

-- TEN YEAR'S WORK IN AN APPLE ORCHARD. --

-- Homer Derr. --

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I. Choose a Suitable Location and Soil.

- (a) Convenience.
- (b) Exposure of slope.
- (c) Soil and Sub-soil.
- (d) Drainage.

II. Select Good Varieties and Good Trees.

III. Properly Plant and Care for them .

- (a) Preparation of Land.
- (b) Setting of Trees.
- (c) Tillage.
- (d) Cover Cropping.
- (e) Pruning.

IV. Fight the Insects, Fungi and Other Enemies.

- (a) Spraying for Insects and Fungi.

Why, When, How.

- (b) Protections against Mice and Rabbits.

V. Harvest and Disposition of Crop.

- (a) Picking.
- (b) Packing.
- (c) Storage.
- (d) Marketing.

I. The question of Apple growing interests nearly every farmer, as it is a crop that is easily grown, succeeding in most localities, and furnishing, at small expense in time, a large amount of nourishing and healthy food. Success in apple culture hinges upon the correct solution of many problems. In this thesis we shall briefly discuss several of these problems which arise in the first ten years of an orchard's life, beginning from the selection of a location.

In selecting a site for an orchard, convenience cannot be left out of the consideration. But exposure and kind of soil are of chief importance. In Kansas, and in the majority of places, a northern, or even better, a north-eastern slope is best; and, likewise, the second bottom or lower uplands, the choicest. It is often said that apples will do well on any high, strong, well drained soil, that will grow good wheat or corn, and this is generally found true. If the soil is not mellow and deep, - what we would call a permanent sub-soil, - then, we must use a sub-soiler.

All orchard lands should be thoroughly surface drained and sub-drained. No orchard can endure for a great length of time with stagnant water either on the surface or within the soil.

II. The selection of trees is an important part of orcharding, for upon care and judgement in this, depend largely the future profits of the investment. Strong, stocky, and vigorous one or two<sup>old</sup> trees, called "whips" by nurserymen, having well developed root systems, are preferable. Trees of this type and age are more satisfactory and profitable in time, and suffer less in transplanting, cost less, and are much more easily handled than older ones. Buy of the nearest responsible nurseryman.

So much depends upon the proper selection of varieties for planting that it should have careful consideration. If one has a neighbor who is a successful grower of apples upon soil similar to that to be used for planting, it will be well to make a careful study of the varieties as they ripen, and in this way, one will be able to determine quite accurately the kinds it will be best to buy. This selection will be governed by the object of the orchard, - i.e., to supply local or distant markets, or merely for family use.

The general work of preparing the land for planting an orchard consists in deep tilling, and the more thoroly it is done, the more certain is success. The majority of planters have the tendency to crowd their trees too closely together. To prevent the branches from interlacing, and not to overtax the soil, there should be left a distance between the trees of at least thirty-five feet.

In setting trees, so as to save labor, we furrow the rows, then plant at the intersections. The tree should have plenty of room for its roots to be spread out. Put the best side of the tree-top to the south-west, and also lean the tree slightly in that direction, to counteract the effect of the wind. The roots should be packed with fine moist earth, but without the use of water. If puddled in the earth they will soon dry out and perish. Leave the soil loose next to the surface to conserve the moisture.

III. The reasons for tilling the orchard are those that apply to other crops, - "to make plant food available, to extend the area in which the roots can grow, to conserve moisture." It is especially important in our hot and sunny climate that the roots extend deep enough to escape the disastrous effects of drought. The ideal treatment of orchard land is to fit the ground deep before the trees are planted, to plow deep a year or two or three in order to force the roots down, and to thoroly ameliorate the soil, and to practice shallow

tillage in order to conserve moisture.

Since trees make most of their growth early in the season, the tillage should be begun as soon as the land is fit in the spring; and it may be discontinued by mid-summer or August. This frequent cultivation is more graciously provided if some hoed crop is grown. Select one that will not require the stirring of the soil to harvest it until after the middle of October. Corn, late potatoes, squashes, and beans are suitable. Avoid small grains, as they require large amounts of water and plant food.

If the land is well handled in the first few years, it will not be necessary to turn a furrow in the orchard thereafter, but merely to loosen the surface in the spring, with a spading harrow, spring tooth harrow, or other tool, in order to re-establish the surface mulch. The only reasons for turning a furrow will occur when the land is so hard that the surface tools cannot mellow the surface, or when it is desirable to turn under a green manure crop. Even hard lands may be got into such condition by means of tillage and green manures, that they may be worked up with harrow tools when the orchard comes into bearing. The best orchard practice of the present day, consists in giving the most thoro cultivation possible during the wood-producing period of the year, - that is, till about the time the fruit trees' terminal buds are formed, - Then seeding this thoroly pulverized surface with a suitable cover-crop, which is plowed under early the following spring.

Cover-cropping is the raising of a crop in the orchard after cultivation should cease (about mid-summer), that will protect the roots of the trees by preventing alternate freezing and thawing and deep freezing of the ground; that will add something to the fertility of the soil when turned under in the spring; that will occupy the ground to the exclusion of weeds.

There are two classes of cover crops: the nitrogenous and the non-nitrogenous. Of the former, crimson clover, red clover, cow-peas, soy beans, field peas, and vetch are the most prominent. Among the latter are included, rye, buckwheat, oats, millet, corn, rape, and turnips.

The question of what cover crop to use is best determined by an examination of the character of the soil, and of the condition of the orchard trees. If the trees are growing slowly on mellow and friable soil, it will probably be advisable to use a nitrogenous cover crop. If, on the other hand, the trees are making a luxuriant growth, and the soil is of the heavy order, a member of the non-nitrogenous group should be tried.

It should be the general purpose to till the apple orchard thruout its life; but whenever the trees seem to be growing too rapidly, the orchard may be seeded down for a time. Tillage should be the general practice, seeding down the special practice.

Pruning and training are requisites in the successful management of an apple orchard. The objects to be attained are: "1st, symmetrical and evenly balanced heads; 2d, to admit sunlight and free circulation of air into all parts of the tree top, and yet maintain sufficient density of foliage to protect the trunk, branches, and fruit from the direct, intense heat of the sun's rays, which is liable to scald and incure both tree and fruit." In all pruning to give the desired form to the head, and especially while the tree is young, the orchardist should keep clearly fixed in his mind the future form of the tree. All pruning and training possible should be done while the trees are young, and the growth of wood tender, as the healing over is more rapid and complete and the tree suffers less injury by the operation. If ever it becomes necessary to remove a large branch,



This is effective in preventing nearly all the insect and fungous pests of the orchard. From what information there is accessible upon the subject, it seems best to spray apple trees about three or four times each season, the first application being made after growth has begun in the spring, but before the blossom buds open; the second, immediately after the trees pass out of blossom; and the third, as soon after the second as may be necessary to keep the fruit and young growth constantly protected. The aim is to keep some of the substances continually on the young foliage and fruit during the parts of May and June, when the insect and fungous pests are most active.

While a small bucket pump will enable one to spray a few small trees of the home garden, it will not do satisfactory work in large orchards. For this purpose use some of the more powerful barrel or tank pumps. These should have large air chambers, which will enable them to throw even and continuous streams, and if the pump handle is geared to the wagon wheel, extensive orchards can be sprayed very quickly and cheaply. Where it is practicable, it is most satisfactory to use a large box tank mounted upon a wagon.

Finally, we have to consider the most important part of our subject, - i.e., the harvesting and disposition of the apple crop. If this is improperly done, the most careful and elaborate culture of the orchard will ensure nothing but financial loss.

Apples should be immature when picked, but not enough to affect proper color when fully ripened. They should be well graded. Never pack an imperfect apple with the best grade, as it may compel the sale of the entire lot at the value of the few poor ones. In picking and handling, use extreme care to avoid bruises and punctures.

Uniformity in package and packing is required. Have no variations in size and quality. Women have proven more valuable than men in assorting and packing fruit. They are quicker and more careful.



Employ only a good class of workers. Shipments of car load lots realize better rates of transportation and better sales than do small lots.

When it is desirable to keep apples for some time, and there is a large lot of them, it will pay to build a cheap storage house in connection with an ice-house. Otherwise, a cellar will suffice, if it consists of several rooms, capable of being completely shut off from each other, and if the temperature can be kept below 40 degrees.

It is of prime importance that the apple grower "be well informed upon markets, where heavy supplies are coming from, where to ship to best advantage, the expense in shipping to different points, reliability of commission men, their facilities for handling and storing fruit."