

of the feeders of ensilage, the Professor seems to have proved that the dry foods fed during the cold months of winter gave a larger flow of milk than the grass (the most perfect form of ensilage) gave during the summer, and the summer is the season of the year when succulent foods, if necessary, are most required. For, in order to keep down the animal heat, a certain amount of perspiration is necessary. This being drawn from the water in the body, necessitates an extra supply of this substance to be taken into the body, and this extra supply is most perfectly obtained in the succulent grass. In winter, however, as has been proved by experiments, this extra supply of water is very injurious, as both heat and force are required in expelling it, and heat is lost. It is owing to the great amount of water which turnips contain that they, if fed in too large a quantity, have been found injurious to economical feeding.

The quality of milk produced by dry food, the Professor claims, was also better than that obtained from grass; and I believe him; for the more water the food contains, the more water will be found in the milk. The practice of adulterating milk in the cow by giving her sloppy and highly carbonaceous foods is, as every dairyman knows, a very expensive one, and would, I am convinced, be dropped if the milk were sold according to quality.

Some may claim that, although the extra quantity of water in ensilage is injurious, the greater digestibility and the more perfect saving of the ingredients of animal nutrition in the foods will more than counterbalance this; but even this, if critically examined and compared with facts established by experiments, will not "hold water," for repeated experiments conclusively prove that simple drying does not diminish digestibility of foods. But, on the other hand, the heat developed in ensilage reduces to some extent its feeding value; and if acetic fermentation should set in—as has been occasionally reported in the history of ensilage—the food is very materially injured.

A certain amount of *sweet* ensilage fed in combination with dry, coarse fodder and grain, may be very beneficial, being in this respect the same as a moderate quantity of roots fed in a ration. But fed in such quantities to entirely supplant other coarse fodders, especially if the stables have no warmth to spare, is in my opinion a very wasteful practice, to say the least of it.

When critically reading the experiments with ensilage, it will be found that frequently an average crop of hay is compared with the greatest amount of ensilage corn that an acre is capable of producing; and it is, therefore, the difference between the feeding value of such an acre of corn and hay that such experiments pass off as the difference between dry fodder and ensilage. If they want to find out the true value of ensilage, they should take two parcels of the same weight and of the same kind of fodder in its green state, and preserve the one in the silo and the other in the hay mow, and then accurately notice the results. But, to my knowledge, no such experiments have been conducted by any one of the ensilage advocates.

Thanking you for kindly inserting these remarks, and hoping that they will benefit some of my brother farmers, I am, yours,

ORILLIA.

It is not the best plan to store machines in fields or barnyards.

Fertilizers.

NO. V.

In previous articles we have discussed the principal special fertilizers which supply phosphoric acid to the soil. It being the plant food of which the smallest supply is present, makes it a very necessary subject for study; but as its deficiency does not affect the present generation as much as those who are likely to exist in centuries to come, it does not arouse the interest of the practical man as much as the supply of the nitrogenous fertilizer—one of those essential constituents of plant food which are frequently deficient in the soil—the deficiency of which (although its supply is practically inexhaustible) is a frequent cause of reduced crops.

NITROGENOUS FERTILIZERS.

These fertilizers receive their name from one of the elements which they contain, namely, nitrogen, a gas which constitutes about four-fifths of our atmosphere. But in order to be of any value to growing plants this gas has to be united with either one or both of the elements of water, and thus form either ammonia, nitric acid, saltpetre, nitrates or various other compounds, all spoken of collectively as combined nitrogen. This combining of nitrogen is going on almost continuously by various agents, of which the lightning flashes during a thunder storm is the principal one. But as other agents (chief among which are fire and decay of vegetable matter) are again at work to decompose this combined nitrogen into its elements, the store of this combined nitrogen is not materially changed. It being a very stimulating and expensive fertilizer, it is very desirable to preserve it as much as possible; and as some of them are very volatile, being very easily sent up into the air, and others very soluble, being easily washed into the subsoil (beyond the reach of plants), much skill is required to retain even that portion which is not decomposed.

One of the most fruitful causes of loss of combined nitrogen is the old system of summer fallowing. By its means a larger portion of combined nitrogen is sent into the air, a larger portion decomposed, and a larger portion is washed into the sub-soil than would be the case if the field were covered with a growing crop. No doubt a portion of the nitrogen which is left is transformed into such a condition that it can be taken up more readily by the next crop grown on it, and it is owing to this fact that summer fallowing has gained such a hold. But as almost identically the same beneficial results, and none of the injurious, are obtained with a green crop of clover, there is no reason why the summer fallow should be continued. The killing of weeds was held to be a prominent point in favor of the summer fallow; but, in the first case, weeds should never become troublesome on a well-managed farm; and, secondly, if they exist they can generally be overcome by other means, which have been, and shall again be, described in the ADVOCATE. Anything that shades the soil saves the nitrogen of the soil, but the nearer this shading material approaches a luxuriantly-growing crop of clover—which, with its long and searching roots, does not only prevent the nitrogen from sinking into the sub-soil, but also brings up some that has passed the reach of other plants—the better it is. Another great cause of loss of these valuable fertilizers is found in the method in which farm-yard manure is frequently handled. By being

exposed to the rain and snow, by overheating, and by long exposure of this manure in the field, an incalculable loss is annually caused, which, with a little care, thought and use of absorbents, viz., land plaster used on the manure heaps, could be easily saved.

Nitrogen, as stated above, is a stimulating fertilizer, but its stimulating effect is more noticeable by an increased growth of hay, straw, &c., than in an increased grain yield, although on lands that are very poor in this plant food the difference in the effect on the grain and straw is not so much noticed.

Although most soils suffer from a deficiency of this fertilizer, it is possible to have too much of it in the soil. All of our readers will have seen spots which were too rich; well, this richness is due to the superabundance of nitrogen. It is very easy to determine if a soil requires nitrogen. All soils producing a rank growth of straw, compared with the grain, soils on which the straw is liable to lodge and rust, and soils which have a dark appearance, are all well supplied with this fertilizer, and their faults may generally be corrected by sowing a little bone-meal, or ashes, or both. Lime is also sometimes beneficial.

Mulching Wheat and Clover.

The drought of the past season should make every tiller of the soil very eager to adopt any measures by which its evil effects can be overcome, and thorough drainage, liberal manuring and constant stirring of the surface soil or mulching, are the best means which we as individuals can adopt to accomplish this. No doubt all of us have noticed their beneficial results, but comparatively few of us will even have thought of using a mulch on our fields; however, it has been done, and with very satisfactory results, as the following extract from the Rural New Yorker, written by T. B. Ferry, will show:—

I have some land with a north-western exposure which is quite poor, and where wheat is apt to winter-kill. There was about an acre of this kind in a field put into wheat last fall. I happened to think that perhaps a mulch of straw would help it somewhat; so on half of the spot—about half an acre—I spread with great care an ordinary jag of straw. There was probably about half of a big load, or half a ton. I did not dare put it on thickly, since, having no experience in this line, I did not know but it might smother the wheat. The application was made just before winter—about November 15, if I remember correctly. I spent a good deal of time in spreading this straw very evenly.

It was very dry last fall, and the wheat came up and then stood just about still, until winter; but although very little growth was made, I had not put on straw enough to hide it.

In the spring I failed to see that the straw had done much, if any, good; but at harvest time the wheat showed very decidedly where the straw was. The gain in wheat would have paid me well if I had covered all the exposed part of the field. But to me the most wonderful benefit was to the clover. I can hardly believe my eyes now, when I go over there. Clover seed was sown on the field in the spring. Where the straw had been put, almost to an inch, there is a grand growth of clover. On the rest of the poor spot it is a very moderate growth. There can be no mistake, as in spreading the straw we were not particular to keep the outside line