

## WINTER MANAGEMENT PRACTICES AND THEIR EFFECTS ON PASTURE SPECIES AND PRODUCTION

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**It** is the purpose of this paper to give some idea of the vast differences in production per acre which are brought about by different grazing systems, through their effect on the stocking rate, and pasture species.

There are, in the Auckland province alone, probably at least 1½ million acres which suffer in varying degrees from winter wetness and pugging by stock.

If full advantage is to be derived from wet soils, they must be kept in good physical condition. To do this may require treading lightly, infrequently, or at times not at all. The period when the desired stocking rate and the most suitable treading rate will show the greatest differences will be that of late autumn, winter, and early spring.

The complicating factor is that this is the most important period of the year for a grazing system which will encourage the clovers and desirable grass species, and discourage the shade-tolerant species such as Yorkshire fog and cocksfoot. Edmond (1964) shows the inability of these two species to stand heavy treading. Their presence in a dominant form is an indication either of a lack of knowledge in preventing their ingress or effecting their removal, or of their acceptance as a valuable component of the sward.

Hutton (1962) shows the inability of dairy cows to eat sufficient to both produce well and maintain body-weight for the first six to eight weeks after calving, even if the quality of feed is high. Thus, high production cannot be expected from poor quality swards.

In the past, the easiest and probably the most economic way to overcome the problem was either to carry few stock or to have a run-off. Today, the practicability of either of these remedies is doubtful. With lowering prices and rising costs, few farms can continue to be economically sound when understocked. With the fertility and value of many run-offs rising, they must either be farmed in their own right or sold to be farmed as independent units.

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Different wintering systems have different effects on pasture species and hence on production per acre. If a run-off is used, it is likely that hay will be cut from the home farm and valuable fertility carted away, only to be largely wasted by being trodden into the mud by stock. Most, if not all, stock will be taken away from the home farm, to suit the school holidays, shooting season, or some other date quite opposed to that dictated by good pasture or stock management.

In many cases, this date will be late May or early June and pastures will remain ungrazed for several months until the cows start calving in late July or early August. During this period in Northland, there is usually considerable growth, which results in an abundance of overmature, partly rotten herbage which has very successfully shaded out the essential nitrogen-producing clover.

Brougham (1958) makes it quite clear that clover cannot be stored for long periods. In fact, decomposition is so rapid that little is left after about twenty days from emergence.

This overmature material is unpalatable to stock, low in nutrients, and a poor producer of dairy products. Pastures which have been subjected to this type of management over a period of years are always slow to recover after grazing and it is very often on properties where this has been allowed to happen that costly meal feeding in spring is essential for reasonable production.

Autumn closing, and no winter grazing, followed by lax spring grazing, because of low palatability, is then followed, on at least part of the farm, by closing for hay. The resultant crop is obviously of very poor quality material and very hard to harvest, especially in difficult weather. Stocking rate with this type of management is usually from half to three-quarters of a cow per acre, discounting the area of the run-off, which should, in fact, be considered as part of the total area farmed. It is only by excluding the area of the run-off from their calculations that many farmers in North Auckland are able to clear their conscience of the low production which is being achieved.

Many farmers are using or have used the split-herd system which appears to be quite successful under moderately wet conditions provided that the stocking rate does not get too high. About seven-eighths of a cow per acre is probably the upper limit of stocking rate for this system with maximum concentration of two cows per acre for wintering on many soils. This system has the disadvantage

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of the cows eating all the feed to start with and having a falling plane of nutrition just before calving. Added to this is the fact that a large percentage of the farm has been set-stocked and pugged to some degree. Regrowth is slow because of pasture damage, and low producing species like *Poa annua* and flat weeds invade the weakened sward.

Edmond (1963) shows that under such conditions of grazing less development of grass tillers and clover nodes can be expected. Production, therefore, is likely to suffer, especially in wetter than average seasons, and again meal may have to be fed. During this six- to eight-week period, some pastures on the remainder of the farm often become overmature and the same deterioration takes place as if the stock were away on a run-off.

There is also the situation where a run-off of good contour, and sufficiently close to the home farm to allow frequent changes of stock, or, more probably, some other type of off-paddock feeding system, such as a feeding pad, yard or shed, is used. According to the season, cows can be milked either until they are sufficiently close to calving, or until the soil conditions dictate that they be removed from the pastures. All paddocks can be cleaned out in turn, with large mobs, if soil moisture conditions allow, or by set-stocking with small mobs. In either case, during periods of excess wetness, stock can and should be removed from the pastures and returned only when conditions are dry enough not to cause pugging. In this way, it should be possible to have good feed all over the farm, and at all times to avoid wasteful and harmful shading.

If the first shut areas start to become too long, cows should be allowed to graze them off for about fifty minutes per day. In this period of time, little preferential grazing takes place; the stock, because they are busy grazing, do a minimum of walking, and the pasture is reduced to a desirable level. When grass is being grazed, hay feeding can be reduced accordingly, and precious reserves of hay are retained for periods of need. Some farmers are reluctant to increase stocking rate sufficiently when these aids are provided and so lose much of the available profit. On self-contained units, on wet soils, increases of up to 20% in stock numbers are very reasonable, as much less supplementary feed is wasted by treading, more pasture is grazed because of lack of fouling, and more grass is grown because of less hoof damage to the sward.

During the past few years, research has shown that restrictions of grazing time after calving, provided that

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extra hay or silage is fed, will not necessarily reduce production. Parker (1966) gave the figures for 4, 8, and 20 hr grazing with and without hay feeding, at Ruakura. Knowing this, it is much better to restrict pasture grazing time during periods when severe damage is likely to take place and so encourage a denser and more productive sward.

Brougham (1966) gives a clear indication of the type of pasture management likely to give greatest production. Under this type of grazing management, the better pasture species are encouraged, much more total herbage is grown, more stock are carried and greater production and more profit are the final results.

A typical case history of a farm where these recommendations have been applied is shown in Table 1. The total usable area of the farm is 210 acres: area flat, 85 acres (Whakapara); area rolling, 55 acres (Waikara); area steep and broken, 70 acres (Marua).

TABLE 1: TYPICAL FARM CASE HISTORY

Season	Topdressing Applic. (cwt)	cows	Replacements	Production lb/b'fat
<b>JULY 10 CALVING, AND WINTERING-OFF FOR AT LEAST SIX WEEKS</b>				
1961-62	3 — super. — — —	119	40 yrl., 40 calves	36,025
1962-63	3 — super. — — —	117	40 yrl., 40 calves	36,055
1963-64	4 — aerial super. — — —	120	40 yrl., 40 calves	38,865
<b>AUGUST 10 CALVING, AND ALL STOCK WINTERED AT HOME</b>				
1964-65	5 — Mo super.	120	40 yrl., 50 calves	42,363
1965-66	6 — super. ....	139	50 yrl., 60 calves	46,540
1966-67	6 — 15% PK on rolling and hills			
	5 — 30% on flats	149	60 yrl., 67 calves	52,029
1967-68	6 — 15% PK all over	166	166 to calve	
(Total lime in this period, 225 tons, an average of 37 ½ tons per year.)				

Note: A sawdust yard was used for wintering in both 1965 and 1966, and for the winter of 1967 a cubicle barn.

## REFERENCES

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## DISCUSSION

*Does Mr Kirton, when using platforms (off-paddock wintering systems), use free grazing or electric fencing?*

Electric fences are used only as subdivision. With 50 min grazing, the cows do not graze selectively and do **not** walk round causing undue pugging.

*What is the cost per cow of cubicle barns?*

Costs have increased over the last 3 years by \$2 per cow per year. For materials only, \$16 per cow is normal. When employing hay storage (20 bales per cow) \$24 to \$30 per cow is necessary.

*What is the frequency of winter grazing a paddock when using off-paddock wintering systems?*

This varies according to the season but generally a paddock is grazed twice during the winter.

*Are there any losses of stock nutrients with off-paddock wintering?*

There is not a great loss. When fertilizer is applied from the bag, little is lost, and, in fact, fertility may be gained as stock numbers are increased.

*Is there any use made of waste materials from cubicles?*

Most farmers have dung disposal methods of some sort.

*Has there been any fertilizer change on the particular farm referred to?*

There has been an increase from 2 to 3 cwt of straight superphosphate to 5 to 6 cwt of 15% and 30% potassium superphosphate, depending on soil type.

*Would Mr Kirton comment on the calving dates mentioned with regard to the summer growth of pastures?*

The last few seasons have had good summer and autumn growth but dry summers normally start about January when two-thirds of the production has been produced. However, with increased stocking, there is definitely an advantage to later calving.

*Is there a possibility of autumn calving?*

With autumn calving, there would be a difficulty of grass utilization. Also, losses incurred in making the reserves of hay required would defeat the object of autumn calving.

*Would Mr Kirton comment on the fact that winter pugging is likely to hasten the onset of dry conditions?*

I agree that pugging has this effect. Badly pugged pastures deteriorate faster during the summer.

*Would Mr Kirton prefer barns to sawdust pads?*

Sawdust supply is limited. When sawdust exceeds \$1 per yard delivered, it is often more economical to use a barn. An off-paddock wintering system should be employed which is the cheapest and most practical in such circumstances.

*Would Mr Kirton comment on the use of some form of surface drainage?*

The periods when paddocks are the wettest and thus a drainage system is necessary, are those when stock should not be held on paddocks. Severe pugging will reduce the effectiveness of drainage such as tiles, moles, or graded banks. Drainage must be used in addition to an off-paddock wintering system, not instead of one.

*Would Mr Kirton comment on the wintering of cows on a concrete race with feeding racks?*

Often concrete can be used in this way as well as being part of the farm race. I do not recommend keeping cows for any length of time on wet dirty concrete, as lameness could result. Concrete is ideally used in conjunction with a small area of dry land on the farm, or with a sawdust yard.

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