



# Growing Quality Malting Barley

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# What are we trying to achieve?

- Protein 9.0 – 11.0%.
- Screenings < 8.0%.
- Moisture < 23%.
- Disease free.
- No physical defects.
- High yield.
- **To produce top quality malt.**



# How?

**1. Aim to achieve a high yield.**

**2. Get the timings right!**

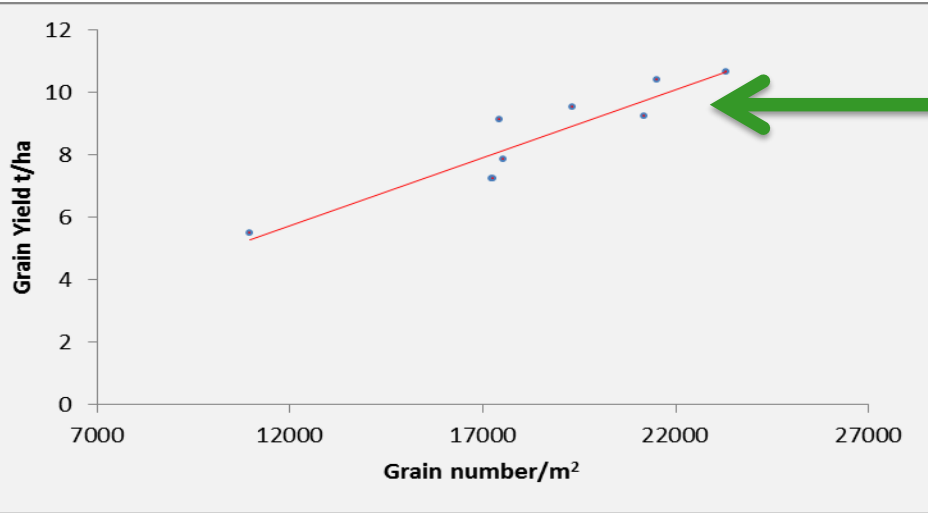
- Sowing date.
- Weed control.
- Fertiliser application.
- Fungicide application.
- Harvesting.

# Varietal Traits are Key to Management

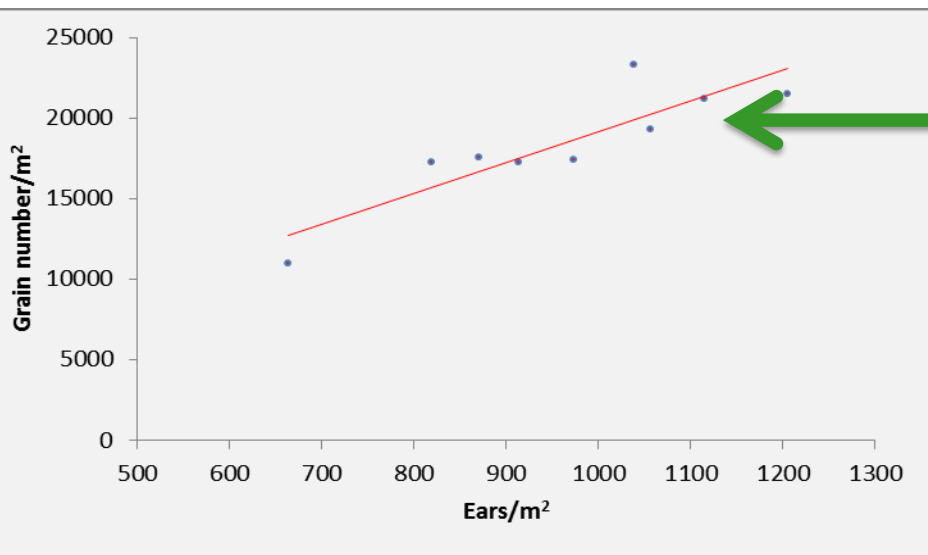
	RGT Planet	Gangway
Straw height (cm)	76.1	76.9
Resistance to lodging	5	(7)
Straw breakdown	5	(7)
Earliness of ripening	5	(5)
<b>Resistance to:</b>		
Mildew	8	(8)
Rhynchosporium	7	(7)
Brown Rust	6	(7)
Net Blotch	5	(8)
1,000 grain wt. (g)	52.9	50.8

# Aim to achieve a high yield

# High yield influenced by grain numbers/m<sup>2</sup>

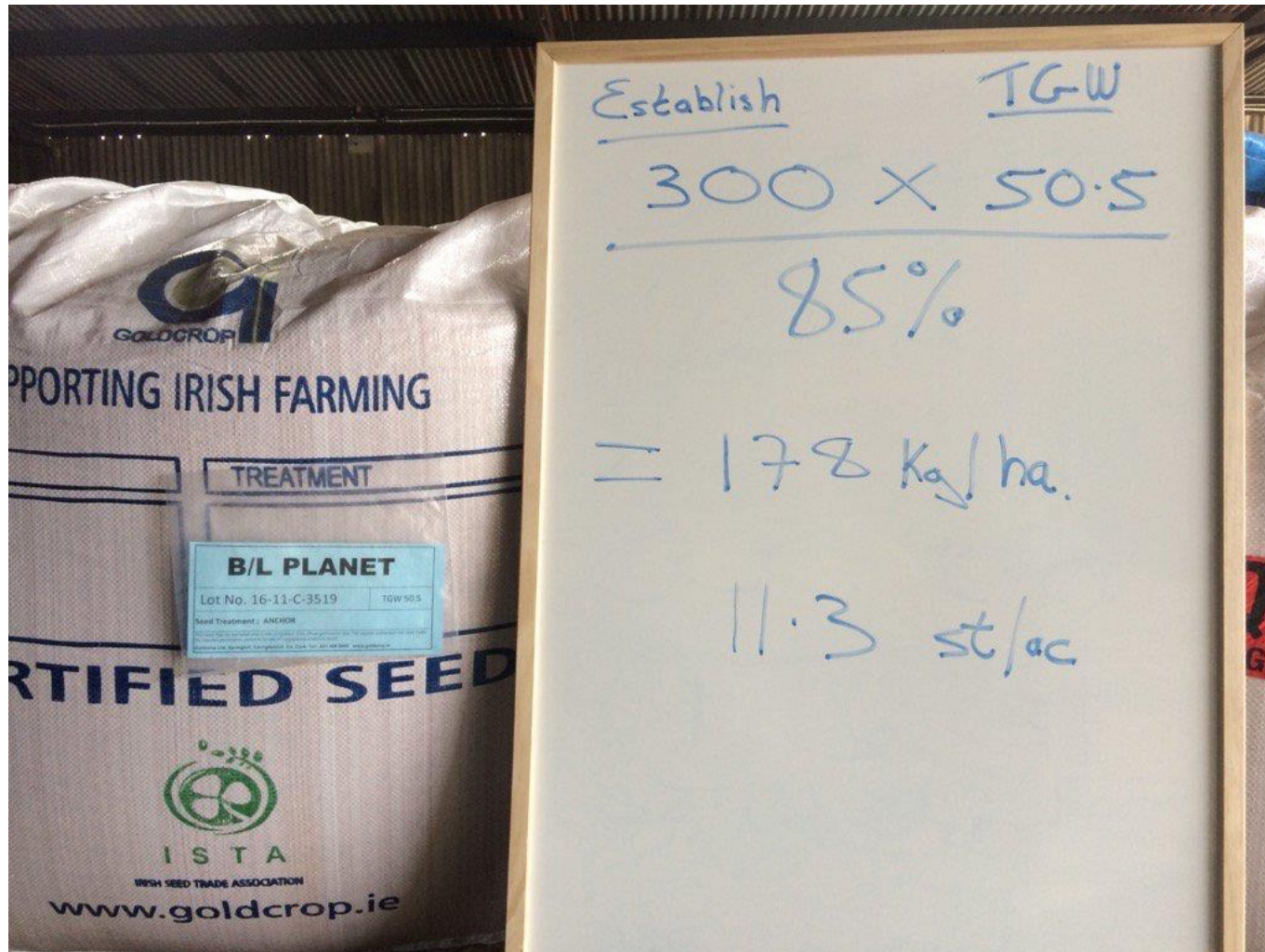


Final yield closely related to grain number /m<sup>2</sup> .



To achieve a high grain number /m<sup>2</sup> must have high ears number/m<sup>2</sup>

# Check bag for TGW



# High yields start with correct seed rate



350 seed/m<sup>2</sup>



@ 85%



# When to sow?

- Sow early – mid March but conditions must be good.
- Later harvesting can lead to poorer quality barley and increase likelihood of skinning.

# Skinning – what does it look like?



A. < 20% husk loss

B.  $\geq 20$  < 50%

C.  $\geq 50$  < 100%

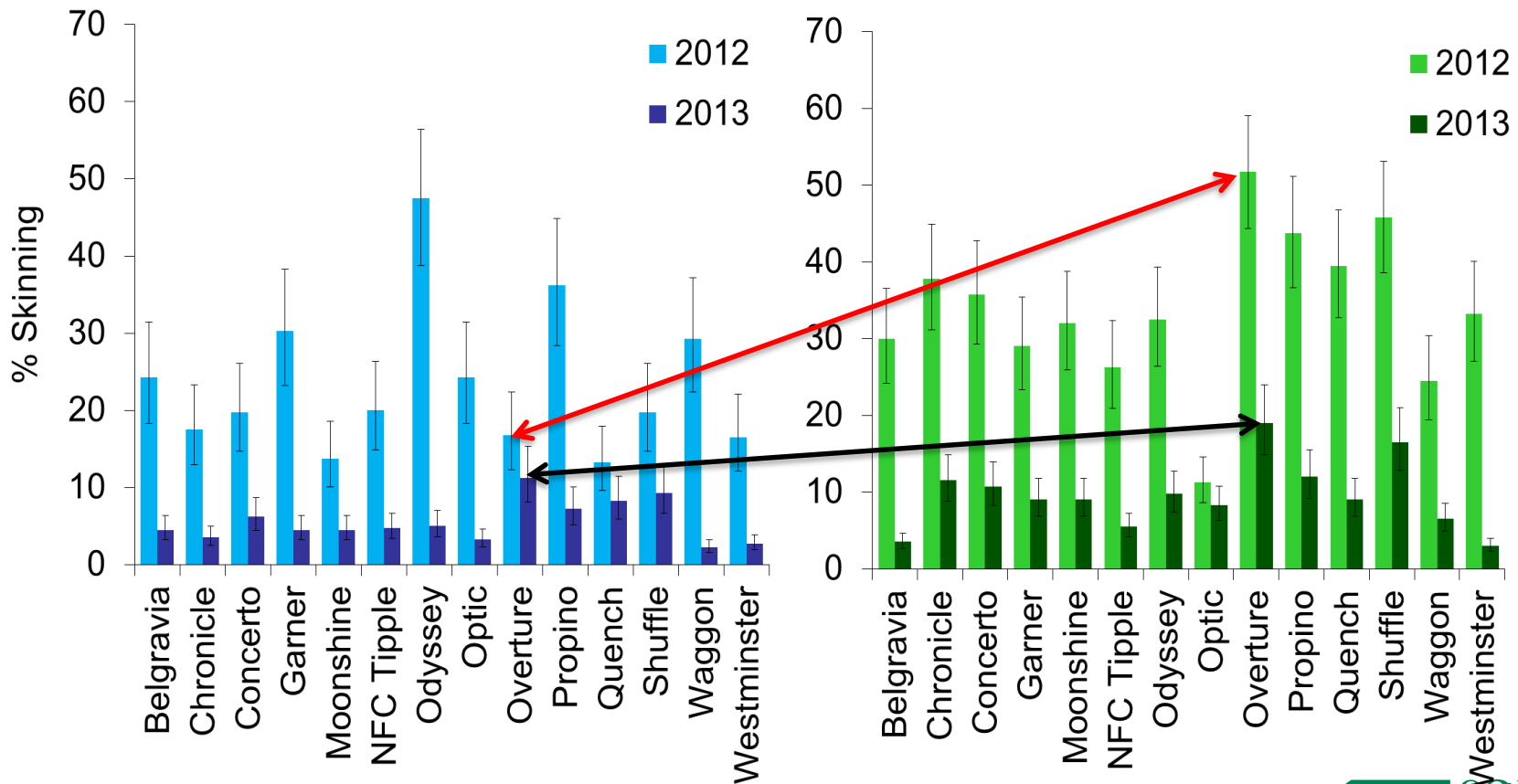
D. 100% (pearled)

# Late harvested crops tend to have increased levels of skinning. Ref SRUC

Fig. 2

A. Early sown plots

B. Late sown plots



# SRUC research summary

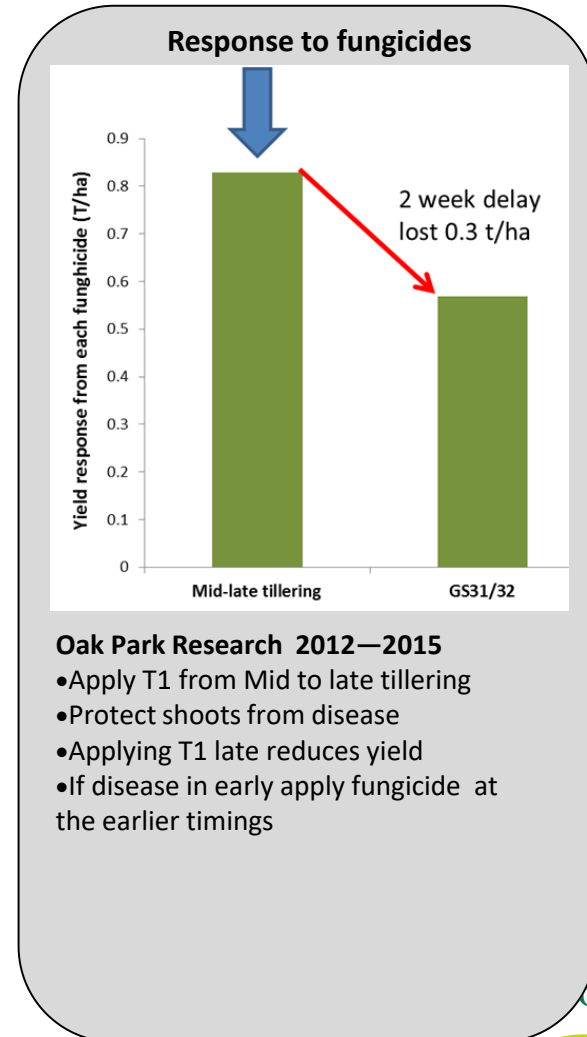
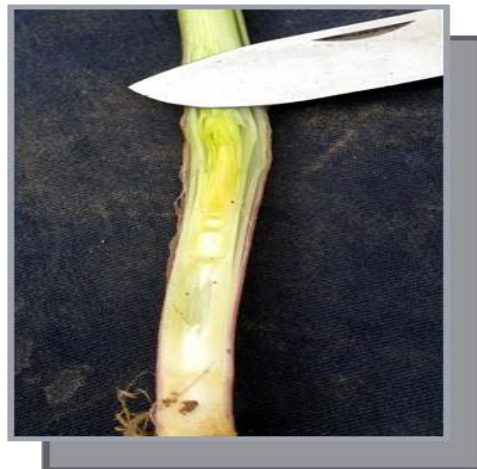
- Newer varieties are more succespectable to skinning but seasonal variations.
- No effect from PGR and fungicide but high Nitrogen has small effect.
- Late harvested crops tend to have increased levels of skinning.
- Combine settings important especially for susceptible varieties.

# Timings

# Correct timings influence yield

- BYDV – GS 1.4
- Weeds – Control early
  - Small actively growing weeds easiest to control.
  - Examine post application – have some weeds survived? **WHY??**

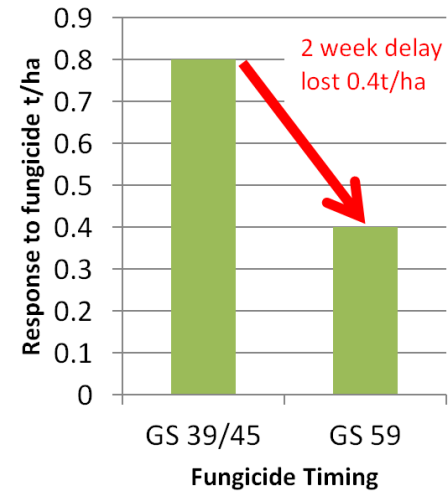
# Fungicide - T1 timing



# Fungicide – T2 timing.



Response to fungicides



**Oak Park Research 2012—2015**

- Apply T2 from booting to awns peeping
- Early application needed to protect against Ramularia
- Late applications can lead to reduced yield



# P & K Removal at Harvest

*Spring Barley @ 7.5t/ha*

**7.5t/ha**  
(Grain & Straw)

P

29kg/ha P

K

86kg/ha K

23 units/ac

68 units/ac

Each 1t/ha Removes

- 3.8kg P
- 11.4kg K



# Fertiliser – P & K

<b>P &amp; K advice (kg/ha) for Spring Barley at 7.5t/ha</b>			
Soil Index	P (units/ac)	K (units/ac)	Programmes
1	49 (39)	115 (92)	3.9 bags/ac 10-10-20
2	39 (31)	100 (80)	3.9 bags/ac 12-8-20
3	29 (23)	85 (68)	3.8 bags/ac 13-6-20
4	0	0	0

Incorporation in seedbed important for index 1 and 2 and late sowing.

# Protein % - Large dilution effect

Grain Yield

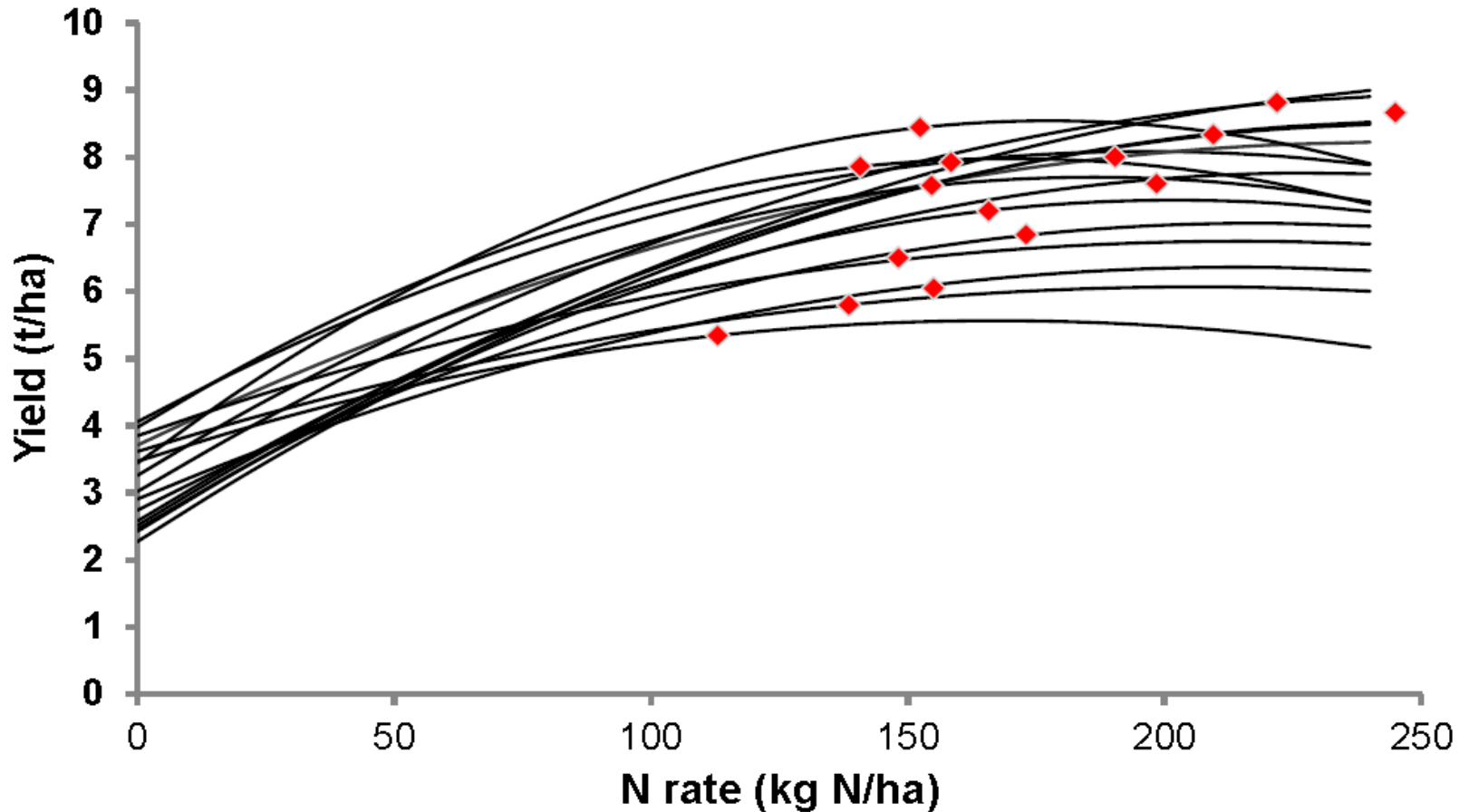


Protein



= Grain Protein %

# Effect of N rate on grain yield and $N_{opt}$ over sites and seasons

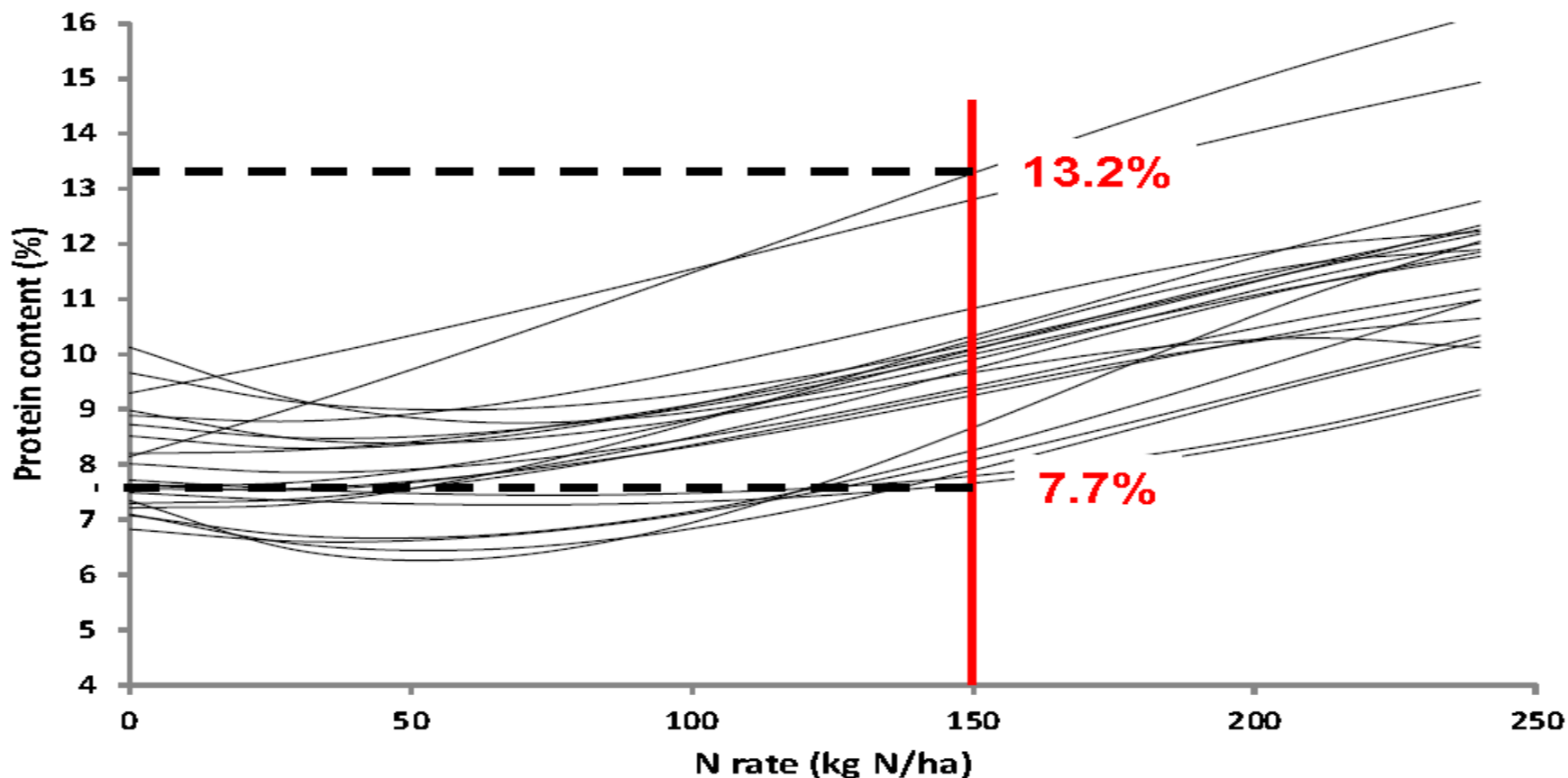


# Fertiliser N rates for yield and protein

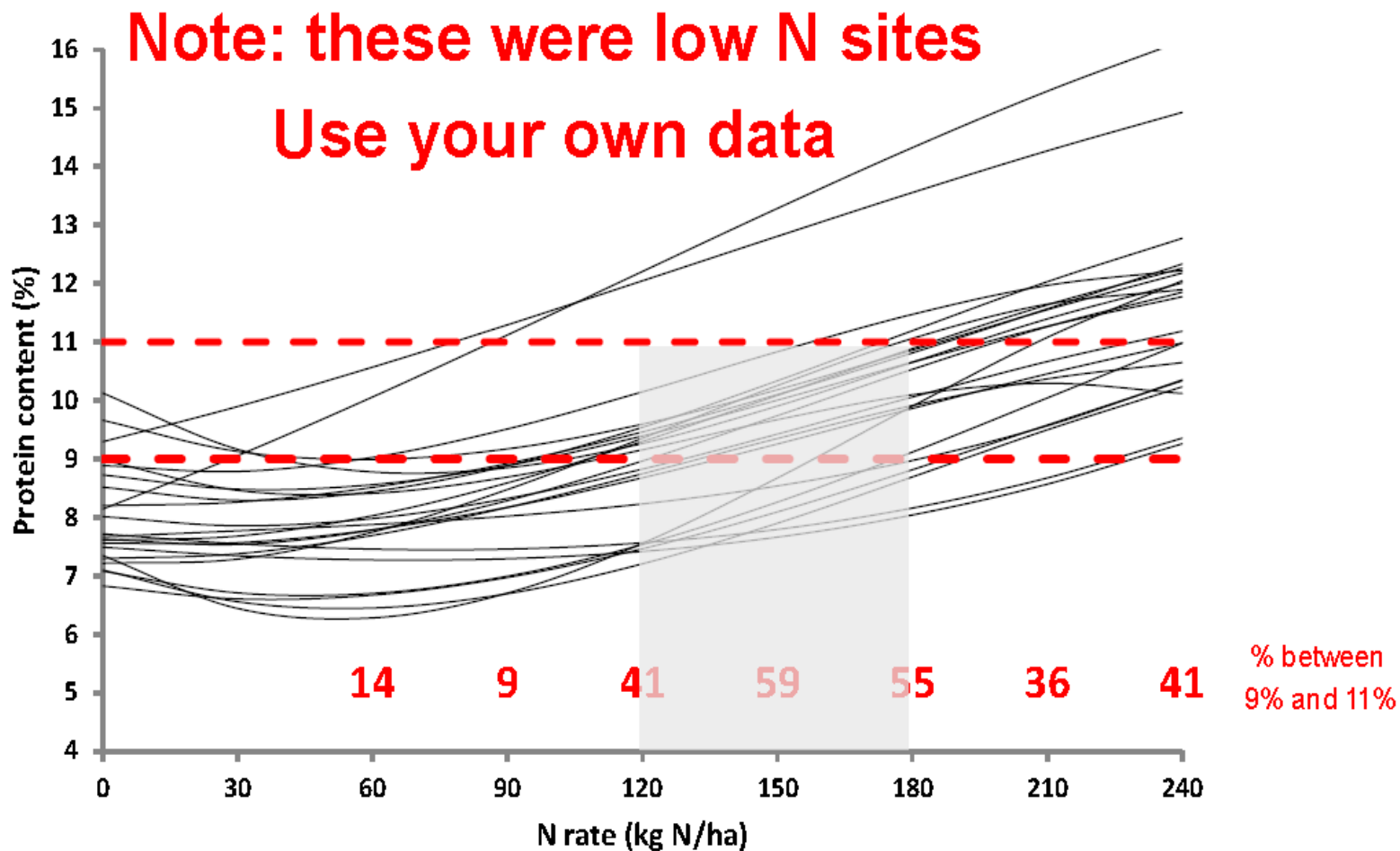
Summary of 22 sites (2011-2016)

	Unit	Mean
Economic optimum N rate ( $N_{opt}$ )	Kg N/ha	177
Yield at $N_{opt}$	(t/ha)	7.7
% protein at $N_{opt}$	%	10.2

# A given fertiliser rate can give a range of proteins



# Effect of fertiliser rate on protein



# Summary

- Grow the crop to achieve a high yield.
  - Sow early but in good conditions.
  - Ensure inputs are correctly timed.
  - Use field history to guide Nitrogen input.



# Thanks for your attention