



Developing and maintaining productive pastures

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Abstract: This paper discusses the problems faced by producers on the southern tablelands with limited land area and unreliable prices for products. The solution in our case appeared to be to produce the best pastures possible and utilise them efficiently to get the maximum benefit from the land available to us. We describe the way we used 'backward planning' from our target market to define our requirements, and then the procedures we use to ensure we meet our production goals. We outline the planning, sowing and management of our pastures and the way we utilise them, including the use of silage to obtain maximum utilisation and maintenance of a consistent diet throughout the year.

Merryvale is a specialist beef farm near Crookwell on the southern tablelands NSW operating a total of 720 ha. An elevation of almost 1000 metres on top of the Great Dividing Range means a long and cold winter with very low pasture growth. The soil type is mainly granite (90 %) and some basalt and has a long history of "pasture improvement". The topography is undulating but not steep, is very open to the elements and most is arable.

The farm is operated by parents and son and his wife. The aim is to produce quality beef for the supermarket trade (*i.e.* 230 to 240 kg dressed weight) from our own self-replacing breeding herd plus the purchase of weaners in most years. To achieve this, we use a moderately high input/output system.

First things first

We can discuss the development and maintenance of productive pastures, but unless we have profitable farms then discussion is all it will be. To illustrate what I mean by this statement, I would like to draw your attention to two articles which I read recently. The first was in the July 1998 Beef supplement in the "Australian Farm Journal" and the second was in the National Bank's "Rural Focus" publication. To quote from the first article, "A specialist full-time beef producer interested in long term survival would need to be running at least 10,000 dse's of beef cattle, or about 500 cows. This enterprise should be run by no more than one full-time labour unit, plus some very occasional casual labour". The second was even more direct, stating, "In the case of livestock, any enterprise with less than 10,000 dse is a part time job". Both of these articles are attributed to Rural Management Consultants, Drs Holmes & Sackett.

Another article by Peter Austin in "The Land" newspaper of February 4, 1999 stated that, "most tablelands properties are already unviable without outside income". The article goes on to illustrate how in the Goulburn Rural Lands Protection Board area, while the total number of ratepayers has increased by 13%, holdings of 20 ha or more have declined by 17%.

I found this pretty startling stuff. It means that in the better fertility areas in the Goulburn district, with a carrying capacity of 12.5 dse/ha (5 per acre), an area of 800 ha (2000 acres) would be required for each full-time labour unit. As the carrying capacity decreased, this area could double to 1600 ha (4000 acres). In the case of the two generational family farm, these areas would double again to a minimum of 1600 to 3200 ha (4000 to 8000 acres).

Around \$200 per dse seems to be the asking price for land in our area, so this means that an area to carry 10,000 dse, or one labour unit, requires an investment of \$2,000,000. A two family farm requires a \$4,000,000 land investment. If this prediction is correct, then one has to be either a multi-millionaire or operate a subsidised farm with an off-farm income.

We estimate our farm's carrying capacity is about 9000 dse, so we fall short of the projected scale of operation needed to survive as indicated by Drs Holmes & Sackett. As we already operate a fairly high input-output system, further expansion on our existing area would be marginal, so we would have to buy more land. We do not have a spare million or two, nor a large surplus income from an outside source, and as today's commodity prices make borrowing the necessary funds very risky, we have no alternative but to try and make

each unit of production more profitable and bring in more net income from the existing area. Hence the need to develop and maintain productive pastures and make best possible use of them.

The big picture

Because the health of our population is considered a national responsibility, all who can, contribute via a Medicare levy. Surely the health of our farming environment is also a national responsibility, so what would be wrong with an environmental levy? The population is demanding clean food, clean water, re-vegetation and action to rectify problems such as erosion, acidity and salinity. If weeds, such as serrated tussock, are allowed to continue their present rate of spread, not only will farm production be affected, but also the biodiversity of our native plants and animals. It is obvious that the farming community is expected to foot the cost. I have pointed out that the cost of these major needs is beyond the financial capacity of most farm-funded farmers, especially those in the grazing industries.

All of us consume food and fibre, and so must be considered as end users, and should contribute to the maintenance of our rural asset. The solutions to these major problems can only be attempted by the involvement of the total community. Why would the farm-funded owners of a family farm put what limited resources they may have into these projects when they suspect, and are being told by consultants, that they are unviable or will probably become so in the near future?

What has this to do with development and maintaining of productive pastures? Productive, perennial, deep-rooted pastures are needed and must be maintained to assist in control of some of the above problems and for profitability. If profitability is low, maintenance may not be possible with all the other costs which have to be met. However, if maintenance drops off, then production drops, profitability falls further and the downward slide continues.

What is a productive pasture?

I describe it as a pasture which will allow farmers to best achieve both their social and production goals. It should allow both pasture and farmer to be long-lasting. Provided maintenance is carried out, it should create minimal environmental problems and even assist in controlling some of our existing ones. The type of pasture that is possible in different locations will vary greatly from native to introduced species. Maintenance will vary according to the needs of the different pastures, different environments and goals. The type of stock and their grazing management will differ, but the end result should be much as I have described above.

Where did we start?

On our property, we started with 'backward planning'. We have a target market which needs high inputs to obtain the high quality product required. Our aim is to carry out all the steps from conception to the abattoir door that are required by a major supermarket. We recognise that we have to be a factory as well a farm. We must make sure that our costs allow an acceptable profit and that our production line and resources are capable of completing each step required to meet the goal that we have set.

For the foundation of the whole process we are developing the major part of our property to long-term productive pastures. Once developed, we endeavour to maintain that situation. Our first pasture of this type was sown nine years ago, and we feel that the pastures we have sown and managed by our present system are maintaining production and even improving. Because our farm factory maintained full production during the recent drought period, both our gross returns and net profitability increased.

Our profitability depends on reaching our production goal. The people we sell to insist that we adhere to their specifications in all seasons. Pasture selection must achieve our goal and be long lasting, without having to be treated with kid gloves. If a pasture plant requires a period of nil stocking at a set time each year for long-term survival, then where do we put our livestock? As we have to start our planning at the finished product and work our way backwards, so must plant breeders. Plants must be reasonably "user friendly" at the point of livestock production, with management requirements that can be achieved on the farm.

The main pasture we use comprises fescues, Australian phalaris, a little perennial rye grass and three varieties of subclover. We have sown the newer varieties of phalaris and ryegrass and initial response was promising, but persistence has been disappointing. This was costly. On the other hand, we have 30 year old pastures of Australian phalaris performing well.

Unfortunately, we also need an area of short term (3 years), highly nutritious pasture comprising Concord ryegrass and subclover to fill one of the steps in the production chain. We wish we could find a solution to this problem and so avoid this type of pasture and the need to re-sow it.

Our main pasture mix is suitable for both the breeding herd and the growing out of steers to the finishing stage. However, it does not produce a top-quality silage which we require to finish our steers to supermarket specifications. This requires a silage which is highly palatable and digestible and encourages consumption. By aiming for a digestibility of 70% with 30 to 35% dry matter, it does not

require many additives to get the desired minimum ME of 10 units with a protein of 14%. Less than this requires more additives and higher feeding costs.

Fescues tend to produce stem as well as leaf in early spring, reducing both of these essential quantities in silage used for finishing. It makes adequate silage for all other stock. Our experience indicates that high-quality silage, fed to breeders in late gestation, may lead to big calves and uterine inertia similar to a lush spring pasture.

Developing the pasture

Year 1

- Soil test to ascertain fertility levels and potential problems and get advice on remedial action (e.g. is lime needed?).
- Spring spray fallow with herbicide rates to kill all plants, plus insecticide for red-legged earth-mite control.

Year 2.

- Apply the recommended amount of lime early.
- Incorporate lime using an offset disc.
- Maintain weed-free fallow with a cultivator.
- Sow mid to late March, moisture permitting.
- Roll with Cambridge type roller both before and after sowing - if only rolling once, before sowing allows better seed placement.

Alternatively, direct drill after a second or third herbicide application. This is not our preferred choice and, while we do use it, we get earlier growth and more even plant density from the first method. The initial grazing can be two months earlier.

Lime in a grazing situation

If soil testing indicates an acidity problem, we use lime when sowing a new pasture while the opportunity to incorporate it is there. We cannot claim there is much of a return on capital invested, at least in the short term, as we have unlimed paddocks performing equally as well as limed ones. One unlimed 36 ha paddock that showed a pH of 4.7 (calcium chloride) and an aluminium level of 3.1% in 1981 now (1999) tests at pH 4.2 with an aluminium level of 17%. However, the pasture shows no sign of decline, with an average carrying capacity over the past 3 years of 16.2 dse per ha. It is one of our highest performing paddocks. If we don't lime now, we suspect we will create difficult problems for the future, but when the banks and consultants suggest that we are unviable, why bother?

Maintaining the pasture

Fertiliser

With our production target and pasture type we consider fertiliser is not an option but ESSENTIAL.

- Soil test some areas each year to check that fertility levels are being maintained or lifted to optimum levels, particularly areas cut for silage, as these may require potassium as well as phosphate.
- Record each paddock's production for the year in dse values, adding allowances for silage or hay production.
- Apply fertiliser in late summer, with rates and fertilisers for different paddocks assessed according to the above points. Areas selected for silage may receive a custom mix containing potassium and nitrogen in early spring to promote rapid growth for early cutting and re-growth. If much potassium is needed, split the application late summer and spring.

Weed control

There are weeds in our district now which years ago I had only heard about. The main pasture is doing a good job in weed control, and there has been no need to use a boom spray. However, we will always have a problem with invading plants from non-arable areas and other sources. Spot spraying is effective in controlling these weeds as they are discovered, and gives extremely low levels of herbicide contamination, with little pasture damage. Scotch thistle requires Dicamba, which is lethal to legumes and, hence, devastating to a pasture if the density of weeds requires the use of a boom spray.

In the practical world, stock cannot be shifted every time some of these weeds are discovered. There is simply nowhere for them to go. We agree with the concept of Cattlecare and Flockcare, but the use of spot spraying is now limited and the 800 to 1600 ha per labour unit required to be viable is a big garden to weed with a hoe. Drenches have a withholding period before slaughter. Could not the same apply for animals exposed to spot spraying with some herbicides and so solve a practical problem? In an ideal world, biological control is the answer, but while there has been a lot written and said about it, I have not witnessed much benefit. Please scientists, get a move on! We badly need help in a world rightly becoming more and more anti-chemical.

Grazing management

This is critical to maintain a productive pasture. Rest periods are essential to allow perennial plants to gather root reserves and compete with less desirable plants. We use a mixture of systems, including in drought times hand feeding large mobs on sacrifice paddocks to rest others. Short-term pasture paddocks can be sacrificed and direct drilled when the

season breaks so there is no long-term loss.

Gross under stocking/under utilisation of a pasture probably does as much damage as over stocking and is a contributor to pasture deterioration through the build up of dead material. This suppresses regeneration, especially of legumes, and leads to an increase in less desirable plants. The annual maintenance cost (mainly fertiliser and weed control) of these pastures is over \$50 per ha, plus the original development cost. This expenditure must be utilised as fully as possible, but about 70% of pasture growth occurs over a six week period in mid to late spring. This means pastures are under utilised, causing reduced livestock production by creating long periods of low quality and/or quantity of forage.

Silage - the key management tool for both pasture and livestock

Development and maintenance of productive pastures is the foundation of our farm factory production of beef, but precision-cut silage is the tool that enables it to happen. This is because:

- It removes pasture-destroying excess spring growth.
- If cut early, it aids in weed control by removing seed heads before maturity and allows regrowth of pasture. For two successive years a paddock of Concord ryegrass was cut partly for silage and the balance for hay two weeks later. The hay cut area is over run with vulpia on the higher areas and Yorkshire fog grass on the wet-

ter areas and needs complete resowing. The silage cut area has far less of these two plants and is suitable for another years production. Cutting for silage controls annual grasses better than grazing as it is non-selective compared to the grazing animal.

- It allows higher stocking rates on uncut areas, allowing better utilisation by livestock and benefit to the pasture.
- Our figures indicate that areas cut for silage may produce useable forage equal to 8 to 10 dse per ha more than if grazed only.
- It is the most cost-effective method to transfer excess quality pasture to periods of low quality and/or quantity.
- Pit silage can be vermin and fire proof for long term storage if covering is maintained.
- It keeps our herd in full production in all seasons.
- It enables us to achieve our target market and satisfy our customer's specifications.

Conclusion

The development and maintenance of productive pastures, together with silage, thus achieving a targeted market has enabled us to stay viable. However, if Drs Holmes and Sackett are right that less than 10,000 dse per labour unit is a part time job, and you are looking for a weekend getaway, provided you have a spare couple of million dollars, then near Crookwell there is this farm.....