

Growth of steers in response to phosphorus in the diet

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Growth of steers in response to diet P

Response of growing cattle to P supplements is variable

- severity of deficiency (soil, plant)
- quality of available pasture (protein, energy)
- P reserves/demands of the animal
- variability in P intake (supplement)



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Growth of steers and soil P (Kerridge et al. 1990)

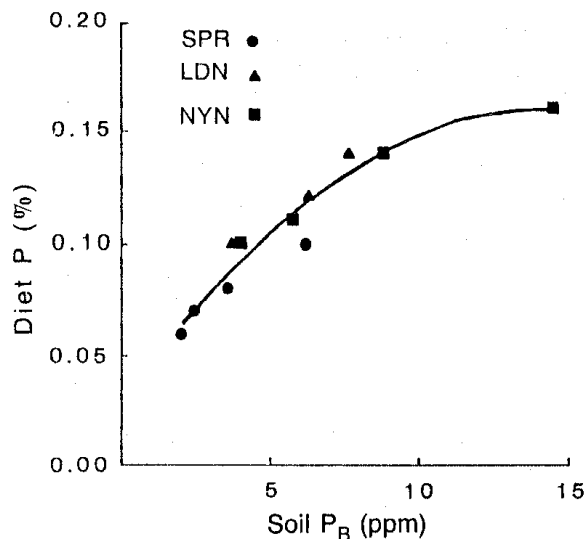
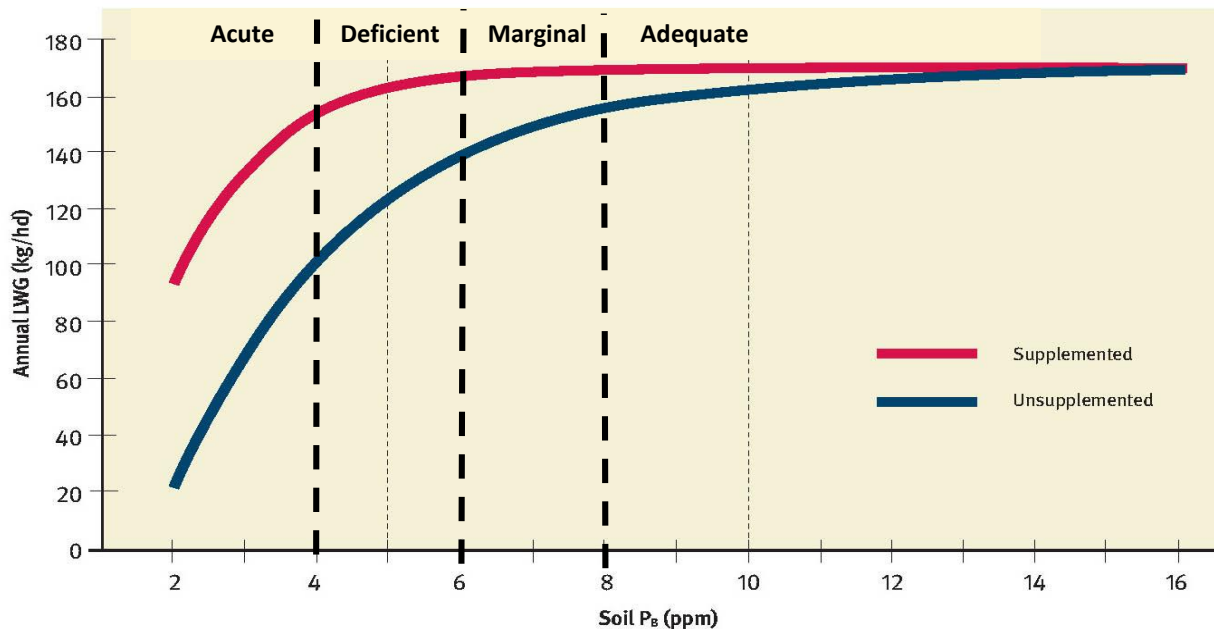


Figure 5. Relation between diet P and soil P_B in grazed, legume-based pastures at 3 sites in the semi-arid tropics of northern Australia.



Growth of steers in response to diet P

Response of growing cattle to diet P is highly variable

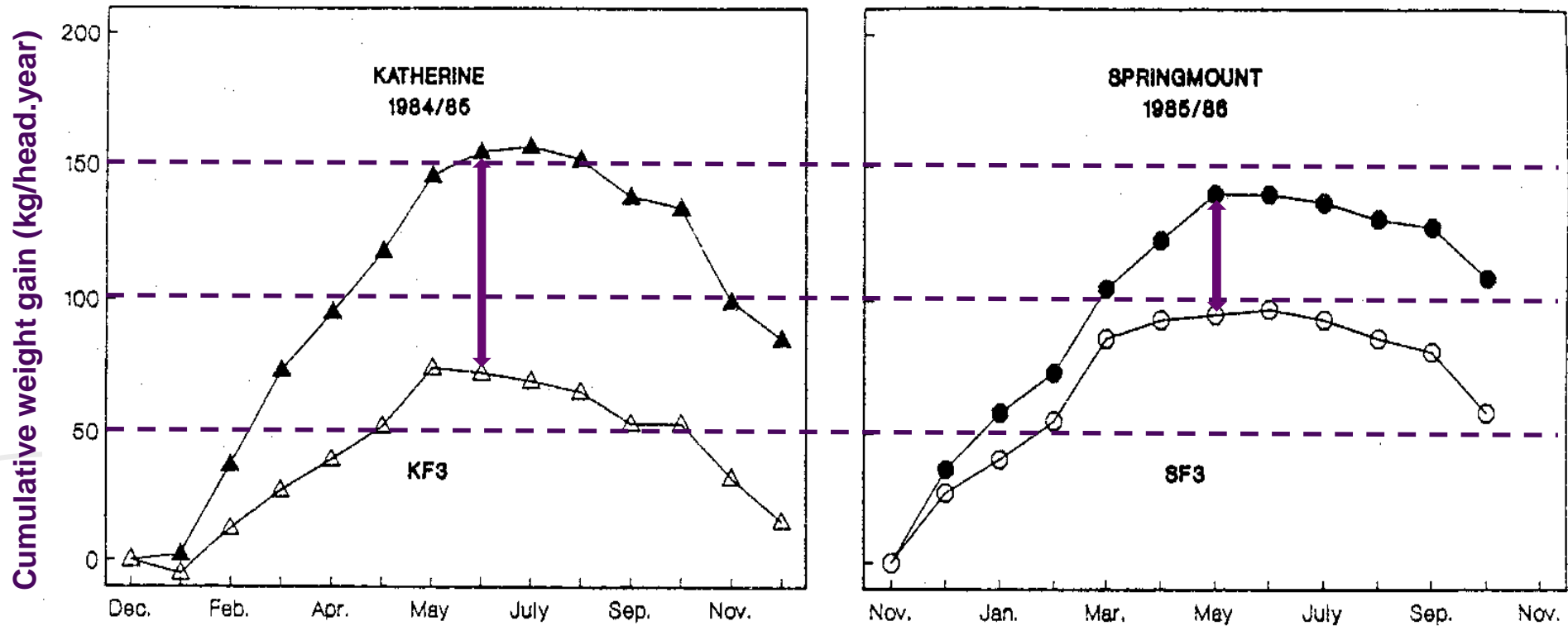
- severity of deficiency
- quality of available pasture (protein, energy)
- P reserves/demands of the animal
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Growth of steers and pasture P (Winter et al. 1990)



Growth of steers in response to diet P

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Growth of steers in response to diet P

Phase 1 (depletion)

- 10% CP and 60% digestibility (early wet season)
- Increased P content in pellet by incorporating increasing Biofos resulting in 5 levels of dietary P
 - 0.9 g P/kg DM
 - 1.3 g P/kg DM
 - 1.8 g P/kg DM
 - 2.0 g P/kg DM
 - 2.4 g P/kg DM

Phase 2 (repletion)

- 2.4 g P/kg DM
- ~3 months and then slaughtered

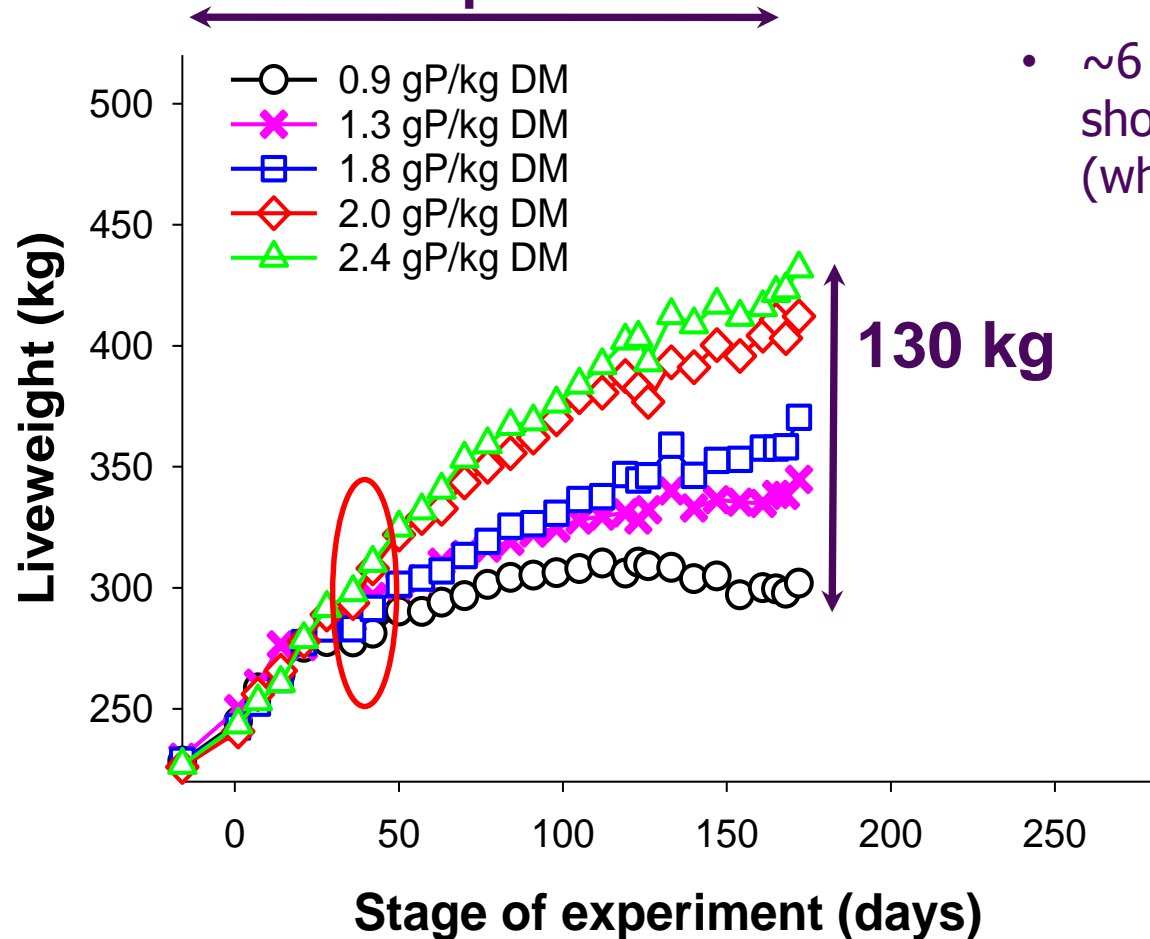


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Depletion



- ~6 weeks for P adequate steers to show sign of deficiency in liveweight (when CP and ME not limiting)



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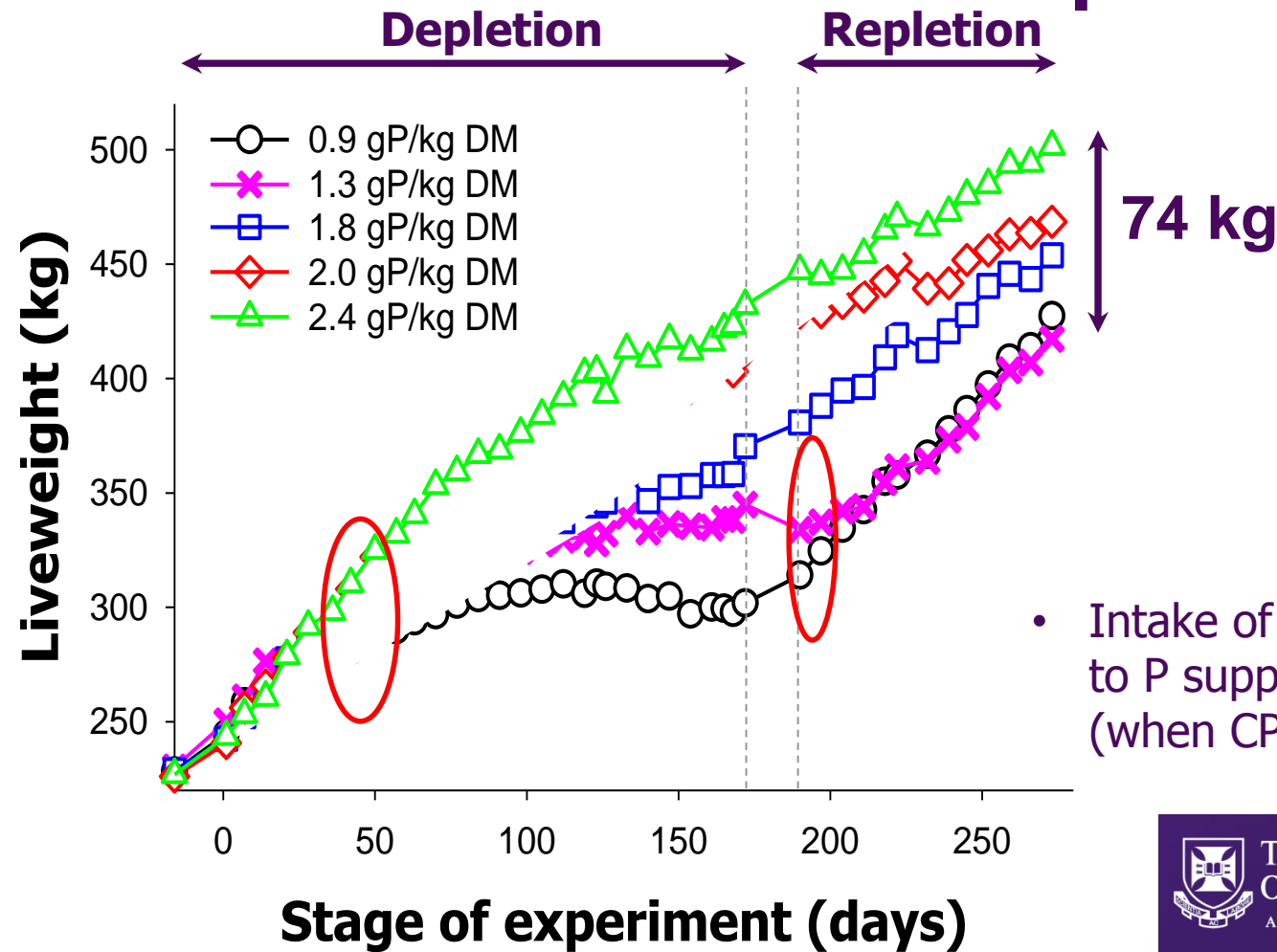
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Growth of steers in response to diet P



- Intake of P deplete steers responds to P supplement within days (when CP and ME not limiting)



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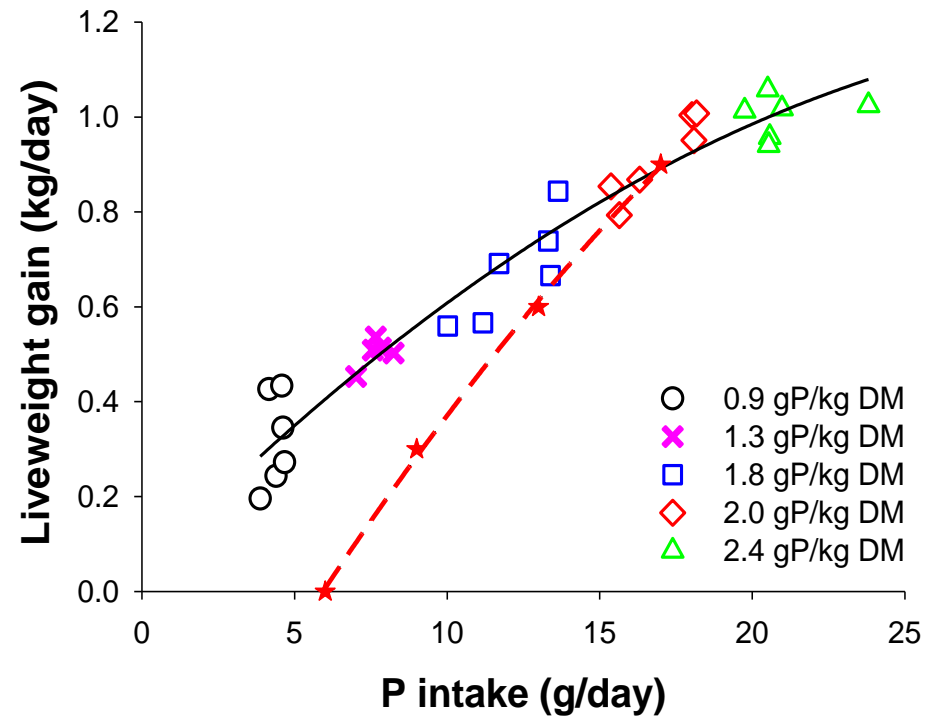
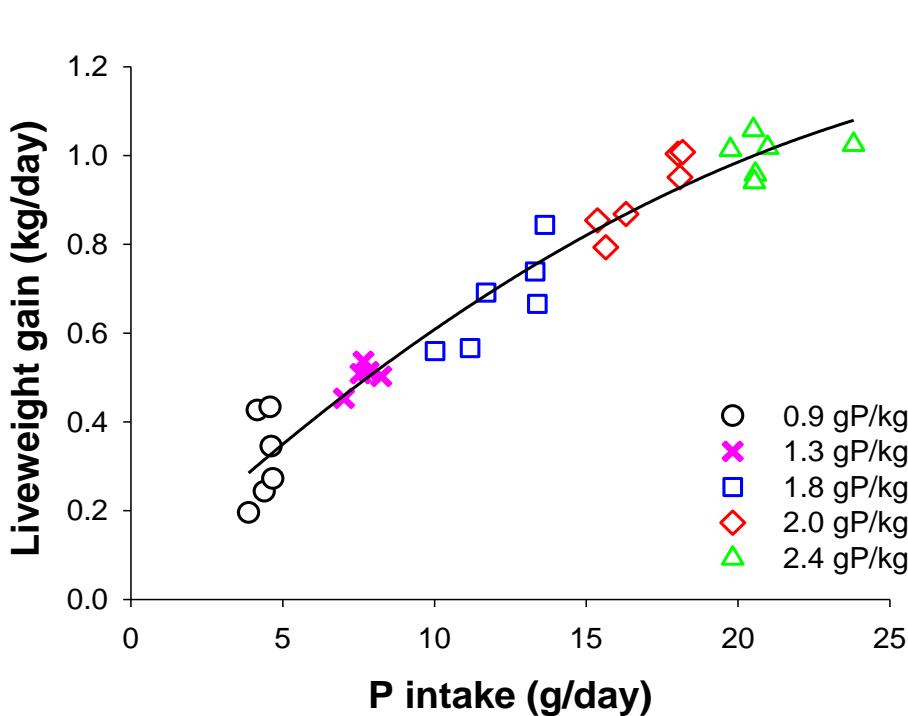
Growth of steers in response to diet P



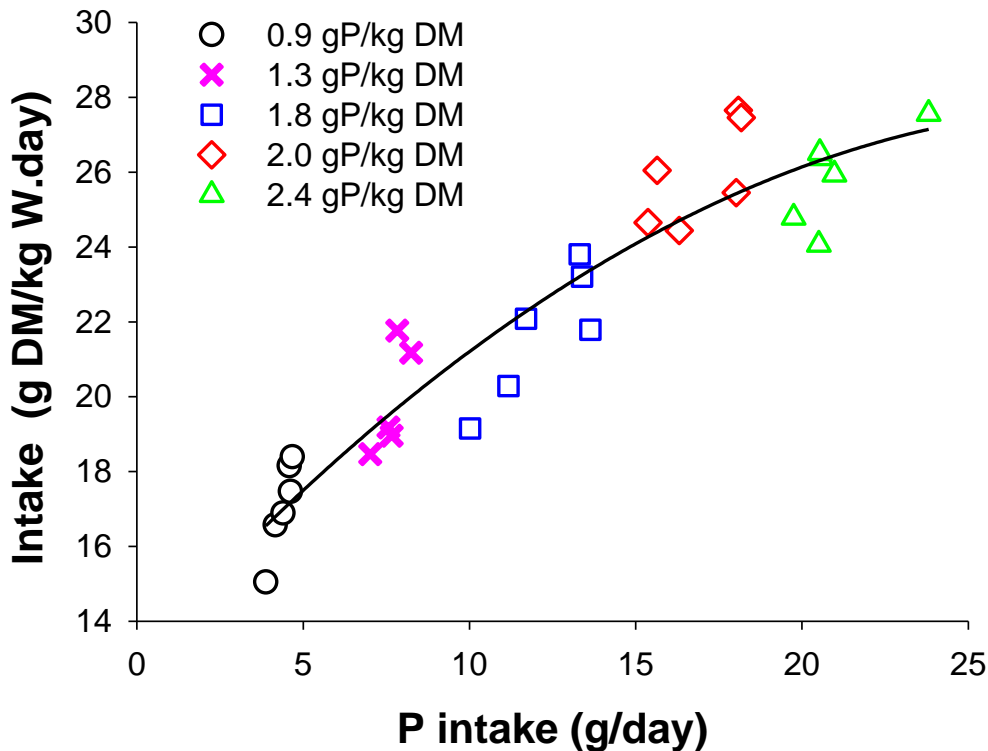
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Growth of steers in response to diet P



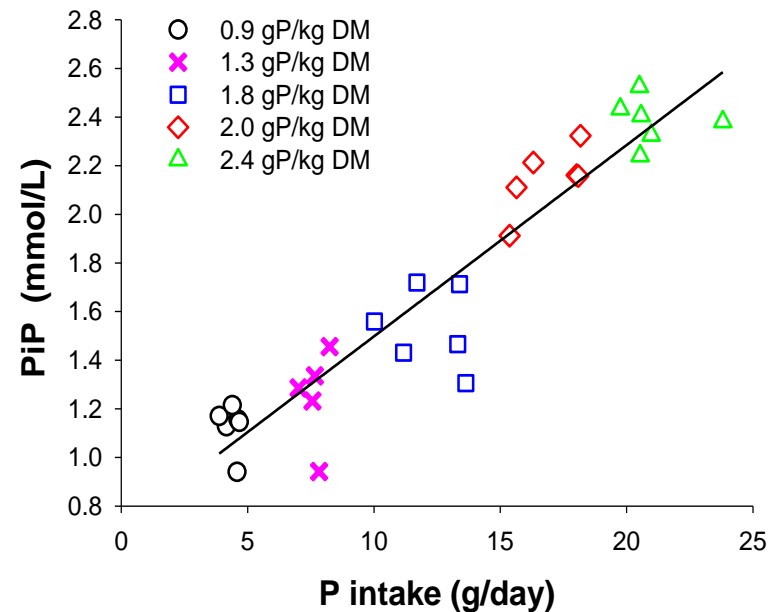
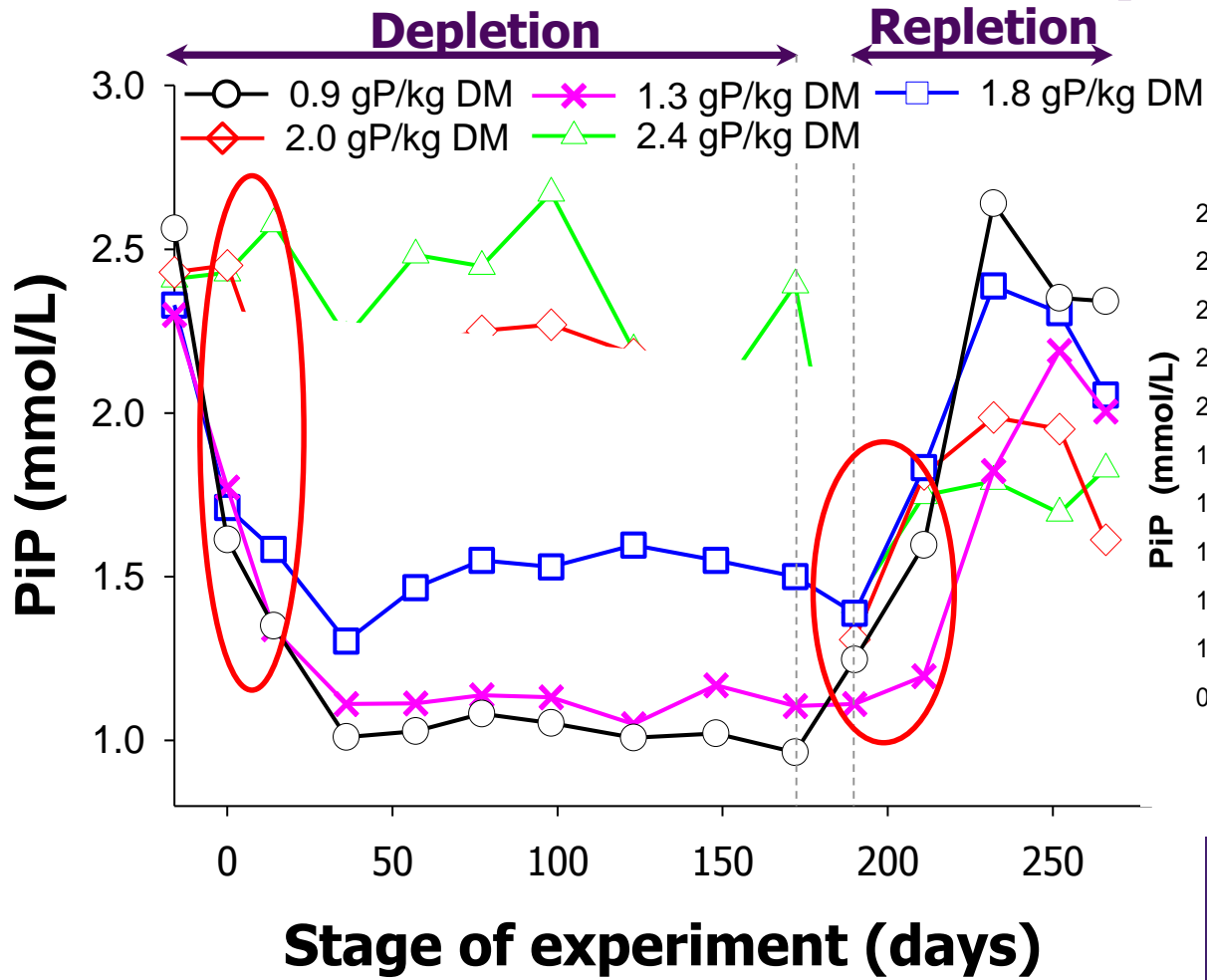
Growth of steers in response to diet P



- Response of growing cattle to diet P is due to an increase in intake
- Implications for stocking rates



Growth of steers in response to diet P



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Take home messages

Largest response to P supplements when other nutrients not limiting (wet/early dry)

Growth response to P supplements from an increase in feed intake

Estimated P requirements for LWG were lower in this experiment at low P intakes but comparable at high P intakes (compared with the Australian Feeding Standards)

P deficient steers

- response of feed intake to P supplement occurs quickly at start of wet season
- provide P supplements as early in wet season as possible

P adequate steers

- ~5 to 6 weeks before negative effects on liveweight evident



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