GRAZING MANAGEMENT ON HILL COUNTRY

By. C. J. HAMBLYN, Fields Superintendent?- Department of Agriculture, Palmerston North.

At the 1947 Conference of the 'New Zealand Grassland Association at Palmerston North a considerable amount of interest was shown in a short paper by a young Manawatu hill country farmer as part of a symposium on "Pasture Grazing Management." In the paper a system of sheep grazing management very different from that commonly practised on our hill country by sheep farmers was described, and the results in increased carrying capacity of the farm for the comparatively short time the new grazing method had been in operation were given. The possibilities of the change in grazing management in promoting the improvement of hill country' pastures, both in production and in composition, in the control and suppression of weeds, and the better and easier management of a hill country ewe flock, were also discussed. It is now proposed to briefly review the new grazing management as applied to this same farm over the past eleven years and give also the experience and results of a few only. of the many younger hill country farmers who have adopted the same or similar methods of grazing management. These latter without exception have been influenced and assisted by the methods and results of the Manawatu farmer; which have been brought to them through the extension service of the Department of Agriculture.

THE NEW IDEA ON HILL COUNTRY GRAZING MANAGEMENT

The change in grazing methods insofar. as the sheep are concerned is a change from the usual practice of set stocking each paddock over practically the whole year with the number. of sheep it is estimated from past experience it will carry to a system of running the sheep in mobs and moving, them round the farm so that paddocks are alternately spelled to grow the feed which is then quickly cleaned up by the mob of sheep. In effect it is putting into operation on hill country the methods which have been developed over

the years by our dairy farmers, using the ewe as the main grazing animal in place of the dairy cow and cattle in place of the mower to assist in pasture control and better utilisation. It is not possible in this short paper to give full details of the actual day to day grazing management of all the different classes of stock that are carried on the average hill country farm because these details vary from farm to farm and from season to season. It can be said, however, that the overall aims are the same and that the general methods of achieving these aims are very similar. It can also be said that the application of these methods requires from our hill country farmers something of the initiative and ability in stock and pasture management which has been demonstrated so well by our dairy farmers, who are often quoted as leading the world in the field of pasture production and utilisation. That we have such men on our hill country will' he illustrated in this paper-men who because they are not satisfied that the old methods of set stocking pastures with sheep on hill country are the best that can be'applied are trying out and developing the new idea of mobstocking and rotational grazing. While they can and do get much encouragement and assistance from the dairy farmer, despite the differences in conditions and animals concerned, they have not as yet had much of either from their fellow farmers on the hills and less than that so far from research workers in some cases. Their results do indicate, it is considered, that the change in grazing management can and does have a beneficial effect on the pastures, that it is not so difficult. to put into operation as at first sight it would appear, that the problems of stock thrift in relation to pasture utilisation can be solved by the application of observation, knowledge and initiative in providing suitable feed for the stock at times when a special type of feed is required, and finally that, other than more regular attention to the stock and pastures than is usual, the operation of mobstocking tends to reduce labour requirements at the busiest times of the year and provides for much better attention to the animals at such times as lambing, docking, footrotting, etc. The change in grazing management is moreover helping in better management of the ewe flock by allowing for earlier weaning, better provision of feed in the summer even in very dry ones, the provision of flushing feed, the carry-over of autumn growth till it is required to bring the ewes up in condition for lambing, and the easier control of surplus spring and early summer growth with fewer cattle.

The new grazing method also allows for the much easier closing of paddocks for such purposes as strengthening the better grasses and allowing clovers, either white or subterranean; to seed, and so increase the proportion of these elements. Such paddocks are merely left out of the rotation for the necessary time and brought back into sheep grazing by the cattle.

Let us have a look at some of the methods 'and results being obtained on hill country farms.

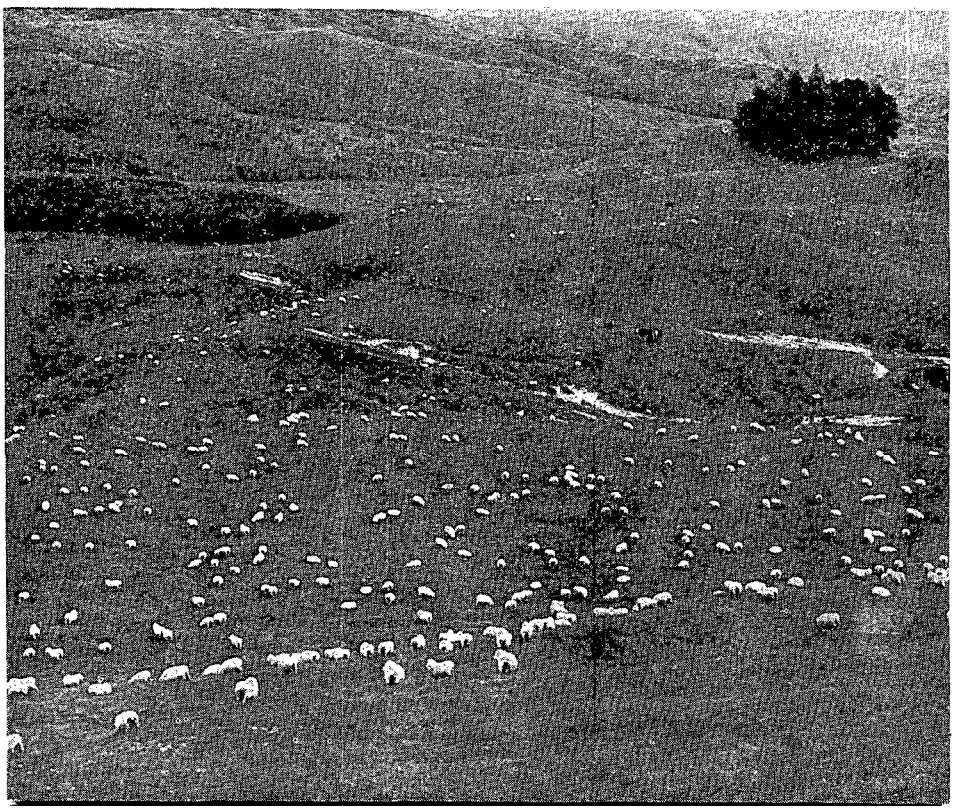
MANAWATU HILL COUNTRY FARM

This farm. of 540 acres, of which some 60 acres is taken up by a deep gorge extending the length of the farm, is located on the western slopes of the Ruahine ranges. It is subdivided into some 18 paddocks ranging from five to eighty acres and carried through the winter in 1944, some 950 breeding ewes, 400 hoggets, 20 wethers and 50 breeding cows with replacement cattle. A change in the grazing management to mobstocking the sheep was started after weaning in the summer of 1945 and has been continued over the past eleven years. The general scheme of management for this farm, which has been the same throughout with slight modifications according to stock numbers, type of season and so forth, will serve to illustrate the methods used also on the other three farms. From weaning, which is now done in early December, the ewes including two tooths are run as one mob through the summer, autumn and winter. They are first kept on short commons to keep down condition and used to clean up roughage and so forth. In January and February feed is reserved for them in a few paddocks to provide flushing feed. The rams are put out with the mob, which is then shifted every few days according to the amount and quality of feed available. After tupping the ewes are again kept on restricted feed through the autumn and surplus feed is saved for late June and early July, to give them a build up for lambing. The shifting, once the ewes get used to it, is a matter of opening a gate into the next paddock. The weaned lambs are also run in a mob through this period, starting on specially prepared paddocks and later going ahead of the ewes. In some seasons on this farm the lambs do the round of some four paddocks selected for them because of the type and quality of the feed and out of the way of the main ewe flock in its rotation. Either method appears to give satisfactory results providing some thought is given to the type and condition of the feed they are grazed on.

The policy in regard to cattle has-varied considerably on this farm, but when breeding cows were run the general idea through summer, autumn and winter was to set stock the paddocks with cattle which were made to clean up roughage or. surplus feed after the sheep passed through their paddock. The round of the farm with the ewes takes about a month but is varied according to the season and growth rate and so forth.

To clear the way for lambing the hoggets and dry sheep are shifted to an area out of the way where they have two or three paddocks for a rotation. As soon as the ewes show they have -started lambing in earnest they are started on a daily shift, the unlambed ewes moving out each day from those that lambed in the last 24 hours. Some 14 to 15 paddocks are considered to' be necessary for the efficient management of the ewes through lambing on this daily shift basis, and this, of course, means in the case of a prolonged lambing the ewes going round the paddocks two or more times. The clearance of their round is therefore necessary. As lambing proceeds a start is made with the gathering of the lambed ewes into mobs sufficient to

Mob stocking on recently developed hill country.



stock a paddock for a short time. This is done by quietly shifting ewes with four day old lambs into the next paddock which has three day old lambs. These two lots next day move into the next paddock and so on, so that at say ten days after lambing really starts a mob of ewes with lambs from 10 days down to three days is gathered. These can be shifted to one side if necessary to allow the unlambed ewes to come around, which they do within. the next four or five days. The next lot of ewes with lambs about the same age is gathered and so on round the farm, or round the block the ewes are being lambed on. Towards the end of lambing there are three or four small mobs of ewes with lambs about the same age, and a small mob of late lambers and dry ewes, preferably near the homestead. The dry ewes are easily drafted out and a few small paddocks will serve for the late lambers which can otherwise be set stocked.

Each small mob of ewes now has available three or four adjoining paddocks round which they can be shifted in an easy rotation merely by opening a gate from the paddock they are in to the next. Docking is done in the paddock, each mob being dealt with in turn as the time for this job arrives. For some time after docking and while the lambs are developing grass eating capacity the rotation of these small mobs is more or less on a daily basis so that the feed can be kept in a condition suitable to them at this stage. As feed commences to get away generally, some time about mid-October, two mobs are joined together and run as one mob round their paddocks, which provides for the early closing of selected paddocks to concentrate surplus feed. The next step is to get all the ewes and lambs into the one mob. On this farm up to 1,300 ewes and 1,300 lambs have been successfully run in the one mob. This big mob provides the numbers required to keep at least part of the farm in good grazing order since they, can clean up any of the paddocks efficiently in one, two, three or more days. They cannot, however, look after the feed on the whole farm despite the fact that the lambs are eating more every- day. More paddocks have to be missed from the rotation and the surplus feed held in them. These. paddocks are cleaned up as soon as possible by the concentration of cattle on them so that they are back into use for the sheep by weaning or soon after. So much for the scheme of grazing management, which by the way is not intended as a complete guide to anyone who wants to practise mob stocking. Now for the results. First a look at

progress in carrying capacity and wool production over the eleven years of mob stocking on this farm.

Table 1 sets out the winter carrying capacity of the 460 acres of grassland together with the wool weights and the topdressing used.

TABLE 1

Year	Ewes	Hoggets	Dry Sheep	Total Sheep	Wool Weights lb.	Fertiliser for top-dressing tons
			20			9
1945	1000	500	75	1370	13280	8
						9
1946/47	1060	550	200	1730	16530	8
1948	1120	600	50	1770	16530	16
1949	1200	470	150	1820	16217	20
			200			16
1950	1250	650	500	2900	17100	20
1952	1250	600		2350	18070	30
1953						30
1954	1300 1250	655 715	86	2051 2280	21360 21400	30
1955	1250	800	200	2250		

The main features of this table are the increase in carrying capacity during the period 1944 to 1949 when topdressing played a very small part in providing for this and most of the credit can be given to the change in grazing management which started in the summer of 1945. During this period ewe numbers were increased from 950 to 1200 and total sheep wintered from 1370 to 1820. During the following six years from 1949 to 1955 the total ewes wintered has been maintained at round the 1250 mark which is considered enough for one man to look after and the hoggets and other sheep, mainly wethers, wintered has ranged from 1,000 to 1,100, an increase of some 500 to 600 over the average for the first five years. While the wool weights in the first three years give an indication of the progress made in increased wool clips from 13,250lb. to 16,150lb. and the figures continue to show a very satisfactory increase on the average, reaching 21,400 in the 1954 season, they do not show the improvement which was shown from the start in the average fleece weight from the ewes and the hoggets. This is because from 3.947 a considerable number of wethers and also of the wether hoggets were sold in the spring in the wool as fats. The topdressing besides giving additional improvement in the pastures has resulted mainly in an increase in this aspect of the farming turnover. The increase and improvement in the pastures effected by

the grazing management and, in recent years, by the increased topdressing has also been taken advantage of along the same lines in the matter of making more profits out of cattle. There is not time to deal with this now.

A WAIRARAPA FARM

This farm, between Masterton and the coast at Castlepoint is in a particularly windy area with an uncertain summer rainfall. The area is 720 acres, and when taken up by the present owner in August 1949 there were two paddocks, one partly covered in manuka and credited with carrying 800 ewes as part of a hill country' station.

Some 6 miles of subdivision fencing have been erected, mainly by the new owner, to subdivide one paddock of 480 acres into 12 main paddocks. The scrub has been cleared and 120 acres broken up and resown. some of it not very successfully. Mobstocking of the ewes commenced in 1951, when there were sufficient paddocks to attempt it, and this method of stocking has been developed since on the lines of that described on the Manawatu farm with some special modifications which are of interest. In the first place, some 240 acres of the farm is still in one paddock and has not been topdressed as yet. The ewes at weaning are transferred to this paddock while the weaned lambs are mobstocked on the subdivided 480 acres plus the two tooth ewes and dry sheep, The lambs have the first pick of the feed. Some weeks before the rams go out the ewes are returned to the 480 acres, the two tooths added to the flock, and the dry sheep and lambs go out again to the 240 acres. The ewes are provided with flushing feed. From tupping on the ewes do a fourteen day rotation of the 12 paddocks, two of which give two days grazing. The same shedding method is carried out during lambing, with a daily shift of the unlambed ewes to the next paddock, and the procedure from this point on till weaning is along the same lines as on the Manawatu farm. Topdressing has as yet played but a small part in the improvement of this farm, an average of some 15 tons being used in recent years, all of which has gone on to the new pastures established after ploughing or giant disking. Lambing percentage, which was 79 the first year, has steadily improved to upwards of 90 per cent this year.

Details of the carrying capacity in this case shown as sheep shorn including lambs are given in Table 2.

TABLE 2

Year	Ewes	Hoggets	Lambs	Total Sheep	Wool Weights lb.
1.950	769	—	660	1429	8483
1951	730	240	639	1609	8487
1952	744	283	645	1672	9732
1953	807	550	634	1991	10231
1954	879	491	664	2034	13704
1955	1021	494	639	2154	16438

While the improvement of the 120 acres has undoubtedly played an important part in the increases shown in the above figures it is very apparent on a visit to this farm that the pastures on the remaining 360 acres of this block have also improved almost beyond recognition and without topdressing due, it is considered, to the grazing management made possible by the subdivision. A remarkable feature of this system of management was shown on this farm last summer, which was a particularly dry one, when the pastures continued green a month to six weeks after the surrounding country was completely dry and brown. So far as lambing is concerned this farmer has no doubts whatever as to whether he would like to go back to the long hours involved in going round every paddock on the farm. His clip has increased from round 81b. for ewes and hoggets to over lllb. last year.

A HAWKES BAY FARM

This is a coastal farm in Patangata County of some 1100 acres, generally fairly easy, but steep and high enough in places to be classed as real hill country. There are some 25 paddocks, with 16 used for rotational grazing varying from 30 to 150 acres. The grazing management here from weaning, which is again in early December, is essentially the same right through to after.lambing as that on the Manawatu farm. Because of particularly bad crossings, however, it is now the practice to distribute the ewes and lambs over the paddocks after docking, though for two seasons 1952 and 1953 the ewes and lambs continued rotational grazing through to weaning.

These farmers, two brothers, are satisfied that from the pasture point of view and also for good stock. management in relation to pasture production the continuance of mob stocking through the spring and early summer is well worth while, but they have a lot of development work by way of tracks and crossings to do before this can be made as easy as they would like.

Mobstocking was started on this farm in the summer of 1950 and has been continued up to date with the firm intention of carrying on and improving the technique.

The results of mobstocking plus the use of fertilisers are shown in Table 3, which gives the carrying capacity in the form of sheep shorn together with wool weights and fertilisers used.

TABLE 3

Year	Ewes	Hoggets	Lambs	Total Sheep	Wool Weights lb.	Fertilisers used tons
1950	1645	777	1564	3986	28000	—
'1951	1670	927	1656	4253	30000	20
1952	1'776	931	1645	4352	31soo	—
1953	1967	932	1847	4746	34400	30
1954	1955	'995	1773	4723	37000	70
1955	2200	1050	—	—	—	90

An interesting feature of this table is the relatively slow increase in the first few years in ewe numbers and the comparatively more rapid increase in young sheep which is necessary to provide for the bigger increase in ewes as the effects of the management are shown in improved winter carrying capacity. It will be noted also the remarkable increase in wool weights of some 9,000lb. with an increase of only 700 odd in the total sheep, which includes an increase of 200 lambs. A further point of some importance in considering the effect of grazing management is the fact that fertilisers can have played but a small part in promoting increased production though in the past three years all the wether lambs have gone to the works.

A NORTHERN HAWKES BAY FARM

The farm in this case is fairly rugged and located towards the coast near the Wairoa-Hawkes Bay boundary. While mainly mudstone papa and sandstone formation, the easier country, what there is of it, has a pumice ash cover.

The area is 1374 acres with 285 acres in bush, reducing the grazing area to some 1089 acres. There are 12 main paddocks, ranging from 20 to 210 acres. The same general grazing management with the ewes in one mob, lambs in another and cattle used to best advantage in keeping feed in good order has been carried out on this farm since 1949. For the first three years mobstocking was continued till lambing. This was while additional subdivision and crossings for steep

gullies were carried out. From 1952-54 the practice of shedding the unlambed ewes followed by later set stocking was the method and in the past two seasons ewes and lambs have been mobbed after gathering into small mobs and docking. The shifting on this. farm, because of the difficult nature of the country; has developed into opening the gate into the next paddock, allowing the sheep to drift through into this paddock and closing gates behind them, according to the rate at which the stock move on. This saves a lot of driving and missmothering when the ewes have lambs at foot. A practice is made of closing paddocks to allow the grasses or clovers to seed and this serves as a control measure during the flush as well as being aimed at a-better cover on some of the dry faces. Shearing has been advanced as a result of the grazing management to mid-October and weaning to mid-December.

So far topdressing- has played practically no part in the improvement, m the carrying capacity on this farm, the first 20 tons having been applied last year.

The progress made through mobstocking and rotational grazing is shown in Table 4, which sets out the carrying capacity as sheep shorn together with the wool weights and breeding cows.

TABLE 4

Year	Ewes	Hoggets	Total Sheep	Wool Weights lb.	Breeding Cows	Total Cattle
1949	993	293	1337	'13069	139	298
1950	995	314	1407	'13276	150	328
1951	1009	360	1519	13338	138	322
1952	962	650	1711	14492	196	345
1953	956	520	1544	15039	153	275
1954	1112	535	1717	16502	172	336
1955	1150	417	1645	—	207	339

Points of interest on this table are again the slow increase in ewe numbers in the first few years with a relatively rapid increase in the number of young sheep. On this farm it should be noted the wool weights relate to ewe and hogget wool. An important feature on'this farm has been the increase in breeding cows and the provision through better pastures and particularly more winter feed for an improvement in the type of cattle being raised. This again is more or less a one man farm, largely because of its location and the man running it is well satisfied that he has more time available for other work because of the management methods adopted, but the outstanding feature is the

increase in feed available during the winter and the opportunity provided by mobstocking the sheep of giving special treatment to areas in need of such.

These, then are a few examples of progress being made on our hill country in developing stock management aimed at the improvement of the pastures and having in mind always the results in more and better stock and stock products.

DISCUSSION

Q. How is mobstocking done with new lambs?

A. You should take four paddocks and circulate young lambs in the four paddocks.

Q. How can you count sheep going through a gate in order to allocate the number of sheep per paddock?

A. Put the whole flock of sheep into one paddock and move them as soon as the feed has run out.

P. E. T. Suckling. Has the speaker checked set stocking against rotational grazing on the OXE property in a replicated trial? Also has the speaker driven lambs and ewes? In my experience the ewes wander off leaving the lambs even though they may have just been shifted into a new pasture. Therefore lambs tread in a constant state of unrest. At a recent Massey Sheep Farmers' Conference it was stated that both systems are important. 'At Te Awa set stocking has given better results than rotational grazing for a period of seven years. At Te Awa other management practices such as subdivision have been more important than rotational grazing or set stocking.

D. Melville. Mr Hamblyn has put too much emphasis on grazing management. In this paper he has given the impression that mob stocking can cure soil deficiences and also overcome deficiencies in pasture species. This is not true as chemical fertilisers have to be applied to the pasture to overcome soil deficiencies and the areas must be oversown to overcome the lack of species if they are not already present in the sward.

Q. How often should stock be shifted? I shift my stock once a week and my neighbour shifts his stock every two days.

A. If possible the shifts should be planned so that each field is spelled up to four to six weeks.

A farmer. Pastures can be improved by mob stocking. I am farming at Eskdale and I changed from set stocking to mob stocking, and since then my property has improved compared with my neighbours and also the amount of meat and wool that got a down the road has increased.

Q. Do you hard or soft graze paddocks?

A. It depends on the season. In summer you should leave some growth; in autumn you also should leave some growth in order that the grass will not be frosted too severely in winter.

Q. Is mob stocking an essential part of the system during the first three months of the lamb's life?

A. Mob stocking can not be carried out in full during the early part of the lamb's life. The lambs are usually not gathered in to a mob until after docking. That is about the middle of October.

A farmer. I am farming near Taihape where the area is cold and the grass can be cut back for a period up to six weeks in winter. The grass therefore has to be left to grow