Feed planning – methods used by "expert" farmers

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Introduction Although formal feed planning has been heavily promoted in New Zealand, relatively few farmers have adopted this approach (Nuthall & Bishop-Hurley, 1999). Reasons for non-adoption have been identified, but little is known about how farmers manage their pastoral farms in the absence of formal feed planning. To this end, the feed management processes used by three successful (expert) farmers were investigated.

Materials and methods A case study design was adopted and the criteria for case selection were farm productivity and expertise in feed management. One sheep and beef (7,770 s.u.) and two dairy (220 and 330 cows respectively) farmers were selected. Monthly semi-structured interviews and field observations were used to collect data over two years. Interview data were transcribed verbatim and analysed to develop models of the farmers' feed planning processes.

Results and discussion The farmers separated the year into four planning horizons and alternated between formal and informal feed planning. Formal feed planning was used when critical decisions had to be made, accurate pasture measurement could be undertaken and the level of environmental uncertainty was perceived to be low (late autumn and winter). Informal feed planning was used at other times of the year. At its simplest level, the informal process used by the farmers was to recall a successful plan from the past. This largely sub-conscious approach required much less cognitive effort than more formal planning. These predefined or *"typical"* plans were used except when circumstances forced the farmers out of "*plan mode*" and into "*decision mode*" to choose between plans. A broadly defined set of farm state conditions was required at the start of the planning period for the *"typical"* plan to be feasible. If conditions were outside this range, the plan was modified. Plans were also modified in response to prior learning, previously made strategic and tactical decisions and significant changes in the market. To modify a plan, the farmers postulated the nature of the change required and then tested its feasibility. At its simplest, this required the modification of some simple heuristics (rules of thumb) in the plan, e.g., the substitution of one type of supplement (grass silage) to make up for the loss of another (forage crop). More complex changes (e.g., the introduction of maize silage) usually took several iterations of adjustments and the associated use of mental feed budgeting to quantify the impact of the change.

Once a plan for a period had been developed, what we term "*micro-budgets*" was used to control its implementation in the face of uncertainty. These micro-budgets operated at a paddock rather than the whole-farm level and were used for time frames of 2 – 4 weeks. For example, during summer, each time the dairy farmers shifted the herd, they estimated the post-grazing residual. They then estimated, given current climatic conditions, how much pasture would grow between now and when the herd returned to the paddock in 3 – 4 weeks time. From this they estimated the proportion of the herd's diet that the paddock was likely to supply at the next grazing. This gave them 3 – 4 weeks warning of an impending feed deficit and allowed them time to evaluate alternative options. As this process was repeated every day, the farm's future feed position was being continually updated. The sheep farmer used a similar process over spring when his sheep were set-stocked. Pasture cover in each paddock was recorded fortnightly in the sheep block. Feed demand for the number of sheep and cattle in each paddock for the next two weeks was estimated and compared with expected pasture growth for that paddock. The size of the feed deficit or surplus over the next two weeks was derived. Stock per paddock was then adjusted to ensure animals were fed to appetite and pasture quality was maintained.

Conclusions Pasture management expertise is integral to successful livestock farming in New Zealand. Despite this, understanding of how farmers plan and control grazing decisions remains limited. Here we have provided some insight into how some farmers manage effectively without formal feed budgeting. Extrapolation of these results from "experts" to the wider farming community must be taken with some care. Nevertheless, the results suggest that rather than continue to unquestioningly promote the adoption of formal feed planning, researchers, extension agents and consultants need to look at how farmers currently manage their feed, and at their requirements for simple, low cost (time and capital) management tools.

References

Nuthall, P.L. & G.J. Bishop-Hurley (1999). Feed planning on New Zealand farms. *Journal of International Farm Management*, 2, 100-112.