

THE  
Canadian Agriculturist,

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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VOL. XI.

TORONTO, AUGUST, 1859.

No. 8.

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A SUPPLY OF AIR NECESSARY TO THE ROOTS OF PLANTS.

The main object of the practical farmer is to raise from the dead earth the living plant; and in order to do this, it has been found necessary in all countries, and in all ages of the art, to break up, and more or less to pulverise the surface soil. As this is the natural station for all our cultivated crops, and where they obtain a large portion of the necessary elemental food requisite for their development and maturation, certain conditions of the said surface become absolutely necessary. Moisture, warmth and air, in due proportions, are indispensable, both to the roots which are extended through the soil in search of mineral food, and to the stem and leaves which appear above the surface, one of whose chief functions being the absorption of gaseous matter from the surrounding atmosphere. An excess of moisture is commonly more injurious to plants, than the extremes of heat and air; for when a soil becomes saturated with water for any considerable time, air is in great measure excluded from its pores, and the slow and constant evaporation which is going on at the surface, keeps down the temperature to a degree inimical to the healthy progress of vegetation. For a soil, therefore, to be made porous so as to freely admit air, warmth and moisture, with the capability of any superfluous amount of the latter freely percolating away, constitutes an axiom on which all our operations of ploughing, trenching, digging, draining, &c., are founded.

Soils, it is well known, vary much in their chemical composition and mechanical texture. The success of many crops depends as much upon the latter as upon the former; and in no case can the natural or artificial consistency of the soil be safely disregarded. Most of the winter wheat in Canada is raised on summer fallows; but the operation of fallowing is often so imperfectly done that a diminished crop of inferior quality is the inevitable result. Wheat, it is true, naturally covets a close soil; yet the deeper and more thoroughly it is pulverised, so as to allow air, warmth and moisture freely to come in contact with the roots of the young plant, the more freely will it grow, and the more abundant will be the produce. If, however, water should in any considerable quantity stagnate, so as partially to exclude air, and by surface evaporation produce cold, *underground draining is essential to the procuring of a profitable crop.*