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SUBSOIL PLOUGHING.

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Ploughing is one of the most important branches of agriculture—necessary even to its existence. The improvement of practical agriculture is in proportion to the improvement made in the art of ploughing. The principles which chemistry has revealed may be made abortive—their results defective—by improper ploughing.

The object to be obtained from ploughing is threefold. 1st. to pulverize the soil; 2nd, to expose a great depth of soil to the action of the atmosphere; and, 3rd., to hold the many fertilizing substances brought down by rain and snow, and absorbed by the soil.

It becomes necessary to pulverize the soil, so that the roots of plants may extend in all directions freely and to a great distance. The atmosphere coming in contact with deep and well pulverized earth imparts heat and moisture, and, acting upon the soil, assists in liberating its salts, and in bringing it into that condition which is best fitted for the growth of crops.

A small portion of water, during rains more or less heavy, sinks into the soil when shallow ploughed; such soil is sooner affected by the drought, and is dry at a greater depth than deep earths, as may be shown by an examination of shallow and deep ploughing in a time of drought. Common ploughing does not reach sufficiently deep to accomplish all that is desired; but deep ploughing, and its good results, are effected by following the common plough with the subsoil plough. It simply loosens the subsoil, and leaves it in that state that roots can enter it, that air can permeate it, and water be absorbed by it. A subsequent ploughing, with the common plough, can then easily intermix the surface and subsoil. Ploughing may thus be effected sixteen and twenty inches deep.

I have found, from frequent examination of the roots of the corn, wheat, and oats, during the last four or five years, that they generally incline to grow downwards, some of the roots even straight down until they reach the subsoil, then, after penetrating an eighth or a fourth of an inch, turn horizontally. I traced the root of a wheat plant which had extended sixteen inches perpendicular, in less than three months after it had been sowed, on ground previously subsoiled. It is interesting to take the spade, and examine the roots of crops, at any stage of their growth, in order to compare the effects of common or shallow with those of subsoil ploughing. To see the roots of corn pushing boldly downwards eighteen inches in search of food, eight inches of which had never been penetrated, except by the noble oak and hickory, and occasionally by the searching tap-root of clover, as I have witnessed this past summer, affords pleasure as well as instruction to the farmer who takes pride in showing fat swine or stall-fed oxen.

I subsoiled three-fourths of an acre, through the middle of an eight-acre lot, in June, 1846, for wheat. The field was ploughed but once, and cultivated several times previous to sowing the wheat. I am not able to give the result accurately, in consequence of cutting the grain with a reaper, by which I was unable to keep the wheat separate. The difference was quite perceptible at the time of harvesting; it stood thicker on the ground, and the berry was of a better quality than the adjoining, on ground not subsoiled.

In May last I subsoiled one acre and a half of corn, in a field containing six acres. It had been a timothy meadow for four years. The soil was clay loam; subsoil a tenacious clay; a part of the subsoiled ground was swale previously ditched, a part was a ridge, the balance a wet swale, with a compact, impervious subsoil. Twenty loads of unfermented manure were applied to the acre. It was ploughed in May, five inches deep, and subsoiled nine inches more.

I saw no difference in the corn until August, which was then very perceptible during the drought of that month. The corn upon the

subsoiled part had retained all its beautiful freshness, bearing a healthy, perpendicular tassel, and having the appearance, through the day, of having been refreshed with a shower of rain the previous evening. That on the unsubsoiled parts yielded to the drought, the tassels drooped, and the leaves became dry and rolled. After an examination of the soil and subsoil about this time with the spade, the difference in the parts became no longer a mystery.

The earth was moist on the subsoiled portion, within a fourth of an inch of the surface; on the unsubsoiled it was dry to the depth of an inch, the balance below dryer than the former. In the one the subsoil was filled with corn roots in search of food and water; in the other they were turned aside by the subsoil. The corn on the wet swale was as good, if not better, than any other portion of the field. Judging from the present crop, I am of the opinion that subsoiling this wet swale was an advantage to the crop of one hundred per cent., notwithstanding the objection raised by some to subsoiling wet land without ditching.

In consequence of an experiment, by which I wished to test two varieties of corn, which crossed the field in an opposite direction to that of the subsoiling, I only compared three rows of shocks, five rows in each shock, each row of shocks gathered from twenty-one rods of ground. The result was as follows:—

No. 1. not subsoiled, gave	606 lbs. of ears.
No. 2, three rows subsoiled, 2 rows not,	646 lbs. of ears.
No. 3, subsoiled,	676 lbs. of ears.

The subsoiled gave at the rate of 73 bushels to the acre; that not subsoiled 65 bushels per acre; a difference sufficient to pay for subsoiling. I considered the subsoiled part as having been previously inferior for corn. I aimed to be accurate: if there was any difference in the previous condition of the soil, or in estimating the results of the experiment, it was in favour of the unsubsoiled portion. From the observation of the effects of subsoiling, so far as it has been practiced by myself and others, my mind has become settled in the conviction that subsoil ploughing upon most, if not upon all the land of this county, will prove very beneficial for corn, and all crops usually raised by us.

I may be mistaken, but I fully believe that subsoiling, thoroughly performed, will prove more profitable to farmers for the outlay than any other one improvement. I have never anticipated much improvement from it until after one crop of clover. Then, I expect a complete preparation of the soil for wheat. It is unnecessary for me to describe with what ease a clover root will penetrate the loosened subsoil, and even go further in search of food, gaining strength with every additional inch of depth, bringing the salts of the lower strata to the surface for its use, and affording, by its decay, when turned under by the plough, rich stores of food for wheat. In conclusion, I would recommend subsoiling in the spring and fall, or when the ground is wet sufficiently deep, at any time in the summer. It does well for a summer fallow, if broken up easily. It is beneficial to any crop. The expense is about the same as for breaking up sod ground.

And, finally, if this short and imperfect essay should persuade one farmer of this county to practice deep tillage, with subsoiling, the object of the writer will be attained.—[Transactions of the New York State Agricultural Society, for 1847.]

WILD POTATOES.

It will be recollected that some have recommended procuring wild potatoes for cultivation, on the supposition that they would be more likely to escape the disease. We have in a former number stated that the results of some trials last year showed the produce of wild tubers as much affected with the disease as any. We learn from the English papers that they have been tried the past season, and proved equally affected as before.