

ON THE ADVANTAGE OF GREEN CROPS TO A FARM.

In travelling to various parts of England, I have remarked how varied are the systems of culture, and the succession of crops. In one part I have seen more than half the land under the green sward, as the red marl district of Leicestershire. In another part I find no green sward but what comes under a rotation of cropping, or Down Land, such as the Cotteswold and Chalk hills.

In Cornwall I observed, some years ago, that the old cultivators continued to crop the ground with cereals, until it could produce no longer, and then it was put down in grass to rest; that is, by sowing amongst the crop of oats, grass seed, perhaps swept out of hay-lofts, with all manner of weed-seed. In this state it lay for three or four years, until it became so mossy and woody that it would no longer produce grass; then it was broken up for wheat, by a process which, to us of the eastern part of England, was unique. A granite stone roller, about five feet long and 12 inches diameter, had steel edges or cutters fixed at every six inches of its length, projecting from the surface of the stone about three inches; this instrument was run over the grass and one way across, and ploughed the other way; thus was the surface of grass cut into small squares, and thrown up roughly to rot; after which it was (during the early autumn) buried for wheat or other corn. The farmers of Cornwall are fast passing into a superior system, and no longer is there need for clauses in their leases restraining them from taking more than three crops of corn in succession.—(See *Journal of Royal Agricultural Society*, vol. 6, part 2, page 434.)

The subject towards which every system of culture should have tendency is, that of making the earth produce the greatest amount of return from the smallest possible expense; therefore the endeavour should be to extract from the soil a food for some variety of animal or other, and endeavour at the same time to increase permanent fertility. This only is to be done by leaving something behind, beyond what we take out of the soil; therefore, either more must be put on the surface, in the shape of manures, for the succeeding crop than it requires, or a portion of the crop must be left on the ground to constitute a pabulum for future crops, so to form a vegetable humus in the soil. This humus is the blackened material which is found in the pan under the usual tillage, and is the result of culture and manurings. The same humus is shewn by the blackened fertile soil of old garden grounds.

The object, then, of a proper succession of crops is, that a something should be left behind from each crop, which shall be of service to a succeeding one, and not to call on the soil to yield in succession the same valuable

materials that are detracted by a crop of wheat which crop is, in all places, considered as the great desideratum. Green crops, therefore, when consumed on the land, are highly fertilizing operations; and at the same time, if the green crop is such an article that is suitable, so the animal reared or fattened on it, is sure to be highly remunerative as a marketable return. Turnips, clover, turnips, &c., fed on the ground, will be charging the soil with a pabulum for future crops; and, after either of these expenditures, wheat may follow with propriety; and if these crops are only half consumed by the animals, (there being plenty of food on the farm) the advantage of ploughing in the half-consumed vegetable will be felt in the succeeding crop, for then, what is left will not have had detracted from it that portion which would have gone to constitute blood, flesh, bone, &c., in the animal that might have consumed the same.

Assertions are sometimes made by farmers, that to save a second crop of broad clover for seed will be more enriching to the land than if cut before it is ripe; that forming seed does not detract from the land; but the contrary is the fact. Producing seed is, in every case, the most exhausting of particular matters to the soil; but when this practice is set in comparison with other parts of the same field that had been cut green for foddering stock at home, it is likely that the appearance of the succeeding crop may be in favour of where the seed has been saved; for in such instances, the crop remaining on the land for a longer period, the plants lose most of their leaves, which fall to the ground as a nourisher; whereas, where the clover has been cut green, all has been cleaned away from the land. Leaves of most plants generally contain a very considerable portion of the inorganic fertilizers.

One of the greatest benefits to be derived from a proper succession of green crops, is the aid which the tap-rooted plants afford, by penetrating beneath the hard pan into the subsoil, there extracting and bringing up from a depth below fertilizing matters that may be deficient at the surface. These, as food to the plants, are most likely to be the aqueous particles that hold solvent in them various portions of alkalis and acids, phosphates and carbonates; and these matters are deposited on the surface at every fall of the leaf, combined with the solidified parts of air and water. Turnips, mangel wurzel, and other broad leaved plants that successively deposit their lower leaves, are enriching the surface with much organic and inorganic matters, which constitute their bulk; and this they do even if the bulbs and tubers are carried from off the land at an early period, when they have scarcely done increasing in bulk.

On referring to the analysis handed to us by Sprengel, I find that all broad-leaved plants take up from the soil much more of the fixed