

Mr. Wright, Country Analyst, reports as follows :—

The results obtained by running sheep on pasture that has been top-dressed with lime and phosphate mixed at the rate of 5 cwt. ground limestone and 2 cwt. of superphosphate per acre, have given further proof that lime is the limiting factor.

Previous experience with superphosphate straight and with basic superphosphate showed that the curing of the malnutrition troubles by means of the usual 2-2½ cwt. dressing of the above manures was not possible in one year. What the results would be had the pastures been regularly dressed as above for some time and then sheep put on to graze has not been determined, as none of the farmers have been top-dressing for a sufficiently long period and running sheep to enable one to get reliable information, and no farmer has been able to carry his sheep over successfully on a super or basic-super dressed pasture with a single application of the manure. The point is that, on the one hand, it is quite possible that with time and a sufficient number of top-dressings with super or basic super a healthy pasture might be obtained; but no farmer can afford to wait, when, on the other hand, with a top-dressing of lime and superphosphate in the proportion of 5 cwt. ground limestone and 2 cwt. superphosphate per acre the desired results can be obtained and the sheep kept healthy over the usually bad period. Four trials with the 5-2 mixture were made, but in only one case was a weighing-test conducted. It is not suggested that the 5-2 mixture is the cheapest or best. It was used in that strength because it was evident from the results from the use of basic superphosphate that there was not enough lime in the latter and it was decided to increase the lime content for a trial. It is now proposed to establish further experiments to determine the best and cheapest mixture. The key to the whole problem at Mairoa now is the production of lime at a lower cost. At present the cost of ground carbonate is 19s. per ton net, and the average cost of carting would be about £1 2s. 6d. per ton, and this would mean that the cost of the 5-2 top-dressing mixture would be about £1 3s. per acre, exclusive of the labour of spreading. It will also be determined, if possible, whether sheep can be kept healthy by periodically running them on the top-dressed pasture, and, if this is successful, it will mean, of course, that the area that will be required to be top-dressed will be limited, and the dressing of the whole of a farmer's property may then proceed as finance will allow.

If satisfactory arrangements could be made for the grinding of some of the millions of tons of limestone in the district so that it could be put on the farms at about £1 per ton, it would, of course, substantially reduce the cost per acre; and the settlers are endeavouring to have this done.

In the seventh experiment listed above the sheep were weighed at intervals between July, 1928, and February, 1929. In all, six weighings were made in this period. The results were as follows :—

	Average Gain in Weight. lb.	Average Weight of Wool shorn. lb.
Eleven sheep, mixed sexes from 5-2 lime-super top-dressed area	51·21	7·71
Ten ewes (control)	23·61	5·31

It was apparent from the weighings that the gain in weight was small in the summer. It has been observed that the sheep generally start to go back from November onwards, which seems to point to the generally known fact that in malnutrition areas the trouble increases as the feed gets away, and, in the above case it was not possible for the farmer to buy more stock to keep his pasture short. The average gain in weight has been quite satisfactory on the lime-and-super paddock, being more than double the gain in the control. The sheep have kept healthy, and certainly show their better treatment when compared with the control sheep. The average weight of wool from lime-and-super paddock (7·7 lb.) and from the control (5·5 lb.), a difference of 2·2 lb., or approximately a 40-per-cent. increase, is very satisfactory.

On another farm, about two miles away towards the south-west of the previous one, an area of 20 acres was top-dressed with 5-2 lime and super in June, 1928. This is hill country, and had previously been very unhealthy for sheep. The farmer has been milking cows, and the increase of ragwort is forcing him to change over to sheep. Unless country could be made healthy for the sheep, this man would have to abandon his farm after having felled the bush on it and improving it, mainly by his own efforts, after nearly twenty years of work. The sheep on this area were not weighed, as it was thought unnecessary, because formerly they could not be held.

The farmer's experience on this area had been most unfortunate. Four years ago, out of 162 rams reared on the place only 100 survived, forty-five of which were marketed in fair condition and fifty-five were culls. Since then the trouble has been accentuated, and sheep would commence to go off six weeks to two months after being placed on the farm. The ewes in these flocks rapidly grew thinner and wasted away.

On a paddock of 37 acres the back portion, of 20 acres, was top-dressed about June, 1928, with 5 cwt. lime and 2 cwt. super; 17 acres were unmanured. It was noticeable that the cows always passed over these 17 acres and grazed on the top-dressed area. Eighteen ewes and sixteen lambs have also grazed this top-dressed portion, not one of which have shown the slightest sign of trouble, the lambs being ready for killing at Christmas, giving weights ranging from 45 lb. to 53 lb. Clovers, rye-grass, and dogstail showed up readily after the top-dressing. So satisfied was the farmer with the results secured on this area that he has bought 30 tons of lime and 4 tons of super to extend the benefits to other portions of his farm.

On another farm, where the experimental paddock showed a lime requirement of 67 tons per acre, about 20 acres that had reverted to fern was top-dressed with the 5-2 lime-and-super mixture. The paddock has been stocked with cattle, and eight months after this treatment the fern was almost all dead, while the grass is looking healthy. On this farm last year thirty wethers were sold fat, while this year 130, which had grazed mostly on the top-dressed paddock, were sold at top prices.

On another farm, at Ngapaenga, with a lime deficiency of 9 to 10 tons per acre, six-year-old pasture which had previously been top-dressed with 3 cwt. super and kainit, but in which the grass was showing very poorly, with a large predominance of weeds, the result of an October, 1928, dressing of the 5-2