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Sampling methods for clover species in grazed pastures to diagnose mineral deficiencies

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New Zealand's specialist land-based university



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Chemical analysis to assist decision making

	Soil	Pasture	Herbage
Sample	 <p>Soil</p>	 <p>Clover</p>	 <p>Mixed pasture</p>
Analysis	pH, Olsen P, S, K...	N, P, K, S, Mo...	ME, crude protein, minerals
Decision	Fertiliser requirements		Animal supplements

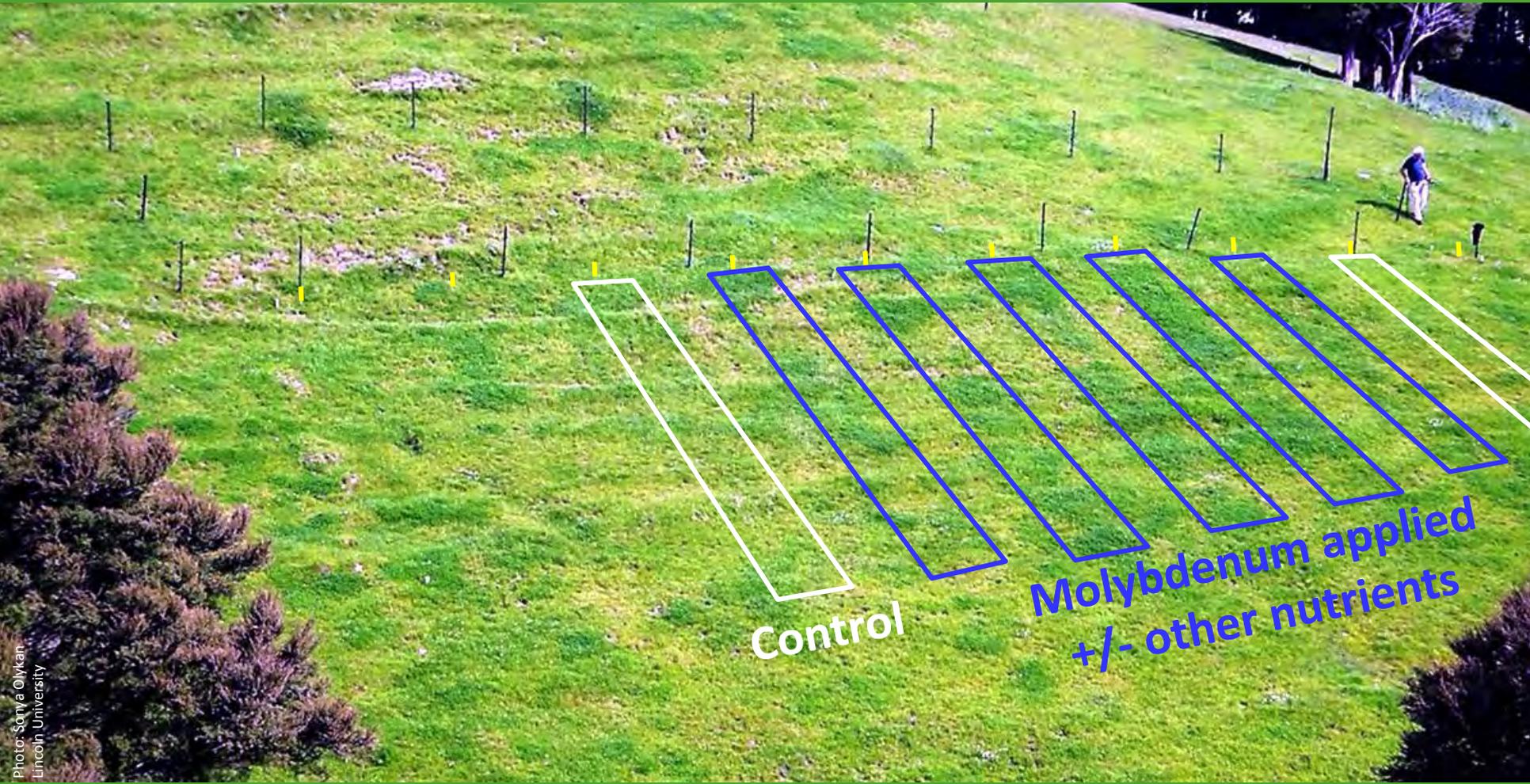
Pasture grab sample



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It's all about the clover...

Q 1: Foliar nutrient concentrations in white v sub clover similar?



Clover species

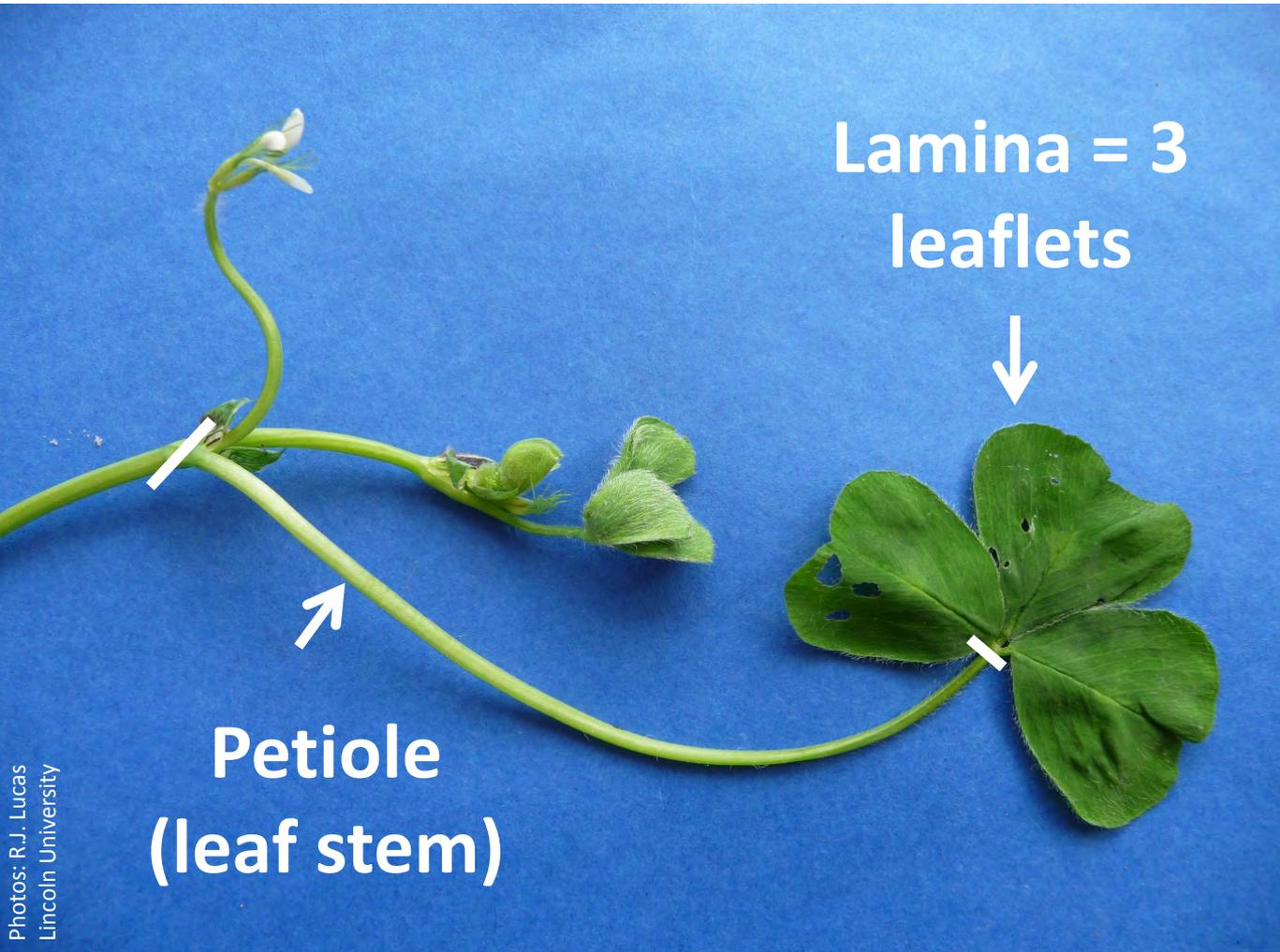


Photos: K.M. Pollock
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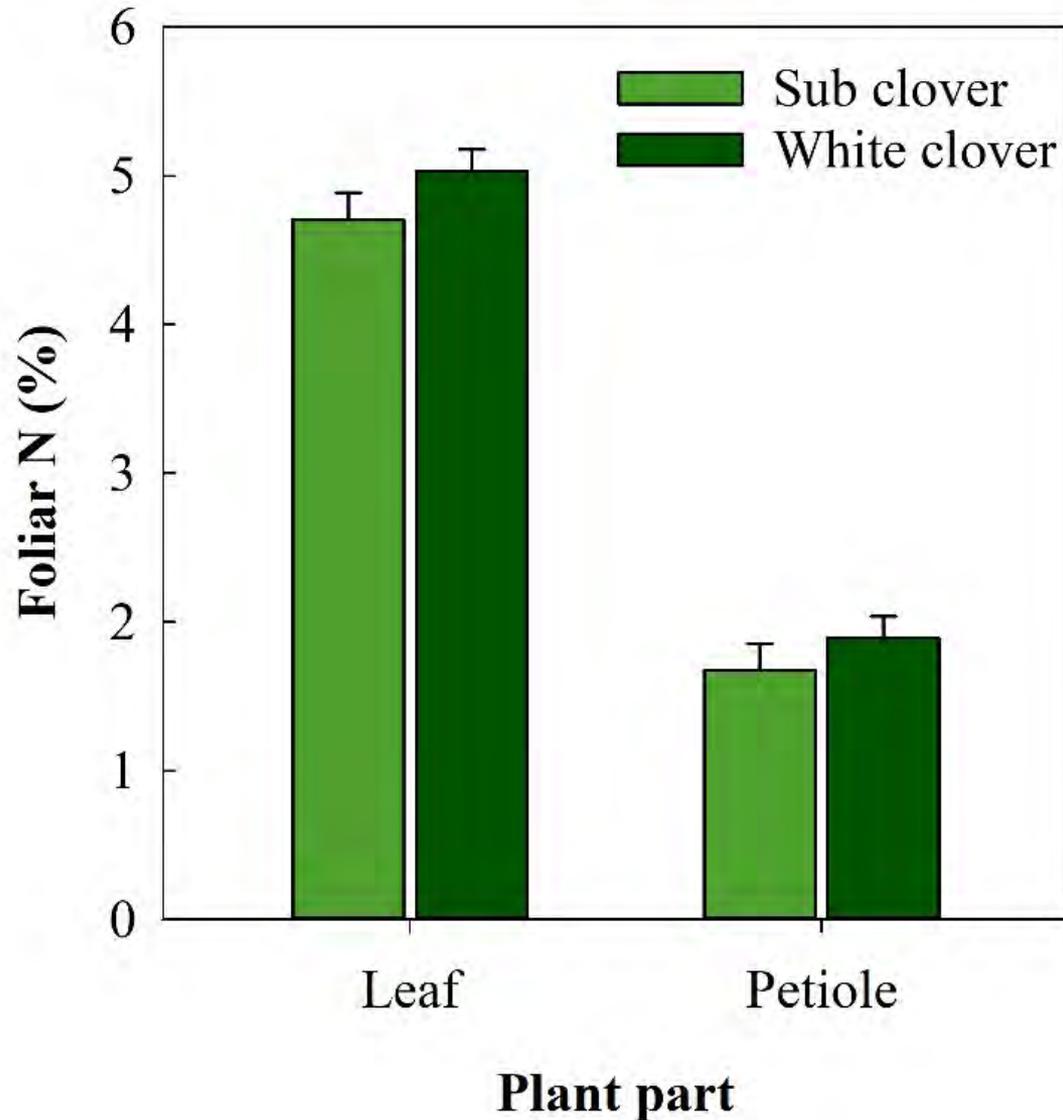
Clover foliage plant parts

Lamina (leaflets) and petiole (leaf stem)



Q 2:
Do nutrient concentrations differ between clover plant parts?

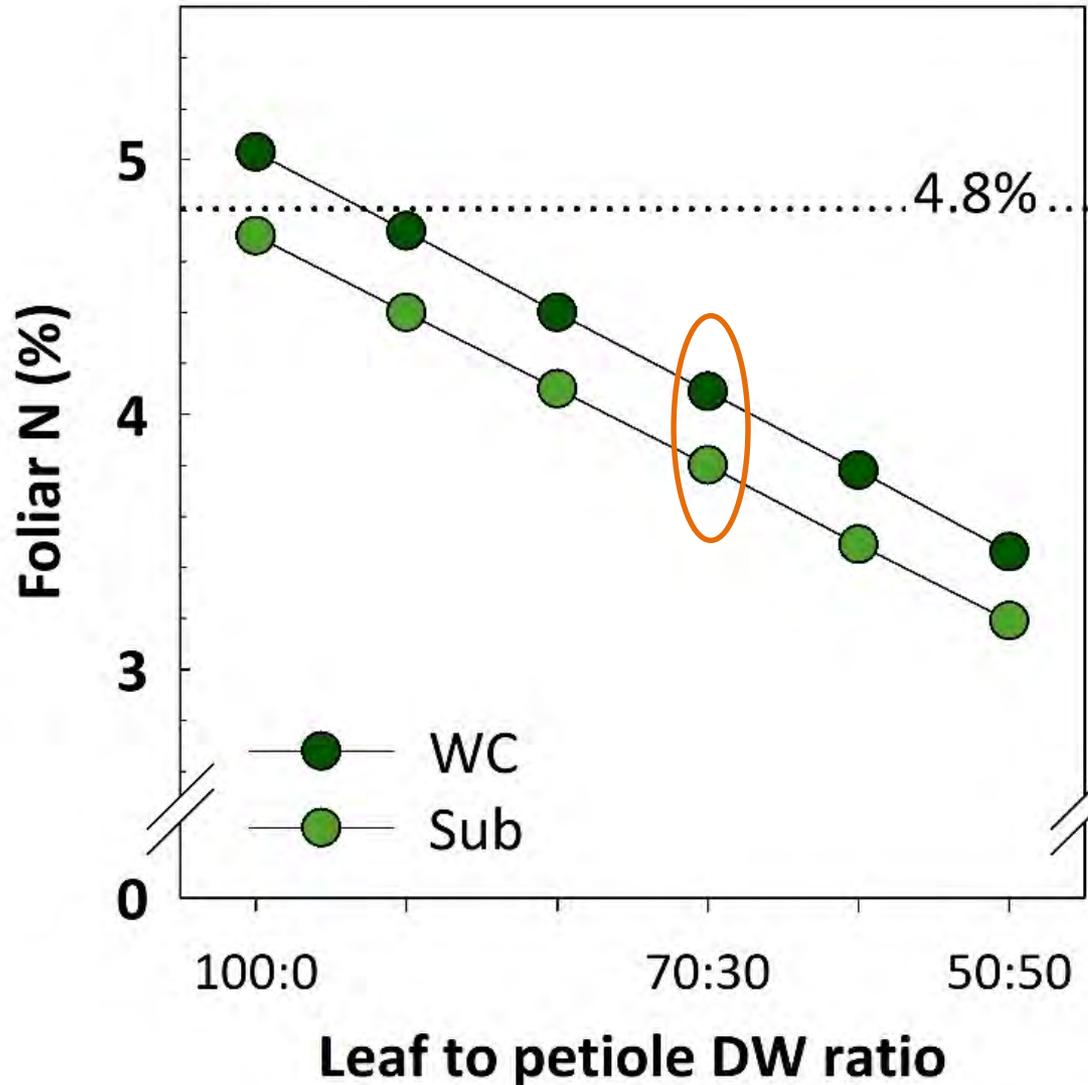
Leaf v petiole: Nitrogen



Varying amount of petiole in a clover grab sample



Increasing petiole reduces N%

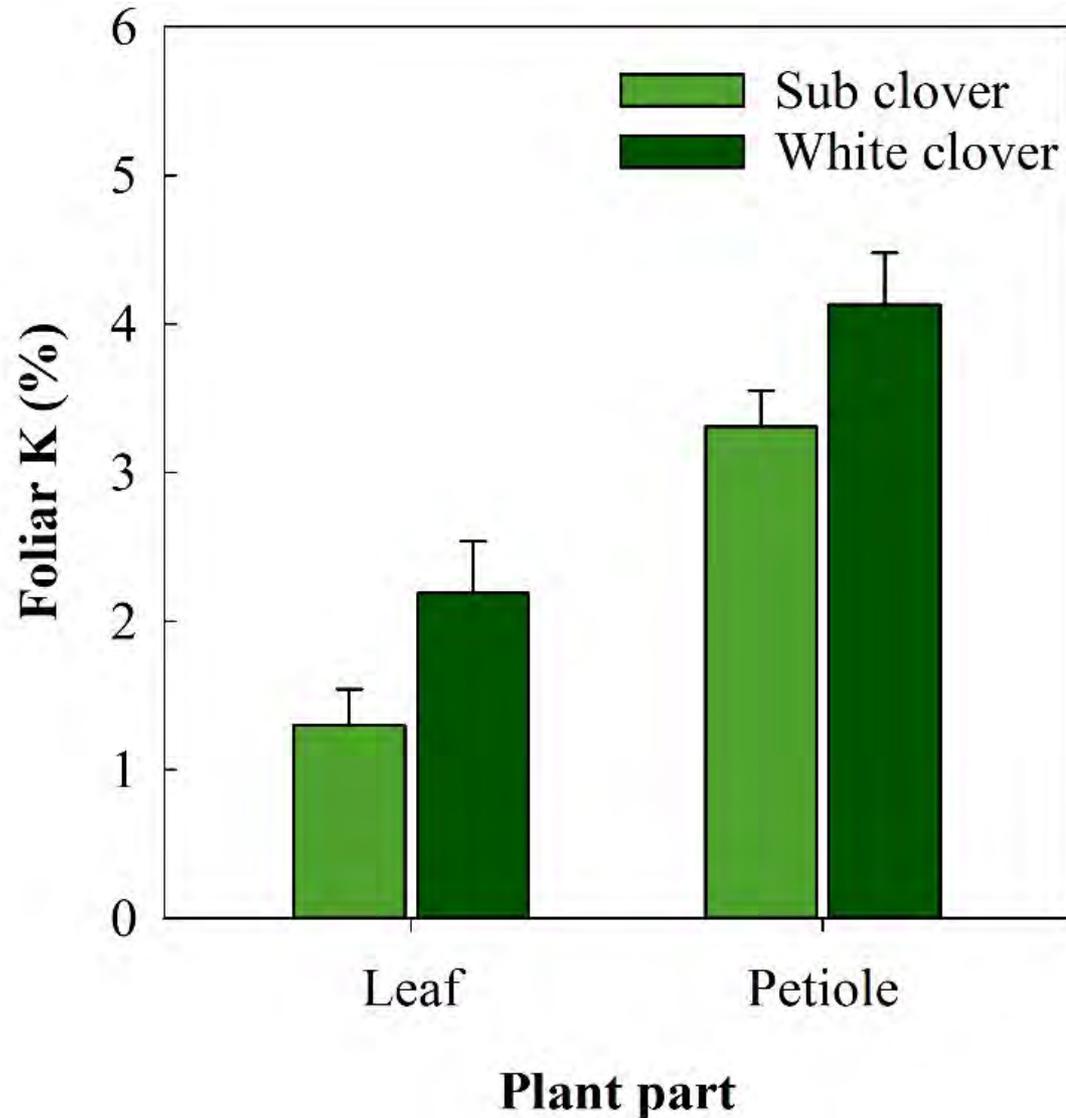


P and S

- similar pattern
- involved in photosynthesis

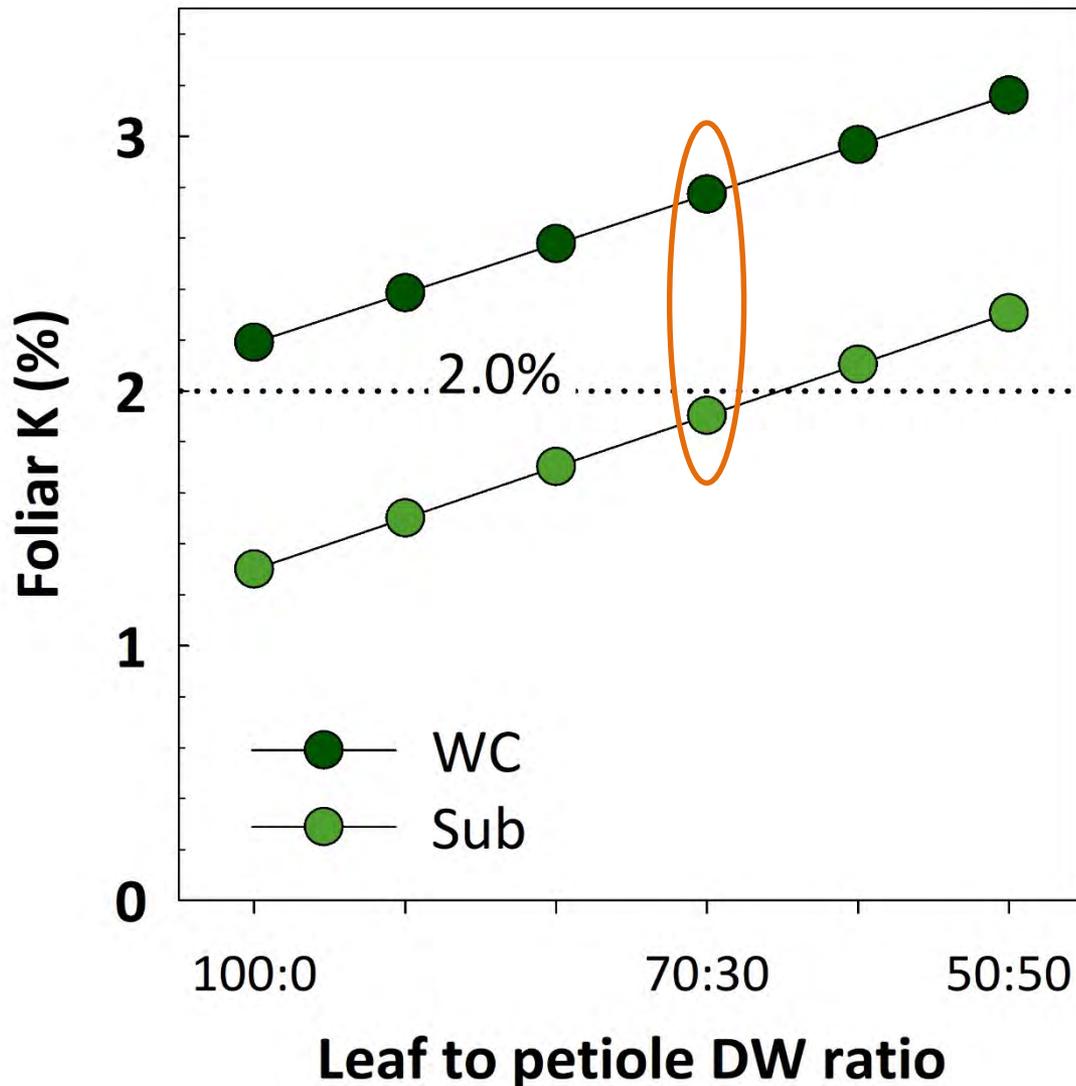
Lamina v petiole: Potassium

Sub
versus
white



Leaf
versus
petiole

Increasing petiole increases K%



K

- water transport
- structural

Conclusions

- ✿ Recommend sampling clover leaf lamina only
- ✿ Including petiole may result in misdiagnosis
- ✿ Affects fertiliser decisions:
 - less than optimal growth, reduced productivity
 - unnecessary costs, waste of resources
- ✿ Separate foliar nutrient critical values for clover species
- ✿ Ongoing research

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Mr Roland Stead

& 'Regenerating Hill Country pastures'

