

Thesis.

"Pruning of Orchard Trees"

— by —

R. J. Nichols.

1899.

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a. Stringfellow.

II. Pruning in orchard culture.

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a. To keep tree symmetrical.

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The subject of pruning is of the utmost importance to the horticulturist. Upon the thoro understanding of its principles and methods depends the success of the orchard. Scientific pruning of the fruit tree at different stages of its growth, is absolutely necessary in order to obtain the best results.

It so happens that the system or subject is in a transitional stage at the present time so that no absolute rules can be laid down for the amateur fruit-grower. A thoro understanding of the principles should be obtained before you start to prune. And then, keeping these principles always in view, the operation should be varied to suit the conditions and environment of the individual plant under consideration. What would be the proper treatment to give the desired result under one set of conditions, might produce just the opposite results under a different set. The transitional period is due, to some extent, to the attempted introduction of entirely new methods, by Mr. H. M. Stringfellow, of Galveston, Texas. He has proposed a system of pruning, which, if adopted, would entirely change the methods

and principles which govern orchard setting at the present time.

There is a great difference among horticulturists of today as to the time and amount of pruning to be done. Most of them advocate severe top-pruning at the time of setting, while a few still cling to the old idea that nature will take care of the trees, and that man should not interfere with her, either at the time of setting, or in subsequent years.

Pruning is the act of trimming, or of removing superfluous parts. We must determine what is superfluous under the existing conditions, and according to our object. And then the question is, how, and when, and where to prune to accomplish the desired end.

The subject naturally divides itself into two main heads; namely, (1) pruning at time of transplanting, and (2) pruning in orchard culture, the theory and methods of which will now be duly considered.

I. Pruning at time of transplanting.

A. Accepted methods.

Until within the last few years, it was

held without the least question, that in removing a tree from one place, and setting it in another, the best results could be obtained only by leaving the plant as full and complete as it was before the removal. That the more the roots were broken and removed, the less the chance for life and growth the plant had, so in taking the tree from the nursery rows, the roots were left as long as possible. The top was well-trimmed, but not severely pruned. This theory was held by all horticulturists and nurserymen of note, and was in general practice all over the world, until H. M. Stringfellow of Galveston, Texas surprised the horticultural world by the publication of his book entitled, "The New Horticulture."

B. New Methods.

In this book, he makes the statement that "instead of the more roots a tree has when reset, the better, — the very opposite is true." To substantiate this statement, he says that the nearer a plant is brought to the natural seed condition when reset, the better, and that the complete removal of the roots and branches is as near as we can get to this condition, so he prunes all the roots back to about one

inch in length, and the top to a stick about eighteen inches long.

To test and prove his theories, he set peach trees by the old method, and the same number by his method, and under exactly similar conditions. The results were, that the close-pruned trees were slower in starting than the unpruned ones, but by the end of the season, the growth in the two rows was so similar that they could be distinguished only by reference to the chart. Upon examination of the roots, it was found that the pruned trees sent out large, strong roots that went deep into the soil, while the unpruned roots were matted near the surface, with large masses of fibrous roots, but no long ones to hold the tree firm.

He claims that this system has advantages over the old in several ways; viz., (1) That it would be an enormous saving to the nurseryman in digging and packing for shipment; (2) That expense of shipment would be greatly reduced, as there would be much less weight to handle; (3) The greatest saving would come in the setting of the plants. That instead of digging large holes as is now necessary in orchard setting under the old

method, the tree could be set in well-plowed land, by the use of the dibble only; (4) That by close pruning of the plant, the danger of spreading insects and fungous diseases would be reduced to a minimum; (5) By this method, large trees that are now thrown away by the nurseryman, could be set, and they would fruit much sooner than a young tree.

This method has caused much discussion in different sections of the country. Several of the experiment stations are testing his theories, but no reports have been made except by the Experiment Stations of Georgia, Nebraska, and Missouri.

In Georgia, with a climate similar to that of Texas, the experiments gave the same results as those set forth by Mr. Stringfellow. While the experiments in Nebraska, with a comparatively dry climate, showed great superiority of the old method of moderate pruning.

It may be that subsequent experiments will show this new method to be superior to the old. If so, it will mean a great saving to the nurseryman as well as to the fruit-grower, and will greatly aid in the rapid development of the country. But

until it is thoroughly tested by the experiment stations under the different conditions of soil and climate, the small orchardist and fruit grower will do well to cling to the old and sure methods.

II. Pruning in orchard culture.

In all plants, there is a certain ratio between the root and the top. In order to obtain the best results, this balance should always be maintained. This necessitates severe top-pruning at the time of resetting, and in the Stringfellow method, all the top is removed except about sixteen inches of the trunk.

The reasons and conditions for top-pruning will be considered under three main heads:—

A. To shape the top.

a. To keep tree symmetrical.

After the young fruit tree has been taken from the nursery row and set out in the orchard, a close watch must be kept over it to make a properly shaped foundation for the mature tree.

During the first year, the tree is headed up. That is, the young shoots

are rubbed off on the lower part of the tree up to the height we wish to have the lowest branches in the mature tree. In different localities the height varies greatly. In a climate like ours, the tree should be headed low — eighteen inches to two feet — in order to protect the trunk from sun scald. In the Eastern and East-Central States, the trees are headed high enough to allow a wagon to pass under them. When trees are headed low, the fruit is brought nearer the ground, and is therefore more easily gathered.

After the tree is headed up, then comes the symmetrical forming of the top, which is so pruned as to bring the branches that will form the main limbs of the tree, into a symmetrical form. Care should be taken not to have two main limbs directly opposite each other on the trunk; the branches should be pruned so that there will be no crotches in the main limbs; main branches should be left on all sides of the trunk. In this section of country, trees are often left a little top-heavy toward the southwest, in order to better stand the

strong winds from that direction.

b. To remove interfering limbs and dead wood.

Those who protest against pruning as being against Nature's laws, need only to step into a forest to see her own way of pruning. And a severe way it is, too. In the hard struggle for existence, sunlight is an essential element, and to obtain this the plants are ever pushing upwards toward the light. As the top gets away from the ground, Mother Nature comes around with her pruning shears, and quietly removes all the non-essential parts. Her method is to gently kill off the lower branches that can no longer reach the sunlight. And when man takes charge of the trees, he also should keep the dead and injured branches pruned off. In orchards, this becomes the more necessary, to give the remaining top room to grow, and to facilitate the gathering of the fruit. In vigorous wood-producing trees, unless the culturist uses his saw and knife freely, the top will become a mass of small, weak branches, unable to support a crop of fruit. In many trees, also, the

top will become so thick and shaded that the fruit cannot ripen or color; and even if it does, one cannot get at it.

Keep the top of the tree open, then, in order that better fruit may be produced; that the fruit-picker will have free access to all parts of the tree; that the fruit may grow on strong limbs able to hold the load; that all parts of the tree may be readily reached by the sprayer; that the trunk may be protected from sun-scall; that the orchard may be open to thoro tillage.

B. To increase the vigor.

There has been much dispute in the past as to whether pruning would in any way increase the vigor of the plant. That is, if a delicate, slow-growing plant could be made a stronger and more prolific grower by means of pruning. This point has now been settled, however, and two general rules have been formulated; viz., (1) To increase the vigor of delicate plants, prune severely; (2) To increase the vigor of hardy plants, prune lightly. A plant of delicate habit and weak growth may, by

means of a careful scientific pruning, be made into a hardy plant of vigorous growth.

C. To increase the fruitfulness.

A plant, if left to itself, will usually set much more fruit than it is capable of maturing with the best results. The fruit will sap the very life out of the plant. As a result, the fruit in number is large, but the amount and quality is much less than the plant is capable of producing under a proper system of pruning or thinning.

The pruning may be done in the fall or winter, while the plant is in a dormant state, by removing a certain percent of the fruit bearing wood of the following season; or the pruning may be left until the tree has blossomed or the fruit has set. This latter case comes under the head of "Thinning."

In pruning to increase the fruitfulness, it is absolutely essential that the operator know on which part of the tree fruit buds are developed. If he prunes all kinds of fruit trees in the same manner, he quite

likely will be sadly disappointed with the results. A person, before he takes hold of an instrument to prune a tree, should know exactly why he prunes and how he prunes in order to come nearest to accomplishing the desired end.

Plants that mature the fruit bud the season before, such as the apple, peach, plum, etc., may be pruned during the winter, and the operator can judge just about what percent of the fruit buds he is removing. While with plants that produce flower buds on the new growth of the season, cannot be pruned with certainty until after the fruit has set.

a. Root-pruning.

In rich, moist soil, healthy trees are often slow to begin to bear, for they throw all their strength into producing an enormous amount of wood, and consequently produce no fruit. Root-pruning is practiced to bring such a tree into bearing; the theory being that if the food supply is checked, the wood-growth of the tree is lessened, and fruit buds will be formed. This can be done by digging a trench some two feet

deep, around the tree at about six feet distance from the trunk. Except in the case given, little or no root pruning is necessary, after the tree has been set in the orchard.

b. Thinning.

To the person not posted in the laws of reproduction, it might seem strange that we could increase the final crop of fruit by removing a part of the blossoms or immature fruit; but such is the case. And if we stop to consider a moment, this fact does not seem so strange. Just look in your garden. Here is a place where you spilled several seeds. They have all germinated, and now there is a mass of small, slender, sickly plants there, none capable of producing fruit. Nearby is a single plant, growing tall and strong. It alone will produce much more fruit than the whole clump of sickly plants. For under a given set of circumstances, a plant can furnish a certain amount of nourishment to the fruit, and to each individual fruit. Now, if we decrease the number of individuals, we necessarily increase the amount of food each remaining one will get, and

in the matured fruit will be the same amount of material, but stored in fewer individuals, which must be larger, and hence more marketable. Further, the greatest strain on a plant comes in seed-production, and in thinning, we limit the seed, but not the edible fruit.

c. Ringing.

Another method of increasing the size of the fruit is known as ringing, and consists of removing a ring of bark from a branch, just below the fruit that we desire to make especial growth. By removing the bark, the flow of the food material assimilated by the leaves, is stopped in that twig, while the flow of sap upward is not stopped, hence the fruit on this twig receives an extra supply of nourishment, and a very large growth is the result.