Malting barley disease control – Why, When and What?

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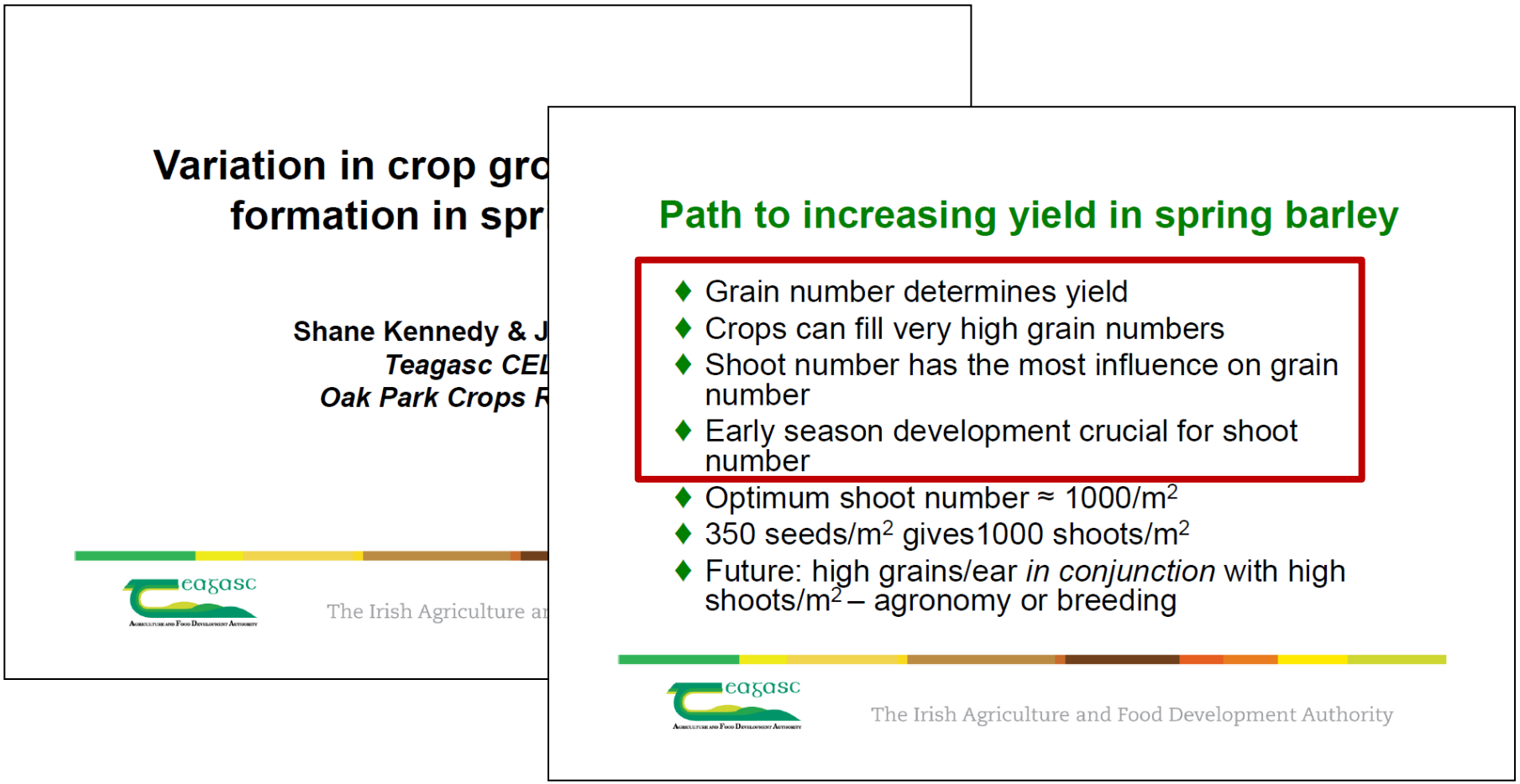
Teagasc CELUP

Oak Park Crop Research

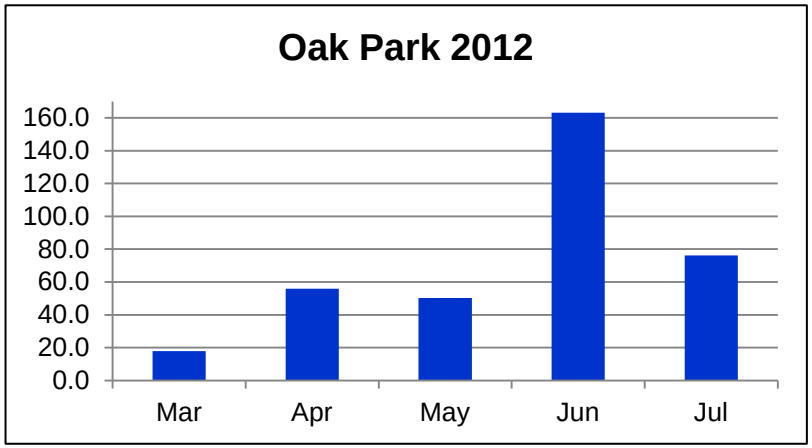
Why?

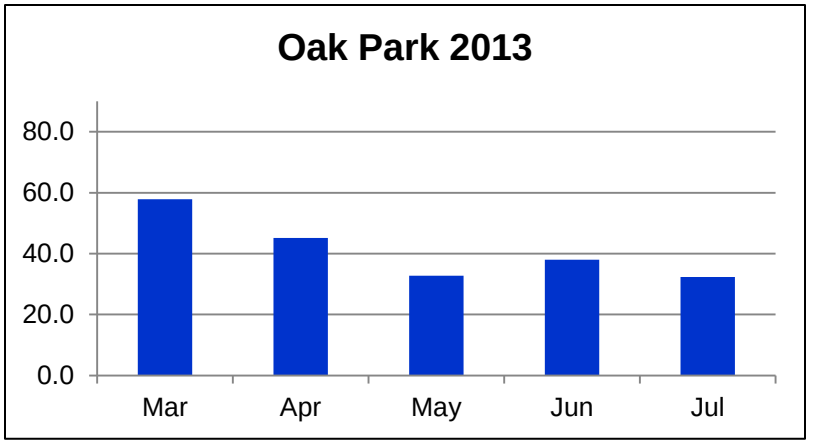
- To protect yield potential
- To control disease to achieve that yield potential

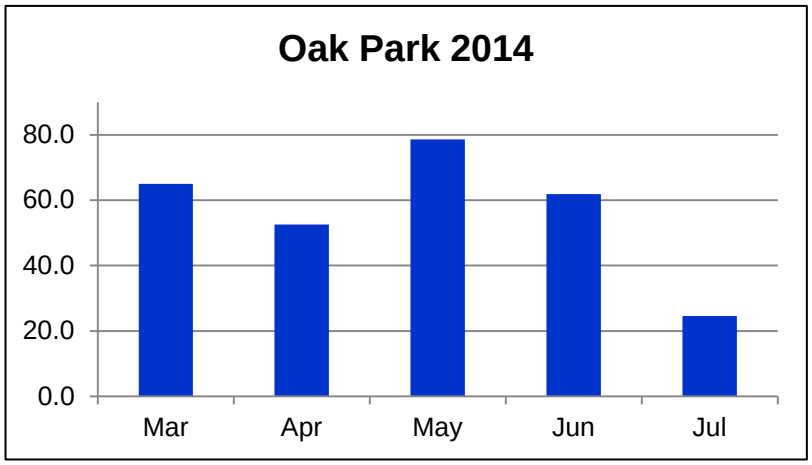
Understanding how yield is achieved

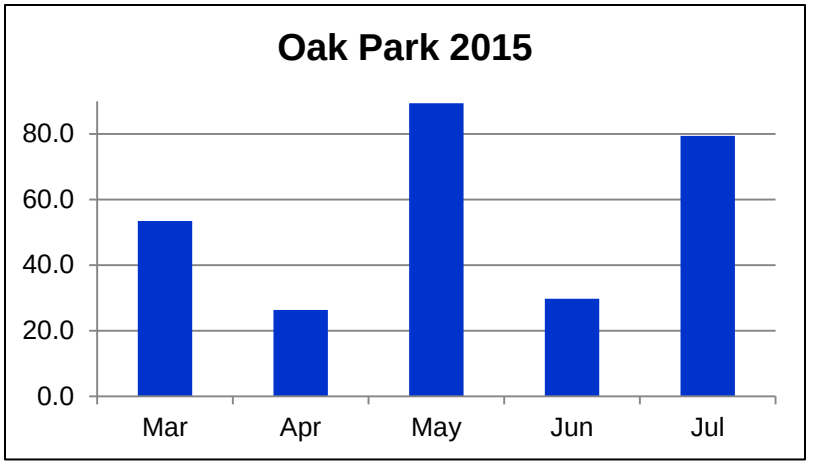


High disease pressure









Wet weather disease

- Rhynchosporium

- Net blotch

- Ramularia

- Head blight

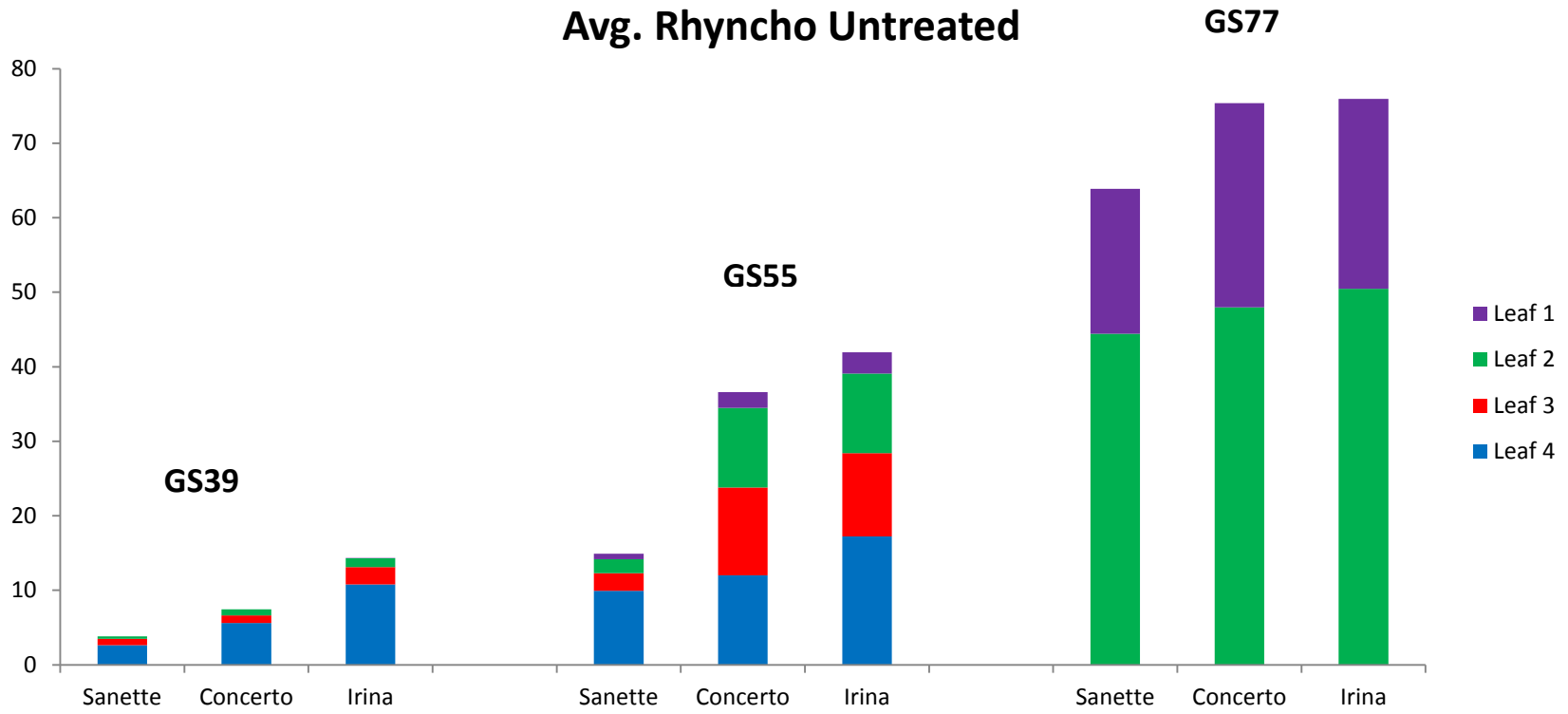
The Effect of Rhynchosporium Resistance Rating on Fungicide Requirements for Disease Control in spring barley (2014)

Deirdre Doyle & Joseph Lynch

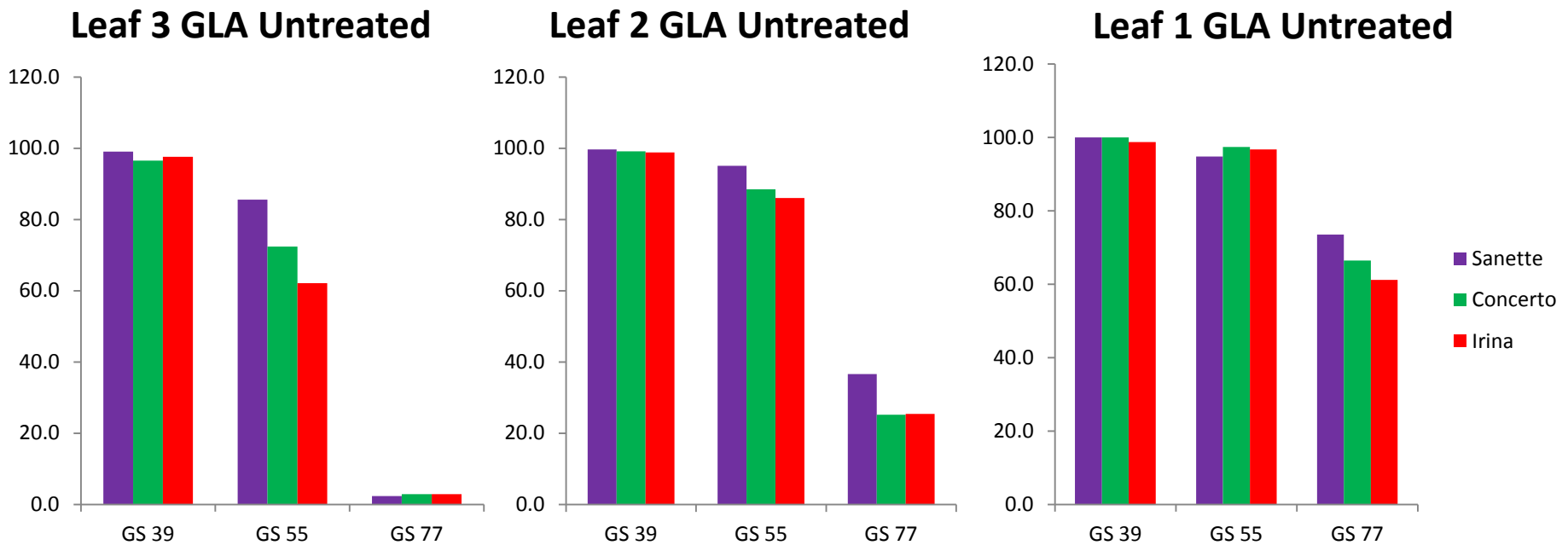
- 3 varieties: Sanette (8), Concerto (5), KWS Irina (4) – AFBI ratings
- Disease assessments: GS30, GS39, GS55 & GS77

Treatment	Rate (proportion of full label rate)
Untreated	***
Proline	¼, ½, Full, Double
Siltra xpro	¼, ½, Full, Double
Spray timings	GS30, GS39-45

Higher disease resistance reduced disease severity

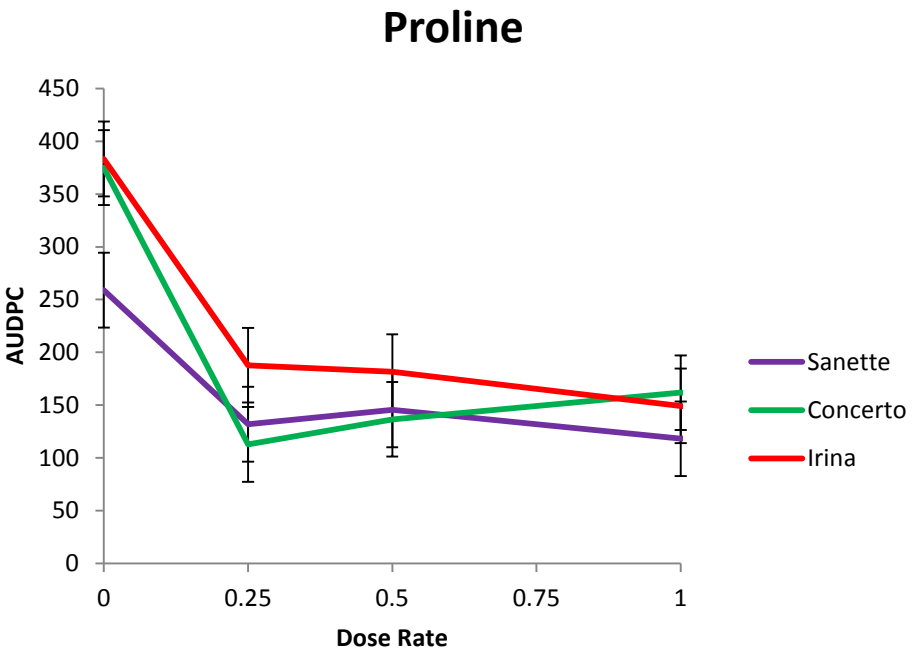


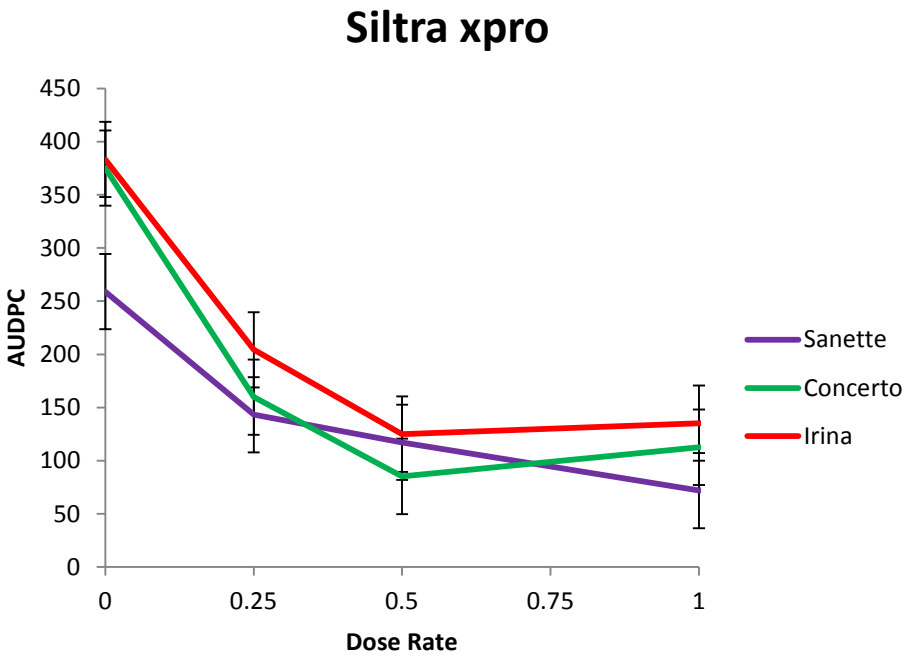
And Increased Green Leaf Retention



- The most resistant variety Sanette maintained the highest % GLA across growth stages
- The lower resistance varieties; Concerto and KWS Irina maintained lower % GLA

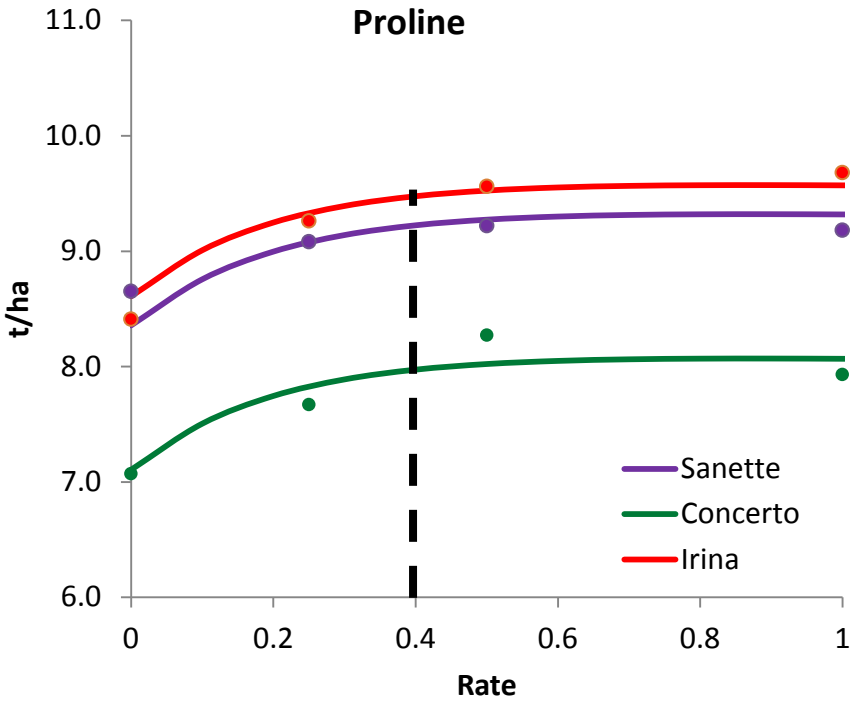
Effect of Dose Rates on Reducing Disease

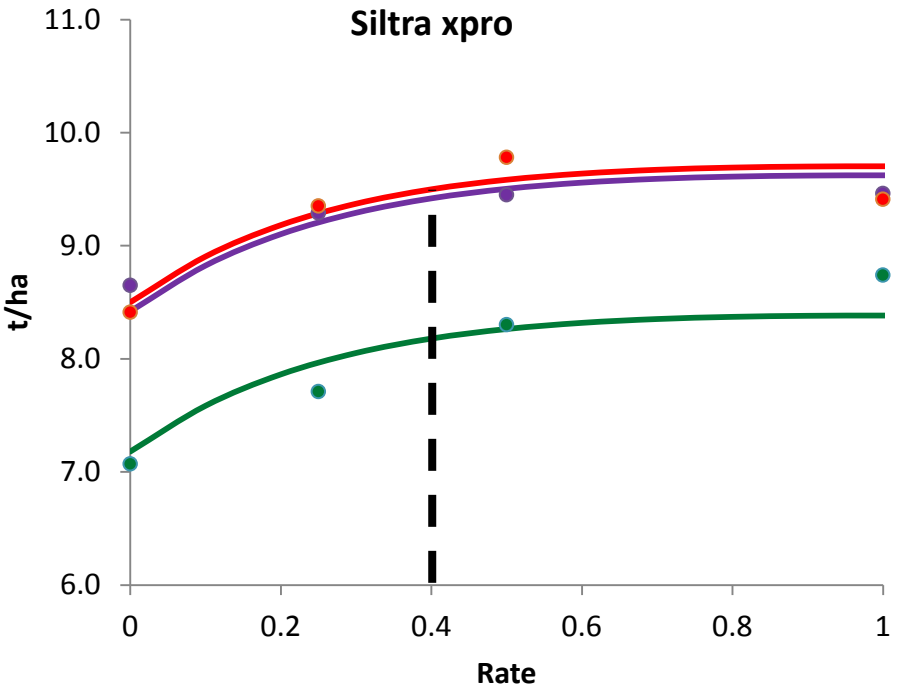




- Fungicide significantly reduced disease but there was no difference between fungicide rates
- There was no difference between varieties when fungicide treated
- Visible disease was delayed but not prevented by a high resistance score

Fungicide response same for all varieties





- Economic optimum rate of 0.4 of a rate, was the same for all varieties
- No significant difference in yield over ¼ of a rate of either product

Yield and yield components of varieties as affected by differing fungicide treatments

Cultivar	Ears/m^2	Grains/m^2	TGW, g	Yield, t/ha
Sanette (8)	940^a	20511^a	44.9	9.2^a
Concerto (5)	785^b	17958^b	43.9	7.9^b
KWS Irina (4)	963^a	20511^a	45.9	9.4^a
Significance.				
Cultivar	0.003	<.001	0.074	<.001
Fungicide	0.279	<.001	<.001	<.001
Cv x Fung	0.387	0.889	0.725	0.267

- Sanette and Irina had significantly higher yield than Concerto
- Due to high grain numbers, as a result of high ear number
- Varieties all responded to fungicide in a similar way

Reminder…

Path to increasing yield in spring barley

- Grain number determines yield
- Crops can fill very high grain numbers
- Shoot number has the most influence on grain number
- Early season development crucial for shoot number
- Optimum shoot number ≈ 1000/m^2
- 350 seeds/m^2 gives1000 shoots/m^2
- Future: high grains/ear *in conjunction* with high shoots/m^2 – agronomy or breeding

Teagasc
Agriculture and Food Development Authority
The Irish Agriculture and Food Development Authority

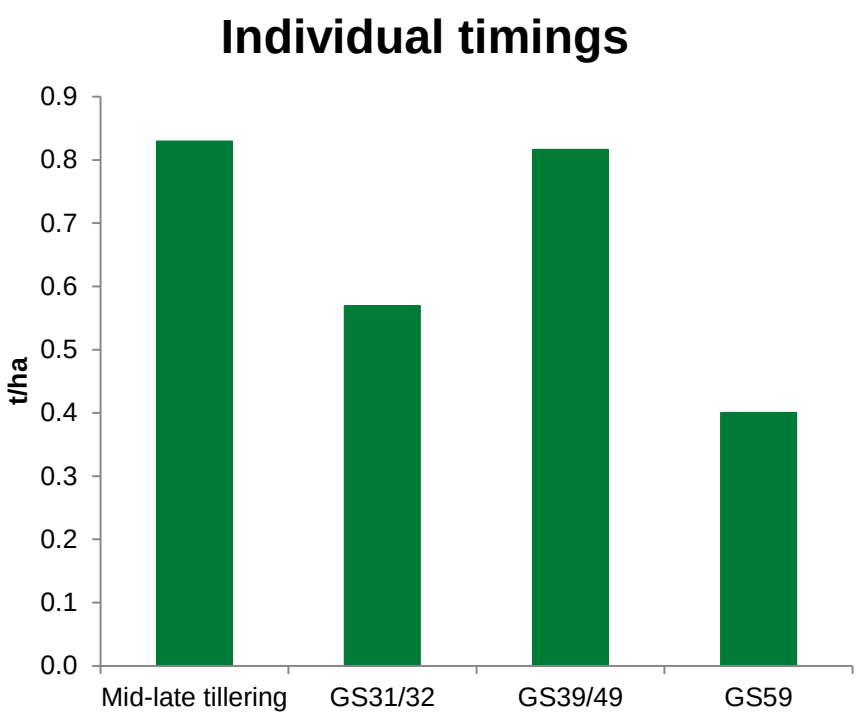
When?

<u>Determining optimum timing</u>

- 2012-2015
- 8 sites (Oak Park, Wexford, Wicklow, Kildalton)
- Siltra xpro (1.0l/ha)

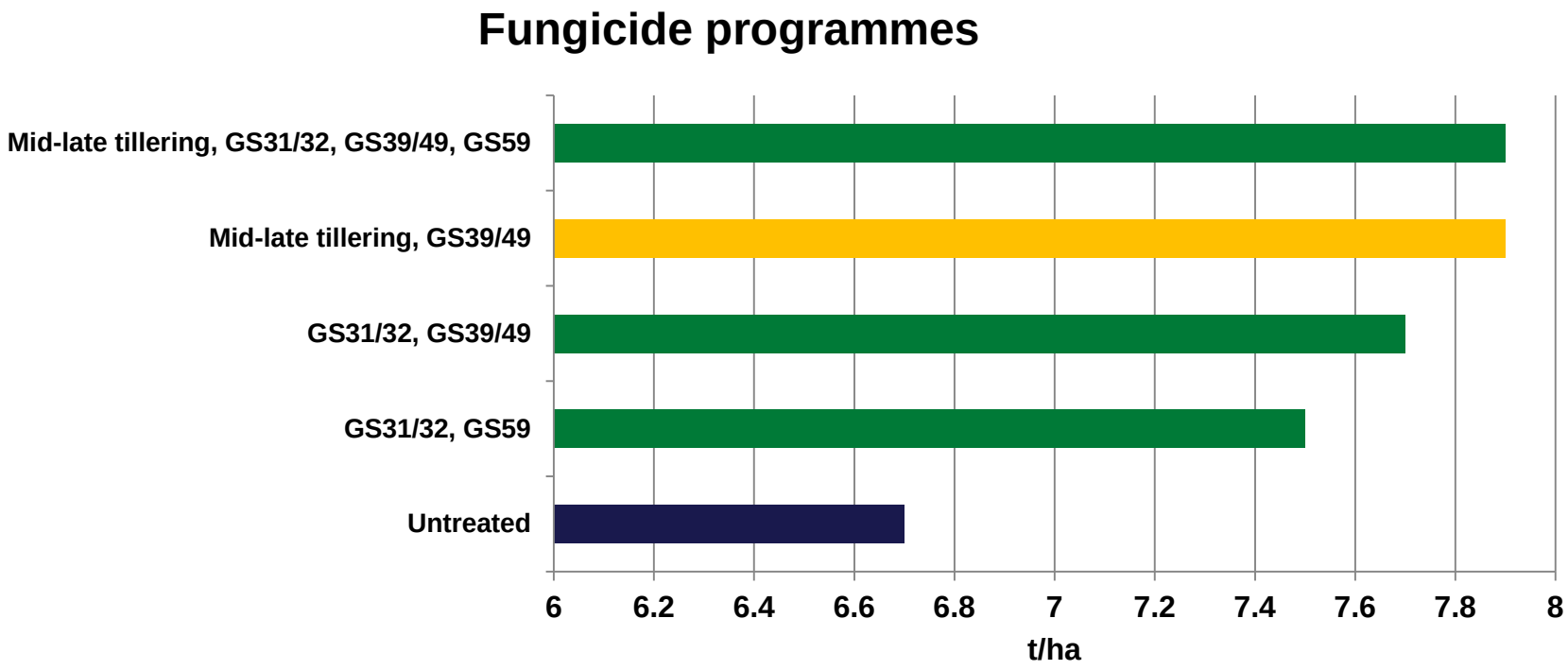
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<GS30	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-
GS31/32	X	X	X	X	-	-	-	-	X	X	X	X	-	-	-	-
GS39/49	X	X	-	-	X	X	-	-	X	X	-	-	X	X	-	-
GS59	X	-	X	-	X	-	X	-	X	-	-	-	X	-	X	-

When?



Teagasc SB Timing Trial
2012-2015: 8 site seasons
Fungicide: Siltra xpro 1.0l/ha

When?

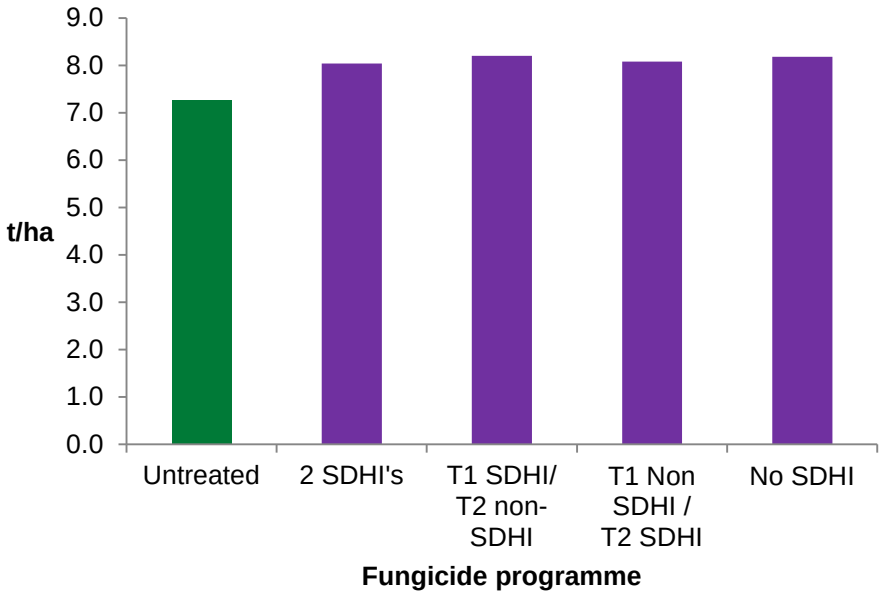


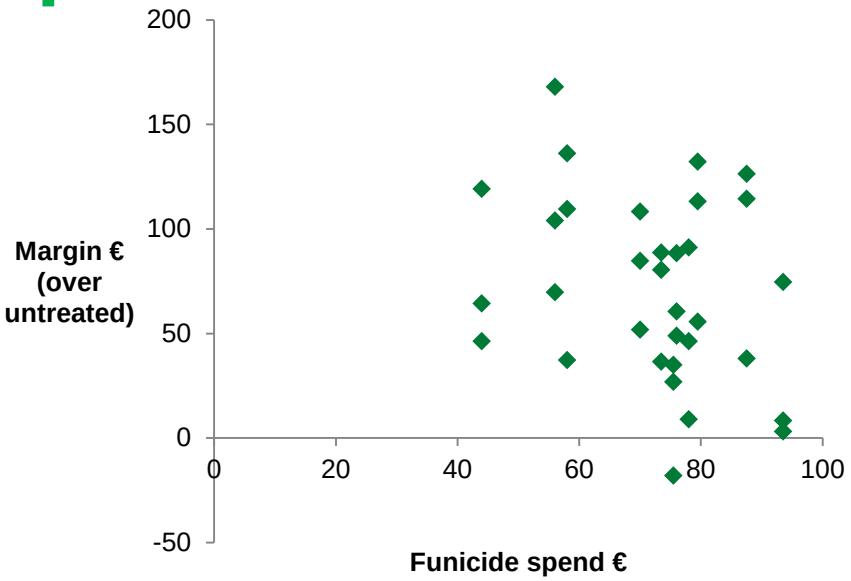
- 1st application at mid-late tillering to protect tillers
- 2nd application at GS 39/49 (awns peeping) to keep crop green for grain fill
- No benefit from additional applications
- Delaying final application until GS 59/61 can reduce yield potential

What?


Bontima
Helix
Modem
Strobs
Amistar
SDHI's
Proline
Ceriax
Frelizon
Bravo
Triazoles
Imtrex
Siltra
Vertisan
Galileo
Jenton
Adexar
Zulu
Deuce
Morpholines
Diamant
Multisite
Fandango

Low disease pressure

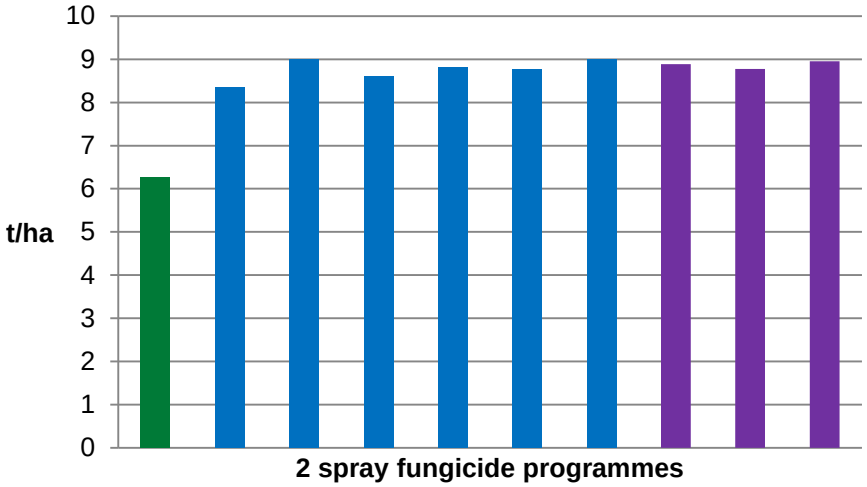


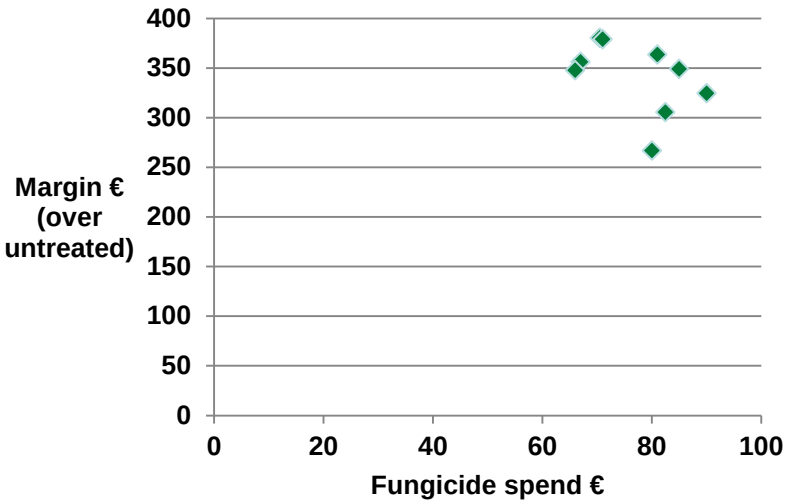


Spring barley programmes trial 2015
3 sites
Propino, SY Taberna
Wicklow, Oak Park

- No significant differences between programmes
- Increased spend did not equate to increased yield

High disease pressure





Spring barley programmes trial 2013
Kildalton
Azalea

- No significant differences between programmes
- Return on fungicide spend higher in high disease

What?

	T1 (GS <30)	T2 (GS 37-49)
Diseases	• Rhynchosporium • Net Blotch • (Mildew) • (Rust)	• Rhynchosporium • Net Blotch • Ramularia • (Mildew) • (Rust) • (Fusarium)
Programme	Mixtures SDHI/azole/Strob/multisite Mildewicide where required	Mixtures SDHI/azole/Strob/multisite Mildewicide where required
Activity of mix partners must be matched!!		

Take home messages

- 1st application – Mid-late tillering
- 2nd application – Awn emergence
- Equal spend at each timing
- Use a minimum of 2 actives at each application
- Tailor your spend to the crop

Thank you for listening

Best wishes for the coming season