Fungicide performance results (2016)

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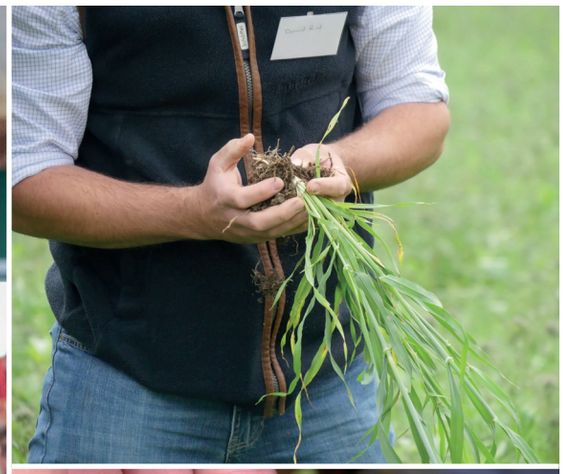

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Using fungicides effectively in wheat and barley

Stuart Knight, Director of Crops and Agronomy, NIAB

Stuart joined NIAB in 2009 when The Arable Group became part of NIAB, having worked for TAG (and previously ARC) since 1997. With over 20 years' experience as a research agronomist, his current responsibilities include agronomy research and knowledge transfer, and regional trials delivery. Stuart's research interests cover most aspects of combinable crop husbandry, including nutrient management and crop protection chemical evaluation. He graduated with a degree in Agriculture from Wye College (London University) and spent six years at Newcastle University working as Technical Manager for the North of England Arable Centre, before joining ARC. Stuart's family still farms in east Kent.

Using fungicides effectively in oilseed rape

Faye Ritchie, Plant Pathologist, ADAS

With around 15 years' experience in plant pathology, Faye's research focuses on the epidemiology and control of soil-borne and foliar diseases of potato, cereals and oilseed rape. Recent research activity includes the evaluation of the performance of fungicides against the major diseases of oilseed rape – phoma leaf spot/stem canker, light leaf spot and sclerotinia – for AHDB and industry. She holds a BASIS certificate in Crop Protection.

Using fungicides effectively in wheat and barley

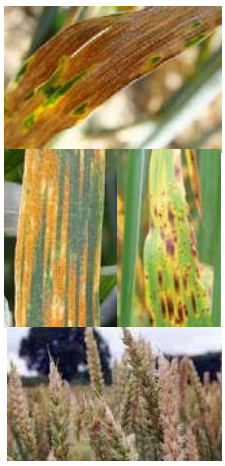
Stuart Knight, NIAB

#AgConf16

Note: These slides contain curves up to 100% label dose.

Curves, therefore, are different to those shown at the AHDB Agronomists' Conference (8 December 2016). These showed results up to 200% label dose but the data used to produce the curves is the same.

General considerations



- Reduce pressure on fungicides (consider options)
- Take account of varietal susceptibilities
- Keep abreast of the dynamic situation with yellow rust races (see UKCPVS)
- Make best use of all effective fungicide groups (in mixtures and in sequences)
- Safeguard SDHIs, disease control is at risk (don’t use solo SDHIs)
- Azoles still needed to help protect SDHIs

Wheat fungicide performance

Wheat sites 2016

1	Rosemaund (ADAS)	Septoria tritici	Consort
2	Sutton Scotney (NIAB)	Septoria tritici (double trial)	Dickens
3	Fife (SRUC)	Septoria tritici (double trial)	Consort
4	Cardigan (ADAS)	Septoria tritici	KWS Santiago
5	Carlow (TEAGASC)	Septoria tritici	KWS Lumos
6	Terrington (ADAS)	Yellow rust	Oakley
7	Cambridge (NIAB)	Brown rust	Crusoe
9	Gleadthorpe (ADAS)	Fusarium	Grafton

Wheat septoria data 2016

Site and timing	Target leaf	Protectant	Eradicant
Rosemaund T2	Flag	✓	✓
Sutton Scotney T1	Leaf 3	✓	✓
Sutton Scotney T2	Flag	✓	✓
Fife T1	Leaf 3	✓	
Fife T2	Flag	✓	✓
Cardigan T2	Flag	✓	
Carlow GS33	Leaf 2	✓	

Wheat septoria products

Product	Active(s)	UK sites	Carlow
Bravo	chlorothalonil	✓*	✓*
Ignite**	epoxiconazole	✓	
Proline	prothioconazole	✓	✓
Imtrex	fluxapyroxad	✓	
Vertisan	Penthiopyrad	✓	
Adexar	fluxapyroxad + epoxiconazole	(✓)	(✓)
Aviator Xpro	bixafen + prothioconazole	✓	✓
Vertisan + Ignite**	penthiopyrad + epoxiconazole	✓	
Librax	fluxapyroxad + metconazole	✓	✓
Ascra Xpro	bixafen + fluopyram + prothioconazole	✓	✓

*Bravo at 50% dose only **Or 'Bassoon EC' ( ) Not in 2016

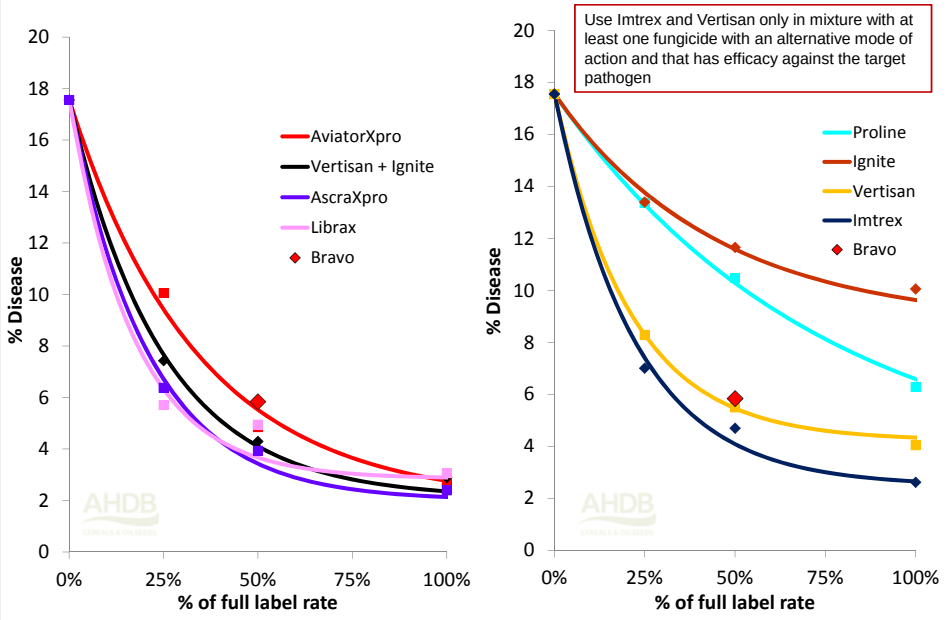
Ascra Xpro

- New fungicide product for 2017
- Contains two SDHI actives plus a triazole:

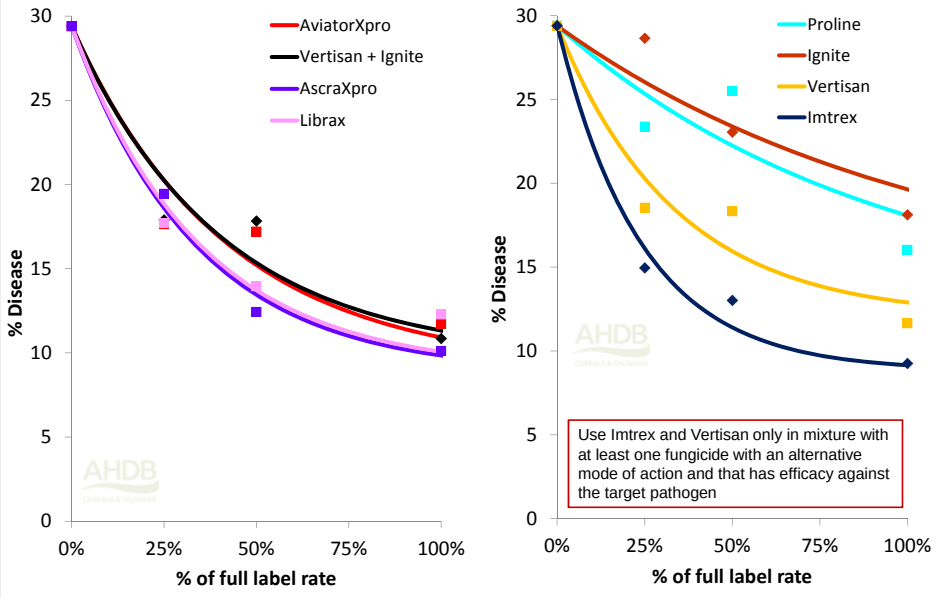
  65 g/l bixafen + 65 g/l **fluopyram** + 130 g/l prothioconazole

- Full label dose 1.5 l/ha
- Maximum two applications
- Approved for wheat only

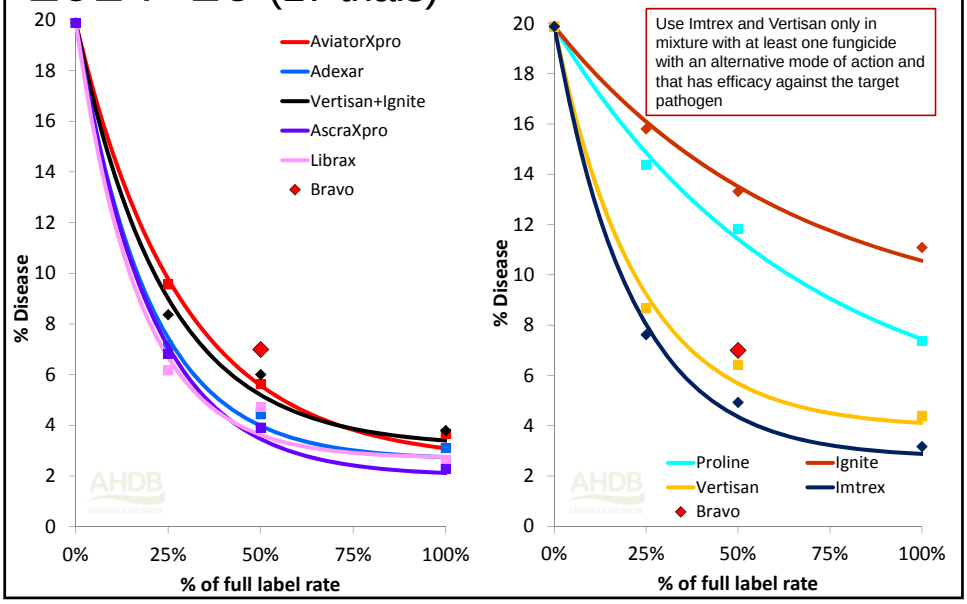
Septoria protectant 2016 (7 trials)



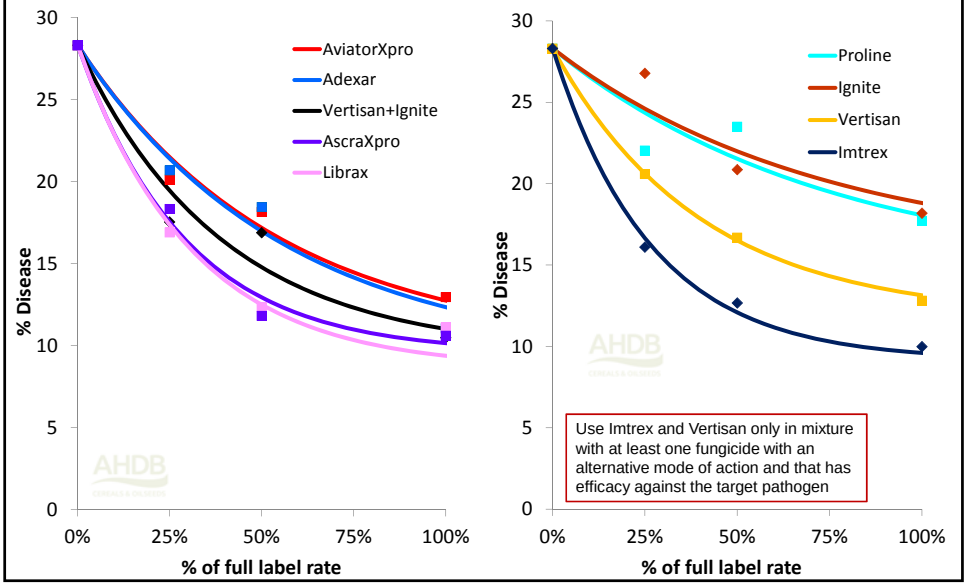
Septoria eradicant 2016 (4 trials)



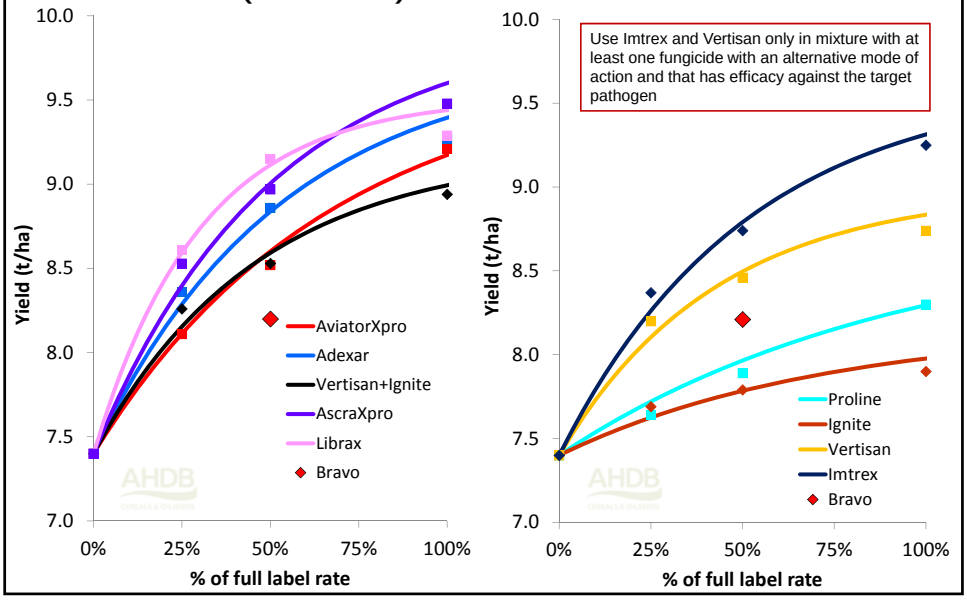
Septoria protectant over-year 2014–16 (17 trials)



Septoria eradicant over-year 2014–6 (8 trials)



Septoria yield over-year 2014–6 (18 trials)

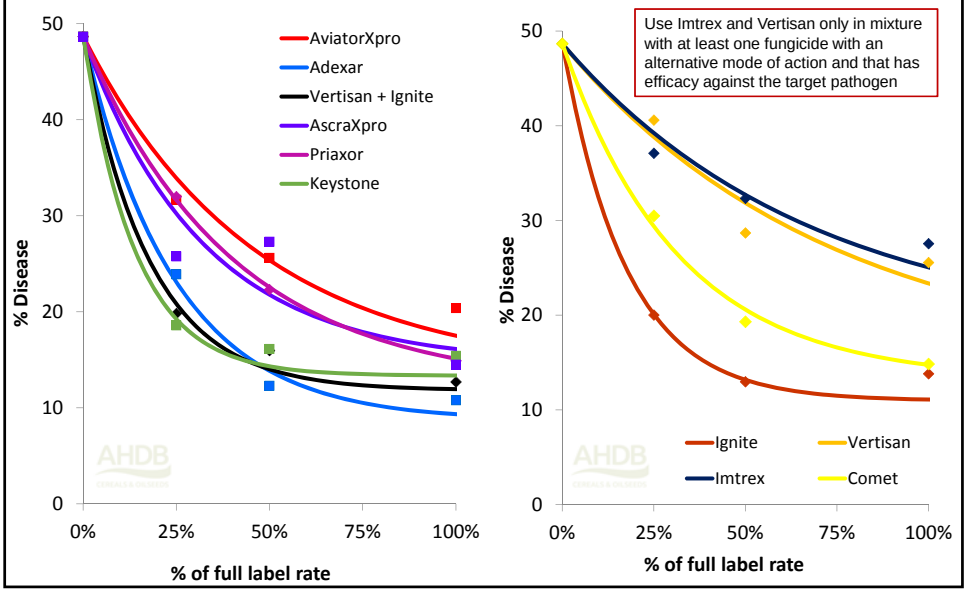


Wheat rust products

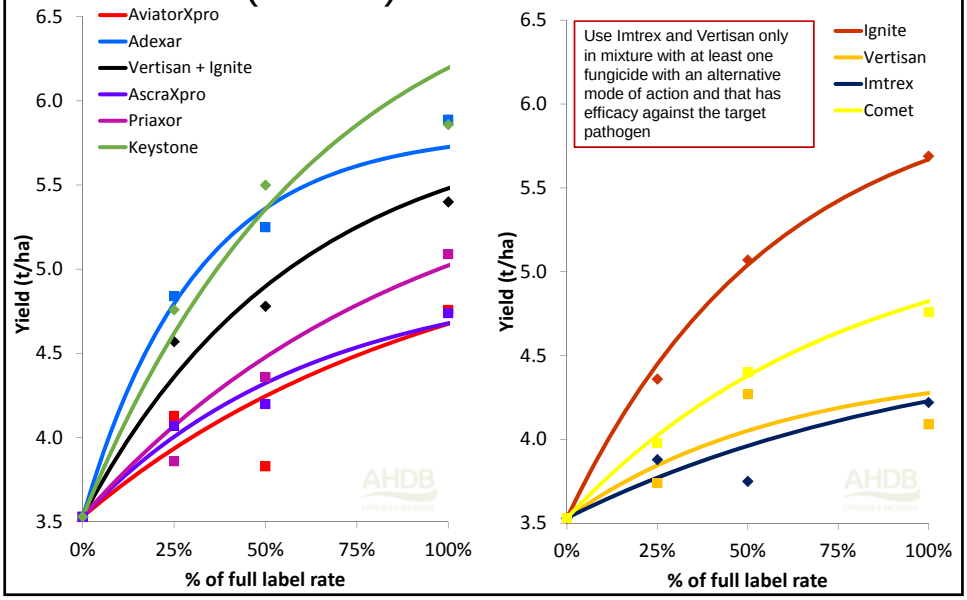
Product	Active(s)	Yellow	Brown
Comet	pyraclostrobin	✓	(✓)
Ignite	epoxiconazole	✓	✓
Proline	prothioconazole		✓
Caramba 90	metconazole		✓
Imtrex	fluxapyroxad	✓	(✓)
Vertisan	penthiopyrad	✓	✓
Aviator Xpro	bixafen + prothioconazole	✓	
Adexar	fluxapyroxad + epoxiconazole	✓	
Keystone	isopyrazam + epoxiconazole	✓	
Ascra Xpro	bixafen + fluopyram + prothioconazole	✓	
Priaxor	pyraclostrobin + fluxapyroxad	✓	

( ) Not in 2016

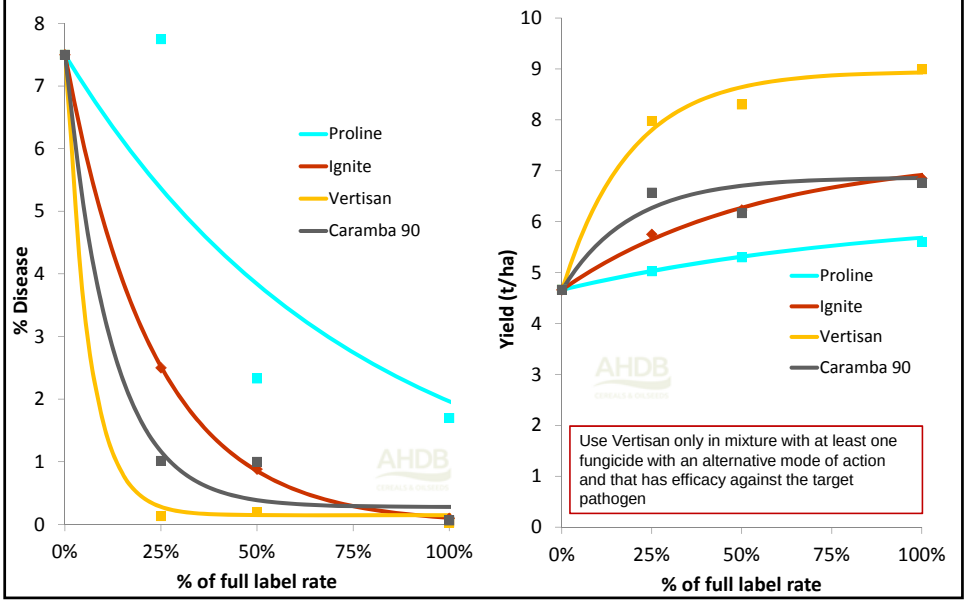
Yellow rust over-year 2014–16
(3 trials)



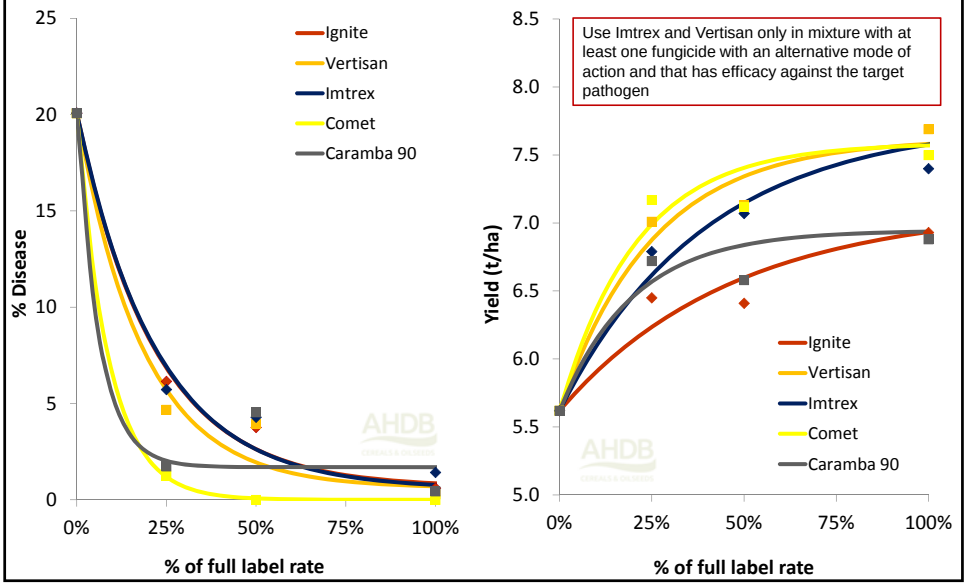
Yellow rust yield over-year 2014–6 (3 trials)



Brown rust 2016 (1 trial)



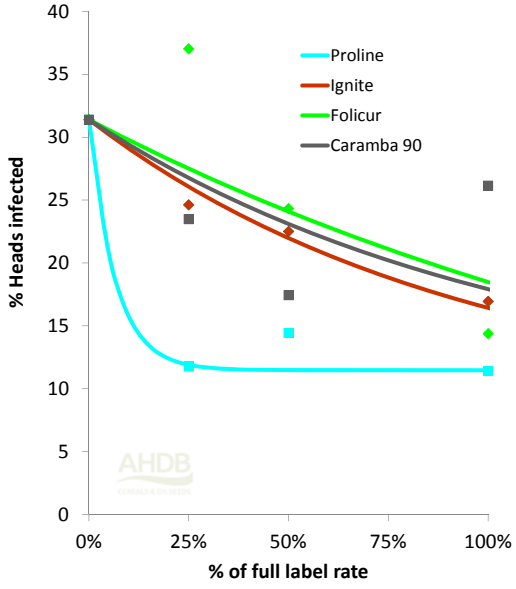
Brown rust over-year 2014–16
(3 trials)



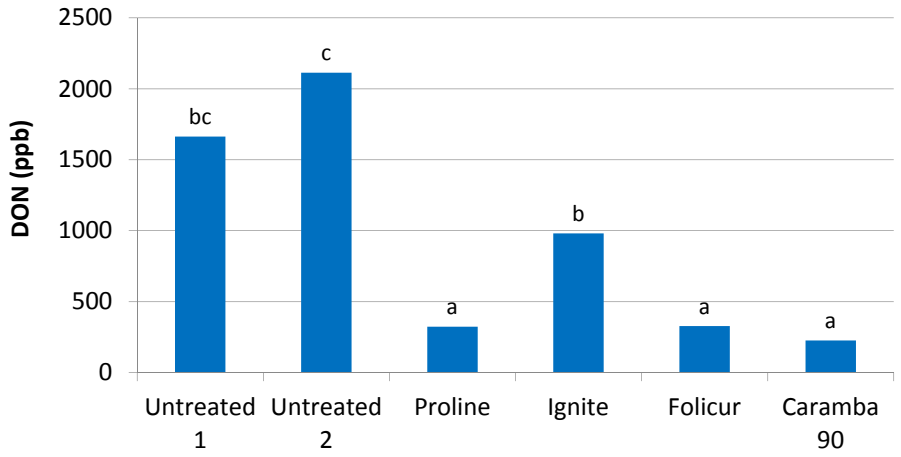
Wheat fusarium products

T3 Product	Active
Proline	prothioconazole
Ignite	epoxiconazole
Folicur	tebuconazole
Caramba 90	metconazole

Fusarium head blight 2015–16
(2 trials)



Mycotoxin data 2016
(1 trial)



Wheat conclusions

- Good septoria control from the SDHIs, but SDHI/azole mixtures much more robust for control and yield
- Ascra Xpro giving improved septoria control over Aviator
- Recent over-year septoria protectant data shows Proline performing better than Ignite
- Straight SDHIs giving moderate yellow rust control but not as effective as Comet or Ignite
- SDHI, strobilurin and azole options all control brown rust, but Proline less effective than Ignite or Caramba 90
- Proline most robust azole for reducing FHB incidence

Barley fungicide performance

Barley sites 2016

1	Powys (ADAS)	Rhynchosporium	Cassia
2	Lanark (SRUC)	Rhynchosporium	Saffron
3	Carlow (TEAGASC)	Rhynchosporium	Cassia
4	High Mowthorpe (ADAS)	Net blotch	Cassata
5	Norfolk (NIAB)	Net blotch	Flagon
6	Bush Midlothian (SRUC)	Powdery mildew	Cassia
7	Bush Midlothian (SRUC)	Ramularia	Quench (spring)

Barley disease data 2016

	Target	Rhynchosporium		N Blotch	Mildew	Ramularia
		Protect.	Eradic.			
Powys	Rhyncho	✓	✓			
Lanark	Rhyncho	✓	✓			
Carlow	Rhyncho	✓	✓			
Mowthorpe	N blotch			<3%		
Norfolk	N blotch			✓		
Midlothian	Mildew*				✓	
Midlothian	Ramularia	✓				x

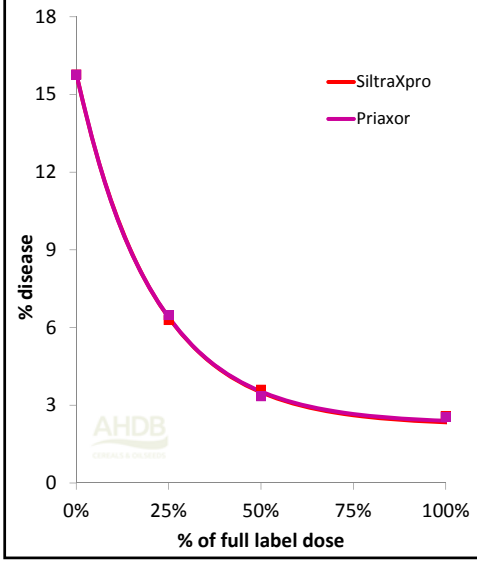
* Treated with rhynchosporium protocol

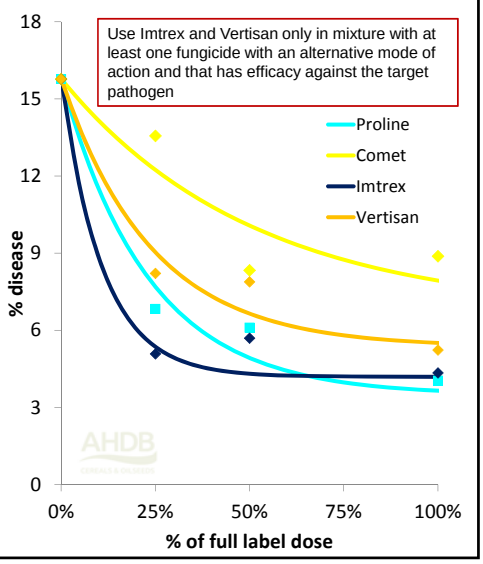
Barley products

Product	Actives	UK sites	Carlow
Proline	prothioconazole	✓	✓
Comet	pyraclostrobin	✓	✓
Imtrex	fluxapyroxad	✓	
Vertisan	penthiopyrad	✓	
Zulu	isopyrazam	(✓)	(✓)
SiltraXpro	bixafen + prothioconazole	✓	✓
Priaxor	pyraclostrobin + fluxapyroxad	✓	✓

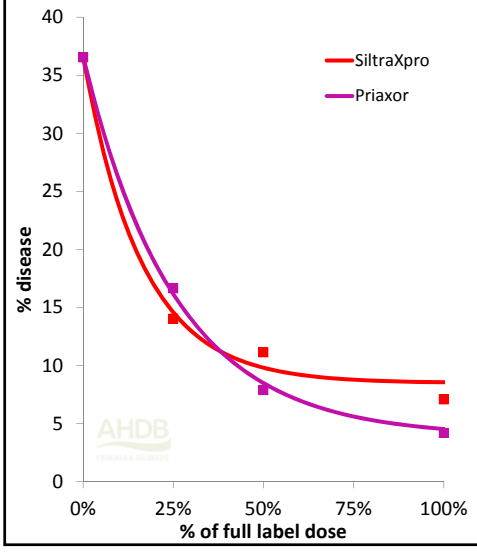
( ) Not in 2016

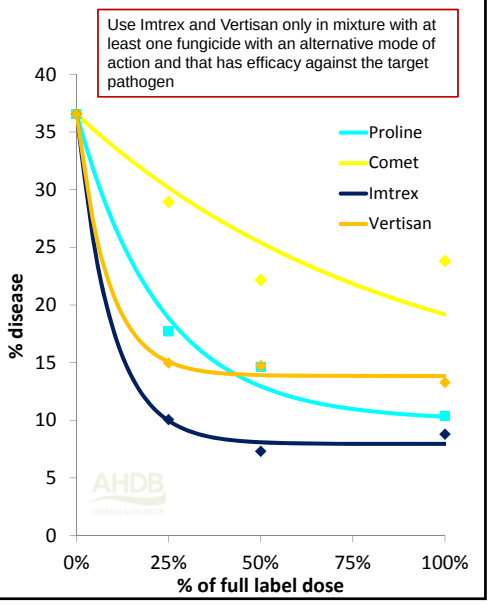
Rhynchosporium protectant 2016
(4 trials)



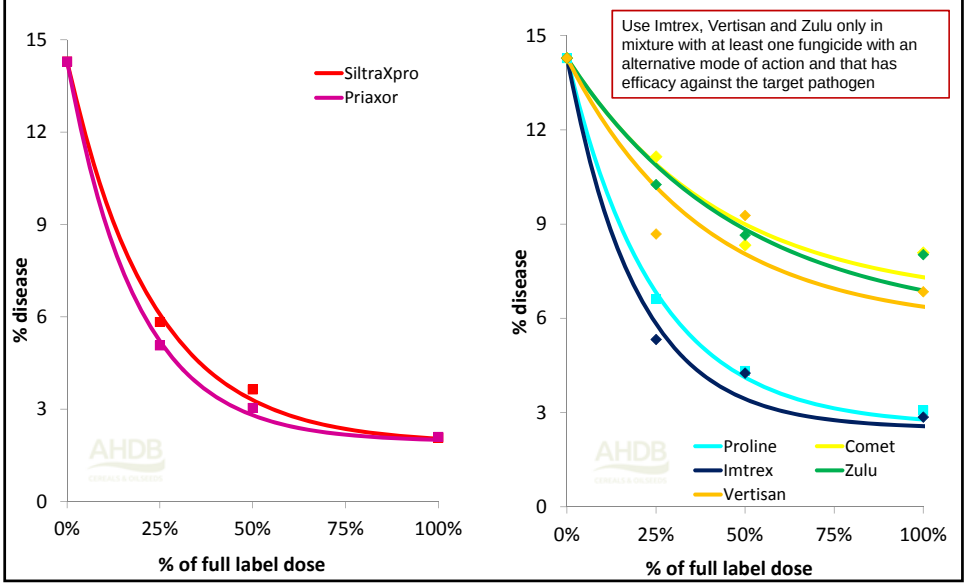


Rhynchosporium eradicant 2016
(3 trials)

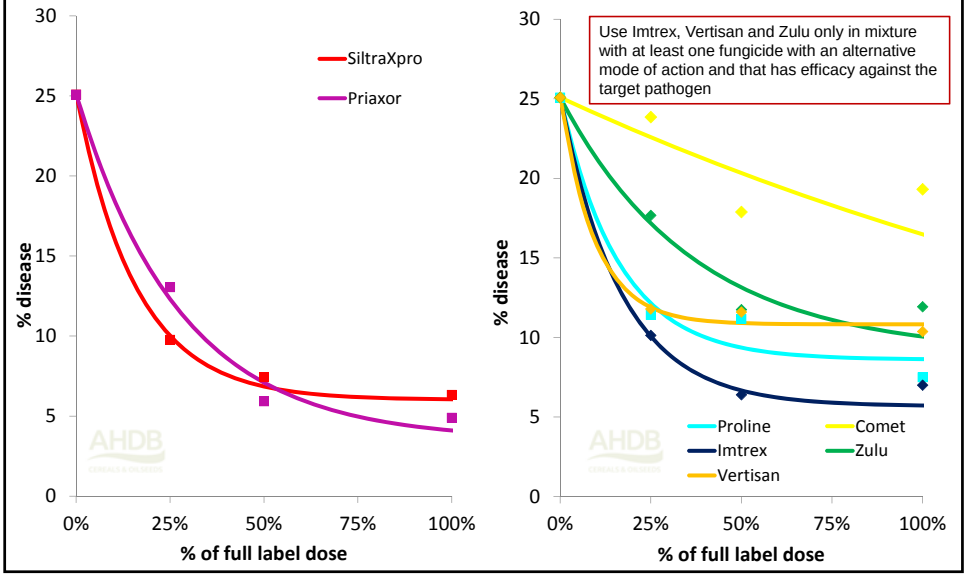




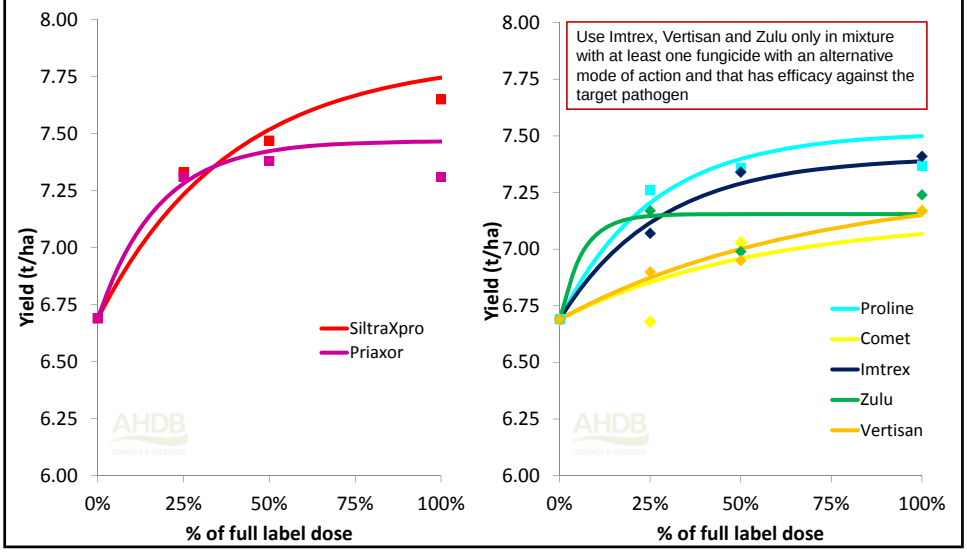
Rhyncho protectant over-year 2014–16



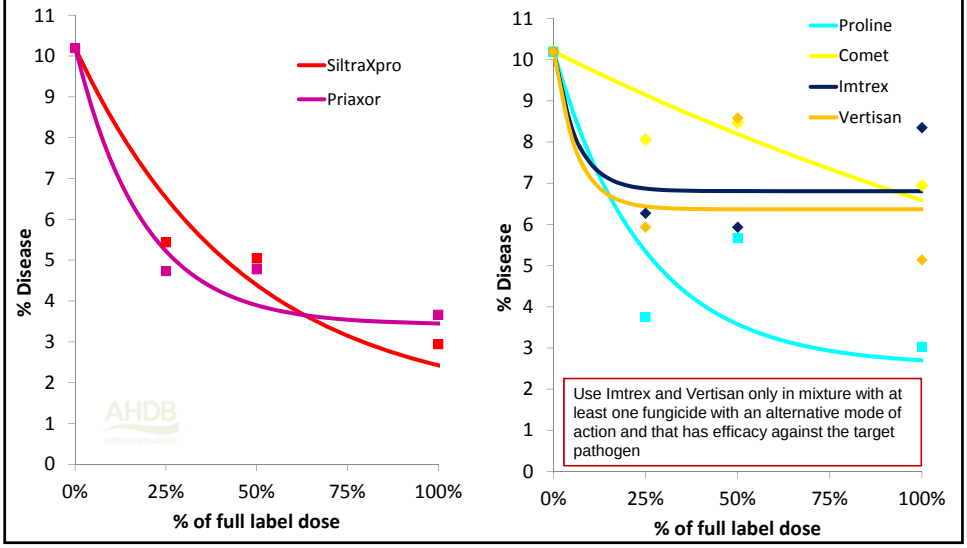
Rhyncho eradicant over-year 2014–16



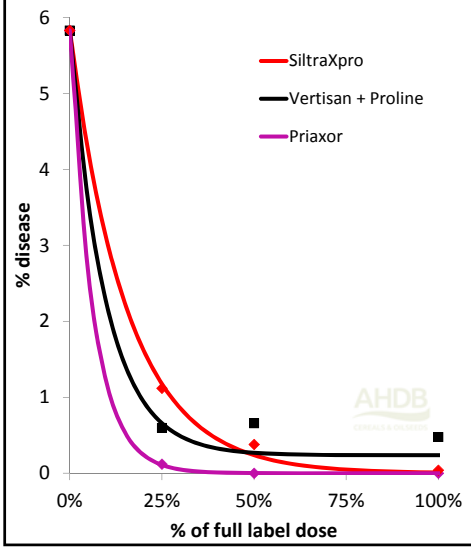
Rhyncho yield over-year 2014–16
(11 trials)

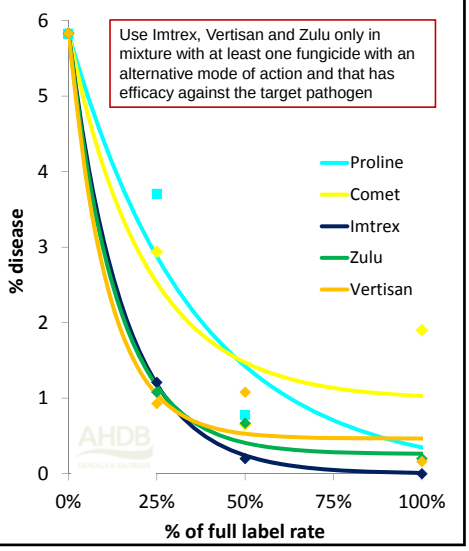


Net blotch protectant 2016
(1 trial)

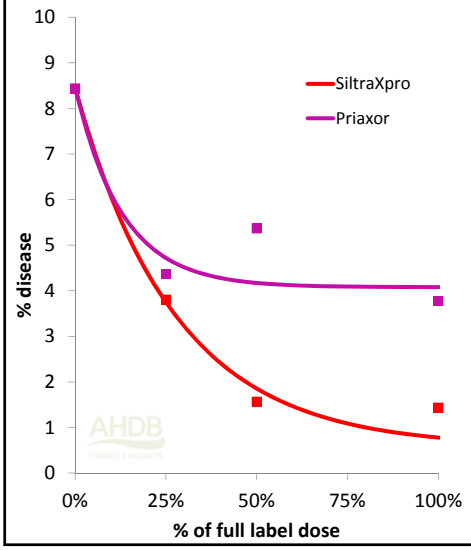


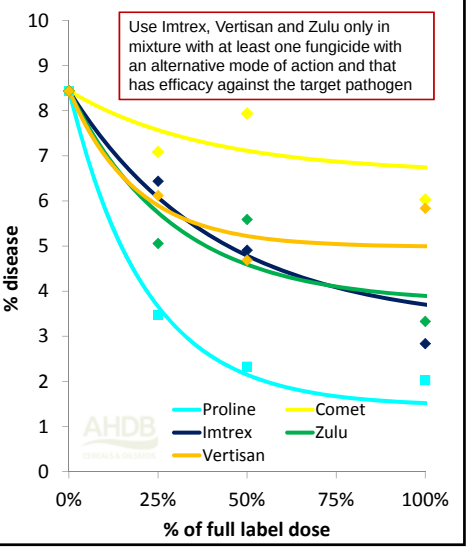
Net blotch protectant over-year 2013–15 (3 trials)





Mildew over-year 2014–16





Barley conclusions

- SDHI/azole mixture ‘Siltra Xpro’ maintaining good control of diseases tested, and more robust than straight SDHIs
- Straight SDHIs range from moderate to good in their effectiveness against rhynchosporium
- Performance of Comet against rhyncho weaker in 2016
- Priaxor offers a non-azole option with good rhyncho control compared to established SDHI/azole mixtures
- Performance of straight SDHIs against net blotch good in 2013–15 (low disease pressure) but weaker in 2016
- Proline maintaining good mildew efficacy

Thank you

cereals.ahdb.org.uk/fungicide

Using fungicides effectively in oilseed rape

Faye Ritchie, ADAS

#AgConf16

Trial sites in 2015/2016 season

Target disease	Site (variety)	Organisation
Phoma (two-spray*)	Boxworth, Cambs (2015-16 cv. Catana)	ADAS
	Terrington, Norfolk (2015-16 cv. Catana)	ADAS
Light leaf spot (two-spray**)	Malton, North Yorks (2015-16 cv. PR46W21)	ADAS
	Dorset (2015-16 cv. Harper)	NIABTAG
	Edinburgh (2015-16 cv. Fencer)	SRUC
Sclerotinia stem rot (single spray***)	Herefordshire (2015-16 moderate disease)	ADAS

*10-20% plants affected followed by 4-10 weeks when similar level of re-infection evident
** Autumn (November/December) followed by pre or early-stem extension (February/March)
***Early to mid-flowering application timing

Phoma and light leaf spot treatments since 2014

Product	Active(s)	Full Dose (l/ha)	Phoma	Light Leaf Spot
Untreated	-	-	+	+
Proline 275	prothioconazole	0.63	+	+
Prosaro	prothioconazole + tebuconazole	1.0	-	+
Orius[a]	tebuconazole	1.25	-	+
Refinzar[b]	penthiopyrad + picoxystrobin	1.0	+	+
Orius P	prochloraz + tebuconazole	1.5	-	+
Pictor[c]	dimoxystrobin + boscalid	0.5	+	+
Cirkon	prochloraz + propiconazole	1.125	+	+
Filan	boscalid	0.5 (kg/ha)	+	-

[a]Tested as a two-spray programme but now one application per season, after GS20/in the spring
[b]Tested as a two-spray programme but the label restricts use to maximum one application per season (at full dose) before GS30 (stem extension)
[c]Can only be used after 1 February and GS20

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Phoma leaf spot/stem canker

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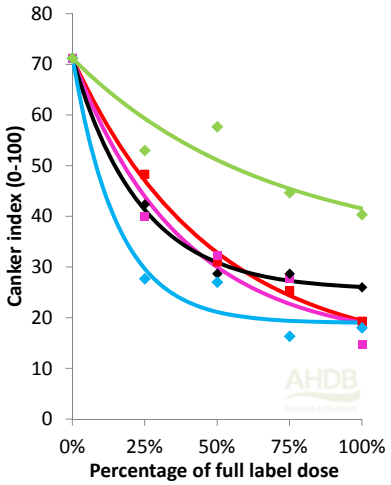
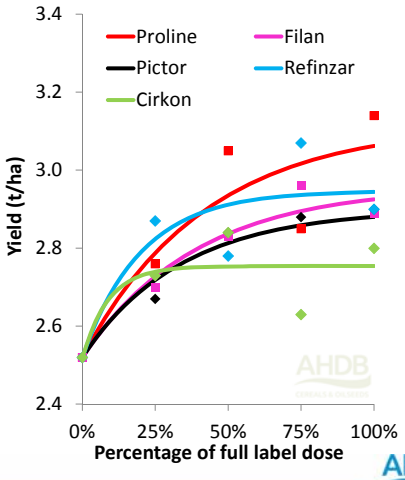
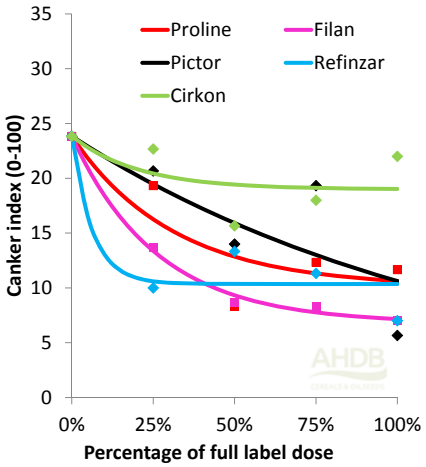
Cambridgeshire: Phoma stem canker and yield 2016



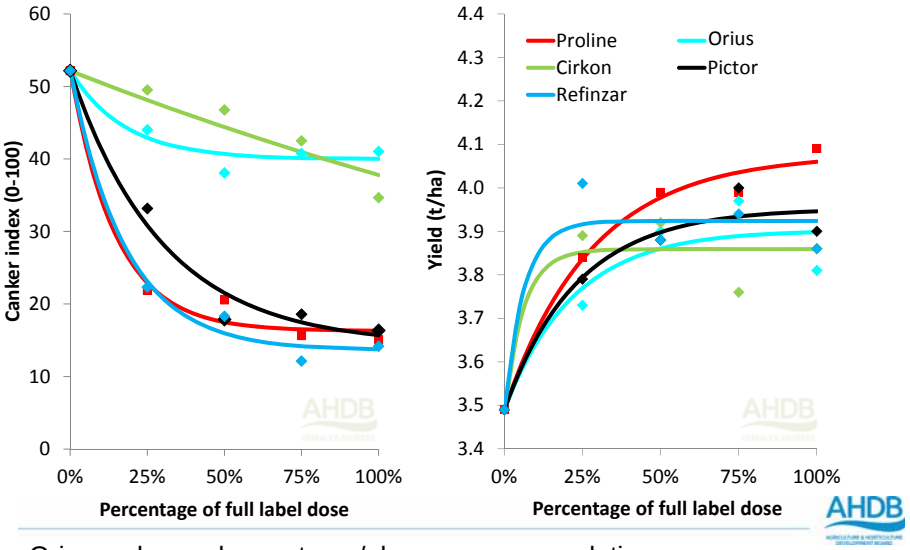


Norfolk: Phoma stem canker 2016

– efficacy similar to Cambridgeshire site



Over-year analysis: Phoma 'high' canker trials 2014 to 2016



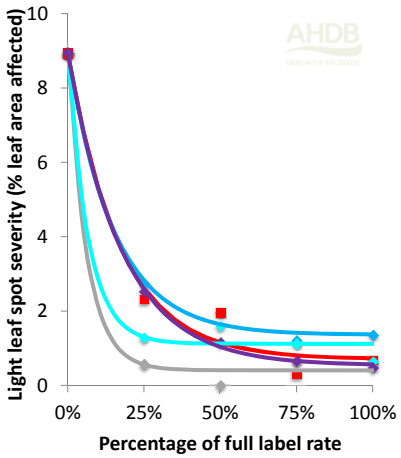
Orius no longer has autumn/phoma recommendation

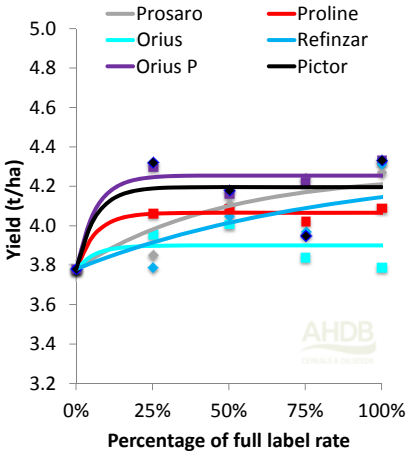
Phoma conclusions

- Application timing in relation to thresholds is key
- Good control with half rates applied as a two-spray programme
- Non-azole options are effective for phoma control
- Very resistant varieties may not reach threshold until late in the season or at all – control of light leaf spot to consider

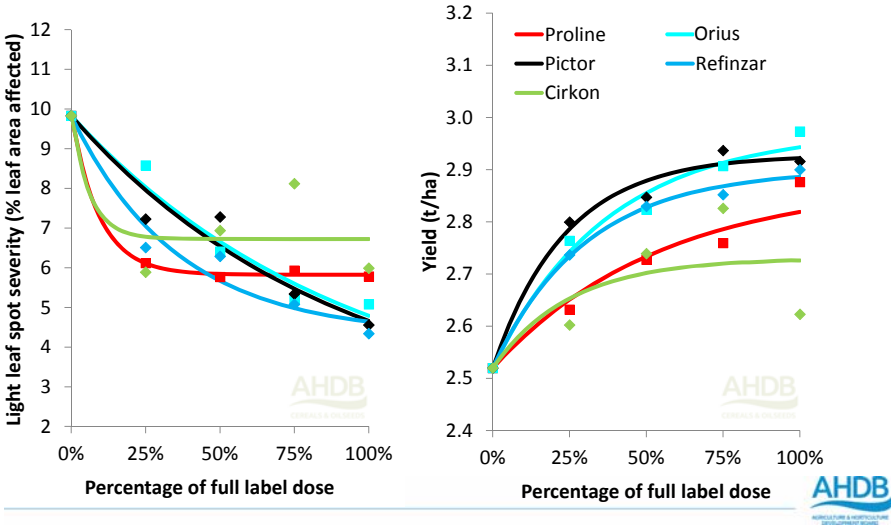
Light leaf spot

Light leaf spot severity and yield in Yorkshire 2014 – 80 to 90% control

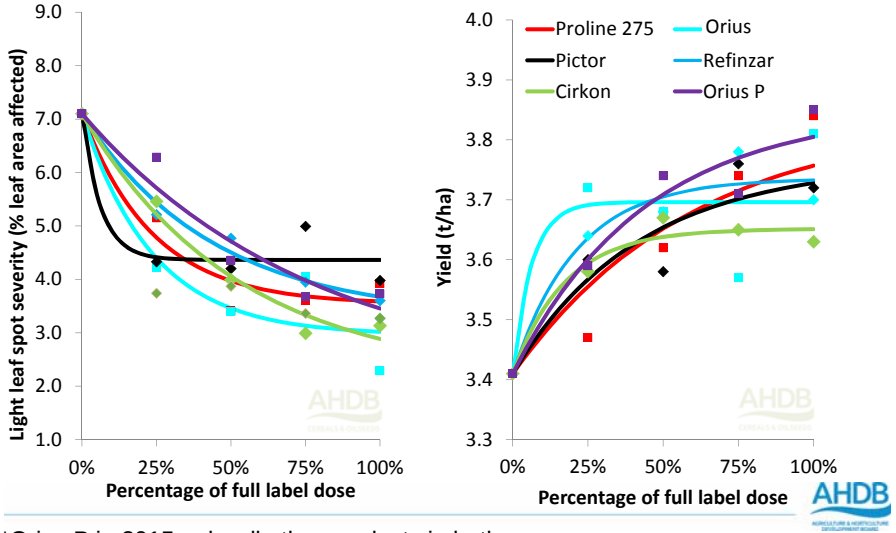




Light leaf spot severity and yield in Yorkshire 2016 – 40 to 60% control



Light leaf spot control across years – 5 trials in 2015 and 2016*



*Orius P in 2015 only, all other products in both years

Light leaf spot conclusions

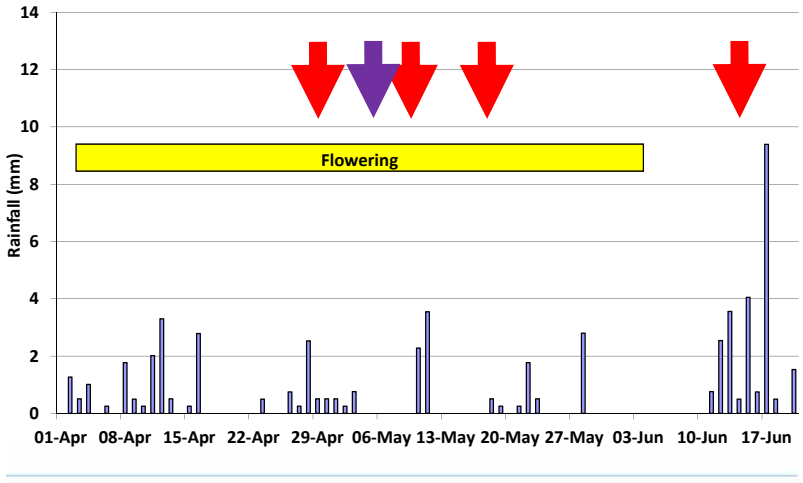
- Following autumn fungicides at high-risk sites, inspect crops regularly on a field-by-field basis
- Non-triazole options providing good light leaf spot control
- Reports of decreased azole sensitivity in UK light leaf spot populations – whether this is having an impact on field control has not been determined

Sclerotinia stem rot

Sclerotinia stem rot treatments in 2016

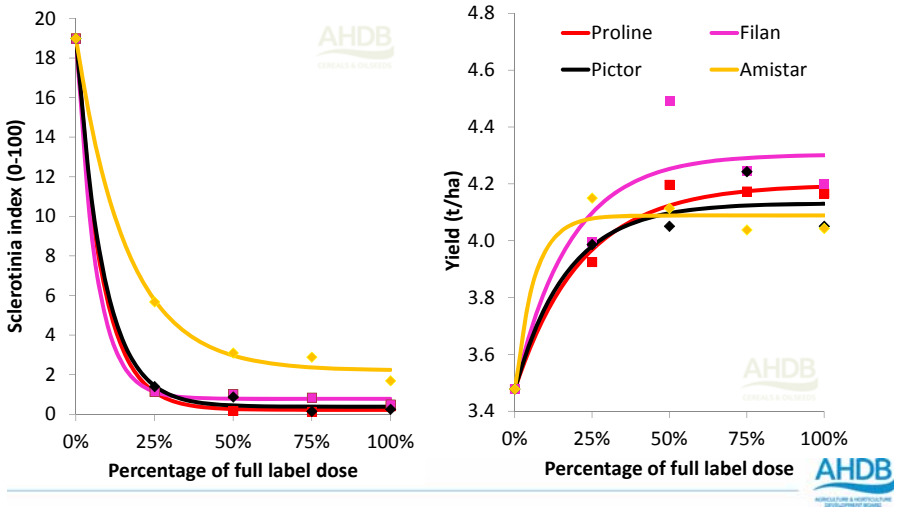
Product	Active(s)	Full dose (l/ha)
Untreated	-	-
Proline 275	prothioconazole	0.63
Amistar	azoxystrobin	1.0
Filan	boscalid	0.5 (kg/ha)
Pictor	dimoxystrobin + boscalid	0.5

Sclerotinia risk, Herefordshire in 2016



Sclerotinia severity and yield

Cardigan 2015 and Herefordshire 2016 (over-year analysis)



Sclerotinia conclusions

- Range of chemistry
- Product choice and dose important in high pressure years
- Products generally give three weeks protection at high rates
- Fungicide resistance not yet reported in the UK

Acknowledgements

Paul Gosling, AHDB

Fiona Burnett, Douglas Goodall and Tracy Yoxall, SRUC

Stuart Knight and Sarah Bowden, NIABTAG

Philip Walker, Lewis Woffenden and Andrew Moore, ADAS

Fungicide performance presentations

Notes:

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Supplementary fungicide performance results (2016)

The following slides show results from 2016 AHDB fungicide performance trials on septoria tritici in wheat and rhynchosporium in barley.

The charts include results for the Syngenta fungicide **ELATUS™ ERA**, which was not registered until after the release of the main dataset in December 2016.

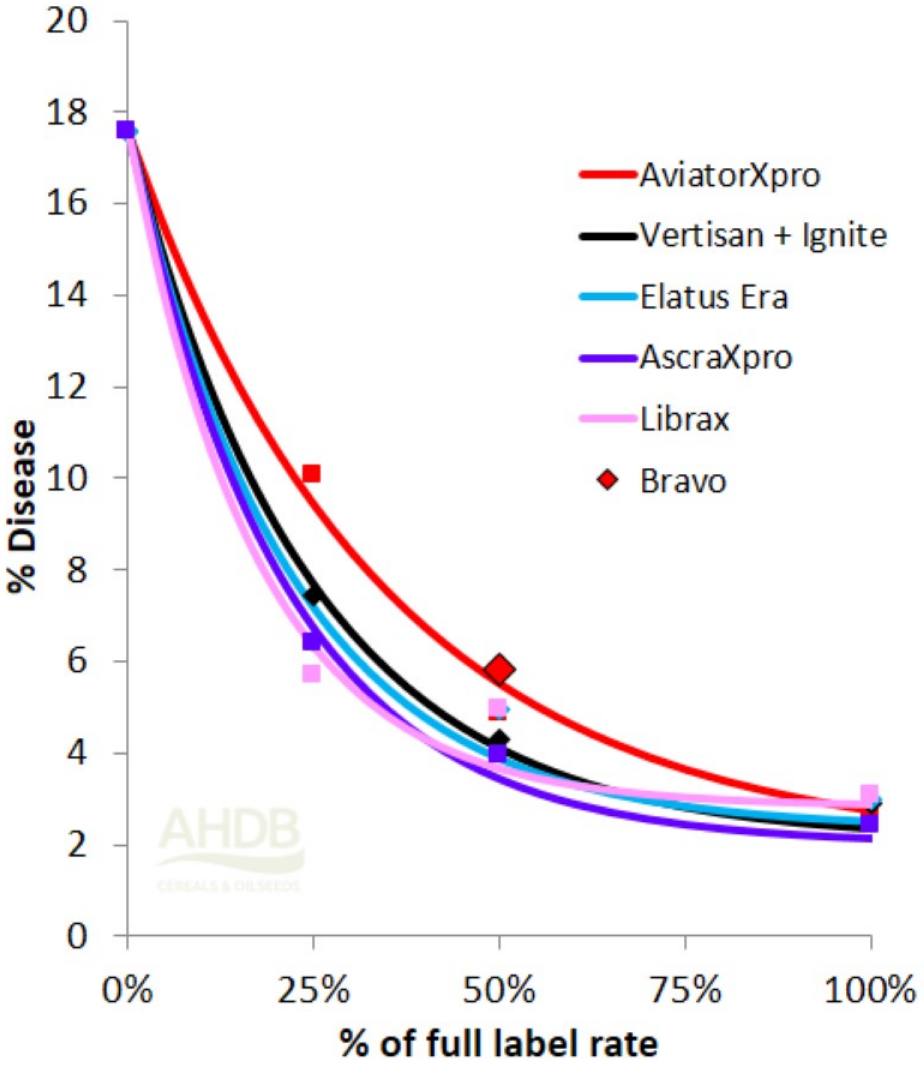
Elatus Era

- New fungicide product for 2017
- Contains new SDHI active plus a triazole:

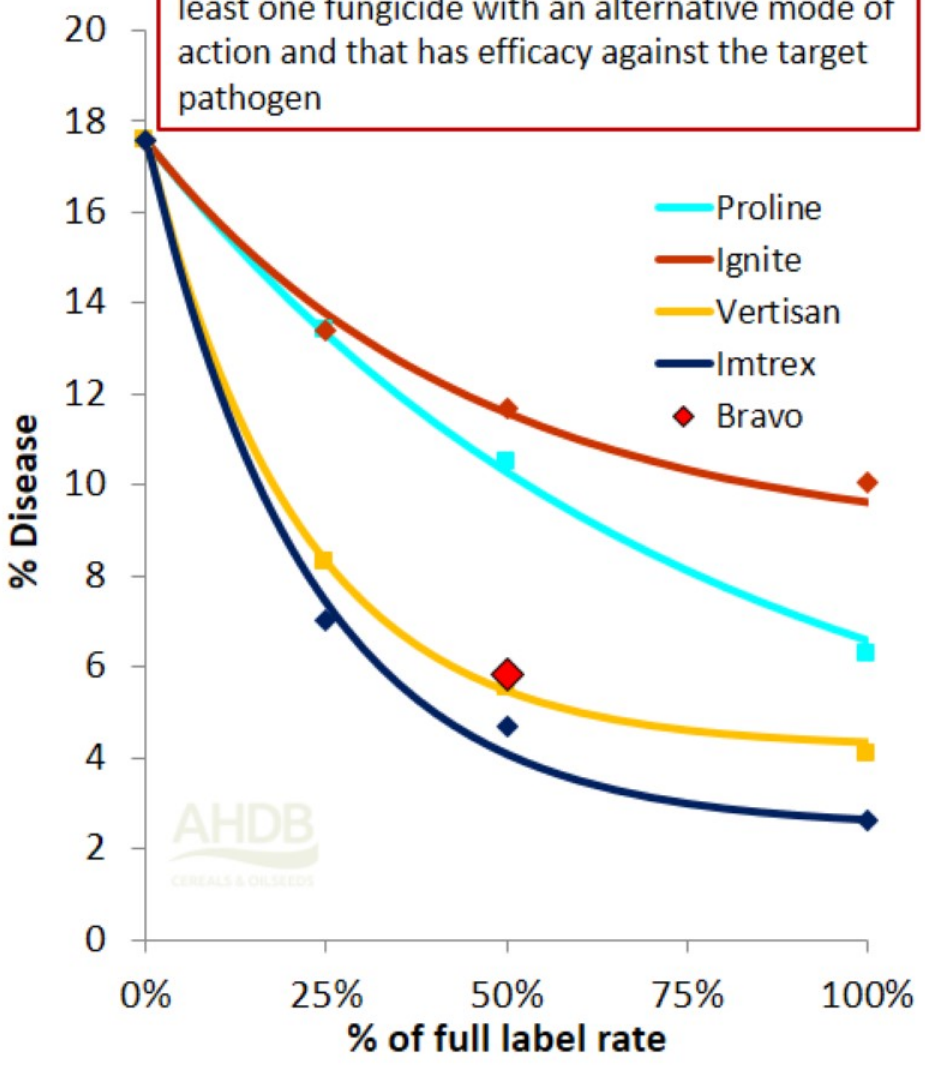
  75 g/l benzovindiflupyr and 150 g/l prothioconazole

- Full label dose 1 l/ha
- Maximum one application
- Approved for wheat, barley, rye and triticale for the control of all major cereal diseases

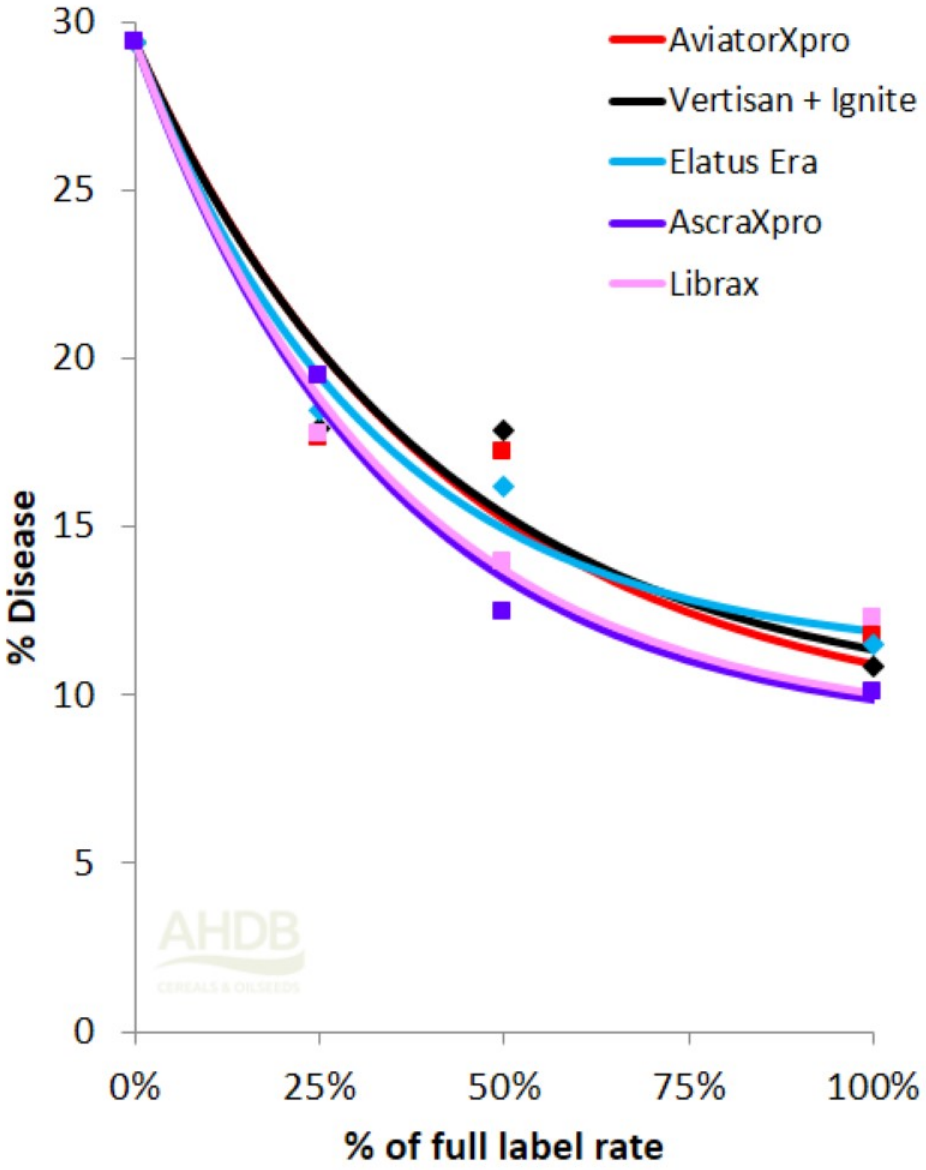
Septoria protectant 2016 (7 trials)

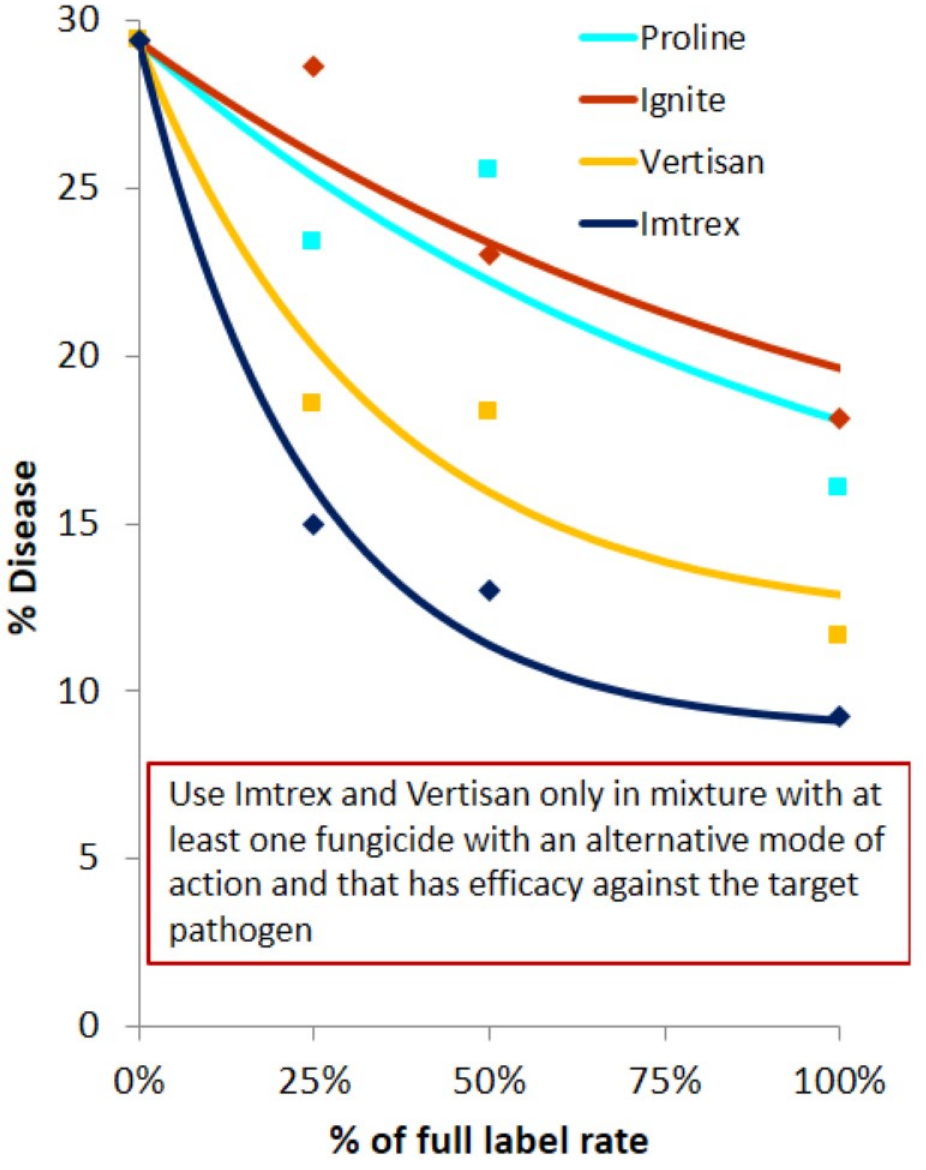


Use Imtrex and Vertisan only in mixture with at least one fungicide with an alternative mode of action and that has efficacy against the target pathogen

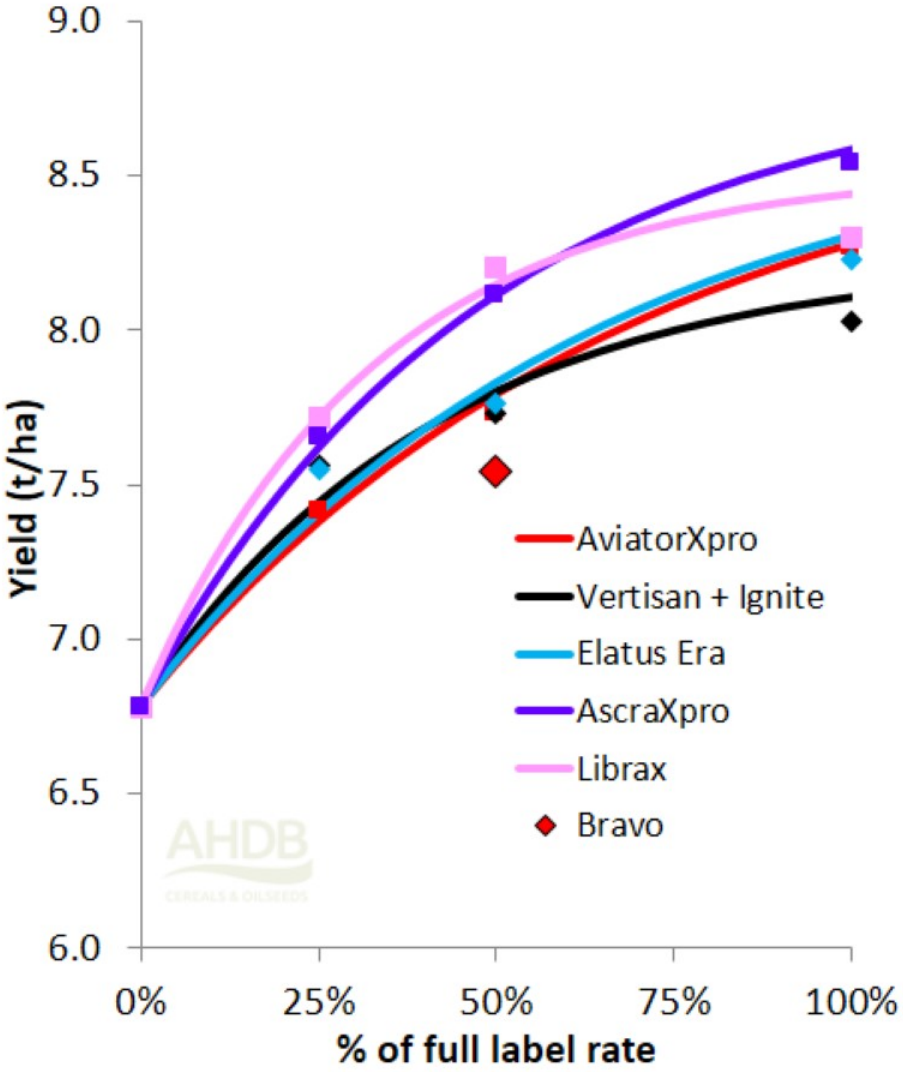


Septoria eradicant 2016 (4 trials)

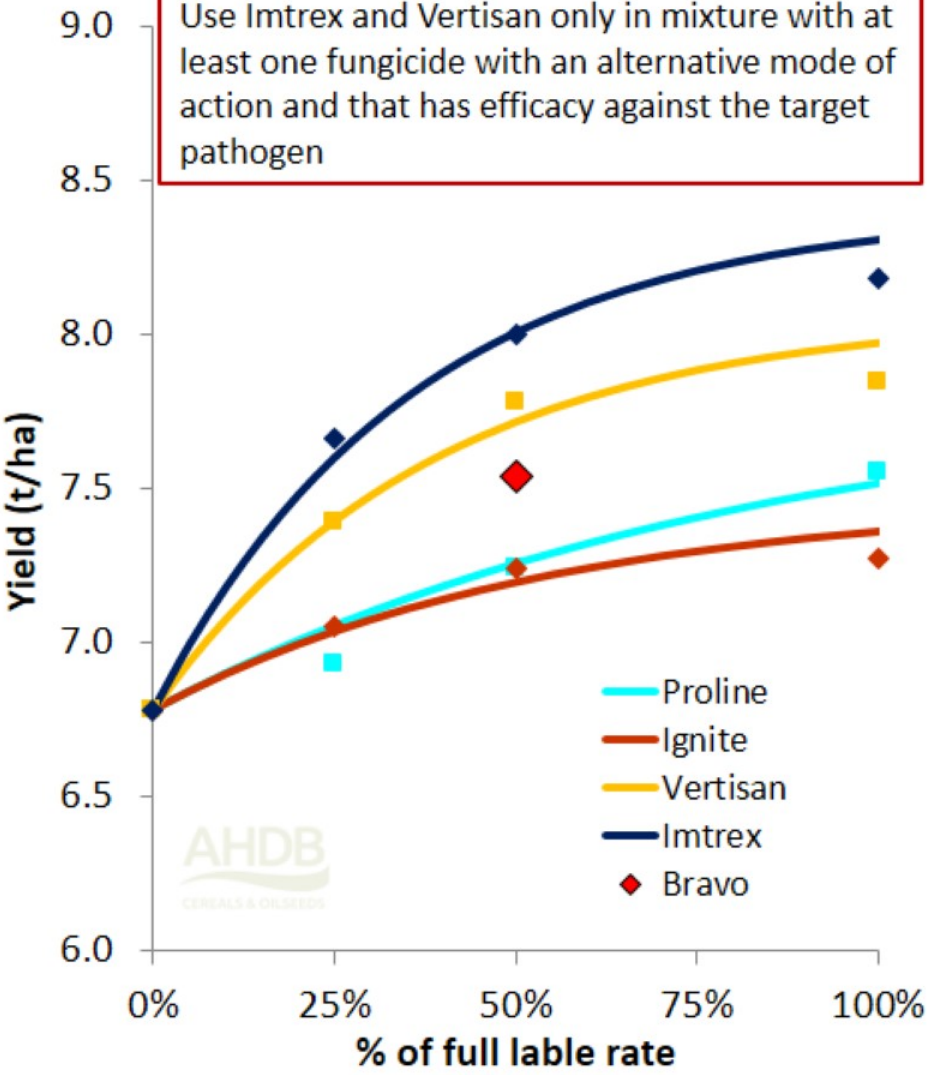




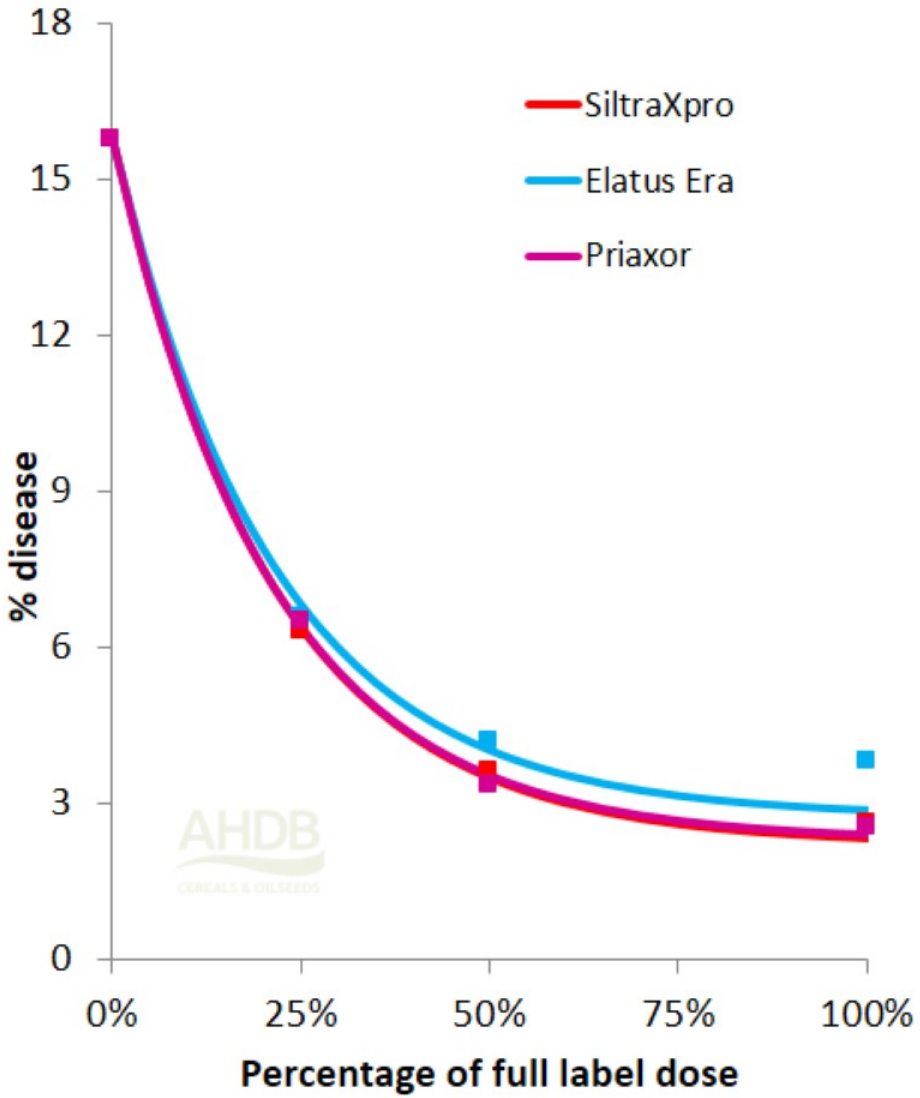
Septoria yield 2016 (7 trials)



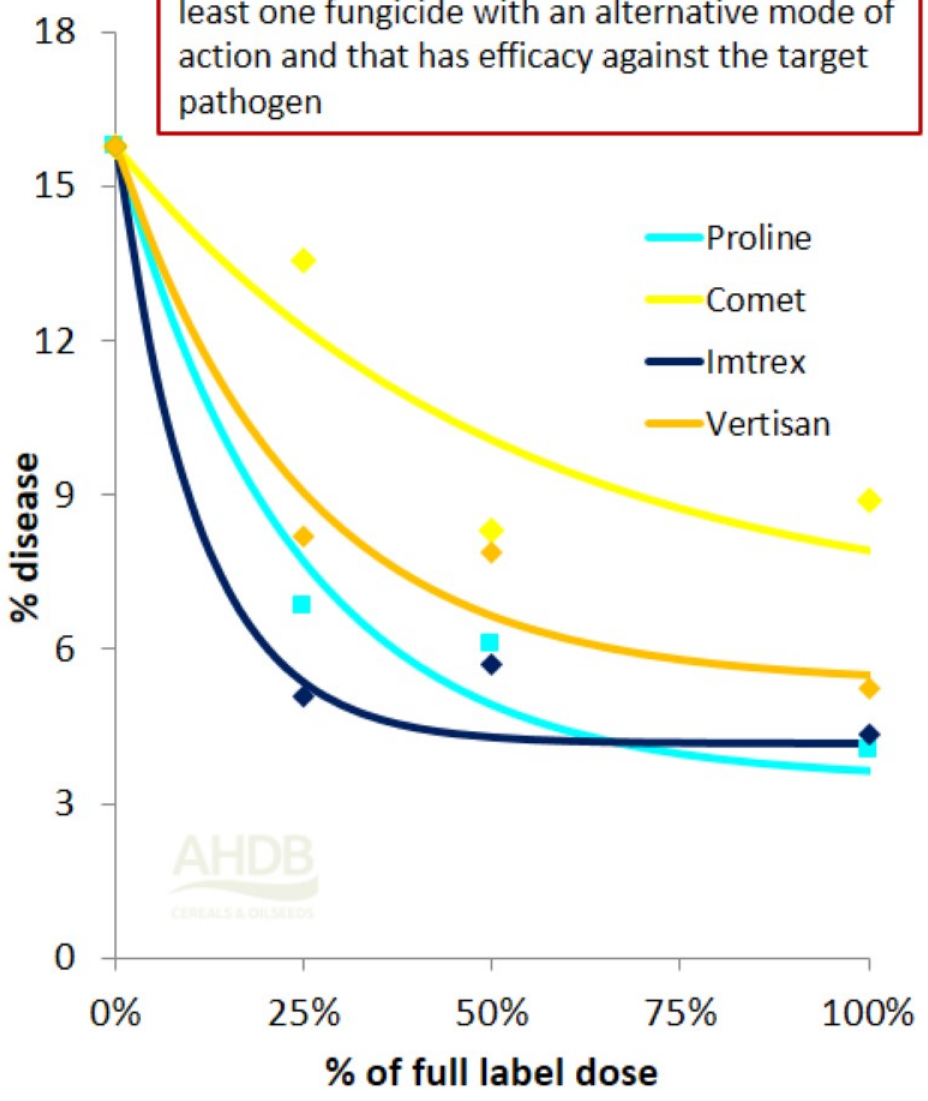
Use Imtrex and Vertisan only in mixture with at least one fungicide with an alternative mode of action and that has efficacy against the target pathogen



Rhynchosporium protectant 2016
(4 trials)

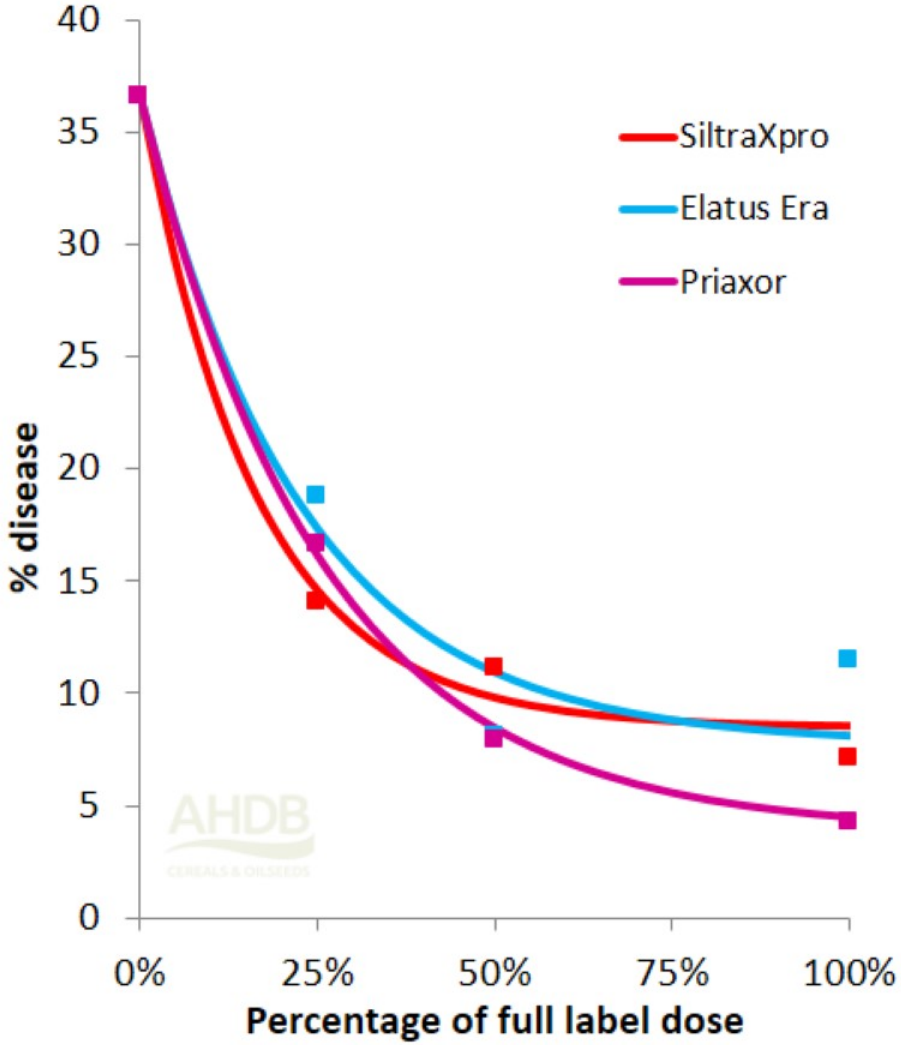


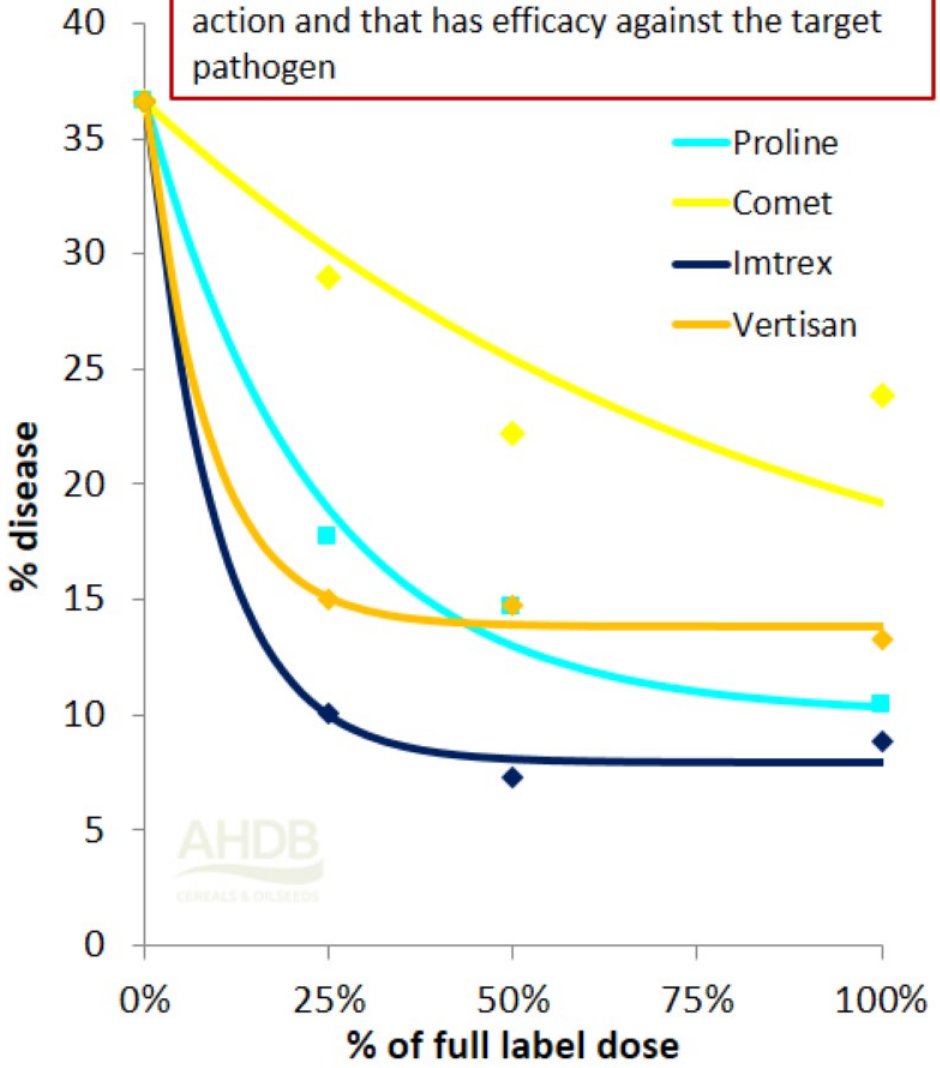
Use Imtrex and Vertisan only in mixture with at least one fungicide with an alternative mode of action and that has efficacy against the target pathogen



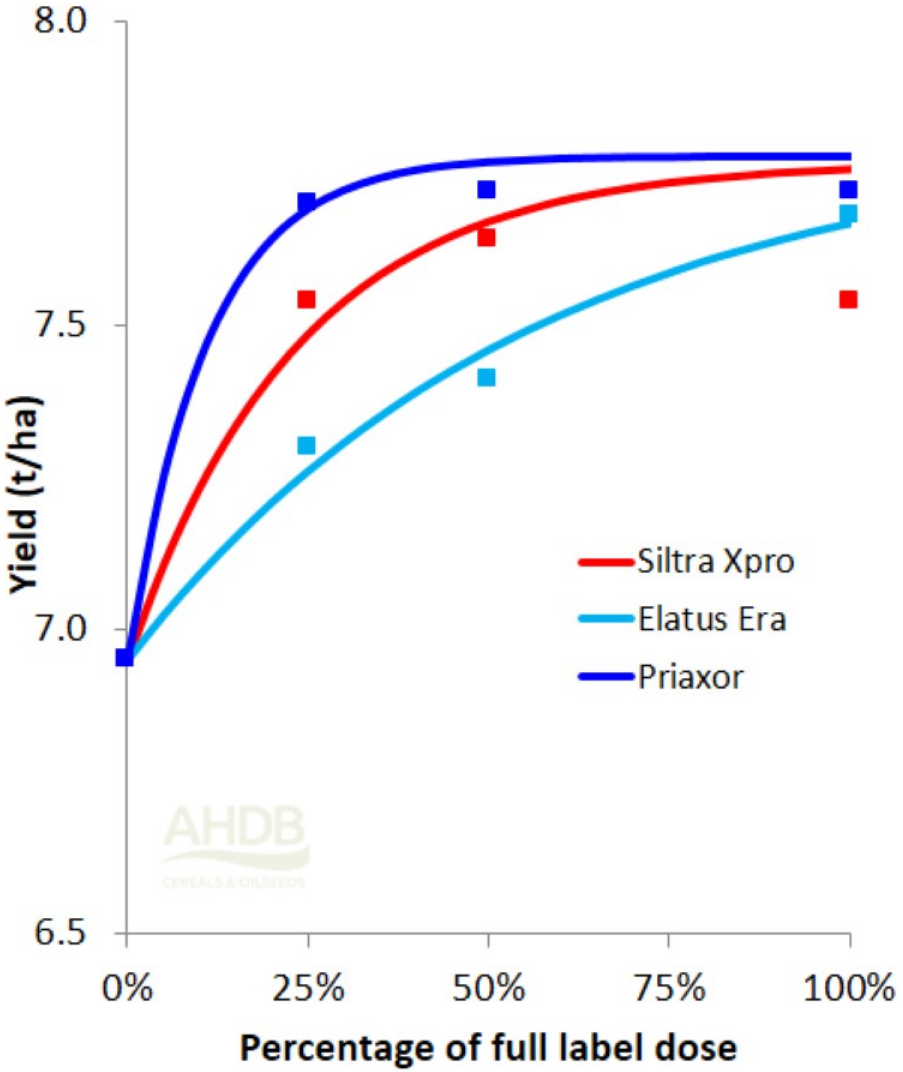
Rhynchosporium eradicant 2016
(3 trials)

Use Imtrex and Vertisan only in mixture with at least one fungicide with an alternative mode of action and that has efficacy against the target pathogen





Rhynchosporium yield 2016
(4 trials)



Use Imtrex and Vertisan only in mixture with at least one fungicide with an alternative mode of action and that has efficacy against the target pathogen