

Potash in WA Agriculture



Pete Rees
Summit Fertilizers
Mingenew

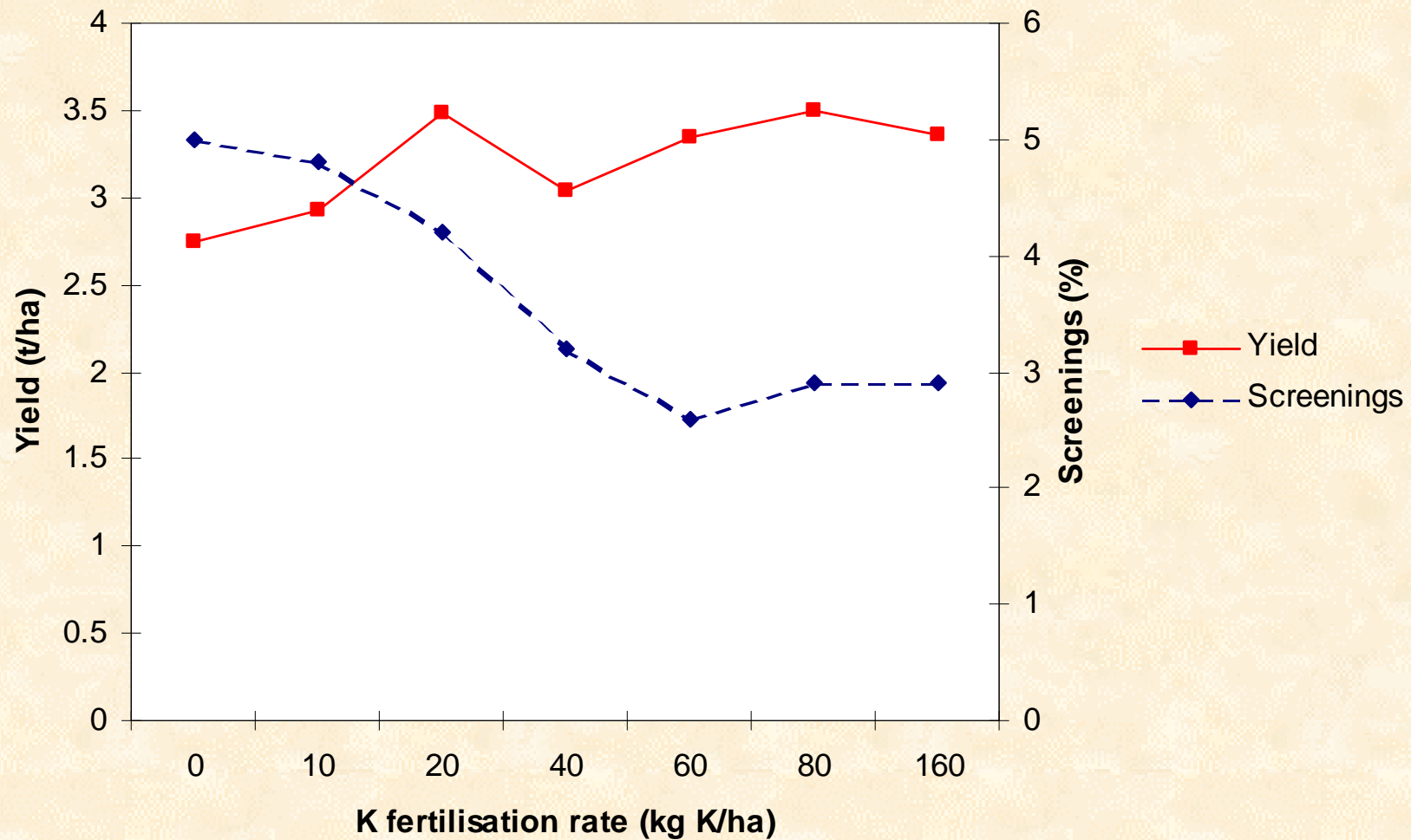
Outline

- Potash Usage in agriculture
- Potash function in the plant
- Potash deficiency in the field
- The Potassium cycle
- Potassium availability
- K Sources and Placement
- Crop requirements and removals
- Comparisons of sources K

Potassium in Agriculture

- One of the four major nutrients required for plant growth
 - (with the others being N,P and S).
 - The fastest growing nutrient use in WA
- It is used in the plant mainly for
 - achieving vigorous early growth
 - grain quality
 - improving water use efficiency
 - stress tolerance
 - disease and insect resistance
 - Improves N and S use efficiency

Responses to K Application



Source:

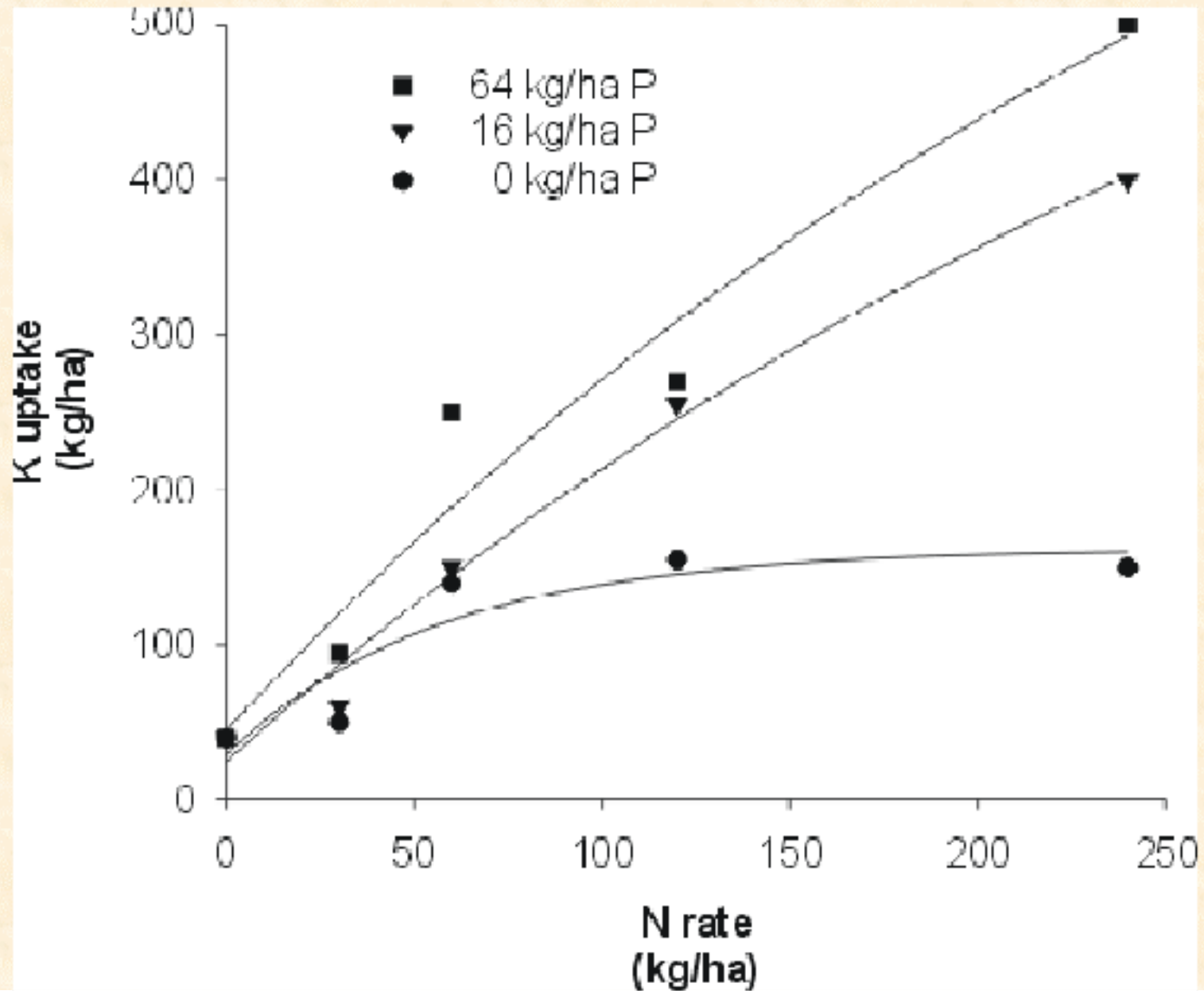
Improving Water Use Efficiency

- K is used to control Stomata in leaves to regulate gas exchange and minimise water loss

Improving Stress tolerance

- K/Na ratios important in determining salt tolerance
- K concentrations in cells prevent frosting

Good K nutrition affects other nutrient efficiencies



General signs of K deficiency

- As K is 'plant mobile' deficiencies show on old leaves
- Leads to less vigorous plant growth
- Tends to show as necrosis of outer margins
- May be the cause of visible header rows



Potash deficiency in Sub Clover

Potash deficiency in Serradella



Potassium deficiency in Canola



K deficiency in Lupins



6 Narrow Leaf Lupins

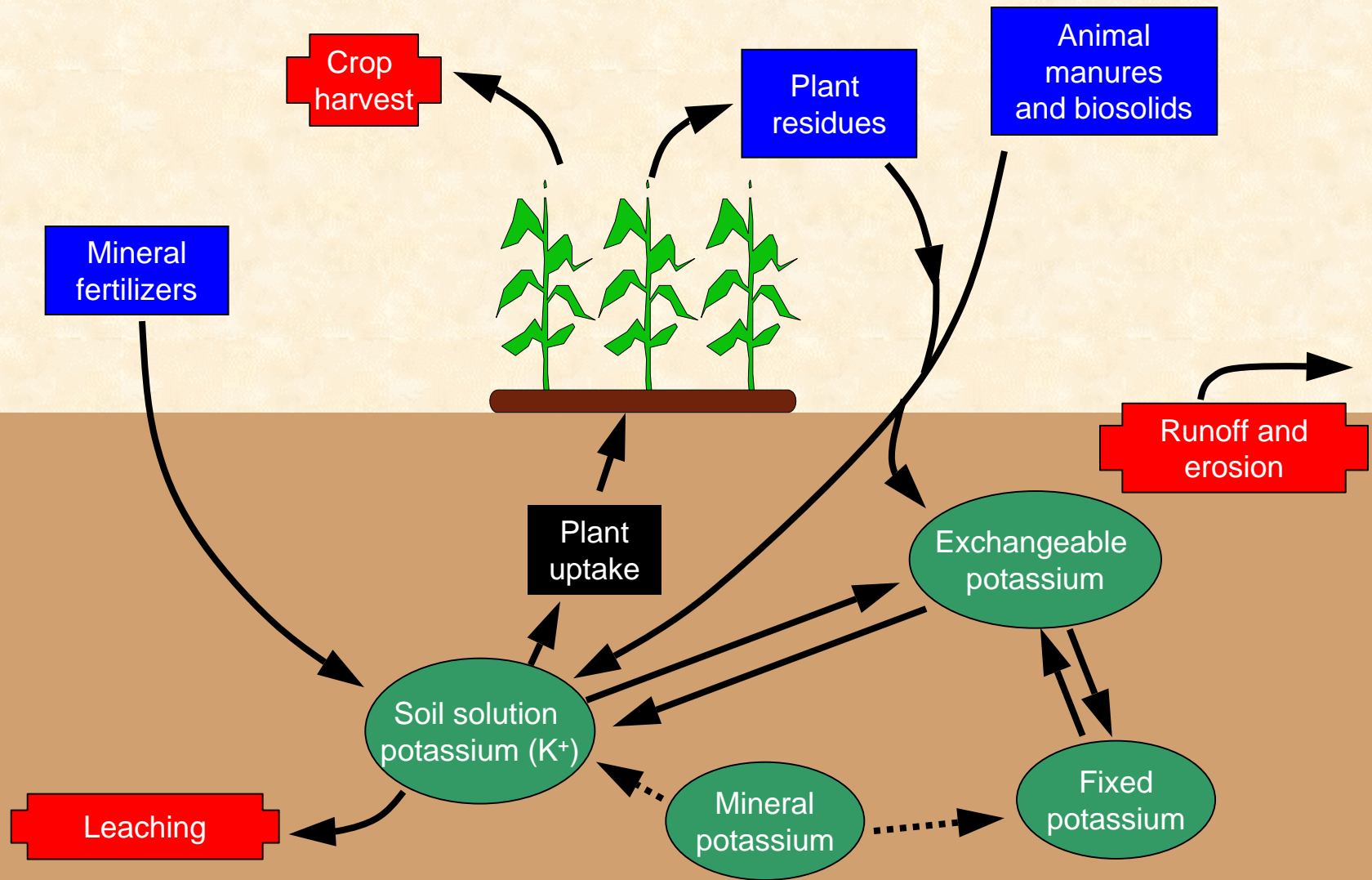
Potash deficiency in the field



Influence of windrows on
K nutrition

The Potassium Cycle

Component Input to soil Loss from soil



Source: Phosphate and Potash Institute

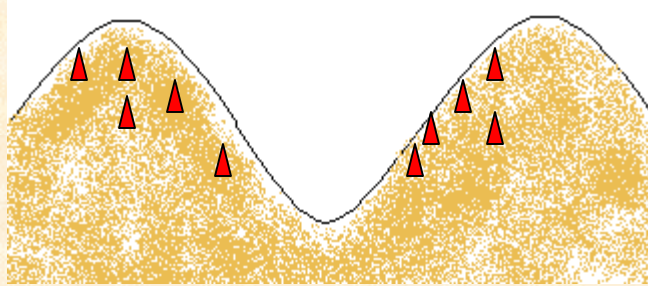
Potassium availability & Uptake

- Cation Exchange Capacity (CEC) "clay content"
- Available K - from soil test
- Non-exchangeable
- Non-exchangeable K "slowly available"
- Hard pans
- Soil moisture
- Acidity

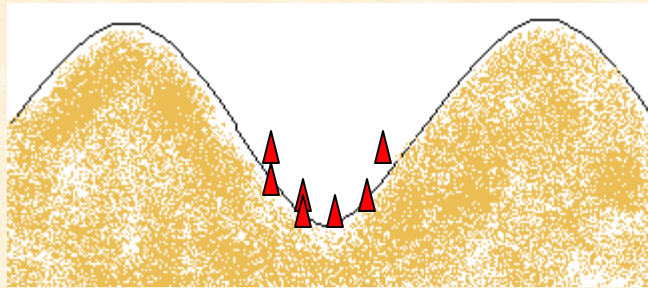
Common sources of Potash for agriculture

Product	N	P	K	S	Mg	Cu	Zn	Cl	Price Per Unit of K
Muriate of Potash			50	0.7				46	0.80
Sulphate of Potash			41.5	17					1.67
Potassium-Magnesium Sulphate			18	22	11				3.61
Potassium Nitrate	13		38						2.63
Vigour	5	11	14.6	6.2		0.2	0.2	13	3.09

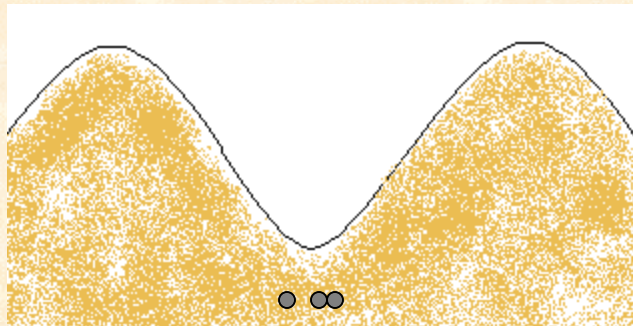
K Placement options



IBS

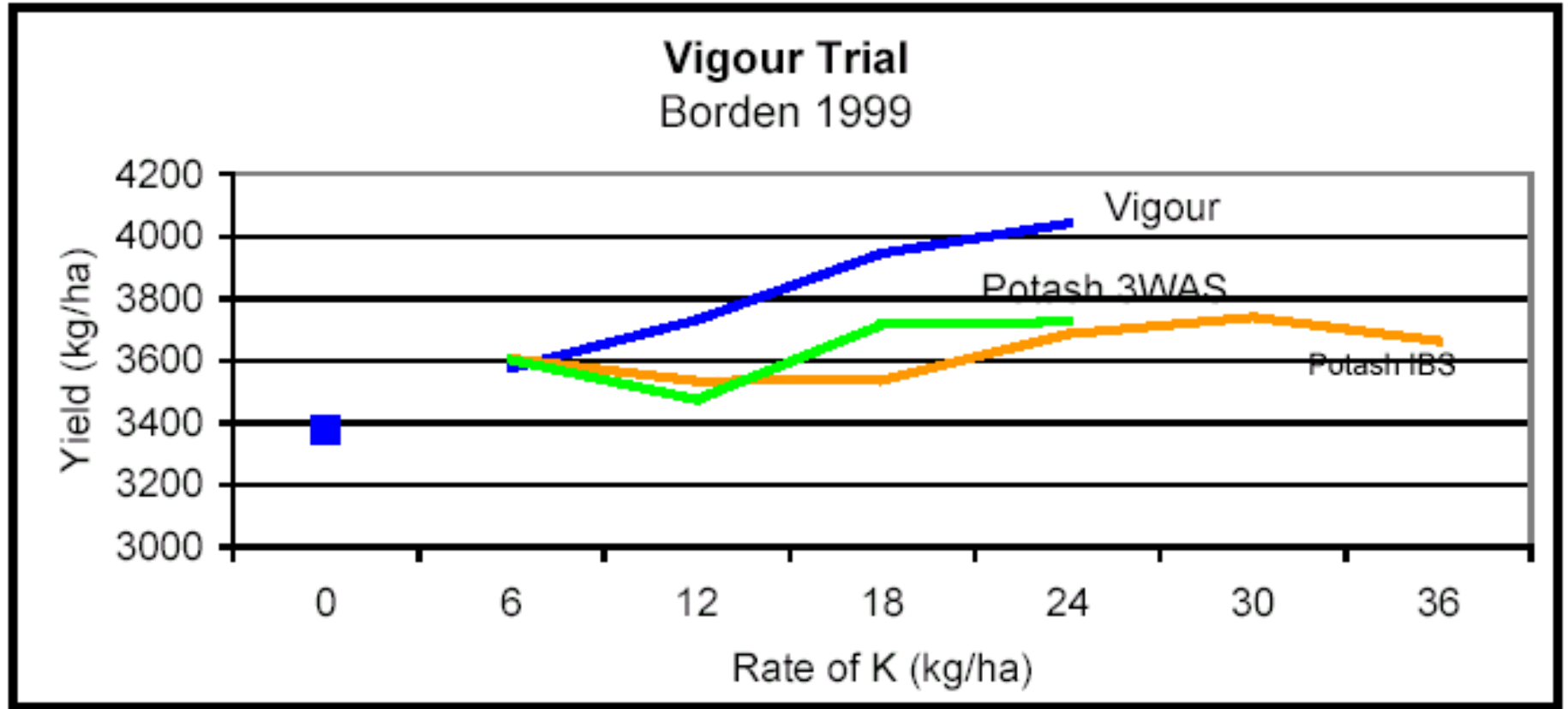


Post seeding



With seed (Vigour)

Responses to K placement



Effects of good K nutrition on emergence

Burnt Header
Trails



Farmers crop
Seeded with
Vigour

Trial-
Seeded with
DAPSZC

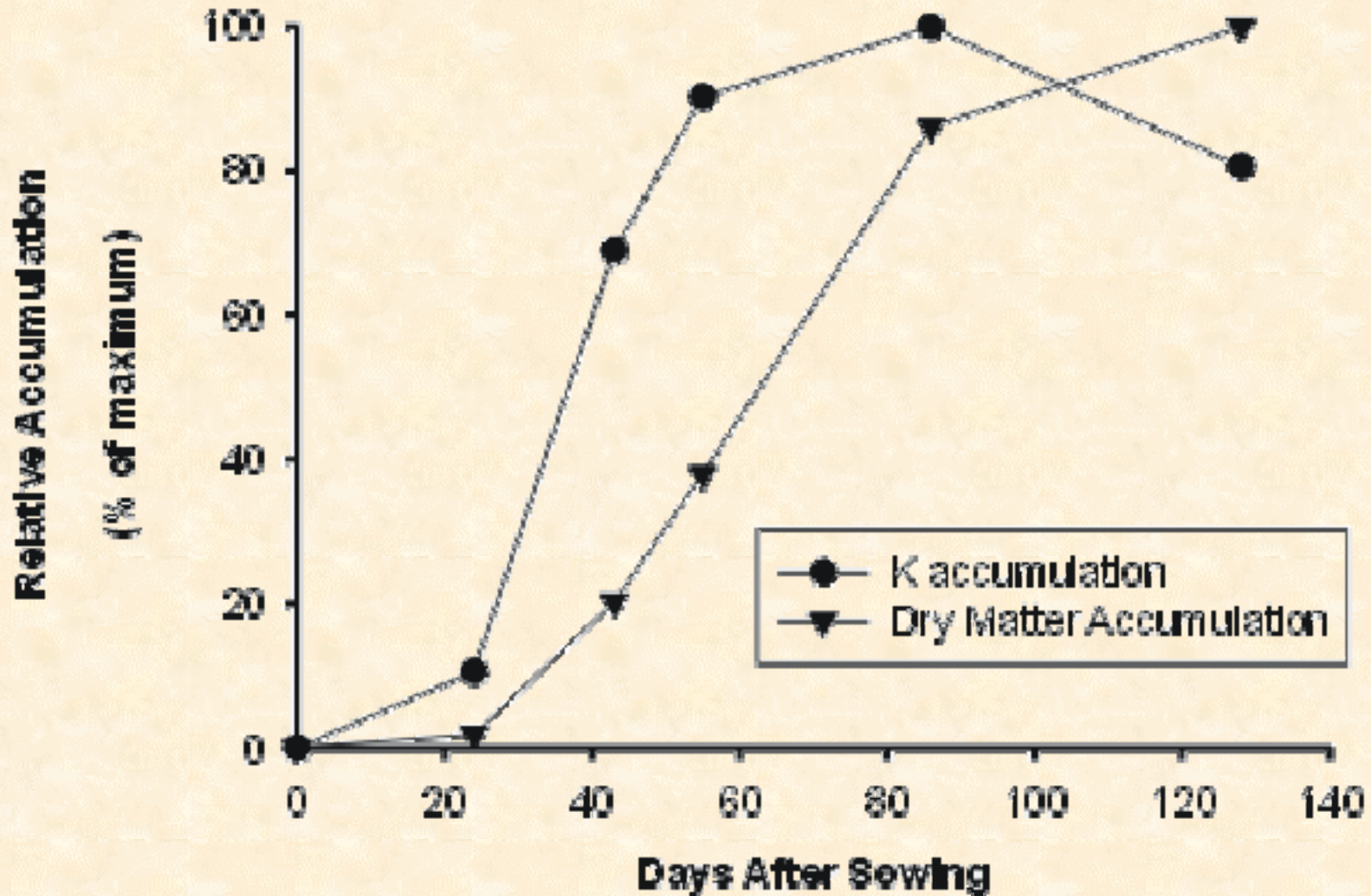


100 Vigour

64 Dapszc



K accumulation relative to growth in wheat

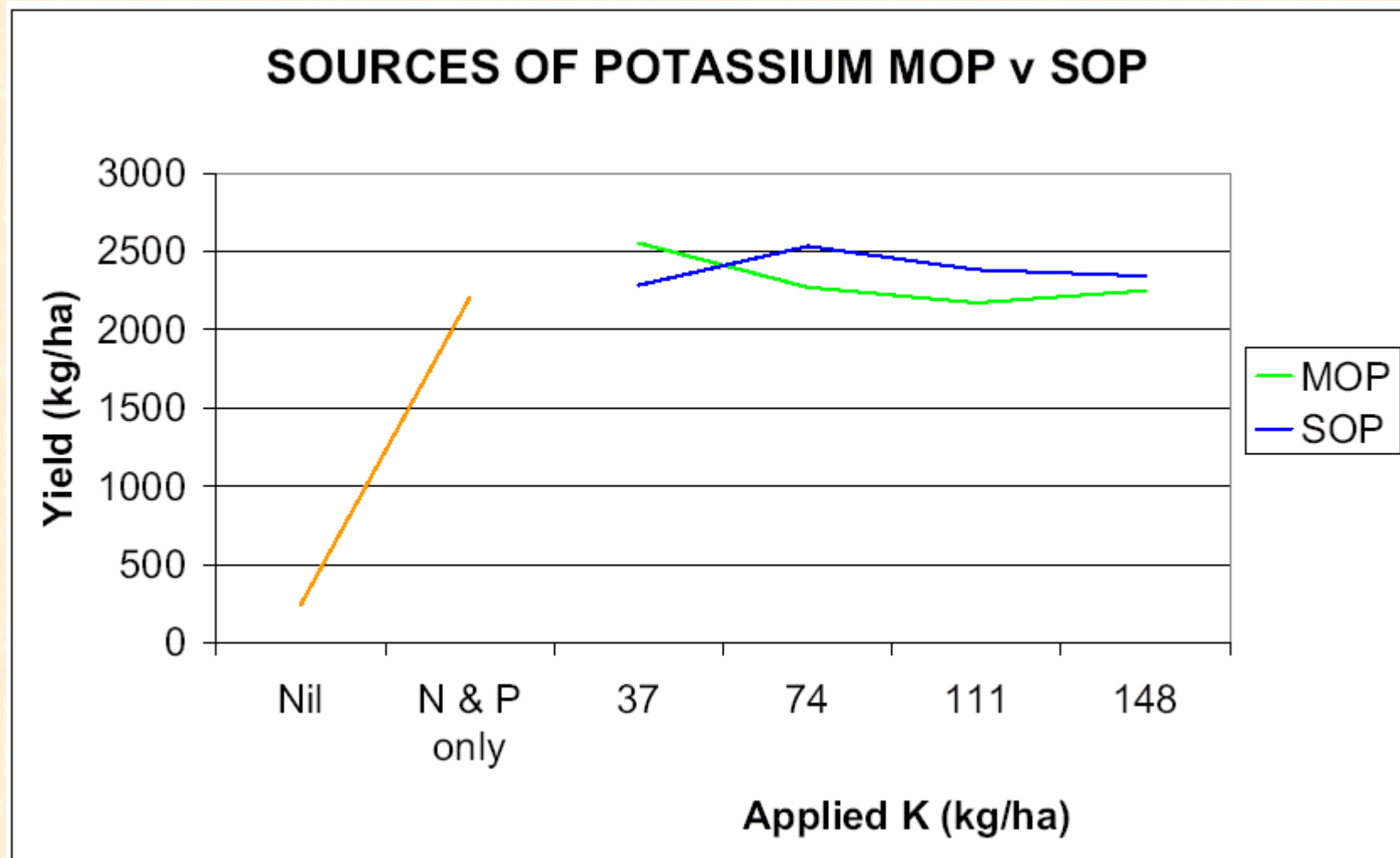


K removal in produce

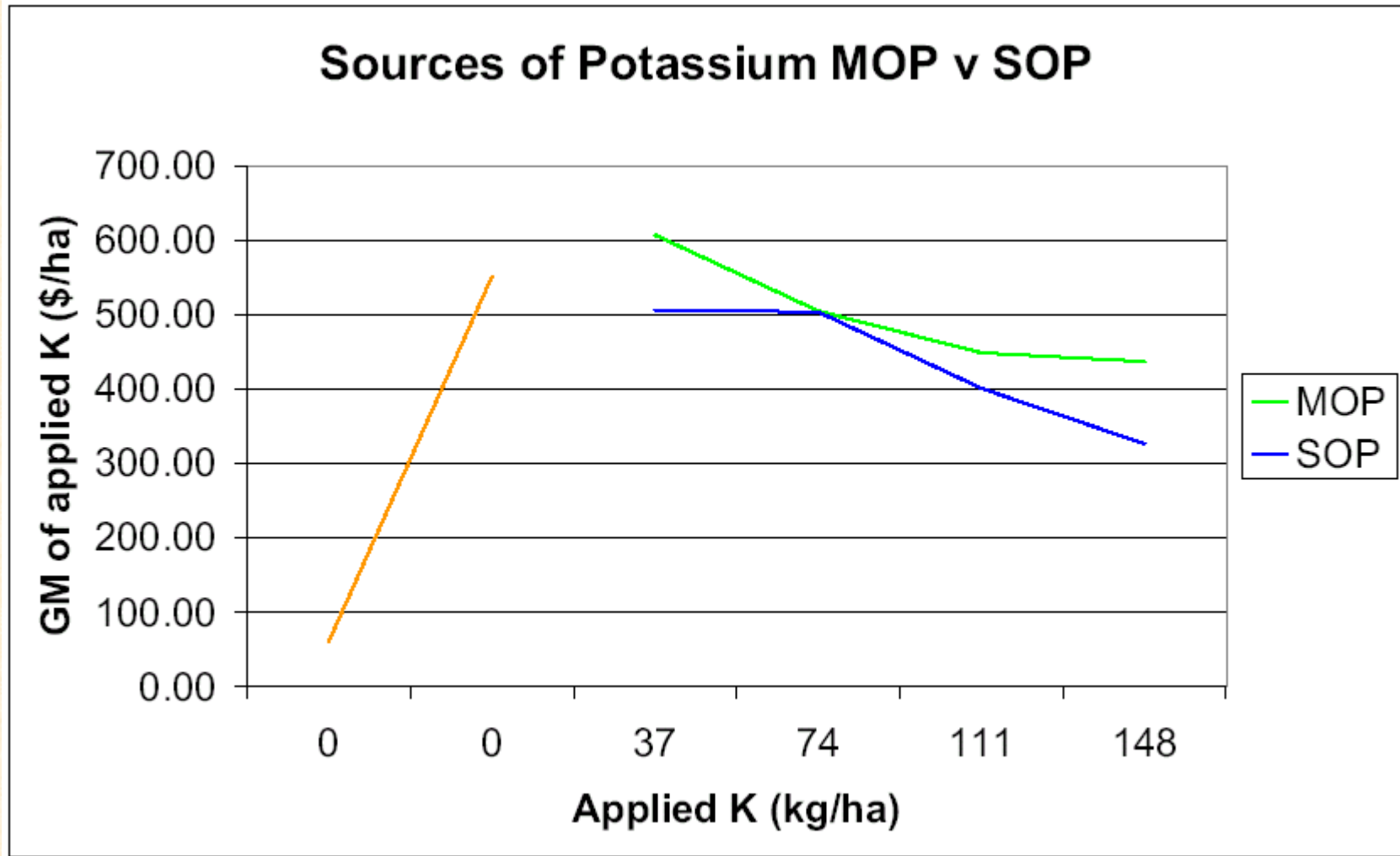
Crop	Potassium Removal in grain(kg/t)
Barley	5.0
Canola	9.0
Chickpeas	9.0
Faba Beans	10.0
Field Peas	9.0
Lupins	10.0
Oats	5.0
Wheat	4.0
Cereal Hay	12.0
Legume Hay	22.0

Think of these when grazing and burning

Sources of Potassium



Sources of Potassium



Summary

- Potassium use is growing in WA Agriculture
- MOP is most cost effective form
- Drilled MOP can reduce both wheat and canola plant densities dramatically
- Products like Vigour appear safer than MOP
- Vigour is cost effective when maintenance K is required