

Evolution in configuration and productivity of New Zealand hill country sheep and beef cattle systems

ABSTRACT

Metabolic energy budgeting (MEB) was used to evaluate evolution over 30 years (1980–1981 to 2010–2011) in New Zealand southern North Island 'hill country' sheep and beef cattle systems. MEB calculates energy required by animals for body weight maintenance, weight gain or loss, pregnancy, and lactation to estimate the system feed demand and thereby provide a basis for calculating feed conversion efficiency. Historic production systems were reconstructed and modeled using averaged data from industry surveys and data from owners' diaries of three case-study farms and reviewed for patterns of change over time. The modeling indicated that pasture productivity was 11% lower and herbage harvested was 14% lower in 2010–2011 than in the early 1980s. This productivity decline is attributable to warmer, drier summer weather in recent years. However, primarily through increased lambing percentage, feed conversion efficiency based on industry data improved over the study period from 25 to 19 kg feed consumed per kg lamb weaned, while meat production rose from 137 to 147 kg per ha per year. Similar improvements were observed for the three case farms. The New Zealand MEB model was found effective for analysis of tropical beef production systems in Sabah, Malaysia.