

SUCCESSFUL TREES ON DRY FARMS
(By E. E. Parsons)

Back in the early days of dry farming many were willing to concede that although crops might be raised by irrigation, it would be folly to attempt to raise trees. Those who thought this were naturally of very limited experience, for not only in the Western states but all over the world we find trees growing on less precipitation than will grow crops. There is a wild fig tree to be found in the deserts of Arabia and Palestine which flourishes on a 16-inch rainfall. There are huge plantations of olives in Algeria which produce vastly remunerative crops on 12 inches. There are forests of mesquite (allied to our locust trees) in Mexico which grow amazingly on 10 inches. The foothills of New Mexico, Colorado and Wyoming, with a precipitation of from 8 to 20 inches, have supplied enough lumber to build a hundred towns.

Why is it that trees will grow on such a limited rainfall? The answer is—on account of the depth of their roots of a tree will penetrate anything in the way of soil that is moist. The finest filaments work downwards thru the invisible air spaces between the granules, then grow and crowd them apart. By this action of the root, a tree may break rocks (whenever there has been an entering crevice, may crack a wall or even raise a pavement. The dynamiting of good soil which may be rendered moist by dry farming operations is quite unnecessary for tree planting purposes, but a hardpan at two or three feet from the surface should be broken up in order to allow depth for the roots, for in dry farming DEPTH is the antidote to DROUGHT.

In the forest and in the orchard we notice that in regions of snowfall every tree waters itself. This is especially true of evergreens which, in consequence of their offering such a complete barrier to the wind, create larger snow drifts than other trees, even in orchards after a blizzard we often find two or three feet of snow when the fields adjoining have drifted bare.

Trees in the West are always planted in the spring of the year, for it is a matter of experience that fall trees,

not having had time to become established, easily winterkill. The land should be plowed in the fall and the holes also should be dug in order to catch as much snow as possible and conserve a few feet of moisture before planting time in the spring. With three or four feet of moisture in the ground it is quite safe to plant young trees, for even if the season turns dry there will be enough water to carry them. The writer has planted as many as 400 trees in one block and had every one leaf out but three.

In the dry farm orchards of the Santa Clara Valley of California, "where the prunes come from," the precipitation is often less than 15 inches, yet thousands of young trees are set out every spring which grow all summer without irrigation and without rain, for there is no precipitation from May to October. These trees live on the moisture conserved in the soil during the winter months.

It is good policy to plow the ground for the trees as deeply as possible, arranging the lands so that the dead furrows will come where the rows are to be. Then by plowing out the dead furrows very little hand digging will be needed.

This method also has the advantage of leaving the ground between the trees disked or sloped towards them, which allows the drainage from the interspaces during heavy rains to gravitate right to their roots. As cultivation is practiced and the orchard becomes older these hollows gradually fill up and the surface becomes level.

On a hillside or slope the rows should run on a level grade with the contour of the hill, in order that all water coming may be caught in hollows between the rows made by the disk for that purpose, for as the trees grow larger all run off and waste of moisture must be prevented.

Trees planted around the house should be accorded the same treatment as those in the orchard. It is always a mistake to pothole a tree in the hard ground. However few the trees which are planted, a strip should always be plowed and the center used for the row. Enough cultivation to keep the weeds out, and the farmer will wonder at the ease with which he can grow trees.

A most important consideration in

planting anything on the dry farm is the spacing. More water falls on two inches than on one inch, therefore, the wheat plant, for instance, which has four or five square inches, will do better than the one which has only two or three. This is the argument for thin planting on dry farms. The same with trees. If we set our apple trees 40 feet apart they receive four times as much moisture than if we spaced them only 20 feet. Forty by forty equals sixteen hundred square feet. Twenty by twenty equals four hundred. With a precipitation of about 15 inches, about 60 tons fall on the former and 15 tons on the latter per annum. Since a full grown apple tree needs at least 60 tons of precipitation we plant them 40 feet apart.

Cherries and plums will do with 20 to 25 feet and grapevines and small fruits with 10 feet each way. The root structure of dry farm trees have always been found to be much more extensive than that of irrigated trees and even with the spacing that we recommend, the roots will commence to meet in the rows in about 8 or 10 years.

In the writer's dry farm orchard 10-year-old apple trees possessed roots which reached 20 feet in every direction and cherries planted 20 feet apart occupied nearly the whole row space with their roots in eight years. At the Government Experiment Station at Cheyenne Wells the same facts were observed.

Trees may be planted in the dry farm orchard some six inches deeper than in the nursery, and the bark which is below the surface becomes root in a very short time. It is better not to plant anything between the trees, for crops use up moisture and all the precipitation should be stored in the subsoil for future use and as an insurance against dry years.

The trees when young use only a few hundred pounds of water per annum, and the surplus under efficient cultivation remains in the soil, moistening it in a very few years to a depth of 10 or 15 feet and rendering the orchard drought proof. A good plow once a year and sufficient cultivation to keep the weeds out and maintain a good mulch are necessary. The plowing does not injure the roots; on the contrary; it cuts off the surface

stagnant and feeds the main growth to go down, which is what we require. It is often argued that the surface roots have easier access to the humus in the top soil, and that therefore they should be allowed to remain; but the fact of the matter is that, as the precipitation goes down, it takes all the soluble plant food with it and the roots below get it all sooner or later.

It is a difficult matter to submit a complete list of trees for dry farm planting on account of the diverse climatic conditions over a large area. We recommend our readers to send to the Agricultural Department, Washington, D. C., for a bulletin on this subject, No. 127, by V. R. Stoddard. The gentleman has visited about every dry farm orchard in the West and gives us the practical arrangements for fruit growing at Cheyenne Wells, the Government station in Colorado. It is a most valuable and complete publication on the subject and contains facts and information gathered during the fifteen years of careful research work.

In many parts of the West, especially the foothill country, several species of berries, cherries, plums, blackberries, raspberries, grapes, currants, etc., are growing wild on a precipitation of less than 15 or 12 inches and the same varieties, of course, do well and much better with care and cultivation in the dry farm orchard.

The Montmorency and Mayhew cherries are the varieties most commonly raised in the West. The Mayhew is a good variety and does well in the Central and Southern sections.

Most varieties of the irrigated varieties of plums are usually planted, such as the American, De Soto, Wolf, Forest Garden, etc. The best of the European purple plums are the Lombard, German Prune and Arctic. The Mission Green grape is a delicious variety and may be planted especially for home use.

The farmer can hardly go wrong in planting small fruits, but only the

Eastern varieties of grapes should be planted. The best varieties for any locality may generally be determined by the experience of those in the neighborhood and the work of the nearest experiment station.

The hardiest of all trees to plant on a ranch are our native Western evergreens. They are all perfectly hardy and grow wild in the foothills in many places under less precipitation than 14 inches. The only objection to them is that they require about ten years to be of much service for wind-breaks. The blue or silver spruce is the most beautiful. The red spruce or Douglas fir are almost as fine. The jackpine and also the yellow pine are easily grown. The juniper is very hardy and holds its own with the sagebrush in the wastes of eastern Oregon, where the precipitation is only 10 inches. It is the ideal evergreen for hedging and grows quickly up to a certain size, but is not such a large tree as the others.

All evergreens do better in sandy and gravelly soils rather than adobe and should always be transplanted with a ball of earth around the roots. The best size for planting out is under two feet in height. They may be pruned a little by cutting off a few branches of the lower branches close to the trunk and setting a little deeper than before. There are plenty of shade trees which may be grown in the West without irrigation; but without some previous experience in any given locality it is not so easy to select the right variety for climatic conditions which may vary with only a few feet of difference in altitude.

The Russian olive and the locust seem to thrive in many places up to 2,000 feet, but the catalpa, elm, black walnut, silver poplar, ash and all the upland trees may be raised without irrigation wherever they do not win territory, and many of these are to be found on farms considerably over 5,000 feet in altitude. The effects of growth are so easily discounted by the proper methods as to be hardly worth considering, and we believe it will pay every farmer to have at least a small orchard for home use, for in spite of late frosts and other adverse conditions there will be but few seasons in which some of his trees do not mature fruit.—Western Farm Life.

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