

unless the soil has become more closely pressed against one part than another. In this case, the roots will be protruded in great abundance; and if the soil has not been pressed to the lower extremity, it would probably produce no roots at all at those points, but rot.

The upper extremity of the cutting is cut in a sloping direction, for the purpose of shedding off the rain. The top end of the shoot, as far as it appears soft, being unripe, should be discarded, because such wood will only produce weak plants, and will not make so good roots the first season as the firmer parts of the shoots will do. Pieces of two year old shoots of the same length as above, and cut in the same manner, may also be used; but these are more expensive, and no better than the former.

The best season for planting cuttings of two year old wood, in a well drained soil, is late in autumn, in consequence of which the buds will well during the winter, and be ready to grow with vigor in the spring; but in wet soil, and in climates where they are liable to be loosened by winter frosts, cuttings planted in autumn should be made firm a second time in spring. The proper time to plant the slips of one year old wood, in a high latitude, is a few weeks previous to their natural period of putting out leaves. The cuttings may first be planted in a nursery, and removed the autumn or winter following, or they may be planted at once in the sites where they are finally to remain. In either case, if the soil is not sufficiently moist, due attention must be paid to give them water in dry weather.

The proper season for cutting the basket willow is in autumn directly after the fall of the leaf.

The advantage of cutting at this period is, that the buds which are left to produce the shoots for the succeeding crop immediately begin to swell and grow in strength during the winter, in consequence of which they make much earlier and more vigorous shoots in the following spring. As soon as the rods are cut, they are generally tied up in bundles, three feet nine inches in girth, and if they are not intended to be used green—that is, with the bark on—they must be set on their thick ends, in standing water to the depth of three or four inches, where they may remain during the winter and spring, until the shoots begin to sprout, when they are ready to be peeled.—Ohio Farmer.

On the Growing of Farm Crops in Winter.

If there is any work which the farmer should give his attention to during the present season, it is that of preparing to make money in winter by growing his crops at that time of year when he can give them the most attention. A good many will ask how it is possible to grow crops in the winter. Well, we will explain, for there are a great many who do not seem to understand how it is done.

It is well settled by experiment and observation that land left to itself will only grow a minimum quantity of grain or of grass, but if it is manured it will produce heavier crops. Ten acres of well-seeded grass land from which last summer a ton and a half of hay per acre has been taken, will not be estimated to produce any more than a ton and a half next year. Yet if it is top dressed with a coat of manure at the rate of ten loads of

manure per acre, or a hundred loads to the lot, will not the owner look for an increase not only of grass, but in the corn or grain crops that succeed the grass? When is manure made in the greatest quantity? Is it not during the winter? Well then, is not the business of making manure the business of growing increased crops? Hence we say that the making of manure is one of the most important and productive occupations which the farmer can engage in. In fact we consider that in the manure is one-half the profit of feeding the live stock which is sent to market. The whole of the hay, corn fodder, straw, oats, meal, that is fed to animals contain a certain proportion of marketable material which are, if skilfully handled, the animal manufacturers into salable articles, which may be wool, or butter, or pork, or beef or mutton. But all these articles of food contain also a certain proportion of substance that is unfit for market, and which is voided, but which is valuable to grow crops, and this is the manure. There are at least five months of the year which the manufacture of manure and its management should be the chief study of the farmer, just as much as the study of how to get the greatest increase of beef out of the stores of forage and grain. When we learn that wheat grown after wheat without any application of manure to the land for a series of twenty years in succession, will only yield at the rate of from 10 to 13 bushels per acre, and that the same quality of land manured each year with twenty tons of manure has produced at the rate of 33 to 46 bushels per acre during the same time, it is readily understood that the making and care of manure is nothing else but the business of growing the crops in winter.

It is estimated that every head of live stock on a farm will consume at the rate of 3 lbs. of first quality timothy hay for every 100 lbs. of live weight, and not increase in weight. This food passes through the animal and is voided as excrementitious matter, which is either solid or liquid. All this excrement contains elements which not only are themselves necessary for the growth of plants, but it also has the property of rendering the soil that comes in contact with it richer in these elements, by effecting changes and modifications, because the excrements contain the fertilizing materials in a condensed form, and it may be advantageously mixed with other materials, such as muck, clay, male, loam, that not only serve as carriers, but also, by the chemical changes effected in their own composition, become themselves powerful aids to promote growth in vegetation, providing the materials out of which plants may be perfected, either in their foliage like the cabbage, in their roots like the turnip and the beet, or in their seed as in the grain crops.

This valuable material which is the foundation of success in the profitable conduct of the farm, is probably the most abused, most wasted, and the least cared for of any article on the farm. It is generally shovelled or forked out, so that it may be got away from the stable in a sort of a heap, where the rain and the snow and the winds may do their best to carry off and waste it. When this is not the case, it is thrown in heaps where it heats and burns up by its own internal warmth, and is reduced in quantity and value to half its original worth. We believe that the waste of manure for the want of proper treatment in this State in a single year cannot be estimated as less than equal to a loss in the wheat crop alone of five bushels per acre, or six millions of bushels. What the estimate may be on the loss of hay, grass, corn and other crops, we may not dare estimate, for the figures would be so trifling that they would seem like exaggeration.

Measurement of Hay.

Many farmers who are far from scales sometimes have difficulty in estimating hay. In relation to the cultivated grasses the Massachusetts Ploughman says:

Many farmers, particularly those who have been building a new barn within the last five years, have the advantages of good hay scales, and know, in consequence, exactly how much English hay the farm has yielded, but the great majority have no such convenience, and they must get at it in some other way. In such cases there is nothing left better than the simple measurement, but that is sufficient for all practical purposes. It can never, in the nature of things, be depended upon for perfect accuracy, because so many elements are involved, as the character of the hay, whether timothy, red top, or clover, the time during which it has been stored, the depth or height of the mow or the "bay," the time when it was cut, etc.; but bearing the modifying circumstances in mind, we can arrive at a very close approximation to exactness, as we know from experience, having sold hay by measurement, with the right to weigh at the buyer's option and expense, and the results almost invariably justified the estimate.

We allow for timothy, red top, and similar grasses, four hundred and fifty cubic feet to a ton at the bottom or lower half of a "bay," that extends from the floor to the barn beams, and five hundred and fifty cubic feet for a ton at the top or upper half of such a bay, after it has lain a few weeks and settled. Of clover hay on a scaffold it will take about six hundred cubic feet for a ton after it has lain, say three months. It will be seen that the average of the bay full of red top and timothy will not be far from five hundred cubic feet to the ton, varying of course somewhat by the circumstances alluded to, that is, the season, the time of cutting, the thoroughness with which it was cured, the time it was settled, etc.

A little testimony on this point may not be uninteresting at this time. A farmer in Uxbridge gives four hundred feet in a mow twenty feet high, twenty feet long, and twenty feet wide, as the lowest number of feet he ever estimated. He says, "In a scaffold of hay eleven and a half feet square and nine feet high, making 1,190 solid cubic feet, there was by actual weight 5,076 pounds of hay; or a little over two tons and a half of hay. The hay was upland interval, resembling red top. This gives a fraction less than four hundred and sixty-nine cubic feet to the ton. Under ordinary circumstances five hundred solid feet of well-packed, not very close hay, is considered with us to be a fair estimate for a ton."

A farmer in West Enosburg, Vt., says: "When there is a large quantity together, 400 cubic feet will make a ton, but where only a small quantity like a scaffold is stored, it will take for a ton not far from 500 cubic feet. It depends something on the quality, but I am speaking of good herdsgrass hay. I saw a scaffold measured and weighed a few days ago. It was twenty-six feet long, eleven feet wide, and nearly five feet high, making 1,430 cubic feet. It weighed 5,500 pounds, so you must see it varied but a fraction of 500 feet to the ton."

A farmer in Freeport, Me., says: "For a mow forty feet long, sixteen feet wide, and fourteen feet deep, well settled, the common estimate is 425 feet to 500 cubic feet to the ton. For some fifteen successive years I have pressed hay in my own barn for a mow less than the above, and the average number of feet required, including tare, which is above five per cent., has been about 425 feet per ton."