



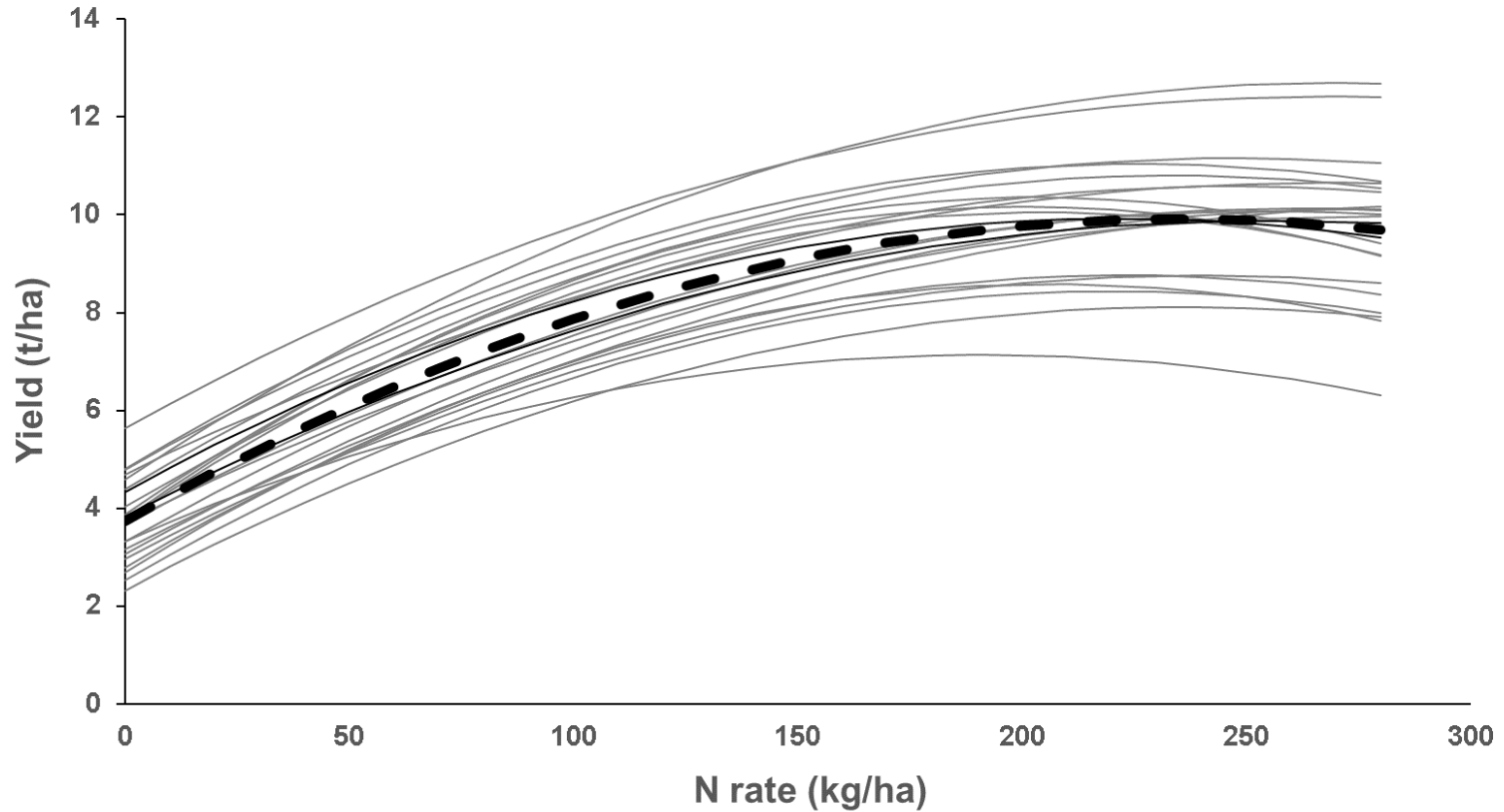
Adjusting N strategies for cereals in 2022

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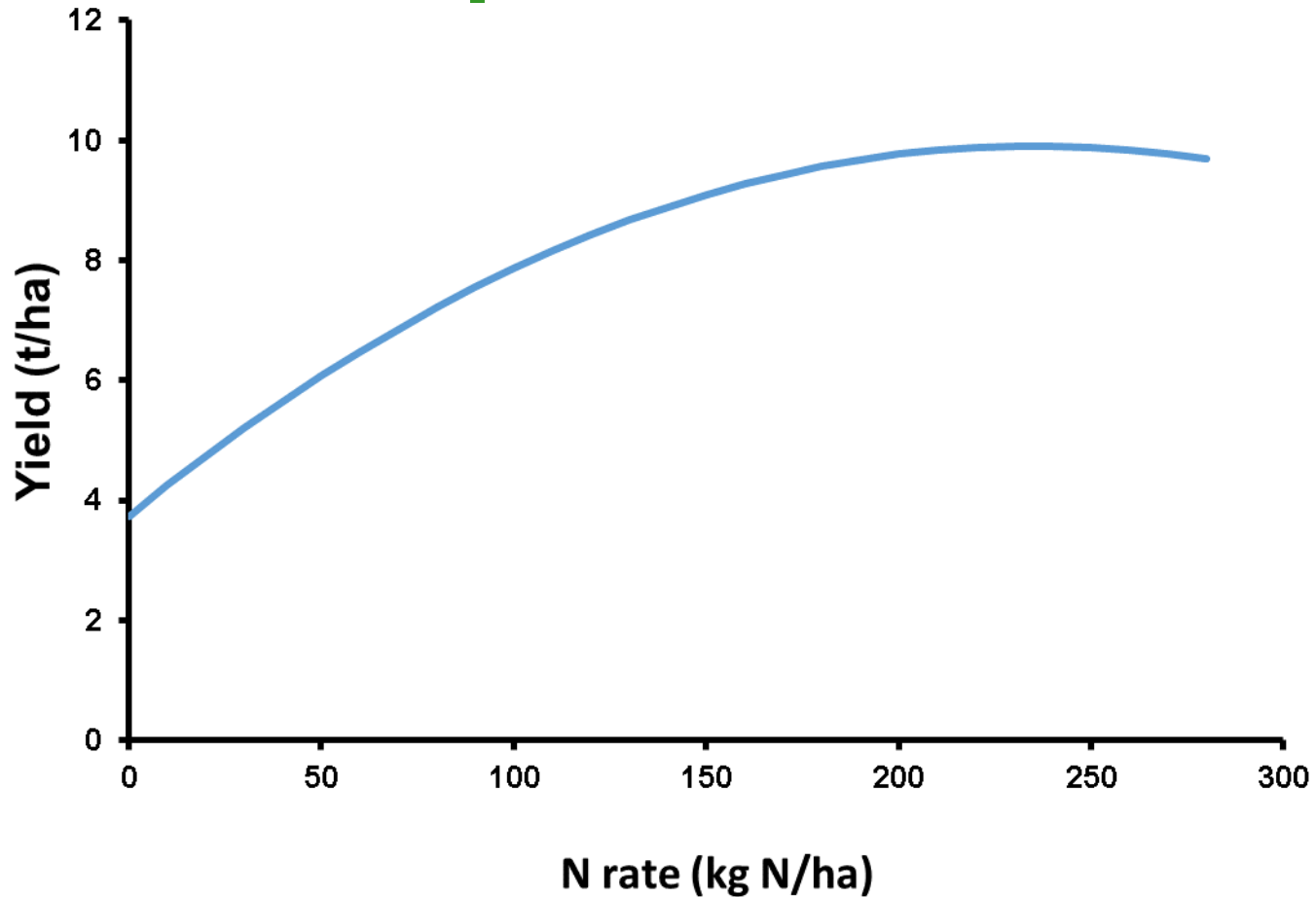
Introduction

- N prices approx. tripled in last year
 - Grain prices increased also
- Should N rates be reduced?
- By how much and when?
- What will the effect on yield be?
- What about N types other than CAN?

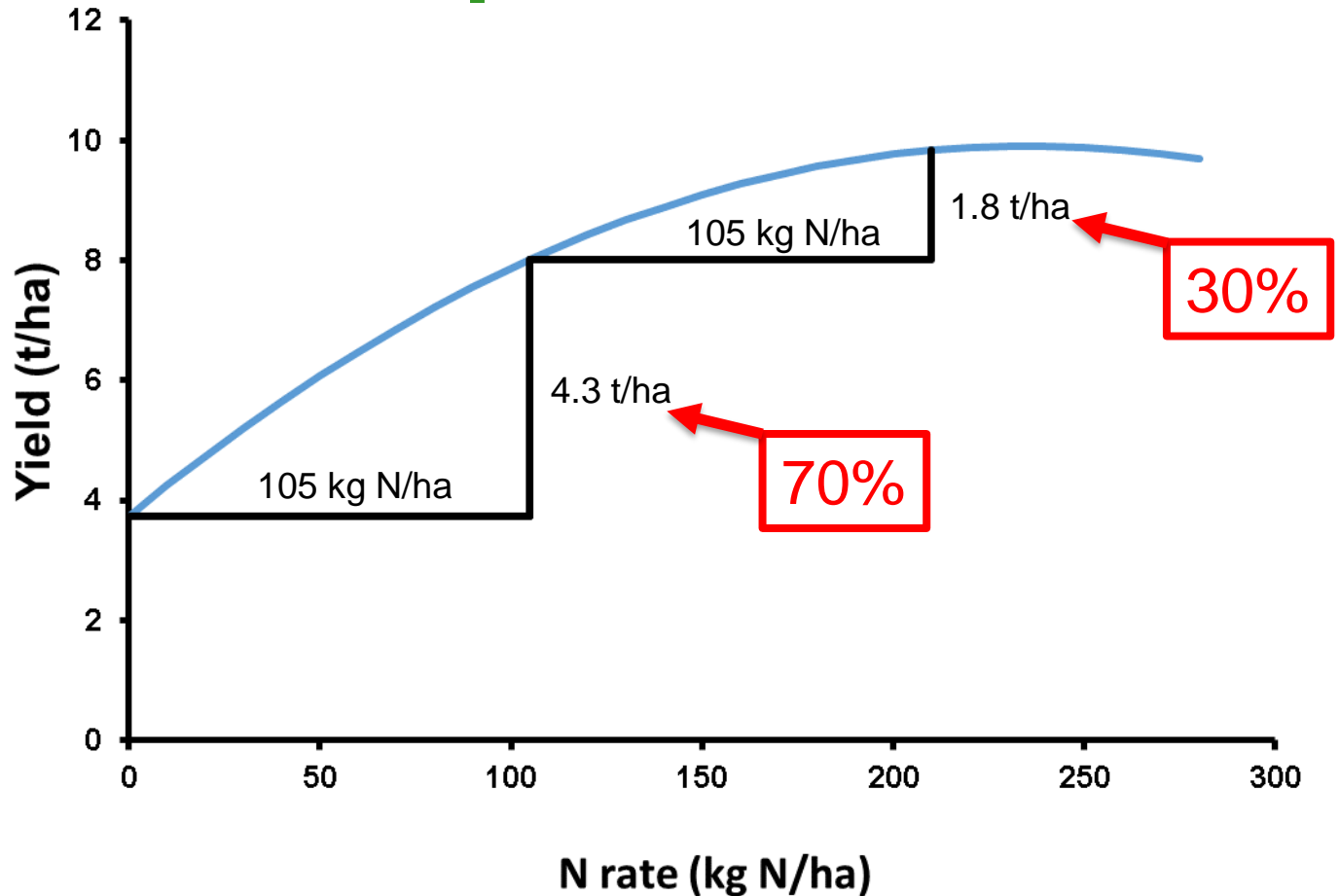
N response curve



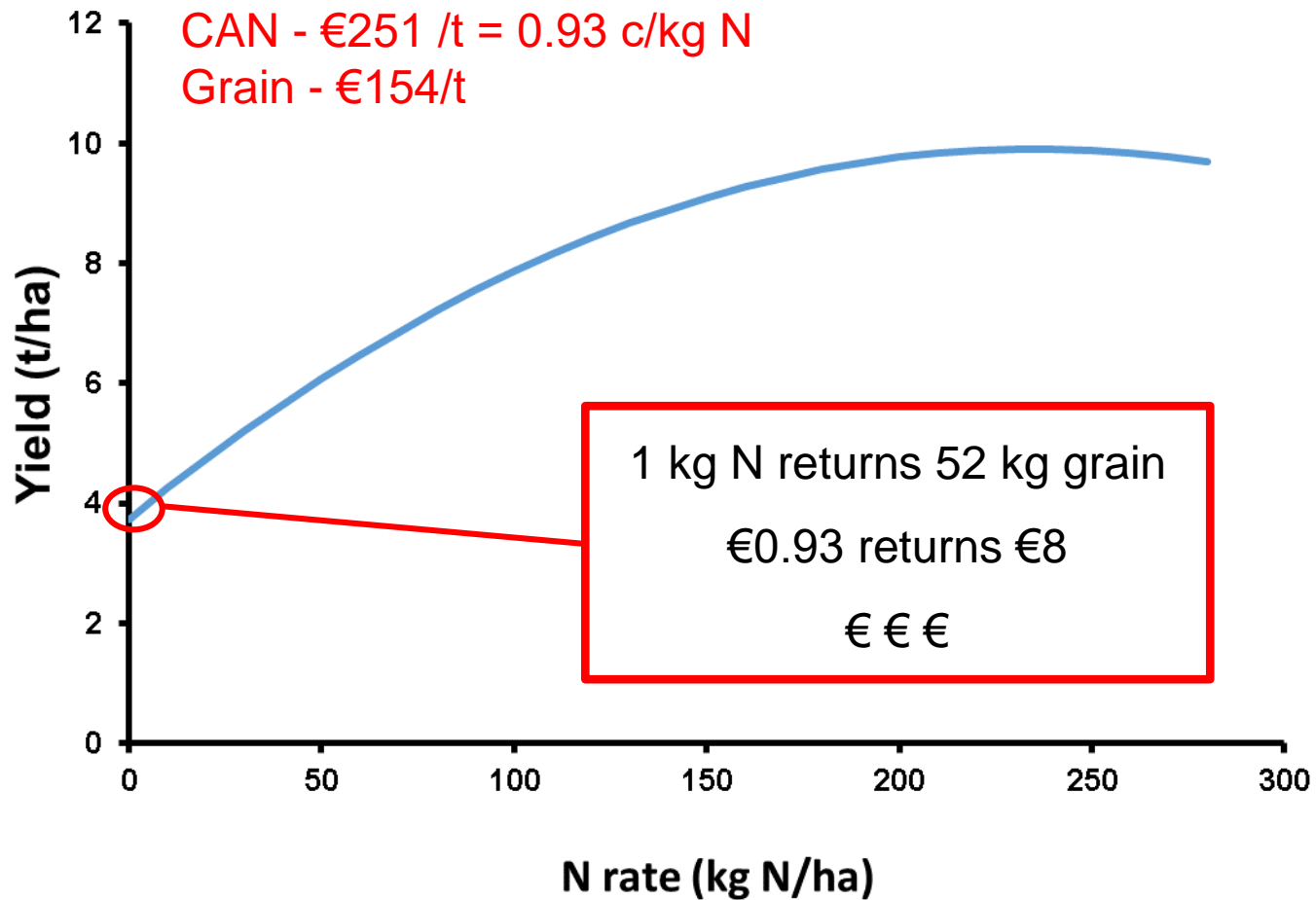
N response curve



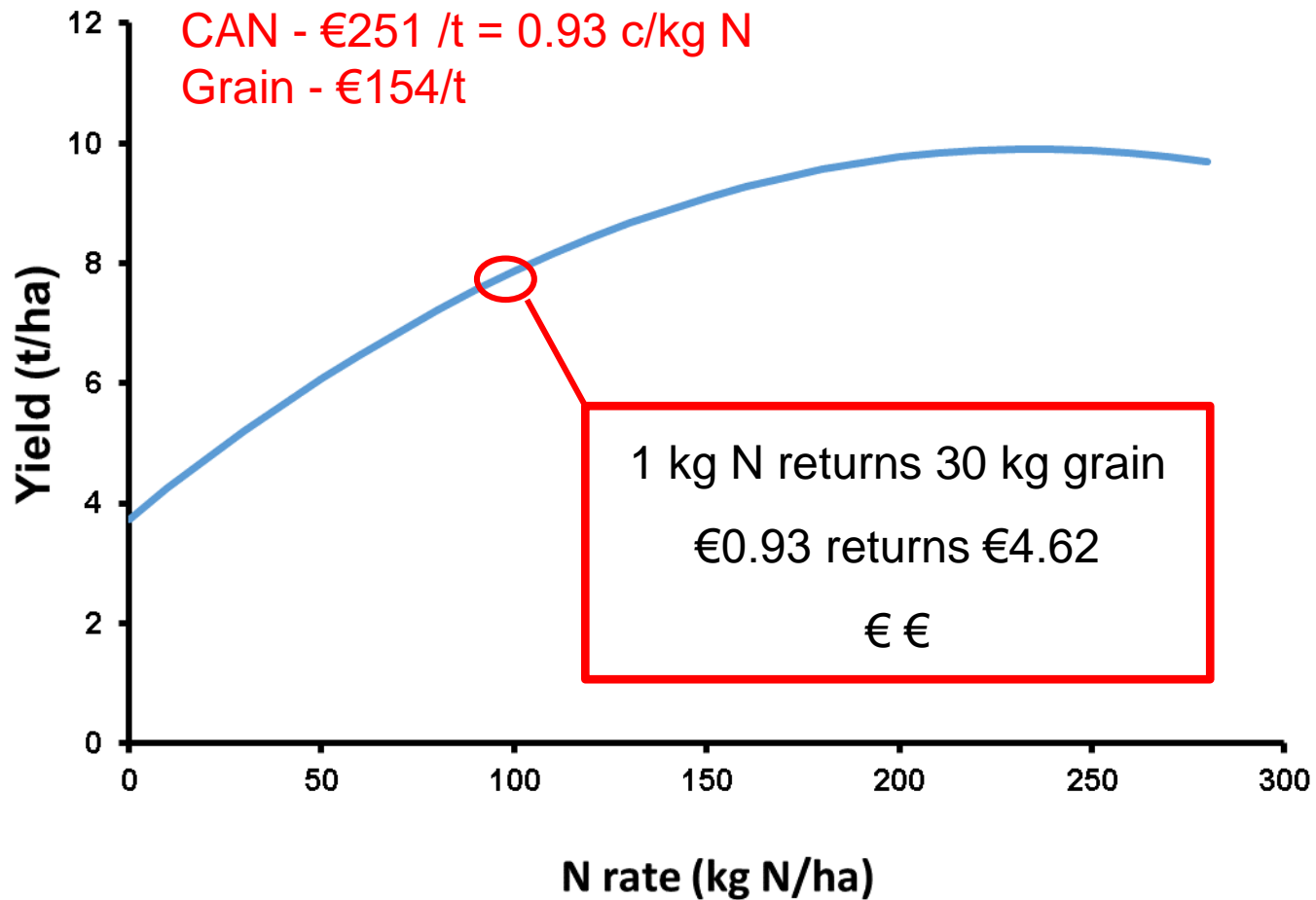
N response curve



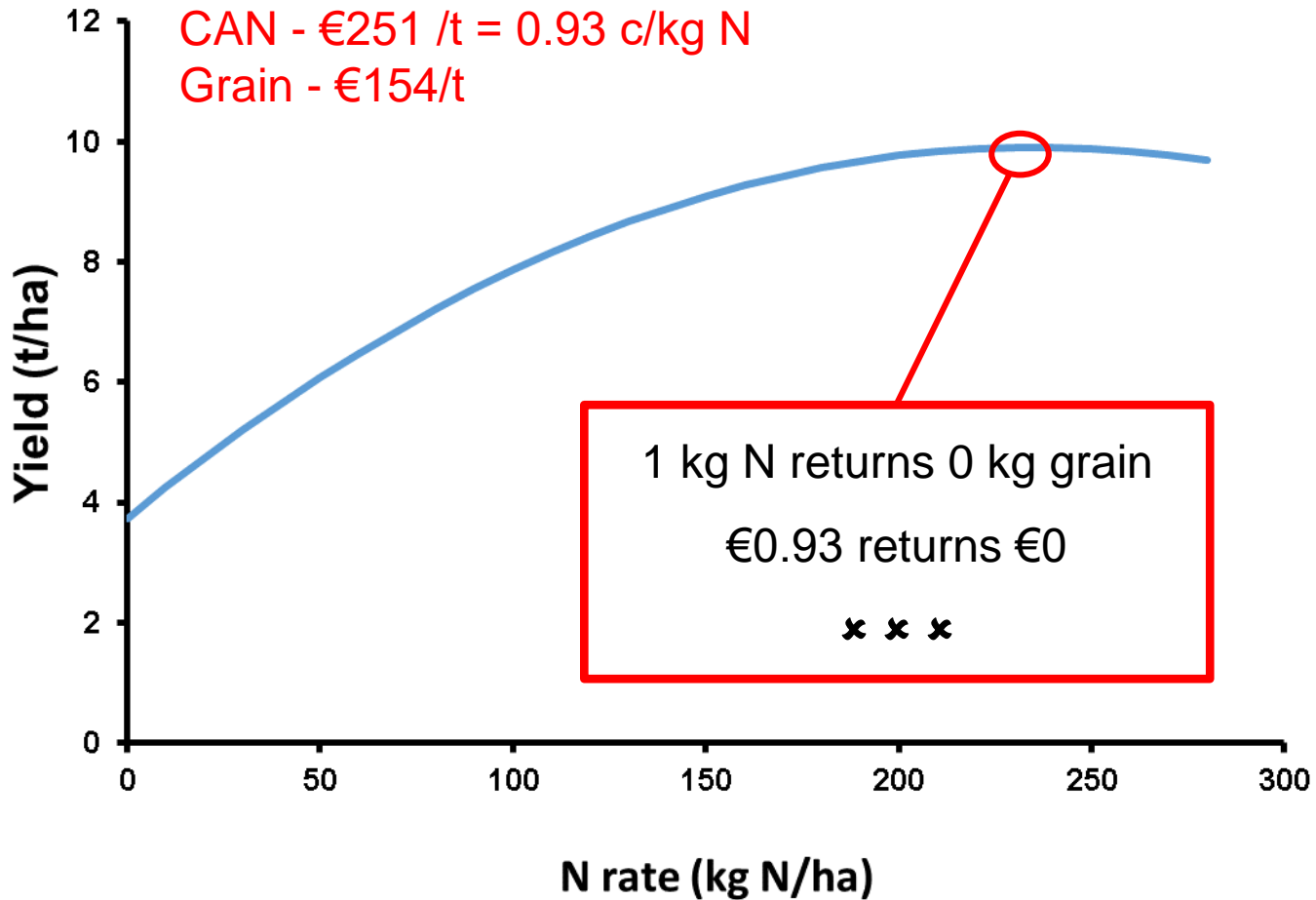
N response curve



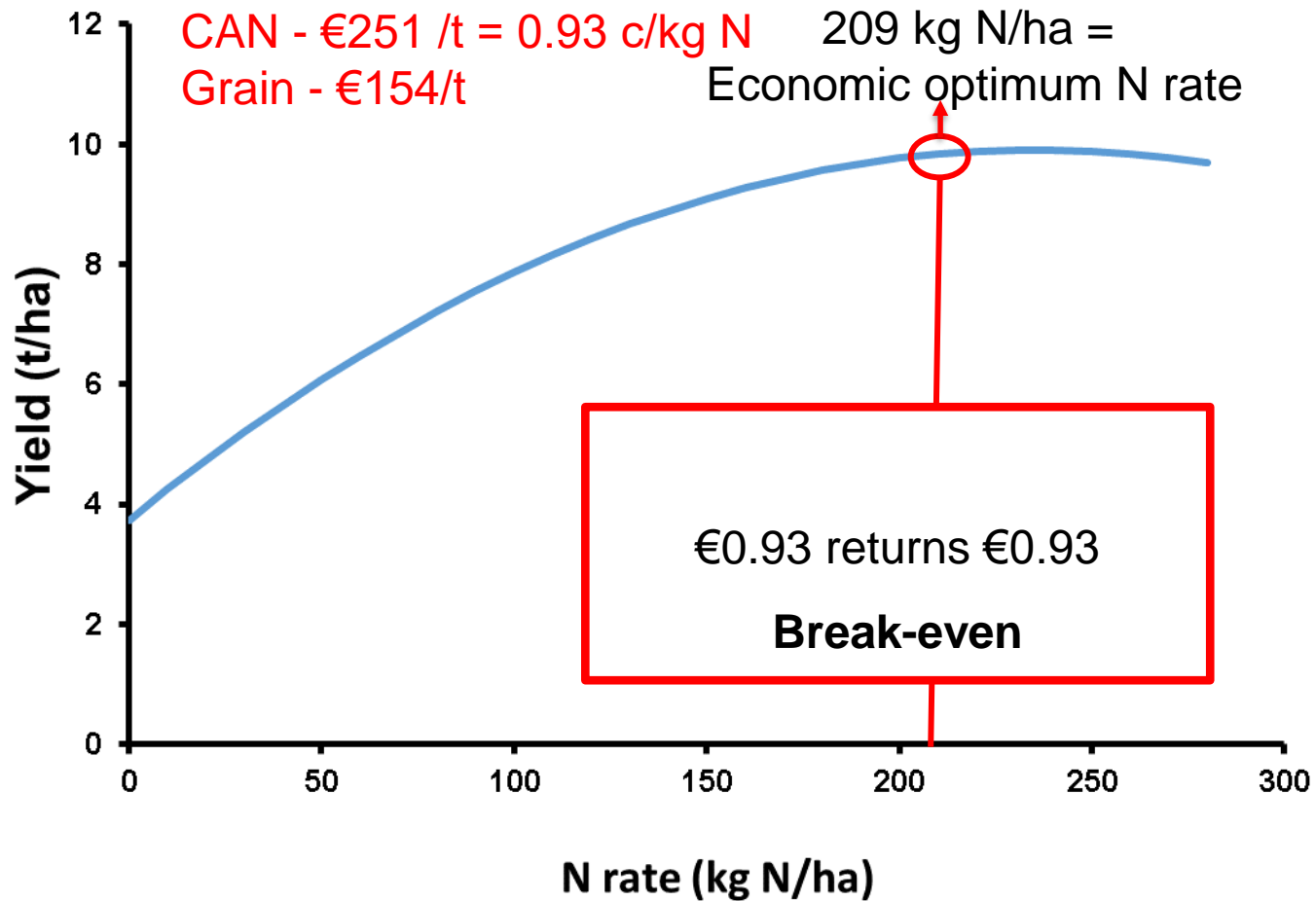
N response curve



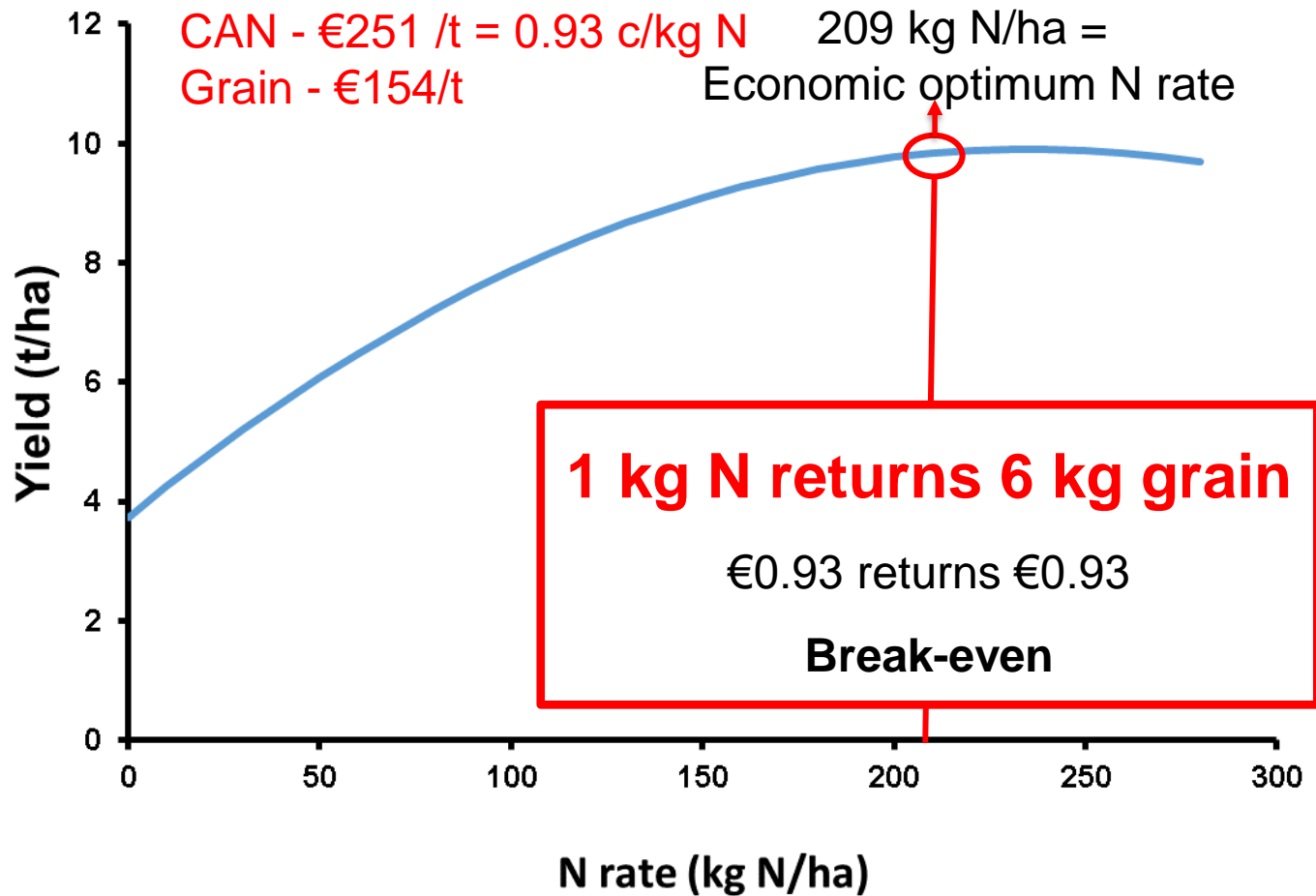
N response curve



N response curve



N response curve



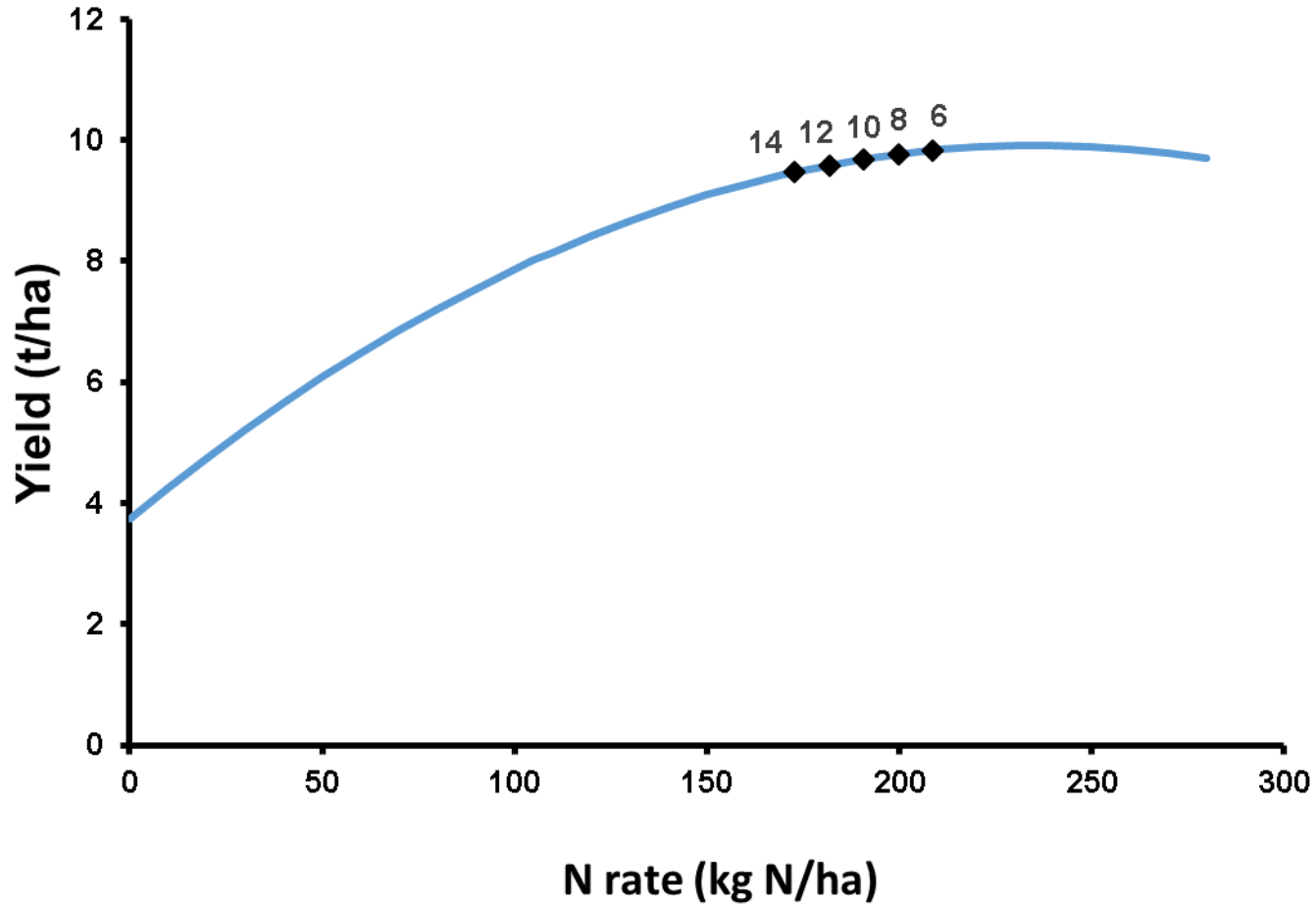
Break even ratio (BER)

- Kilos of grain required to pay for 1 kg N
- Grain price €154/t= €0.154 /kg
- CAN price € 251/t = €0.93 /kg
- $$BER = \frac{N \text{ cost}(kg)}{\text{Grain price } (kg)} = \frac{0.93}{0.154} = 6$$
- Increase N until a kilo of N returns 6 kg grain to give economic N rate

What is BER today?

- Grain price €220/t = €0.22 /kg
- CAN price €675/t = €2.50 /kg N
- $BER = \frac{N \text{ cost (kg)}}{Grain \text{ price (kg)}} = \frac{2.50}{0.22} = 11.4$

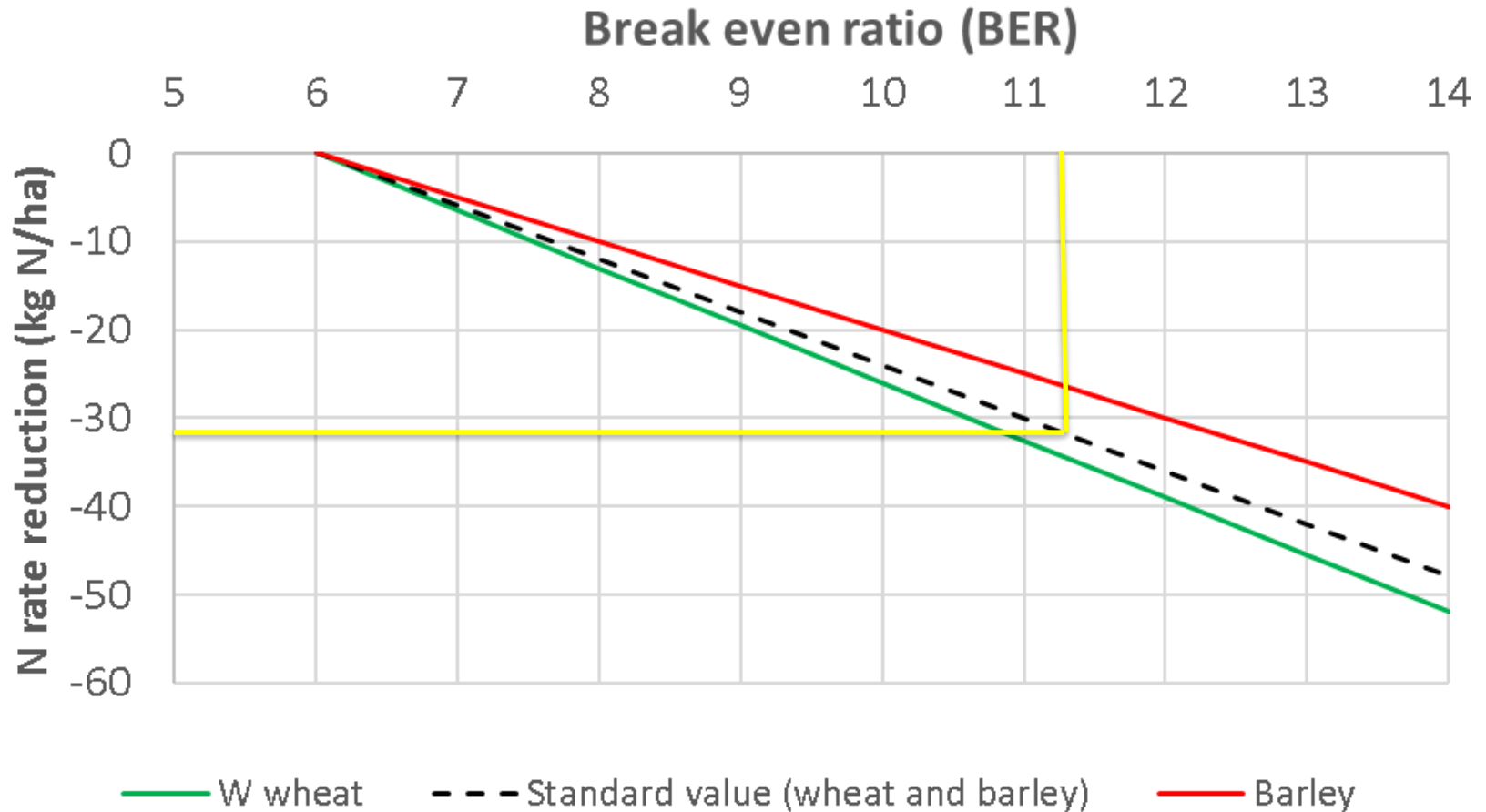
Effect of BER on optimum N



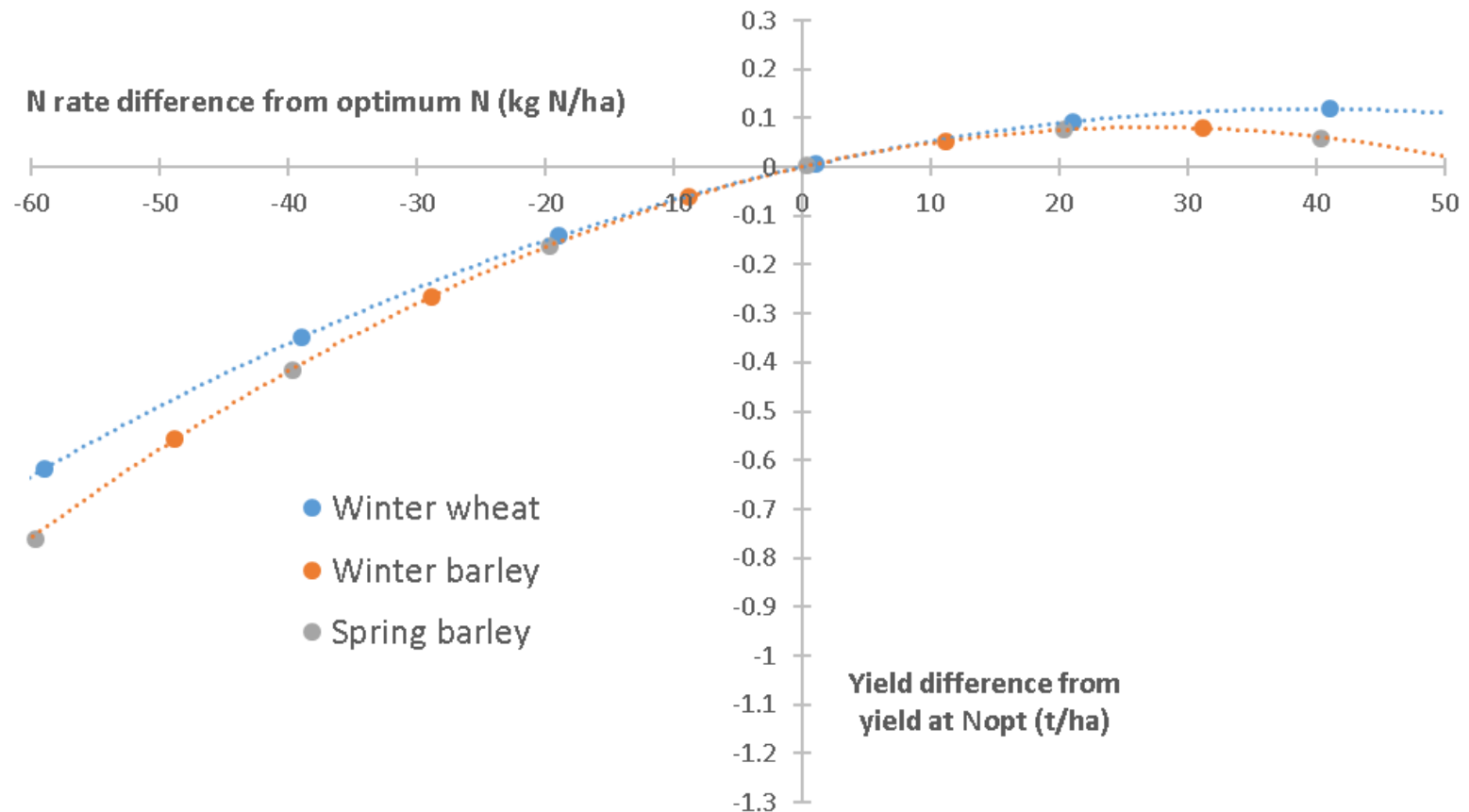
Adjustment factors

- Reduction per unit change in BER
- Wheat/barley – 6 kg N/ha
- Recent analysis indicates small crop specific differences
 - Winter wheat – 6.5 kg N/ha
 - Winter and spring barley – 5 kg N/ha
- Actual reduction as BER changes from 6 to 11.4
 - Wheat - 35 kg N/ha
 - Barley - 27 kg N/ha

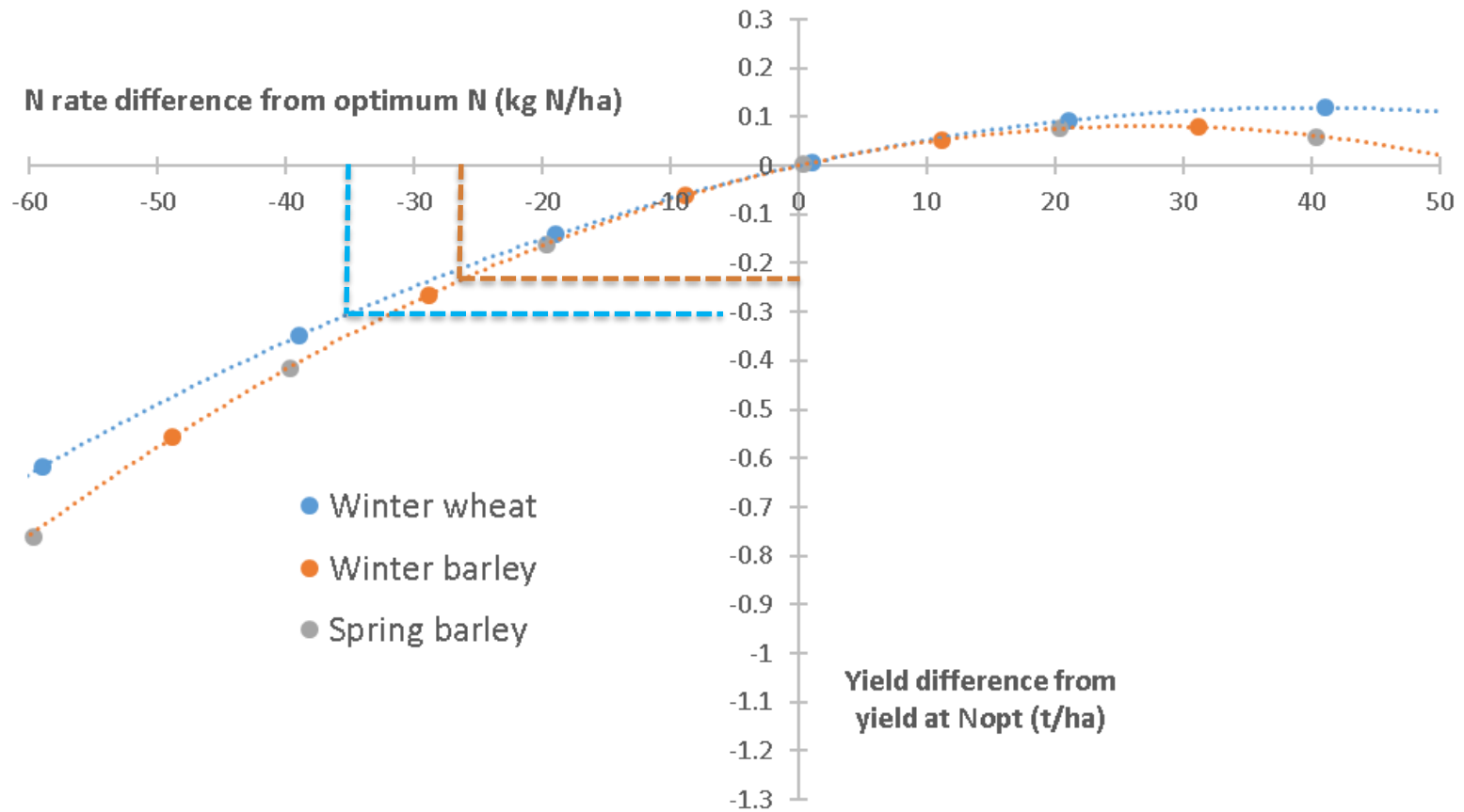
BER and N reductions



Effect of N reductions from N_{opt} on yield



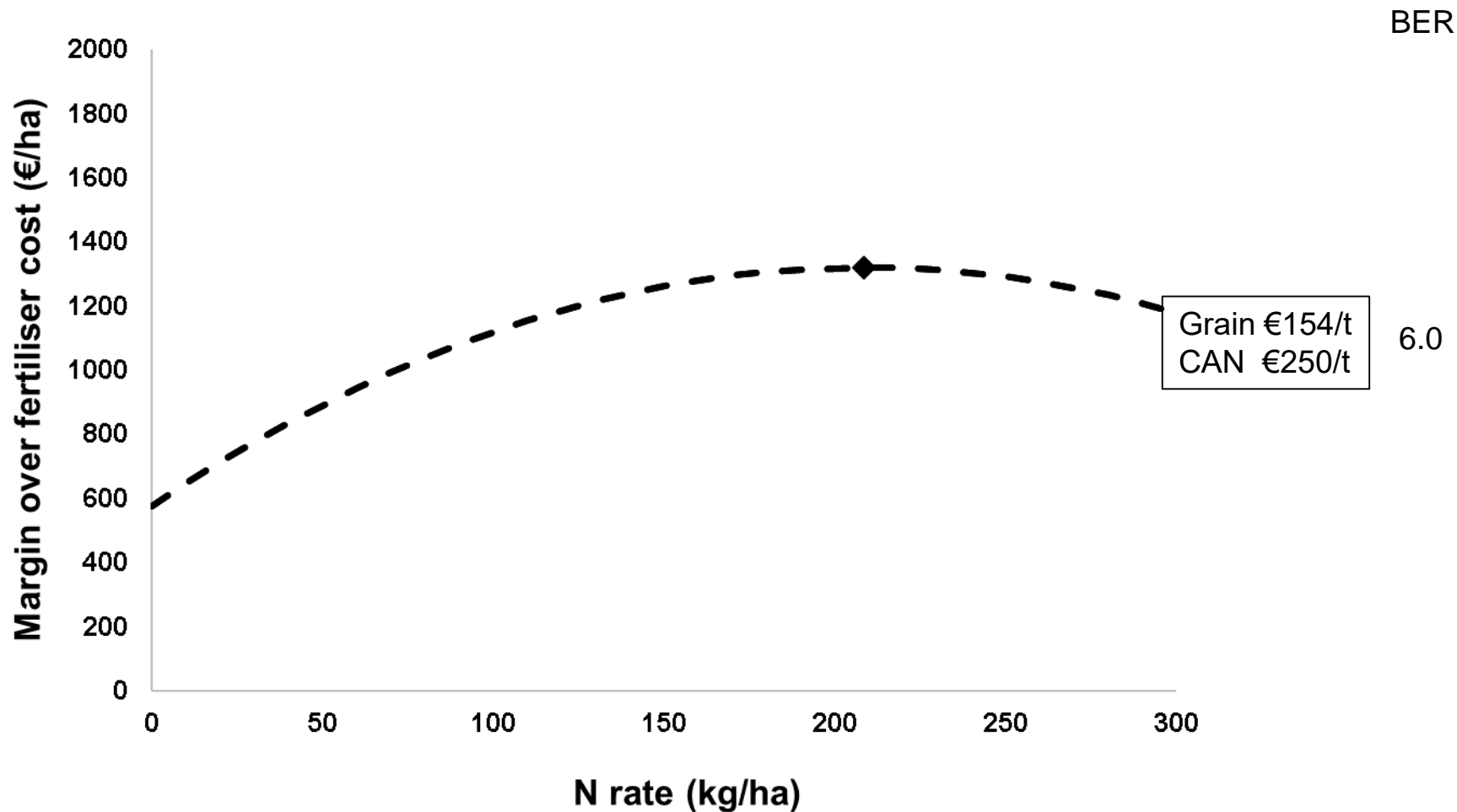
Effect of N reductions from N_{opt} on yield



Malting barley

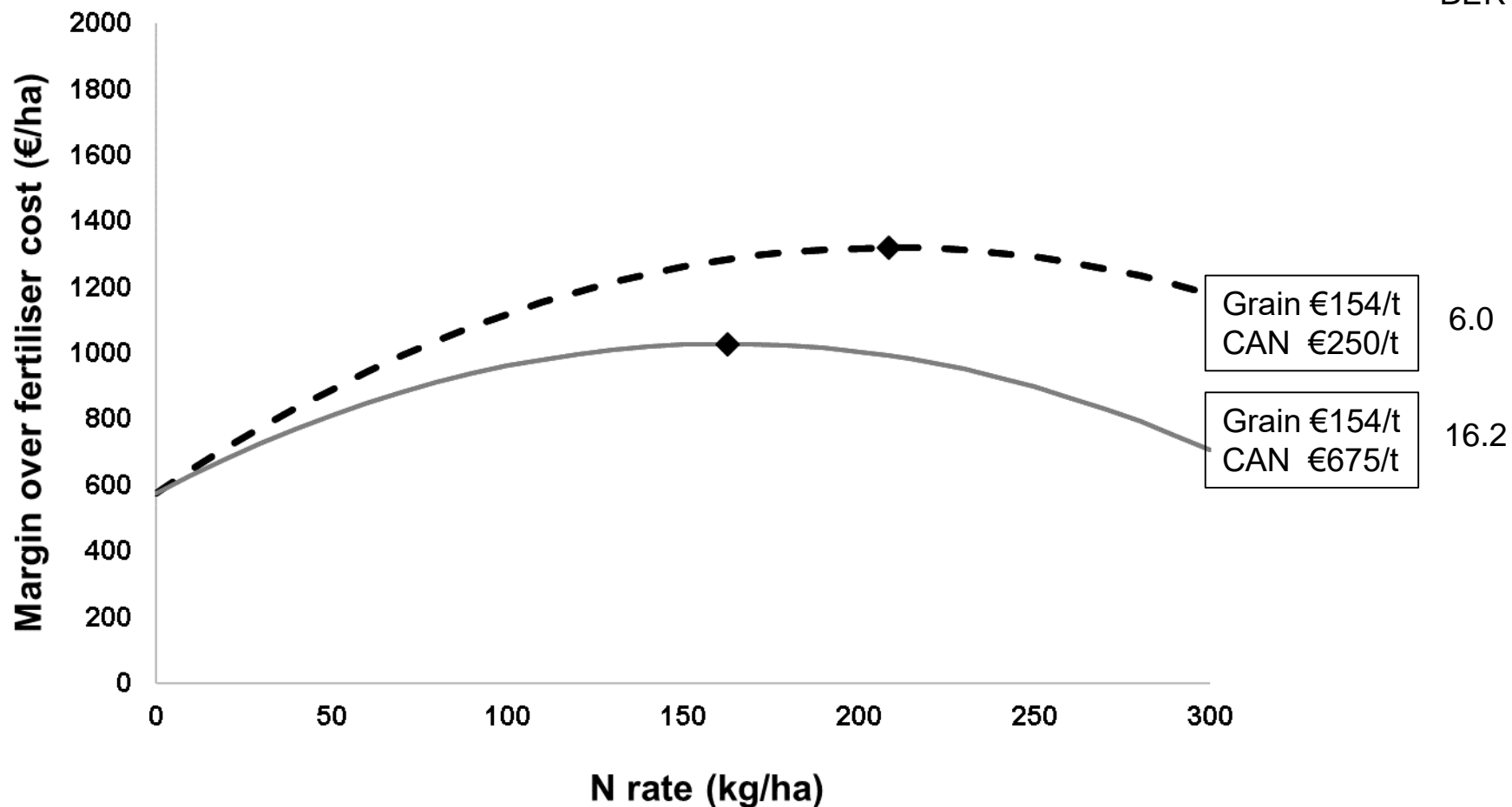
- Many malting growers use less N than optimum for yield already (to meet protein spec)
- Recommended rate from green book for feed barley should be used as starting point
- Price premium for malting lessens impact of fert price on BER
- N reductions, if any, will be smaller for malting barley

Fertiliser and grain price effects on margin

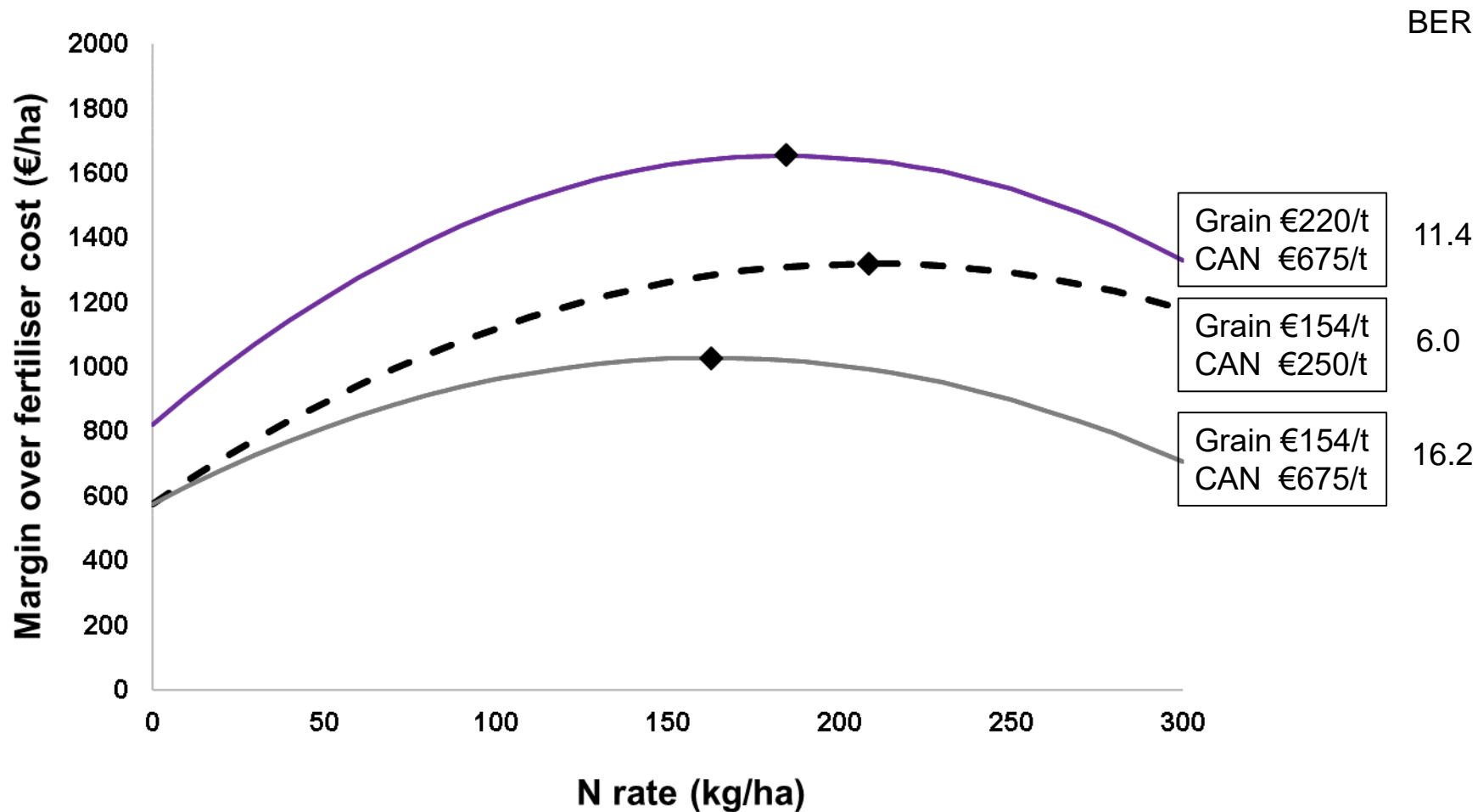


Fertiliser and grain price effects on margin

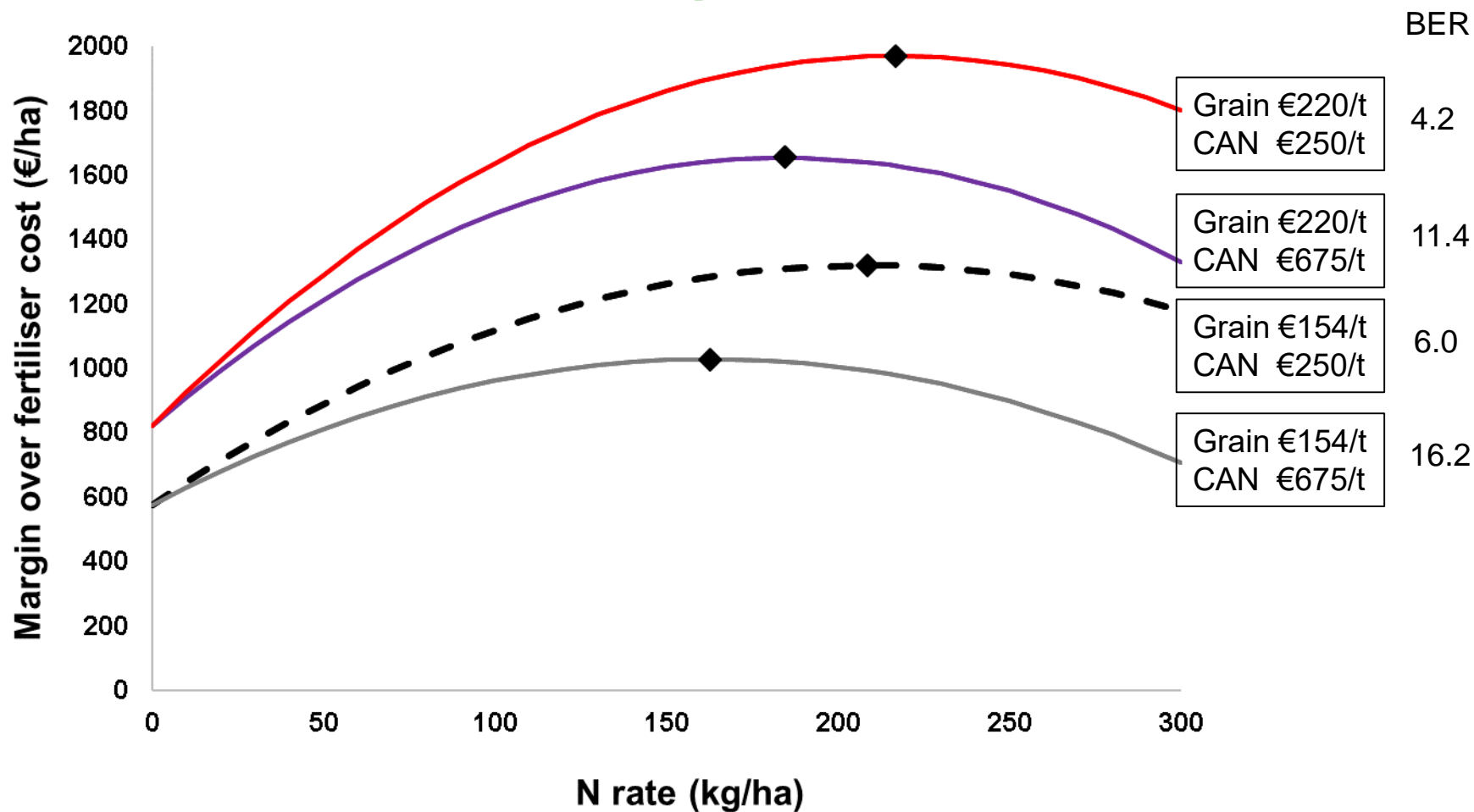
BER



Fertiliser and grain price effects on margin



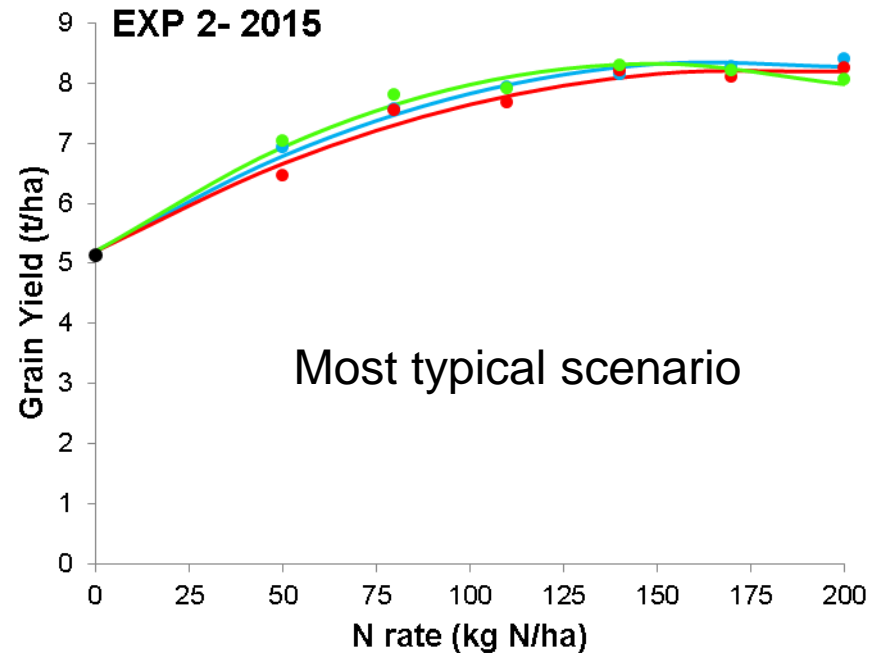
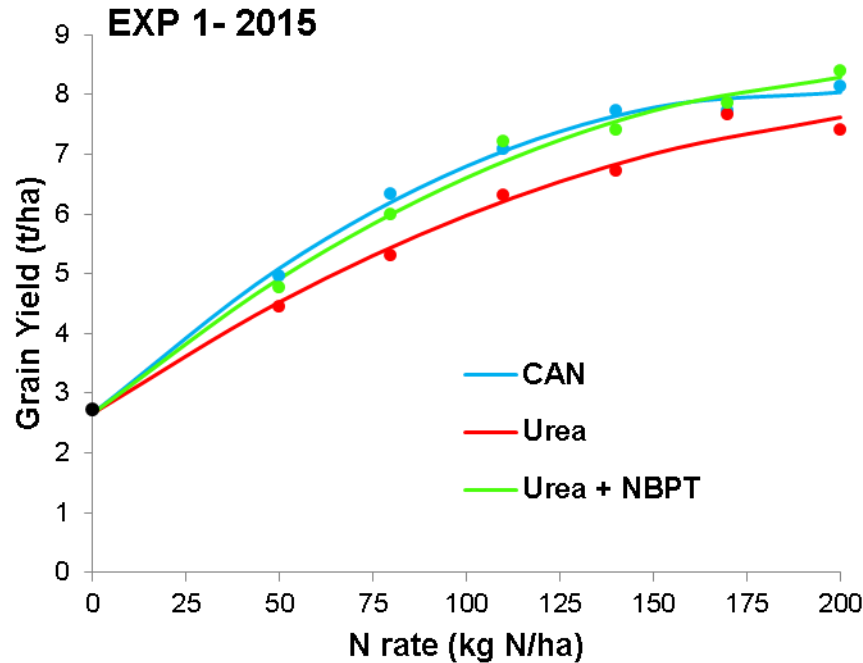
Fertiliser and grain price effects on margin



Where should you make the reductions?

- Aim is to maximise N efficiency
- Apply N as close to when the crop needs it as possible – reduces loss risk
- Main uptake is during stem extension (if temps are good)
- Avoid large early applications (Feb early March)
- Compound will determine 1st N split for many
- 3 splits if applying more than 150 kg N/ha
- Equal % reduction across splits

Fertiliser types



- Urea, particularly protected urea, is suitable N for cereals
 - N can be lost from unprotected urea
- UAN (Liquid N) is also a suitable N source

Conclusions

- Some N rate reduction justified in many situations due to high N price
 - Situation specific
- Typical reduction of 25-35 kg N/ha
- Need to assess all alternative sources of N, including organic, to minimise cost