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AGRICULTURE THE WORK OF AGRICULTURAL COLLEGES

With the graduation of another lot of young men from our Agricultural Colleges attention is naturally directed to the nature of the work done by these institutions. Are the Colleges serving the purposes for which they were established? To answer this question intelligently, however, we must first determine the purposes. For hundreds of years colleges have been in existence for the training of young men in medicine and other kindred professions with the result that mankind the wide world over has been helped and enriched by the applications of the discoveries and searches at these colleges. Thoughtful men felt that similar beneficial results would follow if young men were specially trained in the science and art of Agriculture, which is so intimately related to the welfare of humanity. These men of wide vision believed that the earth had not yet yielded her proper increase, but could be made to do so by the application of new methods arising from the discoveries of men with special knowledge of the soil, the plant and the animal. Thus Agricultural Colleges came into existence, and their main purpose was the improvement of Agriculture.

Are, then, our Agricultural Colleges helping to improve Agriculture? In replying we shall simply outline some of the things these colleges are doing. The work of an Agricultural College lies along two lines—Teaching and Experimenting. The work of Teaching has to do not only with (a) the ordinary college classes through two years but also with (b) the Short Courses that are given at the college and at various centres in the province during the winter, (c) the training of men who intend to devote themselves to research and teaching, and (d) the training of men who intend to occupy administrative positions in the agricultural service of the Province and the Dominion. At the present time there is a great demand for trained agricultural experts in the work of both research and administration in the Dominion, so that the Agricultural Colleges is doing a most valuable service for Agriculture when it supplies capable men. Trained men are needed in the service of the government and on the farms. If, then, many of the graduates go into the service of the government and not back to the farms, no reflection should be cast on the College. For it

must be borne in mind that in addition to the ordinary college classes through their two-year course are returning to farms and are putting into practice the newer methods which science has shown to be so better. The country needs a large number of capable college-trained young men at the present time. The Extension work in Agriculture must develop, for the people of the farms are demanding instruction and help, but the great drawback is the lack of properly qualified persons as instructors. Even the Agricultural Colleges cannot turn them out enough. Moreover we must admit that great improvements have been made in recent years along many lines—in plant and animal breeding, in the control of the pests of farm crops, in the maintenance of the fertility of the soil, in the manufacture of dairy products, etc., etc.—all due mainly to the work of Agricultural Colleges. We believe, therefore, that Agricultural Colleges are doing a most valuable service in the promotion of the best interests of Agriculture, and that the farmers should stand behind them and see that they are properly equipped for doing the best service.

A TALK ON POTATOES

Varieties and Scab Discussed by Mr. Clement

At the Short Course at Macdonald College, Mr. F. M. Clement gave a very interesting talk on Potatoes. He dealt very fully with scab and with the kind of potato that fetched the best price in the market. Scab in the soil, he said, could be got rid of by crop rotation. He recommended potatoes, potatoes, or clover, potatoes, strawberries, and gave a treatment for scab as follows: Where it is desired to clean scabby potatoes for use as seed, it could be done by treating with a solution of one pint of formalin to thirty gallons of water. The potatoes should be put in a sack and then immersed for two hours in a barrel of the solution. This treatment would clear the seed potatoes from scab entirely, but it would have no effect if there was scab in the soil. If the potatoes were to be cut they should be dipped before cutting. Potatoes, he stated, were generally a side line with the Canadian farmer except in some parts of Ontario and New Brunswick, which latter province was famous for the growing of good potatoes. He showed a number of dif-

ferent varieties of potatoes, and, amongst them, some very fine samples of the Green Mountain, which he pronounced to be the best potato in the world's market. The market likes a medium sized potato, smooth, bright, and free from scab. The Green Mountain displayed all these characteristics in an eminent degree. Some of the best varieties for market were the Green Mountain, Carman No. 1 and the Irish Cobbler. The Early Ohio, if it were not for perhaps the best early potato, they had at the College. Green Mountains should be planted towards the end of May or early in June. The potato for market should also be free from scab wounds, from cutworms, etc., and dirt—not necessarily washed, but as clean as possible. Soil, bottom, drained and manured well, said Prof. Clement, was the best land for potatoes, which came out of the service of the government and Drainage was essential to the successful growing of potatoes. He said he preferred land that had been in soil

for two years, as potatoes needed plenty of humus in the soil. The average yield of Green Mountains in Ontario was 105 bushels to the acre; but crops had, in particular places, been run up to 300 bushels, and 400 bushels per acre; 300 bushels in New Brunswick, for instance, being accounted a good yield. The lecturer said that at the College a planter was used, and it would pay the farmer who had more than two or three acres of potatoes to use the planter. Potatoes should be cultivated as often as possible, and the shovel of the cultivator used at the farm could be set as to raise the soil a little higher every time when banking up. They began to bank the potatoes up after six weeks or two months growth. At the request of the lecturer, one of the students from New Brunswick attending the Short Course explained that in his province the growers of potatoes did not use much barnyard manure, but used fertilizers instead, the common fertilizer being that which is a fertilizer made up of 4 parts nitrogen, 6 parts phosphoric acid and 10 parts potash.

INTERCROPPING IN ORCHARDS

Mr. F. M. Clement, Lecturer in Horticulture, discussed the above subject in an address in the Short Course Class at Macdonald College last winter. His subject as reported for the Ottawa Valley Journal, was as follows:— It is well recognized that there is a need to use the land in the young orchard. Ten years is a long time to wait for returns and so the practice has come to prevail of intercropping with vegetables and small fruits between the rows of fruit trees. But in intercropping it should be borne in mind that the chief function of the apple and to secure healthy vigorous trees. Intercropping is not the same as filling. A filler is a tree grown between other trees to fill up the space. The tree may be divided into the root, the stem and the leaves and each part has its particular function. It might be thought at first sight that the chief function of the root was to hold the tree in its proper place, but that is not so. The main function of the root is to feed the tree. It is important then to consider how far out the roots extend. In a tree of seven years of age the roots will extend from 8 to 10 feet around. Consequently the tree needs a large feeding area. The roots in cultivated soil are near the surface, comparatively speaking, and they must be cared for. One of the purposes of the stem is to push up the smaller branches and especially the leaves to get sunshine and light, but its chief function is to act as conveyor of food from the roots to the leaves. Towards the centre is a number of small pipes that carry up the sap from the roots and other small pipes in the branches near the bark that bring back the manufactured goods ready for use and to be turned into fruit. The growing portion always of a season's growth is the place where the return tubes are. They form the season's stem and branch growth. The leaves are the manufacturing plant or stomach of the tree, which turn the sap into fruit, and they should

be kept green and healthy. So that trees have as much life, organization and individuality as the animal. The orchard fertilizers are nitrogen, phosphorus and potash and these are taken in from the soil by the roots. A handful of good clay soil has locked up in it all that is necessary for the fertilizing and growth of fruit; but not so with a sand soil. It is the business of the farmer or orchardist to make the required elements available and there are two ways of doing this—the first by cultivation, which is the surest and most successful way; the second way is by furnishing humus through the means of barnyard manure. Consequently, no crop should be grown between the rows of fruit trees that cannot be easily and well cultivated. There the tree cannot use the elements of growth already named, or the fertilizers, unless they are first dissolved in water, and so moisture is necessary. One of the difficulties with the orchard is that one cannot always manure just one place, such as grape, rape, clover are good crops for loosening up and aerating the soil. It has been calculated that while what in one year takes out of the soil only \$128.23 amount of fertility, applies in the same period take out \$207.45 worth. The necessity of the conservation of moisture in the soil is made obvious by the fact that a tree requires from 240 pounds to 400 pounds of water to get one pound of solid matter, that is, by the absorption of that quantity of water the tree is only increased in weight by one pound. The fruit trees want moisture and the crop between rows wants moisture and the only way to get a sufficient quantity of it is by cultivating. Moisture will be always found two or three inches below the surface. If a soft mulch is kept up by cultivation, it takes 22 inches of water on the level to grow a crop of oats, and the soil does not often get more than 8 to 10 inches by rain; the rest is derived from the soil, retained, then

conserved and utilized, by cultivation. In cultivation, the soil should never be rolled without harrowing it afterwards. The importance of keeping the tree up may be seen from the fact that it takes 38,000 cubic feet of air to make one pound of wood in a tree. There is some objection and drawbacks to intercropping. It is necessary to spray the trees and the crop between the rows should not interfere with that or be such as will be damaged by spraying. It ought to be borne in mind that it is only the last spraying of the trees that will interfere with a crop of potatoes. Blackberries, raspberries, currants, and gooseberries are not to be recommended as crops between rows, because they use the same soil as the fruit trees themselves, and encourage weeds, insects, and fungus growth. Cabbage, turnips, potatoes act as cover crops to a certain extent in furnishing humus, but potatoes are about the best all round paying crop, and Macdonald College had potatoes in nearly all its orchards last year. Where the soil in spraying trees during a wet season becomes puddled, it cannot be easily got back into good condition. Other Macdonald inter-crops in young orchards were corn, strawberries and cabbage. There is one important objection or peril in the use of potatoes as an intercrop and it has to be carefully guarded against as much as possible. The tubers are dug up in the fall, generally in September, and the act of digging them is equivalent to a cultivation that sometimes does harm in the apple tree at that season, which will prove detrimental to the well-being of the tree. It will even cause the buds to swell and then they get frozen, with great damage to the next year's yield. The intercrop should not be too near the trees. Trees 1 or 2 years old should have a marginal area around each one of from 4 to 6 feet in diameter. The rest of the interspace should be devoted to the intercrop.

THE NEW STRAWBERRY PATCH

Have you set your new strawberry patch yet? If you have not, don't delay. There is still time to plant and have an excellent stand of vines by fall. Cultivate thoroughly a piece of rich loam, or sand or clay if you have no loam, and if it is fairly moist and the plants are set on a cool or cloudy day, they will scarcely feel the change. Select the largest plants in your old plantation—those that were formed early last summer and have large white roots—and plant them in the new plot as deep as they were in the old or just so the crowns are free above the ground. Pack the moist soil firmly around the roots and hoe and cultivate immediately. If the blossoms are open or forming pinch them off as the plants are set, and remove all other as they appear when the plants begin to grow. The object is, to get as many runners or new plants as possible, for the parent plants cannot produce both fruit and runners to the greatest degree. When

as much as possible allowing about four or five inches square to each plant. If you have the labor carefully space the runners by hand, so there is no crowding or no surplus runners, and a much increased crop may be expected over those that are allowed to arrange themselves or were given in a test at the Ontario Agricultural College, thirty feet of each of two rows side by side were selected. In one the runners were allowed to arrange themselves or were given only ordinary attention. In the other the runners were carefully spaced, giving six inches square to each plant. A large number of runners were removed entirely. The yields from the two rows were 14 lbs., 11.34 ozs., and 29 lbs., 3.14 ozs., respectively, or estimated per acre on the same basis 6245 lbs., compared to 10690 lbs., a difference of 5355 lbs., in favor of the carefully arranged row. This remarkable increase is perhaps accounted for to quite a large extent by the fact that particular season was very dry and the row with the largest number of plants suffered most. It nevertheless emphasizes the point that overcrowded plants have the better oppor-

tunity to produce a large quantity of good fruit. Do not allow your rows to become too wide. If the plants are set sixteen or eighteen inches apart in the row with about forty or forty-two inches between the rows, as is generally the case, the cultivated space gradually becomes too narrow, 16 or 18 inches or 18 inches of row is quite plenty. The most and best berries are generally on the outside of the row and if the rows are crowded a certain amount of fruit is damaged or crushed while picking. Cultivate regularly, every week if possible, and keep free from weeds, because if the ground once becomes hard and the weeds get established the total labor in the summer will be much increased.

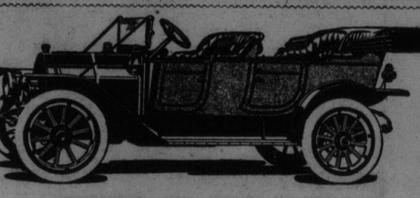
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