

their appropriate food, and that in proper quantity, than can animals. The soil too must be brought into the requisite *mechanical condition*, and possess all the necessary constituents of food, which the plant requires for its healthy growth, and which it imbibes through the agency of its roots. These two conditions of the soil—which may be termed the mechanical and the chemical—are in all successful practice intimately connected, and to a large extent, mutually dependent.

The first step then in the cultivation of wheat—and indeed of all other grain—is to obtain a *clean and deep seed bed*. This can, in most instances, be accomplished only by the *repeated application* of the plough, the roller, and the harrow. A certain proportion of fine earth, in what we may term the active soil, is essential to the germination of the seed; yet it is found in practice, that wheat sown in autumn, especially on adhesive soils, generally succeeds best in a tilth of moderate fineness: clods when not too large act beneficially, by rendering the soil pervious to air and moisture, and by crumbling down under the action of frost, during winter and spring, they form a useful protection and covering to the young plants.

Surface drainage by means of open furrows and ditches is a matter of essential importance in the cultivation of fall wheat. In cases where land is naturally dry, or rendered so by a sufficient number of underground drains, furrowing may, to a great extent, be dispensed with. But when it is considered how large a portion of our cultivated fields is rendered in part, or wholly unproductive by stagnant water, during portions of the year, the attention of farmers requires to be repeatedly called to so grievous an evil. We say then to all wheat growers, see that you effectually get rid of all surface water, either by narrow ridges and deep furrows, or what is infinitely better, whenever practicable, by efficient *under drainage*. No field where fall wheat is sown, ought to be left until this vital object has been, as far as practicable, secured.

A soil then deeply cultivated, free from noxious weeds, and rendered firm and dry, either by nature or art, is in a proper mechanical condition for the reception of the seed. But this is only a *first step*. The soil must contain all that the plant requires for healthy growth and maturity, which is not obtained from the atmosphere. And here we

are directly led to the great and complicated subject of *manures*, upon which our space compels us to be very brief. Repeated cropping with wheat without manure, soon renders the generality of soils incapable of producing a remunerating return, by exhausting them of such necessary ingredients as the silicate of potash, phosphate of lime, &c. When land has not been exhausted by constant cropping, its productive powers may, in general, be easily retained by changing the kinds of crops cultivated, laying down to pasture, with now and then a judicious manuring. Good, well-preserved farm yard dung, especially when it is the product of animals highly fed on grain, linseed, &c., contains, in general, all the ingredients, more or less, in relative amount, that are required for the growth of plants. Upon most of the cultivated lands of this country, the application of lime, or bone dust, (the latter containing a large quantity of lime, in combination with phosphoric acid,) would be exceedingly beneficial to wheat, and indeed to all the cereals.

But one of the most important points of all—yet remains to be mentioned;—the *selection of pure seed*. This is a matter so sadly neglected, by a large number of farmers in this country, that the loss entailed thereby is incalculably great. What has a farmer a right to reap, but what he sows? If imperfectly ripened or diseased grain, or the seeds of various kinds of weeds be sown, what can he expect, when the harvest arrives but to reap the same? The plain truth is, that the gross neglect of the principles of good husbandry, or of the laws of nature, which in this instance are the same thing, is a sin which is certain to bring its own punishment the first year. It is an old adage, that what is worth doing at all, is worth doing well. Whatever pains the farmer bestows in procuring *pure and healthy grain, for seed*, will amply repay him in the first crop. We also strongly recommend the practice of *steeping*; a practice that comes to us recommended by an extensive experience, and the example of the best cultivators, in all parts of the world. A strong solution of salt, or of blue vitriol, or both mixed, in which the seed may be thoroughly soaked, and afterwards dried by the application of slaked lime, is an old practice strongly to be recommended. Our readers are, doubtless sufficiently informed, respecting the various *steeps* that have been recommended and practised, as to render it unnecessary for us to descend to particulars; our