INTENSIVE DAIRY FARMING ON THE COASTAL LANDS

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THE farm I am about to describe has just completed 50 years of factory supply seasonal dairying. About one-third of the dairy farms in the district are owner operated by people who have bought land settled by their forebears 50 to 70 years ago — that generation of pioneers also established the Rangitaiki Plains Dairy Company, which has grown into a large and efficient manufacturer of milk products for local and world markets.

The district used to be known as the Rangitaiki swamp. Because we are only 2 or 3 m above sea level, farm and district drainage systems are essential to take surplus water to the sea 7 km away.

We are blessed with generous sunshine (1800 to 2000 h/yr) and rainfall (1400 mm/yr) . Frosts (approximately 40 per year) have occasionally been recorded in December, and in most other months. Sir Bruce Levy once called this the best grass-growing district in the world.

FARM STATISTICS

On our farm we are using 270 cows to turn into milk the grass grown on 100 ha of medium fertility volcanic soils. Milkfat produced ranges from 140 to 160 kg/cow and 400 to 440 kg/ha, depending mainly on season but also on other factors.The farm is well developed (fifty 2-ha paddocks) and needs little further development.

The farm labour input, approximately that of two full-time people, is supported by farm adviser, accountant, and service through our dairy company divisions of retailing, veterinary, transport, topdressing, garage and demonstration farms.

As we use a rotary milker with automatic teat cup removers and some other aids, one person does most of the milking rapidly and comfortably. The shed and yards were designed by a Ministry of Agriculture and Fisheries dairy adviser, and have not required modification since construction 4 years ago.

Topdressing, determined from periodic soil testing interpreted by a qualified adviser, is now a spring dressing of 300 kg/ha 50% potassic superphosphate, followed in summer by 375 kg/ha 30%

potassic superphosphate. The bulk spreading service is well worth while and rapidly applies the fertilizer without using farm time.

However, we would like to know if increased fertilizer applications would yield more milkfat. Although probably spending more on fertilizer per hectare than average, I would prefer to pay the full cost of fertilizer applied and recover this from realistic milkfat and other product prices. The present multiplicity of input support and incentive diverts some effort away from efficient market-oriented production.

PASTURES

White clover and Nui ryegrass are our main pasture species, assisted by *Poa annua.* Most of the common temperate annual weeds occur, and there are traces of Ariki ryegrass, paspalum, ragwort and nodding thistle.

We farm an area where ryegrasses have generally persisted poorly. Nui ryegrass is a real improvement. Some areas of Matua prairie grass on the farm also appear to have potential. We would like to succeed in establishing plants with strong deep roots, such as red clover or other high producing palatable plants, to combat dry weather and insects. Specimens of soldier fly, grass grub and black beetle are easy to obtain about the farm and these have caused and still do cause problems with pasture production.

Thirty years ago we ordinary farmers knew very little about seasonal herd feed requirements or the influence of management on pasture production. We then accepted the concept of saving autumn growth to ration to July-calving cows. To keep the cows alive during winter, and sometimes in spring also, we made 30 to 40 bales of hay per cow. It all amounted to quite a bit of work, and some of the feeding-out waste was obvious. Later we were also confronted with significant research values on the less visible conservation wastages.

Because of this and my allergy to hay and to waste. we adopted a pasture renewal programme to increase growth, using improved species narticularlv for cool season production. The resulting change from naspalum dominance to clover dominance improved the feed quality and cool season growth and coincided with increased milkfat output. When it became available, Ariki rvegrass was sown over most of the farm; it persisted better than Ruanui ryegrass and was less attractive to stem weevil than was Manawa ryegrass. Winter growth was again improved. When Nui ryegrass became available we rapidlv undersowed the whole farm and improved pasture persistence further.

MANAGEMENT

Several advisory and research groups persuaded us to manage the pasture we had for better production. In particular, we were shown the self-limiting effect of overspelling when growth equates with base rotting. Also, it has been established that cow condition and adequate pasture around calving are very important to milk output.

The shapes of surves comparing seasonal pasture growth and animal requirements (for body maintenance and varying levels of milk production) are generally similar, and when the calving date coincides with the onset of spring growth they match remarkably well. However, when calving dates move away to either side of optimum, the curves diverge and indicate the quantities of feed, conservation and supplementation required. This has shown that some calving dates are not appropriate to our seasonal pasture growth, and has substantially influenced our management policies. Our farm is not subject to flooding, and good predictions can be made of winter and spring growth and potential milkfat production up to New Year. May to July growth is used to maintain the dry herd, after which pasture growth and feed intake rapidly increase.

The herd drying-off and calving dates are now the main factors determining utilization of our known winter and spring growth.

WINTER

We know that through August, feed requirements will increase rapidly as the AB-bred heifers start calving early in the month and the main herd from late August. Also, we know from research and extension that the milking cows should be offered grass that is very easy to eat. Therefore at the end of July, as well as having stock in good condition, the pastures require a bit of green leaf with which to get growing.

We have noticed that following a frosty period the pasture becomes greener as the grazing stock removes frost burn and rust. To grow grass during our winters we need drainage and species that can grow, and management that encourages growth. These prerequisites also appear to be compatible with growth throughout the season. We like the cows to start the winter in similar condition to that desired at calving, although they will become heavier as parturition approaches. This is achieved in the following way.

For convenience, the herd is split into two mobs from drying off, one containing all the rising 2-year heifers plus thinner and less competitive cows. During the May-July period we grow enough grass to maintain 2.7 dry cows/ha. The aim is to start with the same amount of feed on the pastures at May as will be required at the end of July. With the 50 paddocks averaging 2 ha each we use electrified wire to give each mob half a paddock a day to give a 40- to 50-day grazing interval, grazing grass at a height of 12 to 15 cm down to 4 to 5 cm. The principle is to graze the maximum proportion of the total herbage grown.

This winter management is very simple and encourages pasture growth. At our stocking rate and feeding level there is seldom pasture damage. To assist during very wet periods, the area offered is increased. Occasionally a few cows are changed from one mob to the other and a little time is spent accustoming the heifers to the milking area.

Reduced growth of pastures that are used for winter feeding-out has often been observed. On our farm during the four consecutive seasons in which we avoided winter supplementary feeding, all of the pastures remained in good condition. Last year we made a little silage, and I now wonder if its feed value last winter was as much as the pasture lost on the areas used for feeding it out.

Part of the time saved by wintering on pasture is required to combat winter bloat by spraying with paraffin as required. This spraying does not damage the pastures.

From mid-July our pastures appear to be willing to grow fast, so we apply nitrogen as encouragement. At approximately weekly intervals from early July we topdress paddocks grazed the previous week or so with urea at about 60 kg/ha. Nearly 1 t/wk of urea is used for 6 or 7 weeks. Our *Poa annua,* Nui and Matua respond conspicuously. If the published estimated cost of 3 to 5 c/kg extra dry matter produced applies, the extra grass grown is good value when converted to milk or body condition. The increased early spring growth available from late July provides generous feeding for the heifers calving early in August and builds up a base of grass enabling the milking herd to be offered grass at about 15 cm and leave behind 8 to 10 cm.

SPRING

As growth increases through August and September, the grazing interval shortens towards 18 to' 20 days from October through to March. We try not to worry about the possibility of a feed

shortage after calving, as such an event has not occurred here for many years. We also take confidence from recent research indicating that a short after-calving pinch has little effect on well-conditioned cows. In fact, we normally ask the vet to induce parturition of about 10% of the herd that would be calving last.

Come November, next season's calving date decision has already been made and mating is under way. Having made the decision, there is virtually nothing we can now do to influence the time when 10 to 15 cows a day will naturally increase the spring feed demands. Therefore all our subsequent seasonal decisions must be influenced by and based on the fact that many cows will need a lot of grass to convert into milk from August onwards.

We accept the research principle that cows need to be offered about four times their consumption to ensure maximum pasture intake for peak spring milk production. Grazing becomes selective at this time when a very liberal amount of pasture is offered, and pastures are mown as necessary to ensure that palatable and high quality feed is available as we enter summer.

During fine weather we mow alternate paddocks before grazing, as it makes for cleaner grazing and more even regrowth. We would like to know if cows really do increase their intake when offered, pasture that is mown before grazing.

In this district normal spring growth is only a little greater than the herd requirement, and only any real surplus is reluctantly cut for silage. We know we can use all the grass available after November;. therefore the aim is lo rapidly remove any feed that will deteriorate before it can be grazed. Life is easier on the farm in the odd spring when peak growth is slightly less and hopefully continues longer. Some technology to further increase the cow appetite would be a good way for us to deal with the slight spring surplus. If we had a palatable quality pasture that would warm-store for 8 weeks through October and November, it would be quite useful for summer grazing. Alternatively, some method of occasionally slowing down pasture growth for a few days would be appreciated as an alternative to conservation of silage.

SUMMER

Around Christmas the herd's natural decline of milk production is matched by the amount of pasture offered. As pasture growth declines, grazing becomes more even and the pasture base

carried forward from spring is reduced. Future growth will be as variable as the summer and autumn rainfall.

Our management aims are then to convert the variable amount of available pasture into milk while maintaining cow condition and encouraging future pasture growth.

In most seasons some herd members are retired by Christmas because of mammary malfunctions or through becoming unhappy in a production environment. This early culling may reduce feed demand by up to 5%. Owing to the availability of a cheap and easy-to-implement method of monitoring and controlling the growth of spores of facial exzema, we can avoid costly losses from this source from New Year onwards.

Some parts of this farm dry out exceedingly if summer rainfall fails for more than 4 weeks. We adopt a flexible response to these unpredictable periods of reduced pasture growth. The normal grazing rotation may be broken to ensure that areas of wilting grass are grazed while still useful as feed. As soon as all the available pasture is grazed, any silage on hand is fed out; any known empty cows are culled; and some milking cows, particularly amongst 2-year-old heifers that have lost condition, are dried off.

In 1978 we accepted a very reduced rainfall and had dried off half the herd before April. Although we do dry off cows to reduce feed demand and to avoid loss of condition, we would like to know more about the amounts of feed required to restore lost condition before the next lactation. The point here is that it may be better to let cows lose condition and restore it when feed is available, than to conserve and feed out silage or hay.

AUTUMN

Our normal grazing management ensures that pastures are eaten evenly and thoroughly sometime during the autumn. We hope this encourages the tillering that we are told is desirable.

Throughout autumn we are preparing pastures to ensure good growth through winter. Sometime in May, when the average pasture cover of the farm is approximately 1200 kg DM/ha and grazing is from approximately 10 cm down to 5 cm, all cows are dried off and the grazing interval of 40 to 50 days established.

SUMMARY

We regard management as our most- important work input. The main points on which the system described is based are all

available from extension and advisory services, and most are supported by the New Zealand research findings. For us the system works.

A calving date that matches the known spring growth pattern is essential to the direct linking of stocking rate with vigour of pasture growth. Milkfat output is in the range of that from the nearby Omeheu Demonstration Farm.

With little development required, and feed conservation and labour inputs substantially reduced, management now absorbs a larger portion of our effort and rewards us with greater satisfaction from farming. Daily activity concentrates on effective milking, maintaining cow condition, and encouraging pasture growth. Advisory services which stimulate and monitor our management further the objective of producing milk from pasture.

Although younger farmers are likely to lead us in adopting future technology, we intend to be receptive and ready to implement appropriate improvements.

I am confident in the. future of pasture-based dairying in our excellent climate, as there appear to be many product manufacturing capabilities and global marketing opportunities. We may extend a little into other food growing and manufacturing areas, especially those compatible with seasonal dairying.

Research which overcomes limiting factors of pasture dairying and improved technology to apply on farms will give most of us scope to achieve more within our existing structures.

Sensible and adequate product pricing will enable enthusiastic extension services to communicate existing and future technology to farmers. Pasture-based dairying can continue to be profitable to farmer and nation and satisfying to most of the people involved in this major industry.