

## Grasses and Forage Plants.

### GRASS LANDS.

The economic and yet adequate sustenance of animals which contribute so largely to the comfort and usefulness of mankind, is scarcely inferior to the importance of securing the direct food supplies of the people themselves. And not only, in this point of view, is the subject of "Forage Crops" of incalculable importance to the agriculturist, but also from the fact that by the cultivation of the grasses he largely contributes to, and maintains, the fertility of the soil. Laying down land to grass is, now-a-days at least, an acknowledged method of resting and recruiting soil that has been impoverished by over-cropping. Hence the opinion that grass land improves in quality with age, the extreme reluctance with which permission is granted in Britain to break up old pastures, and the exceedingly high rents they return to the proprietor from the grazier.

But, whilst fully admitting the invaluable benefit derivable from laying down fields to grass, we must ever bear in mind that the good to be accomplished thereby is exactly proportionate to the quality of the land and the treatment it receives. We have indisputable evidence of this in the extensive commons, heaths and wastes, which, lying in pasture from time immemorial, have, even in the most highly cultivated countries, been considered so worthless as not even to be worth the outlay for enclosing it, therefore, follows that the mere laying down of land to grass will not make all soil good, whatever be the length of time it remains in pasture. It has also been ascertained that some grass lands will retain their good heart for a considerable period without manuring; whilst others, again, if grazed, cropped with sheep, or mowed for hay, will gradually deteriorate unless some fertilizing stimulant is applied in accordance with the nature and requirements of the soil.

Among the undoubted benefits realized from leaving land in pasture is the gradual accumulation of a dark brown soil, rich in vegetable matter, thickening or deepening in proportion to the age of the pasture. It seems to be a law of nature that this accretion takes place more rapidly in temperate than in tropical climates, as if it was intended that by the more speedy absorption of the sun's warmth by this dark mould, vegetation would be more easily promoted, a matter of great importance in countries where the summer is comparatively short. In light and sandy soils this deepening of vegetable mould is more readily arrested than on soils of a heavier character. The roots of the grasses are also extensive contributors to the formation of this vegetable mould. Professor Johnston declares that on an average the annual production of roots on old grass land is equal to one-third or one-fourth of the weight of hay carried off, varying no doubt with the character of the grass and the soil. If a field yields two or three tons of hay per acre, it is calculated that from half a ton to a ton of dry roots is produced and left in the soil. It is also asserted that in many wheat fields the quantity of straw left in the form of stubble and roots is oftentimes greater than the quantity carried off in the sheaf. It will thus readily be seen how great an accumulation of rich vegetable mould takes place every year a field is allowed to remain in pasture.

But there are other agencies at work in the formation of mould, such as the penetration of the roots of the grasses to the subsoil, opening up a way for the rains which carry downwards along with them a certain per-centage of the surface soil. Then, again, there are the heats of summer and the frosts of winter, causing contraction of the soil. In a dry summer the welcome rain falling on a parched field or a thaw in winter, makes the earth expand, whilst the roots of the grasses remain nearly fixed; in consequence, the soil rises up among the leaves, mixes with the vegetable matter, and assists in the production of the mould.

### Cultivation of Rape.

Rape is cultivated in this country, not for its seed, but for its leaves as a forage plant, and a more wholesome food for sheep is not raised on the farm. It is raised in summer to be consumed in autumn. The culture up to the sowing of the seed, is precisely the same as for turnips, though it does not require the same quantity of farm-yard dung as the turnip.

The culture of rape ceases after the sowing of the seed, as the crop is not thinned out like turnips or the other rooted green crops, the object being to raise a sufficient number of stems to produce a large crop of leaves, for which purpose 2 lb. of seed to the acre will suffice; and as the seed is large compared to that of the common turnip, and about the size of that of the swede, that quantity will not produce too many plants to stand in the drill. Rape seed affords 810 seeds to one drachm, and weighs about 53 lbs. to the bushel. The turnip sowing machine is used for sowing the seed, using one of the larger-sized holes in the seed-box. When weeds make their appearance before the plants are sufficiently advanced in height to keep them down, the sculler, drill grubber, and double mould-board plough, must be put in requisition to remove them, and place the ground again in its proper form and state.

Rape will grow on almost any soil, and certainly well on clay, on which it requires less manure than on hard loam; but it grows on none so well as on drained marsh land, resting on a clay subsoil.

Rape is chiefly raised to be consumed by sheep, by folding on the land, for the double purpose of manuring the soil and fattening sheep; and to attain both ends the rape seed is sown in June and July, and the crop is ready for being folded on in September and October.

A correspondent of the Albany Cultivator says that if the crop is to be hand-hoeed, the drills may be only ten inches apart, but if the horse-hoe is to do the work, the drills will need to be twenty inches apart or more. The after culture consists in keeping the ground stirred occasionally and free from weeds. The plants are allowed to grow pretty closely together in the rows, and as soon as they get about eighteen inches high the stock to be fed on them may be turned in, allowing them only an hour a day for the first week, and not more than two hours a day at any time till black frost comes, when they may be allowed full range to finish up the crop before winter. In England it can be fed off all winter, but in Canada the frost is too severe, though not sufficiently so to kill out the roots, which, if left in the ground will produce a crop of seed the next season. This it is desirable to avoid, as the seed crop is very exhausting to the soil, though the leaf crop of the first year is not. Hence great care should be taken to plow under the roots as soon as they show signs of vitality in the ensuing spring. Even then some will escape and start growing among whatever crop may be sown on the land. Such plants must be pulled up by the roots as soon as they can be seen growing. Rape is a good crop on which to feed milk cows in autumn to obtain a flow of milk at a time when the pastures are comparatively bare, but they must not be fed to excess on it, as it is very stimulating, and liable to cause abortion in some cases.

### Nutritive Value of Grass.

The *American Rural Home* gives some interesting experiments that have been made by German chemists, on the nutritive value of meadow grass at different periods of its growth and upon hay cut at different seasons. An elaborate series of analyses show that young grass is more nutritious than mature grass, and physiological experiments show that it is more easily digestible. Thus grass two and a-half inches high contains nearly fifty per cent. more of albumenoids than grass which is six inches high, and about ten per cent. more of "crude fat" (5.24 per cent. against 4.82). The mature grass contains mere woody fibre and less ash than the young grass, and besides this, it is found that the nutritious albumenoids exist in a less soluble form in hay than in young grass. Hence the difference of nutritive value and digestibility. Autumnal hay was found to be more nutritious and digestible than summer hay. Some qualifications as to this result must be made for the West, inasmuch as it was obtained from German hay, grown in a moister summer climate than ours. Similar experiments were made by E. W. Wolff on clover. He found that its digestibility diminished during the four weeks from the beginning to the end of flowering, while the digestibility of clover hay was about the same as that of green clover cut at the same stage of growth.

### Prepare Land for Turnips.

In a few weeks we shall again be on the land, busy with the ploughs and harrows. If the land intended for turnips this summer was properly manured, and ridged and furrowed last autumn, there will be little difficulty in getting it ready for the seed, as soon as the season for sowing turnips comes on. To see this effectually, we must bear in mind that the great cost of growing root crops, arises from weeds and their destruction. Were it not for weeds, turnip growing would be easy work. But weeds will come, and the only way to contend effectually with them, is to harrow the rows lengthwise at intervals from the first of spring with a very light harrow. By this course the young tender weeds are killed as fast as they germinate. They may not be visible, but they are there, and if let alone, they will show themselves at a moment when you cannot stir the soil and soon cover the ground and stifle the turnip. Where turnips will grow, weeds will grow, and if weeds are allowed contemporary growth, turnips cannot flourish.

If the land has not been manured and prepared last autumn, it ought to be ploughed at the earliest possible moment in spring. If the ploughing is left until the season for sowing turnips arrives, and no harrowing consequently done to destroy the young weeds, turnips and weeds will grow together, and the labor of subduing the weeds will be trebled. By properly attending to the cleaning of the land before seeding, there ought not to be any hand-hoeing required, until the turnips are several weeks high; singling must of course be done as soon as required; but one hoeing by hand ought in ordinary seasons, to be sufficient. Three hoeings are absolutely requisite, but hand hoeing is very expensive, and the necessity of manuring too should be avoided when possible, consistent with the production of a good crop. We must have roots, if we would have good cattle, and without cattle, our manure supply would be a scant one.

### Hungarian Grass.

During the last season, in consequence of the drought, many farmers prepared for the shortness of the hay crop which was threatened, by the substitution of grass seeds of rapid growth. Among these Hungarian grass was very prominent, and, so far, our accounts all concur in the report of a great and satisfactory success, the yield being generally very large, and the quality such as to be very desirable, either for soiling purposes, or for curing for winter supplies. Mr. Chalkley Harvey, of Pennsylvania, has raised it for several years, and he writes thus:—

"On one occasion he had been feeding his cattle for some time upon it, and after it was all gone, and they had to go back to common hay and fodder, there was a marked declension in their appearance, especially in the glossiness and smoothness of their coats. This he attributes in great measure to the large amount of oil contained in the seed. He stated that if two horses were taken alike in other respects, and one was fed all the good Hungarian hay he would eat, and the other had common hay, and 8 quarts per day of such oats as we commonly raise in Chester county, of later time, that the horse fed on Hungarian alone would appear and thrive the best."

Another great consideration with this grass is, the short time it requires to mature the crop. An evidence of this is given by the correspondent alluded to above, who, in sixty-four days from time of sowing, harvested a crop, having a piece of ground of a deep, mellow soil, which accurately measured, was found to be 1-16 of an acre. He gave it a good coat of barn-yard manure, and sowed the seed on 21st May, (1½ bushels,) a nice shower of rain soon afterwards came on, and it grew luxuriantly, and on the 24th and 25th July, he cut and cured over a ton of good dry hay, which he saved for winter use.—*Farmer.*

GRASS SEED FOR GROVES.—In reply to a correspondent, who asks what is the best grass to sow in an Oak Grove, the Editor of the Albany Country Gentleman replies that a mixture of the seeds of the small growing English grasses for this purpose, answers well. Downing recommended a mixture of red-top and white clover for America, while others prefer Kentucky blue grass as the main or sole kind. Either of these would do well, but the latter would probably succeed best for a fine lawn in the shade of trees. The best time to sow is very early in spring, the ground having been previously well prepared by rendering it perfectly clean, and the surface rich and mellow. The quantity of seed should be large, so as to make a very dense carpet of green,—usually at the rate of two or three bushels per acre. The seed should not be covered more than a fourth of an inch, for which purpose either a fine brush or a roller may be used on a perfectly mellow surface after sowing.