

Hill farming – An opinion on the future

G.W.SHEATH

Agricultural Systems Consultant, Hamilton.

Introduction

This paper is not a formal review of hill farming literature. Rather, it is my view on the critical challenges and changes that we need to deal with if mixed livestock farming on hill lands is to be successful over the next 20 years. It is my hope that industry leaders, policy makers and agribusiness managers will give consideration to these views.

Some people say that it is not smart to look into the rear-vision mirror, but I do not agree. Having a better understanding of the consequences of past events can help guide future decisions and changes. During the 40 years that I have worked with hill farming communities there have been several distinct phases of activity and mood:

1970s: Land development and increased livestock numbers,
 1980s: Despair and searching for new options,
 1990s: Intensification of mixed livestock systems and changing land use,
 2000s: Who cares, capital gain is here,
 2010s: ?

For me, some important lessons have been:

- While there have been many Government policies and interventions such as the Land Development and Livestock Incentive schemes of the 1970s and Price Stabilisation schemes of the 1980s, improving productivity and profitability within an open market economy have continued to be critical success factors. Often for many farmers and service organisations, regulatory activity has been a distraction to these sound business practices.
- The resilience and responsiveness of hill farming people and systems has been evident throughout. After very hard times in 1980s, there was a preparedness to move into alternative land use and respond to market signals in terms of product attributes and supply times. Flexibility has been another critical success factor in dealing with a rapidly changing world.
- How quickly important things change. Firstly, it was the expansion of sheep and beef farming in hill land and high country; then diversification into deer, goats and forestry; and now it is dairying and carbon credits that hold the limelight. Disappointingly, hill farming communities are

very much ignored in today's world, both from a political and service perspective.

Relevance of Hill Land

As we move into the 2010s, why care about hill farming? Some very interesting statistics have been recently produced by Rob Davison, Beef+Lamb New Zealand.

	1990-91		2010-11	
	Nos.	Ha	Nos.	Ha
Hill Farms	7,500	6.8m	6,245	6.0m
Finishing/ Breeding Farms	12,100	3.3m	6,365	2.3m

It is estimated that currently half of our mixed livestock farming businesses are located on hill land; and from the 6.0 m ha involved, approximately 65% of lamb and prime beef cattle are supplied from hill farms as store or finished animals. As the easier land classes continue to be consumed by the dairy industry we can expect these percentages to increase. Do not tell me that hill farming is unimportant to New Zealand's red meat industry and supply chains.

It is now well accepted that the wise use of hill land will involve multiple enterprises that reflect land capability. These do, and will include meat, fibre, wood, energy, honey and eco-tourism. If planned and implemented correctly, this diversity can be a strength of hill communities and New Zealand's economic growth. It will be important however, that we do not lock our land and financial resources into inflexible and, ultimately, poor performing options that cannot respond to changing markets, climate etc. My concern is that the Emission Trading Scheme and Carbon Credits will do just this – benefit a few in the short term, but disadvantage many in the future. We must identify and rationalise the intended and unintended consequences of change, and retain the ability to change land use when required.

In addition to the productive value of hill farming, healthy rural communities are also critical to the stewardship of regional infrastructure and natural resources. It is well recognised in Europe and North America that urban people and tourists benefit from (and expect) suitable roads, managed landscapes and convenient services. We do not pay enough attention to this issue in New Zealand. These expectations

cannot be met by derelict rural communities. Given that hill farming communities currently occupy 6.0 m ha of the 11 m ha that are in improved grasslands, and approximately a quarter of New Zealand's land mass, stewardship of this resource is a national challenge and opportunity.

Challenges of Hill Farming

While the following challenges are not unique to hill farming people and businesses, they are very important factors that cannot be ignored. The volatility of product prices, exchange rate and climate leads to business uncertainty. Farming businesses that are highly demanding in terms of finance, feed and labour are most vulnerable to this volatility. It is my observation that many farmers are no longer pushing their farming systems to the same extent as in the 1990s. This is their buffer to uncertainty, but it leads to inefficiencies. Future farming businesses will need to have more in-built adaptation to deal with extreme variation. This will involve more skilled and informed farmers, and more flexible business structures and practices.

The continuing dependence on capital gain to create wealth is of concern as it down-plays the importance of productive value, cash-flows and profit. Without more consistent profit, it is difficult to maintain productive assets (eg. soil fertility, skilled labour) and farm businesses are more exposed to indebtedness with increasing volatility. Within this context, it is my view that the banking sector has not yet come to terms with how they will operate in order to put more emphasis on productive value and performance, and to help buffer revenue volatility.

The loss of connectedness that the hill farming community now faces is another significant challenge. This is reflected in many ways. There is no consistent and firmly driven industry strategy within which these farm businesses operate. This is consistently highlighted in the recently published Red Meat Sector Strategy Report. There needs to be alignment between Public, Industry and Private Good policies. Has Government fully appreciated the unintended consequences of ETS and the lure of carbon credits? Further, there is a dwindling of the services that underpin capacity building and innovation. It is interesting that in 1979, Hight in his NZAPS presidential address, highlighted the fact that while 25% of R&D expenditure was relevant to hill farming, only 3% of research personnel actually worked in hill environments. The wheel has turned full circle and we are no different today.

Biophysical Changes

Soil Fertility

Given the above context, I will now focus on specific

elements of hill farming systems that need to change. While events such as sale-yard prices, droughts, and carbon credits take the limelight, we forget about the most significant and insidious constraint to hill pasture performance – soil fertility. Low soil nutrient status and a weak N cycle determine the poor species composition and productivity of most of our hill pastures.

While it is pleasing to see research work on soil microbes and P absorption, and the search for more nutrient efficient plants, my view is that these innovations will not benefit hill pastures within the next 20 years. Our previous experience with rhizobia demonstrated how difficult it is to modify soil microbe populations; and if improved plant nutrient efficiency is based on a molecular trait, will its expression be persistent and will it be placed in a plant that has agronomic fit within hill farming systems? Given the current plant improvement arrangements in New Zealand, I think not. Market demand for such plants is not high, therefore there is no incentive to undertake the basic genetic changes that are required.

Fertiliser is the most costly and discretionary item in hill farming expenditure and a significant breakthrough in providing plant nutrients in a more cost effective way is needed. This should be a high R&D priority that will require greater public-industry good investment and smart off-shore collaborations. We are too small to break this nut on our own.

In the interim, my view is that hill farming will have to operate at low soil nutrient status for many years to come, and that there is the opportunity to make greater use of tactical N fertiliser applications. This is not about wide-spread use of N, but more about applications that are targeted at responsive paddocks (i.e. aspect, plant species) at critical times. For example, the synergies of early spring N applications to warm facing land and the supply of quality store lambs from high fecund ewe flocks are currently not being exploited enough.

Pasture Quality

There is ample evidence that once pasture utilisation is optimised, then improving per animal performance is a key driver of improved farm productivity. Rob Davison reports that ewe productivity in New Zealand has changed from 9.8 to 16.0 kg lamb sold/ewe wintered, a 64% increase during 1991 to 2011. Better grazing management and the supply of quality feed are some of the factors contributing to this increase through improved lambing percentage and lamb carcass weight.

However, improving feed quality is a difficult challenge for hill farming systems. Without significantly altering soil fertility and pasture composition, we are left with grazing management and the control of surplus feed as our main management tool. For many farms,

continued subdivision and water reticulation will pay dividends in terms of improved pasture control and quality. While we know that productive gains can be achieved by feeding forage crops or starch supplements to finishing animals which are grazing low quality feed, the challenge is the practical and profitable application of supplementation on hill farms. What is the solution? I cannot go past the old saying “Subdivision, Superphosphate and Stock Management delivers Production and Profit”. While this seems to simply be going “back to basics”, I feel that these principles need to be continually and consistently promoted. Otherwise, unsubstantiated opinion creeps in and rules.

Natural Resources

A very large amount of capital has been invested in land and soil, so it is in our best interests to retain and nurture this asset. The concerted efforts of soil conservation in the 1950s-80s must be acknowledged, but have we backed off? Trustrum’s work in the 1980s clearly showed that pasture production on land slip areas never fully recovers; and today, the public through Regional Councils are demanding better water quality.

The significant impact that hill lands have on water quality relates to stream bank erosion and soil surface run-off material. We understand many of the component mechanisms, but have much less knowledge about the interactive behaviour of complete catchments, changing farm practices and farm business viability. To my knowledge, no research is currently being conducted on farm system management and hill catchment performance. This is a very sad indictment on industry good organisations, Regional Councils and research organisations. The public expectation of reduced sedimentation and nutrient loading of our water ways will not go away.

Farm Business Changes

Farm Systems & Supply Networks

Given the issues that I have covered so far, my view is that over the next 20 years, hill farming systems must concentrate on the breeding of quality animals that are predominantly finished on other farms. Weaning 160% of lambs at an average weight of 30 kg is a feasible target. With tactical use of N, this farming policy would ensure we fully exploit the production potential of August to November when 70% of annual feed is grown. I am certain we have the sheep genetics to do this; it’s about designing and managing the right system.

For this proposition to work, these breeding farms will need to be formally linked to finishing farms. Increasingly, this is being achieved through common farm ownership, but I am convinced that there is a place for formal contracting of livestock supply between

breeders and finishers. This will require better business behaviours, and here is an important role that meat companies could perform. Hill farming businesses must be more formally involved in market channels, otherwise they will be most exposed to price and climate volatility. I feel that there is a lot to be gained by being a part of proprietary markets and “supply clubs”. This is where knowledge exchange and interdependence benefits all parties in the long run.

Smarter Farm Business

Successful farming is no longer just about good husbandry. It also involves business connectedness, good planning and early decisions. This is more challenging for hill farmers because of the remoteness and larger scale of their operations. Informal farm business networks and e-technology certainly help to provide a context in which the farm business operates, but attracting talented people into remote areas is difficult. The succession of young managers into hill farming, who are skilled in good farm husbandry and business practice, is a real challenge. Initiatives such as the Agribusiness Research and Education Network, and more recently the Centre of Excellence in Farm Business Management are to be applauded. I just wish the Universities would get on and deliver.

We do have adequate software to help plan and manage our farm businesses. While the monitoring and analysis of financial performance has improved markedly over recent years, I cannot say the same for the monitoring of biophysical performance. I do not fully blame farmers for this situation because we have not developed cost-effective tools and processes that are suitable for measuring biological performance on large scale, variable hill farms. Further, we have failed to demonstrate the economic benefits of early and informed decisions. If hill farmers want to build more flexibility into their system, they will need to be well informed and responsive to changing conditions. Here is a challenge that R&D organisations must pursue.

Behaviour Change

Much of what I have covered will require some change in organisation and/or individual behaviour. Often, it is said that there is considerable knowledge, practices and technology that have not been applied by hill farmers. I would agree, but normally there are justifiable reasons. It is my experience that change will only occur if the farmer is:

- Motivated to act
- Confident in the decision to change
- Sufficiently skilled and knowledgeable to implement the change

All too often, we think that providing written

material, or holding field-days will cause change to occur. In most cases, these are simply awareness generating activities. My strongly held view is that change is most likely to occur when you have like-minded people working together, where there is support for each other to build confidence, and where progress is monitored and modifications are made. The current scarcity of investment and suitably skilled people to catalyse change in hill farming systems is such a disappointment. There must be forums where ideas and practices are challenged and debated on the basis of sound evidence. This is a significant challenge and opportunity for Beef+Lamb New Zealand and AgResearch. The reward – connectedness.

Policy and Strategy

My view is that we will need to remedy the social and economic constraints in hill farming communities, before the bio-physical performance of hill land is fully realised. I strongly feel that the hill farming sector and those that service the sector need:

- Focus: cohesive direction where all participants are aiming for the same targets
- Leadership: motivation to change and take a positive position
- Co-operation: working together at a sector, value chain and community level.

Those who care about hill land and its people need to work together if we are to expect progressive change. Cohesive and aligned leadership will be required from public, industry and private good policies and actions. These sentiments are similar to those of the Red Meat Sector Strategy that Beef+Lamb New Zealand and the Meat Industry Association recently produced. My question is, who owns this Strategy, and who will act; and what role will you play in the future success of wise hill land use?

For hill farming businesses and communities to prosper in the future, I have highlighted the need for change and alignment in farming, business and social systems. My view is that there is an urgent need for an “Advocacy Arm” that can discuss, integrate and promote these changes. Given that hill land farming is the predominant nursery for the Red Meat Sector of New Zealand, I consider that Beef+Lamb New Zealand and the Meat Industry Association must jointly accept this responsibility. The establishment of a Strategic Coordination Group that has been tasked With Implementing the Red Meat Sector Strategy is a good start, but it must effect real change in the hills for the sector to thrive.