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Riverside Farm - A Wairarapa teaching, research and extension resource

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Abstract

Massey University assumed management responsibility for "Riverside", a 723 ha sheep and beef cattle farm 8 km north of Masterton in Master-ton in March 1978. The farm is leased to the University under the terms of the will of the late Mr Sydney Campbell to assist in the accumulation, expansion and dissemination of knowledge about agriculture, with particular emphasis on agriculture in the Wairarapa. A lo-year farm development programme instigated in 1978 resulted in the sale of the beef herd and the winter stocking rate of sheep being increased to 15.1 su/ha by 1984 (9.7 su/ha in 1978). In 1985 stocking rates were sharply reduced following a severe drought and the current mixed 2-year bull beef and breeding ewe policy was introduced. Recent research has focused on drought-tolerant pasture species. In late 1992 sheep and beef cattle farmers (n=100) were surveyed to identify local information needs and how Riverside could continue to serve the region's research and extension requirements. Information related to fertilisers and farm management were most frequently rated as the most imporant current needs.

Keywords: extension, research, Riverside, teaching, Wairarapa

Introduction

Massey University assumed management responsibility for the 723 ha central Wairarapa sheep and beef cattle property, "Riverside", in March 1978. The farm is leased to the University by the Sydney Campbell Foundation on the basis of an initial 100-year term with the right of renewal for a second period of the same duration. This paper describes the resources of Riverside, the farm development programme and changes in livestock policies and performance, and research and extension activities associated with the farm. Possible future directions for research and extension at Riverside to meet current information and future regional development needs are discussed in relation to a survey of Wairarapa sheep and beef farmers, and a workshop attended by farmers, agribusiness people and Massey University staff.

Farm location and history

Riverside is located 15 km north west of Masterton on the upper Opaki Plain. The farm comprises two land areas; Riverside (645 ha) located adjacent to the Masterton-Woodville highway. and Mikimiki (75 ha) which is 6 km west of the main Riverside buildings and yards via the Mikimiki road.

Part of Riverside was originally settled by John Campbell and his wife in 1856. His grandson, Sydney Campbell, who was one of 14 children (none of whom were ever to marry), managed the property from 1948 until his death in May 1977. The Mikimiki Block was purchased by John (II) Campbell in 1908, but the final addition of land to bring Riverside up to its current area was not made until 1972.

In his will Mr Campbell expressed the wish that Riverside be used by Massey University to assist in the accumulation, expansion and dissemination of knowledge about agriculture (especially that which relates to the Wairarapa). In addition, he stipulated that the University was to set aside a sum equivalent to 20% of an assessed annual commercial rent to fund scholarships to assist students from nominated Wairarapa Colleges to undertake study at Massey University. The Sydney Campbell Trust, which manages and disperses the rental funds, awarded 153 undergraduate and 6 postgraduate scholarships with a value of $101,250 between 1978 and 1992.

Farm resources

More than half of the farm area (460 ha) is flat (or terraced), with the remainder being moderate (about 45% of the area) to steep (5%) hill country. The soils on the flats are yellow-brown loams and yellow-brown earths of low to medium natural fertility. They are characterised by shallow topsoils overlying deep gravel, while those on the hill areas (except the Mikimiki) are medium-textured and well-structured yellow-brown earths. The steepland soils of the Mikimiki Block are related to the yellow-brown earths and overlay

greywacke. A detailed soil map for the farm has been prepared by Pollock (1993). Soil fertility levels in 1978 were generally low owing to minimal fertiliser being applied to the property under Sydney Campbell's management (Parker & Lowe 1980). Initial capital dressings of fertiliser in 1978 and 1979, and above maintenance applications in most years since this time, have raised average Olsen P levels on the farm to around 18 in 1992.

Rainfall records, collected at the main homestead and at the Mikimiki Block, indicate an annual rainfall of about 1200 and 1850 mm at the two sites, respectively. December is the wettest month, but summer-autumn rainfall is highly variable and, when combined with hot northwesterly winds, can contribute to summer droughts especially on the stony flats.

Annual pasture production in 1977 was estimated to be 6550 kg DM/ha, and supported 5700 su (8.3 su/eff.ha). Pasture cage cuts that began in 1986 show post-development pasture growth of around 8340 kg DM/ha/year (Table 1). This has supported up to 10417 su (15.1 su/eff. ha; Table 2). A feature of pasture production is the substantial variability in monthly production, within and between years. Inadequate summer moisture, and porina and grass grub infestations contribute to poor persistence of ryegrass. Establishment methods for, and the productivity of, alternative pasture species with better tolerance to these factors (e.g. Wana cocksfoot, Roa tall fescue) have therefore been investigated at Riverside (Mackay et al. 1989).

Table 1 Pasture production estimated by the difference technique with cage cuts and climate data for Riverside Farm.

	Pasture Production (kg DM/ha/day)					Climate	
						Average rainfall	Average soil temp at 10 cm
Month	1986/87	1907188	1988/89[a]	1989/90	1990/91	(mm)	°C
July	6	5	5	5	6	170	6.2
August	12	31	15	15	5	119	7.8
September	36	33	16	37	32	106	10.1
October	62	57	56	40	40	93	12.2
November	61	38	43	26	37	82	14.1
December	10	35	30	31	64	67	16.2
January	8		11	33	46	59	17.6
February	8		1	17	20	110	17.7
March	6	22[b]	2	16	51	123	15.9
April	37	15	4	7	23	54	12.9
May	12	7	11	7	14	122	9.4
June	5	4	1	6	11	102	6.8
ANNUAL TOTAL	8616	8891	6038	7313	10656	1207	

[a] Serious summer-autumn drought in East Coast regions.
[b] Total growth for the January-March period.

Table 2 Livestock wintered at Riverside and their performance 1978-1992 (year beginning 1 July).

	1978	1960	1982	1964	1986	1988	1990	1992
Sheep								
Stock wintered Ewes	5120	6465	8129	8563	7395	5798	5008	4621
Ewe hoggets	388	1900	2519	2406	2039	1950	1742	1300
Others sheep	125	306	239	217	1089	245	63	102
Sheep su	5490	8045	10061	10417	9610	7359	6278	5613
Cattle								
cows	145	99						
Other cattle	60	145	17		73			
Dairy heifers					86	91	46	104
R 1 yr bulls						81	235	362
R 2 yr bulls	2					170	107	101
Cattle su	1208	1168	85		709	1538	1659	2369
Total su	6698	9213	10166	10417	10319	8897	7937	7982
su/eff.ha	9.7	13.4	14.7	15.1	15.0	13.0	11.5	11.6
Lambing %	83	105	106	108	102	129	121	98
Wool sold (kg/ssu)[a]	7.36[a]	6.43	4.80	4.25	4.20	5.04	4.65	N/A

[a] Not corrected for changes in shearing policy in 1960 and 1991.

Farm development

A IO-year development programme to raise farm production and profitability was implemented in 1978 (Parker & Lowe 1980). Pre-development livestock performance was low (e.g., lambing 70-80%, calving 80%), despite a low stocking rate (8.3 su/ha) in comparison with the district average (10.0-12.0 su/ha). The net farm surplus in the 1978/79 season was $1341 ha ($14/su). The development programme was based on well-proven technologies of higher fertiliser inputs, increased subdivision (mainly using low-cost electric fences), intensive short-duration grazing management (primarily during winter) and reticulation of water to paddocks. The base flock of 3700 Romney ewes was rapidly increased by buying in well-grown ewe hoggets (>37 kg liveweight in September) to parallel improved pasture production, the sale of the beef breeding herd (200 cows in 1978) and the disposal of all dry cattle by 1983 (Table 2). Development was funded by a $95,000 loan, farm income and the Livestock Incentive Scheme. By winter 1984 the stocking rate had reached 15.1 su/ha with an all-sheep policy based on a flock of 8563 ewes. The lambing percentage had improved to 108% by spring 1984.

The high stocking rate all-sheep policy was discontinued in 1985 when a serious drought and the removal of Supplementary Minimum Payments on sheep meats coincided with the potential to earn higher returns from cattle (especially bull beef) than sheep. The net farm surplus for the all-sheep policy had declined to $85/ha ($6/su) during the 1983/84 season. A lower stocking rate (12.0-13.0 su/ha) policy based on breeding ewes, bull beef and dairy heifer grazers, that provided for improved per head performance and greater potential to quickly adjust livestock feed demand, was therefore adopted (Parker 1986). This continues to be applied although the proportion of cattle has increased because of the higher earning capacity of bulls (Table 2). The change in emphasis from per hectare to per head production included a flock cross-breeding programme with Border Leicester rams to improve average ewe liveweights from around 50 kg to 60-65 kg. Lambing percentages quickly reflected this policy and reached 129% in 1988 (Table 2). However, wool production has shown less improvement since 1978, remaining between 4.0 and 5.0 kg/sheep su wintered in most years. The sale of lambs, except for ewe lamb replacements and 10-l 5% of the tailend lambs, at weaning as woolly stores has contributed to the low wool output compared with leading Wairarapa properties. The bull beef policy is based on the purchase of 3-month-old Friesian weaners that are sold at 18 months (around two thirds) and 30 months of age. The net farm surplus for the 1992/93 financial year was $116/ha ($10/su).

Research and extension

Riverside management contributes to research in two ways: first by providing technical support and physical resources for on-farm trials, and second by allocating part of the annual farm surplus to the Riverside Farm Research Fund. This was established in 1983 to finance Wairarapa-related research projects that accord with Mr Campbell's will. Allocations to the fund of up to $20,000 per year depend on the level of farm profits and have amounted to $110,582 over the IO-year period from 1983.

On-farm research has included the use of artificial shelter to improve lamb survival (Duff 1981), pregnancy diagnosis of ewes (Parker 1983), alternative ewe (Livingston & Parker 1985) and hogget shearing policies (Parker 1989), iodine supplementation of ewes (Parker & McCutcheon 1989), the use of nitrogen (Parker et al. 1989), phosphate and lime response trials (Mackay et *al.* 1989), and the introduction of new pasture species (Mackay et al. 1989).

Results from research and progress in implementing the farming policy, have been publicised by field days (1978-1986), the Riverside Farm publication series (1980-1986), farming press releases and scientific papers, and the Massey University "Farm Fact Sheets" which are printed each month (1986-).

Research and extension activities have been complemented by a farm monitoring programme. This involves regular (2- to 4-weekly) assessments of farm pasture cover using the Ellinbank Pasture Meter (Parker 1985a), reasonably frequent weighing of livestock (especially young stock) and the collection of climate records (rainfall, 10 cm soil temperature). In addition to supplementing research measurements, the data collected serves to assist management control and decision making, and to provide objective material for student teaching. Data collection has been carried out by farm staff with the assistance of a technician part-funded by the farm.

Future directions

The possible future role of Riverside was assessed in 1993 by conducting a survey of 100 Wairarapa sheep and cattle farmers (Parker et *al.* 1993). interviewing members of the agribusiness sector and holding a workshop with leading Wairarapa farmers, consultants, agribusiness leaders and Massey University staff. The survey results, which apply to farmers selected at random from a map grid of the Wairarapa, indicated

that Riverside was known to 92% of the contacted farmers. Almost one-third (3 1%) recalled research conducted at Riverside or topics at field days, and 33% had been to Riverside for a field day or other farmer meetings. The Sydney Campbell Scholarships were known to 52% of the survey sample.

The surveyed farmers identified issues related to farm management, fertilisers, animal health and pastures as current information needs (Table 3). Information related to fertilisers was most frequently rated (18%) as the most important current need. Farm management needs included identifying the optimum sheep:cattle ratio, management for dry summers, and livestock selling and buying policies. Some of the information needs could clearly be met through research and extension activities based at Riverside (e.g., a continuation of the fertiliser response trials).

Table 3 Information needs (December 1992 – January 1993) of Wairarapa sheep and beef cattle farmers. A 'most important' rating of needs was not provided by all the farmers contacted.

Information category	No. of mentions	Rated most important
Farm management	56	7
Fertilisers	50	16
Animal health[a]	41	5
Pastures	40	6
Climate or environment[b]	23	1
Off-farm factors[c]	19	3
Weed and pest control[d]	13	1
Farm forestry	11	1
Other[e]	3	

[a] Notably drench resistance and blowfly control.
[b] Including the sustainability of hill country farming systems, weather forecasting.
[c] For example, marketing of produce (especially wool), product price forecasting and product quality control.
[d] Most common pest mentioned was porina.
[e] Information on grape growing, deer, silage.

The workshop meeting identified farmer confidence, land utilisation (e.g., the possibility of up to 25% of Wairarapa hill country being established in forestry and the effect of the Resource Management Act), rural labour, transfer of land to the next generation (especially of hard hill country in more remote areas), an apparent breakdown in information transfer between science providers and farmers (associated with restructuring of state-funded extension to user pays) and marketing of agricultural products to be among the most important factors confronting the future development of Wairarapa agriculture. Workshop participants believed Riverside could assist the Wairarapa community by acting as a gateway for education services (e.g., short-courses, centre for discussion forums on topics related to the rural community) and providing funds to support research at the farm and in the wider community (e.g., collation, analysis and interpretation of data collected by farmers). An aim to maximise profit for distribution via the Riverside Research Farm (e.g., by continuing the sheep and bull beef policy) could potentially conflict with on-farm research that evaluated innovative technology and farming systems. To resolve issues such as this, and to maintain local involvement and interest in Riverside, the Wairarapa community may be served better in the future if they are represented on a committee responsible for developing the farming programme (including livestock policy, and research and extension activities).

Conclusion

Riverside is a unique Wairarapa resource that provides a link between tertiary education and applied research at Massey University, and the Wairarapa rural community. The farm services local needs through the demonstration of farming systems, on-farm research and extension, and funding of research and student scholarships. Riverside farm has become widely known in the community through research and demonstration work centred on the farm. Increased "local" involvement in decision-making is likely to improve the future effectiveness of Riverside.

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