FIELD DAY AT THE PROPERTY OF THE LATE MR H. M. GLAZEBROOK, WASHPOOL STATION, MARAEKAKAHO

Some 700 members and farmers attended the field day held on the property of the late Mr H. M. Glazebrook, Washpool Station, Maraekakaho. During a trip around the farm with stops at points of interest selected speakers gave short addresses.

MR G. M. GLAZEBROOK

Washpool Station is really a monument to my late father, as it was his industry and foresight that made it what it is today. When it was first acquired in 1912 it was part of the original Maraekakaho estate and was then five paddocks, covering in all about 3,600 acres, and wintering 5,000 wethers.

The farm comprises 4 different soil types. There are light free-draining flats, which are alluvial silt on shingle. This is very good hogget country. At the turn of the century it was extensively cropped for oats. Then there are heavier clay flats with a hard pan; these lie very wet in winter and dry out hard in summer. Then we have a large area of drained swamp country, which floods in winter and doesn't dry out in summer. The hill country is a well drained sandy loam, with limestone in parts.

By 1937 the farm had been divided into more than 60 paddocks, and was wintering 3.8 to 4 ewes per acre. We used to buy 5-year-old ewes, because 2 tooths got too fat.

In 1947 we changed to dry sheep, chiefly because of the difficulty of getting satisfactory casual labour for lambing time, and also because the relationship of the price of meat to wool made-it worth while. Another reason was the footrot problem, as about 1946 we seemed to have to footrot every sheep on the place.

We now run wethers, buying more or less all the year round, but the principal buying time is when the store wether hoggets come off colder and poorer country from about January on. About a quarter of the block is older wethers because the heavy summer country is too wet in the winter for wether hoggets. The number bought each year varies a good deal, and de-

pends entirely on the late autumn growth. The number wintered and shorn varies from about 6 to 9½ per acre.

The policy is to buy in the autumn and, if things turn out favourably, to buy more. We sell a certain number in the wool to butchers, and the rest go to the works from about October on. If feed is plentiful we buy 2-tooth wethers in spring and fatten them also.

To control summer pasture growth we buy 2 or 3-year-old steers from September on. We try to fatten them and get them to the works from March on before they start eating autumn feed we want for the hoggets.

Hogget losses average about 3 per cent. We keep them off the heavier country, and they don't suffer much from ill thrift. Putting them on the light hills first seems to save a lot of trouble.

Our principal menace to stock is autumn grass staggers. We usually experience it through trying to clean the country up bare for the early autumn growth. If we get good growing conditions after a dry autumn we may strike trouble with facial eczema.

Pizzle rot also can be a problem, particularly after a good winter, and black leg in spring, especially among the better sheep.

Topdressing was started somewhat indiscriminately in 1937, and we now put on 1 cwt. of superphosphate two years out of three. A ton of lime every five years seems to keep the pH at a reasonable level. I have used ammonium-nitrate lime to boost pastures shut up for grass seed with varying results-in dry conditions, no results at all.

In managing our pastures we aim to clean up the country, particularly the hills and light flats, before autumn rains. Some hay is cut, and some paddocks shut for grass seed. Sometimes on the heavier country up to 40 acres of peas are grown as a cash crop.

On the lighter flats pastures are predominantly perennial ryegrass, subterranean clover and "native parsley" or storksbill *(Erodium cicutarium)*. Storksbill comes away very quickly after the autumn rains and is about the best thing we've got for fattening hoggets.

On the heavier country, once swamp, the pastures are mainly perennial ryegrass and white clover, with strawberry clover in the wetter patches.

The dry hills have never been ploughed in my memory. They are principally subterranean clover, which has come in since we started topdressing, *Dan-*

thonia and ryegrass. On this country we lose the ryegrass in the dry summers, and if it wasn't for the *Danthonia* we would have bare ground. The *Danthonia* recovers rapidly after a rain. Our main concern is to keep the barley grass off the hills. Thistles (winged, variegated and nodding) are also a problem and we have sprayed them the last two seasons from the air. Spraying in late November seems to be successful.

We've gone in quite a lot for pasture renovation. The light flats, with underlying shingle, are worked up easily with discs, then seed and fertiliser is introduced with an ordinary hoe-type drill. The seed mixture used is 3 lb. of subterranean clover and 5 lb. of perennial ryegrass or H.1, and the winter carrying capacity is increased quite a lot.

On the heavier flats, which dry out hard *in.* the summer, the soil gets too hard for that method so we use a very heavy disc-type drill, pulled by a 45 h.p. tractor. We also use a pitch pole harrow and oversow after it. It is very hard to pull, but seems quite successful, as it lets the rain into the soil and allows sufficient moisture for germination of introduced grasses and clovers. *On* the heavier flats the general mixture for over-sowing is 5 lb. of cocksfoot, 2 lb. of white clover and 1 lb. of strawberry clover, plus some ryegrass. On the hills a general mixture of 2 or 3 lb. each of white and subterranean clovers is sown.

MR POHLEN

The soils on the rolling and hilly land of this farm belong to the low-rainfall group called yellow-grey earths. Related soils occur in other low-rainfall areas of New Zealand-on the east coast of the South Island, on the plains and downlands of Canterbury and Otago and in Marlborough, in the Manawatu-Wanganui coastal district, and in the southern part of the Wairarapa.

Here the soil is called Matapiro sandy loam, and it is formed on muddy sandstones which were laid down under the sea. The native vegetation was grasses. The topsoil is a dark grey-brown fairly deep sandy loam with rather weak structure. The subsoil is somewhat heavier and is a greyish-brown clay loam cemented to form a hardpan which tends to run out on the hills where its effects on drainage are less evident. The soil is fertile, is naturally low in phosphate, is well supplied with lime, and is only slightly acid. The rain-

fall is too low to leach the soil greatly under native grass vegetation, and I believe that under these conditions the silica and iron oxides released by weathering tend to combine and move down into the subsoil, cementing it to form the hardpan and giving the soil its characteristic colours. Iron oxides are partly responsible for good structures in soils and, as they move down, the topsoil becomes somewhat weak in structure while the clay also tends to move down into the subsoil.

The weak structure of the topsoil has an effect on its management: it needs to be cultivated when neither too wet nor too dry in order to obtain a good seed bed with relatively stable soil structure. As this cannot always be done in practice, rain sometimes causes the surface soil to pack down and seal with the result that poor strikes are obtained.

On these soils ryegrass is being grown near the lower limit of its rainfall range and at times ryegrass pastures are quite severely damaged by drought-for example, in 1946, when little measurable rain fell during the three months from January to March. In Australia, *Phalaris* pastures are used where the rainfall is too low for ryegrass and I have been interested in local experiments with *Phalaris* which may assist in solving some of our pasture problems, for example, on the drier hill slopes. Subterranean clover has already been introduced from Australia and now fills an essential role in pastures on the drier soils of the district.

The soils on the flats of this farm are of three different kinds. The low flats by the stream are on recent alluvium and have fertile river-flat soils-silt loams and clay loams-like the Heretaunga Plains, and when drained are among the most productive in the world. The flats bordering the hills are slightly higher and are somewhat older, and there the soil processes have been operating for sufficient time to produce a soil that is very closely related to the soils on the rolling land-it has a very hard pan that rings like a stone when hit with a hammer. Other flats near Ngaruroro River on the north-west are different again ; their soils have stony gravel subsoils and for the most part are very light and fluffy. They are formed on sediments containing volcanic ash brought down the river from the back country, and this ash is responsible for the light nature of the soils which belong to the group called yellow-brown loams.

Beyond the boundaries of the farm other soils of Mid Hawkes Bay can be seen. The low-rainfall soils

extend to the south (to Waipukurau). On the skyline, a little west of south, are soils from limestone, and below them soils from mudstone. To the south-west the rainfall increases to about 40 inches a year within a year within a distance of two or three miles-the soils become yellower, and their hardpan softer, and they belong to the group of humid soils called yellow-brown earths which are characteristic of southern Hawkes Bay and of much of New Zealand. The high 'country to the north-west is on the margin of the Central North Island volcanic belt, and there the soils are formed on pumice ejected from vents near Lake Taupo about 1700 years ago. These eruptions are thus more recent than the eruption of Vesuvius that overwhelmed Pompeii.

F. H. COLLIN

Barley grass is our No. 1 problem in Hawkes Bay, especially on soils where fertility is rising.' Once pastures open up in the dry summer barley grass comes in, These trials were laid down on May 27, with Dalapon at 2, 4 and 8 lb. and T.C.A. at 10, 15, and 20 lb. per acre applied in 80 gallons of water per acre.

As you can see there has been a considerable kill of barley grass with the T.C.A. Barley grass seedlings are still appearing, which means the seed germinates from the first autumn rains right through until late spring, so it is no wonder it is difficult to control with chemical sprays. Treatments just after the first autumn rains are quite effective, but a second spraying is necessary to kill seedlings germinating in May and that is not economic. We think the optimum time to spray is late May or early June.

Mr Matthews said that T.C.A. mixed with superphosphate would be ineffective. On one plot we mixed T.C.A. and superphosphate six hours before application, and on another they were mixed and stored three months before application. As you can see there has been good control of barley grass on both plots.

On this soil 10 lb. of T.C.A. per acre is the best rate of application, but 15 lb. T.C.A. in 80 gallons of water has also been very effective *in* trials in this district. We find 20 lb. T.C.A. is a little high, and there is too much mortality in the ryegrass and white clover.

C. J. HAMBLYN

I was asked to say something about the pastures of Hawkes Bay. Hawkes Bay, both from a climatic and a grassland point of view, is like Canterbury, in

that the early settlers found large areas in native pastures and were able to bring in their sheep and start farming right away.

There are two native grasses in Hawkes Bay which supply a terrific lot of grazing and don't get the credit which is due to them. These are ***Danthonia*** and rice grass *(Microlaena* ***stipoides).*** I would like to see our grassland research workers doing something to make our ***Danthonia*** more productive. After two or three months without rain it is the only grass on this hill country which is supplying any feed. Rice grass is rather more important in Poverty Bay then here. Both these grasses produce more under topdressing, and are more palatable.

Outside this dry belt we have big areas developed from bush, where browntop is our major grass. Browntop with clover and topdressing can play a very big part in increasing carrying capacity long before we get to the stage of ryegrass dominance, with all its attendant management problems. I like ryegrass where ryegrass does well, and where we can manage it well, but I think ***Danthonia,*** browntop and rice grass with clovers are doing a great -job for us on the hill country, and with improved strains could do a lot better.

MR BLACKMORE

My main object 'in talking to you now is to let you have a look at an overdrilling machine, so that tomorrow you will be familiar with what I'm talking about. Overdrilling has very definite advantages over oversowing, in that it ensures, a better germination and a more even strike. By making a cut in the surface the seed is placed in a better position to make use of the available moisture. Also the fertiliser is placed right where it is needed, which is particularly important when overdrilling clovers. Overdrilling also appeals because of its simplicity and low operation costs.

There are two basic methods of overdrilling—using the disc principle and the hoe coulter principle.

It is vitally important to choose the right time. The competition of the existing pasture species to the developing seedlings is least in autumn. The area should be grazed as hard as possible to reduce the competitive effect of the pasture.

The best treatment for grasses, and particularly H.1., is to shut them up after overdrilling for six weeks to two months in order to allow them to estab-

lish. Unless a grass can establish itself in this period the chances of it playing an important part in the pasture are greatly reduced

The types of pastures to overdrill:-We have had success with overdrilling grasses, particularly H.1., into clover-dominant pastures. Second, after a drought grasses and clovers can be re-introduced where they have died out. Third, introducing clovers into more or less cloverless undeveloped country, like the tussock country.

When considering overdrilling the important thing is to find out the reason for the initial pasture deterioration and remedy it. Was it due to poor methods of pasture establishment, poor grazing management, bad drainage, grass grub. attack, lack of sufficient fertilisers or lime, or were merely temporary species sown? Unless these conditions are altered overdrilling is only a palliative.

DR. P. D. SEARS

I have been asked to comment on the pasture problems of the district. The main thing. that strikes me about this farm is the great variation in soil type. I should like to congratulate Mr Glazebrook on the manner in which he has developed his farming system to maintain a balance between the management of his dry hill country and his wetter flat country. With such a large property and such a variation in climate this is a most difficult business. The big problem on the flats is the silica pan. If it could be broken or dissolved he could grow lucerne. On the hills Mr Glazebrook is maintaining a very nice balance between ***Danthonia*** and perennial ryegrass. If the perennial ryegrass is encouraged too much by topdressing it can lead to a very open sward in summer, with much weed invasion. The ***Danthonia*** is also very valuable in a facial eczema year.

Mr Glazebrook's grazing management differs from the mobstocking system Mr Hamblyn was advocating in his paper yesterday morning. He has found fairly continuous grazing and never letting the sward get too long works the best. I agree with Mr Hamblyn that plant breeders should devote some attention to the breeding of a more productive ***Danthonia.***

DR. FILMER

I should like to thank Mr Glazebrook for the extremely interesting afternoon we have had here.

Listening to Mr Glazebrook one gets the impression that everything is delightfully simple, but we all know it is not nearly as simple as that. Just think of buying 10,000 lambs and letting them loose on this country, and coming through with only 3 per cent. losses each year. It must be a result, not only of talking to the grassland scientists and learning what they have 'to say, but also of a lifetime of very keen observation. We must congratulate Mr Glazebrook for the excellent job he has done, and on your behalf I do thank him very heartily.