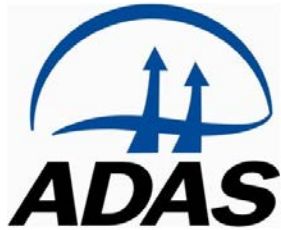


# Fungicide performance in wheat 2014



Note: These slides contain curves up to 100% label dose. Therefore, curves appear different to slides presented on the screen at the 2014 HGCA Agronomists' Conference but show the same results.

# Wheat Trials Summary 2014

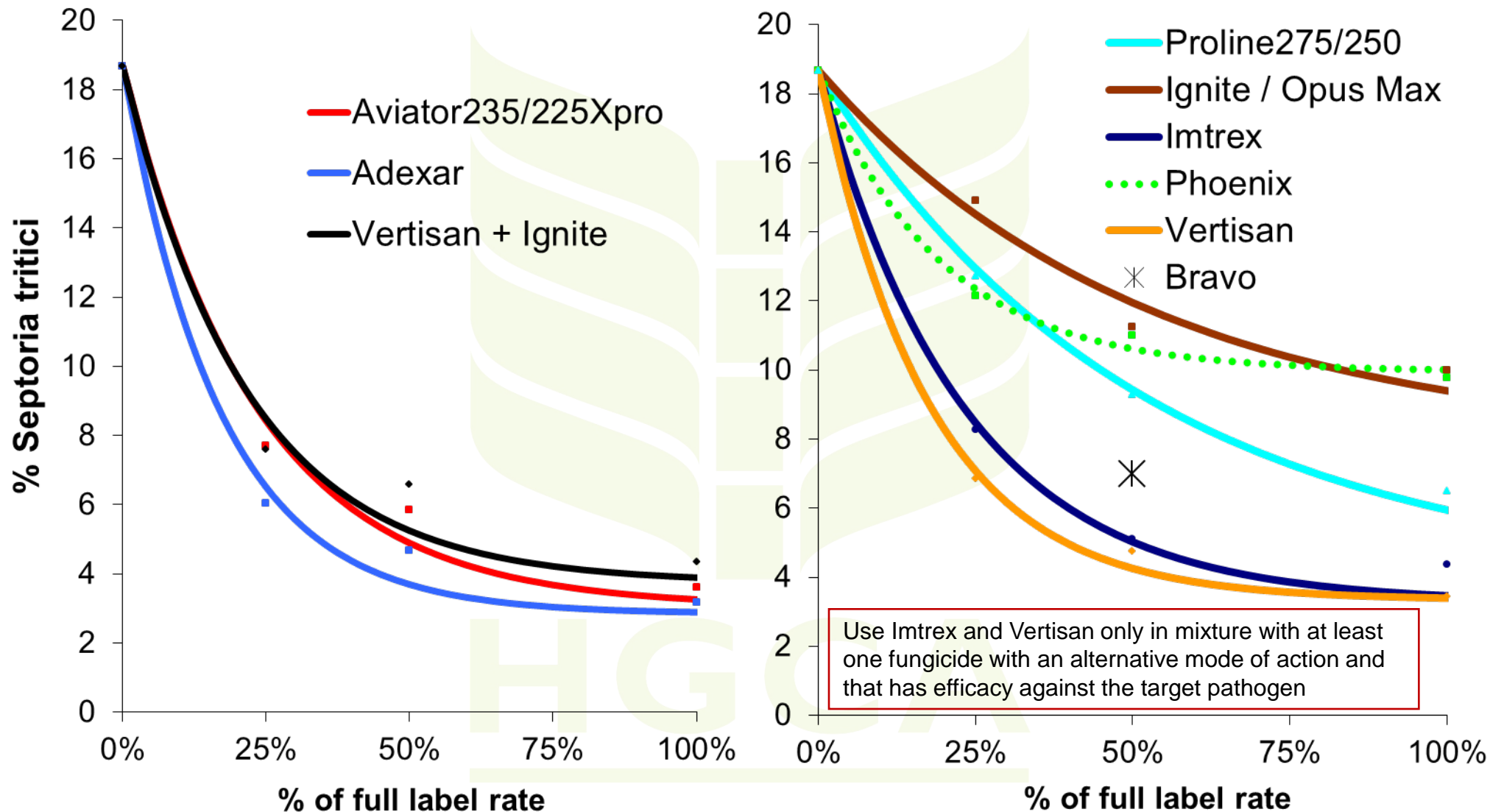


Target Disease	Site (Variety)	Organisation	Disease data	Other
<i>Septoria tritici</i> (T1 and T2 trials)	Fife, Scotland (Consort)	SRUC	<i>Septoria tritici</i>	Yield Spec Weight
<i>Septoria tritici</i> (T1 and T2 trials)	Sutton Scotney, Hants (KWS Sterling)	NIAB	<i>Septoria tritici</i>	Yield Spec Weight
<i>Septoria tritici</i> (Leaf 2, timing trial)	Rosemaund, Hereford (Consort)	ADAS	<i>Septoria tritici</i>	Yield Spec Weight
<i>Septoria tritici</i> (Leaf 2 trial)	Carlow, Ireland (Cordiale)	TEAGASC	<i>Septoria tritici</i>	Yield Spec Weight
Yellow rust (T1 trial)	Kings Lynn, Norfolk (Oakley)	ADAS	Yellow rust	Yield Spec Weight
Brown rust (T2 trial, inoculated in April)	Cambridge (Warrior)	NIAB	Brown rust	No significant differences
Powdery mildew	Fife, Scotland (Claire)	SRUC	No mildew ( <i>Septoria tritici</i> )	Yield Spec Weight

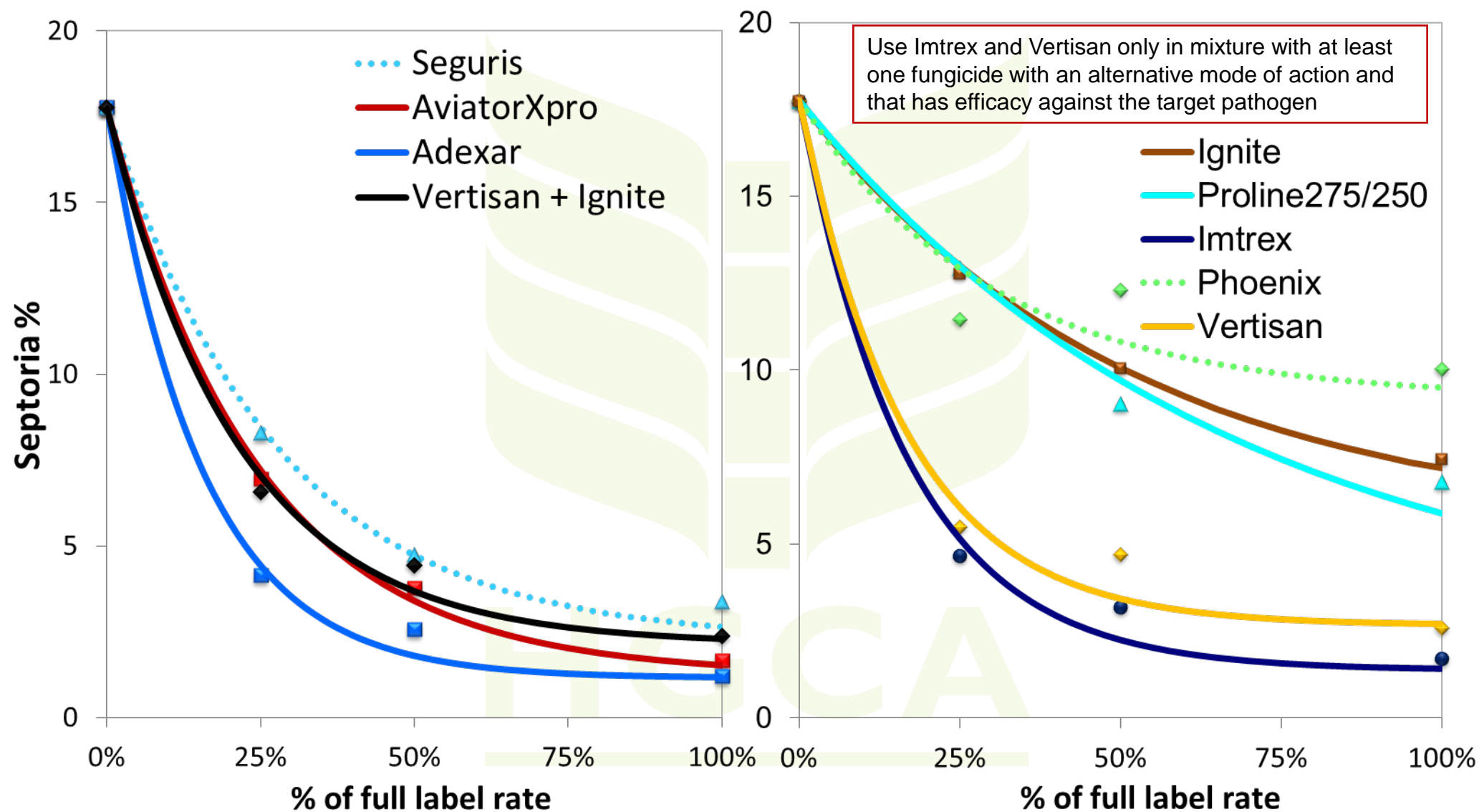
# Wheat Septoria Trial Treatments

Product	Active(s)	Full Dose (l/ha)	S Scotney and Fife	Rosemaund	Carlow*
Untreated			+	+	+
Ignite / Opus Max*	epoxiconazole	1.5	+	+	+
Proline 275 / 250*	prothioconazole	0.72 / 0.8*	+		+
Phoenix	folpet	1.5	+		+
Bravo	chlorothalonil	1.0 l/ha (half dose) only	+	+	+
Imtrex	fluxapyroxad	2.0	+	+	+
Vertisan	penthiopyrad	1.5	+	+	+
Aviator 235 / 225* Xpro	bixafen + prothioconazole	1.25	+	+	+
Adexar	epoxiconazole + fluxapyroxad	2.0	+	+	+
Seguris	isopyrazam + epoxiconazole	1.0		+	
Vertisan + Ignite	penthiopyrad + epoxiconazole	1.5 + 1.5	+	+	

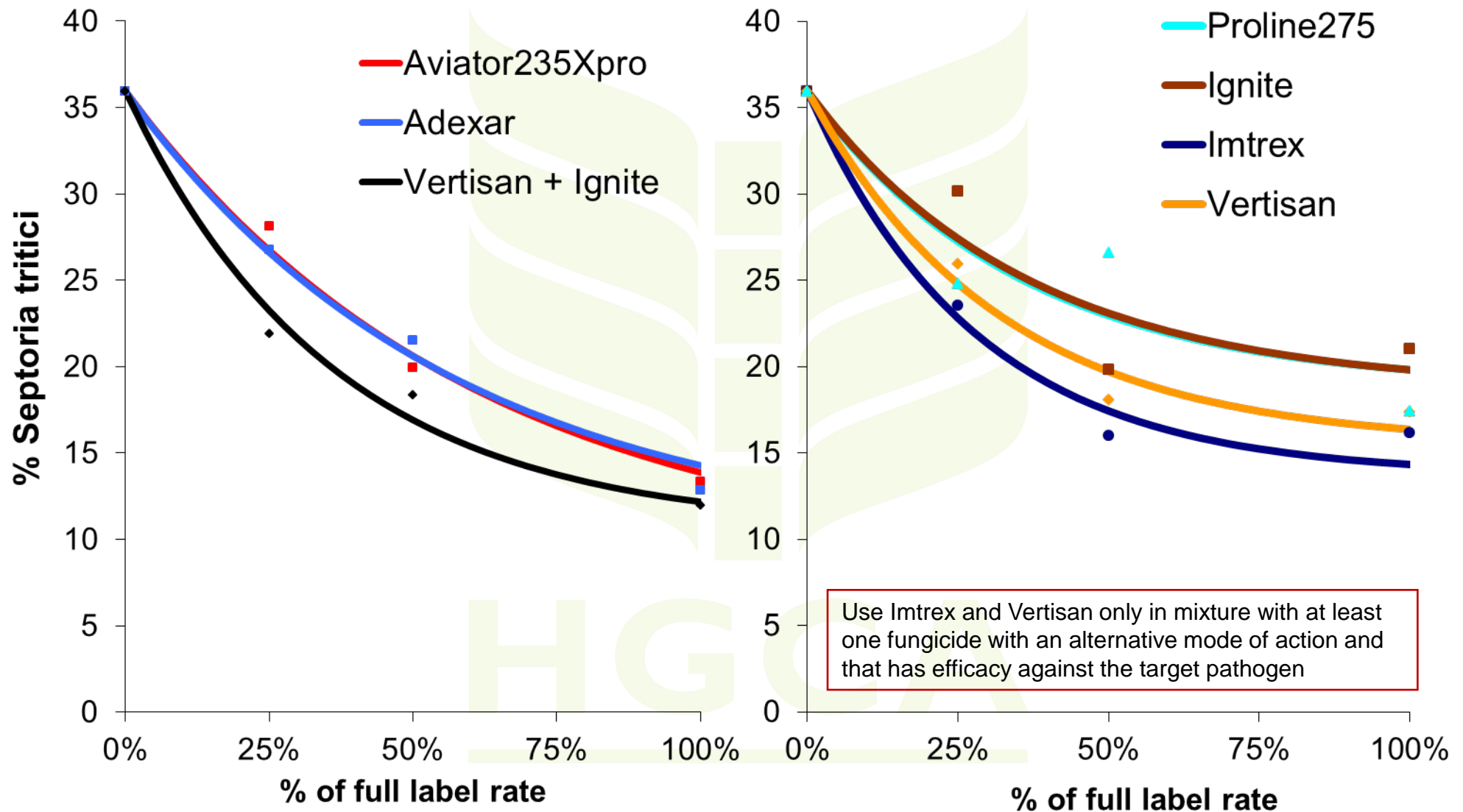
# Septoria: protectant (6 trial mean 2014)



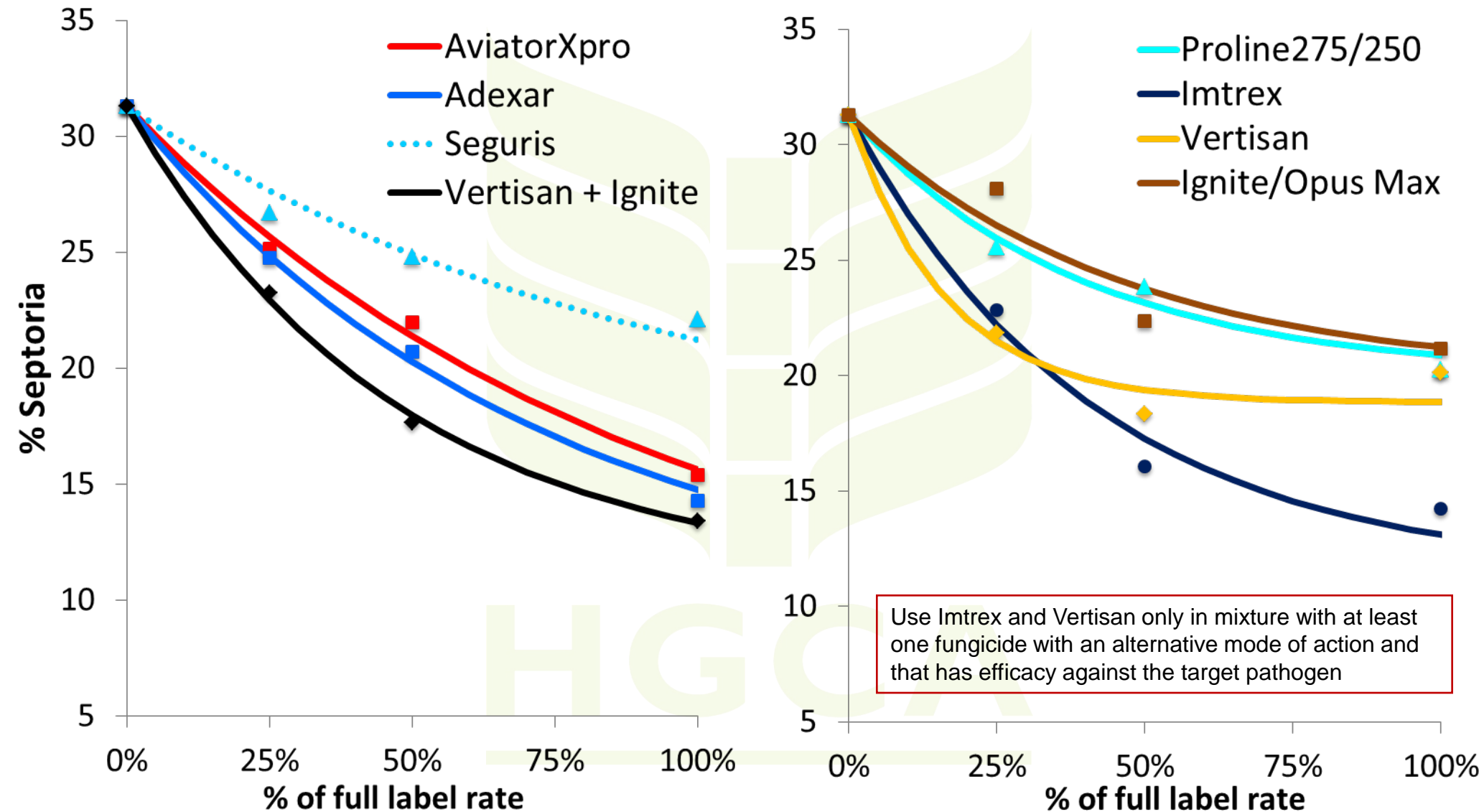
# Septoria: protectant (over year 2012/13/14)



# Septoria: eradicant (4 trial mean 2014)

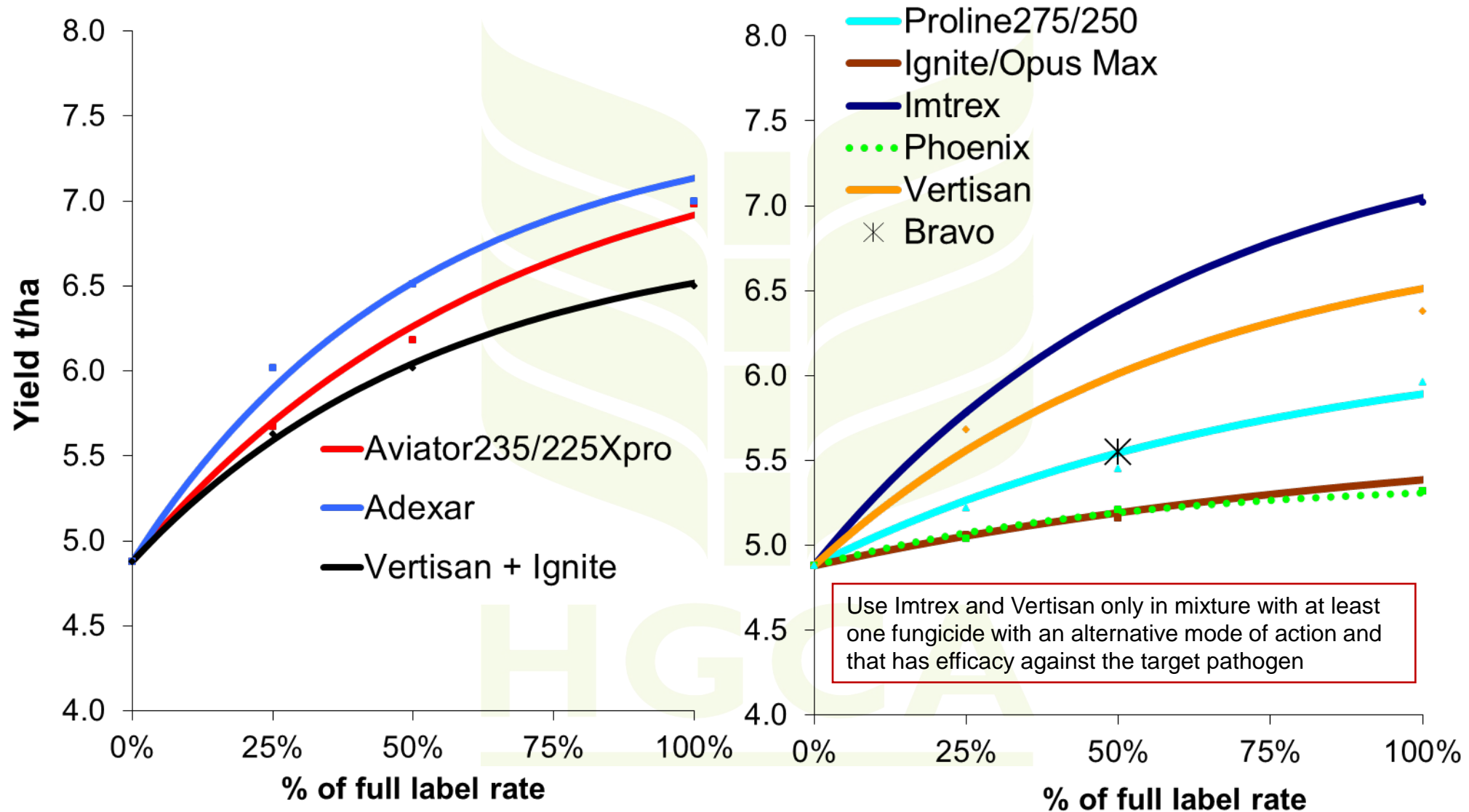


# Septoria: eradicant (over year 2012/13/14)

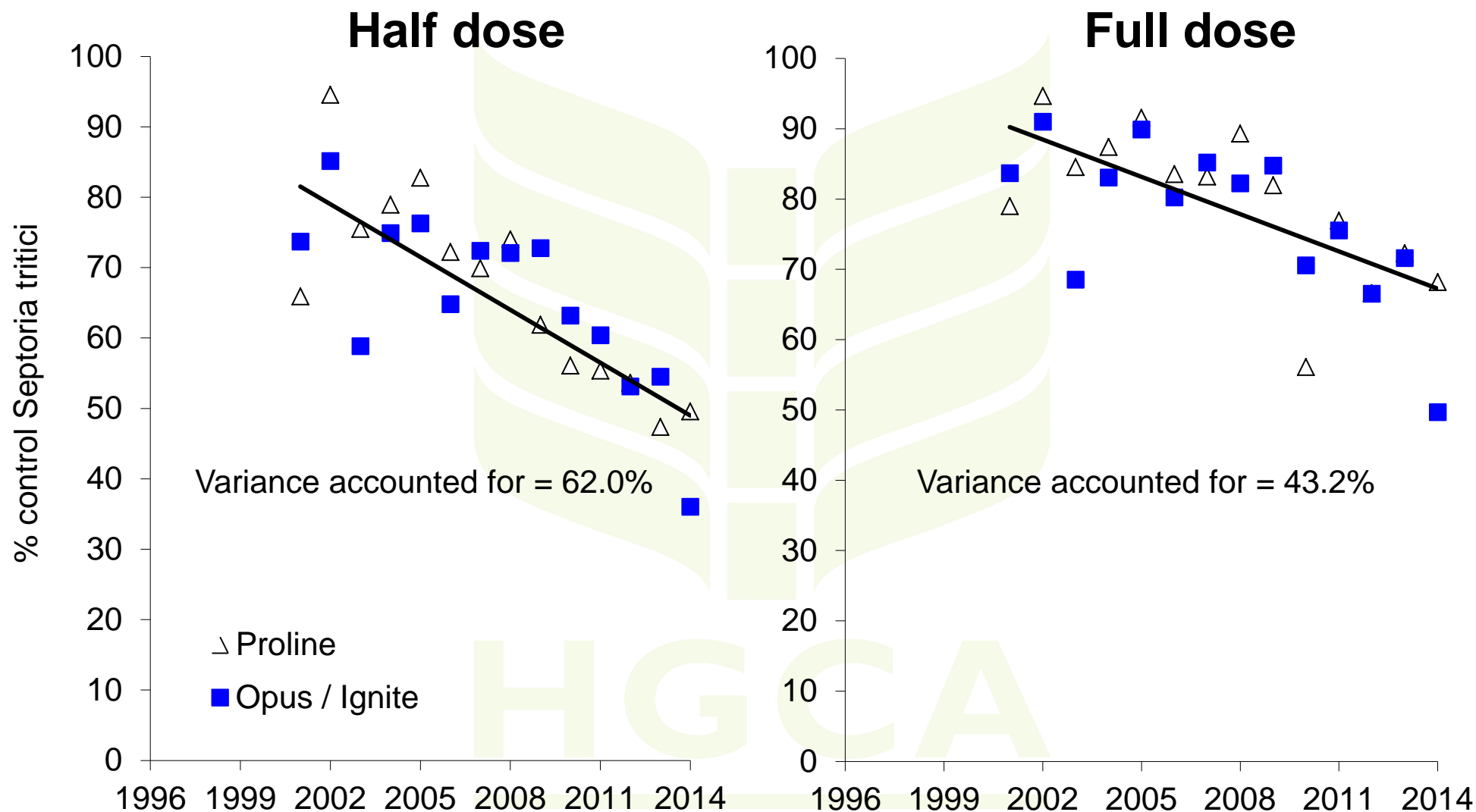




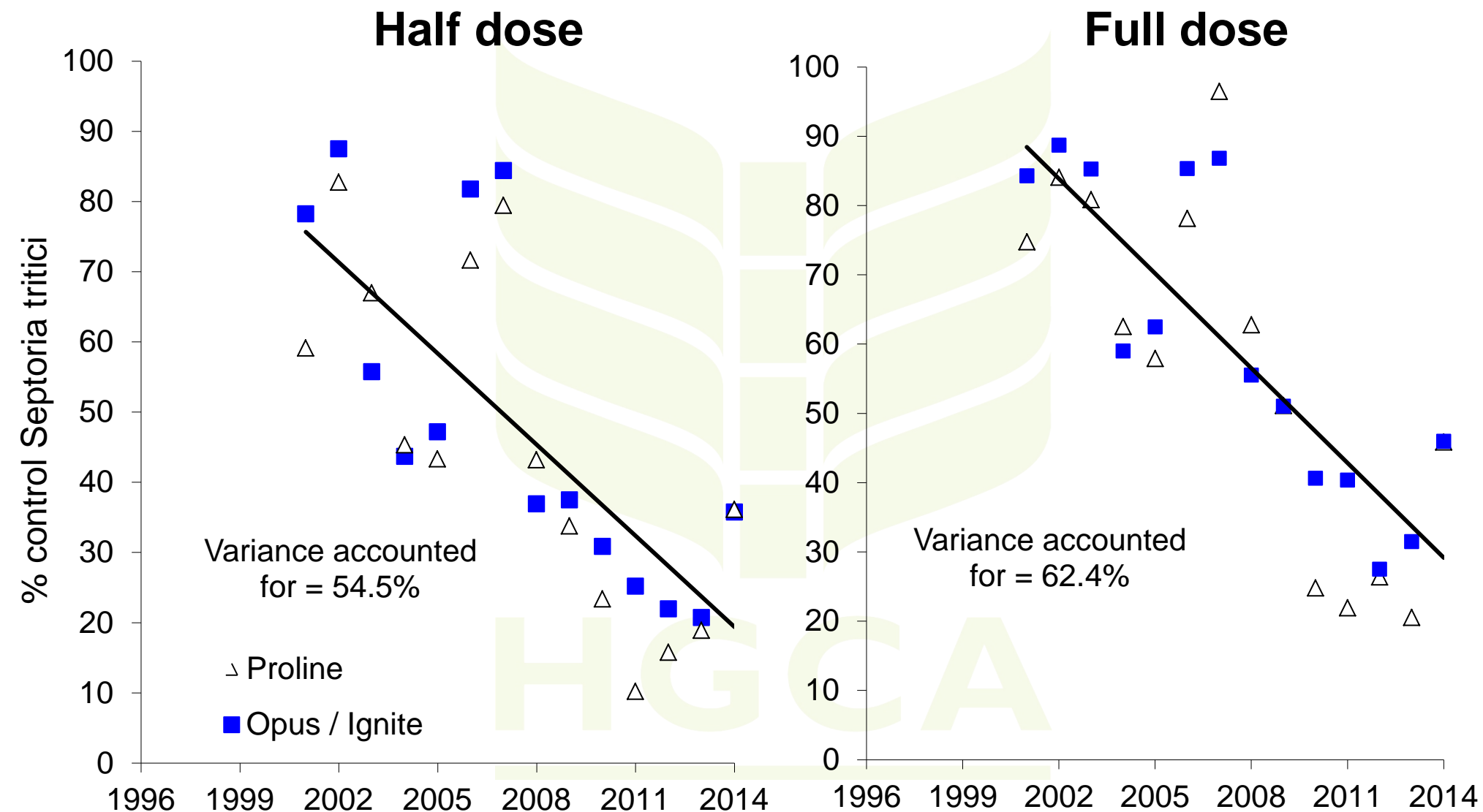
# Yield Summary: all 2014 Septoria trials (7)



# Trend in azole protectant activity over time



# Trend in azole eradicator activity over time

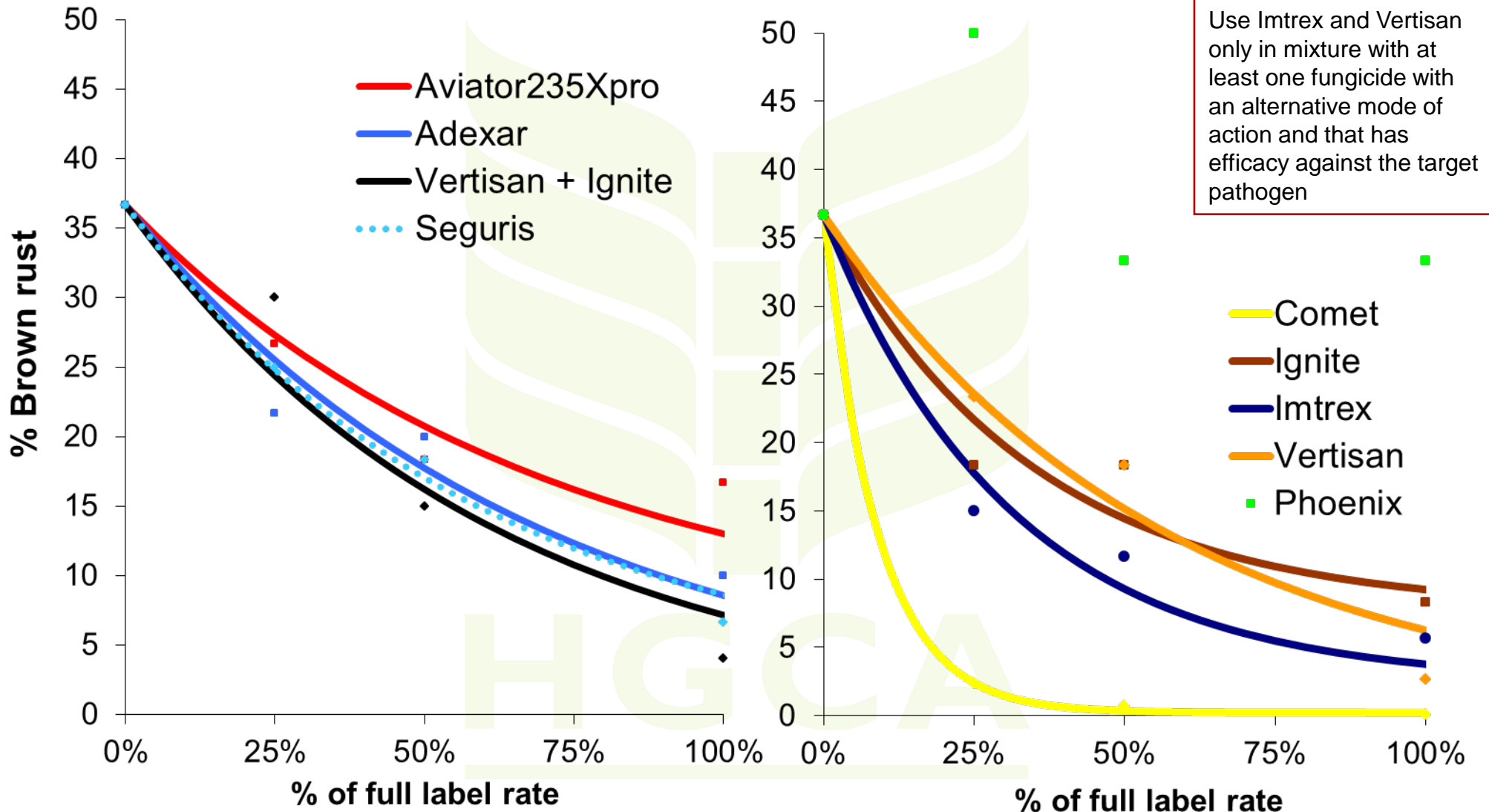


# Wheat Rust Trial Treatments

Product	Active(s)	Full Dose (l/ha)	Yellow Rust	Brown Rust
Untreated			+	+
Ignite	epoxiconazole	1.5	+	+
Comet 200	pyraclostrobin	1.25	+	+
Phoenix	folpet	1.5	+	+
Imtrex	fluxapyroxad	2.0	+	+
Vertisan	penthiopyrad	1.5	+	+
Aviator 235 Xpro	bixafen + prothioconazole	1.25	+	+
Adexar	epoxiconazole + fluxapyroxad	2.0	+	+
Seguris	epoxiconazole + isopyrazam	1.0	+	+
Vertisan + Ignite	penthiopyrad + epoxiconazole	1.5 + 1.5	+	+

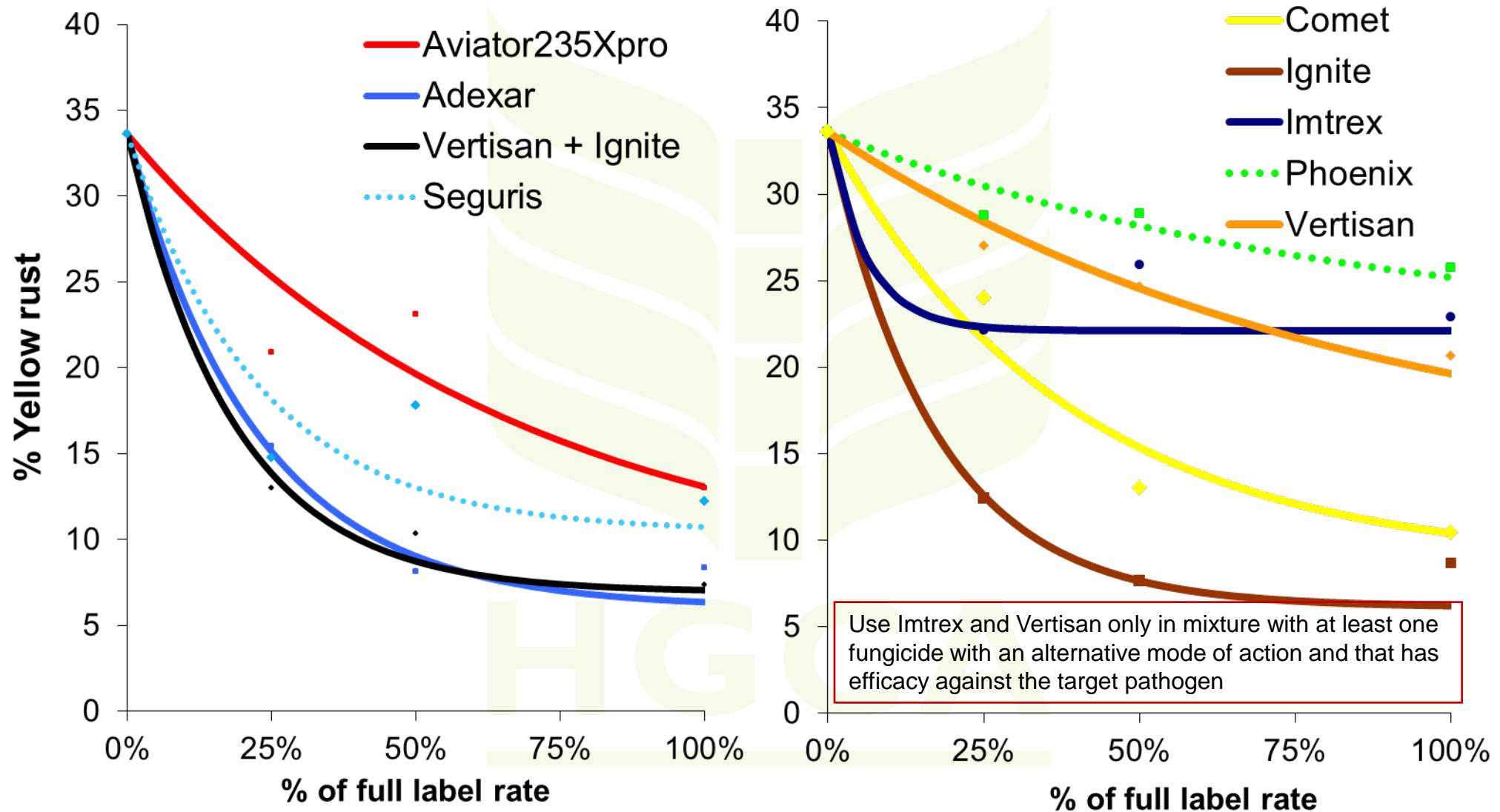
# Brown Rust (Cambridge 2014)

Note: brown rust is not on the Phoenix label

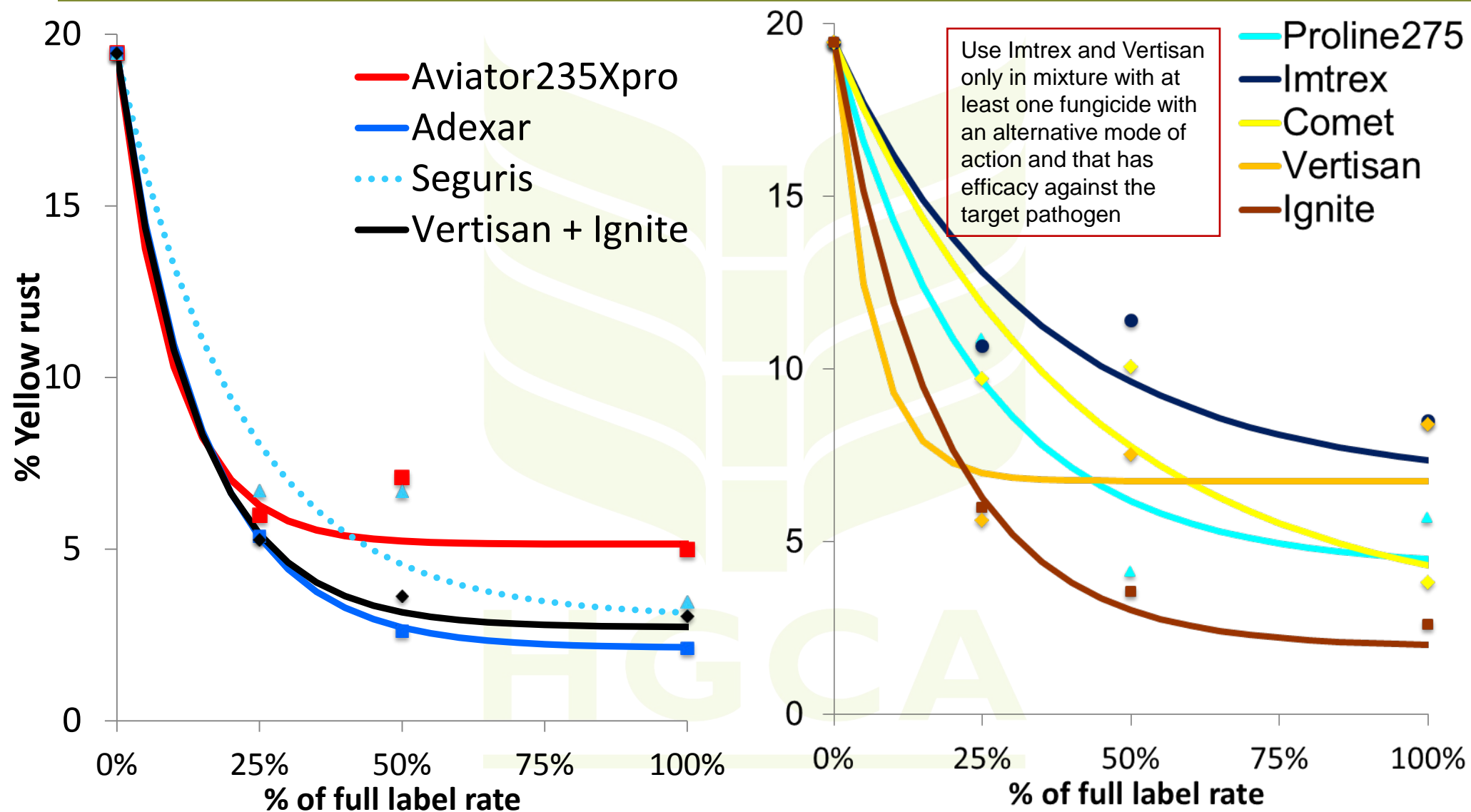


# Yellow Rust (Kings Lynn 2014)

Note: yellow rust is not on the Phoenix label



# Yellow rust (over year 2012/13/14)



# Conclusions: Septoria

- High disease pressure in 2014 giving good protectant and eradicant data, and yield responses
- Differences between Proline and Ignite seen only in protectant activity. Considered unlikely to represent shift in relative efficacy
- Solo SDHI's Vertisan and Imtrex highly active on Septoria tritici
- But ALWAYS use SDHIs in mix with effective partner(s)
- SDHI /azole mixtures Adexar, Aviator & Vertisan + Ignite closely matched for septoria control, and superior to solo SDHIs
- Multisites Bravo and Phoenix remain valuable as protectants



# Conclusions: Rusts

- Vertisan and Imtrex showed activity on both rusts, but more effective on brown rust
- Phoenix had no effect on Brown rust but low level of activity on yellow rust (neither disease is currently on the label)
- Comet remains highly effective against brown rust, and Ignite most effective against yellow rust
- SDHI/azole mixtures more robust than solo SDHIs across yield and overall disease

# Fungicide Performance 2015: What's New?



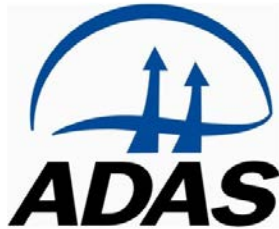
- New partner:



- Oilseed rape, wheat and barley now form a single project
- Wheat: inoculated brown rust trial and inoculated fusarium trial
- Barley: no brown rust trial
- Oilseed rape: additional light leaf spot trial (south-west location)



# Fungicide performance in barley 2014



Note: These slides contain curves up to 100% label dose. Therefore, curves appear different to slides presented on the screen at the 2014 HGCA Agronomists' Conference but show the same results.

# Barley Trials Summary 2014

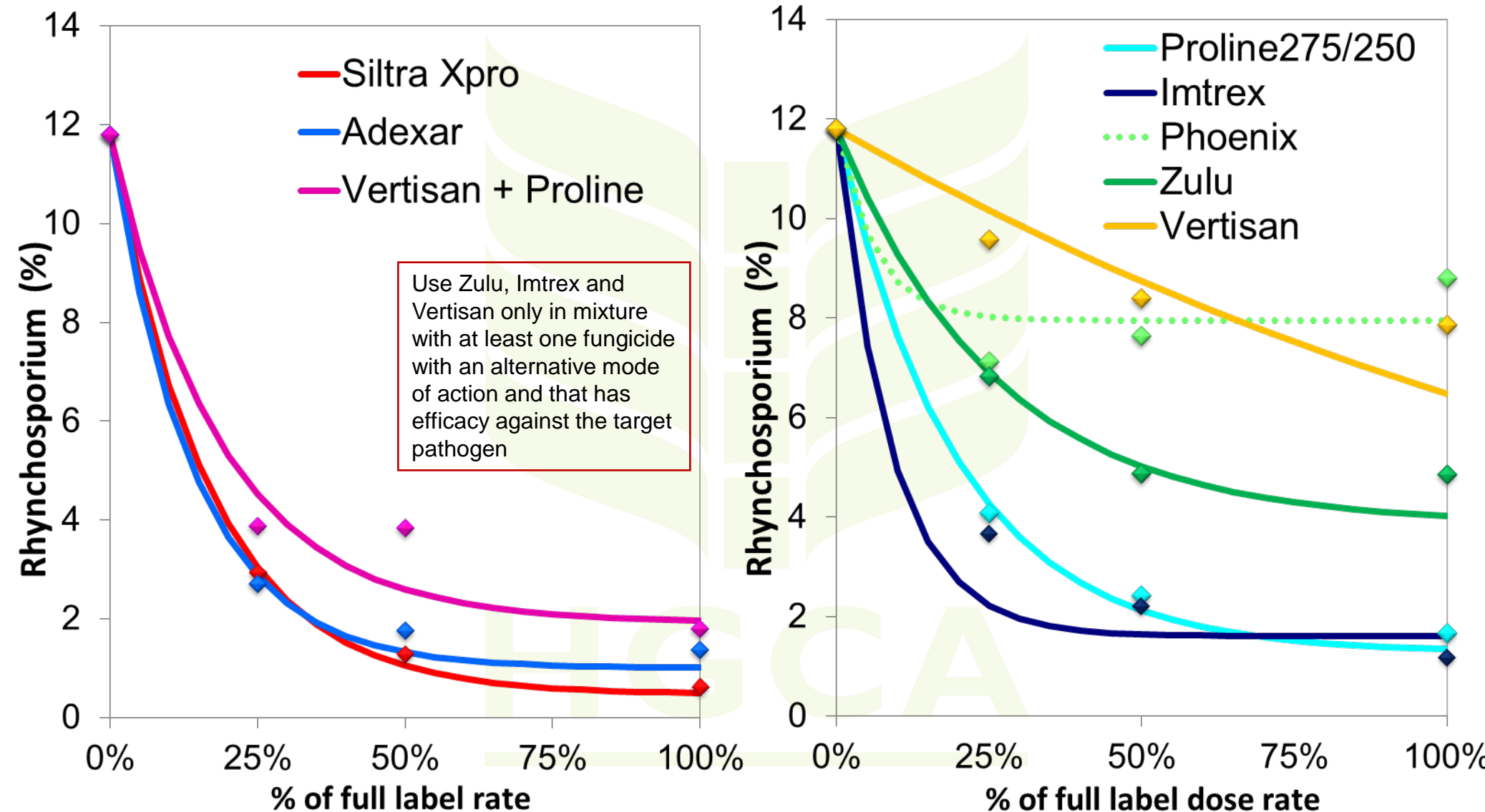
Target Disease	Site (Variety)	Organisation	Disease data	Other data
Rhynchosporium (Winter Barley)	Lanark, Scotland (Saffron)	SRUC	Rhynchosporium (Mildew)	Yield
Rhynchosporium (Winter Barley)	Cardigan, Wales (Cassia)	ADAS	Rhynchosporium	Yield
Rhynchosporium (Winter Barley)	Carlow, Ireland (Saffron)	TEAGASC	Rhynchosporium	Yield
Net Blotch (Winter Barley)	High Mowthorpe, N Yorks (Cassata)	ADAS	Net blotch (Brown rust)	Yield Spec Weight
Net Blotch (Winter Barley)	Morley, Norfolk (Cassata)	NIAB	Net blotch (Brown rust)	Yield Brackling
Brown rust (Winter Barley)	Caythorpe, Lincs (Escadre)	NIAB	Brown rust	Yield, Spec Wt, Brackling
Powdery mildew (Winter Barley)	Midlothian, Scotland (Cassata)	SRUC	Mildew (L4)	Yield
Ramularia (Spring Barley)	Midlothian, Scotland (Prestige)	SRUC	No ramularia (B rust, Rhyncho)	Yield

# Barley Trial Treatments

Product	Active(s)	Full Dose (l/ha)	Rhyncho Trials	Net Blotch Trials	Brown Rust Trial
Untreated			+	+	+
Proline 275/250	prothioconazole	0.72/0.80	+	+	+
Comet 200	pyraclostrobin	1.25		+	+
Phoenix	folpet	1.5	+		
Imtrex	fluxapyroxad	2.0	+	+	+
Zulu	isopyrazam	1.0	+	+	+
Vertisan	penthiopyrad	1.5		+	
Siltra Xpro	bixafen + prothioconazole	1.0	+	+	+
Adexar	epoxiconazole + fluxapyroxad	2.0	+		+
Vertisan + Proline 275	penthiopyrad + prothioconazole	1.5 + 0.72	+	+	+

# Rhynchosporium: protectant (2012/2013/2014 over-year)

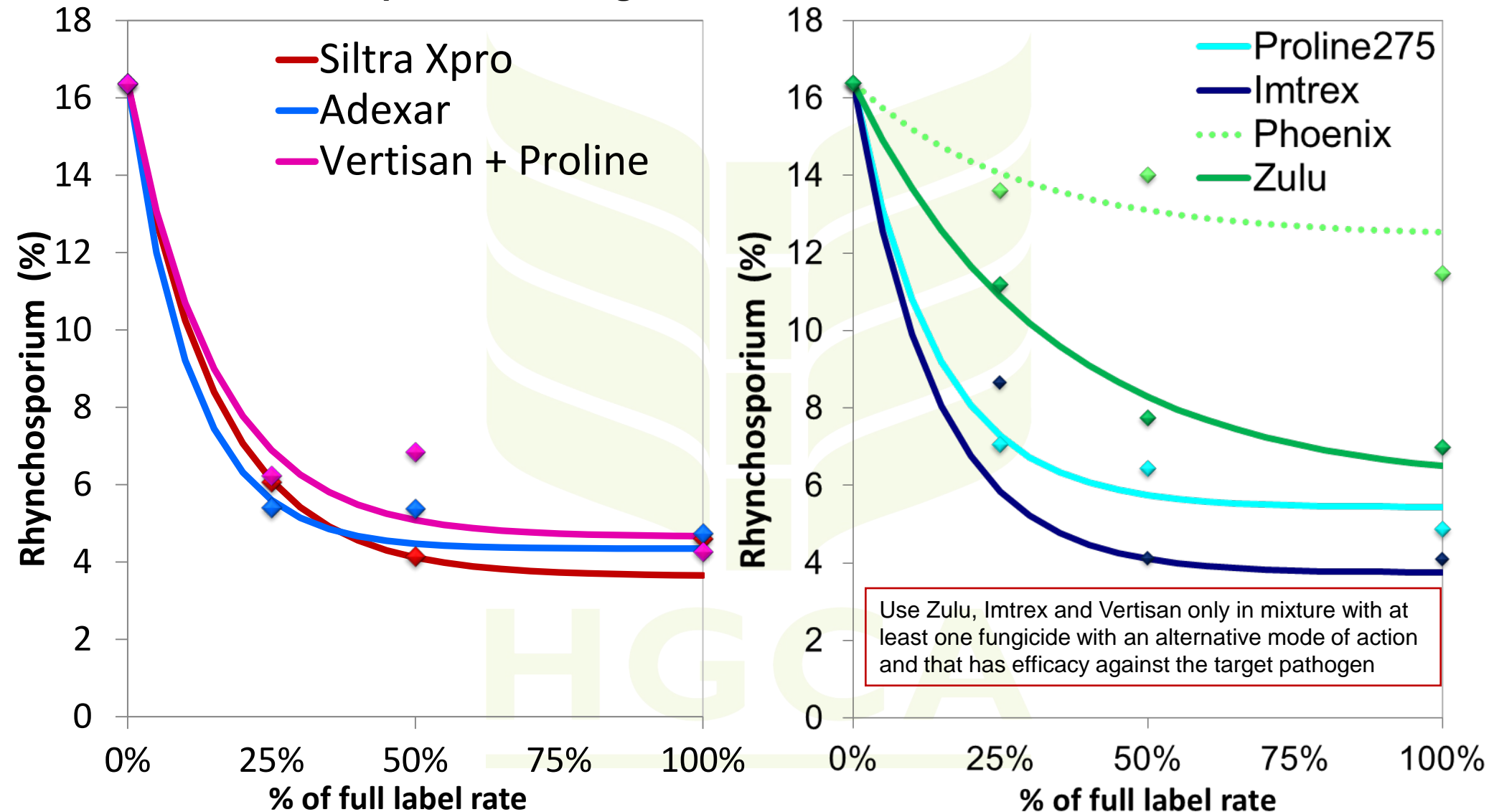
Note: Unshown 12% Imtrex dose point accounts for line fit



# Rhynchosporium: eradicator (2012/2013/2014 over-year)

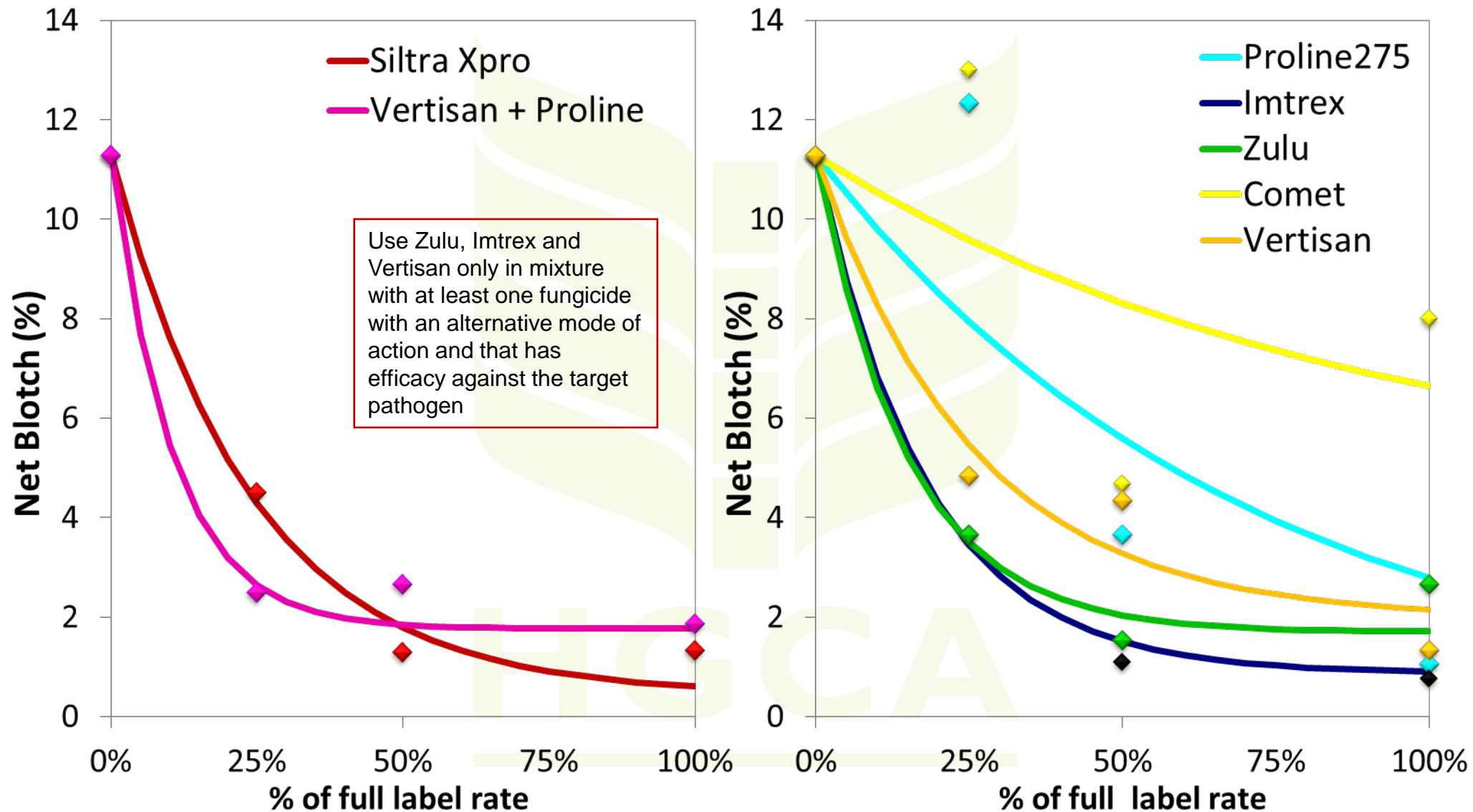
Note: Unshown 12% Imtrex dose point accounts for line fit

Note: Phoenix is a protectant fungicide

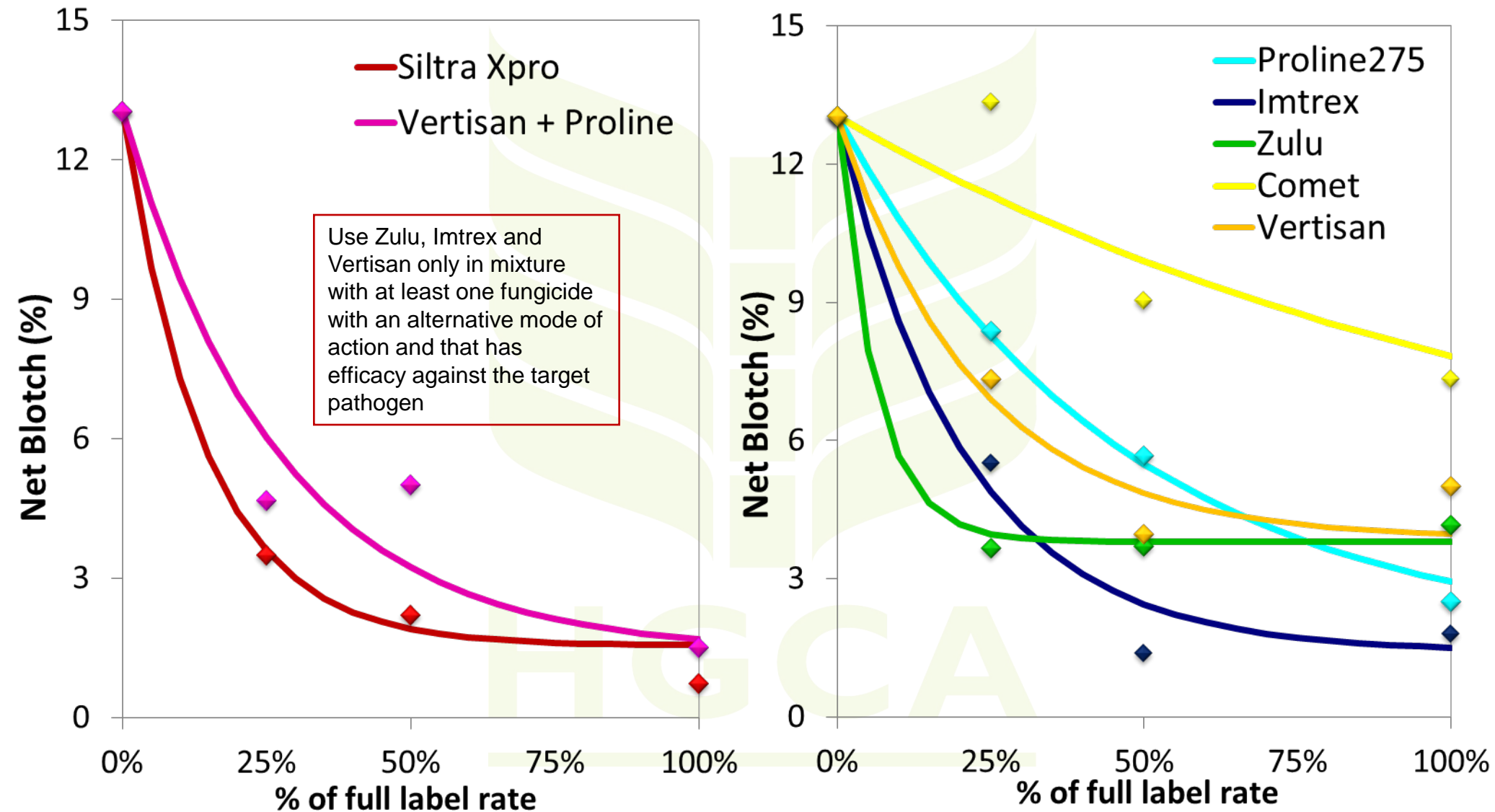




# Net blotch: protectant (H Mowthorpe 2014)

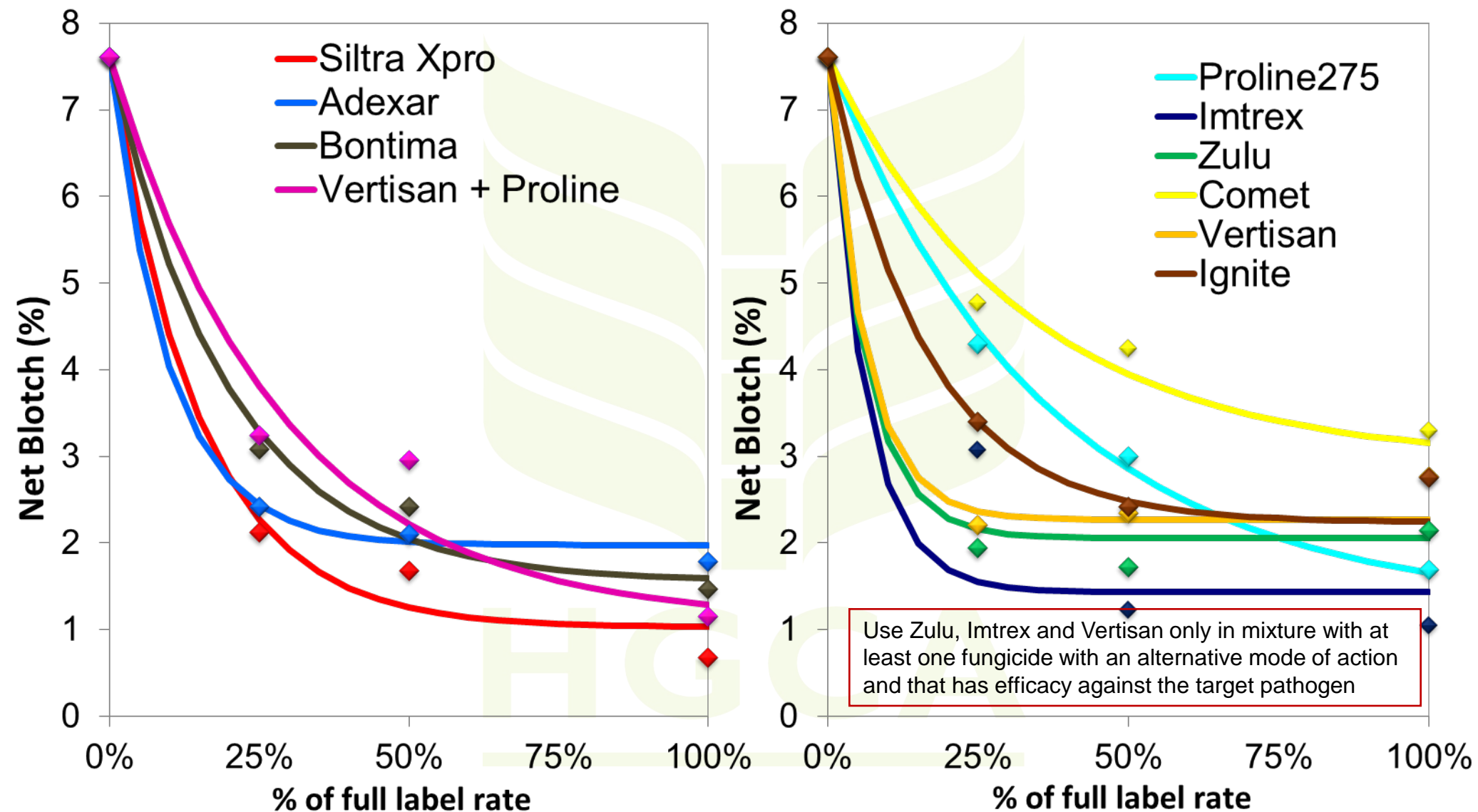


# Net blotch: eradicator (H Mowthorpe 2014)

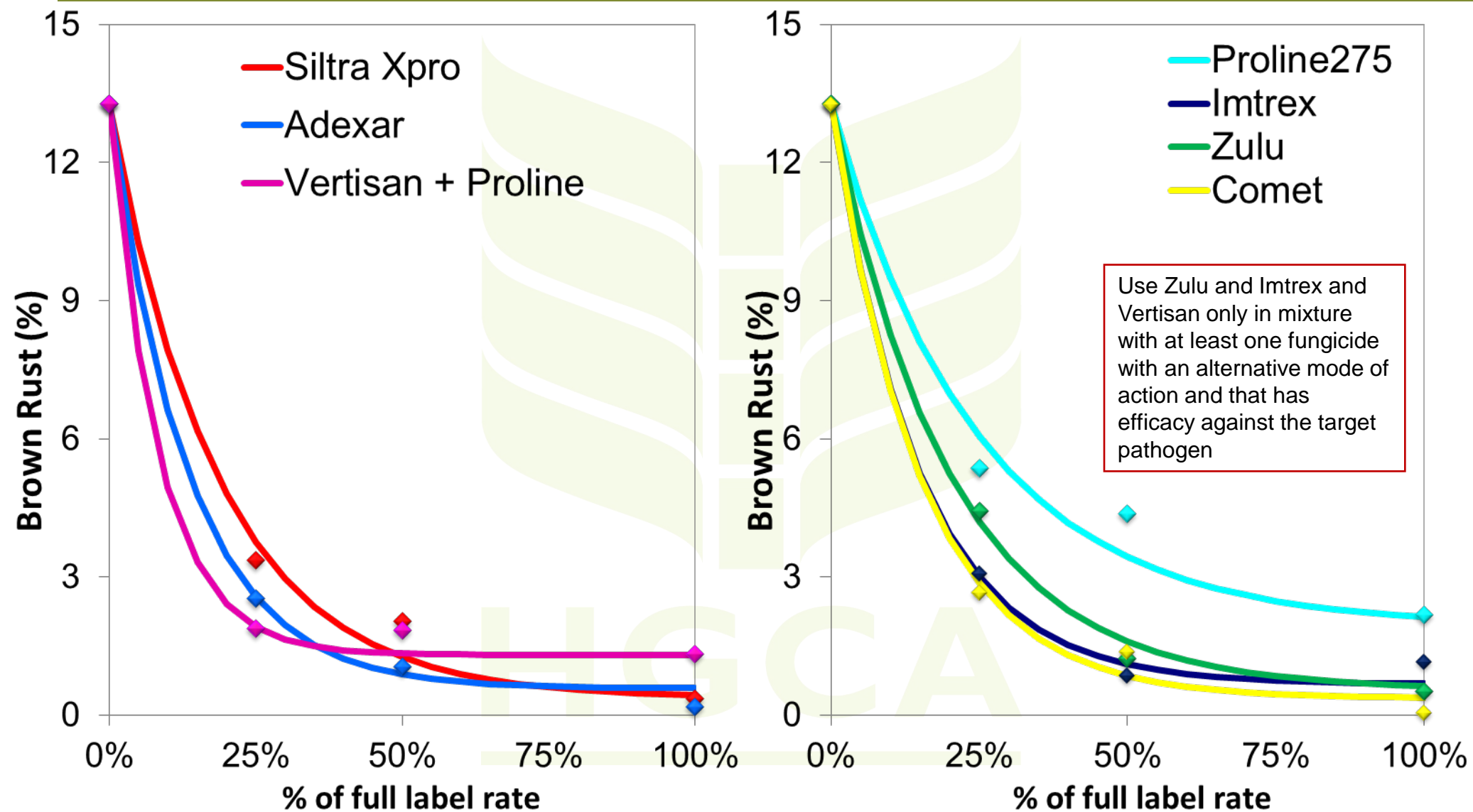


# Net blotch: eradicator (over-year 2012/14)

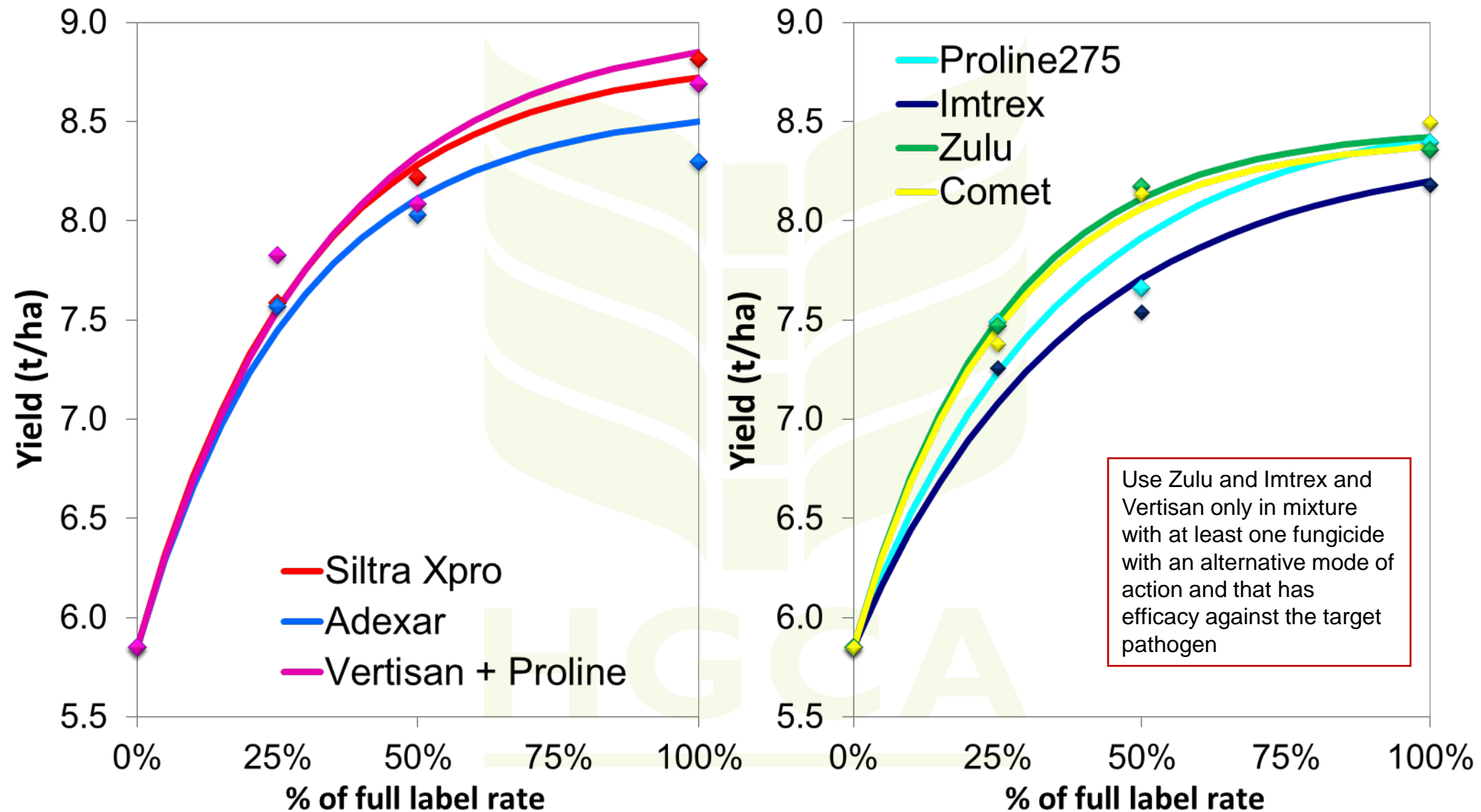
Note: Unshown 12% Intrex dose point accounts for line fit



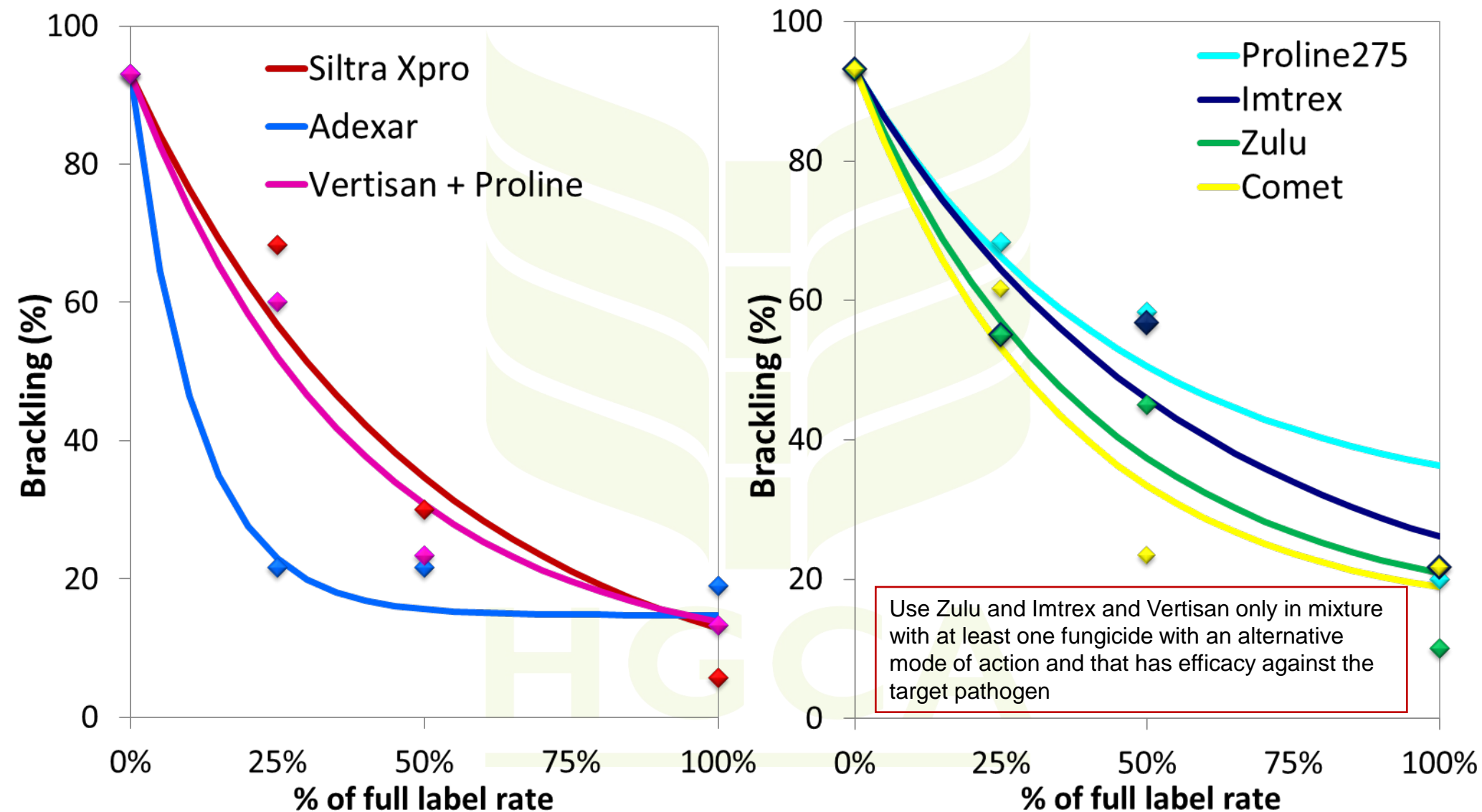
# Brown rust (Caythorpe 2014)



# Yield: Caythorpe 2014 (b rust + n blotch)



# Brackling: Caythorpe 2014 (b rust + n blotch)

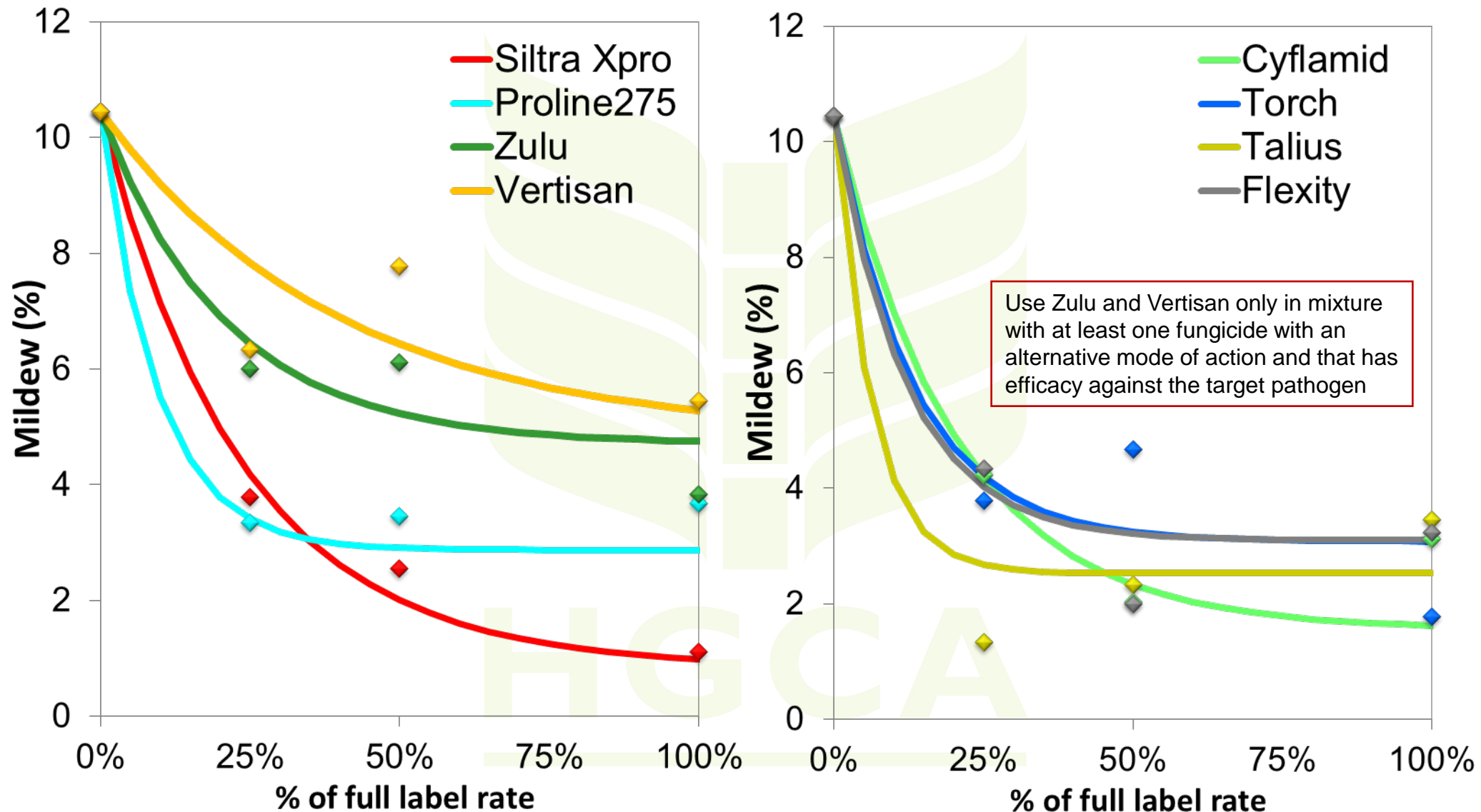


# Barley Mildew Trial Treatments

Product	Active(s)	Full Dose (l/ha)	Mildew Trial
Untreated			+
Proline 275	prothioconazole	0.72	+
Cyflamid	cyflufenamid	0.5	+
Flexity	metrafenone	0.5	+
Talius	proquinazid	0.25	+
Torch	spiroxamine	1.5	+
Vertisan	penthiopyrad	1.5	+
Zulu	isopyrazam	1.0	+
Siltra Xpro	bixafen + prothioconazole	1.0	+



# Mildew: Leaf 4 (Midlothian 2014)





# Conclusions

- More differentiation between SDHI actives:
  - Imtrex performed well, especially on rhynchosporium and net blotch
  - Zulu effective on brown rust but less active on rhynchosporium
  - Vertisan less active on net blotch than Imtrex
- Siltra Xpro consistent with previously but matched by Adexar/Imtrex
  - Vertisan + Proline weaker on rhynchosporium
- Comet less effective against net blotch at highest pressure site, but still performing well against brown rust
- Proline consistent with previous years, including mildew
- Third year confirms Phoenix ineffective against rhynchosporium
- Avoid over-reliance on SDHI + azole: other mixtures are available

# Fungicide Performance 2015: What's New?



- New partner:



- Oilseed rape, wheat and barley now form a single project
- Wheat: inoculated brown rust trial and inoculated fusarium trial
- Barley: no brown rust trial
- Oilseed rape: additional light leaf spot trial (south-west location)



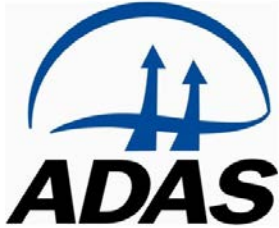
# Fungicide performance in oilseed rape 2014

**Stuart Knight**

Director of Crops & Agronomy, NIAB

**Always read product labels**, consider your local conditions and consult a professional agronomist, if necessary

# Fungicide performance partners



# Oilseed rape: trials summary

Target disease	Site (variety)	Organisation
Phoma (2-spray*)	Boxworth, Cambs (2013-14 cv. Catana)	ADAS
	Terrington, Norfolk (2013-14 cv. Catana)	ADAS
Light leaf spot (2-spray**)	Malton, North Yorks (2013-14 cv. PR46W21)	ADAS
	Edinburgh (2013-14 cv. Castille)	SRUC
Sclerotinia stem rot (single spray)	Herefordshire (2013-14 low disease)	ADAS
	Kent / Berkshire (2013-14 low disease)	ADAS

\*10-20% plants affected, followed by 4–10 weeks when similar level of re-infection evident

\*\* Autumn (November), followed by pre or early stem extension (February / March)

# Phoma and light leaf spot treatments

Product	Active(s)	Full dose (l/ha)	Phoma	Light leaf spot
Untreated			+	+
Proline 275	prothioconazole	0.63	+	+
Prosaro	prothioconazole + tebuconazole	1.00	+	+
Orius 20EW	tebuconazole	1.25	+	+
Orius P	prochloraz + tebuconazole	1.50		+
Sunorg Pro	metconazole	0.80	+	
Refinzar***	penthiopyrad + picoxystrobin	1.0	+	

\*\*\* Refinzar tested as a 2-spray programme in common with other phoma treatments  
BUT the label restricts use to one application per season (at full dose)

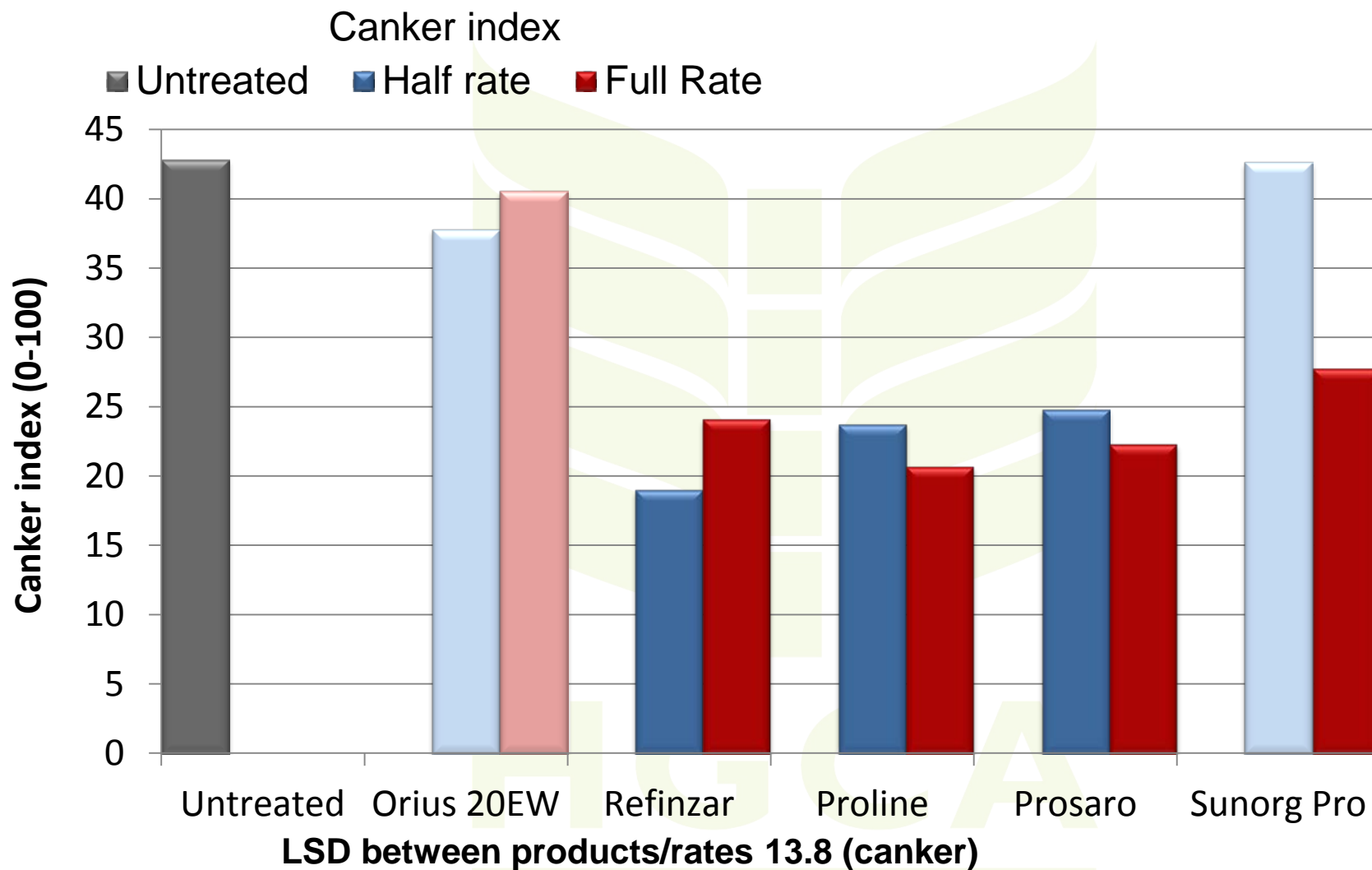
# Phoma leaf spot and stem canker





# Phoma: canker index

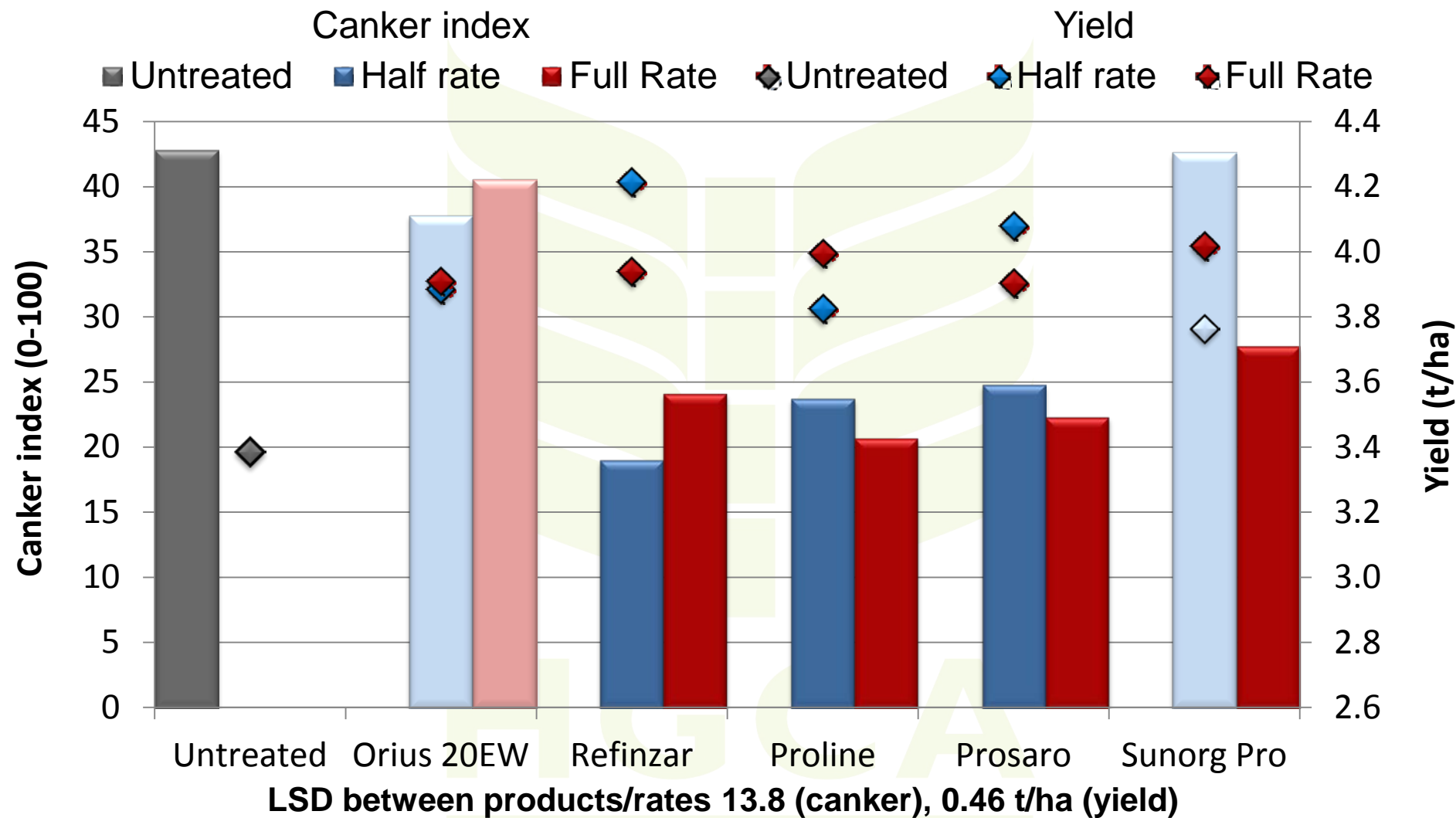
## (Boxworth, Cambs 2014: curative situation)



Pale bars not significantly different from untreated

# Phoma: canker index and yield

## (Boxworth, Cambs 2014: curative situation)

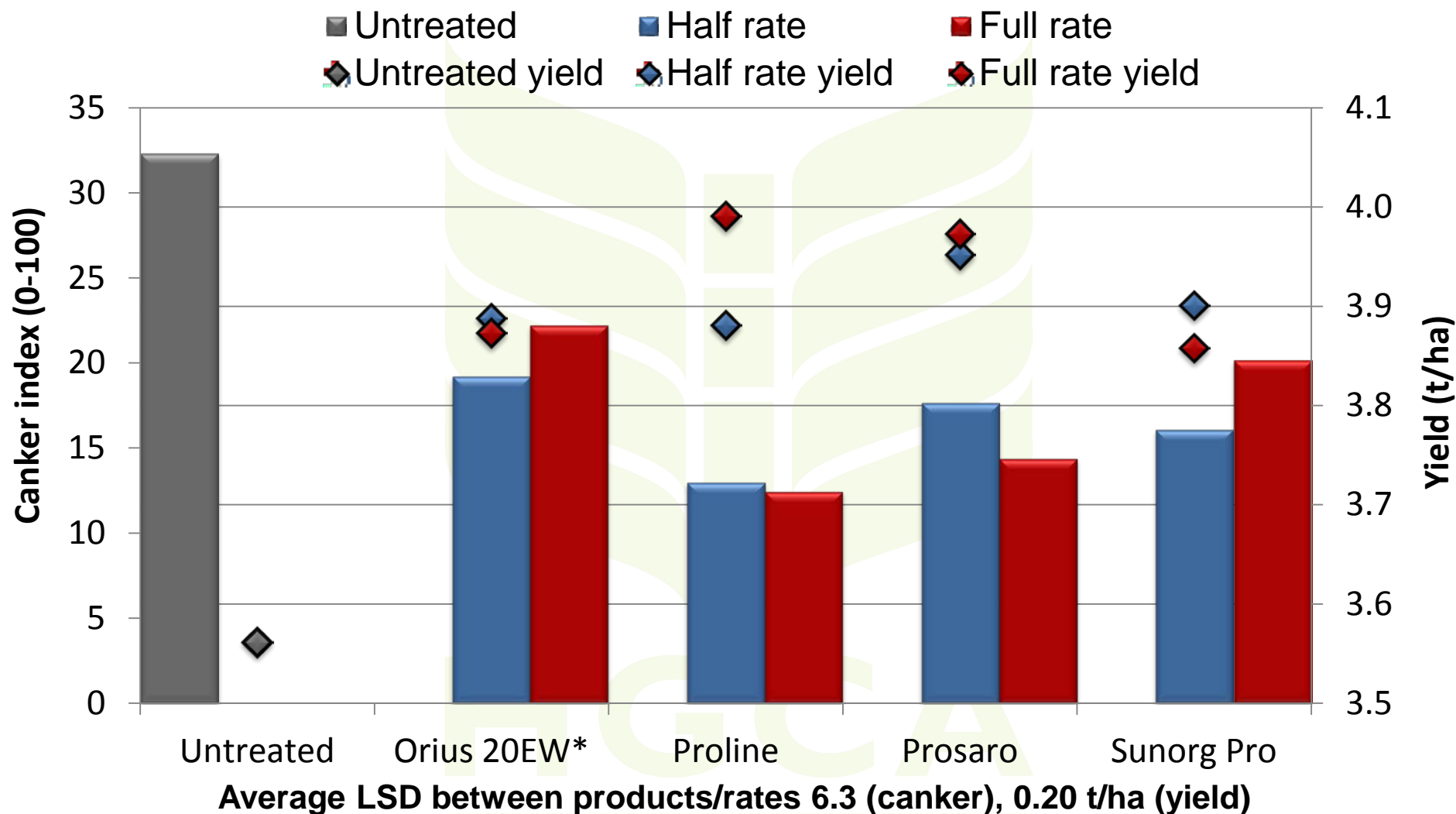


Pale points not significantly different from untreated

Average response to 2 half-rate sprays = 0.55 t/ha

# Phoma: canker index and yield

(8-trial mean, 2011–14 )



\*Orius 20EW based on two years of data only

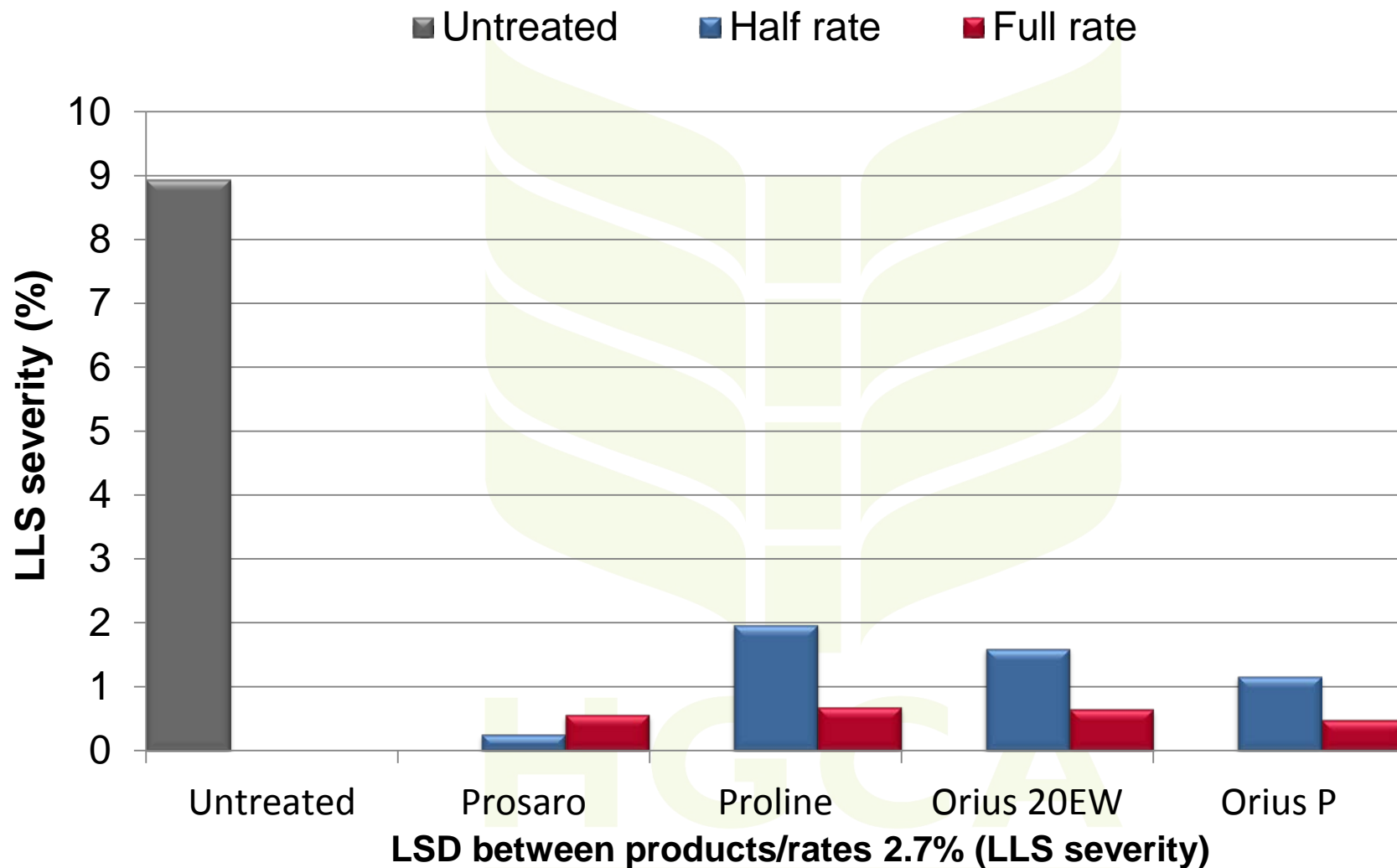
# Effective programmes for phoma

- Treatment timing is key:
  - First spray (RL rating  $\leq 7$ ) when 10–20% of plants have leaf spots
  - Spray varieties with RL rating of 8 or 9 only if >20% plants affected
  - Second spray when re-infection evident (4 to 10 weeks later)
- Good control can be achieved with two sprays at half rate
- Early epidemics most damaging to yield (0.5 t/ha yield at risk).  
Late epidemics damaging, if plants small in late autumn/winter
- All triazoles offer protection when applied prior to infection.  
Product choice influenced by requirement for curative activity
- SDHI + strobilurin co-form (Refinzar) now available, but label restriction of one application per season at full rate (1.0 l/ha)

# Light leaf spot

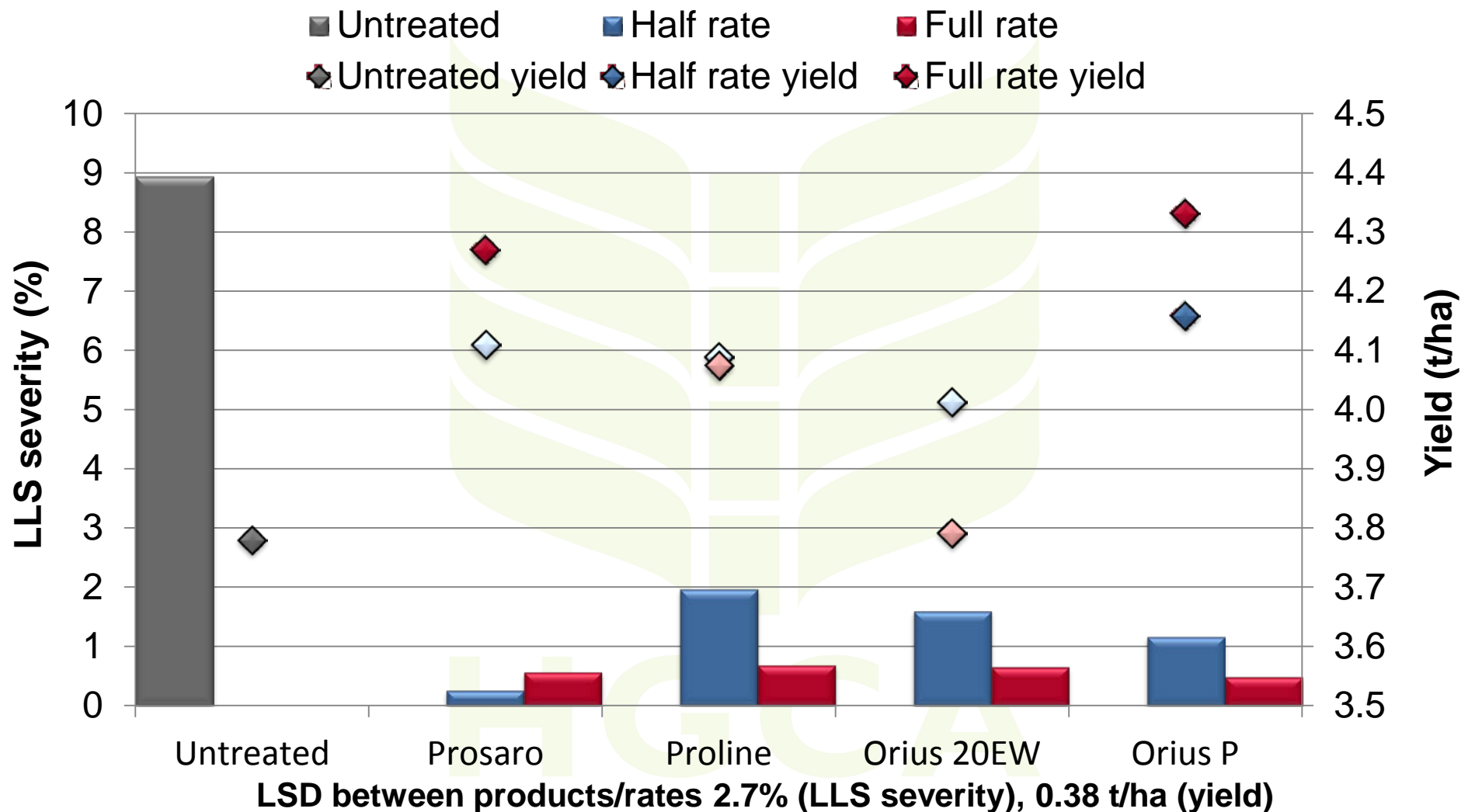


# Light leaf spot: severity at T2 + 6 weeks (Malton, North Yorks 2014 )



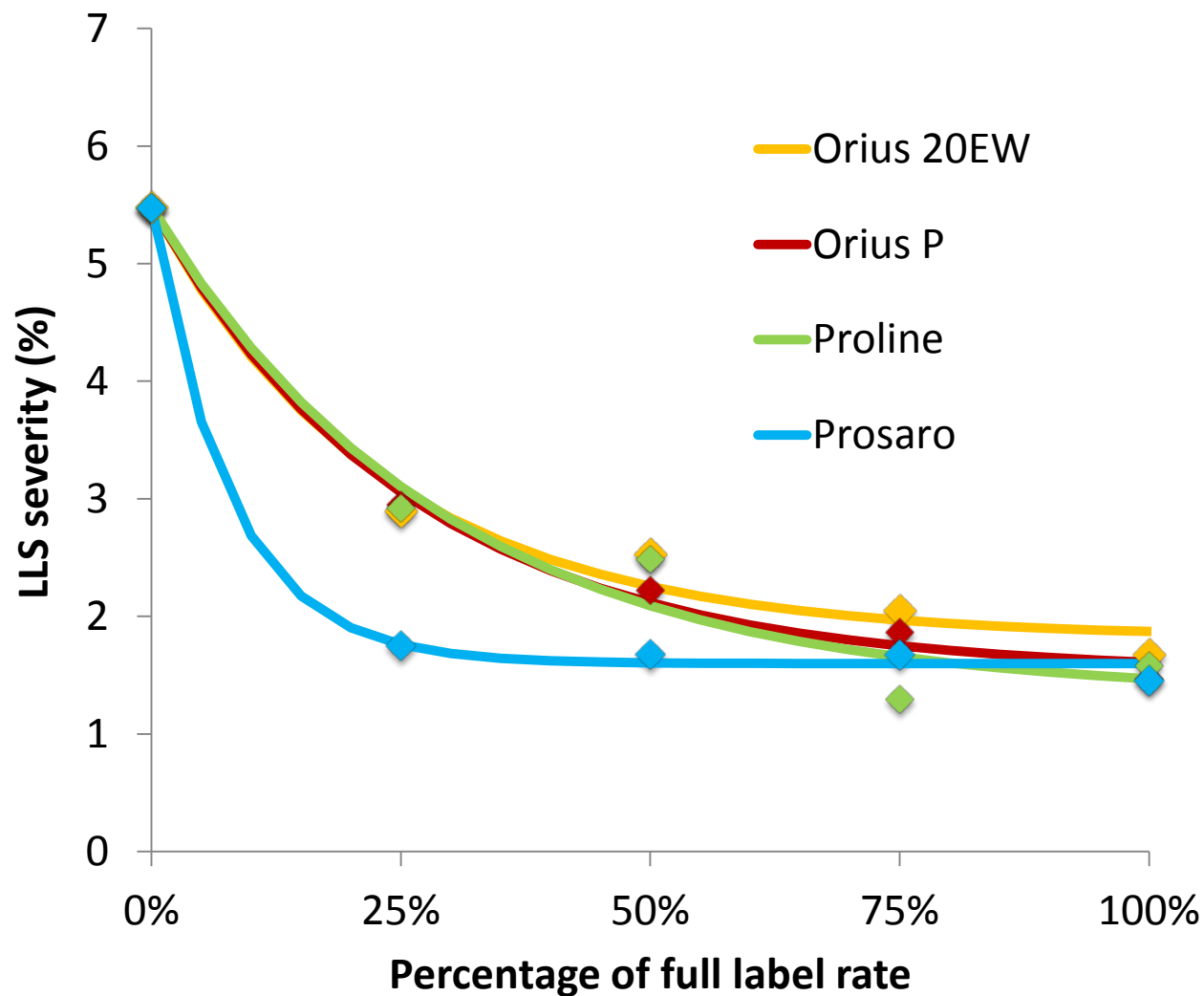
# Light leaf spot: severity and yield

## (Malton, North Yorks 2014)



Pale points not significantly different from untreated

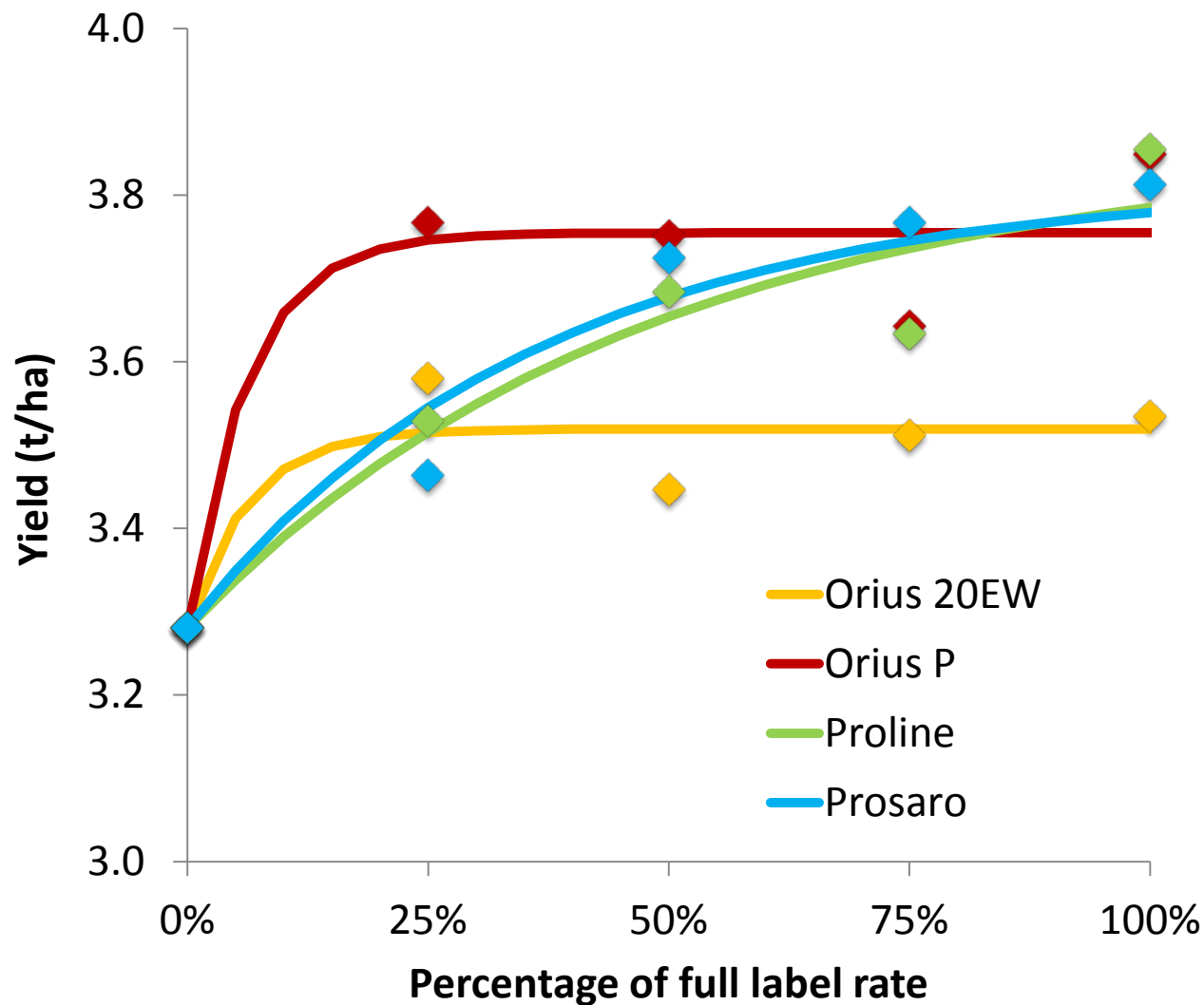
# Light leaf spot: severity (4-trial mean 2013–14)





# Light Leaf Spot: Yield

(4-trial mean 2013–14)



# Effective programmes for light leaf spot



- Assess management and control on farm-by-farm basis:
  - Higher risk if present on stems/pods before harvest (crop debris)
  - All but one variety (SY Harnas) on E/W list have RL ratings below 7
- Use a spray in autumn (November) at high-risk sites, or inspect crops regularly on a field-by-field basis from January onwards
  - Check to see if phoma sprays have given adequate LLS control
- Treatment timing is key: apply fungicide as soon as LLS found
  - At stem extension 15% plants affected equates to 5% yield loss
- Some differences between products. Control improved by increasing number of applications rather than dose
  - Yield responses to product dose variable between sites and years.

# Sclerotinia

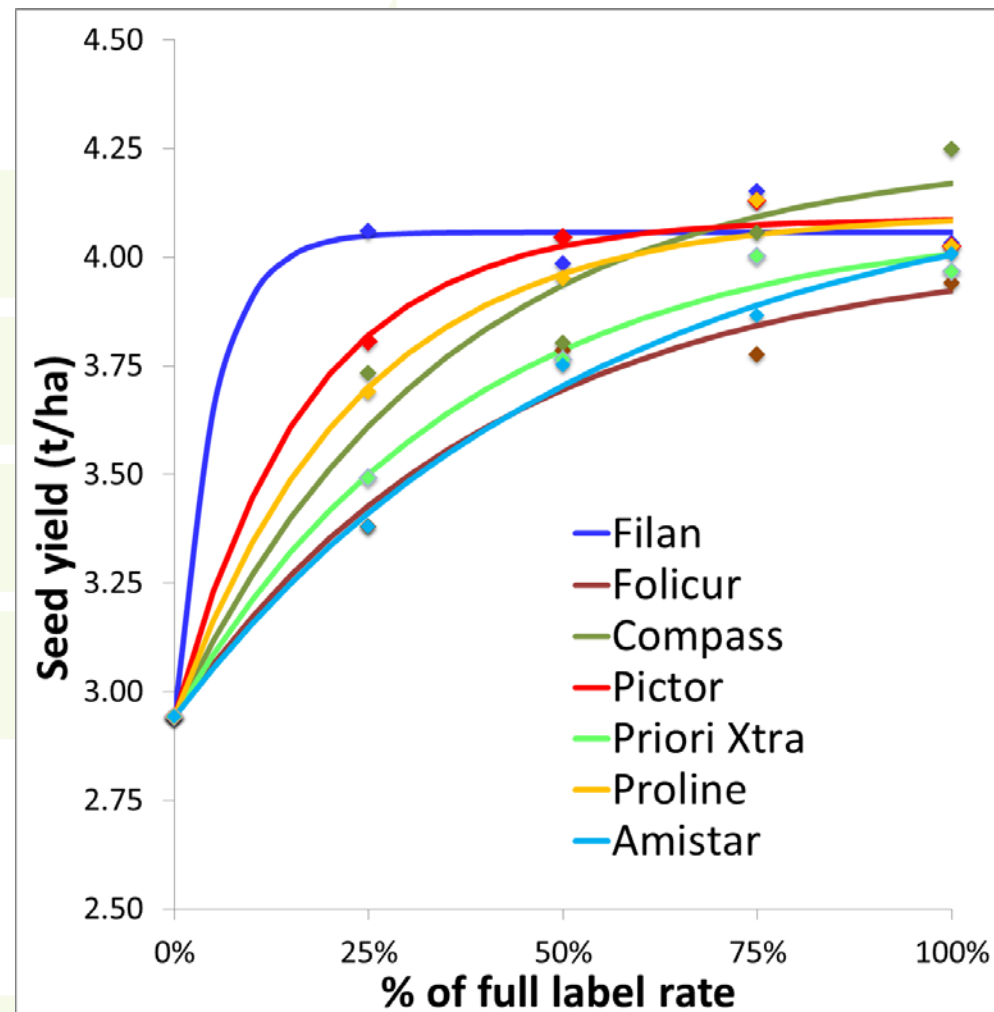
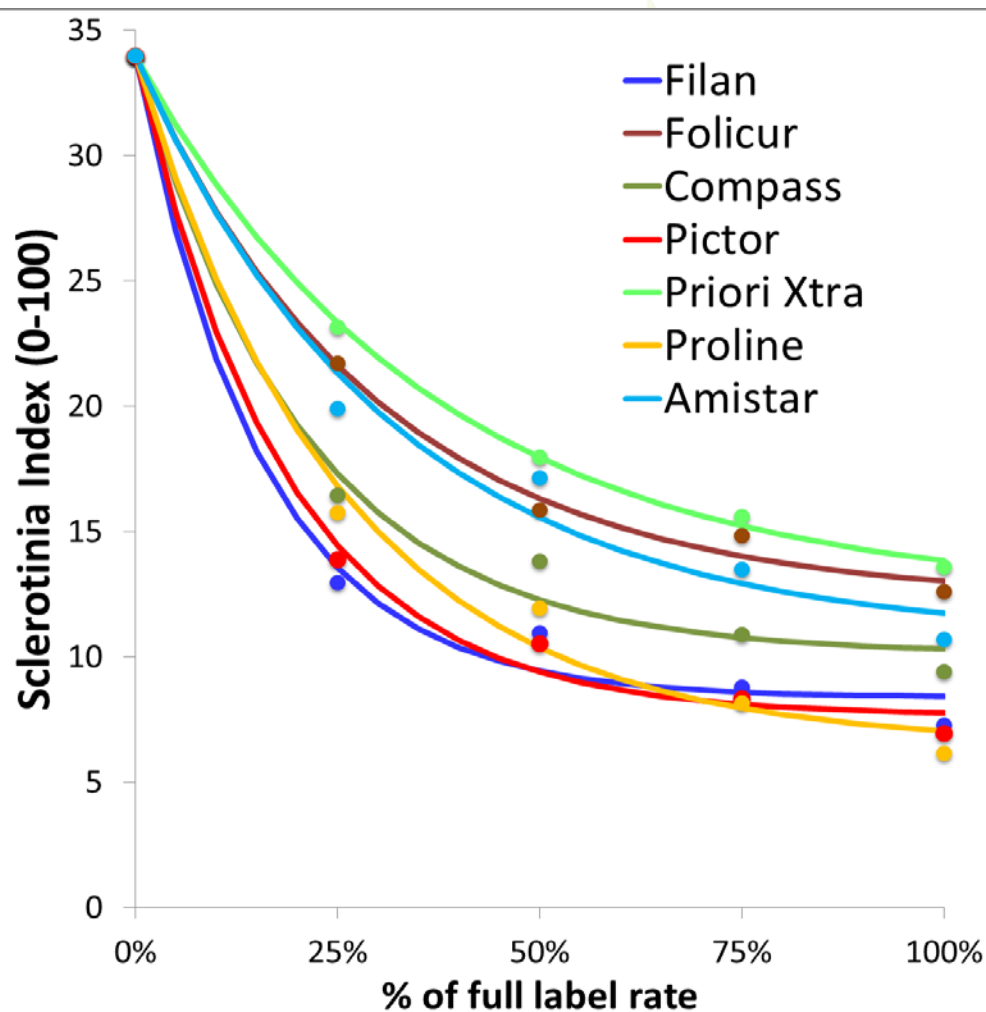


# Sclerotinia treatments

Product	Active(s)	Full dose (l/ha)
Untreated		
Amistar	azoxystrobin	1.0
Compass	iprodione + thiophanate-methyl	3.0
Filan	boscalid	0.5 kg/ha
Folicur	tebuconazole	1.0
Galileo	picoxystrobin	1.0
Pictor	boscalid + dimoxystrobin	0.5
Priori Xtra	azoxystrobin + cyproconazole	1.0
Proline 275	prothioconazole	0.63
Prosaro	prothioconazole + tebuconazole	1.0
Propulse	fluopyram + prothioconazole	1.0
Tectura	boscalid + metconazole	1.0
Topsin	thiophanate-methyl	0.71

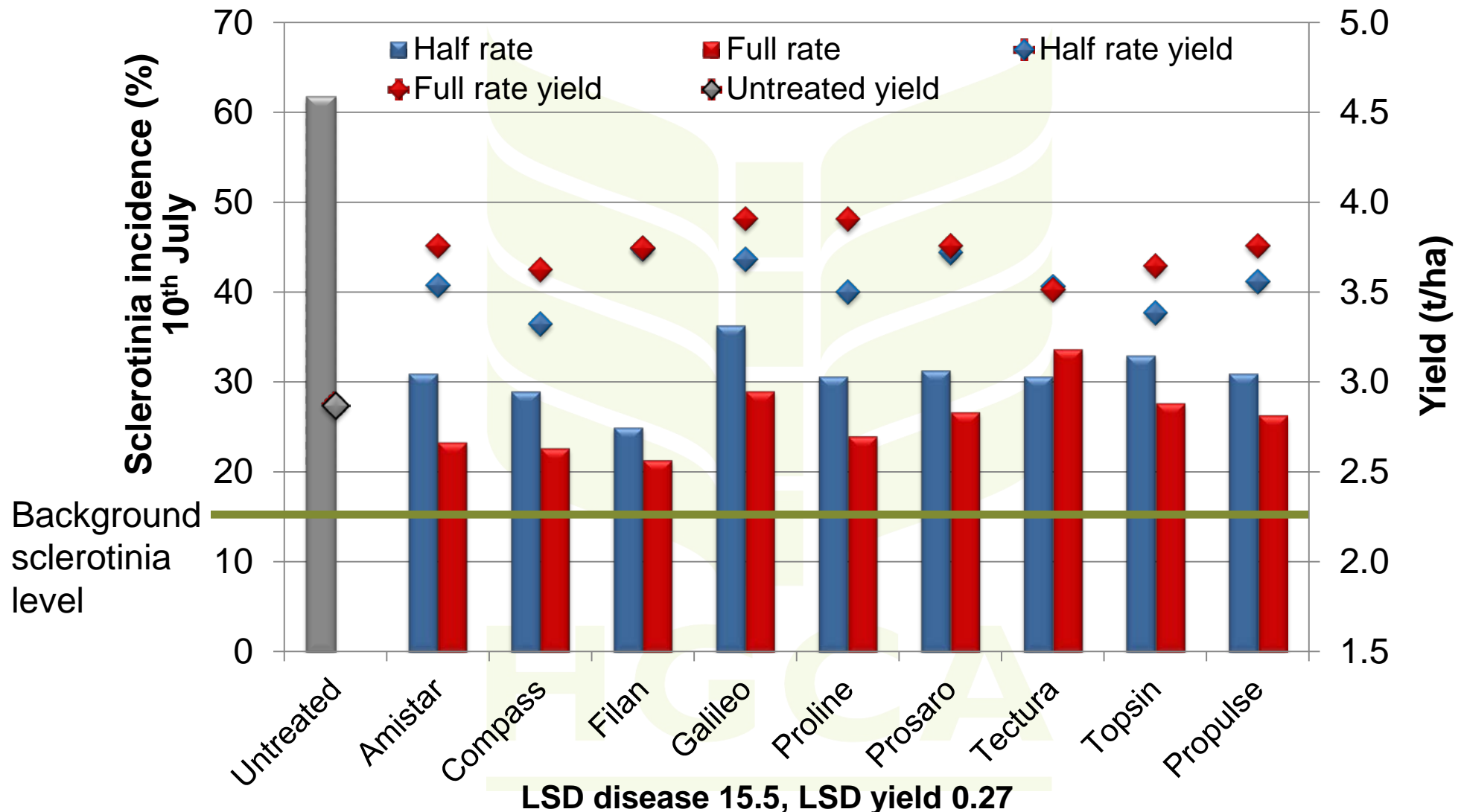
# Sclerotinia

(Kent and Herefordshire 2006–08)

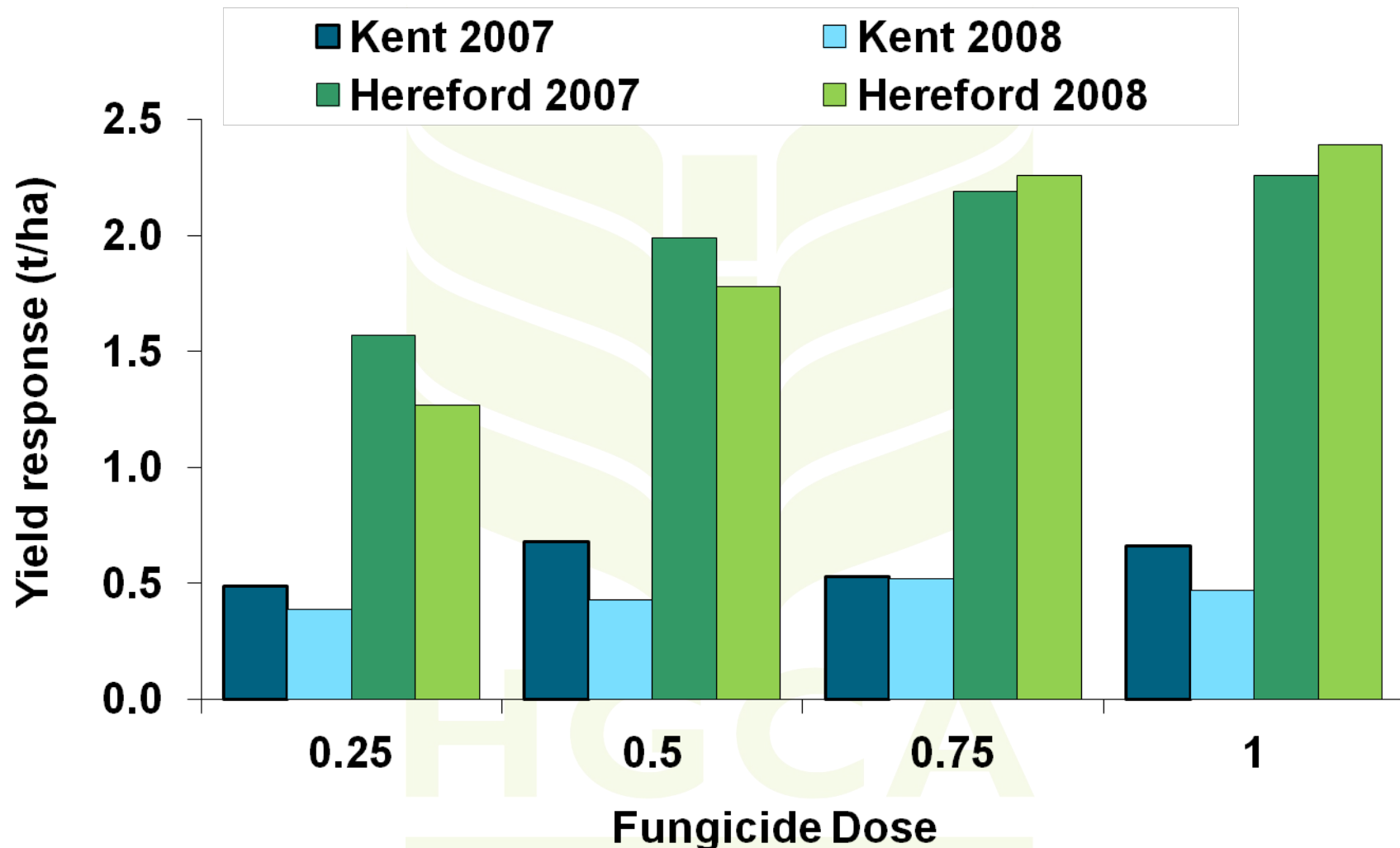




# High sclerotinia pressure: only late infection controlled (Herefordshire 2012)



# Sclerotinia control and fungicide dose



# Effective programmes for sclerotinia

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- Evaluate risk:
  - previous monitoring
  - history of cropping
  - weather / crop microclimate
- Spray timing is critical:
  - protectant activity 3 weeks
  - no effective curative activity
- Where risk is high, consider using:
  - at least 75% doses of active products
  - more than one application
- Pictor new to the market in 2015



# More Information

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- HGCA Information Sheet 35 (Autumn 2014)
- [www.hgca.com/diseasecontrol](http://www.hgca.com/diseasecontrol)
- Phoma leaf spot and light leaf spot forecasts:  
[www.rothamsted.ac.uk/tools](http://www.rothamsted.ac.uk/tools)
- **New for 2015**
  - Oilseed rape, wheat and barley now form a single project
  - Additional light leaf spot trial (south-west location)



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# Thank you