



Potassium (K) Requirements for Winter & Spring Barley



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Potassium the 'Nutrient'

- Potassium or “Potash”
- Essential for crops
- Large amounts compared to P
- Last decade N & P in the spotlight
- Often referred to as *'Hidden Hunger'*

K
POTASSIUM



- Sources of K

- Muriate of K & Sulphate of K
- Manures esp. Cattle slurry / FYM / SMC



Potassium Advice



- Advice updated in 2008
- K rates increased due to higher yields
- Adjustment based on crop yield potential
- Off takes (Grain & Straw)
 - Sp. Barley & wheat (+/- 11.4kg/t)
 - Winter Wheat & Barley(+/- 9.8kg/t)
 - Oats (+/- 14.4kg/t)
- Select suitable fertiliser compound



Potassium & Cereals

- K & Spring Barley
 - Effect of soil K index on grain yield
 - Grain yield & fertiliser K responses
- K & Winter Barley
 - K requirements
 - 2 & 6 row types
 - Types of K
 - MOP v SOP



Spring Barley K Trial 2015

- Intensively cut grassland
- Light to medium soil
- Soil K
 - Index 1 (24 mg/l)
 - Index 2 (62 mg/l)
- All K applied as MOP
- Applied at GS 22/23

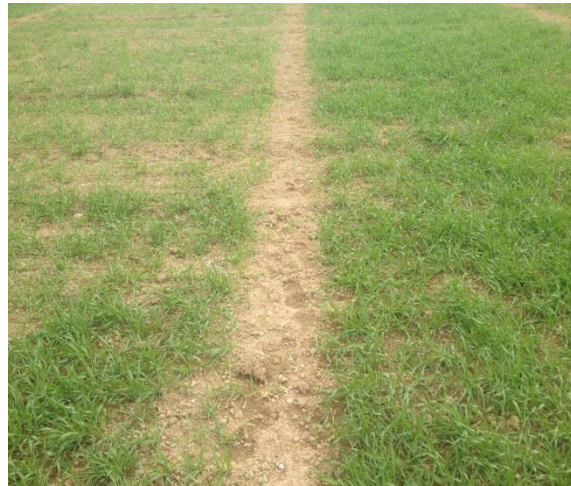


Effect of K on Crop Development

- K role in crop establishment
- Reduce tiller development
- Crop development reduced



K Deficiency



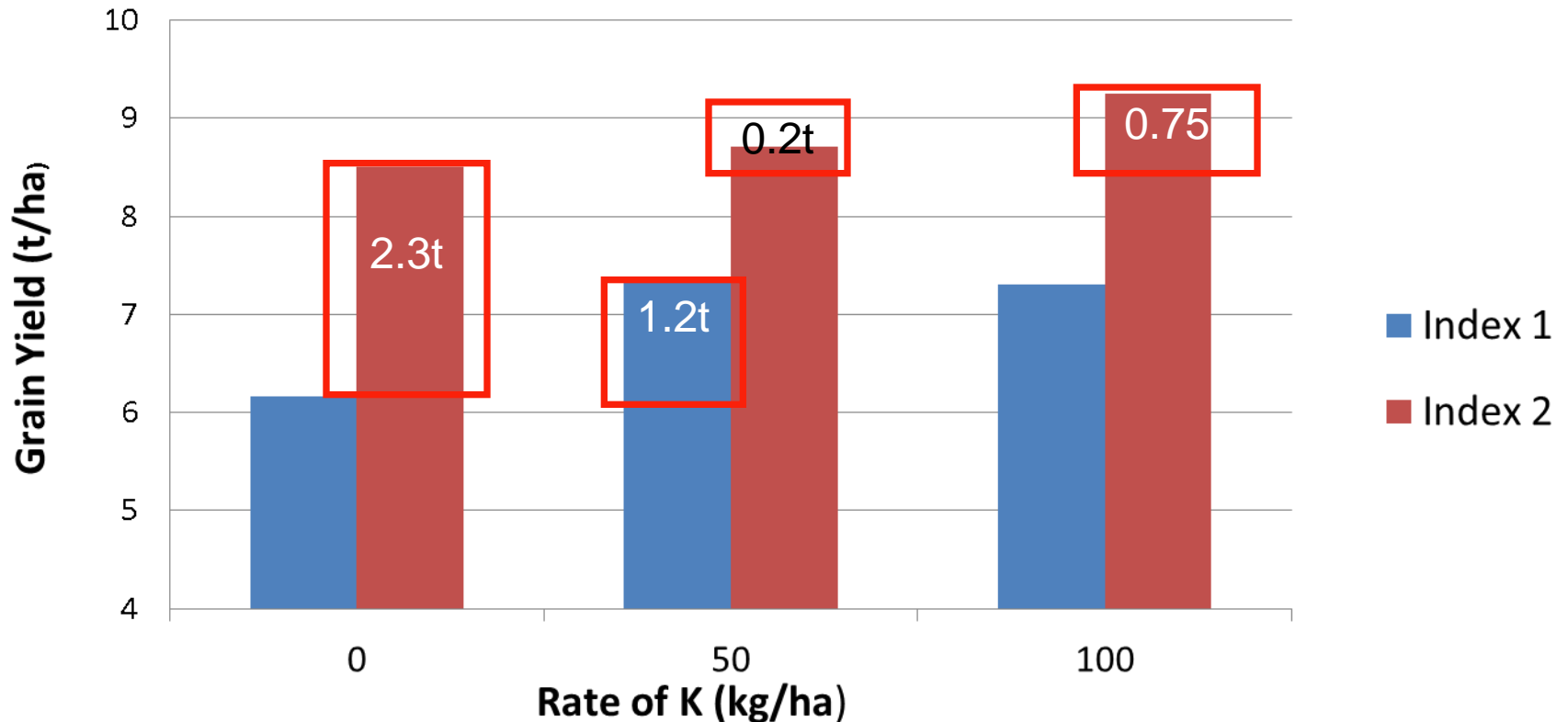
K Index 1 V K Index 2



Index 2 V Index 1

Potassium & Grain Yield

The effect of soil & fertiliser K on grain yield in Spring Barley
(Teagasc, Oak Park, 2015)



Potassium & Disease

- Lower plant K levels resulted in high levels of powdery mildew!!
- Plants infected from GS 39 onwards
- K role in protecting against disease infection



1st July, 2015

Winter Barley K Trial 2016

- Medium type soil
- 2 Row Cassia
 - Soil K - 95mg/l
- 6 Row Meridian
 - Soil K - 71mg/l
- All K spring applied in single split

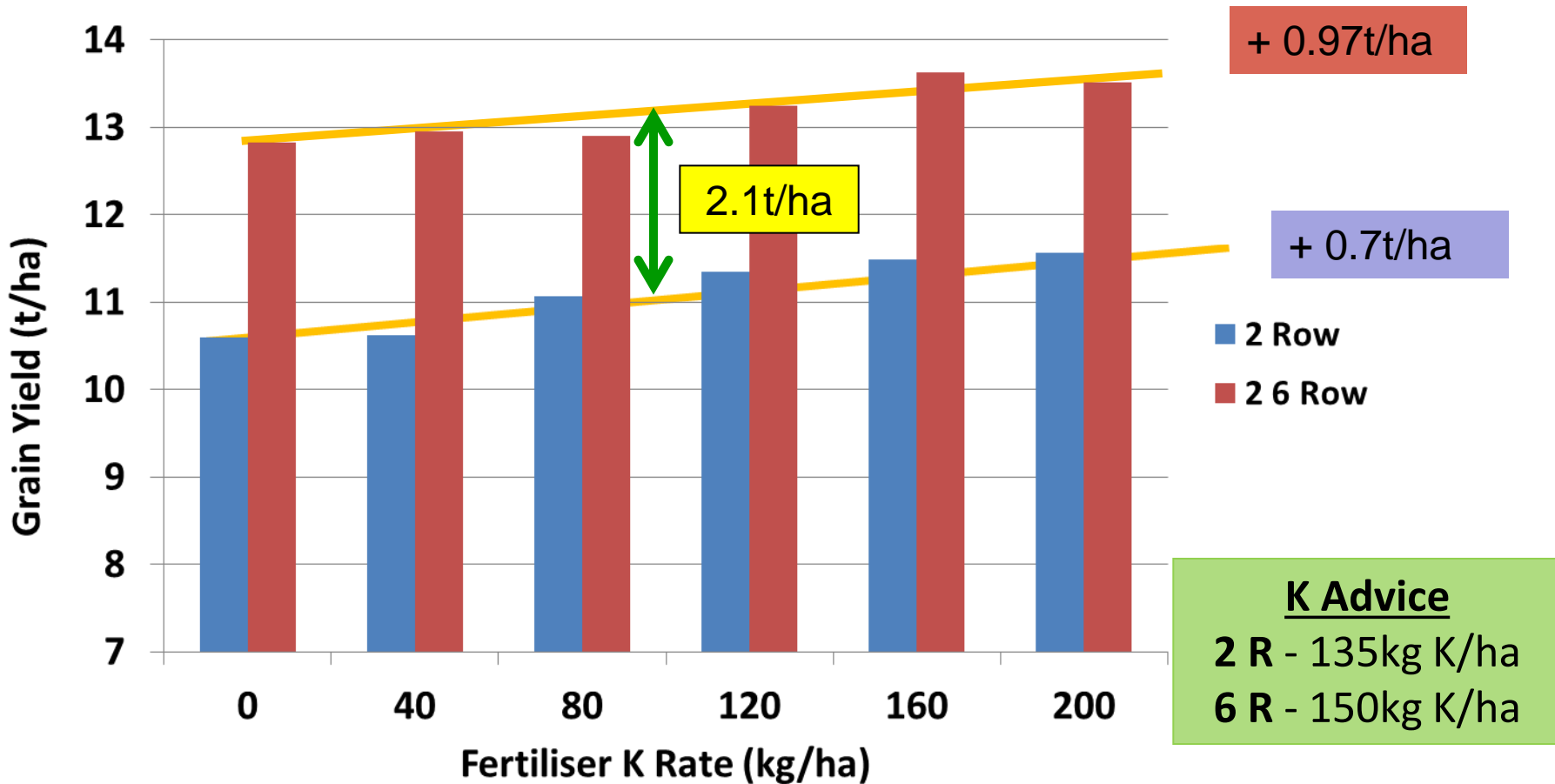


0 K kg/ha

V

200kg K/ha

Effect of K on Grain Yield



Straw Brackling

8th July

Zero K



Straw Brackling

15th July

Zero K



120 kg K/ha



Straw Brackling

21st July

Zero K

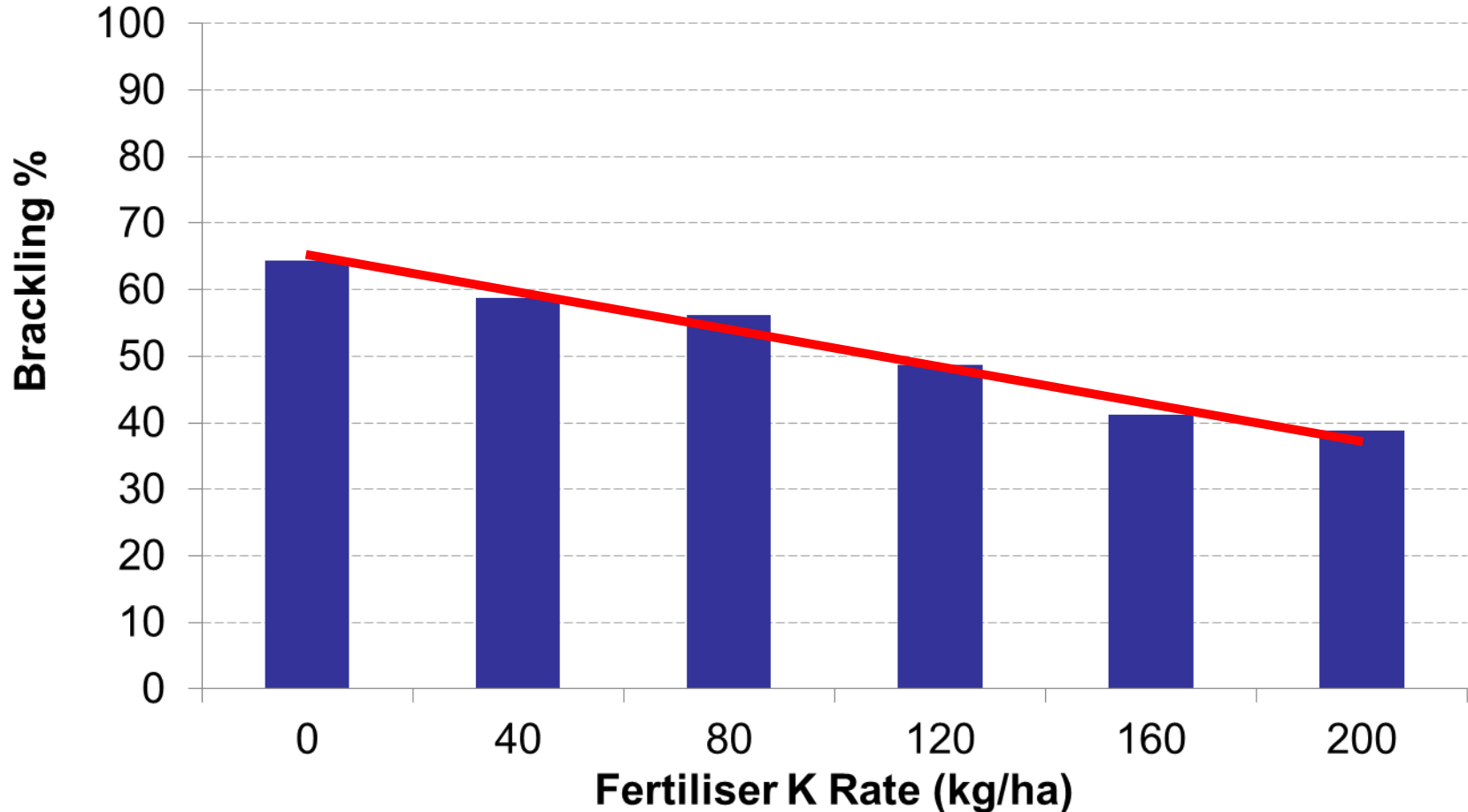


120 kg K/ha



Brackling & K Rate

The effect of K rate on % Brackling in 2 row Winter Barley



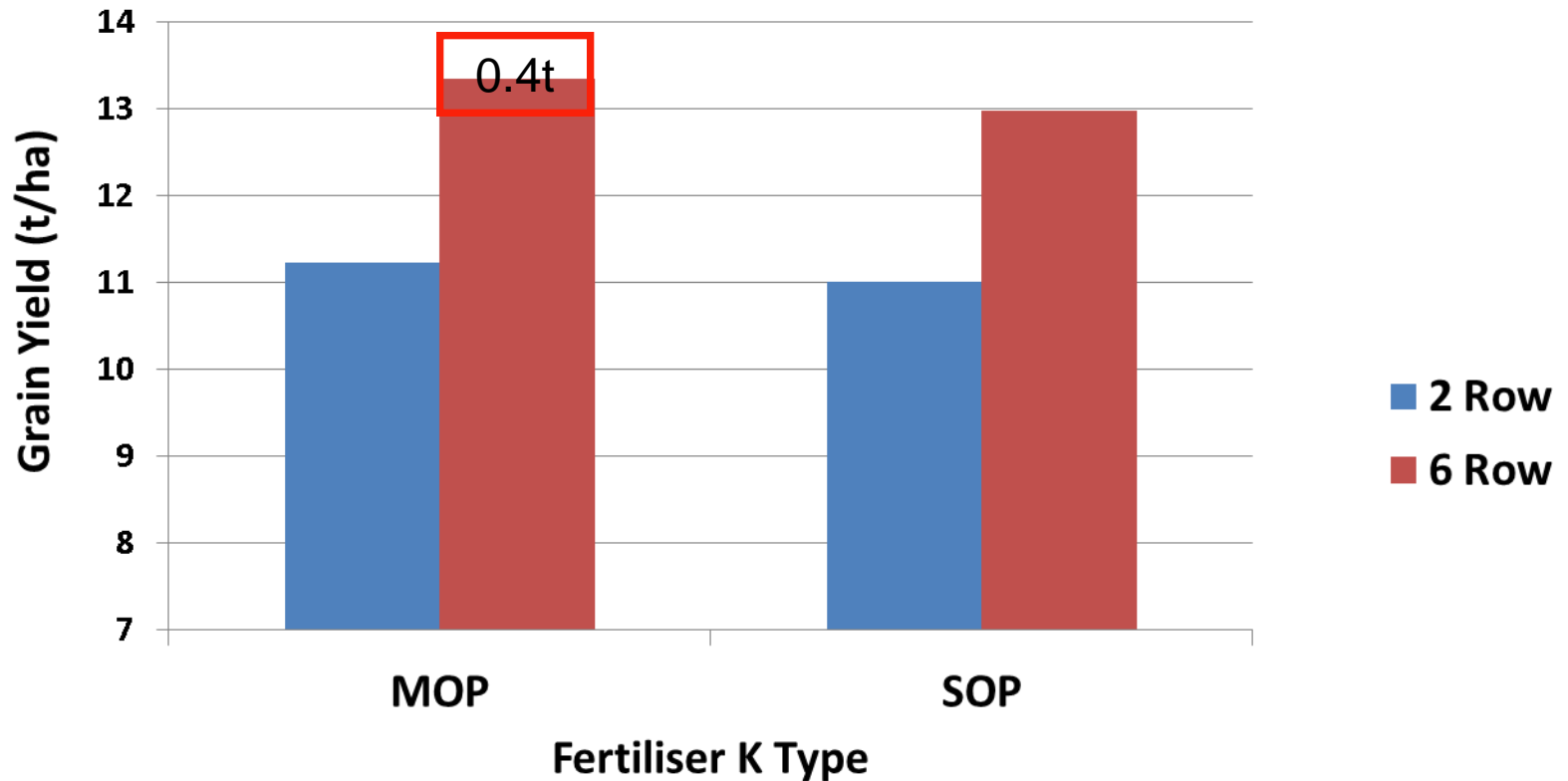
Which type of Fertiliser K?

- Muriate of Potash (MOP)
 - Most widely used
 - Contains chlorine
- Sulphate of Potash (SOP)
 - Used for high value crops
 - More expensive
 - Contains sulphur



Potassium & Grain Yield

The effect of fertiliser K type on grain yield for 2 & 6 row winter barley (Arklow, 2016)



Winter Barley (2 row)

K Treated



No Powdery Mildew
Present

Zero K



Powdery Mildew
Present 8th June

Summary

- Important role in crop establishment
- Higher K fertility
 - Better response to applied K
 - Delivers higher grain yields
- Maintain adequate soil K levels for yield
- Adjust K rates for crop yield potential

Summary

- K Plant Function

- Mildew prevention



- K reduces brackling



- MOP as effective as SOP



Thank you for your attention

I would like to thank *John Hogan, Dermot Forristal, Richie Hackett, Brendan Burke, Sylvester Bourke & Owen O' Sullivan* in carrying out these field trials

