

any means. As long ago as 1790, I find, "that in Hertfordshire, England, farmers have cultivated the red-clover so long and so repeatedly (every fourth year) that the soil is, as they say, sick of the plant. It matters not how fine a plant may be in the autumn, it dies away before spring. Mr. Keate had a proof of the benefit of not sowing it for one or two courses consecutively. Having part of a field for five or six years under lucerne, when it was broken up, barley and clover were sown over the part which had been under lucerne, and also over the rest of the field which had borne clover in the usual rotation—every fourth year—where the lucerne had been, the clover was extremely thick, fine, and regular; on the rest of the piece it was a perfect failure, and was ploughed up."

Again, in the report on the agriculture of Norfolk, same date, we find that "thirty years ago (1760) they had for some time found their clover crop failing, from its renewing too often; this caused the variation of substituting trefoil for one round, and the clover being sown but once in nine years, the evil was removed. And he found the same account every where in the south of the county, that the land, whatever the soil, was what they call *sick* of clover. Formerly it was sown every fourth of fifth year, but now, if it returns so often, it fails for acres together.

All over the Eastern counties of England, on the finest as well as on the poorest soils, the same disease exists to-day. The only chance the farmers have to secure a good crop of red-clover is to sow it only once in twelve years, and thus the old monotonous round of the four-course system has been converted from

Turnips, barley, red-clover, wheat;
into Turnips, barley, red-clover, wheat;
Turnips, barley, trefoil, wheat;
Turnips, barley, beans, wheat.

I think, therefore, after all I have brought before my readers on the subject of this dire malady, that I have a right to say that the frequent recurrence of the red-clover will ultimately lead to its refusing to grow at all.

And having, I hope, settled this part of the question, let us now see how we should treat the red-clover crop in order to secure the greatest benefit from its cultivation.

Seed and sowing.—The seed of red-clover is large, full, glossy, and of a bold purple colour. The usual weight is 64 lbs. per imperial bushel. When sown alone, for a one season's crop, the grant or Rawdon clover should be chosen. Fourteen pounds are plenty for an acre in good tilth. The ordinary seed-box answers very well for sowing this seed, and, if the ridges are of ordinary width, I should recommend the sower to sow two half ridges at a time with 7 lbs. to the acre and then cross the land with the remainder. This will save blanks, and a vacant spot in a piece of land that is to be untouched for at least two years is no joke. Not only will it bear nothing, but it will be a famous nursery for weeds. Why seeds succeed better with barley than with any other grain crop, I do not know, but experience says that they do.

If the season be a very forward one, I should not sow clover at the same time as I sowed the grain, but wait till the latter was three or four inches high, and then harrow the small seeds in with a pair of light harrows and roll immediately. I like the grain to get a fair start of the clover in good soils, as sometimes the latter is so luxuriant at harvest-time that it materially interferes with the drying of the lower part of the sheaves. There is no fear of light harrows injuring the grain-crop; on the contrary, the stirring will do it good.

If the season be an ordinary one, and the barley or other grain sowing be, in consequence, deferred until the middle of May, the clover-seed should be sown before the last stroke of

the harrows, and the light harrows used for covering it. It do not care to cover the seed more than half-an-inch deep. Roll, in this case, when the grain is well up.

In the fall, keep all animals off the young seeds, particularly sheep and horses.

In the following spring, as soon as the land is fairly dry, pass a *bush-harrow* across the ridges, and a week afterwards, roll, in the same direction, with the heaviest roller you can find.

Mow the crop when the majority of the heads are in full bloom. In this part of the country, this will generally be about the fifteenth of June. The second crop will be ready, on an average of years, by the tenth of August, and if the season be not too dry, a fair out may be begun for green-meat, by the first week in October. Is this treatment better for the succeeding crop of grain than one cutting and then pasturing? I think so, I have always found that the roots of the red-clover increase in bulk below ground in proportion to the growth of the stems above ground. And this is a very old feeling in England. At Ware, in England, Mr. Whitting, writing in 1796, "has no doubt about it; better wheat is grown after two mowings than after one." Mr. Clarke, of Saudridgebury—1800—"always finds his wheat better after two mowings, whereof the first is for hay, the second for seeds." Mr. Biggs, near St. Albans, "grows better wheat after mowing than after feeding, and better after two mowing than after one, and this general superiority has amounted to four or five bushels an acre."

For experiment sake, let any one take two acres of clover, keeping one closely fed all the summer, and mowing the other as often as the heads come into bloom, that is, when the plant has attained its greatest height—and, after carefully selecting a yard square of average quality in either piece, dig up the roots, say, two feet deep, and weigh them separately. I think he will be convinced that the *amelioration* of the land from this crop is owing to the riches brought up from the subsoil by the roots of the clover-plant, and not to the imbibition by the leaves of the free nitrogen of the atmosphere. (1)

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(1) Not a very clear or logical exposition of the subject, I fear, but I have been very "seedy" for the last few weeks.

MELIORATING CROPS.

Quebec, August 25th, 1886.

Certain persons have conceived the idea, that there are some crops that have the peculiarity of improving and enriching the soil that supports them; this peculiarity is more especially attributed to the leguminous crops in general, and more particularly to red-clover. The crops, they say, derive nothing, or hardly anything from the soil, and thrive almost entirely on matters absorbed from the air... from the atmosphere. Starting from this principle, they lay down a distinction between exhausting and meliorating plants, and assert that it is sufficient to maintain a proper proportion between the cultivation of the two kinds to preserve the fertility of the land and even to increase it, the deficiency caused by the one being restored, and more than restored, by the residue of the other remaining in the soil. To this principle may be referred the system of rotations which pretend to maintain the soil in an indefinitely improving condition, and even to progressively increase the crops derived from it.

I happened, one day, to have a discussion with a young man on this point who sustained, tooth and nail, the above theory, asserting that he had learned to trust in it from what he had heard during his attendance at one of our agricultural schools. Whether this was true or not, I do not know, but