

DRAINING LAND.**Cultivate Less Area and Drain it Well
—Utilize the Wet Spots.**

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The chief objects of draining are to facilitate the cultivation of wet soil and to increase the effect of cultivation, to open up the soil and subsoil for the cultivation of air amidst the matters organic and inorganic, which require its influence for their conversion into available plant food, and the replacing of stagnant water, in which no plant grown on the farm can live, by our showers of spring and summer laden with plant food in suspension or solution.

Nearly all lands require drainage in some measure, there being very few that in some of their parts are not too wet for economical cultivation and manuring, and in these days of close competition and restricted markets everything that will help us to lessen the cost of producing our crops and the resultant products of their consumption calls for the urgent attention of each of us. In wet seasons like the fall how many acres were left unplowed on account of being too wet, and if the adverse fall should be followed by a wet and backward spring—which is not an altogether unknown thing in Nova Scotia, who can measure the resultant loss in the yield of our crops? Underdraining is the wand the farmer must use to modify the injury resulting from not only excessively wet seasons, but also from prolonged dry ones.

One of the most noticeable and beneficial effects of drainage on our fields this spring, as on every other, will be a higher temperature of the soil as compared with the undrained. On undrained fields saturated with snow water it is impossible for the spring showers to enter the soil. But on drained fields these rains, which at this season of the year are warmer than the soil, pass down to the level of the drains, imparting to the soil their heat. On drained land the temperature is also increased by the admission of warm air which occupies the spaces vacated by the water, as the latter is carried off by the drains. But the principal action of the drainage in warming the soil results from its diminishing surface evaporation, which is such a cooling process, and which is the only process whereby the cold water is removed from undrained fields in spring; this always means from ten days to a fortnight lost in getting on these fields. Every farmer knows at how much less cost and trouble work can be done, if done at the proper time, than a week or two later. One of the drawbacks of our climate is the shortness of the season.

In some countries if your work is not done this week, it may be next; here it must be done at the allotted time, or the chances are not at all, and drainage is the factor underlying all others in enabling the progressive farmer to avoid the delays so often fraught with failure. At this season of the year one of the worst effects consequent to cropping wet fields takes place by the silent but destructive heaving of the surface soil by frost at night, which breaks the roots of our grass crops, particularly clover, destroying their structure, and all our chances for a profitable crop. Underdrain the land and this action is largely banished; thus the fury of the weather demons of winter, which lurk so long in the path of our Nova Scotia spring may be tamed and a greatly increased harvest reaped every year.

Again where drainage is neglected the nitrogenous riches of the air when carried to our earth by the rains of spring and summer, instead of being absorbed by the soil for the growth of plants as the water filters down, is carried away by furrows and surface streams. These streams also carry away elements of fertility which have been taken from the soil, and thus many of the best elements which go to constitute a profitable crop are carried off to our rivers, which bear them on to the sea on our northern shore. No statistician can ever tell how much plant food from the hills and valleys of Nova Scotia has been washed out into the Atlantic as the direct outcome of neglect in this matter. Manure, too, is applied at a loss to wet land, from the fact that a soil surcharged with water cannot absorb and retain the soluble elements of plant food contained in the manure and as a result the bulk of the elements is lost, being carried away over the surface or evaporated into the atmosphere. All crops take up through their roots the food furnished by the soil in a state of solution and it follows in order to attain the best results this food should not be diluted with an excess of water but should be as concentrated as possible.

We might go on multiplying the benefits derived from drainage, such as the improvement of the texture of our soils, facilitating field work, the saving of our crops from failure in bad seasons, lengthening the season of growth, the giving of a deep soil for the roots of plants, lessening the labor of keeping down weeds, preventing the cutting up of our fields by surface washing, hastening harvest and better crops both in quality and quantity. In reading the report of the judges on prize farms in Ontario, ap-

pointed by their Agricultural and Arts Association in 1883, one cannot fail to be forcibly reminded of the success in the contest of those farmers who made drainage a prominent feature in their farm economy. The judges speaking of the close relationship between drainage and successful agriculture, say:—"There is many a farmer in Canada, after hard years of toil, who has now money lent out, and who is drawing his dividends, who would be thousands of dollars richer if the money had been spent years ago in draining his own farm. We are led to speak in this way for we know of many farms owned by well-to-do men who are drawing six or seven per cent. for their money, when twenty could be obtained by spending it upon their own land." And this is just as applicable to us as to the farmers of Ontario. I know of nothing else which would add so much to the material wealth of our farms as a thorough and judicious system of drainage.

Regarding the cost of the operation, this would vary with the nature of the soil, the local rate of wages, and the price of tiles, and is only to be found out in different districts by asking the soil. The labor of digging, however, may be economized by using a plow for the first eighteen inches in depth of each drain in digging, and also in filling in the earth, after four or five inches have been packed about and over the tiles. It is always well to have your tiles at hand before digging, thus avoiding the risk of being disappointed in getting them when promised, as the writer and some others in this vicinity have sometimes been. The point needing most care in connection with the operation is the grading of the drain and laying of the tiles, as the effective working of the drains is wholly dependent upon this. In sections where tiles cannot be procured readily and where stones are abundant, these may be used, and if put in with care, make a very effective and lasting drain, although not equal to the tile drain.

If there is a man who is following the system too largely prevalent of cropping large areas imperfectly, and as is often the case, complaining that he has not more land to cultivate, let him make the experiment of cultivating a small area for a few years, devoting his extra time and labor to drainage and I will guarantee the result to be satisfactory. It is a rare thing to hear men who have small farms lamenting that their land is scarce. The apparent reason for this is that those who have only a little land have been impelled towards methods of close and thorough cultivation that have