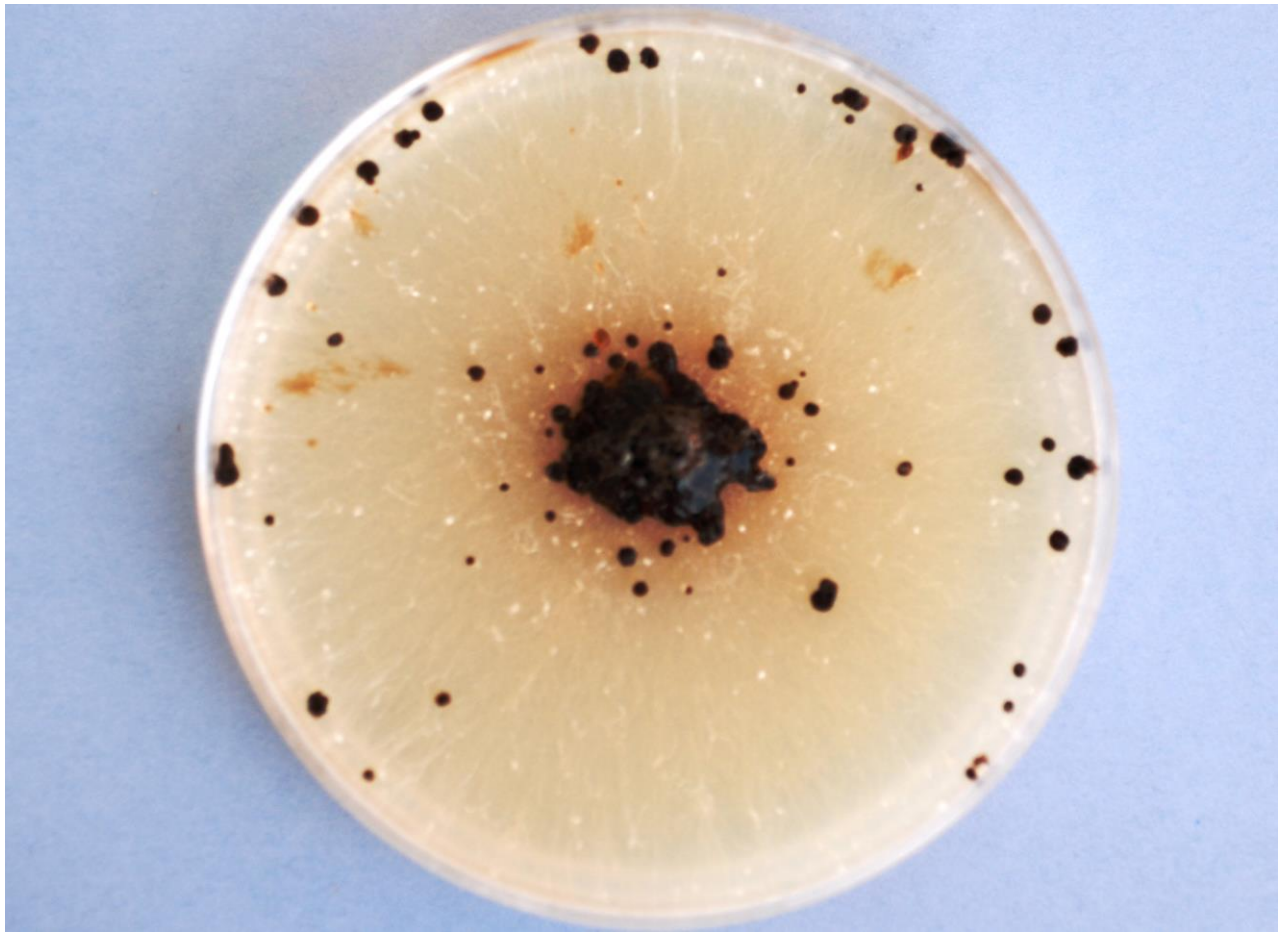
Degree of susceptibleness of the genotype

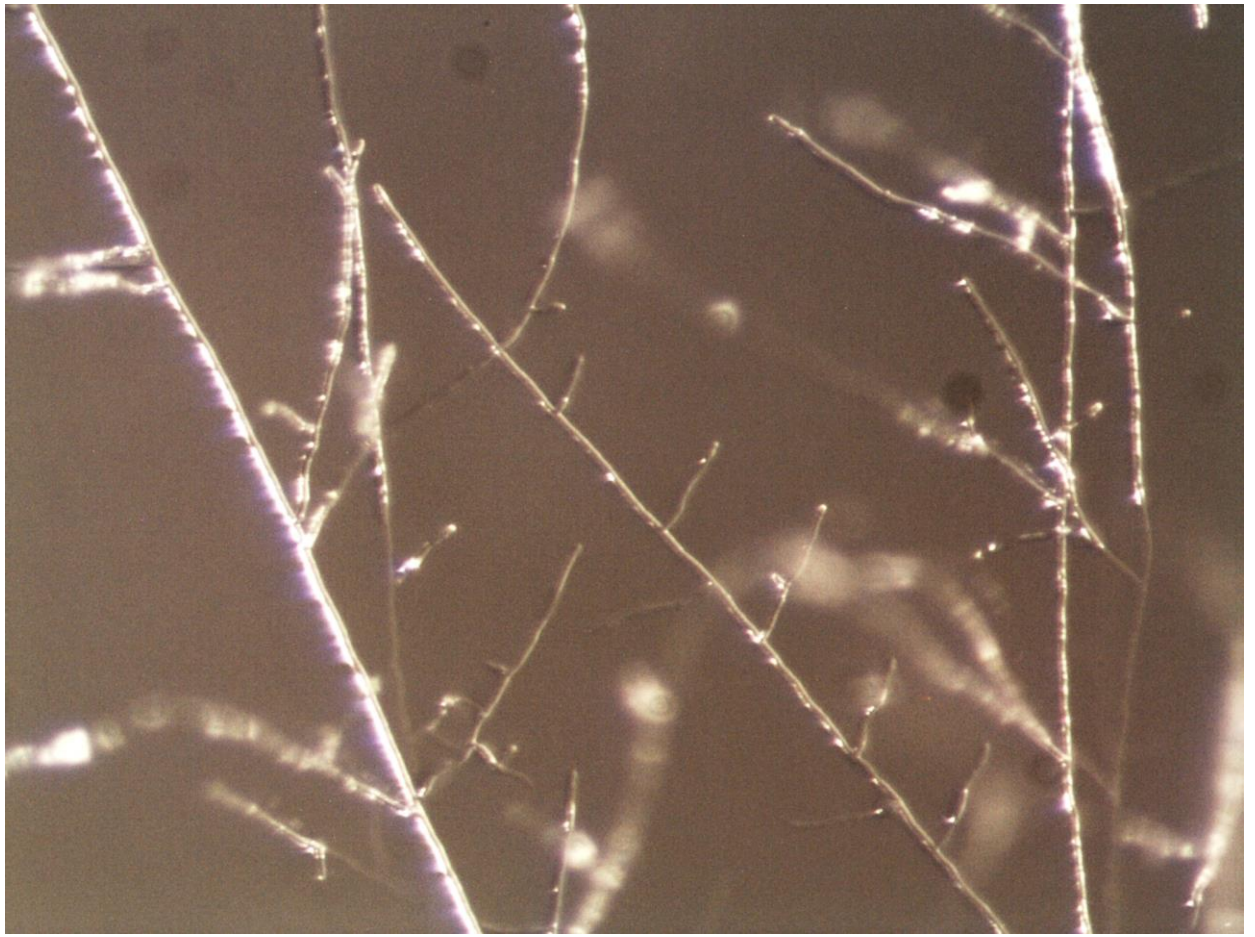
Sheath blight (*Rhizoctonia solani*)





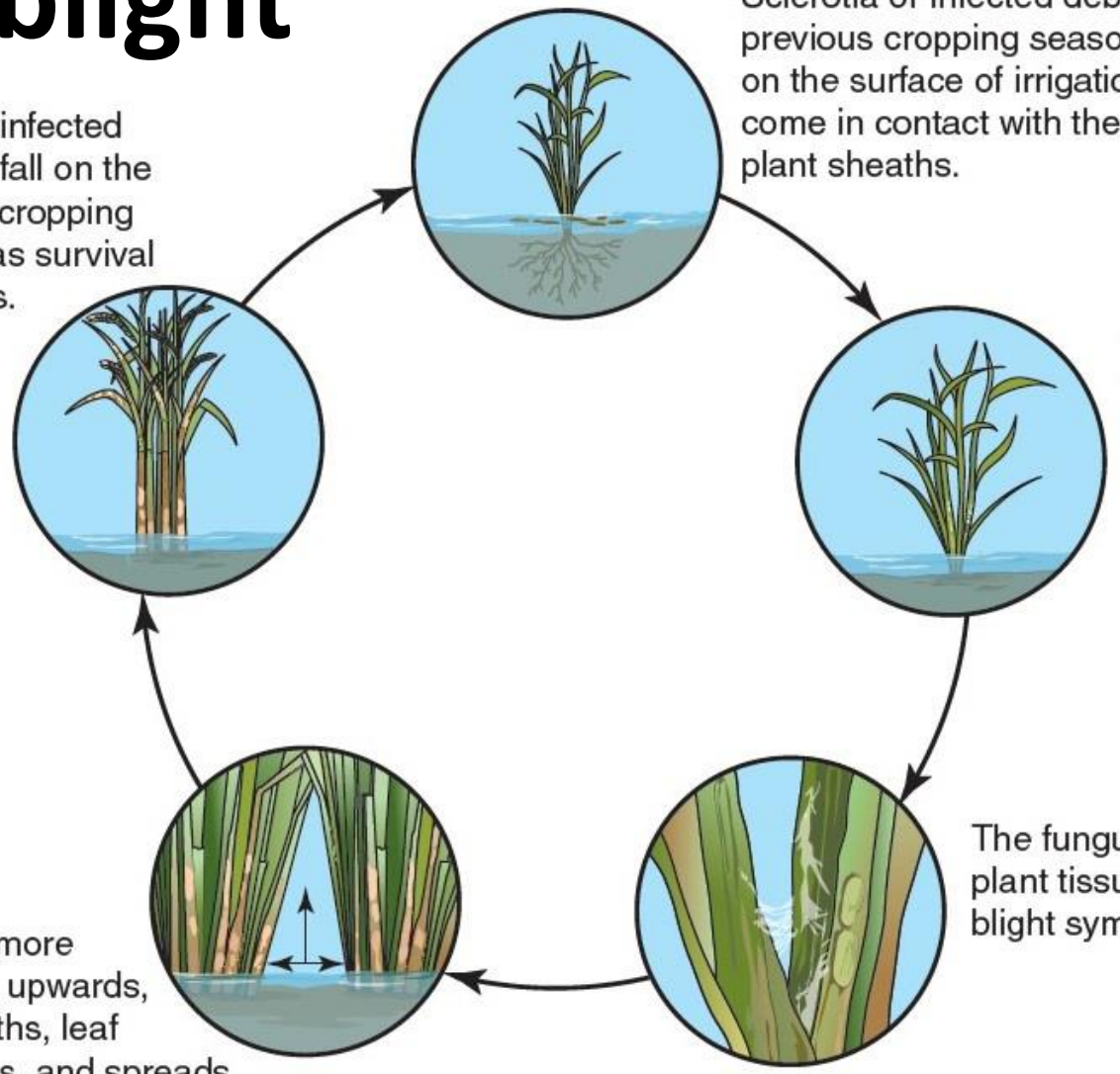







Sheath blight

No spores



Sclerotia or infected debris from previous cropping season floating on the surface of irrigation water come in contact with the rice plant sheaths.

Mycelia in the plant debris or germinating sclerotia penetrate rice plant tissue.

The fungus colonizes the plant tissue and sheath blight symptoms start to appear.

As the fungus colonizes more tissues, disease spreads upwards, infecting upper leaf sheaths, leaf blades, and even panicles, and spreads from tiller to tiller and plant to plant.

Sclerotia develop on the infected tissues which eventually fall on the ground at the end of the cropping season. Sclerotia serve as survival structures between crops.

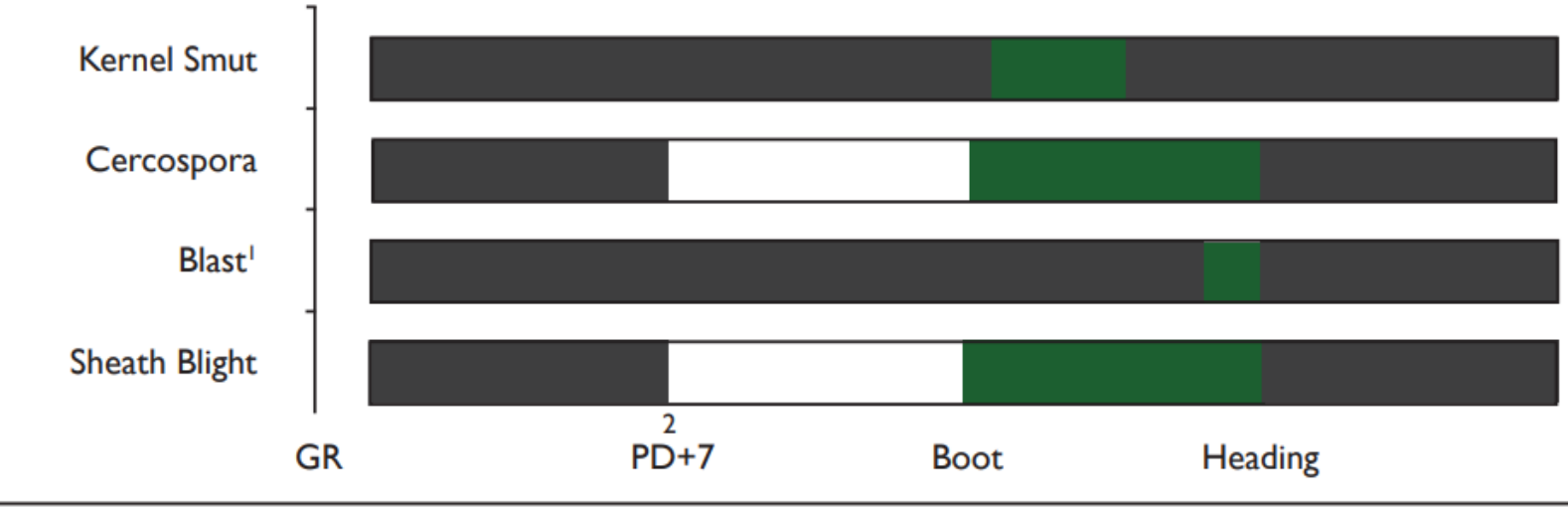
Spatial agregate

Host Resistance - Most varieties are MS or VS to sheath blight

Variety	Blast	Sheath Blight	Cercospora	Bacterial Panicle Blight	Straighthead
Cheniere	MS	S	S	MS	MS
CL111	MR[1]	VS	S	VS	MS
CL151	VS	S	S	VS	VS
CL153	MR[1]	S	MS	MS	MS
CL163	VS	S	R[2]	MS	VS
CLJ01	MR	MS	MR	S	MR
CLL15	R	S	-	VS	R
CLL16	R[1]	MS	-[2]	MS	R
CLL17	R[1]	S	-[2]	MR	R
CLM04	S	MS	-[2]	MR	S
Della-2	R	S	MS	MS	R
DG-263L	-	S	-[2]	MR	-
Jazzman	R	MS	S	S	R
Jewel	R	MS	-[2]	S	R
Jupiter	S	MS	R[2]	MR	S
Lynx	S	VS	-[2]	S	S
Mermentau	S	S	MS	MS	S
PVL01	VS	S	MR	S	VS
PVL02	MS	MS	MS	S	MS
PVL03	MR[1]	MS	-[2]	MR	MR
Titan	MS	S	MR[2]	MS	MS
RT7301[3]	R	MR	MR	MR	R
RT7321 FP[3]	R	MR	-	MR	R
RT7521 FP[3]	R	MS	-	MR	R

Fungicide

Figure 1. Rice Fungicide Timing.



[1] *A boot application followed by another at heading may be necessary with high disease pressure and susceptible variety.*
[2] *An early application may be necessary if sheath blight appears prior to the boot to heading application.*

Do not apply | Application may be needed | Best application timing

Fungicide

Table 13. Efficacy of Fungicides in Managing Rice Diseases.

Efficacy categories: P = Poor; F = Fair; G = Good; VG = Very Good; NL = Not Labeled for use against this disease.

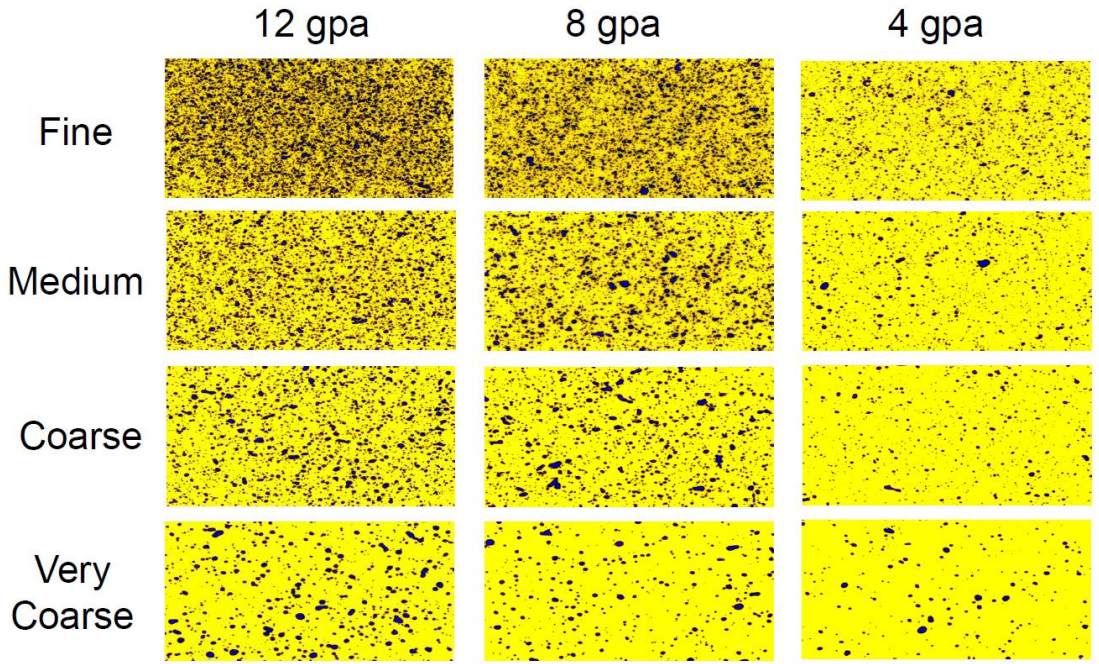
Class and Mode of Action Group[1]	Active Ingredient	Product(s)[2]	Rate[3] (fl oz)	Blast	Sheath Blight	QoI Resistant Sheath Blight	Cercospora	Kernel Smut
QoI Strobilurins Group 11	Azoxystrobin	Quadris 2.08 SC Others	9-15.5	G	VG	P	P	P
	Trifloxystrobin	Flint Extra	3.1-4.7	VG	G	P	NL	NL
Carboxamides Group 7	Flutolanil	Elegia 3.8 F	12-32	NL	G	G	NL	NL
	Fluxapyroxad	Sercadis 2.47 SC	4.5-6.8	NL	G	G	NL	NL
Demethylation Inhibitors (DMI) Group 3	Propiconazole	Tilt 3.6 EC Others	6-10	NL	F	F	G	G
Mixed[4]	Azoxystrobin, Propiconazole	Quilt Xcel 2.2 SE Others	14-27	G	VG	P	G	G
	Azoxystrobin, Difenoconazole	Amistar Top Other	10-15	G	VG	G	G	G

Respiration

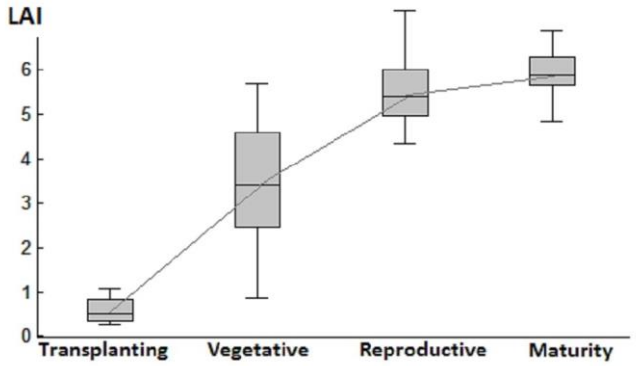
Cell wall

Application volume

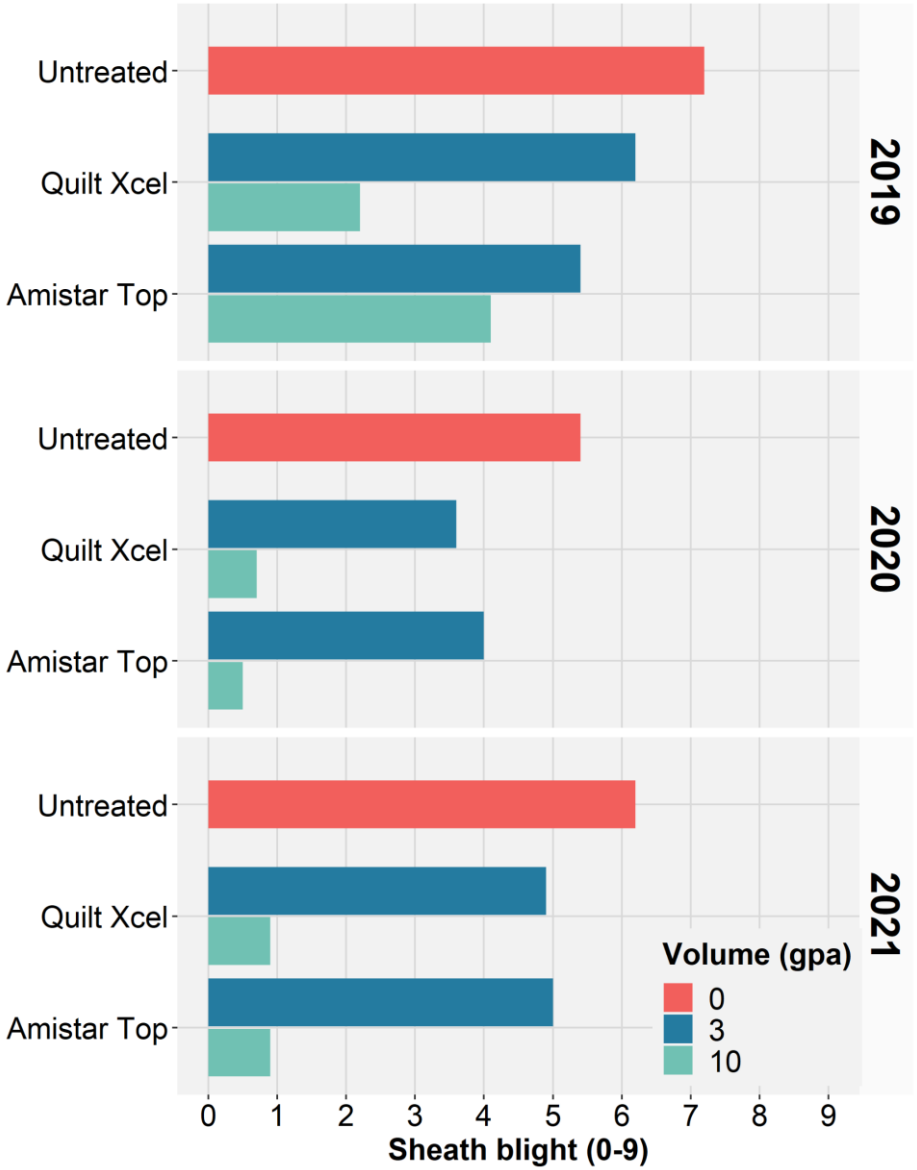
Adapted Wamishe et al. 2021, 2020, 2019



sprayers101.com



He et al. 2019



Fungicide resistance - QoI

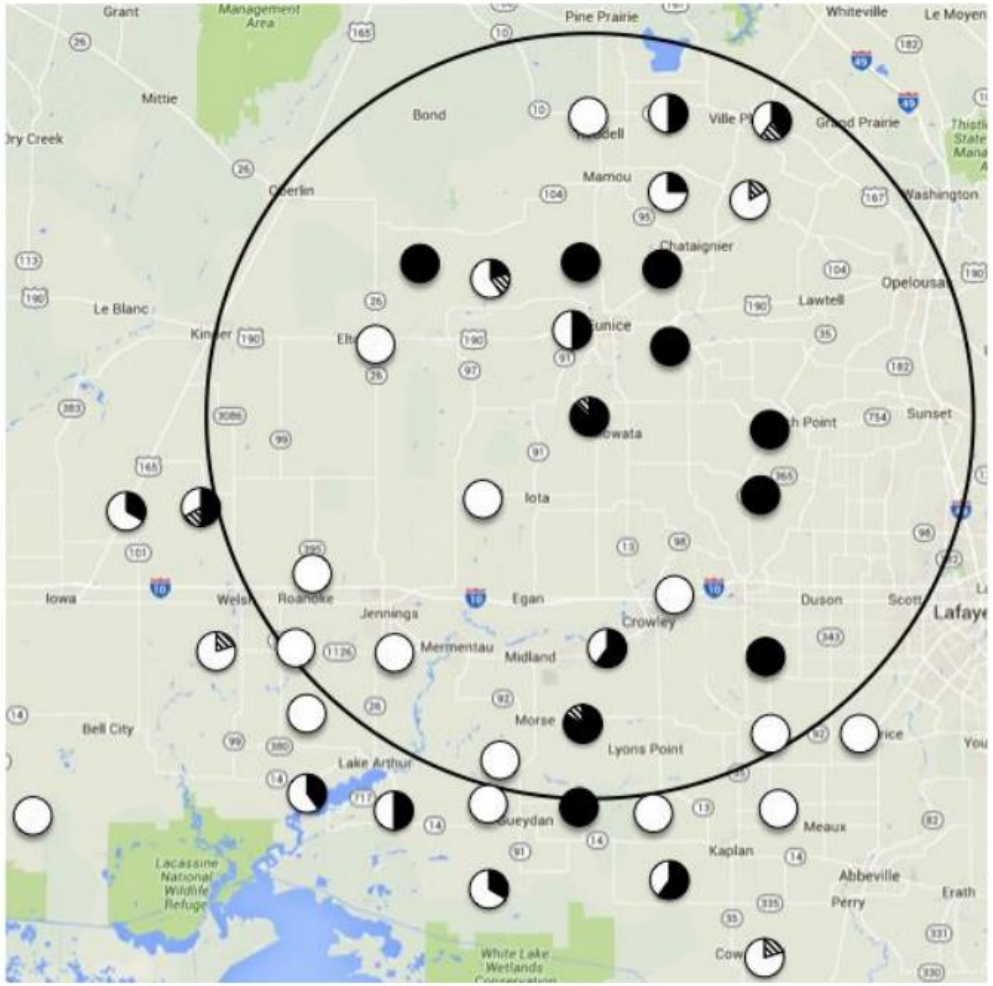
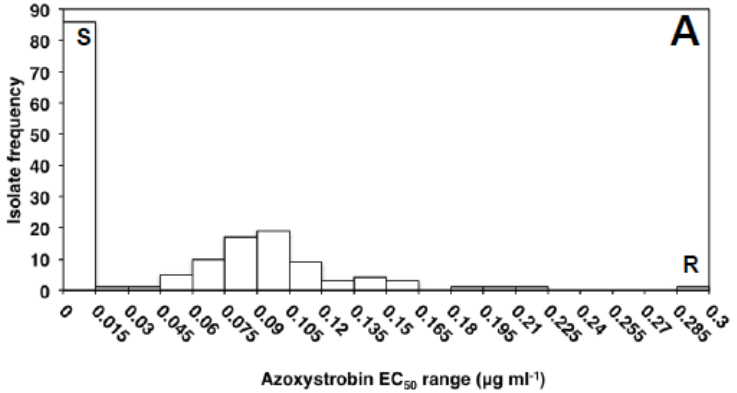
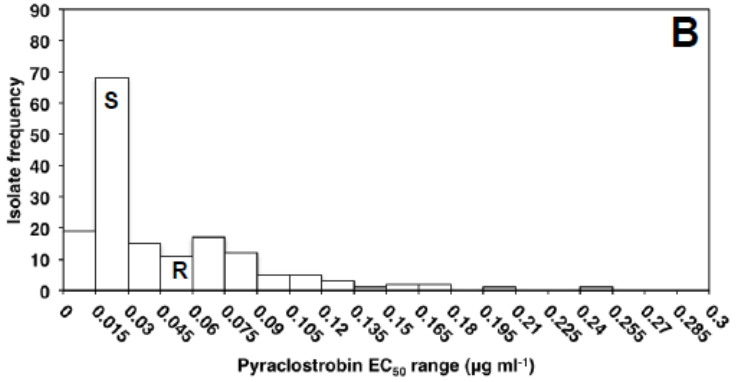
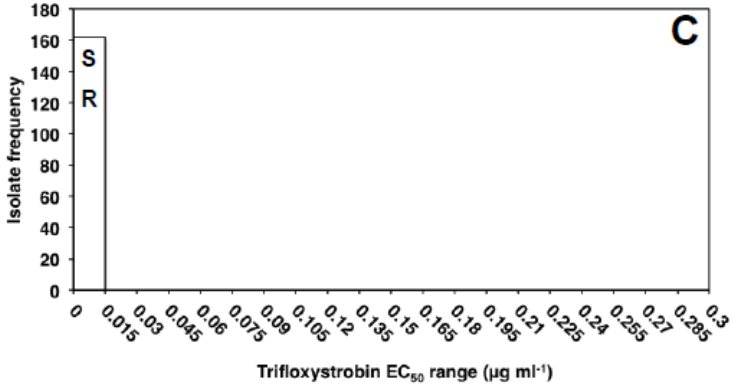


Figure 2.9. Map showing proportional breakdown of isolate sensitivity to azoxystrobin at







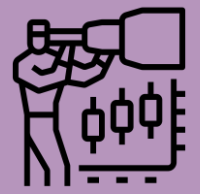
Lunos 2016

Integrate Pest Management

1. Field history
2. Variety resistance and seed
3. Management
4. Weather
5. Disease intensity
6. Yield expectation and market

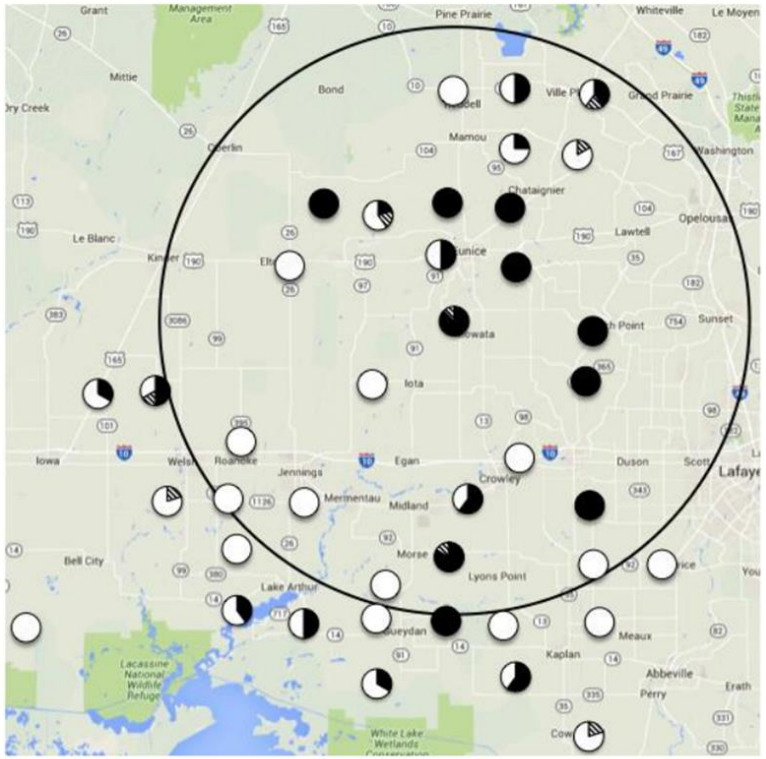




2023 Studies – Sheath Blight

- Chemical control and variety disease reaction
- Fungicide Resistance
  - Status – Spatial distribution and mutations present
  - Sample protocol and mutation detection
  - Tank mixture
- Yield loss estimation
- Plant density
- Yield tolerance
- Remote sensing (drone)
- Data-analysis
  - Compile historical data
  - Risk assessment models (forecasting)



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Thank you

Felipe Dalla Lana
Rice Pathologist – LSU AgCenter
fdallalana@agcenter.lsu.edu
330-461-6634

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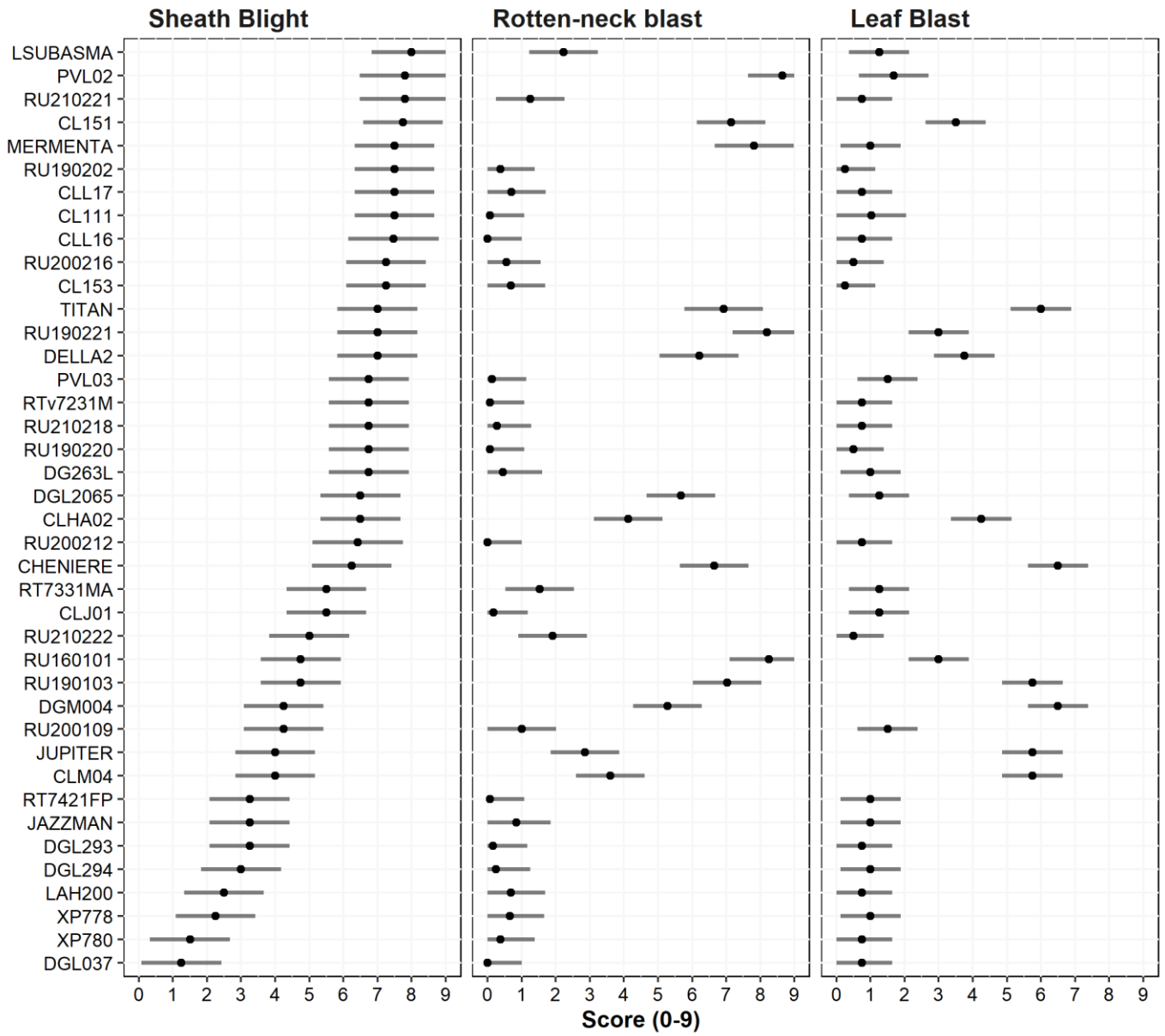
Variety 2023



Fungicide Results 2023