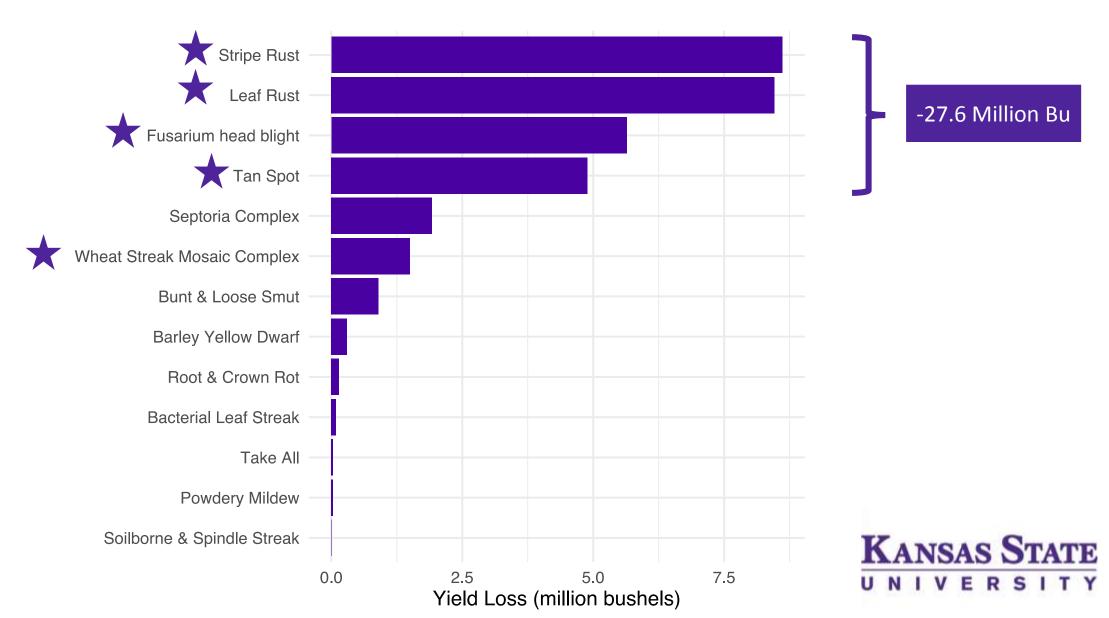
# Major wheat diseases in Kansas: 2021 outlook

Dr. Kelsey Andersen Onofre Assistant Professor Wheat and Forage Extension Specialist Kansas State University



## 2020 Wheat Disease Yield Loss



### Stripe rust Puccinia striiformis f. sp. tritici

## Early stripe rust symptoms vs. severe infection







### Untreated



### Rescue fungicide



### Plant defense response





#### Rawlins Decatur Norton Phillips Republic Washington Marshall Nemaha Brown ewel Doniphan Atchison Cloud Osborne Mitchell Thomas Sheridan Graham Rooks Sherman Clay Rilev Pottawatomie Jackson Jeffersor Ottawa incoln Russell Wallace Gove Ellis Logan Trego Dickinso Shawnee Geary Wabaunsee Douglas Johnsor Saline Osage Ellsworth Morris Franklin Miami Lyon Wichita Scott Lane Ness Rush Barton Greeley McPherson Marion Rice Chase Coffey Anderson Linn Pawnee Hamilton Kearny Finney Hodgeman Stafford Reno Harvey Butler Greenwood Woodson Allen Bourbor Gray Edwards Ford Sedgwick Pratt Haske Stanton Grant Kiowa Kingman Wilson Neosho Crawford Elk . Clark Meade Barber Cowley Sumner Montgomery Labette Morton Stevens Seward Comanche Harper Cheroke Chautaugua Disease obsevation map based on reports from: K-State Research and Extension: K. Andersen Onofre, E. De Wolf, R. Bowden, R. Lollato, A. Fritz, L. Haag, S, Duncan,

#### Distribution of Wheat Stripe Rust in Kansas April 16, 2021

**Disease Risk** 

Stripe rust not observed

Consaltants and Ag Industry: J. Coltrain, M. Padgham; Wheat Growers: J. Blasi, T. Ediger

G. Sassenrath, S. Campbel, C. Long, J. Falk-Jones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seiler, S. Wick

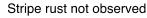
- Stripe rust observed on lower leaves
- Stripe rust observed on upper leaves



#### Rawlins Decatur Norton Phillips Republic Marshal Nemaha Brown Washington Doniphan Atchisor Cloud Mitchell Sheridan Graham Rooks Osborne Thomas Clay Rilev Pottawatomie Jackson Jeffersor Ottawa \_incoln Wallace Russell Gove Ellis Logan Trego Dickinsor Shawnee Geary Wabaunsee Johnsor Douglas Saline Osage Ellsworth Morris Franklin Miami Lyon Rush Barton Greeley Wichita Scott Lane Ness McPherson Marion Rice Chase Coffey Anderson Linn awnee Hamilton Kearny Finney Hodgeman Stafford Reno Harvey Butler Greenwood Woodson Allen Bourbon Gray Edwards Ford Sedgwick Haskell Stanton Grant Wilson Neosho Kiowa Kingman Crawford Elk Clark Meade Barber Sumner Cowley Montgomery Labette Morton Stevens Seward Comanche Harper Cherokee Chautauqua

#### **Distribution of Wheat Stripe Rust in Kansas** April 20, 2021

**Disease Risk** 



Disease obsevation map based on reports from: K-State Research and Extension: K. Andersen Onofre, E. De Wolf, R. Bowden, R. Lollato, A. Fritz, L. Haag, S, Duncan, G. Sassenrath, S. Campbel, C. Long, J. Falk-Jones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seiler, S. Wick Consaltants and Ag Industry: J. Coltrain, M. Padgham: Wheat Growers: J. Blasi, T. Ediger



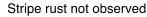
Stripe rust observed on lower leaves



#### Rawlins Decatur Norton Phillips Republic Marshal Nemaha Brown Washington Doniphan Atchisor Cloud Mitchell Sheridan Graham Rooks Osborne Thomas Clay Pottawatomie Jackson Jeffersor Ottawa \_incoln Wallace Russell Gove Ellis Logan Trego Dickinsor Shawnee Geary Wabaunsee Johnsor Douglas Saline Osage Ellsworth Morris Franklin Miami Lyon Rush Barton Greeley Wichita Scott Lane Ness McPherson Marion Rice Chase Coffey Anderson Linn awnee Hamilton Kearny Finney Hodgeman Stafford Reno Harvey Butler Greenwood Woodson Allen Bourbon Gray Edwards Ford Sedgwick Haskell Stanton Grant Wilson Neosho Kiowa Kingman Crawford Elk Clark Meade Barber Sumner Cowley Montgomery Labette Morton Stevens Seward Comanche Harper Cherokee Chautauqua

#### Distribution of Wheat Stripe Rust in Kansas April 26, 2021

**Disease Risk** 



Disease obsevation map based on reports from: K-State Research and Extension: K. Andersen Onofre, E. De Wolf, R. Bowden, R. Lollato, A. Fritz, L. Haag, S, Duncan, G. Sassenath, S. Campbel, C. Long, J. Falk-Ones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seller, S. Wick Consaltants and An Industry. J. Otorian, M. Padohami. Wheat Growers: J. Balsi, T. Eider



Stripe rust observed on lower leaves



#### Rawlins Decatur Norton Phillips Republic Washington /larshal Nemaha Brown Doniphan Atchisor Cloud Graham Rooks Osborne Mitchell Thomas Sheridan Sherman Clay Pottawatomie Jackson Jefferson Ottawa Lincoln Wallace Logan Gove Trego Ellis Russell Dickinsor Shawnee Geary Wabaunsee Douglas Johnson Saline Osage Morris Ellsworth Franklin Miami Lyon Greelev Wichita Scott Lane Ness Rush Barton McPherson Marion Rice Chase Coffev Anderson Linn Pawnee Hamilton Kearny Finney Hodgeman Stafford Reno Harvey Butler Greenwood Woodson Allen Bourbon Gray Edwards Ford Sedgwick Pratt Haske Stanton Grant Wilson Neosho Kiowa Kingman Crawford Elk Clark Meade Barbei Cowley Sumner Seward Montgomery Labette Morton Stevens Comanche Harper Cheroke Chautaugua Disease obsevation map based on reports from: K-State Research and Extension: K. Andersen Onofre, E. De Wolf, R. Bowden, R. Lollato, A. Fritz, L. Haag, S, Duncan,

G. Sassenrath, S. Campbel, C. Long, J. Falk-Jones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seiler, S. Wick, C. Dinkle, J. Wisbey

Consaltants and Ag Industry: J. Coltrain, M. Padgham, E. Beason: Wheat Growers: J. Blasi, T. Ediger

Distribution of Wheat Stripe Rust in Kansas April 29, 2021

**Disease Risk** 

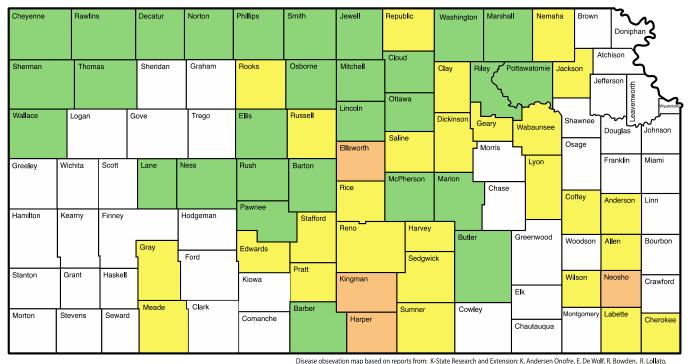
Stripe rust not observed



Stripe rust observed on lower leaves



#### Distribution of Wheat Stripe Rust in Kansas May 6th, 2021



A. Fritz, L. Haag, S, Duncan, G. Sassenrath, S. Campbel, C. Long, J. Falk-Jones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seiler, S. Wick, C. Dinkle, J. Wisbey, C. Otte, S. Dooly, Consultants and Ag Industry: J. Coltrain, M. Padgham, E. Beason; Wheat Growers: J. Blasi, T. Ediger

**Disease Risk** 

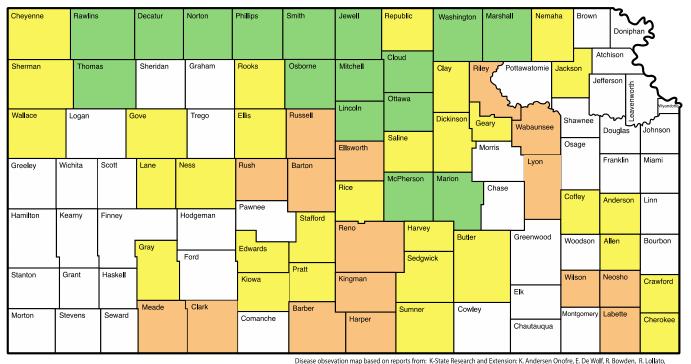
Stripe rust not observed



Stripe rust observed on lower leaves



### Distribution of Wheat Stripe Rust in Kansas May 14th, 2021



A. Fritz, L. Haag, S. Duncan, G. Sassenrath, S. Campbel, C. Long, J. Falk-Jones, D. Halhauer, R. Hein, J. Goodno, C. Miller, J. Seiler, S. Wick, C. Dinkle, J. Wisbey, C. Otte, S. Dooly, J. Coover, Consaltants and Aq Industry: J. Coltrain, M. Padqham, E. Beason; Wheat Growers: J. Blasi, T. Ediger

**Disease Risk** 

Stripe rust not observed



Stripe rust observed on lower leaves



# Leaf rust prefers warmer temps than stripe rust, just showing up in Kansas

Leaf Rust

Stripe Rust



45-60 F

**KANSAS STATE** 

IVERSITY

68-85 F

## Wheat streak mosaic virus





Curl mite image: Thomas et at. 2004



### Curl mite image: Thomas et at. 2004

### Wheat Streak Mosaic Virus (and friends)

- Wheat streak mosaic virus
- Triticum mosaic virus
- High plains virus



Aceria tosichella



## Mites do a lot of damage in a short lifespan!



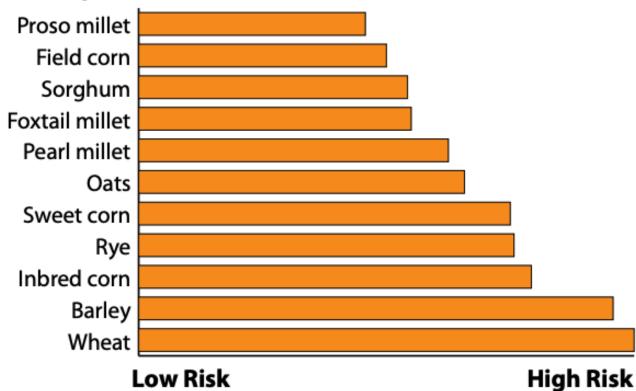
- Curl mites survive 8-10 days
- lay approximately 12 to 20 eggs
- Can survive ~ 4 days without host if temps are cool (~50°F) and humidity is high



Curl mite image: Thomas et at. 2004

## Other crops can be hosts for WSMV

### **Crop Hosts**



- Weeds and other crops can serve as reservoirs for this virus
- Most important is volunteer wheat
- Downey brome/cheatgrass



### Tan spot Pyrenophora tritici-repentis

Cool, wet weather favors spread of spores from residue

High moisture will cause infections in upper canopy

Looks like other "leaf spotters": Septoria tritici blotch and Stagonospora nodorum blotch

Photo: Andrew Friskop

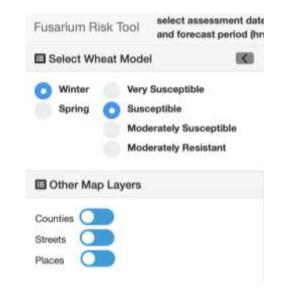
## Fusarium graminearum



## Fusarium head blight risk can be monitored online with the risk tool: wheatscab.psu.edu

### Current FHB (Scab) Risk in Kansas

ima	Dundy	Hitchcock Red Willow Furnas		Furnas	Harlan Franklin Webster Nuckolls Thayer			ls Thayer	Holt Holt		Ge
	Cheyenne	Rawlins	Decatur	Norton	Phillips	Smith	Jewell	Republic	Washington Marshall Nen	Brown Doniphare	D
	Sherman	Thomas	Sheridan	Graham	Rooks	Osborne	Mitchell	Cloud	Pottawatomie Clay Riley		e
	Wallace	Logan	Gove	Trego	Ellis	Russell	Lincoln	Ottawa	Geary Wabauns		
							Ellsworth	Saline	Dickinson Morris	Douglas Johnson Osage Franklin Miami	
	Greeley Wit	chita Scott	Lane	Ness	Rush	Barton	KS Rice	McPherson	Marion Chase Lyon		
475	Hamilton Ke	arny Fini	ney	Hodgeman	Pawnee Edwards	Stafford	Reno	Harv	rey	Woodson Allen Bourbor	n
	Stanton G	irant Haskel	Gray	Ford	Kiowa	Pratt	Kingman	Sedgw		Wilson Neosho Crawfon	
	Morton Ste	vens Sewar	d Meade	Clark	Comanche	Barber	Harper	Sumn	er Cowley Chautauqu	/ abette chorolo	-





wheatscab.psu.edu

### Questions?

Dr. Kelsey Andersen Onofre Assistant Professor Wheat and Forage Extension Specialist Kansas State University

> Email: <u>andersenk@ksu.edu</u> Cell: 785-410-2426 Twitter: @KSUWheatDisease

