

CHEMICAL ANALYSIS OF BRITISH COLUMBIA SOILS.

"CENTRAL EXPERIMENTAL FARM,

"OTTAWA, December 29th, 1900.

"W. J. Brandrith, Esq.,

"Secretary, B. C. Fruit Growers' Association,

"New Westminster, B. C.

"SIR,—Enclosed I have the pleasure of sending you a transcript of that part of my forthcoming report which deals with the examination of the soils you forwarded in February last. It should have been in the form of a special report to your Association, but unfortunately there is not time to re-model it. This, however, will make no material difference, as all the results, deduction therefrom, and my suggestions are given in the enclosed report.

"I trust you will have a very successful meeting and that the soil report may serve to start a useful discussion.

"Please convey my greetings to your members.

"Yours faithfully,

"FRANK T. SHUTT,

"Chemist, Experimental Farm."

ANALYSIS AND REPORT.

No. 1. This soil has all the appearance of a light, sandy loam. It contains a considerable amount of gravel and small pebbles, as well as of undecomposed root fibre. Tested with litmus paper, it gives a strong acid reaction. After preparation, the fine earth (which in the air-dried condition is of a greyish red colour) was submitted to analysis.

Nos. 2 and 3 were light grey in colour. They consist of firmly cemented masses, chiefly of sand, with pebbles intermixed. To the eye there is no indication in either of them of humus, and they have the appearance of being exceeding poor and refractory.

No. 1. SURFACE SOIL.

The chief constituents to consider are potash, phosphoric acid, nitrogen and lime. Our previous work on Canadian soils would show that good examples from uncultivated areas will, as a rule, contain from .25 to .50 per cent. potash, from .15 to .25 per cent. phosphoric acid, from .15 to .20 per cent. nitrogen, and from .5 per cent. upwards of lime. Many of our richer soils have given numbers far larger, but these may fairly represent the limits exhibited by soils of good medium quality. The amounts of potash, phosphoric acid and lime designated in the table as available, are those obtained by digesting the soil with one per cent. solution of citric acid in the cold. English results seem to justify the assumption that less than .01 per cent. of phosphoric acid so obtained indicate the soil's need of a phosphate manure. With regard to the available potash, Dr. Dyer, who showed that the acidity of root sap was approximately equal to the afore-mentioned solvent, says that when such potash falls below .005 per cent., potash fertilizers would prove valuable. Judged by these standards, we are obliged to confess this soil as considerably below the average in all its important elements save, perhaps, in available potash.

HUMUS AND NITROGEN.

It is extremely doubtful if commercial fertilizers could be used profitably on this soil unless supplemented, or rather preceded, by organic manures. When the store of humus has been increased the soil will be more retentive of and responsive to such plant food as is supplied in commercial fertilizers, and it will be warmer and furnish a more comfortable medium for seed germination and root extension. Barnyard manure, naturally, stands first in importance as a source of soil humus; it would be difficult to overestimate the value of this manure for soils such as we are discussing. Not only for its organic matter, however, is it to be recommended; as a source of nitrogen and considerable amounts of mineral matter in a more or less available condition it has a distinct value.

Unfortunately, in the majority of cases, especially where there is a considerable area tilled, there is not a sufficiency of manure, and it then becomes of the highest importance to know what can be most economically used as a substitute. Where swamp muck occurs, this material may be utilized, first being piled and allowed to dry out and then fermented, as in the compost

heap, either as an absorber of a double portion of water, or else he lost air-dried manure, cent. nitrogen.

Possibly the turning manuring, and methods of especially wintering may not be ever, in this or rye may be that a dress much help nitrogen ungerms that of the air.

The acidity of plant food is not wise to or wash down bushels per at greater than that i (usually 12

Shallow to the surface owing to its possible in the value, but in For further is referred to

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Of the from the o a high place in its preparation to 15 per cent. phosphoric elements germinate of

We may applied to with success warm, well 100 lbs. of