

to receive and nourish seeds, nature will sow if the husbandman does not.

No pains or expense should be spared to keep land well seeded with grasses, which are valuable as easy to exterminate. With modern machinery for cultivation, a head and heart for its use, and with the variety of grasses that may be spread all over the earth as a blanket, adapted to every kind of soil, these should make us feel that we are masters of the situation as far as annoyance from weeds is concerned.—S. A. Cleaveland, before Central N. Y. Farmers Club.

Light and Heavy Soils.

At a recent meeting of the N. Y. Farmers' Club, Mr. S. L. Todd read a paper on the above subject, of which the *Times* gives the following synopsis:

A fair crop of excellent wheat may be produced on a light, sandy soil; but such land will not furnish a congenial sub-bed for growing wheat. Barley, for example, may be raised on light, mucky soils; but some other crops may be produced on such land with far more profit, as a mucky and peaty soil is deficient in those elements of fertility which make a congenial soil for barley. As all soils are spoken of by working farmers as either heavy or light, the proprietor of a grain farm will always select land that is neither too heavy nor too light. There is a grade of soils between the heavier and the light which it is always desirable to secure. Yet where the choice lies between the light and very heavy, it will be more satisfactory in every respect to choose the heavy land, as such ground will be found more congenial to a larger number of crop plants than the light soil. Besides this, the heavy soil is susceptible of being brought to a higher state of fertility than the very light land, and the fertility can be maintained from year to year with less labor and fertilizing material than where the soil is so light and porous that the elements of fertility are not retained for the use of the growing plants. When a supply of phosphatic, nitrogenous, or other fertilizing matter is incorporated with a heavy soil, larger than is essential to meet the requirements of the growing plants, the adhesive, argillaceous, portion of the seed-bed envelopes the valuable elements of fertility and retains the minute atoms until the numerous spongioles of crop plants spread through the soil the succeeding season, and lay hold of and appropriate the rich pabulum that had long been held in store. The intelligent proprietor of a grain farm, if he has adopted a system of progressive agriculture, chooses a judicious rotation of crops. Here, also, the important principle of adaptation must be strictly observed. On the heavier kinds of lands the following rotation system will be found quite satisfactory in nearly every respect, namely: Indian corn, barley, oats, wheat, and red clover. The crop of red clover should be plowed under the next year after seeding. On some grain farms the system of rotation is varied from the foregoing, thus: Indian corn, oats, rye, and red clover. In some locations rye straw is so valuable at markets in certain cities, that certain farmers prefer to raise rye instead of wheat, as the remunerative price received for the straw, together with the returns for the grain, will greatly preponderate over the profits of a crop of wheat on the same ground. Besides this, there is no other crop among the cereals with which the seed of red clover can be sown with the same assurance that there will be "a good catch" as with rye. A crop of clover in a judicious rotation is more valuable and more important than a crop of rye or wheat. Red clover will "catch" satisfactorily in some instances with wheat, oats, or barley. But as oats and barley are so liable to yield such a heavy and dense burden of leaves near the ground, the young clover is often in danger of being smothered to a ruinous extent.

Winter Fallowing.

There has been a great deal written in agricultural books and papers about summer tilling, or summer fallowing fields, which are to be seeded to grass in the fall,—some writers recommending the practice very highly, while others object to it because the best part of one season is used up in cultivating the land without getting any crops in return. Summer fallows are excellent for cleaning fields from switch grass, or other troublesome weeds; and if the land can be spared from raising a crop, the practice is sometimes economical, although farmers generally prefer to see their land producing a crop every year.

Last April we sowed a field to grass, which had neither been summer tilled nor planted to any hoed crop, but had been worked by a process which might, perhaps, properly be called winter tilling. It was well plowed the September previous, after the second crop of hay had been removed, using a strong team and turning wide deep furrows, such as would lie still after being inverted. A few days after the plowing was finished, the field was harrowed with a two-horse Share's harrow, going lengthwise of the furrow. This levelled down the furrows without turning them back.

During October and the early part of November the Share's harrow was run over the ground very thoroughly, once in about every ten days, till it was as level, fine and smooth, as a piece of old ground. Before the ground froze up, a liberal dressing of good stable manure was applied

and well worked into the surface, and about seventy-five bushels of leached ashes to the acre were spread evenly over the whole. It was then left till Spring.

Mr. J. W. Gay, of West Dedham, paid us a visit during the Fall, and expressed surprise that a piece of greenward could be made like old ground in so short a time, no weeds and very little grass being in sight on the surface. The land is naturally stony and difficult to plow, but at a former plowing the stones were dug by men following the team, and at this time a large swivel plow and heavy team were used, and the furrows turned over measured about eight by fourteen inches. This kind of plowing gives material to work upon and renders it possible to work up a good, mellow seed-bed, which would not be the case if the plowing had been shallow and imperfectly done.

Last spring the ground had settled sufficiently to allow the use of a deep toothed cultivator, which was run about four inches deep lengthwise of the furrows, and then diagonally across the field, leaving the surface in as perfect condition for seeding as if it had been planted one or more years. It was seeded to grass early in April, and two very heavy crops have been taken off during the summer, and now there is a good coat left on the ground for a winter protection to the grass roots.

This course of treatment we have given a portion of our mowing lands nearly every year for several years past, and with very satisfactory results. No crop is lost, and there is plenty of time in which to make the surface thoroughly fine, smooth and level. If any special instruction is needed by others trying this method of re-seeding grass land without planting, it is to do all the work very thoroughly, manure well, and sow the seed as early in the spring as it is possible to work the land without packing the soil or miring the team.—N. E. Farmer

Storing Potatoes.

Before storing my potatoes for the winter, I always sort them over, picking out the very small ones for the pigs, and the nice, small, or medium sized ones for seed. For seed I like a whole medium sized tuber. With a pocket-knife I gouge out all the eyes except two. In some cases I am obliged to use cut sets; in this case two eyes are quite sufficient. The sets should be cut a week or two before they are planted, so that the starch matter may dry up. Kidney potatoes I never cut, except a very small piece off the end, just before planting. My seed potatoes are kept as follows: I have a quantity of flat boxes, about 5in deep. These are filled with a single layer of potatoes, and a card or piece of paper, with the name of the variety written on, is thrown into the box. When a quantity of the boxes are thus filled, they are afterwards piled up one on top of the other, in a corner of a cellar or any out-of-the-way room which is secure from frost. Two laths or pieces of wood are placed under each box, which allows a little air to come to them. The effect of a little air causes the seed to make stronger sprouts. When no air is allowed to come near them they sprout much quicker, but at the same time they grow weakly, and are long instead of being stiff and chubby. About the end of February the boxes of seed may be removed from the corner, and spread out on the floor separately, to enjoy daylight, which will cause the white tender sprouts to become green in a few weeks, and they will harden in such a manner that there will be no fear of their breaking off whilst planting is going on. This is the best and most convenient method of preserving seed that I am acquainted with. And it is astonishing what a small quantity of room is wanted in the corner of a cellar to pile up these boxes; nine or ten boxes can be piled up, with about 1½ stone in each box. Useful boxes for the purpose can be procured at a small outlay from any grocer; they are merely empty package boxes, that are of no further use. Endeavour to procure them as near an equal size as you can, on account of fitting them firmly upon each other; but the weight of the potatoes will hold them firmly together. In storing potatoes for eating, I find it best not to heap too many together; and, as it is said that potatoes always eat the best when just taken out of the clamps or pies, I stored mine in the following manner: Make a round hole in the garden, about 5in. deep and about 3ft. or 4ft. in diameter, according to the quantity to be stored. Place a fair quantity of wheat straw in the bottom of the hole; then spread two thin layers of straw across this circle, and you will have four cavities, each holding about 4st. Place a different variety in each cavity, taking care to use plenty of straw between each division, in order to prevent the sorts from getting mixed. When they are piled up in the form of a cone, cover the whole with straw, previous to which place a strong stake or stick, with a tally tied to it, firmly into the ground, close to the division containing the sorts named; then cover up with soil by deep digging round the pie. Whenever you want a few of any particular variety, you are directed to the exact spot where to find it by your stakes. A small hole can soon be made, and a few taken out at any time. The trench made round the pie drains off the water, and keeps them perfectly dry. Five of these small pies will hold twenty bushels of potatoes, and all of them may be of different varieties. There is a great benefit in storing them in small pies—they are not so liable to heat and sprout as when larger quantities are heaped together in a field.

Relative Value of Fertilizers.

We find the following sensible paragraphs in the American *Agriculturist*:—"You pretend to be able to tell what a ton of manure is worth; but I notice that the chemists differ very much among themselves as to the value of the same identical manure, and I do not see how you can tell with any certainty how much good a ton of manure will do."

No one pretends to do so. What we say is this:—Here are two samples of barn-yard manure in about the same condition. One contains twice as much nitrogen, phosphoric acid and potash, as the other, and we say, if the one is worth \$1 per ton, the other is worth \$2 per ton. We do not say that if you put 20 tons of the former, or 10 tons of the latter upon an acre of land, the difference of the crops will be worth \$20. This may or may not be the case. The chemist's estimate of the value of different manures is based on their chemical composition, and on the condition of the ingredients. The chemist does not undertake to tell a farmer, whether he can afford to buy sulphate of ammonia, or nitrate of soda, to sow on his wheat or barley crop. But if you are going to sow these manures, the chemist can tell you to a certainty which of two samples is the cheapest for you to buy.

For instance, he finds one sample contains 22 per cent. of ammonia, and the other 18 per cent. If he tells you the latter is worth \$72 per ton, and the former \$88 per ton, he merely uses these figures in a comparative sense. If he should say the one was worth \$36, and the other \$44, he would be equally correct. He has nothing to do with the commercial value on the one hand, or the fertilizing value on the other. The latter must be determined by the experience of farmers themselves, and on repeated experiments. Where wheat is worth only 75 cents per bushel, and other crops on the same scale, ammonia is only worth half as much to a farmer as in a section where wheat is worth \$1.50 per bushel.

When an agent for some artificial fertilizer shows me a whole string of testimonials as to the value of his fertilizers, I tell him that a good analysis would be more satisfactory to me than an actual trial on my own land and under my own eye. A man need not swallow a lot of Glauber salts to tell if they are pure. The chemist cannot tell him whether he needs a dose of the salts, but he can tell him whether the salts are genuine or not. Chemistry cannot tell us whether our land needs this or that manure, but it can tell us whether the manure is genuine or spurious. If farmers had clearer views on this subject, the sale of inferior or worthless fertilizers would soon cease.

VALUE OF MANURE.—An authority on agriculture says that if the manure from a ton of wheat straw is worth \$2.68, then the manure from a ton of meadow hay is worth \$6.43, from a ton of clover hay \$9.64, from a ton of corn \$6.45, and from a ton of peas \$13.38. This estimate of the comparative value of these different kinds of manure is doubtless made from the analysis of those substances, and of course is liable to some variation, but a fair average is taken. The figures show only the comparative value; the real value will depend on the price of the crops raised by the manure, which would be rated higher in a season of high prices; and lower where prices are low, as at the West. The value would also depend much on the mode of application; if thoroughly intermixed or diffused through the soil, it would be more than double in its effects, compared with manure half-plowed in while in large lumps.—*Lure Stock Journal*.

WEEVILS IN PEAS AND BEANS.—The eggs of the pea-weevil (*Bruchus pisi*, Linn.) and of the bean-weevil (*Bruchus fabae*, Riley), are glued to the outside of the pod while it is young and tender. The young grubs hatching from these eggs eat through the pods into the seed, their passage way being so minute that it closes up and becomes obliterated. Within the seed the grub develops and undergoes all its transformations, the pea always containing but a single individual, the bean several. Plant clean and uninfested seed and you will be little troubled with these pests. The best way to get clean seed is to keep it over two years in tight vessels. The weevils may also be destroyed, so as to use the seed the first year after gathering, if it is kept during the interval in tight vessels, accompanied with camphor. Late planted peas are most exempt from the attacks of the weevil. The genuine corn weevil (*Sitophilus granarius*) gets into the grain the same way as the other species mentioned.—*Prof. C. V. Riley, in New York Tribune*.

THE BEST FIELD BEANS.—The *Rural Home*, Rochester, N. Y., says, that in Western New York the Medium and Marrow are most planted, and the White Kidney and early Pea to a limited extent. The Medium is considered the most reliable, as, from its early ripening, it is less affected by the vicissitudes of the season. It sells for less, however, than the other varieties named. The Marrow is quite a popular variety, and on a strong soil is very productive. It is quoted thirty five cents a bushel higher than Medium in the Rochester market, now, and the same as Kidney. The White Kidney has larger stalks, requires a longer season to be matured in, and is more liable to be spoiled in ripening. When everything, however, is favorable, it will produce large crops. It will, of course, make a difference in what way the beans are planted as to the quantity of seed required, but farmers generally use about a bushel of the Marrows and Mediums to the acre, rather more of the Kidneys, and about half as much of the Pea bean.