

Marton Experimental Area.

The experiments on Sir James Wilson's land at Marton Junction were extended this year, and included liming experiments, rotation manurial experiments, summer-forage crops, fertility-improvement experiments, and pasture top-dressing experiments. The summer was, unfortunately, rather dry for determination of treatments, moisture being the controlling factor, but the data were carefully taken and recorded, and will be interpreted in conjunction with future results.

Christchurch Supervisorate.

Lucerne Demonstration Areas.—Negotiations were set on foot early in the year to secure from the Railway Department small areas of their reserves at suitable points along the main line southward from Christchurch, to be used as lucerne demonstration areas, with the following objectives: (1.) Demonstrating that lucerne could be grown successfully on the shingle plains of Canterbury. (2.) Being thus brought continually under the eyes of the travelling public, to stimulate interest and thus to bring about in a shorter time the universal recognition of the value of lucerne as forage and fodder. (3.) The carrying-capacity of the land being increased through lucerne-growing would mean that more stock would be carried on the railways, thus increasing the revenue of that Department. (4.) The railway reserves being planted with lucerne would be in a manner evergreen, and would thus be an assistance against fire spreading to adjoining lands from passing locomotives.

Three suitable areas have been secured from the Railway Department, on lease from year to year at a peppercorn rental, as follows: Between Templeton and Weedon's, 6 acres 2 roods 10 perches; near Bankside, 4 acres 2 roods 35 perches; near Ashburton, 2 acres 2 roods 20 perches.

The Templeton area has been ploughed and cultivated, to eradicate patches of twitch throughout it before sowing next spring.

The area at Bankside was fenced in by the Department with a rabbit-proof fence. The land was ploughed once, cultivated, limed at the rate of 1 ton crushed lime to the acre on the 5th December, 1917, and 300 lb. inoculated soil applied. Four acres were sown with lucerne, drilled in rows 21 in. apart, and seeded at the rate of 15 lb. per acre. About half an acre has not yet been sown, and arrangements are now about to be completed to utilize this portion for irrigation demonstrations, it being recognized that irrigation is highly necessary on such lands if lucerne is to be successfully grown. The Selwyn County Council has agreed to supply the necessary water, under the direction of their engineer, at a rental of £1 per annum. The necessary grading of the area for the purpose of irrigation will be carried out immediately, but the seed will not be sown before next spring. On the 4 acres already sown the lucerne has come away well, opportune showers of rain in its early stages of growth benefiting it immensely. The land on which the area is situated is recognized to be the poorest along the plains, and results are being keenly watched by the farming and commercial community.

The area near Ashburton has been fenced in by the Department. The land was ploughed, cultivated, and limed, and seed drilled in on the 14th December, 1917. The seeding was at the rate of 15 lb. per acre, and was drilled in rows 21 in. apart. The lucerne has come away very well. Adjoining the demonstration area on the railway reserve, and between it and the Main South Road, the Ashburton County Council has a reserve. Application was made to that body to have a portion of this included with the railway reserve area, and the County Council has now written agreeing to our use of this piece of land, 4 acres 3 roods 24 perches, on a peppercorn rental when required. The total acreage of the demonstration area, including the railway and county reserves fenced in by the Department near Ashburton, is therefore 7 acres 1 rood 24 perches. It is proposed to set aside an area for irrigation demonstrations, and an application for the use of water from one of the county races has been made to the Council. The area has been ploughed, but no lucerne will be sown until next spring.

The 4-acre departmental reserve at Darfield was also taken over to be used entirely as a lucerne demonstration area. A new ring-fence was erected. The land was ploughed and cultivated, and 1 ton of ground lime and 300 lb. inoculated soil was applied per acre, surface stones being removed preparatory to sowing. The lucerne was sown on the 13th December, 1917, as follows: $\frac{1}{4}$ acre devoted to a variety test of twelve varieties; $\frac{3}{4}$ acre in Hunter River lucerne; 3 acres in Marlborough lucerne. To date the lucerne has made good progress, and promises to be a satisfactory stand.

It should be noted that in the case of both the Bankside and the Ashburton areas the land prior to sowing was in its native state, and that the seed was sown on the first ploughing without any excessive cultivation—only sufficient to give a few inches of well-worked soil in which the seeds could germinate. In a like manner the area at Darfield was sown on the first furrow, but this land was not broken up from its native state like the others, having previously been ploughed up and laid down in pasture for some years. The practice of sowing on the first furrow, without the excessive cultivation usually advocated, has proved to give equally good results as land which has had a large amount of labour expended on it previous to sowing. The reason for this appears to be the rapid growth downwards of the tap-root of the lucerne-plant. In many investigations made this was found to be from 4 in. to 7 in. the first week, and up to 10 in. and 17 in. the second week. Another practice which years of experience has proved invaluable is being carried out on these demonstration areas—viz., deep cultivation between the rows when the plants are some months old. The stimulating effect of such cultivation is in marked contrast to stands where the top soil has been allowed to cake or the land become weedy.

Top-dressing Cocksfoot for Seed-production.—Two areas were selected in the Banks Peninsula district for experiments in top-dressing for cocksfoot-seed production, one on Mr. Thomas Thompson's farm, Little River, and the other on the farm of S. J. Vogan, Duvauchelles Bay. The results of the top-dressing were negative.

Co-operative Field Experiments in conjunction with County Councils.—The following experiments were initiated during the past year, having been agreed to in 1915-16: Wairewa County—Lucerne