

and he is experimenting with some English varieties and we hope may in a few years secure the apple we can grow to absolute perfection.

B.C.

WALTER M. WRIGHT.

### Root Killing.

Editor "The Farmer's Advocate":

Probably no one agent in the past year has been so actively engaged in reducing the number of bearing fruit trees throughout this Province as that of root killing. Judging by the number of requests for information which generally suggest the workings of some mysterious insect or disease, it might also be safely said that an indispensable knowledge of this injury is limited to a very few of the fruit growers whose orchards have suffered heavily enough to warrant special attention.

Though our knowledge up to date is confined to the symptoms by which injury can be readily recognized and to preventive measures, it is of the utmost importance to the fruit grower in all parts of Ontario to become thoroughly familiar with those factors which influence this form of injury one way or the other. Consequently, he should make a determined effort to stay the progress of this injury and avoid those cultural methods with which we see root killing associated, and with the information received from the studies of the fruit grower combined with our observations taken from a great variety of these injuries over the Province, it may be possible to get very close to the exact cause of the injury, and finally to produce a remedy which as yet no one will stake their reputation on being able to do.

Root killing can best be described by the character of the letters requiring information on this subject. One letter (and I think it conveys the average impression), says, "Can you give me any assistance in the matter of a blight which is seriously affecting my trees, causing the leaves to assume a wilted and poorly-nourished appearance soon after leafing out in the spring." While there are several other indications on the trunk and branches of decadence, the one other important mark is a dead area where the tree enters the ground. Often the dead area is exposed by the bark lifting and splitting.

In all cases the tree leafs out a little on the late side, and is to all appearances perfectly healthy. As soon as the flower buds appear the leaves cease to show any further development, and any growth after this period is as a struggling industry and is dead by next spring. The symptoms are always the same. The buds after their first effort are not supported by the roots, and the growth made is the utilizing of the stored up energy in the tree.

Believing that the roots would present some facts for study, I followed a number of these from the trunk to their extremities. The depth of several of these roots ran at six inches beneath surface till they were five feet from the trunk, where they angled down to a depth of eighteen inches. The part of the root with the shallow covering of six inches of soil was either dead or injured to the extent of being incapable of supporting a flow of sap, whereas the root with a deeper covering was still white and attempting to throw up shoots. No doubt the owner has plowed deeper at five feet from the tree than closer in, thus making the root strike deeper, and giving greater protection against a deeply penetrating frost.

The outstanding truth in this condition of a live top and dead root is that the stock or root is not as hardy as the top. Two preventive measures that might best be adopted would be the obtaining of a harder stock for the nurseryman, and avoiding those conditions which we believe bring about root killing.

It must seem absurd to a man when he selects a hardy variety like McIntosh to find out that this, as well as other varieties, is grafted on a French seedling of uncertain hardiness. There are two means of correcting this condition, one is to test out in a commercial way a crab or some equally hardy stock; the other is to develop a lower depth of planting. Deep planting invariably forces roots above the graft, and as these will be as hardy as the top, the roots can be safely depended upon to come through the winter. Many examples can be readily found for the conviction that shallow planted trees suffer from root killing considerably more than others, and this accounts to some extent for the spotted killing in an orchard.

It is a very common viewpoint to isolate root killing and winter injury to the northern sections of Ontario, but the comparatively mild winter of southern Ontario is a blind to many, for the

lack of sufficient snowfall as a protective covering for the roots has been the evident cause of some of the most severe cases of root killing. Proof of this relation of a snow blanket to root killing is plainly evident in all the orchards where this injury is to be found, as the ridges and knolls invariably give the first indications. When the careful observer has been finally convinced that a light snowfall allows of deeper penetration for frost, his thoughts are directed at once to a cover crop as the most efficient substitute, and at present the most popular preventive measure for root killing.

As cover crops could be very easily made to occupy our attention as a separate subject, just a few words need be said as to selection of a suitable crop for this purpose. Viewing these from the standpoint of economy of labor, it has been found that rye and vetch are particularly difficult to turn under close to the trees, as these make a rapid rank growth before the land is suitable for working. Oats, buckwheat and clovers are excellent workmen as a cover crop in the orchard.

The objection has been raised to rape as being dirty to work in while picking and packing. By mowing the tops just prior to picking this difficulty is overcome at small cost, and the plants will continue growth if not cut off too low.

A rather costly experiment has recently proved to what extent the exposure of roots is affected by frost. In a small orchard near Toronto soil was removed from the base of several trees that appeared to have plenty of soil covering and some to spare. The soil was taken away in the late fall, and although none of the roots were laid bare, the following spring brought all the symptoms of root killing, and dead trees in the fall.



Apple Tree Over a Century Old.

To carry this point further, it can be readily seen that under certain conditions plowing away from the trees in the fall would give to a slighter extent perhaps the same result.

While these points offer some explanation for root killing in general, they have no importance in solving the riddle as to why a certain tree is killed and its neighbor enjoying the best of health, or what certain climatic conditions affect the trees most unfavorably. However, the explanations already advanced should be of assistance to some and a means of advancing further information for others.

O. A. C.

G. J. CULHAM.

### An Old Veteran.

In another column there is illustrated an apple tree which is 115 years of age. It was planted by the grandfather of Andrew Anderson, who now resides on the next farm and is 82 years of age. It has borne about 10 barrels of apples each year for the last 65 years and is still bearing. Blossoms were picked off every alternate branch one season, and since then it has borne every year. The stump of the tree is sixteen feet in circumference and five feet above the ground. The apples are of good quality and very much resemble the Rambo. The tree was a seedling from England or Scotland. It has seen five generations come and go and is now owned by G. H. Corsan, Swimming Instructor of the University of Toronto, and is in an orchard located at Islington, Ont.

## FARM BULLETIN.

### P. E. Island Notes.

Editor "The Farmer's Advocate":

The annual meeting of the P. E. Island Central Farmers Institute was held in Charlestown early in December. There was a large attendance of delegates from the local Institutes from all parts of the Province.

The President, D. N. McKay, in his opening address called attention to several important matters relating to P. E. Island agriculture, which were discussed and acted upon. One of the principal of these subjects was the co-operative marketing of eggs through the "Egg

Circles." S. A. Benson, "Dominion Poultry Representative" led the discussion, and gave a very clear statement of just where we are in the matter of egg marketing. "We had succeeded in a great measure in face of the tremendous opposition aroused by the former shippers," but he assured the farmers present that greater success will come in the future on account of the establishment of independent candling stations by the "Central Co-operative Egg and Poultry Association," as well as from the system of marketing, which is now being successfully worked out.

He assured egg producers that success was theirs if they would provide the quality that the market demands. There are now nearly seventy local circles shipping eggs from the Island. Formerly they shipped to many different firms. Now it is proposed to ship all through the Agency of "The P. E. Island Co-operative Egg and Poultry Association." The farmers here seem determined to stay with the co-operative movement, and make a success of it rather than go back to the old system of selling full count at a flat rate for a very small price. This new system of marketing, thanks to the untiring efforts of Mr. Benson, has already done great things for our poultry interests, and promises in future to greatly increase the profits of poultrymen who take pains to provide the quality of eggs that will always command high prices.

Another subject that brought forth a lively discussion was "The Midway" at our Provincial Exhibition. At our last Provincial Exhibition here side shows were much more strongly in evidence than ever before, and exhibitors claimed that the midway did a rushing business while

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