
Guest Editorial

SOME IMPRESSIONS OF NEW ZEALAND GRASSLAND FARMING

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A VISITOR to New Zealand gains the impression that the farmers have developed a highly successful integration of grassland and livestock, obtaining high outputs of animal products for the minimum of inputs → the ultimate in low cost production.

This effective use of grass is just as apparent in the marginal areas, devoted to meat and wool production, as it is in the highly productive dairying districts. The simple but well executed farming systems have been developed to suit the particular environment of the various areas.

New Zealand farming has been developed to its present high level of grass utilization, with little or no supplementary feeding, in order to sell its 'agricultural products on the British market, a market dominated since the repeal of the Corn Laws in the middle of the last century by its quest for cheap food. At present the country's primary industries are: riding along on the crest of the wave of world timber and food shortages. How long this situation will last is open to question, but it is evident in the United Kingdom that politicians are still thinking in terms of keeping down food prices. The EEC tariffs and the relative currency exchange rates will have repercussions on export prices of lamb and dairy products, and will be reflected back to producers, so the present high prices may not hold.

I was very fortunate in being able to attend the New Zealand Grassland Association Conference at Te Kuiti in 1973. This gave me a very good introduction to the farming of the King Country and an excellent opportunity to meet and talk to many interesting people, including Sir Bruce Levy. It was impressive to find such a large farmer participation in the conference. I was most impressed throughout my stay at the understanding of the industry shown by the extension workers, university staffs and research workers, and their excellent relationship with the farming community.

*Nuffield Farmer Award 1973.

This close liaison between all those engaged in the industry must make for rapid acceptance of new ideas. A good example of this relationship is the success of the discussion groups, an ideal medium for the dissemination of new ideas and techniques. The groups seemed to be well attended by keen farmers and I was (impressed at the depth to which some groups went in discussing their figures and problems. This approach highlighted the shot-t falls and successes in very clear terms and must be a springboard for further farm development. As an exercise by the MAF it must be very "cost effective".

In the United Kingdom we try to relate grass production to livestock systems, often aided by high levels of concentrate feeding, whereas in New Zealand grass is considered to be the raw material and livestock systems have been developed to fit in with feed availability, and it is this discipline that dictates farming operations.

The excellence of many pastures is soon apparent as one travels around the country, but I was surprised, as one who thought New Zealand pastures were an ideal mixture of perennial ryegrass and white clover, to find so many "weed grasses" present in these highly productive swards. One begins to question the effect of pasture composition, and to wonder whether they would be even more productive if they contained a higher proportion of ryegrass.

Grass is treated as a crop and as such is well documented. It was impressive to hear research workers, advisers and farmers giving estimations of the daily grass dry matter production of paddocks and being able to relate this to stock requirements for maintenance and different levels of production. These requirements have been established for use in "feed budgeting" and have brought about a better understanding of the relationships between grass production and stock requirements. Very high levels of grass utilization have resulted from this development. This can lead to higher stocking rates or higher individual performance by matching the seasonal grass growth curve with stock management.

The research work in progress at present at the MAF and DSIR research stations, and the universities, is mostly of a very practical nature, with practical problems being probed in a practical way, with often a true commercial result. The efforts of Grasslands Division to produce better grass varieties and the very extensive testing of existing and new varieties under a wide variety of conditions, starting from spaced plants right through to

grazing by both sheep and cattle, have done much to maintain productive pastures in New Zealand. These very extensive tests on a relatively few varieties is probably the right approach but one cannot but ask if, in a country with such a variation in latitude and altitude, more effort will have to be put into more specific breeding programmes in future.

In the past, relatively little work has been done on the use of nitrogen. Over the last few years nitrogen use has been increasing on farms, particularly to help cover feed shortages. The work now under way is showing that clover is fixing very high levels of nitrogen, and, with the inevitable steep rise in the cost of energy, the work on the tactical use of fertilizer nitrogen can be very important, as is the work going on in various places on the use of phosphate, which will probably rise in price far more than nitrogen. So there could be a place for lower phosphate applications, while the deficit of clover nitrogen could be replaced by fertilizer nitrogen*.

There seems to be a tendency for stocking rates to be dropping slightly. In many cases stocking rates probably moved up faster than the ability to manage the increase. Individual performance fell initially, and has now risen again as stocking levels are adjusted. As management problems are surmounted the stocking rates will rise again, if other factors, such as manpower, capital and markets are favourable.

The possible outputs demonstrated at Ruakura, Waimate West and Massey on butterfat production, and at DSIR on hull beef production, producing over 560 kg of butterfat and 1100 kg of meat per hectare, show the levels that could be achieved with the adoption of high output systems and are in fact being achieved by some farmers. Much of this work shows that effective grass utilization is more important than high grass dry matter production (although there is a close link between grass and live-stock production) as long as quantity is not obtained at the expense of quality.

Irrigation in dry areas is showing that the use of even a limited amount of water at critical times can result in tremendous responses. Even in higher rainfall areas the use of water is highly economic and, if available, is capable of increasing yields more than quite high levels of fertilizer nitrogen.

This paper was written before the recent changes in fertilizer prices (Editor).

The increasing use of lucerne in the drier areas, and more recently in the moister regions, is going to increase livestock production and is sure to catch on quickly and bring even greater emphasis on dealing with the problem of bloat. The value of irrigation on lucerne was very apparent in the work being done at Kirwee and Lincoln. The expansion of irrigation could be one of New Zealand's best national capital investments.

It was surprising to find how little research has been done in the past on small-seed production, a quite important export crop. This is now beginning to get under way and could play an important part in increasing production and seed quality. This will be more important in the future to ensure that the present markets are maintained in Europe.

The production of small seeds appeared highly disorganized, almost on an *ad hoc* basis. To find so much seed being grown with no contracts for production and, perhaps even more important, no collective pricing arrangements was surprising. The merchants are in a very powerful position relative to the growers, who carry most of the risk.

The speed and efficiency of the Ministry's seed testing service was impressive and could form the basis for a more logical production and marketing organization. The information it had gathered from some participating growers on the effect on yields of various cultural operations threw quite a lot of light on the reasons for some of the low yields of grass seed. Once again very economic responses were being obtained by the use of irrigation. The increasing acreage in the Manawatu particularly in years when the Canterbury Plain is suffering from drought, is likely to even out fluctuating national yields of grass seed, and also bring in a useful cash crop to the area.

The part played in grassland improvement by the aeroplane is almost equivalent to the coming of the wheel centuries before. The effect it has had in topdressing and oversowing not only steep land, but also making these operations much quicker and economic on some of the best land, must account for a large part of the increased output since the war. Much of the land that has been cleared since then and brought up to its present state, could not have been economically tackled in any other way. It is quite easy to see the effect of 'aerial topdressing' when flying across the country, and also to see where there is full scope for grassland improvement.

As grass is only part of the production cycle, livestock improvement is also playing its part in making better use of the

raw material. The various breeding schemes are all aimed at improving productivity by various ways and means.

The concentration in breeding "easy care" sheep should bring high benefits. With the current low average lambing rates of the Romney ewe, the present rate of lamb mortality should not be tolerated. If these losses could be reduced by better breeding and selecting, it might be more advantageous in most circumstances than breeding for increased lambing percentage. Increased lambing percentages can bring many problems, which may accentuate lamb fatalities. With the current and, possible, future high level of wool prices it is probably more profitable to keep more ewes producing as close to 100% as possible and requiring the minimum of attention.

There are circumstances, though, where intensification demands high lambing percentages and the efforts of the various breeding groups are beginning to show progress. This shows what can be done with a sufficiently large number of animals from which to do the original selection and the use of recording as an aid to genetic improvement. This applies not only to litter size, but to growth rate, wool weight and quality, in whichever way it is defined, from fine-wooled Merinos to the Drysdale.

The dairy industry has been influenced to a considerable extent, in changing from Jersey to Friesian, by the advent of dairy-beef, particularly bull beef, production. It is surprising to find the Canadian Holstein blood has played such a large part in this change. Perhaps the European Friesian would have been a better base to have started from, especially as high individual yields are not likely to be achieved under New Zealand conditions. On the whole, except in stud herds, little genetic improvement is possible, other than through the use of more productive sires through A.I.

The growth in herd size has been quite dramatic but is bound to have almost reached a plateau. The manpower problem is most acute in dairying and will become an even greater problem in the main dairy farming areas as more light industry is set up. The use of "share milking" to solve this problem may also ultimately be affected by the rapid rise in land prices, making the farming ladder more difficult to climb.

The simple but effective paddock grazing systems impose a strict grazing discipline which dominates many management decisions, as does the need for only the minimum of conserved feed.

In many cases the most efficient dairy farmers have full control of the cows and their daily management. It seems that in some cases the divorcing of the cow management from that of the overall farming operations through share milking can cause problems leading to less efficient production. This is quite probably acceptable in many situations as it removes the everyday cow problems from the farmer, allowing him to concentrate on other problems and enterprises.

In beef production, as in sheep breeding, selection is playing its part. With such large herds available, either through group breeding schemes, the Lands and Survey Department, or large commercial breeding herds, the scope for selection, testing and breeding more productive strains, with or without the help of the newly imported breeds, is bound to be considerable.

The meteoric rise in bull beef production, aimed mainly at the American manufacturing market, is in direct competition with soya bean derivatives. It must be consoling to producers that artificial meats are very high in energy requirements, while grass-produced meat is low on the list.

The skill in buying, selling, and stock and grassland management developed by many of the producers shows what part precision can play in a system where the producer has no control of the breeding of his livestock. The grazing techniques developed by some of the better producers, aided by regular weighing, are giving returns greater than dairy farming at current price levels.

It was surprising to find such dependence on the constant use of worm drenches. One cannot help but wonder if these are really needed, or whether a combination of periodic drenching, coupled with management, could not achieve the same ends.

One must admire the New Zealander's approach to stock control, and handling. The well laid out and well fenced farms, with hard races, make for easy handling. The cattle 'handling yards and wool sheds not only make for high output per man, but make the work much more pleasant. This is a very big lesson for any visitor from the U.K.

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