



STRIPE RUST CONTROL – WHAT HAVE WE LEARNT?

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GRDC[™]
GRAINS RESEARCH
& DEVELOPMENT
CORPORATION



1. Stripe rust – as far as the eye can see!!

**Can we prevent infection getting this
severe?**





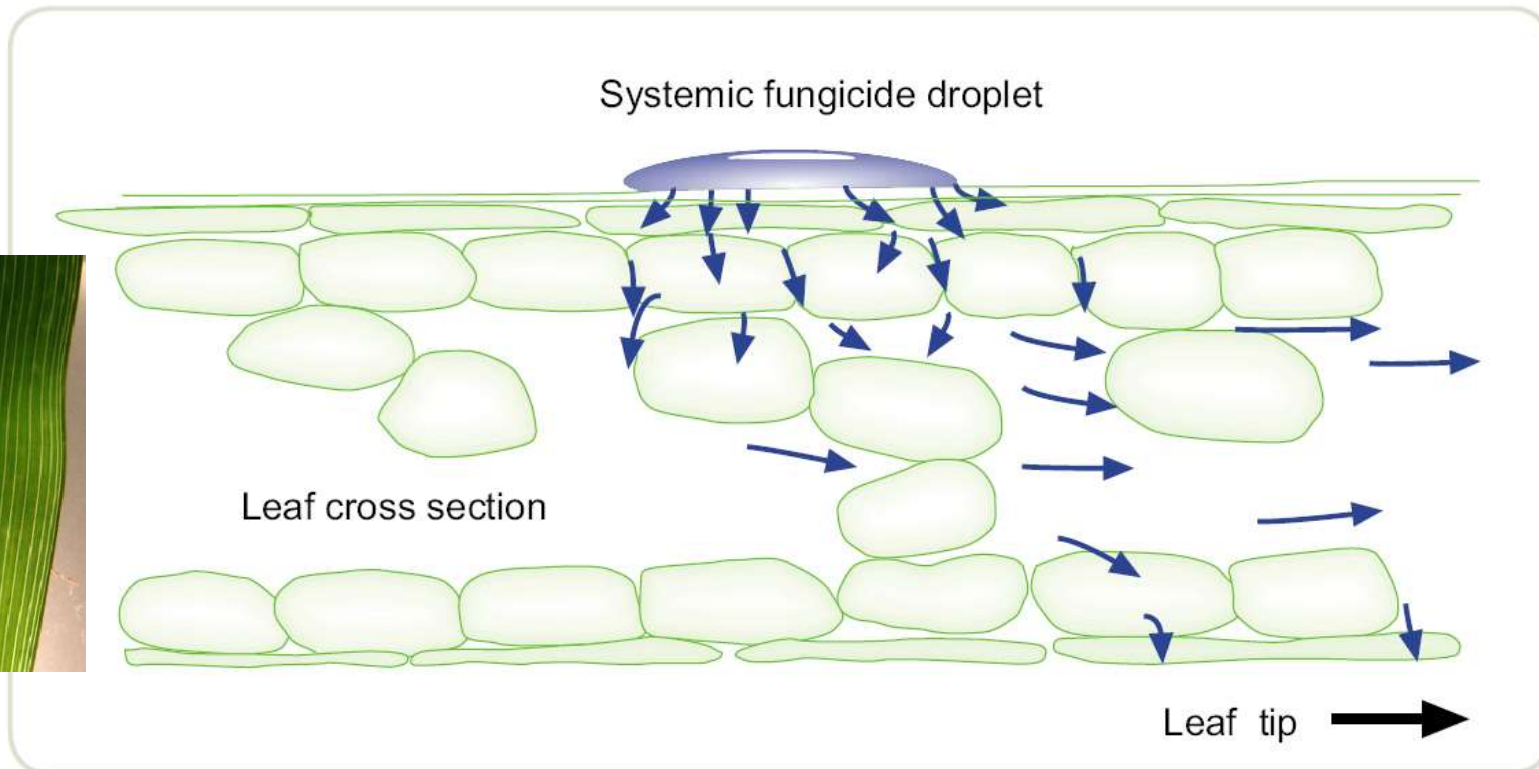
2. Fungicides

Protection not cure!

Why?

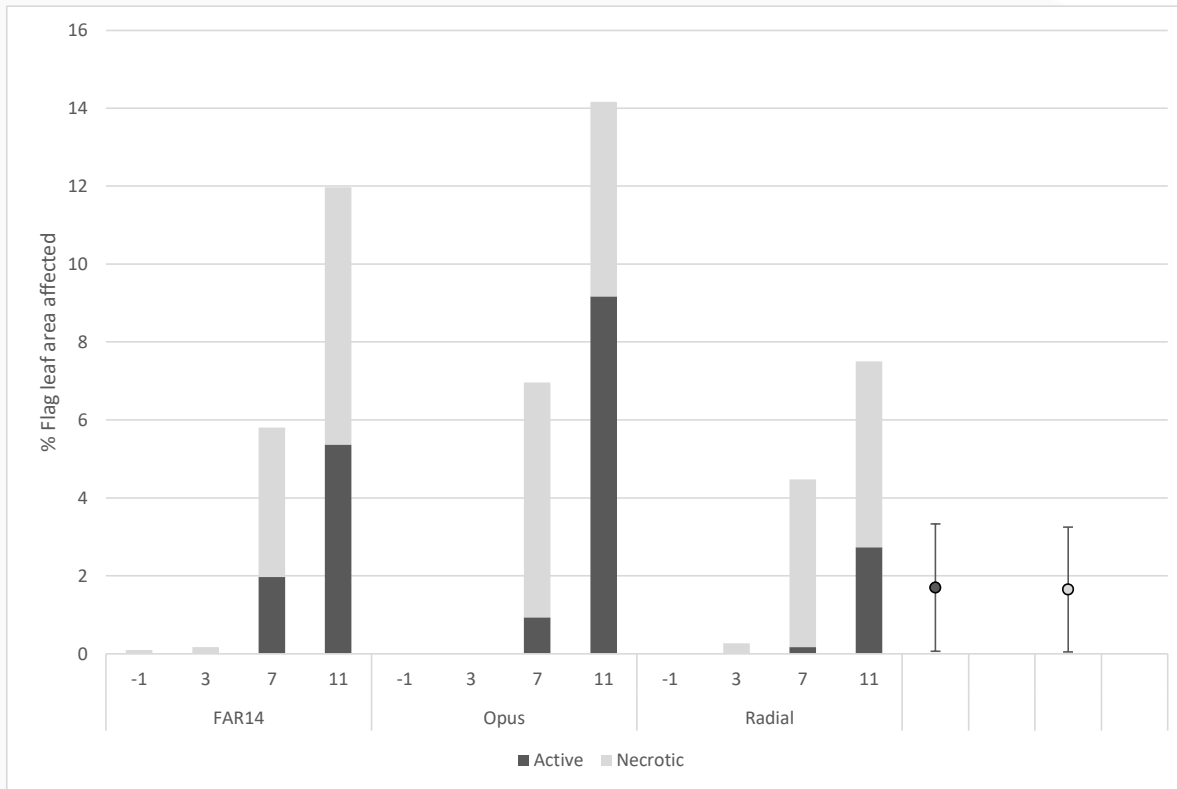
SOWING THE SEED FOR A BRIGHTER FUTURE

Fungicides protect what they contact – they have generally limited systemic and curative properties



Slide: N Poole (FAR Australia)

Controlled Environment - How many days kickback (curative activity) can we achieve with foliar fungicides against stripe rust?



Good control of active stripe rust infection 7 days after infection at a constant 20 °C

Equates to 140 °C days curative activity.

At mean daily temp of 20 °C equals 7 days kickback or 14 days at 10 °C

Untreated infection 14.5% flag leaf

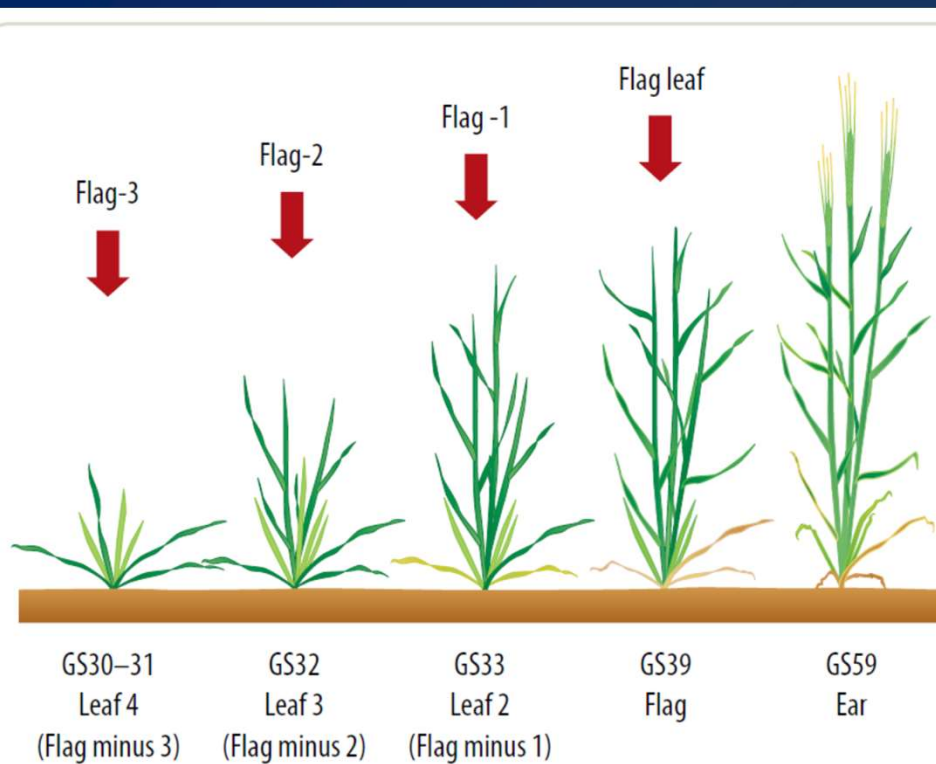
Rates (Opus 250ml/ha, Radial 420ml/ha)



3. What leaves do you want to protect?

SOWING THE SEED FOR A BRIGHTER FUTURE

Target the “money leaves” – why, which and when?



At which approximate growth stage do the important leaves emerge?



Untreated

GS31 (1 spray)

GS31 & GS45 (2 spray)

RGT Planet – Hyper Yielding Crop Research – FAR Australia Crop

Aim to protect the top three - four leaves by spraying at GS31-32 and GS39.

If you spray during tillering (GS23-25) and GS39 then none of your money leaves are protected until flag leaf



4. What's wrong with early sprays?

Mind the gap!



Fungicide Timing – What wrong with early sprays?



If you spray Fungicide with the broad leaved herbicide at tillering – You might have sprayed “early” but you haven’t protected any of the “money leaves” directly!



Hyper Yielding Crops Project wheat research – NSW Crop Technology Centre, Wallendbeen, NSW, October 2020

Mind the gap! (between the first and second spray: 5-8 weeks is too long!)

SOWING THE SEED FOR A BRIGHTER FUTURE

5. Head Wash – to spray or not to spray at GS59-61?

Two identical trials sown side by side 1 month apart – Onset of stripe rust infection at different development stages – GS32 (second node) and GS39 (flag leaf emergence)

cv H45 – SVS – Southern NSW 2004

Fungicide Strategy and Timing	GS32 Infection		GS39 Infection
	Trial 1		Trial 2
	Yield t/ha		Yield t/ha
Untreated	2.32		3.66
Single spray – GS39 (Flag leaf)	3.99		5.86
Two spray – GS32 (2 nd node) & GS39	4.87		5.87
Two spray – GS39 & GS59-61 (head em.)	4.39		6.04
Response to head wash spray at GS59-61	0.4 t/ha		0.2t/ha

Response to flag spray 1.7 – 2.0t/ha and to additional head spray 0.2 – 0.4 t/ha



Stripe rust in the head!

- - Stripe rust control can be achieved if the heads are sprayed at emergence (GS59) before flowering.
- Yield effects are generally small if flag GS39 spray was timed correctly.
- Stripe rust cannot be controlled once disease is evident in the head post flower. ADVISED NOT TO SPRAY.
- Head sprays have greatest economic effect when grain fill period is prolonged (“tops up” protection in the flag leaf and F-1).
- When yield effects are small - quality improvements are generally small!



Trojan untreated subject to severe stripe rust infection in the Victorian HRZ.

Hyper Yielding Crops Project wheat research – Gnarwarre, Vic 2020


Good disease management is essential for crops with increased yield potential!



Cultivar	Varietal yield under different levels of disease management					
	Untreated		1 Fungicide unit (GS39)		4 Fungicide units (S.trt, GS31,39, 61)	
	Yield t/ha		Yield t/ha		Yield t/ha	
Trojan (spring)	2.14	p	2.90	o	8.97	d-g
Scepter (spring)	5.82	n	7.87	jkl	8.78	efg
Nighthawk (facultative)	7.21	m	7.60	lm	8.11	jk
Anapurna (winter)	8.30	hij	8.97	d-g	9.23	b-e
RGT Accroc (winter)	7.85	jkl	9.13	c-f	9.58	abc
RGT Calabro (winter)	7.67	klm	8.63	gh	8.95	efg
Tabasco (winter)	7.67	klm	7.81	kl	8.11	ijk
SF Adagio (winter)	8.71	fgh	9.67	ab	9.44	a-d
SQP Revenue (winter)	5.71	n	7.92	jkl	8.58	ghi
LSD Cultivar x Man. p=0.05	0.47 t/ha		P val		>0.001	

*Hyper Yielding Crops Project
wheat research – Gnarwarre,
Southern Victoria (HRZ) 2020*

*Disease Management Protocol 4
for Wheat*

 *No significant difference in yield between 1 & 4 units of fungicide*

- Good disease management is essential in all regions when yield potential is higher due to spring rainfall! Particularly if the germplasm is susceptible to disease such as stripe rust.
- Fungicides essentially protect what leaves they contact and have limited ability to cure stripe rust infection (curative or kickback activity limited to approximately 7-10 days after infection – temp dependent).
- Spraying early at tillering may be convenient (tank mixed with herbicide) but in good springs growing susceptible cultivars it results in too large a gap (5-8 weeks) between the first and second fungicide if the second fungicide is applied at flag leaf. "MIND THE GAP" 3-4 weeks more idea
- For early protection against stripe rust flutriafol in furrow is still very effective and better suited to providing protection than foliar fungicides during tillering.
- Key foliar fungicide timings for wheat to protect the top three - four leaves (money leaves) are GS31-32 (1st – 2nd node) and GS39 (flag leaf emergence on the main stem).