

# Overdrilling Pumice Pastures

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SOME of the disadvantages of having pastures with a high proportion of clovers were commented on in the April 1956 issue of the "Journal of Agriculture" by C. R. Taylor. In particular, this report pointed out that swards lacking ryegrass give poor yields of autumn-saved pasture and do not therefore provide their share of winter grazing. These pastures also lead to digestive disorders, the most serious of which is bloat.

FOR those readers not aware of the particular problems of newly sown pumice pastures some explanation may be necessary. Each year since the war thousands of acres of pumice scrub land have been burnt, cultivated, and sown with pasture mixtures. The natural fertility of the soil is very low and consequently grasses are not prominent in the young pastures. On the other hand, clovers make remarkable progress, and if amply supplied with phosphate, dominate the pastures for the first 5 or 6 years at least. The grasses which do survive are weakened further by the smothering effect of the strongly growing clovers.

As a result of the vigorous clover growth over a number of years the nitrogen status in the soil is built up to a stage where the grasses would respond to it if they were present. Too often, however, they are very poorly represented and so cannot assume their rightful place in a high-yielding pasture.

With these problems in view, and following a direct request from farmers in the Whakamaru district, the authors conducted a field day there on overdrilling grasses into the sward in the autumn of 1956. The demonstration was held on the dairy farm property of Mr. D. Tong, whose active co-operation is gratefully acknowledged. This article gives an account of the treatments used, the results obtained, and the conclusions derived from the sowings as judged from an inspection of the area 6 months later.



Some of the machines and spectators at the demonstration.

## Preliminary Considerations

It has been determined from numerous trials conducted by one of the authors that the successful establishment of seedlings following overdrilling or oversowing is dependent largely on the lack of competition from the plants already growing in the sward. As the latter are less competitive in autumn than in spring, and as previous trials had favoured autumn sowings, it was decided to hold the demonstration at Whakamaru on 6 March 1956, when soil conditions could be expected to be satisfactory.

Treatment of the area before sowing was designed to reduce the vigour and amount of the existing vegetation as much as possible, to assist the placement of seed and fertiliser in the soil, and ensure that the seedling growth had the minimum of competition. Unfortunately it was not possible to stock at the intensity desirable, with the result that clover competition did become a factor of importance after the seed was drilled. In a season of vigorous autumn growth hard grazing may often not be feasible on a large area,

particularly where dairy cows are the only stock available to eat it down. Consequently only the area which can be given this preliminary treatment should be overdrilled unless recourse is made to mechanical means of removal. Overdrilling without it is not likely to be satisfactory.

## Experimental Sowings

The methods of sowing are shown in the table below. Grass seed at 7lb. per acre was sown on all plots except the control plots. Serpentine superphosphate was applied, as detailed in the table, at 2cwt. per acre on all plots. The light cultivation treatment before seeding consisted of two strokes of weighted spike tine harrows, the aim being to reduce the white clover by about 50 per cent. The heavy cultivation before seeding was done with tandem disc harrows, followed by tine harrowing, and the vegetative cover was reduced by about 90 per cent. Each plot was given one stroke with the chain harrows after seeding. Control plots were spaced among the others for later comparisons.

### EXPERIMENTAL SOWINGS

Treatment No.	Method of seeding	Cultivation	Seed mixture	Fertiliser application
1.	Disc drill	Light	Short-rotation ryegrass	Drilled with seed
2.	Disc drill	Light	Perennial ryegrass	Drilled with seed
3.	Disc drill	Light	Short-rotation ryegrass perennial ryegrass	Drilled with seed
4.	Disc drill	Light	Cocksfoot	Drilled with seed
5.	Disc drill	Heavy	Short-rotation ryegrass	Drilled with seed
6.	Hoe coultter drill with "Blackmore" tips	Light	Short-rotation ryegrass	Drilled with seed
7.	Hoe coultter drill with "Blackmore" tips	None	Short-rotation ryegrass	Drilled with seed
8.	Australian sod-seeder	Light	Short-rotation ryegrass	Drilled with seed
9.	Australian sod-seeder	None	Short-rotation ryegrass	Drilled with seed
10.	"Wilson" tiller-seeder	Light	Short-rotation ryegrass	Broadcast
11.	"White" disc-seeder	Light	Short-rotation ryegrass	Drilled with seed
12.	Broadcast	Light	Short-rotation ryegrass	Broadcast
13.	Broadcast	None	Short-rotation ryegrass	Broadcast
14.	Control	None	None	Broadcast