

If we allow that the straw is double the weight of the grain, then 1000 lbs.

Of wheat there is only	.87	cf potash.
—Barley, . . . . .	2.13	—
—Oats, . . . . .	6.30	—

Thus we see that 1000 lbs. of red clover requires nearly as much potash as is contained in twenty times the same amount of wheat, eight times the amount of barley, and three times the amount of oats, and twice of rye-grass, the very crops which are made to form part of the rotation along with it.†

Besides, potash is one of those substances which has a strong affinity for water, and is, on that account, very soluble in every state of combination in which it is found in the soil; hence its great liability, when the land is under cultivation, to be carried off by rain. This observation, however, applies more to the rain which falls in inland situations, or to those localities which are screened from the sea by some high mountain range; for there is good evidence to shew that portions of the various saline substances contained in sea-water, and which contribute so much to the fertility of the soil, are often carried to considerable distances from the shore.‡ We may further observe, that it is owing to the still greater amount which the different green crops require of inorganic as well as of organic food, that a large application of manures is found to be necessary for their growth, in which case those substances cannot be said to be abstracted from the soil.

Although these remarks are made more particularly in reference to potash, as the substance which, with the exception of lime, enters more largely in the composition of clover than any other, and one which is more apt to be washed from the portions of the soil which is subjected to frequent cultivation, still they are applicable to other inorganic constituents, though many of them are less soluble, and exist often in much larger proportions than potash. This view of the case helps to explain why the red clover crop is less abundant on land which has been frequently cultivated, and why its failure is more perceptible on inland situations, than in those more exposed to the sea.— But there are often causes of failure on soils which cannot be said to be deficient in any of the substances essential to the growth of this crop.\*

In the spring of 1841, we commenced a series of experiments, with the view of obtaining some information on this subject, and conceived that we were more

† Gypsum has been strongly recommended by Sir Humphrey Davy and other writers on Agriculture, as a valuable manure for red clover, but we have found that coal, peat, and wood-ashes—particularly the ashes of ash-wood—are much more efficacious. This is chiefly to be attributed to the potash they contain.

‡ Liebig's Agricultural Chemistry, pp. 110, 128. And we believe that Dr. Madden, when at Penicuik, had satisfactorily proved, by a series of observations then recently made, that the rain which falls between the sea and the Pentland hills, contains more saline substances than the rain which falls beyond that range.

likely to arrive at the truth, by beginning at the germination of the seed, and marking with care the progress which it made in the different stages of its growth. A piece of ground was selected adjoining the house, the soil consisting of a fresh loam, and as much alike in character as one soil could be. Two rows of boards, eight inches broad, were placed edgewise parallel with each other, at six feet apart in the ground. The earth was then put in and equalised between the boards till an inclined plane was formed by it, with a rise of one inch in the foot. The earth was thus level with the upper edge of the south board, and six inches below the upper edge of the north one. This inclined plane, though only six feet wide, was seventy feet in length. Sixty-eight gentle impressions were made upon the mould with the handle of a rake, after the plane was made as smooth and uniform as it could be. In those impressions, the same number of the different kinds of seeds most commonly used in Agriculture were sown,\* and more earth was then put in till it was level with the upper edge of the boards. The seed sown in this way, had little or no cover of earth at one end of the row, but the cover gradually increased, till it reached a depth of six inches at the other end. The boards enabled us to make this cover with great accuracy, so that at every part of the rows in which the seed germinated, there was an inch of additional covering of soil for every foot in length; so that by applying the foot rule to the surface, we would ascertain at any time the depth of the seeds, and by assuming the half of the space in which the seeds germinated, that gave the proper depth of covering. The seeds were equally exempted from the risk of germination being prevented by too much cover, and at the same time from being lost, in case of dry weather, from having too little. We thus arrived at what may, with confidence, be regarded as the proper depth at which clover seed should be placed; and of six samples sown in this way, namely, English, French, American, Flemish, Juliers, Sucklings, the average, and therefore the proper depth, may be stated at one inch.

There is no doubt that seeds will germinate at a greater depth in a light gravelly or sandy soil than in a clayey one; but we consider the soil in which the experiments were made as equally removed from both these extremes, and, in this respect, as of a very fair average for an experiment of the kind.

(To be continued.)

\* For this we were indebted to the kindness of Mr. Thomas Kennedy, nursery and seedsman, Dumfries.

TO PRESERVE PARSLEY IN WINTER.— Cut your Parsley when full grown, hang it up to dry, and when wanted for use, rub a little in the palms of the hands, put it in the pot, and it will resume its smell, flavor, and color, although it may have been kept for years.

From the Farmers' Gazette.

## TO THE YOUNG FARMERS OF IRELAND.

LETTER V.

### MIXED OR PUTRESCENT MANURES.

My Friends—We have, in some measure, seen how far we may supply the natural wants of the soil as to its earthy ingredients, and in what manner mineral manures act on it; let us now enquire how those manures which are composed of vegetable and animal substances, and without which the effects produced by mineral manures are imperfect, are to be collected and applied.

Unaided nature voluntarily contributes to the support of plants by the process of decay, death and recombination, which is continually going on, for the death of one generation of plants is but the commencement of new life and the supply of fresh nourishment to others, "that an oak may live an acorn must die." Death thus goes before life; every living thing dies and is resolved into its original elements; the dissolution of its organic form brings forth the seeds of new existences. Thus life is sustained by means of death. The earth which supports our bodies, teems with the remains of the animals and plants that have successively lived and died on it; the more it contains of the residue of living substances, the richer it is in the elements of re-production.

Instead of making a mournful visit to the churchyard in search of rank soil, fit food for plants, I procure this plentiful of guano, which is a compound of decayed organic matter (principally the excretions of sea birds), and is found to contain all the ingredients necessary as food for plants. Some thousands of sailors and many hundreds of ships are annually engaged in importing this manure from S. America.

Now if I intended to force land into productiveness, suppose at the close of my term of tenure, and had no favorable intentions towards my landlord, I would go on board a ship, suppose at Liverpool, freighted with guano, and remain there (if the strongly-aromatic odour from the ammoniacal salts would permit me,) until I had purchased and carried away as much of this manure as I required, before any dealer in the article had the opportunity of trying experiments on it in his stores. Of course I do not mean to insinuate that any mercantile importer of guano would intentionally add any matter to the genuine article that might have the unfortunate effect of lessening its value or increasing its weight; yet, from the pure motive of rendering it better, he might add something to it not quite chemically correct, just as a baker occasionally adds alum or bone dust to his flour to improve the colour, or some other matter which he conceives likely to improve the texture of his loaves; therefore, I should wish to save any commercial gentleman trouble in this way, and the more so as I could probably procure the sub-