

Economic comparison of pasture based lamb production systems in southern Australia

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Introduction Lamb production enterprises in southern Australia utilise a pasture base as their primary nutrition source due to its low cost. Holmes Sackett & Associates (2003) identified that increasing total lamb weight per hectare by increasing ewe stocking rate, animal genetic potential and weaning percentage can increase enterprise profitability. The limitation of these enterprises is the seasonal and geographic variations impeding pasture production and quality. The 'MoreLamb Quality Pastures' project is demonstrating the benefits of mixing high performing grass, legume and herb species to extend the pasture-growing season and increase pasture quality. Key economic indicators of three pasture systems and commercial lamb enterprises are reported.

Materials and methods On five commercial lamb enterprises situated around Hamilton in southeastern Australia, the following pasture systems (10-25 ha/system per site) were established in June 2002: (i) System A - perennial ryegrass, subterranean clover and white clover; (ii) System B - tall fescue, subterranean clover, white clover and red clover; and (iii) 'System C' - perennial ryegrass, tetraploid Italian ryegrass, subterranean clover, balansa clover, red clover, white clover and chicory. Rainfall is between 650-750 mm/yr and winter/spring dominant. Systems are rotational grazed from Dec. to June and are set-stocked from July to Nov. Key economic indicators for systems A, B, C and the five commercial lamb enterprises (LE) were formulated for 2003 data. The LE is used as a control unit and is representative of lamb production systems for the region. General analysis of variance was undertaken on the key economic indicators using GenStat 7.1 (Genstat Committee, 2003).

Results System C produced more lamb/ha than System B (84 kg, $P<0.05$), and systems A, B and C produced more lamb per hectare than LE (61-145 kg, $P<0.05$) (Table 1). There were no significant differences in weaning percentage between systems A, B and C, but values for these systems were 16-26% higher ($P<0.05$) than for LE. There were no significant differences for ewe stocking rate between systems. Weaning percentage had a greater impact than ewe stocking rate on lamb output/ha when systems A, B and C are compared to the LE. The higher weaning percentages of systems A, B and C compared to LE were attributed to higher reproductive rate, as lamb mortality to weaning was constant at 25-30% for all systems.

Gross income/ha was higher for systems A and C (\$110 and \$180 respectively, $P<0.05$) compared to LE, but no significant differences were found for enterprise costs between any systems. The gross margin/ha was greater for systems A and C than LE (\$98 and \$112 respectively, $P<0.05$). Hassell & Associates (2003) reported that a 20% increase in weaning percentage could return a 22% increase in gross margin/ha.

Table 1 Key economic indicators for three pasture systems and lamb enterprises for 2003

System	Lamb (kg live/ha)	Weaning (%)	Stocking rate (ewes/ha)	Gross income (\$/ha)	Enterprise costs (\$/ha)	Gross Margin (\$/ha)
A	472 (6.16)	140 (4.94)	10.5	1064 (6.97)	421 (20.5)	642 (25.3)
B	433 (6.07)	143 (4.96)	9.7	990 (6.90)	404 (20.1)	588 (24.2)
C	517 (6.25)	150 (5.01)	10.6	1136 (7.04)	481 (21.9)	656 (25.6)
LE	372 (5.92)	124 (4.82)	9.6	954 (6.86)	406 (20.2)	544 (23.3)
l.s.d ($P=0.05$)	0.12 [#]	0.08 [#]	1.4	0.10 [#]	2.48 [*]	1.72 [*]

[#] l.s.d in reference to log values in parenthesis. ^{*} l.s.d in reference to square root values in parenthesis.

Conclusions Lamb enterprises that use systems to increase the supply of high quality pasture can increase ewe reproductive rate and weaning percentages. The increases in lamb output can return a positive economic outcome that offset any increase in the costs of these systems. At this level, pursuing reproductive and lamb survival efficiencies should be considered before increasing stocking rates.

References

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