

# TOPDRESSING IN WAIKATO . . .

the mixture used was 3cwt. of superphosphate, 1cwt. of bonedust, and 2cwt. of lime per acre per year, plus 1cwt. of potash on the swamp-land. Throughout the rationing period lime and potash remained at this rate, while superphosphate was reduced to 1cwt. and lately has been slightly increased to 2cwt. per acre. Bonedust has not been available. In the early days topdressing was done with the grain drill pulled by horses; today a topdresser pulled by a tractor covers four times as great an area in an hour.

One paddock which was sown in 1916 remained down until 1946 when it was ploughed up, cropped, and re-sown. Most of the paddocks on the farm carry a first-class sward of perennial ryegrass, cocksfoot, and white clover, but a few have suffered from the effects of fertiliser rationing and are being ploughed up in turn and cropped with soft turnips and then put into the better types of recently developed Certified grass and clover strains.

The effects of lack of sufficient fertiliser throughout the war can be seen in the pasture deterioration and reduced production.

The farm is topdressed in autumn of each year, the hay paddocks getting an extra dressing in spring.

Mr. Roberts considers that a saturation point can be reached in the application of artificial manures, and that to get the most from them climatic conditions must be ideal, with good utilisation of the increased pasture growth.

## Utilisation

Rotational grazing is practised until January and from then on the cows are allowed free range. Topping of pastures is carried out when and where necessary. Cropping was not carried out after 1930, with the exception of a paddock of soft turnips which was sown when a run-out pasture was ploughed and before it was resown.

Cropping and resowing have been necessary in recent years through lack of fertiliser during the war and resultant loss of fertility and pasture deterioration. All surplus spring pasture growth is made into hay and silage, from 30 to 40 acres being shut up for hay and 10 acres for silage each year. A surplus of 1 year's requirements of hay and silage is always carried over as an insurance against drought and severe winters. The quality of the hay and silage made would be hard to

equal in the Waikato, and the method of covering haystacks is an example that could be followed by many. As Mr. Roberts points out, a considerable sum of money is spent by some farmers each year on fertiliser to give increased pasture production and then much of the excess spring growth is wasted because little or no hay and silage is made; if harvesting is carried out, it is done so late that much of the grass's value is lost. Often when quite good hay is made at least 40 per cent. of the stored hay is lost through shoddy methods of covering the stacks.

About 60 acres of pasture are shut up each autumn and this autumn-saved pasture is fed to the cows as soon as they calve in early spring, and provides good succulent feed at a time when pasture growth is very slow.

## Production

In 1910, when the area in grass was 80 acres, 30 grade Jersey cows were milked and produced 6000lb. of butterfat. In addition 40 head of dry stock were carried. By 1920 the area under grass had increased to 120 acres, the stock to 60 cows, and the production of butterfat to 15,000lb. The dry-stock position remained the same. The area under grass reached its maximum in 1930 and in this year cropping ceased. The stock had increased to 90 milking cows and 32 head of dry stock and the butterfat was up to 23,000lb. Production reached a peak 10 years later at the start of the war in 1939 when the area in pasture was the same as it was 10 years previously and no cropping was carried out. In this year 110 cows and 35 head of dry and replacement stock were carried, giving a production of 36,300lb. of butterfat. Since then, although the stocking was the same and the pasture was supplemented by 7 acres of turnips each year, production has slowly declined. The production in 1946 was down to 27,000lb. of butterfat from 110 dairy cows.

Between 1930 and 1939 on a similar area in grass the stock increased from 90 to 110 cows and butterfat production from 23,000lb. to 36,300lb. With the rationing of fertiliser the production has steadily declined and in 1944 was down as low as 25,000lb. of fat. With an increase in the fertiliser allocation the production increased to 27,000lb. of butterfat in 1946. Throughout this period the same number of replacement stock were carried, but in addition about 100 hoggets were fattened each autumn between 1942 and 1947.

## PRODUCTION ON MR. S. ROBERTS'S FARM OF 150 ACRES

Season	Area in grass (acres)	Area in crop (acres)	Area in hay and silage (acres)	Fertiliser and lime (cwt. per acre)			Dry stock carried		No. of cows milked	Butterfat (lb.)	Weather
				Phosphate	Potash	Lime	Sheep	Herd replacements			
1910	80	10	10	2	—	3	100	40	30	6,000	
1920	120	8	20	2½	—	4	100	40	60	15,000	
1925	130	6	25	3	—	4	100	30	75	18,000	
1930	140	6	25-10	3½	—	5	100	32	90	23,000	
1935	148	—	30-10	4	—	5	100	40	110	30,000	
1939	146	—	35-10	4	—	5	100	35	110	36,300	
1940	146	—	35-10	4	—	5	100	35	110	35,000	
1941	140	7	30	—	—	5	100	30	110	31,000	
*1942	140	7	40	—	—	3	100	35	110	24,000	Severe drought
1943	140	7	40	—	1½	3	100	18	110	27,000	Dry autumn
1944	140	7	40	—	1½	4	100	20	110	25,000	Very dry autumn
1945	140	8	40	—	2	4	100	25	110	25,000	Dry autumn
*1946	140	8	30-13	2	—	—	100	25	110	27,000	

\* Herd trouble.

## Summary

For the first 10 to 12 years in development of the Waikato the income of farmers was derived from the sale of fat stock in Auckland. For the next 20 years the English system of farming prevailed and the settlers carried out mixed farming, using artificial manures instead of farmyard manure. It was found that pastures put down following crops did very well largely because of the delayed action of the fertilisers, particularly bonedust, that were sown with the crops, and it soon became the practice to sow down grass seed with fertiliser too.

With the advent of refrigeration and the establishment of the Southdown freezing works and later those at Horotiu, as well as the opening of butter and cheese factories, the use of fertilisers for topdressing began. A one-man dairy and fat-lamb farm was now a commercial possibility and made possible the purchase of land by farm labourers.

The first topdressing was carried out about 40 years ago and with its introduction ploughing ceased, as pastures that previously had to be ploughed up after 4 years because they were run out could be held and improved with the use of artificial manures. It was then realised that topdressing as a general farm practice would enable high-class pastures to be produced on poor land. Pastures that previously carried a sward of sweet vernal, browntop, ratstail, and Yorkshire fog, with an almost complete absence of clovers, could, by topdressing, hold a pasture of perennial ryegrass, cocksfoot, and white clover.

Of the fertilisers used bonedust was most favoured until it became scarce and expensive. It was superseded by "Waikato mixture" of equal parts of bonedust, guano, and superphosphate. By 1920 superphosphate had come into its own. Today more attention is being paid to the use of minerals such as copper sulphate and cobalt.

Mechanisation has made the task of topdressing a relatively easy one on flat and rolling country. In the early days the work was done by hand from a bag round the neck, then came the use of the grain drill, and today there are many types of mechanical topdressers that have reduced the time and labour of topdressing to a minimum.

The effect of topdressing was to provide a veneer of fertility which nourished the shallow roots of the white clover plant and thus made the plant perennial on poor soil. Heavy stocking was made possible by autumn topdressing, which provided a flush of feed for winter. Today on soil that 40 years ago carried a very poor sward of native grasses with a low carrying capacity and poor production there is a first-class sward of the best of English grasses, with a carrying capacity and production in most cases at least 300 per cent. greater than it was on a corresponding area 40 years ago. Subdivision, shelter, and improved systems of pasture management have all played a big part, but in the Waikato at least it must be agreed that the major factor in the development of farm lands has been topdressing.