

## CHALLENGES FACING GRASSLAND FARMING

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*"Ka haere te tangata, ka noho tonu te whenua"*  
*"Man changes, earth endures"*

Man has changed since those first Maori settlers from the Haroto and Taki-timu canoes made the East Coast, Gisborne/Wairoa district their home. Historically, the area has special significance for the pakeha also, as Poverty Bay was Captain Cook's first landfall. Traditionally, the pastoral farmers of the district have had a reputation for being conservative, and change has not occurred as readily as in other areas of New Zealand.

The earth has had a struggle with accelerated erosion after the removal of the bush. However, it has endured although its outward appearance has been greatly altered.

### BACKGROUND TO THE REGION

The Wairoa/Gisborne/East Coast district covering 1,005 m hectares, consists of the Wairoa, Cook, Waikohu and Waipua counties situated on the northern end, and on the eastern side of the North Island's main mountain axis. The area is characterised by features of hill country sheep and beef farming, erosion, areas of fertile flats suitable for horticulture, a high proportion of Maori land, and substantial new development in the 70's. The region has a sunny climate with warm summers and mild winters. The annual rainfall varies from 1,000 mm near the coast, to over 2,500 mm in the higher inland country. The rainfall is distributed unevenly and droughts occur 1 year in 7.

### Soils and Erosion

This relatively isolated region is bounded in the west by sandstone ranges, the Urewera National Park and the Raukumara Forest Park. Seventy five percent of the district is steep hill country, comprised of sedimentary rocks ranging from sandstone to mudstone, with volcanic ash covering the easier slopes from the middle to the southern end of the district. The soils derived from sandstone and pumice are of low natural fertility, and historically, reversion has occurred readily on the sandstone soil. On all soils, the requirement for regular inputs of phosphorus is high.

Besides fertiliser, another dominant physical limitation to hill country grassland farming is erosion. In the north we have deep seated gully erosion, which requires retirement and blanket forest planting. The large bentonite earth flows need a combination of forest planting and intensive erosion control measures. In the Hangaroa and Wairoa areas, surface slipping is very evident, and can be severe after cyclonic storms. Although pasture recovery on the slips is slow, these soils are still capable of high pastoral production. Research is underway to investigate soil conservation techniques for this class of country. Spurred on partly by the need to control erosion, forestry has expanded rapidly in the region, and exotic forest occupies approximately 70,000 hectares, with further areas in line for planting.

## Horticulture

Alluvial soils cover the river flats in various pockets throughout the district, with Poverty Bay the dominant area. Tolaga Bay, Nuhaka and Wairoa flats have seen a relatively large increase in horticulture in recent years, but, by far the largest expansion has taken place on the Poverty Bay flats. Most development has occurred in kiwifruit, grapes, and citrus (Table 1). Grape plantings have now stopped. Other crops grown are 2,000 hectares of maize (a decline from 5,000 hectares in the mid-70's), 1,000 hectares of sweetcorn, and 1,000 hectares of process vegetables (peas and tomatoes).

Table 1: DEVELOPMENT OF HORTICULTURAL CROPS IN THE EAST COAST REGION.

Year	Kiwifruit	Grapes	Citrus
<b>a) Crop Areas (ha)</b>			
1978	92	1 595	176
1982	671	1 950	298
<b>b) Crop Yields</b>			
	<b>Kiwifruit</b>	<b>Grapes</b>	
1978	82 000 trays	10 000 tonnes	
1982	155 000 trays	21 000 tonnes	
1983	373 000 trays	32 000 tonnes	
1984	600 000 trays predicted		

## Pastoral Farming

Pasture composition and production varies enormously, with on average 12,000 to 15,000 kg DM/ha/year on the flats, and 8,000 to 12,000 kg DM/ha/year on the hill country.

By far, the most significant aspect of the region is its hill country sheep and beef farming. Properties are large with 25% over 600 ha. The predominant breeds are Romney and Perendale, Angus and Hereford. The area has traditionally bred large numbers of cattle for fattening in other districts of the North Island. In recent years, the number of breeding cows has declined, while the number of other cattle has increased, but not enough to prevent a decline in total cattle stock units (Figures 1 & 2). It appears that we could see a further drop of up to 20% in breeding cows in 1983/84 as a result of the 1982/83 drought.

The increase in total stock units is largely a result of the effects of the Live-stock Incentive Scheme (LIS) and Land Development Encouragement Loan (LDEL) which had a considerable impact on the region. Under LDEL approximately 100,000 hectares were approved for development by the offices of the R.B.F.C., of which 75,000 hectares have been developed. Some idea of the further potential of the district can be gained when we look at our Farm Management analysis data (Table 2). The table shows some examples of performance data for a sample of 53 Wairoa farms. The first column of figures are the averages

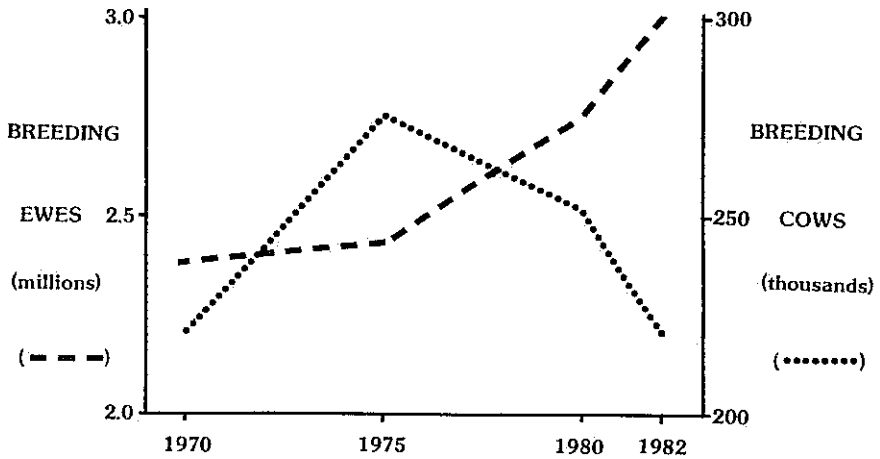


Figure 1: Breeding cow and ewe numbers over the 1970-1982 period.

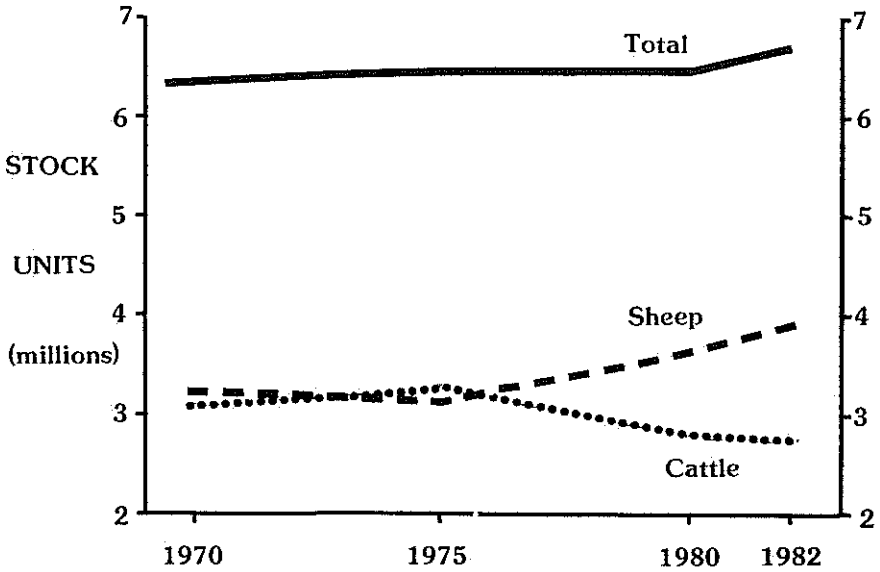


Figure 2: Stock units in ewe equivalents over the 1970-1982 period.

for the three farms which had the highest economic farm surplus (EFS) per hectare. The second column shows the averages for the three lowest farms and the third column gives the average for each item of data for all farms.

Note the range. It's also interesting to note that the lowest three farms had the same stocking rate as the district average, so good stock performance is still very important as stocking rates increase.

Table 2: FARM MANAGEMENT ANALYSIS SCHEME DATA FOR 1981/82 IN THE WAIROA COUNTY (BASED ON EFS/EFFECTIVE HA)

	Top 3 Farms	Low 3 Farms	Mean
Lambing %	103	58	94
Wool Wt/ssu	4.8	4.2	4.7
Calving %	97	66	79
su/eff. ha	15.3	11.9	11.9
% eff. ha fertilised	100	63	81
G.F.I./su \$	28.44	14.63	21.87
G.F.I./eff. ha \$	413	171	261

### Maori Land

Large areas of Maori land are an important aspect of the Wairoa/Gisborne/East Coast area. In the Tairāwhiti land district which extends from East Cape to the Mohaka River, there are 268,128 hectares of Maori land, plus 132,499 hectares farmed by 72 Incorporations making a total of 400,627 hectares under Maori ownership. In the past, multiple ownership of Maori land has hindered development. With the formation of Incorporations, 438 Trusts, Tribal Trusts and Marae Enterprises, considerable progress has been made, but there is still a long way to go. The region features New Zealand's largest Incorporation — Mangatu Blocks, which cover just under 50,000 hectares. A feature of our work over the last three years in the region, has been a close association with the Maori Incorporations. Much is made of the difference in concept of land between Maori and Pakeha. While we appreciate the way in which the Maori people view their land, we also realise that if the owners wish to enjoy the advantages of modern technology and living, they must make their land produce.

### CHALLENGES IN THE EIGHTIES

The challenges facing grassland farming in the eighties, are to cope with competition for land use, particularly between farming and forestry, a strong possibility of adverse climatic conditions continuing, more demanding requirements from the market and high costs.

#### Forestry

Undoubtedly, forestry has an important role to play in the development and economy of the region. Unfortunately, forestry provides the best economics on the best land, so unless local authorities exercise some control, forest companies can take over farm land which is capable of high pastoral production. The key consideration is wise land use from an erosion, economic and social point of view. It makes sense to encourage forestry onto areas of land that are difficult and expensive to maintain in pasture, but which may have a high site index for growing trees. Forestry should also be encouraged to expand on idle land, either through purchase or joint ventures. Although a study near Wairoa showed that pastoral farming would out-perform forestry, it will be necessary to continue to improve our grassland farming if we are to lay claim to the bulk of the land for

this purpose (McRae 1981). Agro-forestry or multi-tier farming — combination of tree crops and grazing, is being promoted as a viable land use option. While there are successful examples of this, I have yet to be convinced that this is an attractive proposition from a grassland farming point of view, unless the tree crop is supplementary to the livestock enterprise.

### **Diversification of land use**

Large forestry operations then, are in competition with pastoral farming. Horticulture and diversification into other livestock enterprises result, generally in an intensification of land use, and so far have had little effect on sheep and cattle numbers. Deer farming is one such enterprise which is expanding rapidly in the region. Deer numbers in 1982 were 2615 hinds and 2923 stags. The 1983 figures when available, are likely to show a marked increase. The feed requirements of deer do not fit the pasture growth pattern as well as sheep and cattle. The large spring feed surplus generated under a breeding hind regime, can result in pasture deterioration, and lower autumn and winter production. Conservation as silage or hay, or the use of sheep and cattle, are required to cope with this surplus. For this reason, deer farming is best suited to easy contour country, where silage or hay can be harvested or run in conjunction with sheep and cattle on hill country.

The conservative farmers of Wairoa/Gisborne/East Coast have been slow to get started in deer farming, which is a highly profitable venture, and appears to have a bright future. Goat farming is another enterprise which has been slow to get off the ground. Up until now, the economics have not been attractive enough, but the exciting developments taking place in the cashmere industry, have stimulated awareness among farmers of the valuable resource of feral goats. Feral goats producing \$10 to \$20 of cashmere (a very fine fibre of 15 to 19 microns) after grading up, can be largely complementary to sheep and cattle. They avoid clover, they love blackberry, eat a variety of weeds, and can be controlled with electric fences. They will be profitable, providing any additional workload is not detrimental to sheep and cattle production.

### **Climate**

In the Gisborne region, we have recently struggled through the worst drought this century. On many properties, dams have still not regained full capacity. Meteorological research predicts that during the mid-eighties, New Zealand rainfall will be below average (Tomlinson 1980). Thus, there is a fairly high probability that the East Coast of the North Island will have some dry summers during this time. This has serious implications for the economics of grassland farming in the region. Our pastures have already been severely damaged last summer, and capital stock declined. It could take five years to restore breeding cow numbers to 1982 levels. Many properties require more subdivision, and vastly improved water supplies to increase flexibility to deal with adverse weather. Also we have an urgent requirement to research and demonstrate techniques to improve pasture production and feed supplies.

A project is currently being undertaken by the Hawkes Bay Catchment Board on the McRae Trust property near Frasertown to investigate the potential for fodder trees. Hopefully these may have a dual role of increasing soil stability and providing feed. There is an urgent priority (especially as a result of the drought) to look at pasture renovation and the introduction of new pasture species.

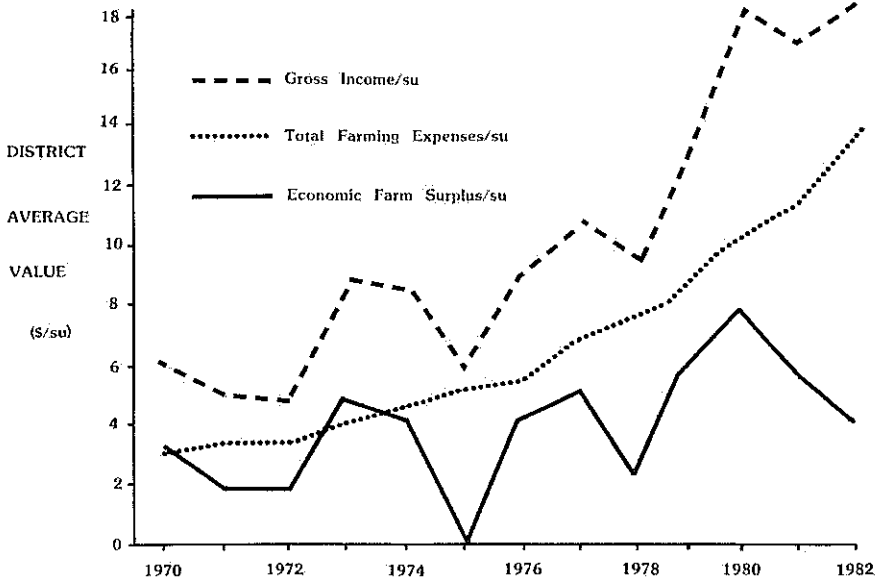


Figure 3: Pastoral farming income analysis

### The Market

A more demanding market place is rapidly becoming a challenge to our meat and wool producers. The realisation that we must get our act together on meat marketing, has already seen changes in the lamb grading. Farmers will have to adjust their management and breeding programmes to maintain their returns from lamb. We must improve our market intelligence, and provide the market signals to the farmer, so that he can respond to consumer requirements. Again, to cope with market requirements, more subdivision, better water supplies and much more productive pastures are required.

### Fertiliser Use

From 1969/70 to 1980/81, as Gross Farm Income (GFI) varied, so too did Economic Farm Surplus (EFS). In 1981/82 the GFI went up, but the EFS went down. We reached a point where greater output in dollar terms was insufficient to cope with increasing costs. A large contributor to these cost increases was fertiliser. (In 1970/80 fertiliser costs increased by 73%, while other farms costs rose by 22%). To maintain their cash flow, some farmers have reduced or cut out maintenance fertiliser.

The last two years have seen greater use of nitrogen fertiliser, partly as the result of the relative economics of different fertilisers, and partly as a need to boost feed supplies going into the spring. Throughout much of the region, the month of September (except in a drought year) is the limiting feed period. We have measured growth responses of 10 kg DM/ha/kg N from DAP applied in July/August. DAP at 100 kg/ha has provided enough feed for an additional two ewes/ha for a month over lambing for a cost of \$5/hectare for the nitrogen. Pastures have recovered well and ryegrass tillering has been extensive this spring in

paddocks which received nitrogen. More and more evidence is accumulating concerning feed levels in the spring. A small increase in available kg DM/ha can result in a significant improvement in growth rates. This period is so important because the weight young stock achieve in their early life determines their lifetime performance. I believe we could see nitrogen used to boost spring feed supplies become a widely adopted management strategy depending on the relative costs of various fertilisers. So nitrogen is one way in which farmers are meeting the challenges.

### **Grazing Management**

Other opportunities to meet the challenges are to improve farm management skills such as establishing priorities and making decisions and to more successfully integrate the feeding, breeding and animal health aspects of livestock production. There is ample scope in the region for within breed improvement and for crossbreeding.

There is even greater opportunity for improved grazing management. We are getting great results with planned grazing programmes where we are setting target liveweights, working out what we need to feed stock in terms of intakes and residual dry matter levels and then how we are going to do it. These programmes are resulting in considerable improvement to both pastures and stock performance. The key to shifting stock at the right time to the right place is to have a planned but flexible grazing programme and be able to recognise the different levels of feed required for various classes of stock throughout the year.

The answer to the challenges facing grassland farming is to strengthen the pastoral farming base in the region through intensification and diversification. We must change to take advantage of the opportunities available now. When we look at the range in performance and gross farm income between our top farmers, average farmers and bottom farmers, there is enormous scope for vast improvement.

Farmers servicing industries and other people involved in the agricultural industry can respond to the challenges by setting their sights on readily attainable objectives and providing the inputs and the skills to make the most of our land resource.

*Ka haere te tangata, ka noho tonu te whenua*

### **REFERENCES**

Aglink NZA 34

\_\_\_\_\_ NZA 54

McRae, G.L. 1981. Internal publication MAF, Hastings.

New Zealand Department of Statistics

Tomlinson, A.G. 1980. *N.Z. Geographer* 36: 68-72