

The Professor adds, by way of comparison, the results of two analyses of hay—one well-made clover hay and the other good meadow hay. He found in 100 parts of these—

	CLOVER.	MEADOW.
Water	20.50	16.66
Soluble organic mat.	18.07	17.79
“ inorganic “	4.43	4.37
Insoluble organic “	54.38	57.78
“ inorganic “	2.62	3.40

The general conclusion to which the Professor arrives, from the results of his laborious and valuable researches on straw, of which I have made but a very small abstract, are these (to give his own words): “Assuming the land and climate to be equally well adapted for producing in each case, and the crops to have been harvested in the same stage of maturity, I am induced to place the different kinds of straw in the following order, beginning with the most nutritious, and ending with the least valuable for feeding purposes:—

1. Pea haulm.
2. Oat Straw.
3. Bean staw with the pods.
4. Barley straw.
5. Wheat straw.
6. Bean straw without the pods.”

From careful researches like these, the young farmer will rarely fail to derive valuable materials for his profitable consideration. The very varying value of the straw of the same cereal, according to its unripe, ripe, and over-ripe state, may, in this period of extending stock keeping and increasing demand for food, lead him to make sundry valuable calculations; and this differing value of the different kinds of straw may in some instances have a considerable influence in the selection of his rotations. In any case he will arrive at a wise conclusion if he is convinced that there are valuable observations yet to be made, chemical researches of an increasing value, even upon a green blade of grass or a golden straw, which will continue to profitably excite the curiosity and reward the studies of the agriculturist.

Manures for Grasses.

A thick carpet of such fine grasses as are seen in our old and rich lawns, is one of the most beautiful crops that can meet the eye. The great variety of species which are found in the best pastures flourish on the same spot for centuries, and grow without much or any care bestowed upon them by man. It is, generally speaking, only first or second class land that yields good permanent pastures. All the best and most nutritive grasses soon die out when the soil is poor and unsuitable. This in many cases does not seem to arise so much from an actual

deficiency of nutritive matters as from a certain condition of soil which does not maintain its roots in a healthy state. On a great many descriptions of land, the application of lime has wonderful effect in lending vigour to worthless and worn-out lands when all other applications have comparatively little. One of the functions of this agent appears to assist in the healthy composition of the accumulating vegetable matter.

When inferior pastures arise from an actual deficient supply of mineral matters, such as phosphate of lime, the application of bones well known to produce favorable results. The use of bones has been the right arm in increasing the productive powers of our rotations, though, for obvious reasons, the effect are now usually much less marked on these than on turnips.

In the manuring of grasses and turnips with phosphates, a few well-marked characteristics these crops ought to be kept in mind as guides to the economical use of the substance. The grasses in an old pasture field or even those of the young layers of one of our rotations, have an ample staff of roots running through the soil. These are already in contact with the earthy food of plants, and much more easily take up what they require than a plant like the turnip, which has all its roots in the soil, must grow fast, and meet with a corresponding liberal supply. This is the secret of the magical effects which a dressing of superphosphate often has upon young turnips. We sometimes dress liberally with phosphates superphosphates, for the turnips, even when there is abundance of the fertilizing ingredients to which they owe their efficacy already in the land.

It is quite different with our grasses, natural or artificial. By the permanent mass of roots which they leave in the soil, they can grow luxuriantly when the supply of phosphates is more scanty. For this reason it is seldom phosphates or superphosphates can be economically used either for pasture or hay, where land is under a regular rotation. What of these substances remain, after the demands of turnips and succeeding white crop have been satisfied, are usually far more than sufficient to produce full crops of grass, if nitrogenous manures are only used.

For these reasons, there is scarcely any to which nitrates or manures containing ammonia can be used with greater certainty than grasses. Their roots, being thickly scattered over the land, readily absorb these soluble manures when broadcasted over the surface. A very fact of rapid growth succeeding such application shows that the plants are obtaining a supply of the earthy matter they require.

The comparatively moderate price of nitrate of soda of late years has caused it to be much more generally used for the grasses.