MANAGEMENT ON WINTER WET SOILS

B. T. JORDAN, Department of Agriculture

At least 1,500,000 acres of grassland in the Auckland Province suffers to greater or less degree from pugging because of winter wetness. Severe problems are experienced on 293,000 acres of this area, so that it is certainly time a start was made in solving the managerial difficulties on the various soils involved.

From the data collected it can be seen that by far the greatest proportion of the 1½ million acres lies north of Auckland city, where rainfall in the three or four winter months far exceeds that produced by any'other of the three seasons.

The soils affected range from the naturally poor podzolic soils, which invariably have an impervious pan only a few inches below the surface, to the highly fertile meadow soils, which originally grew kahikatea forest and flax. In between these we have the rendzina group, which includes the limestone country.

Natural drainage is extremely poor and while artificial drainage, by using contour banks on the hill soils and either ridge and furrow or tile and mole systems on the flats, is a great help, we know from a paper presented by Bowler to the 1961 Ruakura Conference that management during wet weather is vitally important. Especially is this true when one realises that it takes at least £30 to lay one acre of tiles today.

The problem we face then is that of keeping our stock on the pasture only as long as it is necessary to eat a ration of grass and then take them off before they have time to damage the surface by excessive tramping from hay feeding or just straight-out wandering.

The use of a tractor, too, needs to be reduced to a minimum, as it can do even more damage to the ground surface in one traverse than a herd of cows over several hours.

Edmonds (Grassland Conference 1960) said that one heavy treading of wet soil, causes an impressive change in porosity which may be significant to plant growth. He added that although in nature soil structure tends to be restored, continued heavy treading militates against this.

J. Webber ("Agriculture" 1961) pointed out that one of the three most important facets of soil fertility was its physical condition.

To extract the best from these winter wet soils, therefore, one must tread lightly, infrequently, and at times not at all. In other words they must be managed in such a way as to keep heavy

animals away as much as possible and use sheep for preference. The reason is obvious when you consider the pounds per square inch exerted by a cow's hoof to be 27 lb, while that of a sheep would be nearer 12-l 5 lb.

However, to carry this out would mean the purchase of a second property on some better drained soil.

Let me explain what happens under such circumstances, especially where the type of farming is dairying.

There is usually a home property of say 80 acres and another one-generally a bit bigger-on a hill somewhere which is used to put the dairy cows out of sight and mind for two months from mid May to mid July. They are then brought home on to the main property with its saturated soils disguised by a relatively good cover of pasture. Within six or seven weeks the grass cover of July becomes a pugged mess. By the end of August and early September one wonders whether anything will ever grow again, but nature usually provides the sun that is needed to dry these properties and restore some of the pasture, but by that time the damage has been done. The back property was not as dry as it was hoped, so that it too was left pugged to about the same state as the home farm.

This state of affairs prevailed in the Ruawai district in Northland until a year or so ago.

Although the heavy clays in that district cover 21,000 acres, accurate figures show that 17,289 acres were being used for dairying in 1959 and this area produced an average of 181 lb of butterfat per acre. However, as far as I could ascertain, this flat area was supported by 16,510 acres of hill country for wintering the stock, bringing the actual production per acre down to 93 lb of butterfat. The cows milk for an average of only 238 days, whereas they should average at least another 30 days in production.

Arnold and Scott (Grassland Conference 1953) referred to the run-off system as we know it having some radical weaknesses.

It is my opinion that these weaknesses are so vast that the word "run-off" should no longer hold a place either in farming practice or in our agricultural vocabulary.

However, do not think that 1 am getting on to the subject of the use of run-offs as such. I merely wanted to point out that they are not a good system of managing winter wet soils.

Let me consider the alternatives.

Sheep have been mentioned, the use of the land for cattle fattening during the summer is a possibility, and summer crops are not to be entirely excluded.

None I believe can be adopted by a small property owner at present milking cows. For this reason my remarks from this point on will be confined to the management affecting these animals.

Let me describe the way I would approach this problem and how it works in practice.

First and foremost is the need for a race system on the farm, and it must be metalled. It should be graded and have a fine metal or sandstone surface which will not cause the cows to have foot soreness.

In the race itself there should be a water trough not too far away from the cowshed.

The next step is the hayshed, sited if possible adjacent to the race and within easy reach of the cowshed. (Dairy Regulations prevent this being closer than 30 ft.) Incidentally the hayshed should have something in it, preferably at least 1 ton per cow of good quality hay.

Then comes a set of racks in which the hay can be put to enable the cows to feed without having it at their feet, the length of the rack required being 2 ft per mature animal. Where both sides of the rack can he used one running foot is required for each cow wintered.

This is the most meagre start possible if the scheme I now suggest is to work.

As the majority of these soils troubled by wetness do not have a problem until at least June due to the drainage provided from cracks, etc., after the summer, I believe the cows should be milked until the end of May or even the first week of June and then dried off to calve from the third week of July on.

Autumn grass is saved one paddock at a time from 1 April until two-thirds of the farm are closed by mid May. The milkers clean up the last one-third of the farm and then when dry, or when soil conditions dictate, they are moved from the paddocks to the race.

At this stage the hay is fed in the racks but, depending on the feed available and the soil wetness, the grass closed in the autumn is rationed at the rate of 1 to 2 hours per day. Grazing can be on strip grazing or free range basis, but I prefer the latter, as it would not be my intention to graze these paddocks bare, but rather to leave them with a reasonable cover.

All supplementary feeding would be from hay at first, but as it becomes more popular self fed silage could also be used. The cows do not have access to the pasture again until next day, or longer in very wet weather.

As the money and time become available the standing area for the stock should be concreted and into this platform are set the racks. Twenty-five square feet per cow should be allowed as far as the platform size is concerned and I suggest it be 4 in. thick.

Once the racks have been set in concrete the management after calving becomes a great deal simpler. I have already mentioned the next point, but I will do so again because it is the crux of the whole idea.

The most difficult time is from mid July to the beginning of September. This being so it is most necessary to continue feeding the cows in the manner I have outlined: on grass for two hours or perhaps a bit longer once they have calved and then back on the race or into a racked shed to eat hay until milking time.

It allows the herd to be kept in two groups but both feeding from the same place. They are kept separate by the racks and a gate or two at each end.

It is of course the ultimate of most farmers who have begun this form of management to cover their racks to prevent too much mud and slush and also hay wastage.

The burning questions in your minds at present will be the cost of these platforms on a per cow basis and whether they are really worthwhile.

The cheapest effective open feeding system where the cows. and racks are left uncovered would be in the vicinity of f300 for 60 cows (£5 per cow).

A fully covered shed, including the storage space for the hay but without side walls, came to £10 per cow, while that with walls and totally enclosed, including the hay space, came to £15 per cow,

Disadvantages accompany this management, but they are not as troublesome as those encountered with what we know at present to be orthodox.

Fertility transference will be the concern of those dealing with soil fertility, but I cannot imagine it to be as bad as at present where hay from the home farm is being taken to the hill property.

There is the constant need for daily attention throughout the winter. This to my mind is advantageous from the husbandry side, but it is looked on with scorn by many farmers.

When the weather demands hay feeding alone the fear of compaction is real, but it is not usual for the cows to be without grass for more than four days on end.

The last question is, Does it pay?

I will not waste time comparing all the farmers using one of the many versions at present being put into practice, but I will quote one farm on the Ruawai flats with two years of home wintering.

Using a covered barn costing £550 for his 58 cows he produced a herd test return of 339 lb of butterfat per cow from 70 acres in the 1960-61 season.

This farmer is, I admit, above average, but testing returns for his last year using the hill wintering system produced an average of 317 lb of butterfat for slightly fewer cows and a lot more acres.

This managerial practice, with the fewer total acres, gives the farmer a much easier and desirable way of life.

No standards can be laid down, as each property has its own particular situation. However, these ideas, properly applied, can be a real aid to lowering production costs. Because those now in operation show the broad principles of this management to be sound, its rapid extension can be expected within the next few years.

REFERENCES

Bowler, D., Ruakura Conference, 1961.
Edmonds, D., Grassland Conference Proceedings 1960.
Webber, J., "Agriculture", "Wet Weather Soil Fertility" 1961.
Arnold & Scott, Grassland Conference Proceedings 1953.

DISCUSSION

Comment (W. Reynolds): My run-off costs £15 per cow. Stock are wintered on it at the rate of 10-15 to the acre. I regard it as a better investment than concrete or the shed. There has been little evidence of fertility transfer. It does not appear to be a case of all the fertility going off on to another area. Both areas are, in practice, increasing in carrying capacity.

A. (J. E. Bell): There are two different circumstances involved. Mr Reynolds has a nice bit of stand country. North Auckland is a different proposition. Mr Reynolds's runoff is appreciating in value. Perhaps Mr Jordan could comment?

A. (B. Jordan): I agree. It is not a matter of comparison of finance for concrete sheds and racks versus a run off. In North Auckland a run-off costs £1,500—usually £1,500 for scrubby tea-tree with gorse. A more reasonable piece might cost about £3,000. It is better to have one where fewer cows are done well over the winter than many done poorly. As an example, a Bank Manager wanted to know the reason for the loss of 48 cows out of 120. No poisoning was involved, it was simply starvation. The following year 28 cows were lost from the same cause-starvation. They couldn't afford to do anything about it although told the reason each time.