

WAR-TIME MANURING PROBLEMS

Your Ration Is Small So Use It Judiciously And Get Maximum Results

SOIL fertility is the real capital of every farm. It is this that the farmer sells off his property in the form of produce, be it milk, meat, wool or crops. Maintenance of soil fertility and its enhancement by fertilising materials is the central core of good farming. In New Zealand large areas of our lands are not intrinsically rich in plant foods and to a very marked

but firstly let me say a few words on the present fertiliser position.

The Fertiliser Position In Essence.

TODAY the average farmer is faced with the situation that during the next 12 months he can obtain less than one third the tonnage of fertiliser he used for the two years 1939-40. The range of fertilisers is also now quite limited. Such phosphatic manures as basic slag, Seychelles guano, and North African phosphates are now not available, while potassic and nitrogenous fertilisers are restricted for special purposes. Superphosphate and modified super in the form of Serpentine super or basic or reverted super must now be the basis of farm manuring. This has simplified the fertiliser problem since there is a strict limit to the quantity and type of fertiliser to be used. The main question to be considered by each farmer is how best to use the limited fertiliser available, and this is far from a simple one to answer. So many factors have to be duly weighed and these in terms of conditions of each farm.

The actual quantity of phosphate (expressed in terms of superphosphate) that can be applied per acre for each crop is determined under the rationing plan and is as follows:—Carrots 2cwt; maize 2 cwt; wheat 1 cwt; other cereals (barley, oats, millet etc.), 1 cwt; chow moellier 1½ cwt; hops 4

cwt; linen flax and linseed 1½ cwt; mangolds 1½ cwt; new grass 1 cwt; new lucerne 1 cwt; pumpkins 1½ cwt; rape and kale 1 cwt; turnips and swedes, ridged 1½ cwt., sown on flat 1 cwt.

Comments on Crop Manuring.

THE most effective way of manuring crops is to sow the fertiliser with the seed in the case of drilled crops. For cruciferous crops, turnips, rape, swedes, kale and chow moellier, a reverted super or serpentine super should

carting and distribution. The serpentine super type of fertiliser will not draw on lime supplies in the soil as would straight super. For fields of poorer fertility additional blood and bone can be used.

On bush areas a cobaltised fertiliser should be used. If the quantity of fertiliser is insufficient for a good coverage of the grazing areas, a mixture of cobalt and lime can be applied. Licks containing cobalt can be used but they are not so effective as cobaltised fertiliser applied to the pasture.

The Time to Apply Fertiliser.

PROBABLY too little attention has been paid to the time of application in pasturing manuring. Experience has shown that for maximum effect fertiliser is best applied when plants show some growth and not in the

By

"Observer"

degree the high productivity of our farms is dependent on the induced fertility of fertilisers and stock droppings, combined with favourable climatic conditions. Of 66,000,000 acres in this Dominion, possibly not more than 1,000,000 can be classed as naturally rich soil. This emphasises the important part that fertilisers play in our farm economy, and the serious lessened tonnage of manures now available. It means too that at this critical time farmers would do well to fully consider making the best use of (a) the limited fertiliser tonnage available, (b) natural soil fertility and (c) fertility agents on the farm. These notes are prepared as a guide,

The "Exporter" Will Pay You For Your Ideas.

This article by "Observer" opens up the whole question of war-time manuring in New Zealand, and the ways in which the fertiliser ration can best be used under the widely differing conditions that occur in the dairy industry. We believe that many practical farmers have given a lot of thought to this and will have ideas that would be useful to others. The "Exporter" will pay a minimum of a guinea for each of the five best letters received from farmers telling how they have solved their own war-time manuring problem, and will pay liberally for any others used. Names and addresses will not be published where farmers desire to remain anonymous. Address letters to The Editor, "Dairy Exporter," P.O. Box 1001, Wellington.

be used to prevent germination injury. Where brown heart is prevalent a borated super should be used. Broad casting prior to sowing seed is not so effective, especially where, as now, small quantities per acre are used.

In hand sown crops it would be well to try and sow the fertiliser in bands on either side of the seed in the row and at the same level. Extensive tests in America have proved that this gives the best results on most crops. If the fertiliser is well mixed with the soil more of the phosphate is "fixed" by the soil and less is available for the crop. Available farmyard manures can be applied to such crops as mangolds, potatoes, carrots etc. ploughed or worked into the land prior to seeding. The use of land in good heart such as night paddocks, stock holding paddocks, etc. will give bigger crops. Good preparatory cultivation will help in a measure to make up for a part of smaller fertiliser dressings. Keeping crops clean by inter-cultivation will minimise competition of weeds for plant nutrients wanted for the crops. Disease control will mean bigger crops harvested per acre.

Guiding Principles of Grassland Manuring.

THE limited tonnage of fertilisers available for grassland presents each farmer with a more complex problem than that of crop manuring. For a number of reasons each farmer's problem will vary with:—(1) the type of soil (2) the state of its fertility, (3) the type of farming and (4) the amount of labour available. It is therefore possible to present only guiding principles that experience indicates should be followed.

The type of fertiliser to use has been largely decided for you. For grassland manuring, reverted super or serpentine super is indicated especially as liming may become limited, by transport and labour available for

dormant season. Fertilisers applied in the dead of winter are less effective than if used in Autumn or spring especially those of the super type. If put in soil when plants are dormant the fixation of phosphate by the soil can proceed more completely, and before the plants can get their share of the nutrients. Fortunately fertiliser like serpentine super can be stored indefinitely without its setting or injuring the bag. Because of this it should be possible to apply it at the most suitable time, even though labour is scarce. This was difficult in the past where large acreages had to be covered, especially by hand top-dressing. The above remarks refer to general grassland manuring, but for ensilage and hay crops the fertiliser can most suitably be applied just before closing the pastures from the stock.

Place and Quantity of Application.

THE problem of just what areas should receive the limited quantities of fertiliser and in what amounts per acre, is a most difficult one, and probably the most important under today's conditions. It is quite possible to apply one's ration of fertiliser so that it can be very ineffective.

Whilst the type of farming must be considered, what is still more important is the class of soil, and its condition. Of course on most areas this varies over any one farm. Nevertheless there are certain points that can be borne in mind. Two important ones being: (a) That on farms or portions of them that are naturally fertile or have been well manured and stocked, a relatively small dressing of fertiliser per acre can be applied with effect; (b) That on newly broken in land and particularly on types where phosphate fixation is high and where only limited manuring has been carried out, a small dressing per acre is not advisable. In such conditions the

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soil will tend to absorb nearly all the fertiliser ingredients applied, leaving little for the young plants. Under such conditions it is certainly advisable to select some paddocks, possibly with a good pasture cover and those with a stock utilisation, and to apply 2 or 3 cwt. per acre on these, leaving the remainder of the farm unmanured.

There are some advocates for a form of strip manuring, that is, applying 2 or 3 cwt. per acre on portions of paddocks instead of all over a small area. It is not easy to apply small dressings of say 1 cwt. per acre by hand or drill. One method is to add an equivalent quantity of lime to get even distribution, but this means extra labour.

Proper Grazing is Important.

SINCE phosphate, possibly with some lime additions, will be practically the only type of fertiliser used, it is essential to apply it to fields with a substantial amount of clover in the sward. It is the clover that is mainly stimulated by phosphate and lime, and it in turn helps grass growth by the nitrogen it collects in its root nodules. There is little justification for top dressing thin swards skimpy in clover. The plough is the best treatment here this is possible and practicable. Harrowing to tear up any surface is advisable, and chain harrowing to spread dung. Moderate grazing prior to top dressing is helpful allowing fertiliser to get on to the ground surface, but a pasture too close to the ground is relatively slow in its response.

Certain leaf growth assists plants

to utilise more quickly plant nutrients in or applied to the soil. A judicious system of rotational grazing by stock is important in getting the best from pasture. It should be remembered too, that hay and ensilage are relatively exhausting crops and manuring before and after their harvesting is indicated.

Utilising Present Soil Fertility.

ON MOST farms, particularly those devoted to dairying and fat lamb production, where top dressing has been consistently carried out, there is a reserve of fertility in the soil. Possibly up to 80% of phosphates applied are still in the first few ins of the surface of grass lands, since phosphate does not leach from most soils. Unfortunately it is not very available to pasture plants at present growing on most areas. A most important question today is how to make this inactive fertility function in farm production. Here are a few suggestions. The ploughing, cultivation of such areas and re-seeding to grass will be a most effective way of using some of this fertility.

This has been proved on even poorer soils in the plough-up campaign in Britain. By this method some of the unavailable phosphate becomes available, especially if lime is used at the time of sowing down. Good young pasture has a high stock carrying capacity which is important today. Other crops grown will also use the natural fertility, especially as certain crops such as turnips and swedes can use some of the phosphate not very available to grasses and clovers. Of course the shortage of labour, of implements, of horses and tractors and

their drivers on many farms will, I know, prevent much ploughing of grass land, but even small areas will help in the feeding of stock when fertilisers are scarce.

Weed growth too is a problem in some areas. However, this stored fertility from fertiliser application and stock droppings can be cashed-in if the plough is used, and each farmer must size up his own needs and his ability to do this. Possibly in the future we will see an increase in the contract method of ploughing and crop production so that small areas on farms can be cheaply cropped without each farm having to keep a full unit of power and implements. Such a method too, could function in the harvesting of hay—a commodity all too short for stock feeding on many New Zealand farms.

Using Natural Manures on the Farm.

Our system of all the year outdoor grazing means that only a minimum of farmyard manure is saved on farms. In the past far too much of this limited tonnage has not been utilised on most N.Z. farms. The manure has been exposed to the weather and much of its value lost. Only on a few farms has the urine from cow sheds been saved. Urine has a particular value especially on farms where there is a deficiency of potash and is also valuable for its nitrogen content, to get early grass, and for ensilage and hay paddocks. Stock manure is not so suitable for spreading on grazing pasture except on paddocks prior to being closed for hay, or those to be

ploughed-up for re-seeding or cropping. It can be most useful, however, for the small areas of mangolds and other roots and for forage crops grown supplementary to pasture. Where possible farmyard manure should be saved under cover and on dairy farms it can be utilised in the form of liquid manure. A dairy cow produces 8 to 10 tons of manure per year, and if most of that goes back into the soil in the proper way quite useful amounts of fertilising ingredients are made available.

Soil fertility is the stock in trade of each farm. What is already there should be wisely used and ploughing and cropping will cash some of it from the soil bank. The stock manures should be kept away from weather if possible, and should be judiciously used. Artificial fertilisers and lime should be applied in such a way as to get their full benefit today, not too thinly on new soils and on those in areas where little has been used, but thinly on soil in a good state of fertility from consistent previous manuring and relatively heavy stocking.

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