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FROM FARM LABOURER TO FOOD TECHNOLOGIST A CENTURY OF RADICAL CHANGE IN FARM EMPLOYMENT 1900-1999.

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Ruth Gasson, tutor to student land economists at Cambridge in the late 1960s, introduced me to the more social aspects of agriculture (e.g. [Gasson](#), 1971). I have been drawn to issues of rural work and employment since then.

I come from a hop and fruit farm in the Weald of Kent and had been introduced to issues of employment through my father. There were regular discussions of problems he was encountering with his dozen or so permanent staff and their wives, additional seasonal and casual workers, or the up to a hundred families of Londoners employed during hop picking. The latter provided my first introduction to the dramatic effects of mechanisation when our first hop-picking machine was installed in 1955 and then followed shortly by another, which did away with the need for the often-troublesome Londoners. Personal memories, however, do not take us back to the turn of the century, and I want to begin my paper there as the title suggests. After viewing the beginning and the end of the century through others eyes I want to explore a number of the key processes which have been going on over the past hundred years. However, I am going to confine my remarks to the food part of primary production rather than the fibre element. Wool, which was the major commodity produced before the means of transporting more perishable foodstuffs became available, has already been well researched and written about from the point of view of the rural worker (e.g. [Martin](#), 1990; [Martin](#), 1992; [Tsokhas](#), 1990). Concentrating on the food story should help to simplify the issues.

I want to begin with extracts from Arthur I. Carr's *Country Work and Life in New Zealand* published in 1913 but researched over the previous nine years ([Carr](#), 1913). It was intended to be a guide for prospective emigrants. To help my argument the following quotes about farm work at the turn of the century are rearranged in terms of order:

Sheep are the backbone of New Zealand, and by learning work in connection with the 'Jumbuck' (a favourite name for the animal) one can travel practically all over New Zealand and Australia with the certainty of getting work...(p. 17)

With twenty-two million sheep to be looked after, naturally a large number of men are required, besides which a great number of cattle are also pastured (especially in the North Island, to keep down the second growth of Manuka and fern) ...Shepherds do all the mustering, drafting, and all other work in connection with the animals. After a careful study of shepherds and their work, gained through working on a number of stations, I have come to the conclusion that anyone with ordinary intelligence who can whistle loudly (even if this is not necessary, as tin whistles can be made or bought) is fit to take on the work with a short experience. Of course there are good and bad shepherds. (pp.32-33)

Work on Agricultural Farm - ...The knowledge or the ability to learn how to handle horses is essential. Ploughing, discing, drilling, harrowing, and rolling are all done by horse power (a few owners use motors). One man drives four horses and guides the plough himself - with some brands he walks - or others (sulkies) he rides...Driving the disc plough, the harrows or the roller is not difficult. A new hand is generally started on the roller. There are no fixed hours of labour, but the successful and systematic farmer manages to get the ordinary routine work done in eight hours. This does not, of course, include the time taken feeding the teams...Food and accommodation in the majority of cases is satisfactory. There is, however, a minority of employers who, through their inadequate accommodation, compelled the passing of the Farm Labourers' Accommodation Act and now try to evade it, and try to economise on the food bill and find daylight to dark all too short for work. (p. 35)

Haymaking - The jobs to look for are 'cocking up' (with a two or three pronged fork), driving the horse rake (no hand rakes are used nowadays), driving the mower (which requires experience), loading the drays or sledges when ready, and stacking (also an experienced mans job)...Threshing - In fine seasons the farmers thrash straight out of the stook, the leading-in and forking is just the same but no stacker or crow is required. The mills carry their own forkers, band cutter, weigher and bagman (one man) and sewer and stacker. The farmer supplies the carts and drivers... (p. 12-13)

Dairying - ..Milkers are in demand from early spring to late autumn, say from August to May. The majority are employed on wages although a large number of herds are let on the share system. Owing to the difficulty in getting efficient 'teat pullers' (as milkers are familiarly known) machines are being largely brought into use. Where farmers allow a reasonable amount of time off during the middle of the day, the job is by no means a bad one. Some farmers, however, expect a man to be up about three in the morning, milk, take it to the factory, feed pigs and calves, clean cans and then go out and do general farm work, ploughing, fencing, ditching, etc, until it is time to milk again. To earn full wages a man is expected to milk eight cows an hour..(pp.38-39)

Gardiner [1](#) - Has to grow all vegetables required, look after the lawns, flowers etc. On some stations he has to milk a few cows... (p. 34)

Fruit Picking and Orchard Work - Nearly all parts of New Zealand can grow fruit superior to California in flavour, if not equal in appearance, and the industry, now that growers are planting in an up-to-date style, promises to develop largely. Several efforts have been made to encourage an export trade in apples, but without any great success...The weakest point at present in the industry is, however, the method of distribution. There is a vast difference in the price the grower receives and what the consumer is called upon to pay. Until this is rectified (and it is not an easy matter to suggest how) fruit will not become the every day diet of the working classes here, as it is in California...The work is not hard. The pace is by no means fast, compared to what prevails in California, where piece work is mostly in vogue...Orchard work consists in pruning, spraying, digging round the roots of trees where the horse scarifier cannot reach, and weeding... (pp.22-23)

In New Zealand vegetables are no longer grown by a specialist gardener employed full time but bought from the supermarket like most other farm family requirements. Vegetables make the connection with my second quote about the future of agricultural production [2](#). It is taken from the New Zealand Commercial Grower and describes space-age growing under the title 'Growers to target safe food practices' (September, 1997, pp.4,6,8).

It looks more like an operating theatre than a factory. You could carry out brain surgery there, the place is so clean, white and sterile. Staff wear white coats or overalls, everyone has a head cover, people using knives have a chain mail glove on the vulnerable hand, or people handling the produce wear disposable gloves. Footwear is covered by PVC bags. Conveyor belts and all working surfaces are blasted with hot water and steam every night. Sounds like science fiction? Not a bit of it. The scene is a prepared food 'assembly' plant in Australia. One of those places where they cut up all vegetables and pack them for stir-fry or soup mix. Or make tubs full of cooked potatoes and mayonnaise. Its food for those salad bars and pre-prepared meals in most supermarkets around the country. The company involved in this case hasn't gone over the top. It is not being run by a lunatic with an extreme fetish for hygiene. It is working to new food safety (mark the word 'safety') regulations common in Europe. And its more than likely that similar or maybe even more stringent regulations will be in place in Australia and, yes, in New Zealand in the not to distant future.

The article goes on to suggest that such practices are not too far away for the fields, glasshouses and packhouses of New Zealand, together with portable toilets and washing facilities in the field, and a Food Safety Programme on every property supplying food processors. This is all in the international desire to improve food safety. Further, it goes on to highlight the developing tensions between the food safety movement and the 'organic' movement, because many products grown as part of sustainable farming systems do not and cannot meet the requirements of food safety. From the food safety angle inorganic chemical fertilisers are more suitable than the regular supply of that fully sustainable farm yard manure like our grandfathers used.

Since Christmas similar issues have arisen in animal production, with a ban by the European Union on the use of four types of anti-biotic in pork and poultry production. While the effects of such anti-biotics on humans are unproven, the ban was implemented by the European Council in spite of the lack of a proven connection. Further, there are growing demands from consumers and supermarkets for the introduction of traceability of all animal products back to the farm of origin as part future quality control measures (Radio NZ, 7 January 1999).

What do these changes mean to the farmer? To explore the question further I asked a Mid-Canterbury mixed cropping farmer with a B.Agr.Sc. degree, how he perceived the changes in work and employment since 1900 [3](#).

Firstly, he recognised the reduction in labour use, but at the same time pointed out how vulnerable this left the individual farmer, whose only worker might be incapacitated, leave or be imprisoned at a critical period. He was speaking from first hand experience on this point. In his youth there had been lots of staff about, which had had its own problems. He noted that the nature of work had changed, with a lower level of skills being required formerly but a higher level of physical fitness. As he said: 'You cannot afford to have any idiot driving your \$100,000 tractor or \$300,000 header'.

With modern herbicide regimes he suggested that applicators had to be able to read and calculate application rates and know the mutual compatibility of different pesticides. A higher degree of technical knowledge was necessary than formerly. Overall, he believed arable farming was much more complex, while increased complexity was not as serious for animal farming.

Technological developments were making previously un-thought of integration of systems possible. Yield monitors in headers are making it possible to decide which areas need more fertilizer or pesticide and can be integrated with spreaders, sprayers and irrigators. Technical information overload is becoming a real problem. More high technology machinery has its own problems. Formerly, a blacksmith/engine driver (with a steam ticket) was employed on his property. He shod the horses, ran the forge and made bits of equipment required. Now one has to employ the appropriate service engineers from Ashburton or Christchurch. There are more things to break now and they are more expensive to fix. He recognised that communications had changed dramatically too. For example, marriages were no longer a matter of who was in bike or horse distance, but much further afield. To illustrate how much horizons had expanded, he cited a neighbouring farmer who had been at Lincoln with him. Not only had he gone to college/university but also on an overseas exchange to America, where he had met his Canadian wife.

Changes in farm work and employment

We can summarize the changes in farm work and employment since the turn of the century under the following ten headings:

1. Role of Government

At the turn of the century Government was heavily involved in the New Zealand farming economy. A Department of Agriculture had just been established and public policy was to settle more people on the land with the 'busting-up' of the large pastoral estates and the granting of the freehold to settlers. For most of this century the focus of policy has been establishing and maintaining working family farms, with perhaps the help of the proverbial married man. Because agricultural products were of such economic significance, the Government was always involved in trade policy, and then after World War I, in the setting up of the Producer Marketing Boards in response to trading difficulties. Government intervention reached its peak in the Muldoon years of the 1970s with Supplementary Minimum Payments, which completely distorted production patterns, and led to the reaction of Rogernomics. Farmers had to go 'cold turkey', when all the production subsidies were removed. From 1985 farmers were 'on their own', often with diminished equity from buying land at land prices inflated by SMPs, which fell when SMPs were removed. While the transition was painful, most farmers would recognise the failures of the SMP system. Leaner, meaner farming was required and resulted, but the feather bedding of other parts of the economy and government services were given much greater scrutiny by the farming community as a consequence.

What is it that farmers seek today?

Governments must create a business environment for farmers conducive to their success. This means that, by having as little involvement in the economy as possible, ensuring that we have an open and competitive economy and, beyond that, keeping out of our way. (Malcolm [Bailey](#), President, Federated Farmers of New Zealand, 3 July 1998).

2. Labour force

While the proportion of the overall work force engaged in agriculture in New Zealand has continued to diminish since 1900 ([Easton](#), 1996), actual numbers have remained relatively stable, although there have been structural changes within the work force. Around 1900 most employment was concentrated in arable production. Then with the advent of mechanisation it became concentrated in intensive animal production. Latterly, the growth areas have been the non-traditional ones of horticulture, viticulture and new ventures such as deer farming. Generally there has been an intensification of land use, with the resultant increase in the demand for labour. Employment in agriculture has tended to shift to the North Island as well, and now involves far more women. Following the abolition of agricultural support in 1985 the number of paid workers seems to have decreased and be replaced by unpaid members of the family ([Gouin](#) et al., 1994; [Fairweather](#), 1997), but it is not clear to what degree the children of farmers use the farm as an employment refuge in times when employment opportunities are distinctly limited. Such disguised unemployment has not been investigated in New Zealand ([Errington](#), 1994).

The proportion of most developed countries' active population engaged in agriculture has been falling steadily since 1945. In Britain since 1985 it has hovered at around 2 percent. For Germany it has fallen from about 5 to around 3 percent, and from 8 percent to 4.5 percent for France). The current level for New Zealand is about 8 percent, close to Italy (7 percent) and Spain (9 percent) and one of the highest levels in the OECD, reflecting the country's economic dependence on agriculture. The farm labour force shrank by 75 percent from 1960-92 in the USA to a level around 2 percent, but farm productivity doubled. On-farm labour productivity had increased by approximately two and a half times labour productivity in the non-farm business sector since 1945 (The Economist, 1998; New Zealand Yearbook, 1998; [Anon](#)., 1997).

3. Production

Traditional small mixed farms have given way to an increasing tendency to specialize, and many farmers have begun to produce niche products for specialized markets. For example, the mixed farm in Southland disappeared in the Korean war when returns from meat and crop production were sufficient to meet farmers' needs without recourse to dairy production and the need to milk cows. Only recently has milk production become significant in Southland again. Simple systems have been replaced by pluriactivity as farmers have sought extra income from non-traditional enterprises such as a range of exotic animals (e.g. deer and goats), or horticultural crops (e.g. designer lettuces or calla lilies), organic farming systems, active recreations (e.g. pony trekking) or farm tourism. Milk production has continued to thrive and dairy cows have recolonised the South Island, while beef and sheep farms have languished over 15 years of economic stagnation.

4. Mechanization

Mechanization had its chief effect after 1945. The mutual help of small farm communities has been gradually replaced by an increasing use of farm contractors e.g. for haymaking. Now contracting services for farmers are available for: hay and silage making; cultivations; heading/harvesting; shearing, dipping, pregnancy diagnosis, muscle and fat detection etc.

During the 1950s and 1960s the cost of labour was relatively expensive compared to the cost of capital. So many farmers substituted all kinds of mechanical devices. Also contract gangs have been used to avoid the problems of 'dead' time with regular staff in a seasonal industry. Farm equipment has become increasingly sophisticated over the century with changing forms of motive power, moving from the horse and steam to petrol, then diesel powered motors, to electricity. Guidance systems have changed from the naked eye to lasers and global positioning systems. Stationary threshing machines have given way to self-propelled combine harvesters of increasing dimensions, with bagging being replaced by bulk handling. The ability to set-up and calibrate machinery is now more important than ever.

5. Pest control

Pesticides had been introduced in the nineteenth century, but often in simple but very toxic forms (e.g. [Tipples](#), 1987). High levels of toxicity have been maintained, necessitating increasing safety precautions, but problems of increasing resistance to pesticides has become apparent. On the one hand, natural resistance to specific pesticides has become an increasing problem as pest species have evolved, necessitating a continuous search for new effective agents, which is both costly and increasingly difficult. On the other hand consumers have become increasingly resistant to pesticide residues on produce and have demanded clean produce, leading to strategies such as Integrated Pest Management to minimize pesticide applications ([McKenna](#) et al., 1998; [Ravlich](#) et al., 1998).

6. Transport

Transport systems have become speedier and more secure, as long as the worlds shipping lanes are undisturbed. Sea cargoes are increasingly containerised in a controlled atmosphere, with reduced problems of theft in mid journey. Land transport has developed from manual handling systems to bulk handling. For example, milk used to be transported in churns to the dairy factory. Now it is shifted by controlled temperature bulk road tankers. Milk transportation by trains of bulk tankers to major processing plants was initiated in 1997. Hawkes Bay and Manawatu milk is now railed to Taranaki for processing. As the size of such units increases to maximise economies of scale, the number of such plants will decrease yet further

and they will become more remote from the producer (Stott, 1998). There is only one major milk factory in the South Island now. For more perishable produce such as flowers, transportation by controlled atmosphere air cargo is common. Relatively high value, low weight, flower crops are regularly shifted to northern hemisphere markets in perfect condition.

7. Communications

Communications have improved throughout the twentieth century, from the earliest telephones, shared party lines and antiquated rural exchanges, where everybody knew your business, to totally automated systems run entirely by computers. Whereas formerly farm workers were often out of sight and cut off, now they may only be a cell phone call away. In contrast, markets in all parts of the world can be accessed in a few moments through the World Wide Web and e-mail.

8. Marketing

Farmers produce used to be sold most often at auction. Now there is increasing Supply Chain Management in which products are only produced for ultimate end consumers, on contract, with guaranteed sales at set prices, rather than in the hope of a sale. Further, undifferentiated commodity production is being replaced increasingly by niche products. Fine wool is now being sold as the product of a specific station and a specific breed e.g. Ultra-fine Merino Wool Group; Bendego Station products; and Milmore Downs Organic produce ([Ramsay](#) , 1999). Quality management systems have taken over in the search for higher value, customer-oriented production systems and have the potential to completely refashion the organisation of sectoral production systems to achieve desired quality standards ([Perry](#) et al., 1997).

9. Education

Over the twentieth century the amount of schooling has progressively increased. School leaving ages have risen and tertiary education is now required for most before entering the work force. On-farm experience is no longer adequate on its own, but has led to formal training and then a formal college education. Agricultural schools have become Colleges and Polytechnics, and then Universities, now set in a national framework for agricultural training and education. One of the less formal parts of rural education has been the Young Farmers movement. Young Farmers learning is encouraged by the annual Young Farmer of the Year competitions, which are both prestigious to win and financially rewarding. They are regarded a matters of sufficient moment that the finals have been televised live, at peak viewing time, for several years ([Tipples](#) and Jones, 1999).

10. Employment Relations

Many of the previous headings lead up the last one, Employment Relations, the bond between employer and employee. In agriculture employment relations have changed substantially over the last century. At the end of the nineteenth century, employment was essentially in a pre-regulated state. Regulation was introduced when industry and commerce were subjected to the rigours of the Industrial Conciliation and Arbitration system from 1894. Only shearers, and nursery and landscape gardeners, were covered by the 1894 Act ([Tipples](#) , 1987). When urban unionists attempted to achieve coverage of farm workers in 1907-8, their case was not accepted ([Thompson](#) , 1967). Regulation was not applied to the farm sector until the Agricultural Workers Act 1936 was passed by the first Labour Government. Then it was not the full Industrial Conciliation and Arbitration system but a system of Ministerially imposed Wages Orders setting basic terms and conditions ([Tipples](#) , 1987). The period of regulation continued after the passing of a

further Agricultural Workers Act in 1977, which made possible legal approval of the non-union Farm Workers' Association and the first arbitrated awards for agriculture ([Angove](#) , 1994), until the National Party, farmers, employers and Business Roundtable wreaked their revenge on all employees for, as they saw it, being featherbedded by the Arbitration system, with the Employment Contracts Act 1991 ([Tipples](#) , 1995).

The Employment Contracts Act 1991 introduced the era of individualised employment relations, not an unregulated state but a re-regulated one. While individualism was to reign supreme in employment, which naturally favoured the employers, certain features were retained somewhat unexpectedly. I am referring to the Personal Grievance and Disputes procedures. The Federated Farmers submission on the Act supported both, although the Personal Grievance procedure is a continuing source of grief to the Business Roundtable, and to individual farmers falling foul of a justifiably aggrieved employee. Farmers did not want the upstream and downstream industries, on which they might be dependent, disrupted by industrial disputes and individual grievances. The system adopted, unfortunately for them, can be used against their most employee unfriendly colleagues ([Tipples](#) , 1995). As a consequence employment relations has become a much more critical concern for farmers!

Dairy farmers are the most aware of how critical are employment relations. Employment relations issues have been apparent in dairy farming at least since the 1930s (Reid, 1977). The first Agricultural Wages Act, 1936, was directed specifically at dairy farming. In the inter-war depression the Government of the day argued that if it was supporting dairy farmers, then it was entirely reasonable that they should treat their staff to at least certain minimum levels of pay and conditions ([Tipples](#) , 1987). At an industry based focus group, held in late 1997, to identify future land use and farm management research needs, one of the major issues identified related to issues of employment in the dairy production sector. Specific concerns were 'Labour mobility at peak season', 'Sharemilking contracts with unreasonable cows/labour unit ratios', 'Career opportunities and the image of dairying', 'Career structures other than sharemilking', 'Labour/staff management', and 'Effects of large herd sizes on career paths'. The efficiency of labour use was also identified as a predominant information need of the industry in a review of the future of the Ruakura Dairy Farmer's conference ([Mclean](#) , Penno and Howse, 1997). Under the caption Labour Management, the availability, recruitment and retention of high quality farm staff, was identified as the largest single issue facing the dairy industry now and in the foreseeable future.

Besides employment issues, farmers are also concerned about the associated paperwork, even going to the extent of avoiding employing particular types of employees who are seen as having difficult taxation problems (e.g. student loans). However, farmers surveyed were more concerned about the implementation of the Health and Safety in Employment Act 1992, which governs all places of employment. At least half of the respondents in a survey had spent time or money complying with the Act, but most often less than \$800. They were more concerned about what might happen if they had a health and safety problem, and were prepared to spend these funds to have safe businesses. The study concluded that compliance costs were as much about fear and uncertainty as they are about dollars and hours (Wilkinson et al., 1998).

It must be remembered that although the Employment Contracts Act 1991 introduced a period of re-regulation and individualization of employment contracts, it did not remove the informal code of minimum conditions all employers, whether farmers or not, are obliged to keep. For example, the Holidays Act 1981 sets the amount of paid leave an employee is entitled to as a minimum; the Minimum Wages Act 1983 does likewise for wages, whether adult or youth rates; and the Equal Pay Act requires men and women doing similar jobs to be paid the same. Whereas at the beginning of the century the farmer/employer was almost unregulated in terms of employment conditions, today and for the foreseeable future, a degree of minimal regulation appears likely. Employment regulation is often held to reduce employment possibilities but

English and American research suggests that this may not in fact be the case ([Dickens](#) et al., 1995; [Katz](#) and [Krueger](#), 1992). Again, there has been no equivalent research in New Zealand.

It might be thought that concerns about the management of farm staff would benefit from academic study. Agricultural Labour Science was fostered in Britain in the 1970s by a society, and was the subject of a journal (*Journal of Agricultural Labour Science*). It was intended for persons throughout the world interested in labour science and its application to agriculture and ancillary industries. Such a grandiose title did not last long and it was replaced by *Agricultural Manpower* in 1980, a journal with a more applied pragmatic industry orientation rather than scientific approach ([Gasson](#), 1991). Its impact on New Zealand was never great, perhaps reflecting the limitations of its content. Debate still continues on the place of people in Farm Management Education, and papers regularly appear in Canada and America arguing the case (e.g. [Howard](#) and [McEwan](#), 1989; [Jeffrey](#), 1997; [Owen](#) and [Howard](#), 1997). In California, *Labour Management Decisions*, published by the Agricultural Personnel Management Program of the Division of Agricultural and Natural Resources, University of California, is devoted to issues of agricultural employment and farm labour contractors; housing; immigration; minimum wages; safety and health; and work place standards. However, there does not seem to have been much debate in Australia about farm employment issues, save for two recent articles ([Hawke](#) and [Wooden](#), 1998; [Ferguson](#), 1998), and the substantial treatment of the issues relating to shearing.

I came to New Zealand to be a Lecturer in Labour Management at Lincoln College (as it then was). I have chosen to develop this area as 'Employment Relations'. That decision followed the Employment Contracts Act 1991. I choose to emphasise a more pluralistic approach than Human Resource Management usually seems to represent. Farm employees do have opinions, beliefs, ideas etc too, and they may be usefully engaged to help improve farm effectiveness, efficiency and profitability (see [Pfeffer](#), 1998). However, my student clientele has changed substantially, with the ebbs and flows of primary production. Originally appointed at a time of a boom in horticultural production and employment, with associated perceived problems of labour shortages, I now find myself much less concerned with production horticulture and more concerned with the problems of employment associated with large herd dairy production. Also, I have moved more away from the primary sector into the employment problems of small scale enterprises in the rural and leisure industries, and more general employment relations issues. I have had to diversify too!

Conclusion

So where does that leave our review of changing employment circumstances over the past century, and what is our view for the next millennium? The trends for diminishing numbers of farm staff appear likely to continue. With the greater range of skills they will need to operate machinery, maintain quality systems and service supply management chains, minimal education and training is clearly inappropriate. A better general education and specific technical education will be necessary if the agricultural industries are to continue to prosper with a relatively reduced labour input, whether that labour is of paid employees or unpaid family members. However, a colleague recently visited California [4](#), and observed the continued mundane nature of some agricultural work. Filbert (Hazel nut) producers were spraying under their trees to make the worms rise to the surface and then requiring their largely Mexican staff to collect them for sale as fish bait. Pluriactivity, yes; applied science, yes; farm technology, yes for spray application; food technology, well only for the fishes! Perhaps where agricultural labour is concerned as the French say *Plus ça change, plus ça la même chose!* The boring and the mundane continue, but all work has its moments like that!

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Endnotes

1 - The original spelling

2 - In this paper, from this point on, I am using the word *agriculture* in the American sense, to include both agriculture and horticulture.

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