

# Malting barley disease control – Why, When and What?

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*Oak Park Crop Research*

# Why?

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

# Understanding how yield is achieved

## Variation in crop growth formation in spring

Shane Kennedy & J  
Teagasc CEL  
Oak Park Crops R



The Irish Agriculture and Food Development Authority

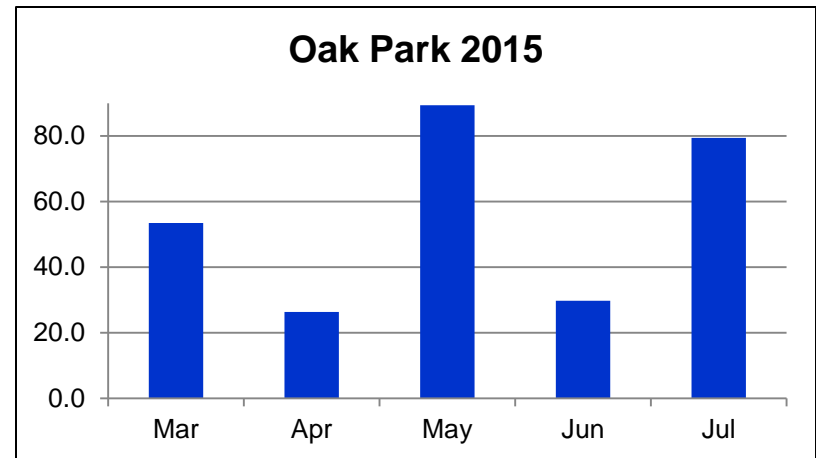
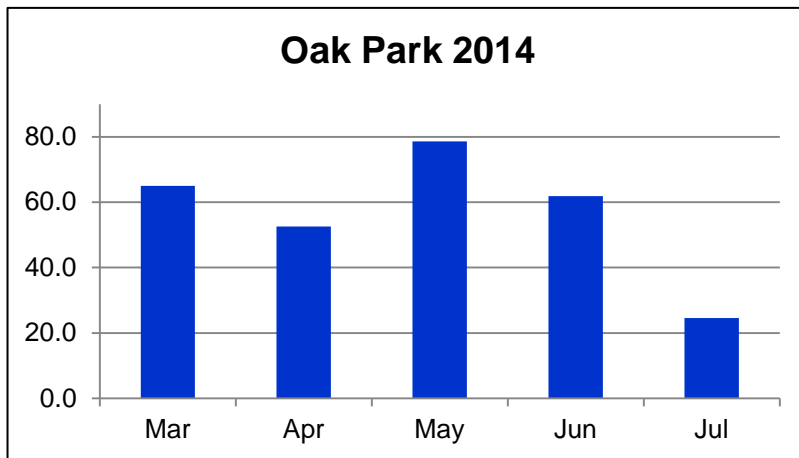
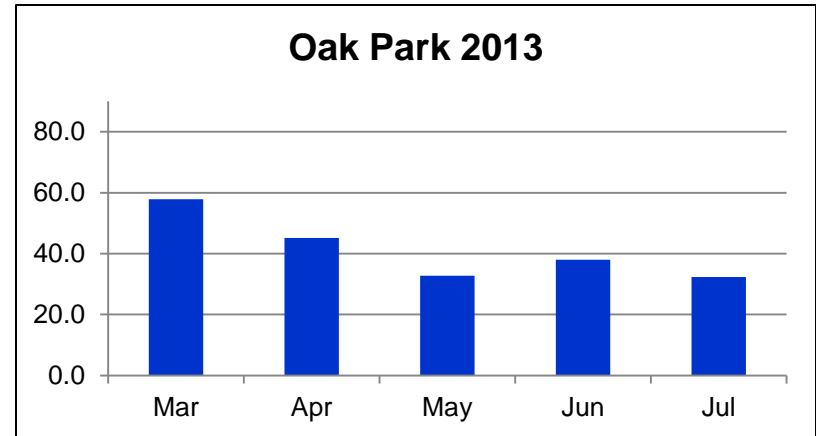
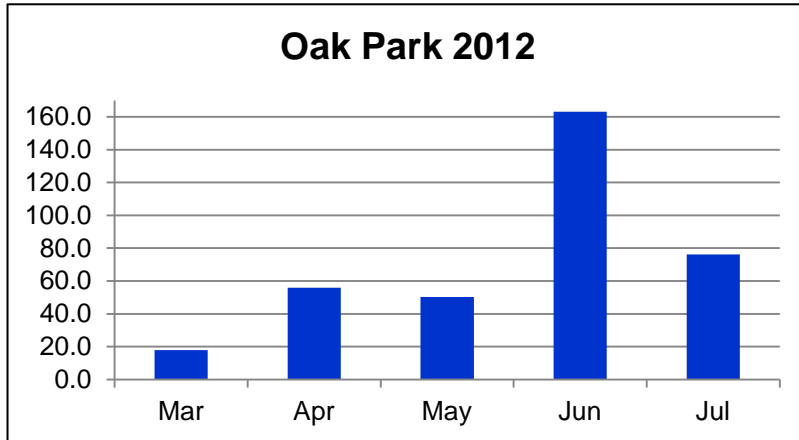
## Path to increasing yield in spring barley

- ◆ 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  $\approx 1000/m^2$
- ◆  $350 \text{ seeds}/m^2$  gives  $1000 \text{ shoots}/m^2$
- ◆ Future: high grains/ear *in conjunction* with high shoots/ $m^2$  – agronomy or breeding



The Irish Agriculture and Food Development Authority

# High disease pressure



# Wet weather disease

- Rhynchosporium



- Net blotch



- Ramularia



- Head blight



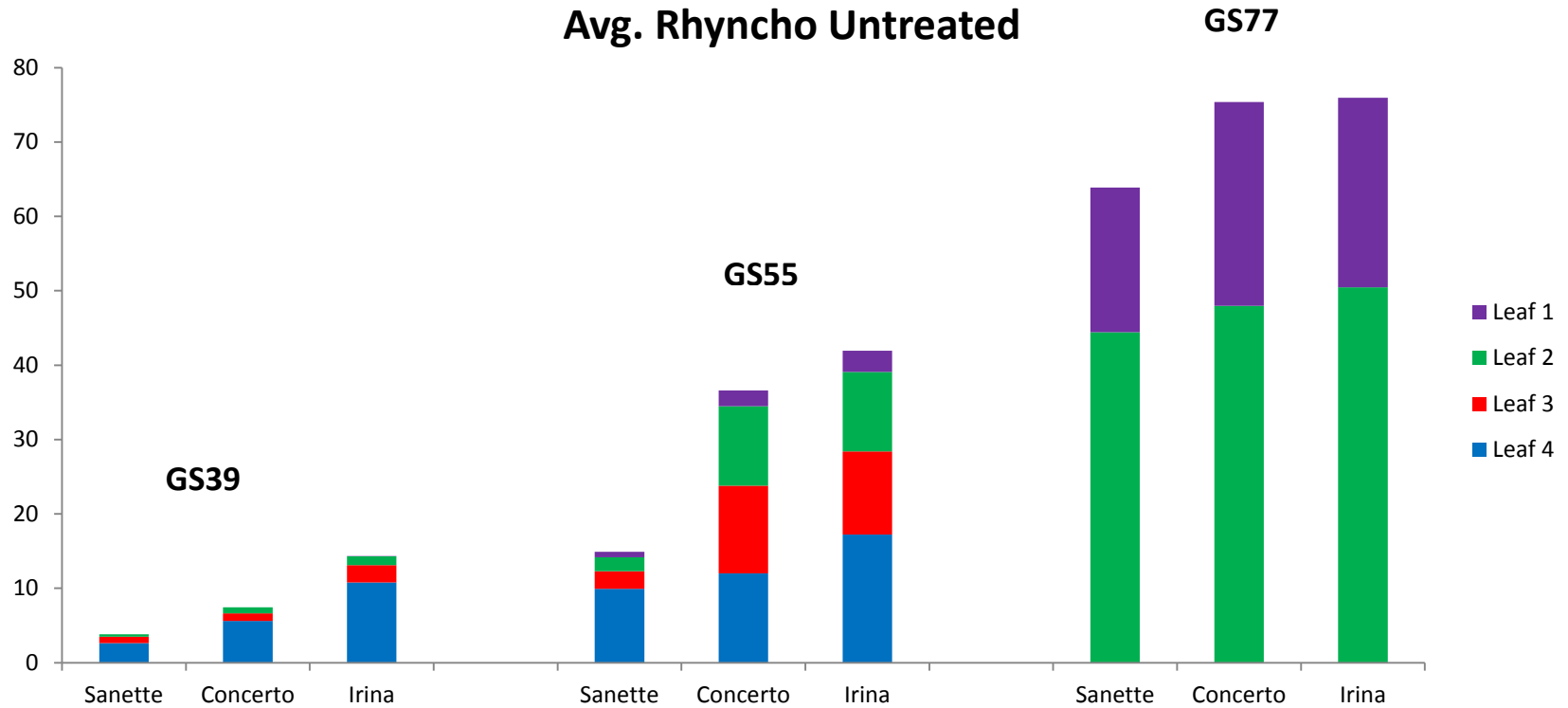
# The Effect of Rhynchosporium Resistance Rating on Fungicide Requirements for Disease Control in spring barley (2014)

## Deirdre Doyle & Joseph Lynch

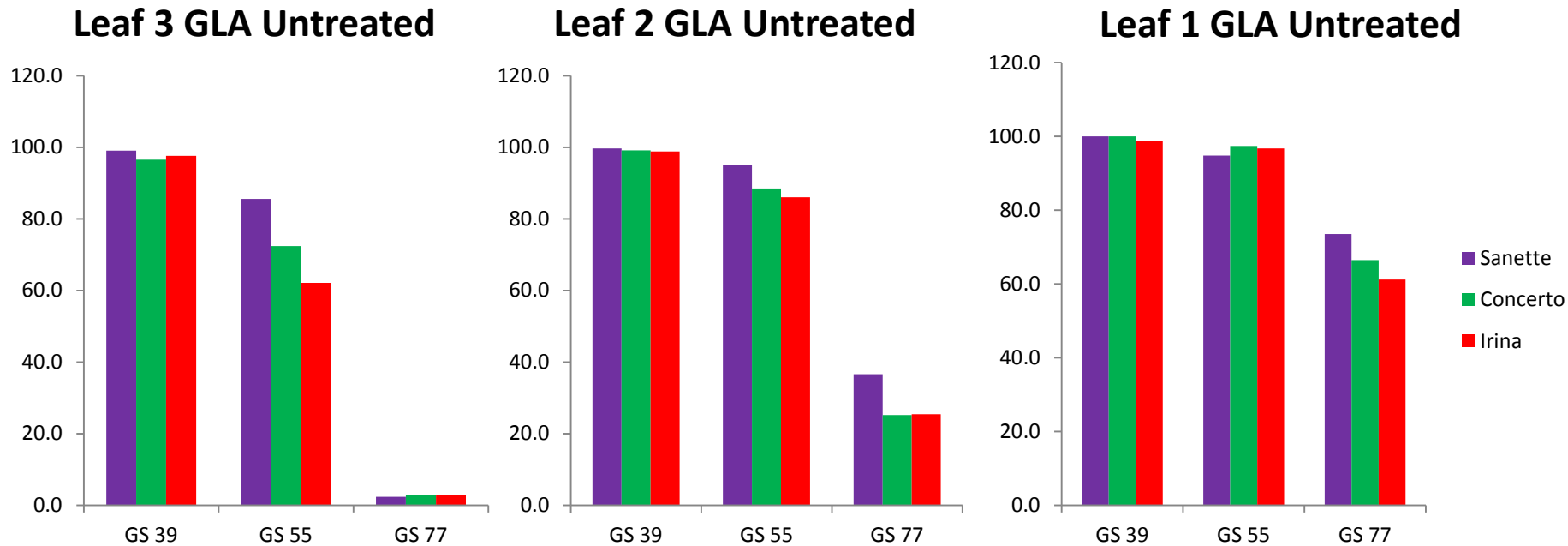
- 3 varieties: Sanette (8), Concerto (5), KWS Irina (4) – AFBI ratings
- Disease assessments: GS30, GS39, GS55 & GS77

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

# Higher disease resistance reduced disease severity



# And Increased Green Leaf Retention

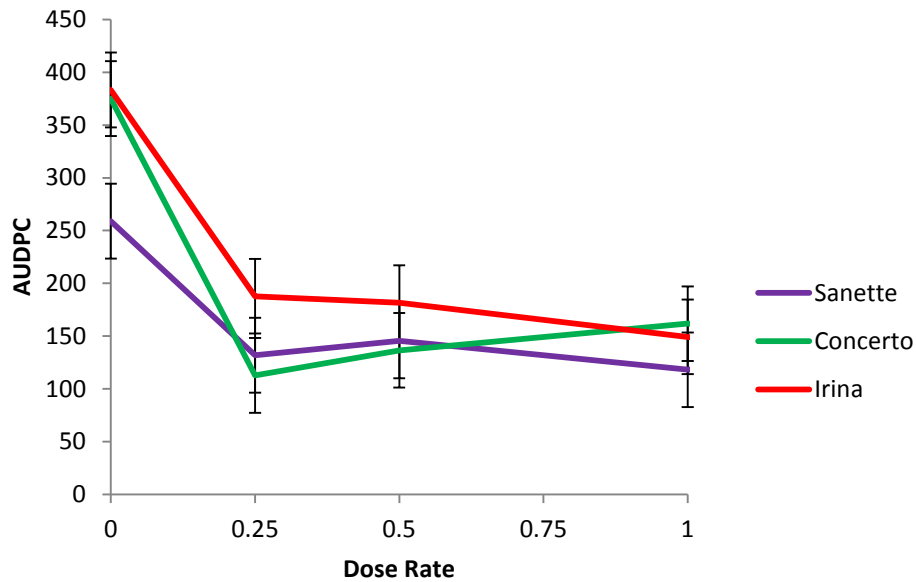


- The most resistant variety Sanette maintained the highest % GLA across growth stages
- The lower resistance varieties; Concerto and KWS Irina maintained lower % GLA

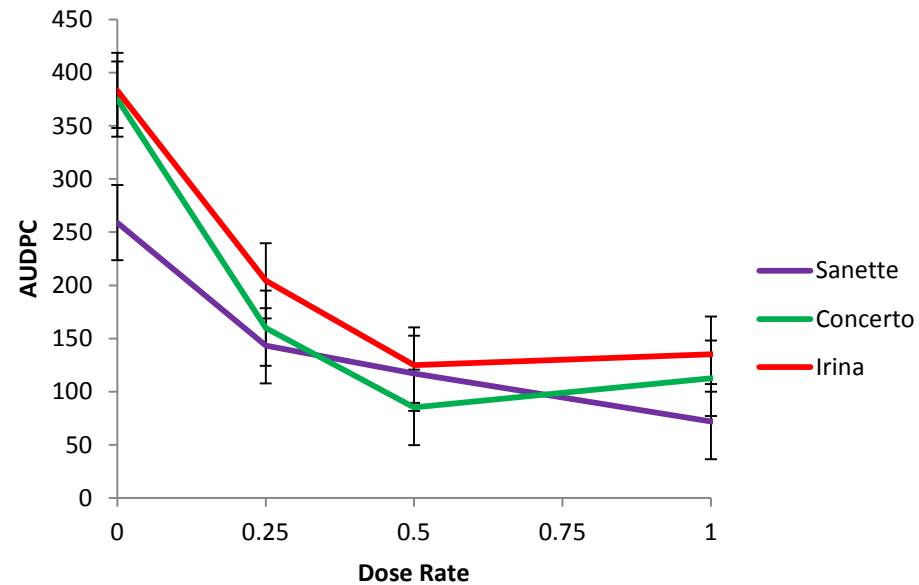


# Effect of Dose Rates on Reducing Disease

## Proline

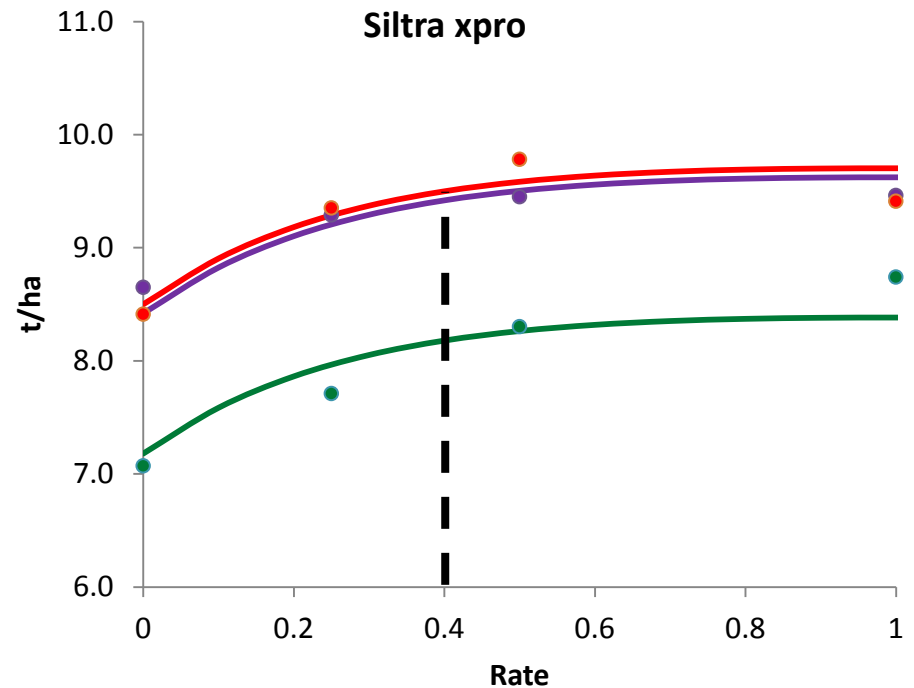
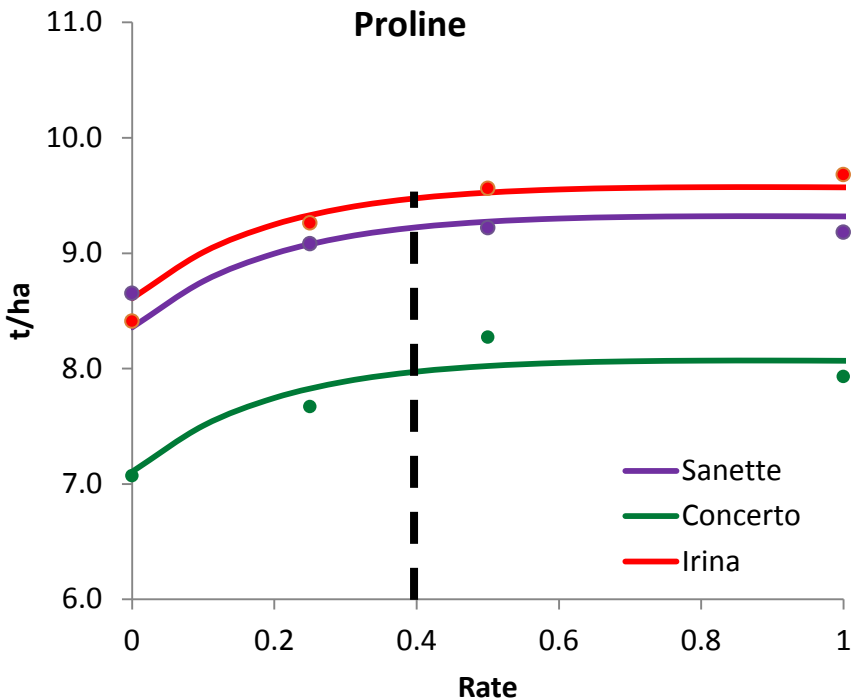


## Siltra xpro



- 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  $\frac{1}{4}$  of a rate of either product

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

Cultivar	Ears/m <sup>2</sup>	Grains/m <sup>2</sup>	TGW, g	Yield, t/ha
Sanette (8)	940 <sup>a</sup>	20511 <sup>a</sup>	44.9	9.2 <sup>a</sup>
Concerto (5)	785 <sup>b</sup>	17958 <sup>b</sup>	43.9	7.9 <sup>b</sup>
KWS Irina (4)	963 <sup>a</sup>	20511 <sup>a</sup>	45.9	9.4 <sup>a</sup>

## 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  $\approx 1000/\text{m}^2$
- ◆ 350 seeds/ $\text{m}^2$  gives 1000 shoots/ $\text{m}^2$
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# When?

## Determining optimum timing

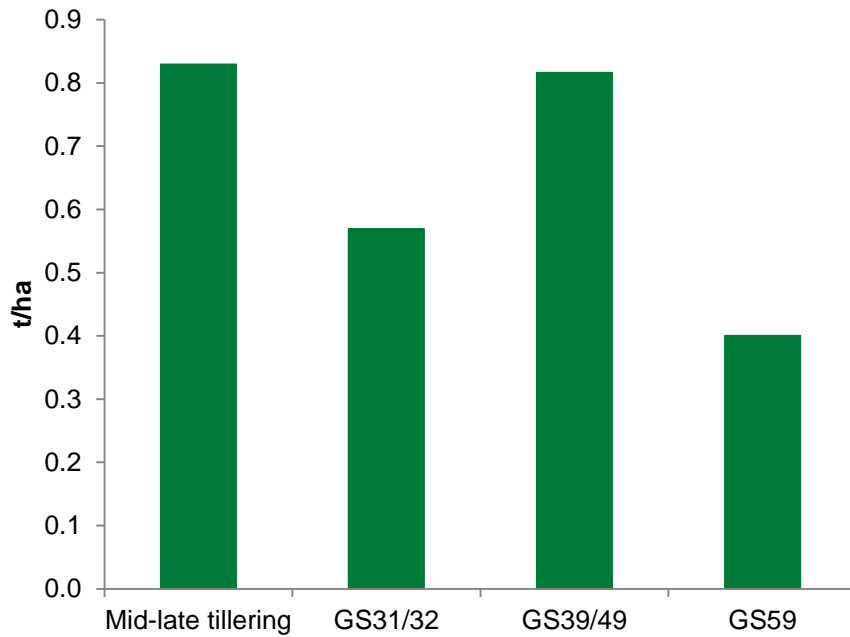
- 2012-2015
- 8 sites (Oak Park, Wexford, Wicklow, Kildalton)
- Siltra xpro (1.0l/ha)



	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?

## Individual timings



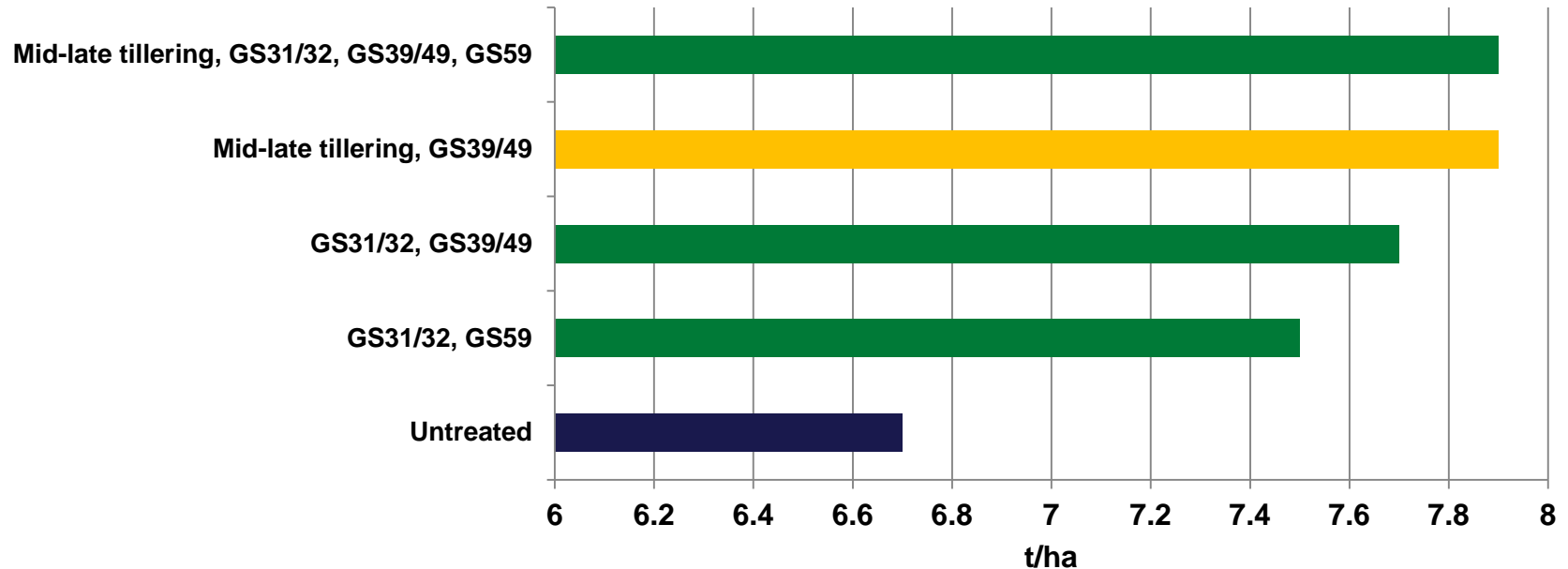
### Teagasc SB Timing Trial

2012-2015: 8 site seasons

Fungicide: Siltra xpro 1.0l/ha

# When?

## Fungicide programmes



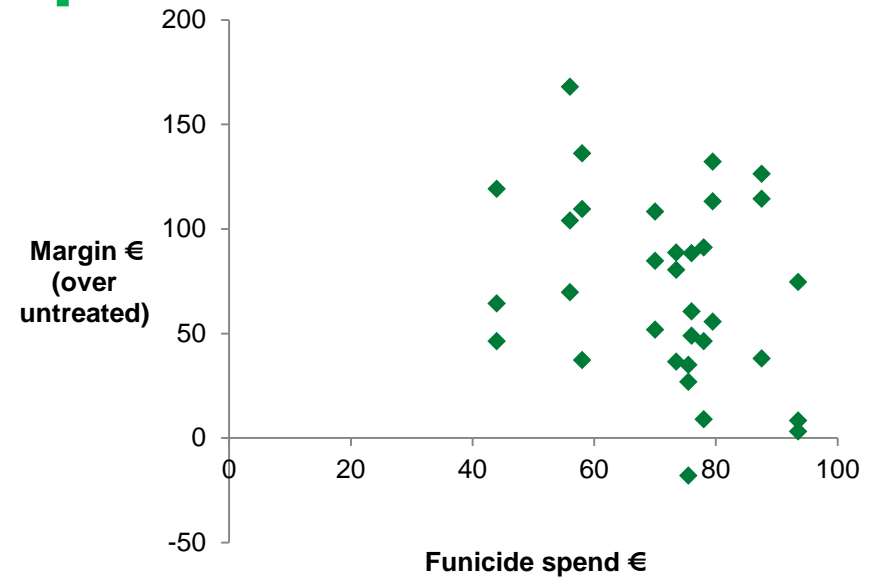
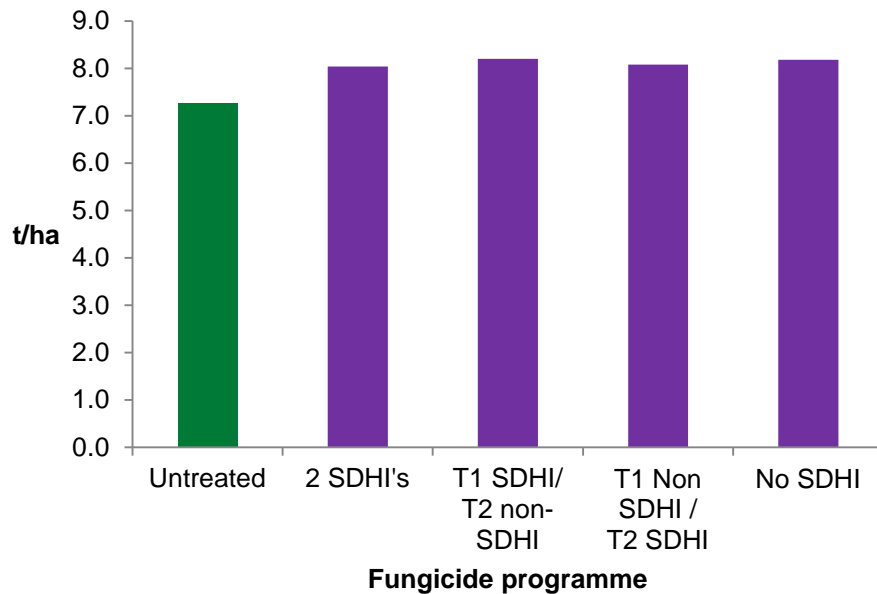
- 1<sup>st</sup> application at mid-late tillering to protect tillers
- 2<sup>nd</sup> application at GS 39/49 (awns peeping) to keep crop green for grain fill
- No benefit from additional applications
- Delaying final application until GS 59/61 can reduce yield potential

# What?

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



# Low disease pressure



Spring barley programmes trial 2015

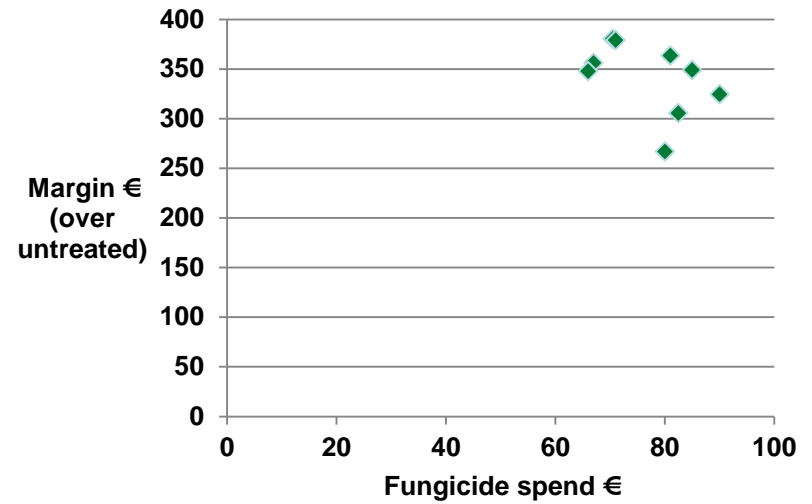
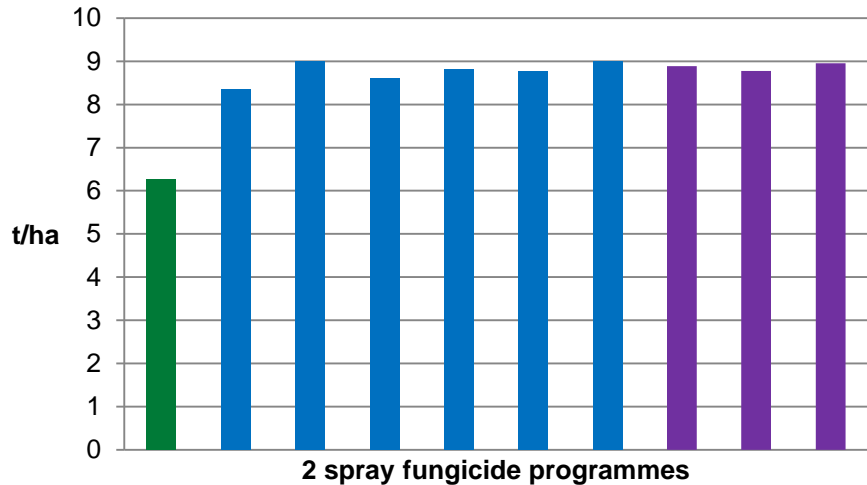
3 sites

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	<ul style="list-style-type: none"> <li>• Rhynchosporium</li> <li>• Net Blotch</li> <li>• (Mildew)</li> <li>• (Rust)</li> </ul>	<ul style="list-style-type: none"> <li>• Rhynchosporium</li> <li>• Net Blotch</li> <li>• Ramularia</li> <li>• (Mildew)</li> <li>• (Rust)</li> <li>• (Fusarium)</li> </ul>
Programme	<p style="text-align: center;"><u>Mixtures</u></p> <p style="text-align: center;">SDHI/azole/Strob/multisite</p> <p style="text-align: center;">Mildewicide where required</p>	<p style="text-align: center;"><u>Mixtures</u></p> <p style="text-align: center;">SDHI/azole/Strob/multisite</p> <p style="text-align: center;">Mildewicide where required</p>
<b>Activity of mix partners must be matched!!</b>		

# Take home messages

- 1<sup>st</sup> application – Mid-late tillering
- 2<sup>nd</sup> 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**