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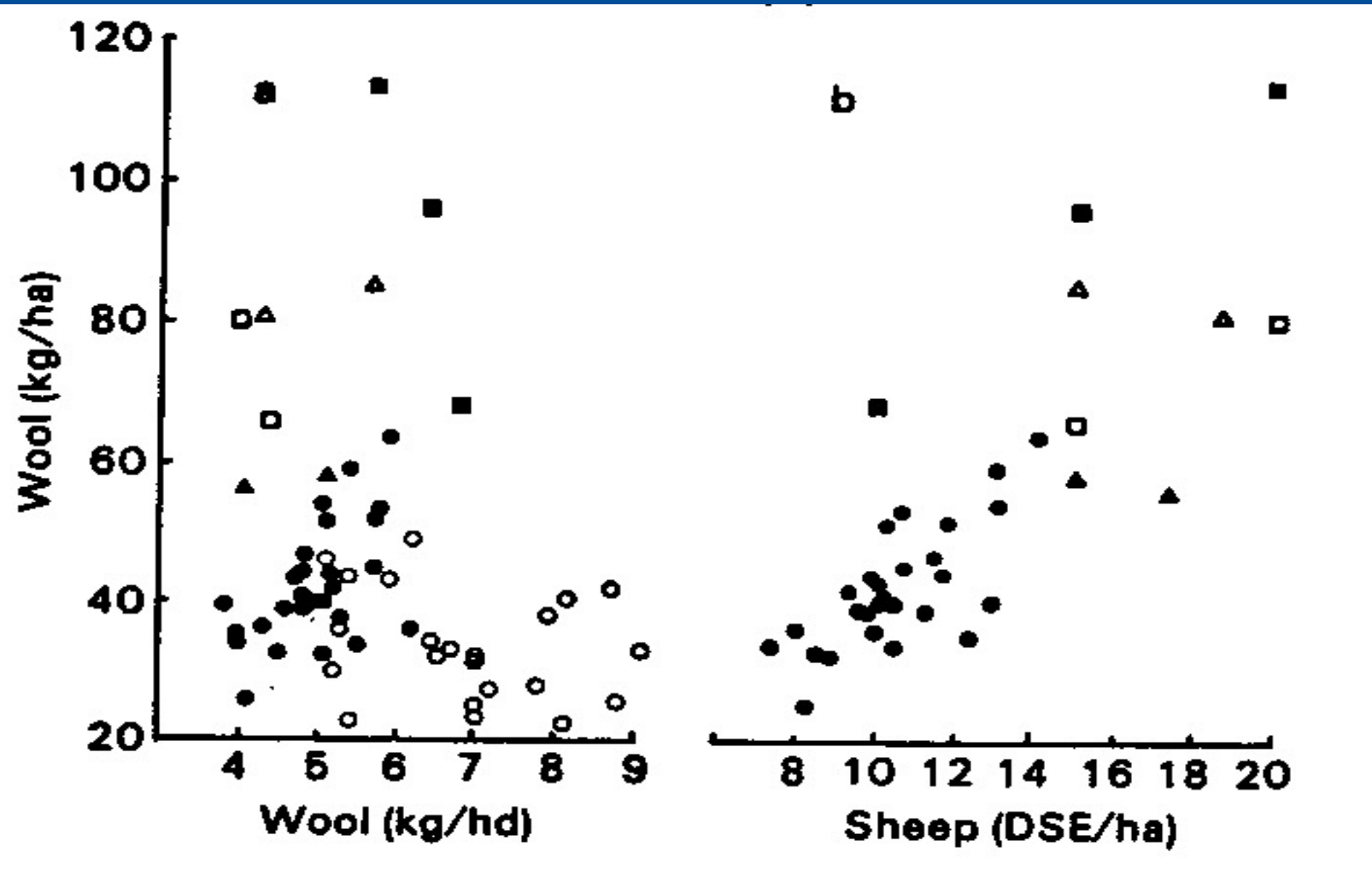
Wool

Management of Temperate Perennial Pastures for Wool Production: “High Input” Systems

Produced for the CRC for Premium Quality Wool undergraduate program by;
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Wool production per hectare vs: (a) wool cut per head; (b) sheep per hectare



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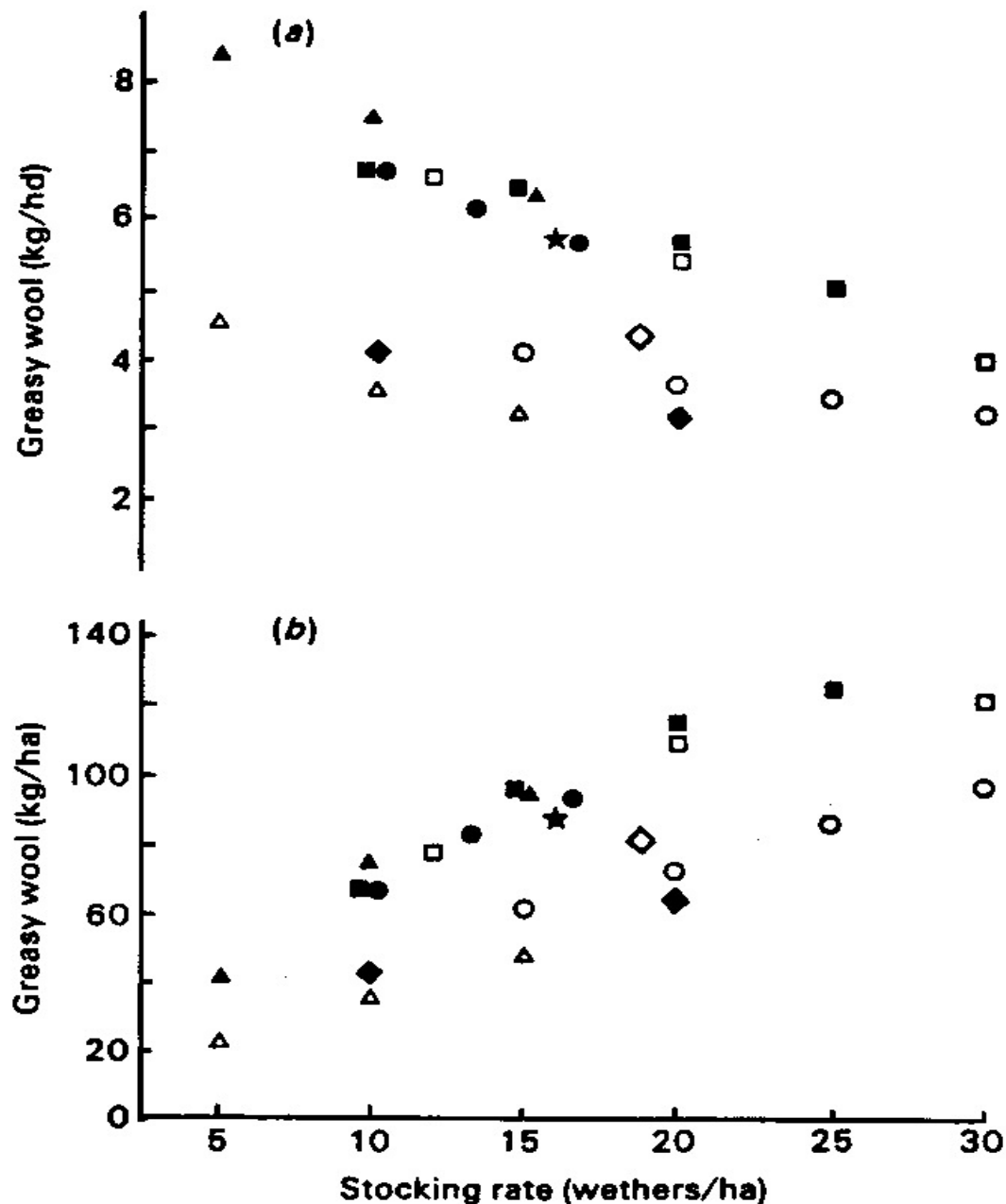
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**Wool production per head
vs
stocking rate**

**Wool production per
hectare
vs
stocking rate**





Soil Fertility and Botanical Composition

16 year old Phosphate Trial at Hamilton, SW Victoria

	Fertiliser rate (kg P/ha/year)					
	1	3	7	14	21	33
Onion grass (%)	35	31	9	2	1	0
Sub clover (%)	6	11	14	27	28	24
Perennial Ryegrass (%)	12	15	32	34	39	37

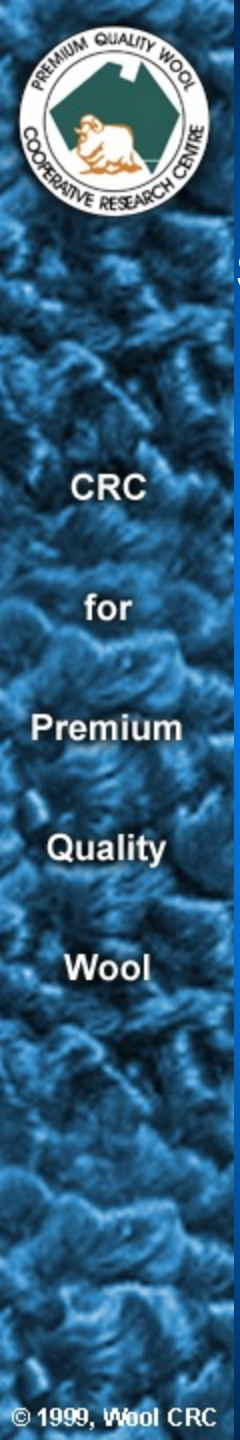
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Fertiliser and stocking rate effects at Hamilton: spring-lambing Merino ewes

Stocking rate	Traits	Average fertiliser applied (kg P/ha/year)		
		1	14	32
Low	June Weight (kg)	46.6	54.7	53.0
	S. Rate (ewes/ha)	5.0 ¹	10.0	12.5
	Fleece (kg)	4.4	5.4	5.6
	Wool per ha	22.0	54.0	70.0
Medium	June Weight (kg)	47.7	52.6	52.2
	S. Rate (ewes/ha)	7.0 ¹	14.0	17.5
	Fleece (kg)	4.2	5.0	5.0
	Wool per ha	29.4	70.0	87.5

¹ ewes required supplementary feeding

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Source: Saul (1994)



High Input Systems:

- **Require P application rates exceeding those recommended by conventional fertiliser practice:**
 - conventional practice for these initial pastures would be approx. 9 kg P per ha.
- **High stocking rates required to obtain profitable return on investment in high P rates. Low SR and high P may lead to loss in legume component.**

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South West Sheep Pasture Productivity Project: 1992-1995

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August lambing
Merino ewes
(22 μ m)

August lambing XB
ewes, joined to
Dorset rams

Typical Upgraded

Typical Upgraded

Ewes/ha

5.5

11.0

8.4

13.2

Total returns (\$)

241

500

510

808

Total costs (\$)

70

185

125

255

Gross Margin (\$/ha)

171

315

385

553

Net profit (\$/ha)

91

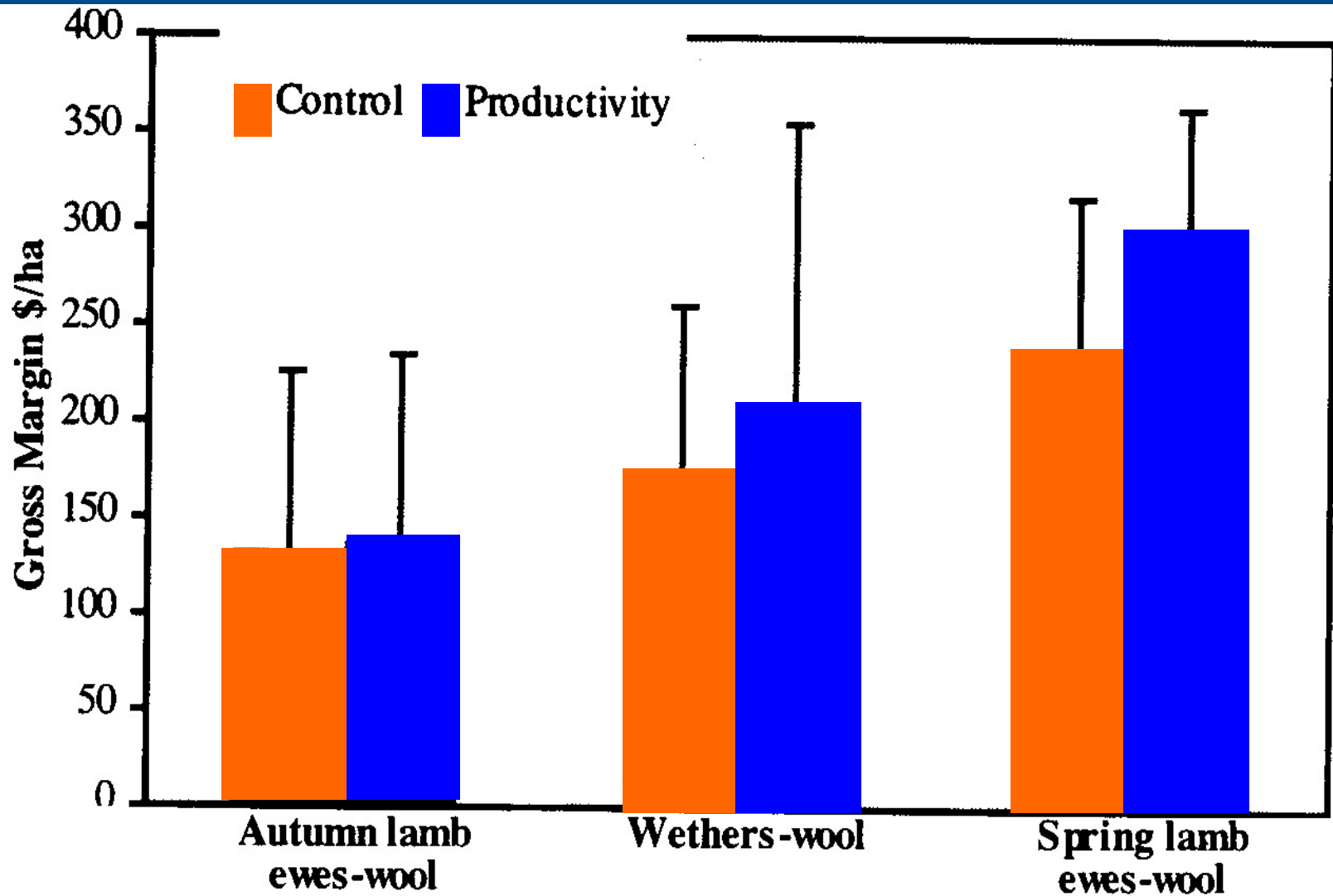
235

305

473



Gross Margins for Wool Sheep



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Dollar return on dollar invested: Productivity vs Control Paddocks

Enterprise	Additional \$ returned per additional \$ invested
Autumn lambing ewes (wool)	0.94
Spring lambing ewes (wool)	1.63
Autumn lambing ewes (meat)	2.07
Spring lambing ewes (meat)	2.18

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Additional considerations

- Development of more productive pasture species
- Environmental impact - nutrient leakage to groundwater or waterways?
- Worm burdens
- Grazing management:
 - persistence of desirable species and control of weeds:
 - using variable grazing pressures, rotational grazing and spelling of pastures, depending on species
 - what does it mean in terms of animal productivity?

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Control vs Productivity Paddock: Faecal egg counts (1995-1996)

Average FEC (eggs per gram)		% sites where Productivity Paddock	
Control	Productivity	Higher	Lower
166	168	30%	42%

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Rotational grazing with breeding ewes on phalaris-sub clover pastures

Results in 1967	No. of paddocks			
	1	3	9	
Total dry matter (kg/ha)	17.1	18.0	16.4	
Phalaris %	42	52	70	*
Barley grass %	11	6	4	*
Other annual grasses %	32	33	18	ns
Sub clover %	9	8	9	ns

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Source: Morley et al. (1969)

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Rotational grazing with breeding ewes on phalaris-sub clover pastures

Results in 1967	No. of paddocks			
	1	3	9	
Wool weight (kg/head)	2.5	2.6	2.6	ns
Ewe deaths - sudden (%)	0	0	15	**
Ewe deaths - lambing (%)	11	3	3	*
Lambs born (%)	71	69	53	*
Lamb birth weight (kg)	3.6	4.2	3.9	*



Sheep Production:

Continuous vs Rotational Grazing

- Moore, Barrie and Kipps (1946):
 - no benefit in wether productivity of RG of improved pastures BUT stocking rates relatively low
- Wheeler (1962):
 - review of comparisons: inconclusive results overall
- Morley et al. (1969):
 - increased herbage mass and change in botanical composition with RG but little difference in ewe and lamb productivity AND increased supplementary feeding with more intensive RG system
- Saul et al. (1998):
 - increased herbage mass with RG but little benefit on sheep liveweight
- relatively short-duration studies - need to evaluate long-term consequences on soil and pasture parameters, and subsequent impact on animal productivity

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Pasture type vs production objectives

	Phalaris tuberosa	Phalaris hybrid	Tasmanian Ryegrass	Gundaroo Ryegrass	Demeter Fescue	Brignoles Cocksfoot
Ewe weight gain in winter	1	4	5	7	5	8
Ewe weight gain in spring	3	4	2	1	5	7
Ewe wool weight	1	3	3	2	8	7
Lamb gain	1	5	3	2	5	5
Lamb wool weight	1	6	3	1	6	3
Weaner gain	6	8	4	3	1	7

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Source: Axelsen and Morley (1968)