

## Agriculture.

## CULTIVATION.

The great aim of all thorough cultivators is to maintain a continued healthy and vigorous growth from the period the seed vegetates until the plant reaches its maturity. The word cultivation may be defined as a term whereby we recognize those operations necessary to maintain a constant and proper equilibrium of the elements of plant-growing.

Therefore, in order that we should be able to do so understandingly, it is absolutely necessary that we be thoroughly conversant with the principles governing vegetable growth. In the absence of such knowledge, practice is merely empirical. One of the prominent operations in culture is that of stirring the surface of the soil around growing crops. The soil may be looked upon as the laboratory of nature, where her great decomposing agencies, air and water, prepare the food of plants, and the object of culture is to facilitate the chemical operations as far as our knowledge will admit; and experience fully proves that frequent cultivating or stirring the surface stratum of the soil, thus allowing an unimpeded access of air and moisture to penetrate and follow the various ramifications of plant roots, is undoubtedly the most essential item in what is termed cultivation.

The efficacy of this treatment depends, however, upon the nature and condition of the soil, as also upon the time and mode of performing the operation. Unless the sub-soil is also porous and permeable, its benefits will be comparatively slight. Hence soils that are not naturally pervious must be rendered so by draining and sub-soiling.

Soils so treated will continue to support in a healthy and luxuriant growth even in long-continued dry seasons. This is owing to the facility with which the rain-water can penetrate deeply, its downward passage being encouraged by the admission of air, and when, in addition to drainage, the surface is kept loose and open, the rains of a heavy shower penetrate at once instead of passing off on the surface, as will be the case when the top soil is compact and the sub-soil undisturbed. Clayey and tenacious soils require more careful treatment than those of a gravelly or sandy character; the former are liable to become hardened on the surface after even slight showers. This is occasioned by their easy solubility, and good management of such soils demand that they should be surface-stirred after every heavy rain. Much now depends upon the time such stirring is performed.

Between the softening of the surface by rains and its hardening again by sun and dry air there is a period when it is in the most favorable condition for culture. Here it is difficult to lay down a definite rule, as the practice that would be suitable for one soil and climate would be unsuited for another differently circumstanced.

The principle being understood, the practice may readily be deduced. In order to facilitate cultivation all crops should be grown as far as practicable on the drill system. It is worthy of thought whether or not many crops now grown on the broadcast mode might not be more properly cultivated in drills. Experiments in wheat culture and other grains show to advantage when drilled, and it might be questioned if all cereals would not give an increased crop if cultivated during their growth.

**DIGGING POTATOES.**—Where quantities of potatoes are raised, harvesting may be considerably facilitated by using boxes, instead of baskets and barrels, for picking and carting them in. Boxes made of slats of some light wood, the corners bound with strap-iron, and of a size to hold just one bushel, are easily handled, and are more durable than barrels. Small lots of potatoes may be stored in them all winter and keep well, and by placing them on the top of each other occupy but little room.

## ACTION OF LIME ON SOILS.

Sir John Bennett Lawes, writing concerning the statement made before the Scottish chamber of agriculture that the action of an application of lime to some soils might continue during thirty years and might cease at the end of seven, remarks:

When we consider that the influence of lime upon a soil which is naturally deficient in this substance is due to several distinct causes, and further, that the after treatment of the land which has received the lime differs much in different cases, we have no difficulty in understanding that there must be considerable variations in the periods of time during which the beneficial effects of lime will be apparent. Two of the crops which are grown at Rothamsted in our ordinary rotation—roots and clover—contain large quantities of lime in their ash, and when potash is not abundant in the soil they possess the property of utilizing this lime in its place. The ash of leguminous plants growing in an ordinary pasture which has been well supplied with potash contained 32 per cent. of potash and 22 per cent. of lime; but on pasture where potash was not supplied the ash contained 32 per cent. of lime and 14 per cent. of potash. Lime, therefore, economizes the use of potash.

The first application of lime to moor land, or to pastures which are deficient in lime, is often followed by a growth of white clover so abundant as to have led some to the conclusion that the plant was spontaneously generated in the soil. It may be observed that it is only plants with creeping roots which can so rapidly cover the ground; a similar instance in the case of arable land may frequently be observed in the equally rapid covering of the soil by couch grass; this being a graminaceous plant can find in all soils an abundant supply of its own proper food—silica; but lime in many soils is by no means abundant, and if the supply is insufficient a liberal dressing is essential, not merely for the purpose of furnishing the lime which the plant takes up, but also to enable the roots to be in constant contact with that substance.

I may observe that although the amount of lime dissolved and removed in drainage waters is considerable, still the necessity of repeating the application after a few years appears to be rather due to a descent of the time to a lower level in the soil, where it is less accessible to the roots of the plants. Lime also acts as the medium by which nitrification takes place; and the almost entire absence of nitrates in the water passing through the peat soils in Scotland—which abound in nitrogen—must be mainly due to the absence of lime. A reference to the returns in the table shows that the effect of lime is most durable upon pastures that are grazed; that its effects are very good on virgin soil; that it lasts longer upon good than upon bad land, and upon clays and heavy loams than upon light land. The amount of soil nitrogen which is nitrified each year

must depend somewhat on the amount that the soil contains, but where each application of lime is attended with less benefit than the preceding one we may feel tolerably sure that the resources of the soil have been too largely drawn upon, and that the export of fertility has been too great.

Lime, therefore, acts in a double capacity; it furnishes an important ingredient in the food of roots and leguminous plants, and in addition it furnishes the key by which the stores of organic nitrogen in the soil are unlocked and rendered available as the food of plants. It is in this latter capacity that its functions are more liable to be abused. As lime does not furnish any of the more important or of the more costly ingredients which plants require to form their structure and seed, it is quite evident that these must be derived from the soil; this being the case, if the views of those who hold that agriculture should be carried on without any reduction of the fertility of the soil are correct, it is evident that an application of lime should be accompanied by an application of all those ingredients which are carried away in the crops or by feeding with stock. My own opinion is that the soils are generally competent to yield a certain portion of their fertility without injury, and that practical experience of the particular district will be the best guide for deciding the amount of fertility that may be thus removed.

## Horticulture.

## SUMMER MEETING OF THE FRUIT GROWERS' ASSOCIATION OF ONTARIO.

This meeting, which was held at Trenton, was exceedingly well attended, and the discussions were deeply interesting and animated throughout. Our short-hand reporter was present, and took down the various items of information, and will have them fully written out so that they will be given in their completeness to all our members in the Annual Report for 1882. The programme as published was nearly all gone over, and many valuable papers on most of the subjects were presented, which will also appear in full in the Report.

The citizens of Trenton and vicinity attended the meetings in large numbers, and though their Mayor invited the members to dine with them on the evening of the first day. This social re-union was a most enjoyable occasion, enlivened with sentiment and song and many earnest and telling speeches. The second day they arranged an excursion to Picton and the famous Sand-banks, thus enabling them to have an opportunity of inspecting the fruit-producing capabilities of Prince Edward County. After returning from the excursion, the evening was spent in the discussion of shrubs and ornamental plants suited to the climate of that section, and desirable to be planted for the adornment of our country homes.

The Association adjourned at the close, to meet in Kingston, on Tuesday, the 19th day of September, much gratified with the kind attentions they had received, and feeling that it had been a very instructive and enjoyable occasion.—*Canadian Horticulturist*.

## THE DAMSON PLUM.

In the long list of horticultural productions there is, perhaps, none more neglected than the damson plum. To anybody aware of its merits it must be apparent that this plum is unjustly overlooked and does not receive the

attention it merits. The features that recommend it to the fruit grower, are, hardiness and productiveness, and the little labor involved, or necessary in its cultivation. In addition to these advantages it is remarkably free from the ravages of insect enemies, and the tree flourishes in abandoned, neglected corners, where perhaps nothing else could be successfully cultivated. Very little seems to be known about its cultivation by the average fruit grower, and in horticultural meetings it is rarely if ever referred to.

We have known cases in which the trees were planted out and the grower waited for years and yet no fruit was visible, and finally giving up hopes of ever seeing any fruit on the tree, cut them down. The damson tree will not bear for about ten years after planting out—a feature doubtless, in a measure accounts for the scarcity of the fruit. When it does begin to produce, however, it keeps right at it for about twenty years—rarely failing to make a fair crop, regardless of the neglect to soil and trees during all that time. It is but fair to presume, however, that it would prove beneficial to regularly bestow a little labor and attention. The procuring of trees is not an expensive undertaking, and when once supplied you can easily and readily extend your field of operations as far as plants are concerned. The roots throw up suckers regularly and freely, and in a few years you can have enough from a few trees to plant out a large orchard. The tree does not seem to be affected by the severe summer heat nor the rigors of winter—and the prices obtained for the fruit are always remunerative, something that can be said for but very few fruits. During the past ten years the price obtained in St. Louis for the damson plum ranged from \$2 to \$2.50 per bushel, and but for the large quantity that comes to this market each season from Indiana, the prices prevailing would rate higher. From these facts it must be admitted that the damson plum is not receiving at the hands of the fruit growers the attention it deserves.—*Colman's Rural World*.

## GIRDLED TREES.

Dudley W. Adams, of Waukan, Iowa, writes the Editors of *The Florida Dispatch*: "When a tree is completely or almost girdled, there is no remedy—the tree must die." So said the *Dispatch*. Now I have apple trees in full vigor and productiveness that were entirely girdled by mice twenty years ago. If the injury is discovered before the vitality of the tree is reduced to low, it can be saved and fully restored to health by inarching cions over the girdled portions, thus again restoring the connection between the branches and roots. These cions will rapidly increase in size and soon meet each other and encase the old naked trunk in a solid palisade of new ones and eventually the place can hardly be detected by the eye. I have frequently applied the same remedy to orange trees at Tangerine, Fla., completely girdled by white ants (wood lice), and with perfect success.

## NEW STRAWBERRY BEDS.

From time to time we have said a great deal on the subject of planting out new strawberry beds. Many fail in their efforts to secure beds that will yield them satisfactory crops for at least three or four years without re-setting, for the reason that they do not go right about it. Of course the ground should be rich, dug pretty deep, made fine and friable, and the plants, while they should not be set