

erly. From one-and-a-half to three cwt. is the common quantity applied. Where the common or perennial ryegrass predominates in young layers, nothing will 'up' such a heavy crop as nitrate of soda. The best time for its application is just when vegetation has made a decided start.

On the other hand, when the red clover plants are more plentiful, Peruvian guano, which is soluble, and comes more slowly into action, is usually considered better suited than nitrates. Manure dressings of guano often strengthen the other plants and make them keep a vigorous crop of the land. Guano, too, should be applied earlier in spring than nitrates in all cases, especially where clovers abound.

Red clover is a much slower growing plant than either Italian or common ryegrass. It does therefore, make so good a return for applications of nitrogenous manures. And, besides, when grown as a mixed crop, the true grasses sometimes rise so rapidly with liberal manurings that they often overtop and weaken by their own slower growing rivals. Were clovers alone they would be far more grateful to nitrogenous manures, but, being usually mixed with ryegrass, they are not placed upon an equal footing. This is all the more apparent when nitrates are used for a well mixed layer of seeds. In this case a full and well mixed crop of hay may be drawn up, but the clover is far more exhausted and less fitted for producing an aftermath than when guano is used.

It ought always to be kept in mind that there is a special unfitness in clover for being benefited by dressings of nitrogenous manures. Ryegrass and ryegrass, as usually grown, have very different capabilities for digesting or assimilating a certain amount of nitrogen in a given time. The difference in this respect between red clover and Italian ryegrass, which may be taken as representatives of two different families of plants, is not nearly so great as betwixt these and other individuals of their respective families or orders. It is only a few of the many kinds of grasses that respond to liberal treatment, and are therefore fit objects for cultivation.

If a rich old lawn is dressed richly with nitrogenous manures, a few species grow up besides the others, and keep them out of view. As in the animal so in the vegetable domain, each species has a limit or capacity of growth which cannot be exceeded. We have ceased to look for the plants which will flourish without manure, but, instead, for those which in some measure act the part of gluttons, and at the same time give a good account of themselves when they are supplied with. No plant can surpass Italian ryegrass in this respect, for it is supplied with moisture and manure, it almost uninterruptedly throughout spring, summer and autumn.—*Scottish Farmer.*

## The Earthworm—Its Use.

Reaumur calculated that the number of worms on the earth exceeds the grains of all kinds of corn used by man, and as, perhaps, there is in no other animal so preyed upon without any diminution in numbers as the earthworm, the calculation may not be far wrong. Hedgehogs, frogs, and moles devour it; beetles prey upon it, and often cast their young on it—and but for the earthworm a large portion of the bird family would soon deteriorate or perish, for, with the exception of the finches, there is scarcely a bird, from the robin to the wild-geese, but eats it, and many, during open weather, live almost solely upon it. After a summer shower, the farm-yard ducks actually race against each other along the roadsides in search of it; and on wet days they each devour hundreds. All river fish feed to a great extent upon it; and wherever the river beds are of a clayey substance, worms are more plentiful than in *terra firma*.—The river worms are darker in colour and flatter as a whole than the earthworms, but so little do they differ in appearance that a novice could not tell the land from the waterworms. The worms in the water live under the embedded stones, and trout are generally on the watch to gobble them whenever they leave their abode; they even move and turn over the stones in search of worms and the larvæ of water flies.—When a flood comes, the stones are generally displaced in great numbers, and at such a time (in a river such as the Tweed, for instance) the worms must be dislodged and carried along the river bottom in tens of thousands; and it is for such food, too, that ducks are constantly gumping among river shallows; for, if watched, it will be seen that they insert their bills below, or move, mostly all the likely stones they pass. We have frequently turned up worms at a depth of about one foot in the rivers.

But though the worm yields a considerable amount of food to the birds and fish that grace the dinner table, it is much more beneficial to man as a fertilizer of the land. Subsisting on the earth through which it burrows, with an occasional meal from a decaying tuber or leaf, its excretions from the husbandman are of the smallest nature; whereas it lightens "the earth's surface" by its burrowings, and thereby aids the spreading of the roots of all cereals and bulbs; and the burrows also carry down water after heavy rains, that, but for them, would often gather in surface-pools, and thereby injure the crops; and they also admit the air to the soil to a depth by which by natural means it could not reach. The earth ejected by them also tends to the improving of the soil; and instances are known whereby these droppings or "worm casts" caused in a few years, a considerable increase to the depth as well as the quality of the soil. Mr. Darwin, the naturalist, gives