

An Environmental History of New Zealand Agriculture

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Introduction

Throughout the year 1946, the *New Zealand Journal of Agriculture* carried a striking series of colour illustrations on its monthly cover. These sought to illustrate the role that New Zealand agriculture was playing in the export of food to war damaged London. The story was of helping to save Britain – the cover for July used a graphic illustration of the four horsemen of the apocalypse over Europe – from the spectre of starvation. The nature of the relationship was however best summed up by the cover for September, which shows a young New Zealand farmer on his tractor ploughing a paddock. The paddock sits in a neat pastoral landscape in which fences, trees and grass fade towards snow covered alps, above which, and directly in the gaze of the young farmer, rises the symbol of St Paul's Cathedral. Were it not for the presence of the mountains, this could easily be an English scene, although the prominence of the tractor is indicative of the technological edge that New Zealand agriculture wished to portray at the time.

The closeness of the relationship between 'the Britain of the south' and metropolitan Britain is one of the fundamental characteristics of any environmental history of New Zealand agriculture. This paper will briefly outline the landscape transformations that resulted from this relationship, and the ways in which it was mobilised through patterns of production and productivity. It will then consider some of those aspects of environmental sustainability and systems thinking that have long characterised New Zealand agriculture, before concluding with a brief analysis of contemporary meanings of land and landscape now that a commodity-based productivist agricultural model is being superseded.

Landscape transformations

The predominant story of the making of new landscapes in New Zealand has been one of the replacement of indigenous vegetation by what were usually described as 'English grasses'. The prospects for turning this part of the European new world into 'empires of grass' has an extended history. John Nicholas in his narrative of *A Voyage to New Zealand*, published in London in 1817, wrote that "the lands of this country ... might be brought to produce grasses of every description; were the experiment tried, I doubt not but it would prove invariably successful, and that the islands in general would afford as fine a pasturage for sheep and cattle as any part of the known world" (in Ward 1840, 23).

Standard maps available in sources such as *The New Zealand Historical*

Atlas (Mackinnon 1997) indicate the extent to which this vision was delivered. European pastoralists took over much of the South Island within a few years of the signing of the Treaty of Waitangi, with a great deal of the North Island being converted from bush to pasture in the 30 years before the First World War. Much of the seed was indeed English in origin and companies such as Sutton's of Reading, west of London, supplied substantial quantities of grass seed from at least the 1840s. The Sutton's trademark, widely used in its printed advertisements as well as on the zinc containers in which seed was exported, showed a picture of Demeter, the Greek goddess of corn, seeding a globe, surrounded by the words "Sutton's English seeds for all parts of the world" (Pawson 2008).

The conventional account of landscape transformation therefore gives a sense of inevitability about of the creation of these empires of grass. At the time, however, this was only one of several futures that were being discussed. Amongst different visions for remaking New Zealand in the mid to late nineteenth century were a range of possibilities focused on all sorts of potential trade goods with which farmers, acclimatisation societies, and provincial governments were experimenting. 'Mediterranean' alternatives were popular and the growing of corn, grapes, olives, and silk all had their proponents. George Grey urged the exploration of these alternatives, and in the 1890s Romeo Bragato was engaged by the New Zealand government to assess the potential for growing grapes. His report picked out almost all the areas that a century later were to become important in this industry.

Grass however seems to have become an inevitability as a result of the process of "recolonisation" that according to Belich (2001) characterised the period from the late nineteenth century on. With the introduction of refrigeration in 1882 it became viable to use grass-based systems to export not only wool, but also meat and dairy products over long distances. Thereafter New Zealand's future became closely allied to the British urban market. The colonial effects of this were profound, particularly in those parts of the country where Maori had yet to be displaced and forest and swamplands were still widespread. On the whole this involved the remaking of the landscapes of the North Island, although at least one South Island region played an unsung role in this regard.

Banks Peninsula in Canterbury was deforested between the 1860s and 1900, becoming in the process a significant international producer of cocksfoot grass seed. Not only was this exported to Australia, California and northern Europe, providing a counter flow to that which companies such as Sutton's had initiated, but it was also widely used in a popular mix with ryegrass to seed the new grasslands of the North Island (Wood and Pawson 2008). These lands included the dairy pastures of the inland Manawatu and Taranaki that were carved out of the burnt forest in the 1880s and the 1890s as well as drained wetland areas of the Thames district and the lower Manawatu. Such was the extent of this transformation that New Zealand now has less indigenous wetland left than either the United States or Holland (Park 2002).

Productivity

Despite the significance of grass in these new production/landscape systems, it was said at the time that “grass is of all the crops the most generally neglected” (Morgan-Richardson 1900). An important early element of the science of agricultural productivity was therefore a focus on improving the quality of grass seed and grass seed mixtures. Alfred Cockayne, who was to become Director General of Agriculture, worked tirelessly in this respect from the early years of the new century, highlighting losses sustained from weed-ridden pastures. His acolyte Bruce Levy, who became Director of the Grasslands Division of the Department of Scientific and Industrial Research, devoted his career to championing highly productive strains of ryegrass and ryegrass-based pastures (Levy 1970).

There were however two other important elements in the productivity revolution of the early to mid twentieth century. With access to phosphate deposits from the island of Nauru, fertiliser usage increased from 25,000 tonnes in 1900 to 400,000 tonnes in 1925. It was topdressing with superphosphate that underlay the increased productivity of New Zealand agriculture between the 1920s and 1950s (Hopkins and Wilkins 2006). After World War Two, it was the turn of agrochemicals to assume an increasing profile. Through the Ivon Watkins-Dow factory in New Plymouth, New Zealand became a significant producer of 2,4,5-T, sold under brand names such as Weedone, for the control of the gorse and other woody pasture weeds (Wildblood-Crawford 2006). The changing covers of *Service*, the IWD in-house magazine, portray the same elements of pride in technical and pastoral progress that were implicit in the 1946 covers of the *New Zealand Journal of Agriculture*.

The subtitle of *Service* was ‘A Review of Agriculture and Chemical Progress’. In landscape and production terms this can be summarised by a graph of changes in the numbers of stock units and of the extent of sown grasslands (Figure 1). This shows the degree of intensification of production since the middle of the twentieth century.

Systems and sustainability

These aspects of landscape transformation and land productivity underwrote what is often called the ‘productivist model’ of New Zealand agriculture. A productivist emphasis should however be counterbalanced by an acknowledgement of issues of sustainability, based on an understanding of environmental systems as opposed to merely the unit of the farm or paddock. Although there had been some interest in elements of ecological and aesthetic approaches to landscape as early as the 1860s, systems thinking became much more prominent in the field of catchment management from the 1930s onwards. Widespread loss of good soils in the 1930s and some serious flooding events encouraged consideration of methods of soil conservation.

In 1944 the geographer Kenneth Cumberland published *Soil Erosion in New Zealand: A Geographic Reconnaissance*, in which he undertook a nationwide survey of the extent and processes of soil loss. He worked raising public and political awareness with Lance McCaskill, whom Cumberland subsequently credited with being influential in the broadening of the Rivers Control Bill into the landmark Soil Conservation and Rivers Control Act of 1941 (Cumberland 1981). This Act was subsequently used to facilitate the management of catchments as systems and the establishment of catchment authorities, whose role was to develop catchment-wide and farm scale plans for vegetation, soil and flood management purposes.

QuickTime® and a
decompressor
are needed to see this picture.

Figure 1: Changes in the area of sown grassland (dashed line) and the number stock units for New Zealand, 1861-2005. Data not collected for those years shown as dotted lines. Source: Agriculture Statistics

Catchment authorities survived until the restructuring of local government in the late 1980s. It was also in the 1980s that sustainability of water resources came to prominence. The environmental reports of the Waitangi Tribunal drew attention to the extent to which agricultural and industrial wealth had fouled waterways and water bodies over a long period of time (Wheen and Ruru 2004). These reports in turn encouraged land and water resources to be thought about in system terms, in which water was seen as an asset and not as an easy source of waste disposal. This approach was then codified through forms of compliance required by plans drawn up under the new Resource Management Act from 1991 onwards.

A third form of approach to system sustainability might be labelled 'multifunctionality', or using landscape for multiple purposes. One of the consequences of a strongly productivist agriculture in New Zealand has been a sharp division of landscape types zoned by activity (Swaffield 2008). In contrast, multifunctional approaches assume that land and water can be managed for several purposes simultaneously. In landscape terms the outcomes may be much less clear cut but are likely to produce systems that are much more resilient. Land and water use becomes the outcome of both production and environmental drivers: within any one unit such things as pastoral production, catchment and nutrient management, tourism and carbon sequestration may all be of substantial significance. In parts of North Canterbury for instance, former sheep country is rapidly reverting to beech forest, which can be used for commercial products as diverse as honey, carbon credits and recreational walking.

Meanings of land/scape

The recognition of collective and consumption values such as those for environmental management and tourism raises the question as to whether New Zealand farming land and landscape should still be conceptualised as a commodity or seen more broadly as an asset that belongs to the whole community. So, in the light of these increasing uses of land, to whom does land and landscape belong? This is not a new question and was being raised as long ago as the 1960s (Johnson 1969). But in the twenty first century there are widespread expectations of increased public access to privately owned and managed farming land. The government's Walking Access Consultation Panel (www.walkingaccess.org.nz) that reported in 2007 is one indicator of this.

At the same time, however, many new products of the land are being packaged and sold in ways that encourage everyone as consumers to feel that they have a stake in the landscape when they purchase, say, New Zealand wine, regional cheeses, or merino adventure clothing. Increasingly the producers of high end products are seeking to capture value through an emphasis on narratives of desire, sustainability and animal welfare (as exemplified at the conference by the Icebreaker story). The extent to which this shift from a productivist model based on commodities towards a consumer oriented value chain will alter the significant themes in the environmental history of agriculture remains to be seen. But at the very least it does suggest that vicariously we all as consumers have a future stake in the meaning of New Zealand's land and landscape.

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