

All these foods vary in a contrary direction from the coarse fodders, and although they are highly nutritious, yet the nutriment is decidedly unbalanced, and therefore unhealthful and productive of disease. Wheat bran approaches most nearly to a complete food; oats are the next to bran in the list, and thus oats, with occasional feeds of bran, so called to help its digestion and given with a portion of hay is a complete but costly food for horses. Economy, however, has to be considered, and it is one object in discussing this subject to show how cheaper foods can be substituted for the more costly ones, with equivalent results.

Corn, it is seen, contains 50 per cent, excess of carbonaceous matter, which easily explains how corn-fed animals, (swine for instance), become diseased by overloading of the blood with these elements, and depriving it of its due proportion of nitrogen, the excretory organs being unable to dispose of the overplus. Cottonseed meal is another ill balanced and dangerous food which is to be used with the greatest caution to avoid excess.—*Times*.

GRASS LANDS

At any season we may very usefully take up the subject of GRASS LANDS in its various aspects — seeding, whether in spring or autumn, top dressing, laying up for the hay crop, summer grazing and soiling, or cutting for hay or ensilage. With the latter aspects however, we cannot on this occasion deal, and would very briefly refer to those of more immediate interest, viz., seeding, top dressing, and laying up for mowing.

To ensure success in seeding to grass, the land must be (1) perfectly clean, (2) in good tilth, and (3) in at least fair manurial condition; and (4) good seeds of the right kinds and in the right quantities must be used. Where the seeds are sown after a root crop, as is generally the case, there should not be the slightest difficulty in fulfilling the first requirement. As regards tilth, when the "seeds" are sown along with a corn crop, this is best attained by allowing the corn to braid before sowing the grasses and clovers, when the latter need only be rolled in. Feeding a crop of turnips on the land by sheep is one of the best preparations for the young grasses from a manurial point of view, provided due care is taken to plough in the manure as fast as the turnip fold is shifted. Where turnips have shown any appearance of finger-and-toe, the land should be limed if it is to be laid down to permanent pasture.

The seeds sown must vary in kind and quantity according to the nature of the soil and the object of the pasture. "If a pasture is generally to be mown for hay, then varieties of grasses should be chosen which come to their greatest perfection at the making season. If, on the other hand, the field is to be generally grazed, a selection should be made which will ensure a continuation of feed throughout the whole year. Pastures for sheep should be formed of finer, closer-growing varieties than those to be fed by cattle, and bullock pastures may contain many varieties which it would be useless to sow on a trainer's paddock." The use of short-lived grasses and of biennial clovers, coupled with an insufficiency of proper seed, is, in Mr. Faunce de Laune's opinion, the main cause of the deterioration of new pastures after the first two or three years. As a rule not less than 40 lb. to 45 lb. of seeds should be sown in a permanent mixture. Want of space prevents us giving the details of various mixtures, but it may be well to give Mr F. de Laune's mixture of seeds for good or medium soils, which is as follows:—Foxtail, 10 lb.;

cocksfoot, (1) 7 lb.; catstail, 3 lb.; meadow fescue, 6 lb.; tall fescue, 3 lb.; crested dogstail, 2 lb.; rough meadow grass, 1½ lb.; hard fescue, 1 lb.; sheeps' fescue, 1 lb.; florin, 1½ lb.; yarrow, 1 lb.; perennial red clover, 1 lb.; cow grass, 1 lb.; alsike, 1 lb.; Dutch clover, 1 lb.—total, 41 lb. per acre. This, it will be seen, excludes rye-grass, which few Northern farmers would care to do.

For rotation grasses from 22 lb. to 30 lb. of seed per acre is usually given, according to the number of years' lay. Thus, on medium soils, Mr. Hunter recommends, (1) for one year's lay, 22 lb. of the following mixture:—Italian rye-grass, 5 lb.; perennial rye-grass, 3 lb., cocksfoot, 3 lb.; catstail or timothy, 2 lb.; alsike clover, 1 lb.; broad red clover, 6 lb.; and trefoil or yellow clover 2 lb. (the foregoing for mowing; if for grazing, replace 2 lb. red clover by that quantity of white clover); (2) for two years' lay, 25 lb., in the following proportions: Italian rye-grass, 4 lb.; perennial rye grass, 5 lb.; cocksfoot, 4 lb.; meadow fescue, 2 lb.; catstail, 2 lb.; alsike, 1½ lb.; broad red clover, 4 lb.; white or Dutch clover 1½ lb.; and trefoil 1 lb.; and (3) for three or four years' lay, 30 lb., as follows: Italian rye-grass, 3 lb.; perennial rye-grass, 7 lb.; cocksfoot, 6 lb.; meadow fescue, 3 lb.; hard fescue, 1 lb.; crested dogstail, 1 lb.; catstail, 3 lb.; alsike, 1½ lb.; broad red clover, 1½ lb.; perennial red clover, 1½ lb.; and white clover, 1½ lb.—Mr Sutton's superb volume on the grasses may also be consulted on this, as on every other practical point in grass land management.

As a top-dressing for "seeds" to be cut for hay, we know of nothing more effectual, in the shape of artificial manures, than equal mixtures of superphosphate and nitrate of soda. On light soils kainit may be added to the mixture with advantage. The quantity of the mixture that can be profitably applied may vary from 3 to 5 cwt. per acre, according to the condition of the land and the demands to be made upon it. As a top-dressing for permanent pasture, where the land is poor, and farmyard manure is not available, 1½ cwt. to 3 cwt. each of bone dust, Peruvian guano, and kainit will be found to produce a good and durable effect.

It is bad policy to pasture mowing lands late into spring, but when there is not a full bite of grass on the other fields, and hay, straw, and roots are already exhausted, there is sometimes, in exceptional seasons, no alternative. If possible, however, the fields to be mown should be laid up early in April at latest. Grass meadows should first be looked over for mole hills, and if any are seen these should be levelled without baring the spots; then the whole meadow should be well chain or bush harrowed; next, all stones, rubbish, &c., picked off; and the ground finally rolled with a plain iron roller. (2) Clover "seeds," rye-grass, and rotation grasses intended for mowing should, at the time of laying up, be picked clean of all surface stones, &c., and well rolled. Where there is a well-established plant, a turn of the bush or chain harrow first will also do these good. If any top-dressing is to be given, it may be applied after the rolling, if the weather is showery at the time; but in a very dry time, we prefer to brush it in and follow with the roller. *Eng. Ag. Gazette*.

PLASTER.

Land plaster, when perfectly pure, contains (per cent) sulphuric acid, 46.50; lime, 32.56; water, 20.90. When subjected

(1) Cocksfoot is orchard-grass. Yarrow, Italian ryegrass, and trefoil or hop-clover, are no good here. A. R. J. F.

(2) Ah! If our farmers here could only see an English meadow in the middle of May after the treatment mentioned in the text.

A. R. J. F.