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Agriculture.

Lime in Agriculture.

The agricultural action of lime is both chemical and mechanical, and its application, in proper quantities, to almost every kind of soil, is followed by beneficial results It acts in several ways, but chiefly by dissolving excessive accumulations of vegetable matter that has become inert, thus rendering it soluble and fit for plant food; and by acting upon and facilitating the appropriation of mineral matter for the same purpose. Although lime is present in most soils, it is usually so in small quantities— much too small to supply the crop demands, or, should the natural quantity be sufficient in some cases to aid vegetation, since all plants require lime, it follows that, with successive cropping, the supply must soon be exhausted, and the land, as a consequence, be impoverished. Boggy or peaty soils have their fertility often hindered by what is known to chemists as sour humus, that is an accumulation of undecomposed vegetable matter which is likewise present in a greater or less degree in all long-cultivated lands, and which is supposed to exercise an injurious effect on plant-growth. When existing only in moderate quantities, this humus is beneficial, but when, as in boggy soils, it is present to a hurtful degree, the remedy is a plentiful application of lime. In the action that follows such application, not only is the injurious humus dissolved and rendered available as plant food, but during the process of decomposition, three other most important ingredients are formed, carbonic acid, nitric acid and ammonia, the first-named constituting one of the chief supports of vegetable life, while the other two are of equal importance to the soil, the one combining with what humus still remains undecomposed, the other uniting with bases to form nitrates. In cold, stiff, clayey soils, again the action of lime is very similar and equally beneficial, its functions being now, however, exercised chiefly on mineral instead of vegetable constituents. In clay we find several alkalies, especially potash which, in combination with alumina and silicic acid, exists in a condition in which it cannot be dissolved and conveyed to the roots of plants by the solvent power of rain. The action of lime here is to dissolve this substance and combine with the alumina and silicic acid, setting the alkalies free, and these latter, being readily soluble in water, are thus distributed throughout the soil and rendered available as food for plants. Mechanically, lime acts upon boggy and clayey soils by transforming them into a more finally decided condition. To the former it fits for a more uniform incorporation of fertilisers; the latter it renders less tenacious, more open and porous, and thus prevents its consolidation into a mass of matter impenetrable by the roots of growing vegetables, air, heat, &c. Summarizing the whole, we may classify the agricultural effects of lime as four-fold: it is a necessary ingredient of plant food, and must be supplied as such; it disposes inert vegetable matter to become food for the plant; it dissolves mineral matters in a similar manner and renders it available for a similar purpose; and finally, its effects are mechanical. Nothwithstanding all its good properties, however, lime must not be used indiscriminately, but with the fullest regard to the condition and circumstances of the soil to which it is to be applied.

Run-Down Farms.

In several districts of Ontario, some of them what may be called the "more advanced" in other respects, it is a painful though none the less positive fact, that farming is neither what it was once, nor what it now ought to be. The returns are poorer, the cattle are scrubby, and nothing seems to prosper as it should. Discouragement is of course the result and listlessness seems fast following in its wake. What is the reason? Simply that those affected have overtaxed their land without attempting to reinvigorate it. They have ploughed nearly all their clearings and raised crop after crop of grain until their soil has run out. The surface is exhausted so that seeds will no longer catch on it. Wheat has first been the order of the day until it failed; then oats until they followed suit. Hay never received much attention, and still less was given to roots. The system of manuring has been almost, if not quite, equal to no system at all, for the stock, or rather half stock, and scrubs at that, are fed mostly on dry straw during winter, and kept in a half-famishing condition all the year round.

We are induced to make these remarks from a letter that has just reached us wherein the writer bemoans the contrast between the present and ten or fifteen years ago, but says not one word about the returns he has made to

Draining Spade.

his land during the interval. While the virgin soil remains young and vigorous, no wonder it yields good crops; but it must not be forgotten that, with a series of successive crops, this vigour cannot last. What we would advise our correspondent and all others similarly situated to do is this:—Begin and sow about half your ploughed land with clover and grass seeds for hay and pasture. Summer fallow from five to ten acres each year, according as your farm exceeds or falls short of a hundred acres, and drain thoroughly: the cost will be returned in a couple of years. Sow about half as much wheat as you used to sow, and use the very best seed. Raise from three to six or eight acres of roots; attend to them well and they will not only enable you to double your stock, but largely increase your manure heap. And finally, keep the very best stock you can get—thorough-bred if possible—and see that the males used for the future are of the same class, otherwise your stock will go back.

Draining Implements.

By the use of certain implements specially made for a purpose, that purpose can be not only more easily but more economically effected than by using other tools not so made. This is true in the abstract and applicable generally, but in a peculiar manner to draining. Viewing it in its most favorable aspect, ditching is a heavy, disagreeable process, and anything tending to lighten or expedite that process will be hailed with satisfaction.

Post-Hole Spade.

Few people care about employing a regular ditching machine unless their work is likely to be quite extensive, still ... wer will purchase one, for the simple reason that, for the purposes alone, the investment would not pay. The ordinary spade and shovel are consequently resorted to, and, although they are on the whole quite sufficient to the task, is it not worthy of consideration that a great deal of hard digging, heavy lifting, and lost time could be saved by using some other more appropriate implements? The draining spade, here illustrated is now used by all experienced ditchers. The blade is from eighteen inches to two feet long, tapering from six to eight inches wide at the top to four at the end, and convex, the concave surface uppermost. It is made of the best steel, and very strongly strapped to the handle. By means of it a good ditcher will dig half as much again per day as he would with the ordinary spade, and be less fatigued at the close.

The next implement, called a "crumber," is most useful and convenient. It is designed to clean out, or give the "finishing touch" to the bottom of the drain ere the tile is laid. In ordinary soil, the one here illustrated answers the purpose admirably. Of course its appearance will suggest the mode of working it. In the case of very wet land, however, and more particularly wet quicksands, the blade (which is also concave, like that of the spade, but the same width throughout, viz., about three inches' is reversed, and made to work towards you that is to say, with the first you move forward and finish ahead of you as you go, with the second you move backwards, finishing towards you, and thus obviating the necessity of stepping on the finished portions. There are thus three different implements of moderate cost which farmers would find highly serviceable on the farm for ditching purposes —the spade and the ordinary and reversed crumber Another very useful article is the post-hole spade, which we also illustrate, for lifting out the soil after it has been loosened by a crowbar. It is also made of steel, in the form of a spoon, curved out at the bottom edge, and supported by a wrought iron strap, making it very strong and durable. Our cuts are taken from Mr. Rennie's catalogue

The Indigenous Forest Trees and Shrubs of Ontario.—No. 3.

Asimina triloba, COMMON PAPAW.—A small tree, bearing a large, sweet, edible fruit. Common in "Middle States," extending far South; in Canada found sparingly in the Niagara peninsula only.

Menispermum Canadense, CANADA MOONSEED.—A handsome climber, sometimes reaching a height of fifteen feet. The berries—which are about the size of black currants—contain crescent-shaped nutlets, whence the common name. *Menispermum* is stimulant, diaphoretic and tonic, and has been used in place of sarsaparilla. Common in Northern States and throughout Ontario, from Quebec to Winnipeg.

Hudsonia tomentosa, DOWNY HUDSONIA.—A small shrub, hoary with whitish down. Not common in Ontario; found on the shore and islands of Lake Superior. Ranges from Maryland to Minnesota and Slave Lake.

Hypericum Kalmianum, KALM'S ST. JOHNSWORT.—A small shrub, having four angled branches, flowers yellow, large and clustered. Not common in Ontario; ranges from Niagara Falls to islands of Lake Superior.

Tilia Americana—BASSWOOD.—A large, beautiful, and very useful tree, common all over Ontario. It does well as an ornamental shade tree; is hardy, grows rapidly, and the deliciously scented flowers afford a rich harvest to the bee-keeper. Basswood lumber is extensively used in carriage building, cabinet making, and sometimes in house finishing; it, however, does not last long "between wind and water," and should always be protected by paint. In new settlements, basswood is generally split into fence rails, although they are not durable; it is, perhaps, a little inferior to pine as fuel. It is sometimes used as lower pump logs, in paper making, and the "second growth" wood makes the best ox yokes. Basswood bark is used as a roofing material, and the "inner bark" as cordage by the settler and by the Indians. A decoction of the inner bark is an excellent tonic; the buds bruised, make a poultice which may be used with good effect as a substitute for bread poultice; the buds are eaten greedily by cattle old and young. "Hollow" basswood trees are often met with; they, of course, are useless to the lumberman, but hollow basswood is not without value to the settler, even as an aid to poetic and moral reflection—as

> "I stood by a hollow basswood tree,
> The wind it hollow blew,
> I thought upon the hollow world
> And all its hollow crew."

The standing hollow trees were used by the Indians as