

Pasture research

Transforming hill and high country pastures - Agronomy and grazing management

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Matching species to environments

- Soils**
- low pH, fertility
 - Aluminium
 - spatially variable
 - watering holding capacity?

- Environment**
- cold
 - dry or wet
 - conservative farmers
 - poorly advised
 - little recent research

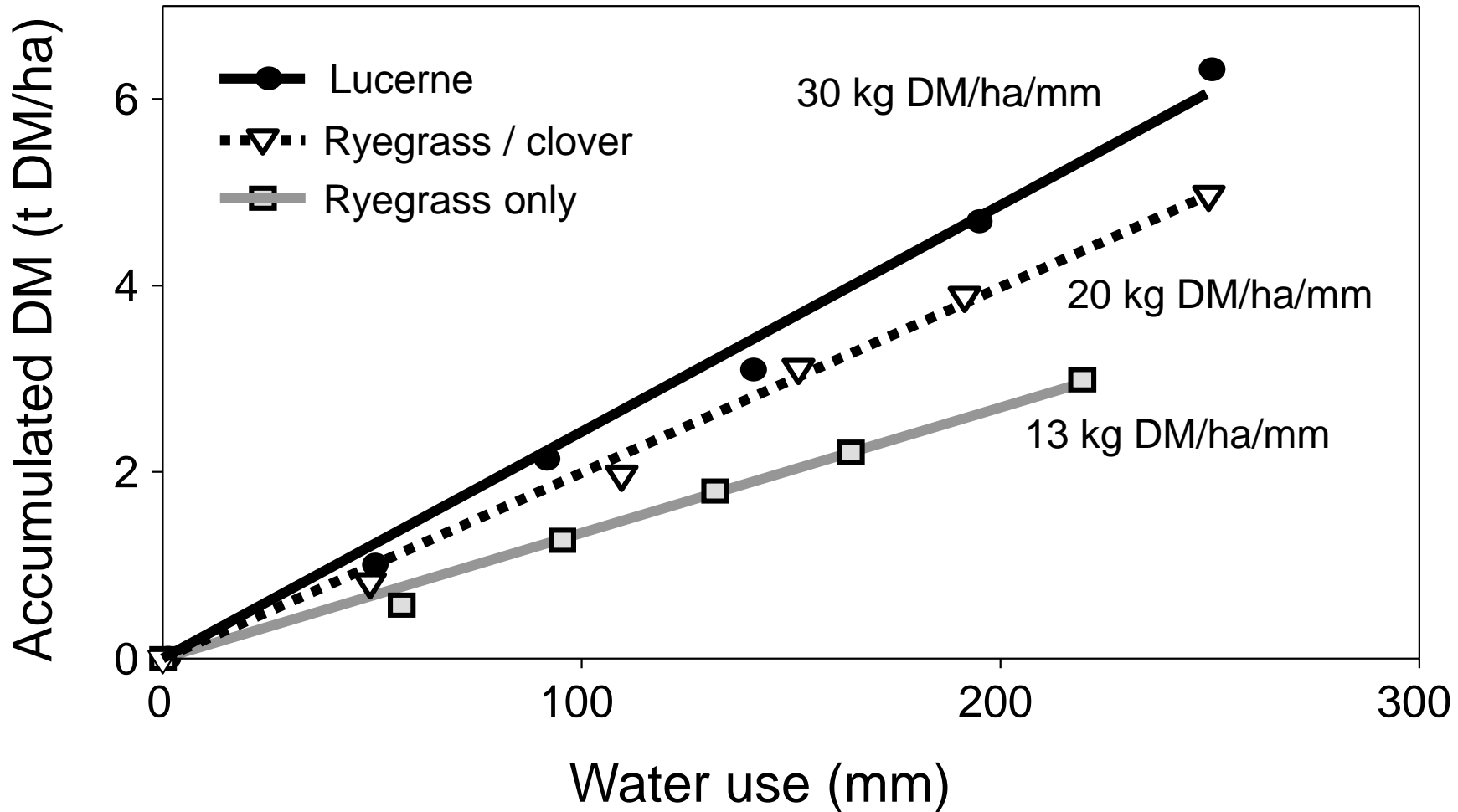
Farmer comments

- Feed properly** - low lambing percentage
- low ewe condition
 - meat vs wool (both)
 - poor grass persistence
 - cost of inputs
 - strategic irrigation
 - cost of conserved feed
 - flat to steep country
 - poor quality feed

Current on-farm activity

- Central Otago to Marlborough
- lambing onto lucerne
- wethers/hoggets grazing lucerne
- introducing annual legumes
- managing aspect and altitude
- dealing with aluminium
- rectifying trace element problems
- bacteria and michorhiza
- intensification of tough country

Spring WUE: legume = (nitrogen)



Pre-development

- browntop
- hieracium
- sweet vernal
- <5% legume

- Low palatability
- Low production
- Low legume
- 50, 000 hectares

Lime and Fertiliser Application

Lime 3-5 ton/ha

Fertiliser 250-500kg/ha



Typical 0.15 m soil test results for pre (2008) and post (2010) fertiliser applications from three Central Otago farms.

	pH	Olsen P (ug/ml)	Potassium (QTU)	Sulphur (ug/g)	Aluminium (mg/kg)
Pre-Development (2008)					
Hills Creek	5.2	10	5	14	2.6
Huntleigh	5.2	10	5	1	6.3
Styx	5.2	13	13	3	5.7
Post-Development (2010)					
Hills Creek	5.8	19	9	31	0.9
Huntleigh	6.0	18	4	25	1.5
Styx	6.1	29	13	23	1.1



2nd Spray – Spring
Glyphosate, insecticide, penetrant

Result from Autumn spray, photo taken 1 November 2010

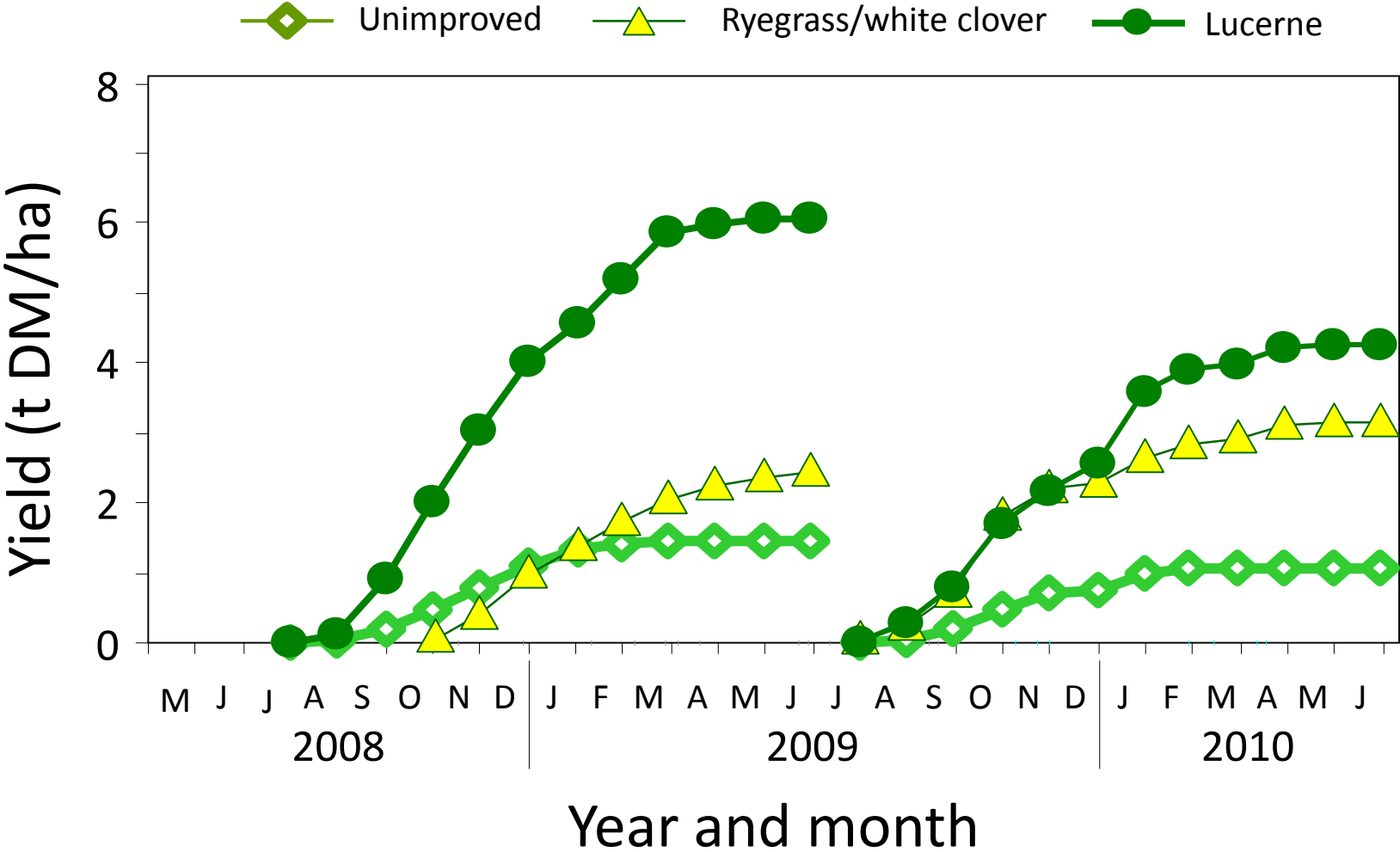
Drilling seed with fertiliser
Direct drilling = seed + fertiliser



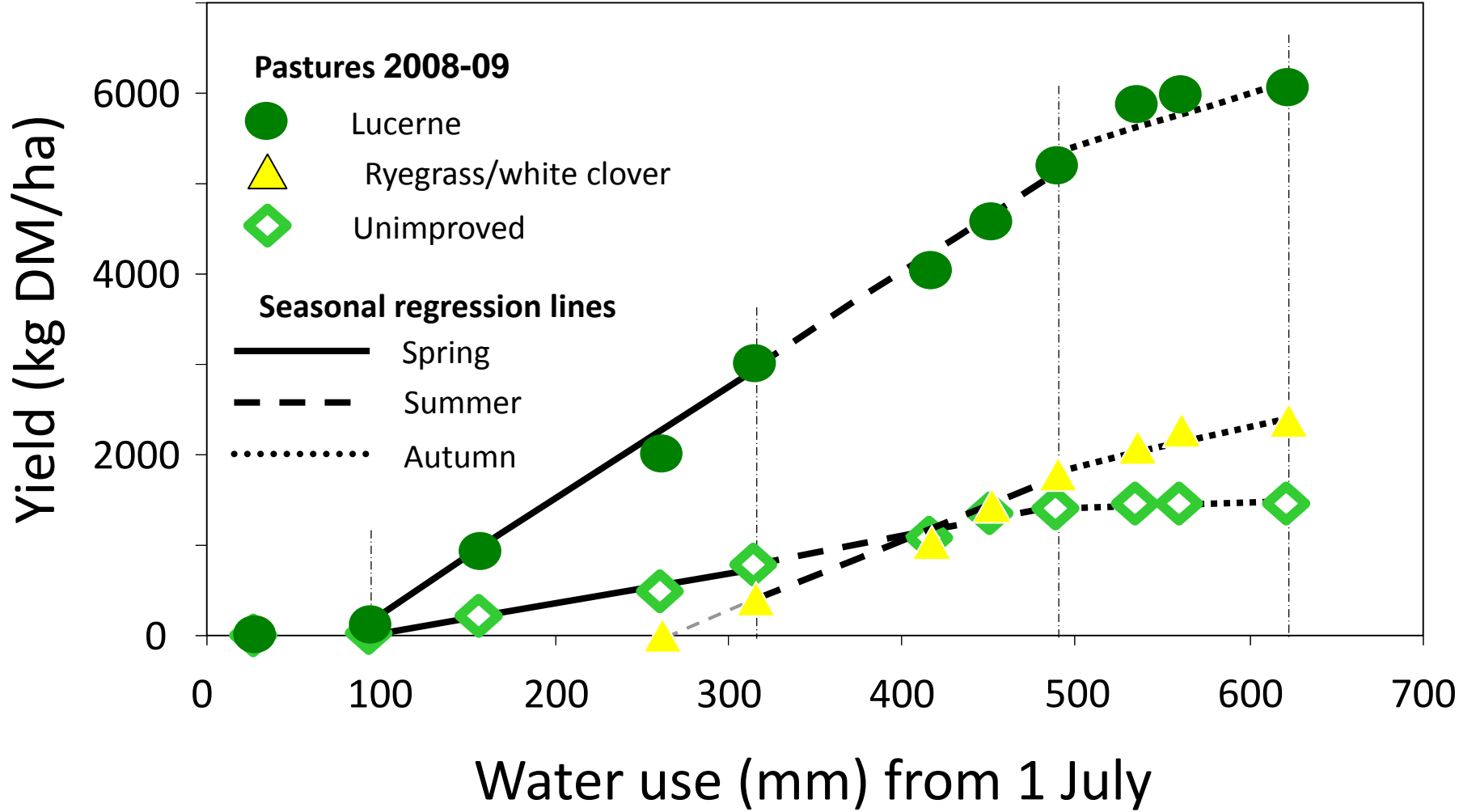
Sown 21/11/2007
Photo taken 1/11/2010
Styx Station



Pasture growth – Central Otago



On farm - yield and water use















Current research

- MaxClover – measurements ceased
- Lucerne grazing mgmt – flexibility/water
Ashley Dene - (Pastoral 21 Part II?)
- Top flowering annuals – (PhD)
- AD = five grazing treatments – perennial
grasses plus sub or top flowers, lucerne,
lucerne/grass. (Pastoral 21 Part II?)
- Marginal env. – low pH high Al (PhD).

**Non
cultivable**

Spring

Summer

Aut./winter

Summer moist

Mgmt

Mgmt

Mgmt

Summer dry

Species

X

Mgmt

Cultivable

Summer moist

Mgmt/sps

X

Mgmt

Summer dry

Species

Species/mgmt

Mgmt





Staff involved

- Prof. Derrick Moot
- Dr Alastair Black - Pastures
- Dr Jim Moir - Soils
- Dr Hayley Ridgeway - Mirco-organisms
- Dr Mitchell Andrews - Nitrogen fixation
- Dr Annamaria Mills - Water use
- Mr Dick Lucas - Extension
- Dr Rainer Hoffman - Plant physiology
- 8 post graduate students

Acknowledgements

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- Lincoln University
- MAF Sustainable Farming Fund



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References

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Moot, D. J., Brown, H. E., Pollock, K. and Mills, A. 2008. Yield and water use of temperate pastures in summer dry environments. *Proceedings of the New Zealand Grassland Association*, **70**, 51-57.