

ble hurdles. Put movable racks in this inclosure, cut the tares and feed in the racks as required. Move the racks from time to time as occasion may call for it. In this way the crop that grew on all the area thus sown to tares will be returned to the soil in the form of excellent manure.

Cultivate the portion of the field not sown with tares after it has been plowed, as occasion may require until the middle of June. Secure a fine pulverization and sow the Dwarf Essex rape broadcast or in drills. If wanted for a cleaning crop it should be sown in drills and cultivated. As soon as the tares are all used, the rape crop will be ready to pasture. The sheep may feed upon it at large.

After the first lot of tares has been fed, the ground may be at once plowed and sown to rape in drills, and so with the second lot. When the sheep have eaten off the first sown rape, then they may eat the last sown. When the sheep are feeding upon the tares, they should be inclosed in the hurdles at night only and at each end of the day while the sun is not hot. They should be removed to a shady pasture daily when the sun waxes warm. When feeding upon the rape, they may remain upon it day and night, but it is all the better at the same time to have access to a grass paddock. Probably twice as much manure would be necessary on the part of the field first sown to rape, as the tares gather large quantities of nitrogen from the air. This the rape cannot do. A field thus treated should be in good condition for growing any ordinary crop that would follow. But this plan will apply only to soils that will grow rape well. The character of the soil is not given.

The process of enrichment with the next 10 acres would be further enhanced by commencing in August. The field might then be sowed to rye, and pastured by sheep in fall and spring until time to plow for the aforementioned crops. It would provide more even enrichment to devote one field entirely to growing tares and one to growing rape. The one which grew the tares could better do without barnyard manure than the other.

Great care should be exercised in securing the Dwarf Essex rape seed. Last year the major portion of the rape seed sown on this continent was not true to name. To protect our farmers in this neighborhood as far as we can, we are testing the stock of seed laid in by our Guelph seedsmen. The spurious kind sown last year blossomed in two months after the seed was sown, whereas the Dwarf Essex does not blossom the same season. Nearly all writers who referred to it called it the "Bird Seed" variety, which is a mistake. It was a larger kind, but its feeding value was not nearly equal to that of the Dwarf Essex.

Ontario Ag'l Exp. Station.

[PROF.] THOS. SHAW.

Tree-Culture & Horticulture.

The encouragement of Fruit-growing

CIRCULAR ADDRESSED TO MM. THE MEMBERS OF THE LEGISLATURE.

Department of Agriculture and Colonisation.

Quebec, February, 1893.

SIR,

It is the intention of the Department to encourage as much as possible the cultivation of fruit-trees in the province.

Sir Charles Tupper, the High Commissioner of Canada, in London, has invited the attention of Canadians to the importance of the imports of apples and other fruits into England; and at the same time he attracts our notice to the fact that if we want to sell our apples in that country, we must make up our minds to grow the best sorts and those that are suited to the English market. Our exports of apples have already attained a pretty high figure, as last year we exported \$1,389,714.00 worth. In his report the High Commissioner mentions the industry of canned fruits, saying that we already supply England with part of her consumption of these, and incites us to develop this trade still more, as he believes it would be highly remunerative to many of our farmers.

The cultivation of fruit, in fact, has become a source of pretty considerable revenues to many inhabitants of this province, and convinced as I am that I ought to aid the development of this branch of Agriculture, I desire to diffuse a taste for fruit-tree planting.

I conferred with the nurserymen this autumn, and told them that I should need a certain number of fruit-trees for planting next spring. These trees will be assorted, and will comprise at least 20 specimens, the nurseryman will either go himself to set them out, or send an efficient substitute.

The trees will be delivered gratis at the house, but in only one place in your county, which place, as well as the name of the person who will undertake the care of the plantation, I beg you to state to the Department. It would be better that they should be all planted on the same property, in as central a spot as possible, and entrusted to one who understands their care; and that person must, from time to time, report on the growth of the trees and on the results produced. Instructions will be given him about the management of the trees. He must acquaint us beforehand with the nature of the soil on which the plantation is to be made.

I may be able to increase the number of the trees, but will depend upon my resources, and upon what I can get from the Ottawa experiment-farm. At any rate, I can ensure there not being fewer than 20 trees, including apple trees, plum-trees, &c.

I have the honour to be, Sir,

Your obedient servant,

LOUIS BEAUBIEN,

Commissioner of Agriculture and Colonisation.

(From the French.)

Manures.

A correspondent asks several questions about the proper way to use "phosphates" (see p. 95). Of course he means fertilisers in general. We will reply to his inquiries with pleasure.

And first, we divide the "chemical manures," as our friends in France call all fertilisers, into three classes: 1. those containing phosphoric acid, like bone-meal, superphosphate, Carolina-rock, basic-slag, &c.; 2. those containing nitrogen, as nitrate of soda; sulphate of ammonia, &c.; 3. those containing potash, as wood-ash, kainit &c.

In the second place, the question arises, to what kind of crops are we going to apply the fertilisers? The usual crops grown on the farm are of four kinds: grain crops, roots and other hoed-crops, grasses, including the clo-

vers, and green-meats, including maize or Indian corn.

For GRAIN CROPS.—The usual dressing for these is superphosphate and either nitrate of soda or sulphate of ammonia. The superphosphate and sulphate of ammonia may be mixed and sown broadcast before sowing the grain, and covered by the harrows; or they may be broadcasted after the grain is up. We prefer the former plan.

The nitrate of soda, a far more soluble fertiliser than the sulphate of ammonia, should never be sown before the grain is well above ground; the better plan is, in early seasons, to sow it at twice, with an interval of ten days between the sowings. In this case the superphosphate should be sown as above and covered with the harrows. 250 lbs. of superphosphate and 100 lbs. of nitrate of soda, or 80 lbs. of sulphate of ammonia, will be sufficient on fairly well farmed land.

ROOTS AND OTHER HOED-CROPS.—These may be divided into turnips and swedes, mangels and sugar-beets, carrots, parsnips, and potatoes, with maize for ripening.

Turnips and swedes demand phosphoric acid, in the forms we saw above; as these and mangels are, here at least invariably sown on the drill with at least some portion of farmyard-dung, the best way of using the fertilisers is to sow them with the manure drill, after the drills have been split over the dung. One great object of using the highly soluble superphosphate of lime for these two plants is to push them out of the fly's way as soon as possible; and as the manure-drill sows the fertiliser and then interposes a shallow layer of earth between it and the seed, before the latter falls from the seed-conter, it is clearly as nearly perfect as can be. But, in the absence of this implement, to get the seed and manure into as close juxtaposition as possible, we have practised the following plan: a single horse is yoked to a rather stout pole about 8 feet long, which is drawn along over the drills after the dung is spread and the artificials sown across the drills; the drills are then split, rolled, and the seed sown with the ordinary seed-barrow. With a fair allowance of farmyard-dung, 300 lbs. of superphosphate (containing 15 o/o of phosphoric acid, which is always the quality we speak of here and elsewhere) should be sufficient for an acre. An addition of 80 or 100 lbs. of nitrate of soda or sulphate of ammonia may possibly increase the crop, but at the expense of quality in the case of white turnips; which are none the better for being large.

Mangels persistently ask for nitrogen. An experience of more than forty years induces us to say that no man who aims at a really full crop of mangels should fail to use nitrogenous manures at the rate of 40 lbs of nitrogen to the acre. This would require about 200 lbs. of sulphate of ammonia or 250 lbs. of nitrate of soda. The sulphate of ammonia should be sown as recommended for sowing the superphosphate on the drills for turnips and swedes; but the nitrate of soda should be scattered over the young plants immediately after the first hand hoeing or singling. The dose of fertilisers mentioned of course is in addition to the usual dose of dung.

SUGAR-BEETS.—We never grew any, but from all the practical men engaged in growing beets for the factories, we hear the same story: to get the best quality of roots for sugar, no farmyard dung should be used immediately for this crop, but that the previous crop should be heavily manured, and a dressing of the following mixture applied for the beet-crop:

200 lbs. of sulphate of ammonia;
400 lbs. of superphosphate;
160 lbs. of nitrate of soda;
100 lbs. of sulphate of potash, or 200 lbs. of kainit;
300 lbs. of land-plaster.

The sugar-beet, in Europe, is almost invariably drilled in on the flat, so the manures should be harrowed in just before drilling, except the nitrate of soda, which, as usual, should be sown on the plants after the first hoeing.

As we never found potash do any good in this country for any crop—not even for potatoes—we do not care to recommend its use. The sulphate of lime, or as it is called here, land-plaster, is always used abroad in the calcined state, which renders it much more soluble.

Carrots and parsnips, as far as our experience goes, seem to have no special desire for any artificial manures; at least, we have never found any one who had used them for these crops. Good seed, well soaked and just sprouted, good preparation of the land, and careful singling; if these points are attended to, and a fair dressing of dung applied, the yield is generally satisfactory.

Maize, like grain-crops in general, requires nitrogen and phosphoric acid. Three cwt. of superphosphate and 100 lbs. of sulphate of ammonia or 130 lbs. of nitrate of soda, added to a heavy dressing of dung, will, with good cultivation and plenty of hoeing, seldom fail to produce a crop—in favourable season. Harrow in the sulphate of ammonia, and sow the nitrate of soda, along the rows of corn when it is about 6 inches high.

POTATOES.—Some deny that nitrogen is beneficial to potatoes, but the universal use of it in England and Scotland contradicts their assertion. Potash, on light soils long under the plough, but seldom visited by the dung-cart, may possibly be of use to this plant; in which case, it, in the form of kainit, at the rate of 400 lbs. to the acre, or wood ashes, at the rate of 30 bushels of hard-wood-ash, should be spread either in the fall, in places where there is no fear of their being washed away by the spring-thaws, or at the very earliest opportunity in the spring. Potash, in every form, is very refractory: it will not readily become soluble; but the phosphoric acid contained in wood-ash must always be useful. Besides dung in abundance, 200 lbs. of sulphate of ammonia or its equivalent of nitrate of soda, will not be wasted on this greedy feeder.

GREEN-MEAT CROPS.—Hungarian grass and silago-corn, are consumed in the immature state. What is wanted for luxuriant production of such is a good supply of nitrogen; so 100 lbs. of sulphate of ammonia or 130 lbs. of nitrate of soda, used as above, will do for them. If the corn is to nearly ripen before cutting, 200 lbs. of superphosphate may be added.

The finest crop of vetches or tares we ever grew was treated to 3 cwt. (gross) of the best Peruvian guano; this was in 1-52, when guano contained 14 o/o of nitrogen, beside some 5 o/o of potash and 25 o/o of phosphoric acid. The crop was, before it went down, about 3½ feet high, and the small piece of it that was required for the daily supply of 11 horses, 25 head of cattle, and a lot of pigs, was curious to see. The moderns, Villo and others, will not hear of nitrogen being demanded by this crop. Well, brazen-faced boldness as it may seem to be, we prefer our own experience to their theory, and we should apply to an acre of tares, to be cut in bloom, 200 lbs. of sulphate ammonia, or 260