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Agriculture.

New Ideas in Fertilizing.

EDITOR CANADA FARMER.—Artificial manures have of late become very common, and their uses in most cases have been attended with tolerable success. From the difficulty, however, experienced by the ordinary farmer, either to judge for himself, or to obtain definite information from other sources as to the constituent elements of his land, or the crops produced by it, experiments in the way of detailed or minute fertilizing have always been, and indeed are still to a considerable extent lotteries. Of course certain general truths have been demonstrated and become fixed through repeated experiments, such, for instance, as that beneficial results will follow the application of one kind of manure to potatoes, another to the grasses, and so on. Research has been carried even further, and the theory promulgated that, as certain crops extract certain elements from the soil, these elements must again be returned to the soil, if its strength would be conserved. But beyond these general truisms, now patent to every intelligent agriculturist, the main difficulty yet remained. A crop of turnips, for instance, sown upon A's farm, turned out excellently, while the same quality of seed sown by B, and treated in every respect precisely like A's, proved a comparative failure. What was the reason? Might we not give similar instances in every department of vegetation, and end them in each case with the same query. Now evidently in the supposed case cited, the difference in yield must have arisen from a difference in soil. But here the difficulty again meets us. What was that special difference, and what means has A or B of ascertaining it?—which must force upon every thinking person the conclusion that a knowledge of practical chemistry is absolutely indispensable to the farmer, whose labors would always be crowned with success. It is to the progress made in this direction and to chemical experiments in Great Britain and America that we are mainly indebted for the strides of agriculture even within the past twenty years. All our artificial manures have sprung from chemical research, and in them we have a world of wealth. The agriculturist should be able to analyse his soil and discover in what element, if any, it is deficient. He should be acquainted with the chemical analysis of all kinds of crops and manures, natural and artificial, and thus be enabled to judge not only how and where to sow, but also what special fertilizers, and what quantity of each will ensure success. It is quite possible that a field which grows an enormous crop of oats this season, will do nothing of the kind three years hence, even with the same treatment. Two years ago a field may have contained a decided excess of lime; to day it may be quite deficient in that element. How is the farmer to know it? True, he may guess at it, supply the needful element, and be successful; but after all it is only guess-work with him, and moreover, he is never sure whether or not he is supplying the proper quantity. A few pounds more per acre of his fertilizer might have increased his crop twenty-five per cent.; a few pounds less might have had no appreciable effect whatever. And, worse than all, he might guess wrongly, in which case both his labor and manure would be comparatively lost. It was evidently such views as these that weighed with agricultural chemists the world over, when within a comparatively brief period back, they turned their attention to a more direct and minute method of applying their art in the various departments of vegetation. Professor Stockbridge, of the Massachusetts Agricultural College, appears of late to have taken a new lead in this movement, and if his investigations prove in all cases as successful as the few experiments he has already tried, he shall certainly have conferred a boon on the world generally, and the farmer particularly. The Professor's plan is a novel one. Having selected a field for the purpose of raising, say wheat, he first analyses and determines the exact composition of wheat, straw and all, calculating how much of this, that and the other element is contained in each bushel. He next analyses the soil of his field, observing in what elements of wheat it is deficient, and the amount of that deficiency. His calculations are then made and applied. Suppose he desires to raise forty bushels of wheat to the acre. He applies to each acre of his field enough of the proper fertilizers to contain just the quantity of chemical elements in forty bushels of wheat, deducting of course what amounts of these elements may already be in the soil—and his experiment is complete. The Professor, in brief, claims to demonstrate the fact that worn-out soils may be rendered fertile and productive by the application of chemical manures. The main principle of his method, which he regards as original, is the determination of the precise quantity and cheapest form of fertilizers required for a given amount of any crop. He gives the formulas and rules whereby every farmer can purchase and apply the manure to whatever crop, within certain limits, he may desire to grow, and he asserts that a fair profit, with increased fertility of soil, may be thus obtained without much regard to the season.

Some of the experiments published have indeed been attended with wonderful results. For instance, to raise fifty bushels of corn, a quantity which, on analysis, he found to contain as much nitrogen as is combined in 320 lbs. sulphate of ammonia; as much potash as in 154 lbs. muriate of potash, and as much phosphoric acid as in 248 lbs. superphosphate of lime, he applied these several fertilizers in the quantities mentioned. The result was a yield of 74 bushels per acre of fully developed, perfect corn, while an adjoining unmanured plot produced only 25½ bushels per acre of inferior grain. "In an experiment with field beans," the Professor says, "we applied as much of the three constituents of plant food as are contained in 20 bushels, with the natural proportion of straw, as follows:

Nitrogen, 53 lbs. Equal to Sulphate ammonia (20 per cent. nitrogen), 265 lbs.
Potash 33 lbs. " " Sulphate potash (35 per cent. of the salt), 98 lbs.
Phosphoric acid, 20 lbs. Equal to Superphosphate lime (13 per cent. soluble acid), 160 lbs.

The variety planted was the common white, oblong bean. The natural yield, as shown on an unmanured plot, was four bushels per acre. The fertilized plot produced 25 bushels per acre."

Many farmers present at the Professor's lectures, expressed their purpose to test his experiments for themselves. In order to the carrying out of this intention, we subjoin the formulas made use of by him in preparing his fertilizers. Column 1 gives the quantity of the crop, including the natural proportion of roots, stalk, leaves, pods, &c., to be produced on a given area in excess of the natural production of the soil. Column 2 gives the proportion in this given quantity of the first element, nitrogen, and 3, the form in which it may be obtained; 4, of the second element potash and either 5 or 6 the form in which it may be obtained; 7 of the phosphoric acid, and 8, the form in which it may be obtained. This is based on the supposition that the superphosphate used contains 13 per cent. of soluble phosphate, but if a reliable Company guarantees a greater or will not guarantee so great a per cent. as this, the quantity of superphosphate must be proportionally diminished or increased. For example, if the guarantee is for 18 per cent., divide the number in column 8 by 18 and multiply by 13. If the farmer make it himself, as recommended by Prof. S., by mixing 50 lbs. of 66 degrees of sulphuric acid with 100 pounds of ground bone, it will contain from 17 to 18 per cent. of soluble phosphate.

1	2	3	4	5	6	7	8
CROP.	Nitrogen, lbs.	Sulphate of Ammonia.	Potash, lbs.	Sulphate of Potash.	Muriate of Potash.	Phosphoric Acid.	Superphosphate.
100 bush. Potatoes	21	105	34	225		11	85
25 bush Oats, 32 lbs to bush.	23	115	20		40	12	90
50 bush. Indian Corn	64	320	77		154	31	248
20 bush. Beans	53	265	30	198		20	160
25 bush Buckwheat	37	185	50		100	15	105
20 bush. Winter Rye	25	125	24		48	16	128
25 bush Wheat	41	205	24		48	20	160
2 tons Corn fodder	20	100	66		132	16	123
100 bush. Ruta Ba. s	11	55	18	118		[illegible]	63
100 bush. Beets	11	55	25	155		[illegible]	50
100 bush. Onions	11	55	9	54		4	32
1 ton Green Cabbage	28	140	12	75		4	32

These and other experiments which the Professor promises to publish, from time to time, we need scarcely say, will be watched with great interest. If successful in producing what he claims for them, they will certainly have opened up a new field in the domain of agriculture, and conferred lasting honor and gratitute on their discoverer.

N. B.

Not Fancies but Facts.

The first of the following letters came too late for our February issue. We took occasion in the interval, however, to submit it to the writer of "Leaves from Farming Experience," and we now subjoin the reply as well. They are as follows:

EDITOR CANADA FARMER:—I have just received and read with much pleasure the first number of the CANADA FARMER for the present year. Will you allow me to ask, through you, the writer of "Leaves from Farming Experience.—No. 4," if the quantity of crops and the prices given are those he *has* realized during his lengthened experience; for, to some, they look more like a fancy picture of what *might be* realized, were every season fruitful, and every crop abundant, and were there no drawbacks from bad harvests, wet or dry seasons, frost, insects, rust, mildew, or many other of the numerous accidents from which even the best managed farms are not exempt?

Cobourg. W. R.

REPLY:—I received yours of the 9th current, asking if the quantities of crops and prices realized were real or only fancy, as stated in the "Leaves from Farming Experience." Since I began to cultivate and manure the soil, as stated in these leaves of experience, the quantities were rather over, than under, what is stated. I had no poor crop during fifteen years. Mother earth is generous, if well treated.

Sometimes hay and oats were far above the quantities as I have stated them. I believe the average price of good, clean wheat has been something over $1.10 per bushel. Peas are low at 70 cents; hay has been selling from 15 to 20 dollars these many years; turnips bring 40 to 50 cents; I value them at 7 cents. I bought all the crop from myself at the prices stated, and converted it into cheese, butter, beef and pork, as you will see in the leaves not yet published. All is real, and has been tested many years. Greater things than these will be done in Ontario soon: but I am too old to enter upon them, being in my 81st year. I shall be glad to give any explanation.

JOHN ROBERTSON.

P S.—I would like some one to give a detailed account of working 1 or 10 acres, the rent, disposing of the crop, profit or loss, &c. J. R.

Profitable Farming on New Land.

EDITOR CANADA FARMER.—Having some time at my disposal this pleasant winter day, I don't know how I can better employ it than in compiling a few thoughts for the FARMER, both for my own amusement, and in the hope that the observations of an almost uninterrupted practical experience of fifty years in England, the United States and Canada, may set others to exercising their powers of thought in the direction indicated.

During my extensive connection with agriculture in England, from the commencement of this century till 1855, I experienced the great value of the old grass land which remains permanently unbroken, and, on coming to this continent, was surprised to find not only that none of the magnificent natural pastures of Kentucky were reserved, excepting in a very few instances, but that, in the States generally, as soon as the stumps are out of the way, no matter how well stock may thrive on the grass, it is ploughed up, and as some express it, is subdued; and advertisements will be seen where it is stated that the farm for sale has been thoroughly subdued, as if that was a great inducement to buy it. Wherever the soil is naturally favorable for the growth of the best native grasses, it would be a great gain to every farm to reserve the portion most convenient for pastures, and, though it is never done in America, some of the old established grass fields can be mowed; for the hay is better for many purposes than clover or timothy, and it is extraordinary, when the London market in England is supplied chiefly by this old meadow hay, and when the whole of the race horses, and the fox-hunting horses all over the country, by hundreds of thousands, never eat other hay while in their work, that Americans do not understand the value of genuine old grass fields for grazing and for mowing too.

Genuine is the word to express that it is not what farmers in the States call permanent meadows, as they only mean timothy, which is ploughed and re-seeded every few years; whereas, if any of the real old natural grass land is ploughed, it would take 20 years to re-establish the varieties which are essential to the welfare and value of the sward, and which are destroyed by the ploughing and cultivation of the soil. All the dairy cows in England are grazed on the old grass land, and the best cheese made