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Home Orchard Income



An eight-year-old home orchard apple tree bearing a heavy crop of fruit.

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Home Orchard Income*

T. J. TALBERT

The value of the home orchard and the advisability of its maintenance on the average farm have been for some time, and are still, popular questions for debate. Information as to profits and losses giving definite and reliable figures is in general lacking. Furthermore, it is generally believed that the large size of the old-time orchard has contributed materially to its downfall.

It is common knowledge that a neglected orchard is unattractive, does not enhance the value of the farm, provides little if any worthwhile fruit, and is usually a menace to properly managed orchards. With the gradual but certain increase of injurious orchard pests, good fruit cannot be grown without proper and timely spraying.

The purpose or object of this investigation was to develop and maintain a small three-fourths acre orchard capable of supplying an amount and variety of fruit sufficient to meet the needs of the average farm family. To make the conditions comparable to those found on the average farm, expenses for maintenance were reduced to the minimum. The time that might be required of the producer in pruning, spraying, cultivating, etc., was conserved materially. An object has also been to determine whether or not a home orchard is profitable when placed upon a cost and return basis.

The chief problems for consideration were: first, to determine the actual cost, including labor and materials, of developing and maintaining a small three-fourths acre home orchard as it is handled by the average good farmer; second, to procure as nearly as possible the actual value at current prices of the products obtained from the fruit plantings; and, third, to maintain a careful and complete record of costs including trees and plants and to keep a similar record of the sale or value of all products harvested.

Believing that the home orchard should furnish a succession of fruit throughout the season, varieties and kinds were selected and planted for this purpose. In this way fresh fruits have been provided from early season through mid-season and until late, giving a continuous supply over a long period.

*This project of the Missouri Agricultural Experiment Station was conceived, planned, and initiated in November, 1918, by V. R. Gardner, chairman of the Department of Horticulture from September 1918 to September 1922. From this latter date up until the present time the writer has supervised and cared for the work as a regular Experiment Station project.

In the selection of varieties high quality was given first consideration. For the home orchard it was thought that personal preference for particular sorts might justly be satisfied by choosing the varieties preferred.

PROCEDURE

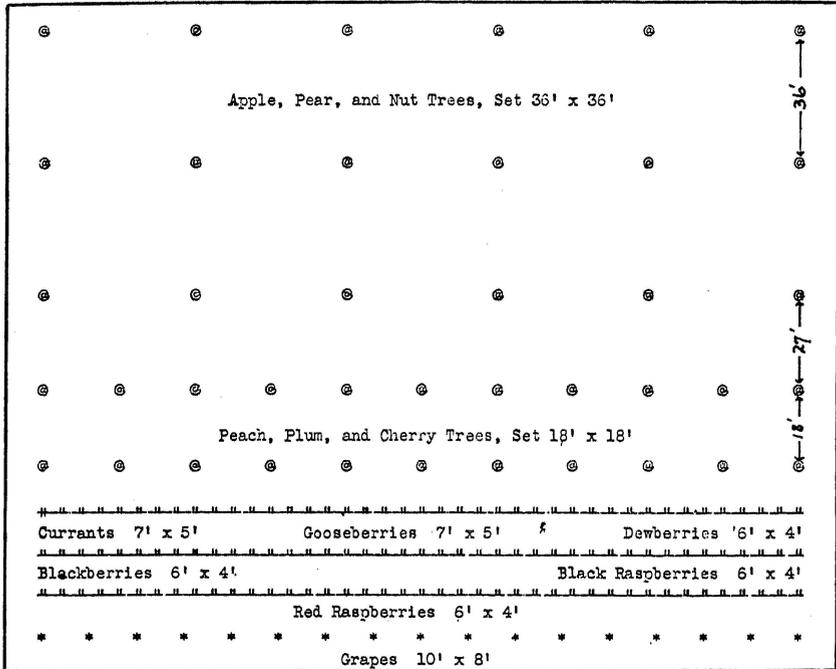
Standard nursery stock of the varieties desired was purchased and planted in the spring of 1919. For the first three years the land between the rows of fruit trees, nut trees, brambles, and grapes was cultivated. In 1930 a small plot of Irish potatoes was grown.

Such cultural practices as spraying, pruning, fertilizing, and the like were given attention each season. The aim or purpose was not to employ what would be considered the best type of orchard culture, because it was believed that more information of value to the prospective home orchardist would be obtained through adopting practices which would be more likely to be pursued by the average farmer. The care given the trees, therefore, was as nearly comparable to that used by the average farmer as it was possible to make it. Moreover, the culture given would not be considered nearly as good as that employed by the average commercial orchardist.

A careful record was maintained at all times of the cost of nursery stock and the cost of such cultural operations as spraying, pruning, cultivating, etc. A record of the income, or production, from the orchard was maintained with equal care. All the fruit harvested was given proper value based upon the prices prevailing on the local markets.

ORIGINAL PLANTINGS AND COST

The original plans included the following list of fruit trees and plants for the three-fourths acre home orchard: Apples—Yellow Transparent, Jonathan, Lowell, Mother, Grimes, Delicious, Arkansas, Winesap, Ingram. Pears—Keiffer, Anjou, Seckel. Peaches—Family Favorite, Champion, Early Crawford, Elberta, Krummel. Plums—Shropshire Damson, Burbank, Green Gage. Cherries—Early Richmond, Montmorency, English Morello, Bing, May Duke, Long-stemmed Waterhouse. Nut Trees—Busseron Pecan, Thomas Black Walnut, Boone Chestnut, Franquette Walnut, Ridenhower Almond. Persimmon—Early Golden. Grapes—Moores Early, Concord, Worden, Agawam, Norton. Blackberry—100 feet of row, Early Harvest and Snyder. Black Raspberry—100 feet of row, Kansas and St. Regis. Red Raspberry—200 feet of row, Cuthbert and Cardinal. Dewberry—100 feet of row, Lucretia. Currant—50 feet of row, Perfection and Fay. Gooseberry—50 feet of row, Downing and Houghton. It was believed that this selection



PLAN OF HOME ORCHARD—200 x 170 FEET
(Area Approximately ¾ Acre)

of fruit would furnish fresh fruit from early spring to late fall and abundant supplies for canning, drying, preserving, etc. for the winter season.

Difficulty was experienced in getting all of the nursery stock desired, but in most instances it was secured, as given in the list above. The plants used in the orchard setting with the cost of each follows:

12 apples.....	@ 35c.....	\$ 4.20
12 grapes.....	@ 10c.....	1.20
25 blackberries.....	@ 03c.....	.75
13 currants.....	@ 12½c.....	1.65
12 gooseberries.....	@ 10c.....	1.20
6 cherries.....	@ 35c.....	2.10
3 plums.....	@ 35c.....	1.05
4 peaches.....	@ 30c.....	1.20
4 pears.....	@ 35c.....	1.40
8 nut trees.....	@ \$1.15.....	9.20
50 raspberries.....	@ 05c.....	2.50
25 dewberries.....	@ 06c.....	1.50
Total cost of nursery stock.....		\$27.95

TABLE 1.—COST OF PLANTING, DEVELOPING, AND MAINTAINING A THREE-FOURTHS ACRE HOME ORCHARD FROM 1919 TO 1931 INCLUSIVE

Items of Cost	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	Cost for 13 years
Nursery stock.....	28.82		3.00	1.00					3.50	3.75				40.07
Harvesting.....			1.20	.50	1.50	2.50	2.25	3.00	2.50	2.90	2.00	3.25	3.25	24.85
Spraying labor.....	.40			.20	5.80	.90	1.67	1.10	2.08	2.30	2.50	2.00	1.75	20.70
Cultivation.....	2.70	2.10	4.10	2.00	1.80	1.25	1.60	1.90	1.25	.75		.50		19.95
Spraying materials.....	.30			.10	.75	1.00	2.25	1.85	2.25	2.24	2.73	1.50	1.40	16.37
Pruning and training.....		.50	.15	.15	1.00	.60	1.40	.90	1.50	1.25	1.00	.90	1.80	11.15
Mowing and mulching.....	.10	.30	.40	.15	.51	.50	.60	.50	.40	.60	.50	.55	.60	5.71
Planting and staking.....	3.60		.10		.50				1.25					5.45
Fertilizers and applica- tions.....				.20						1.05	1.00	.75	.90	3.90
Totals.....	35.92	2.90	8.95	4.30	11.86	6.75	9.77	9.25	14.73	14.84	9.73	9.45	9.70	148.15

Average cost per year for the 13 year period \$11.43.

A study of Table 1 shows that the cost items for the 13-year period may be ranked according to their importance as follows: Nursery stock \$40.07, harvesting \$24.85, labor for spraying \$20.70, cultivation \$19.95, spraying materials \$16.37, pruning and training \$11.15, mowing and mulching \$5.71, planting and staking \$5.45, and fertilizers and their application \$3.90. The table shows, also, an itemized record of the cost for each year.

The cost of the nursery stock may be considered an investment. This would seem particularly true for trees which live for twenty-five or more years as do the nut, apple, pear, and persimmon trees. It is true, also, that these fruits should not reach their maximum production until they are about twice their present age.

In amount, harvesting ranks next to the cost of the nursery stock. While it is true harvesting should be considered as a cost item, yet it frequently is omitted in cost figures maintained by farmers. One is reminded in this regard of the statement often made, "If farmers were to keep a careful and accurate record of all the items concerned in cost of production, including interest, taxes, and all overhead charges, but few if any would show a profit."

Other cost items that must be given attention by the home orchardist consist of Labor for spraying, cultivation, pruning, training, mulching, and staking; spraying materials, fertilizers, and the labor for their application. It should be emphasized that the work of spraying can not be neglected. It is of first importance. Cultivation may rank higher in cost than spraying, but if properly performed it should pay good returns. No cultural practice is so important in the care of young trees and plants as thorough and timely cultivation.

Some pruning and training is essential. The cost for this item, however, should not be great. All the practices enumerated will require careful consideration and timely attention. It is true also that there may

be other practices which have not been mentioned that should be included and expenses incurred for them.

TABLE 2.—RETURNS FROM A THREE-FOURTHS ACRE HOME ORCHARD FROM 1919 TO 1931 INCLUSIVE

Items of Return	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	Total Returns for 13 years
Apples and pears	-----	-----	-----	-----	1.00	2.90	3.00	13.50	12.75	24.50	14.25	26.00	35.60	133.50
Strawberries	-----	-----	-----	-----	-----	14.10	17.69	11.25	5.50	8.75	2.50	-----	-----	59.79
Peaches	-----	-----	-----	-----	24.80	-----	-----	12.00	-----	-----	-----	-----	3.50	40.30
Blackberries	-----	-----	5.00	3.00	1.00	.29	1.00	3.75	3.50	1.50	.90	.80	.50	21.24
Cherries	-----	-----	-----	-----	2.00	2.50	4.00	3.50	1.20	-----	-----	4.00	3.20	20.40
Grapes	-----	-----	-----	.84	1.50	2.00	1.75	2.56	3.70	1.80	.40	1.50	.75	16.80
Currants and gooseberries	-----	-----	-----	-----	-----	3.75	3.75	2.00	2.25	1.75	.75	1.25	.90	16.40
Irish potatoes	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	10.40	-----	10.40
Dewberries	-----	-----	3.40	2.50	.60	.40	.50	.45	1.50	.50	-----	-----	-----	9.85
Raspberries	-----	-----	-----	3.50	.80	.63	.50	.40	.75	.50	-----	-----	-----	7.08
Plums	-----	-----	-----	-----	.50	.75	.60	.90	1.00	.90	-----	.50	.75	5.90
Totals	-----	-----	8.40	9.84	30.20	26.82	31.29	50.81	34.45	41.40	18.80	44.45	45.20	341.66

Average return per year for the 13 year period \$26.28.

From Table 2 it readily may be observed that apples and pears have given the greatest and most regular annual income. For the thirteen-year period this amounts to \$133.50. These fruits should under proper care and attention continue to bear larger crops and bring increased returns for at least twelve or fifteen years.

Other crops ranking fairly well in production are: strawberries \$59.79, peaches \$40.30, blackberries \$21.24, cherries \$20.40, grapes \$16.80, gooseberries and currants \$16.40, Irish potatoes \$10.40, dewberries \$9.85, raspberries \$7.08, and plums \$5.90. With the exception of the almond, the nut trees are just coming into bearing, and as the yields have been small their value has been omitted from consideration.

With better cultivation and fertilization, strawberry production should be larger. The blackberries and dewberries, it is believed, would have given greater yields and resulted in increased profits had cultivation and fertilization been continued throughout the period of the investigation.

It is of interest to note that only three peach crops were produced during the thirteen-year period. These three crops, however, were fairly satisfactory when compared in value to the other crops produced. This is particularly significant inasmuch as peach production in central and north Missouri is uncertain due to occasional winter temperatures of 10° to 15° F. or more below zero and the occurrence of freezes and frosts during the blooming period or shortly thereafter.

After peach trees come into bearing the grower in this section considers from two to three crops out of five a good average. For the

home orchard, however, it will generally pay to grow two or more varieties of peaches, as the crops produced are enjoyed greatly and are usually very profitable.

Returns from the other fruits are not so significant. They do, however, add materially to the income of the home orchard and are important from the standpoint of giving a variety and succession of fruits for home consumption or for the local markets.

During the year 1930 a small plot of Irish potatoes was grown between the rows of trees. This produced an income of \$10.40 and illustrated, it is believed, the value of growing such crops, including others like cabbage, sweet potatoes, tomatoes, etc. in the home orchard. In fact, where the soil and conditions are suitable, it will generally prove profitable to intercrop the home orchard with vegetables and truck crops. By so doing the land devoted to the project may be made to pay while the trees are coming into bearing.

AVERAGE ANNUAL GAIN

The average annual income for the thirteen-year period amounted to \$26.28. If we take from this the average yearly cost of \$11.43, the remainder \$14.85 will represent the annual gain over cost operations.

Due to the fact that from 1 to 2 or 3 years are required for small fruits to come into profitable bearing, no income was received for the first two years. It should be understood in this regard that peach and plum trees must be at least three or four years old before worthwhile crops may be expected and apple trees are generally six to ten years old before profitable cropping occurs. Furthermore, the average returns for the second two-year period amounted to only \$9.12 annually.

DISTANCE OF PLANTING

The apples, pears, and nut trees were set at a distance of 36 x 36 feet. The planting distance for peach, plum, and cherry trees was made 18 x 18 feet. Currants and gooseberries were set in rows at a distance of 7 feet apart and in the row about 5 feet apart. Blackberries, raspberries, and dewberries were planted in rows 6 feet apart and in the row 4 feet apart. The grapes were planted in rows 10 feet apart and in the row 8 feet apart.

Where for any reason it is necessary to economize in land, the spacing of the various fruits used may be made closer than the distances given above. If cultivation is desired by means of tools used for grain and truck crops, it is advisable to make the rows wide enough apart to allow these implements to be operated without difficulty. By so doing

much hand hoeing may be eliminated and considerable time saved in cultivating.

On the other hand, if the fruit crops are planted closer together, garden tools like hoes, push plows, and the like employed in the garden may be used successfully in cultivating the fruit plants.

LOCATION OF HOME ORCHARD PLOT

Unfortunately the home orchard plot was located upon soil subjected to severe erosion on account of the steepness of the slope. As a result of cultivation for the first two or three years after planting the plot, the erosion became so serious that cultivation except in the case of strawberries was almost entirely discontinued. For the most part the plot was seeded to bluegrass, while for some fruit plants like blackberries, raspberries, dewberries, and currants, mulching with wheat straw was resorted to to keep down weeds and grass.

The mulching system used did not prove profitable and grass and weeds soon came in to such an extent that the vigor of the plants was markedly reduced. In fact, the change from clean cultivation to a grass sod following the year 1923 accounts especially for the small annual yields or returns from blackberries, dewberries, and raspberries. It is also true that the annual yield of grapes was cut down materially as a result of the sod culture.

Careful study of the three-fourths acre plot and the culture given indicates that the home orchard if possible should be placed on comparatively level soil in order that good cultivation may be maintained from early spring until mid-summer without the danger of the loss of soil by erosion. This may permit the growing of leguminous and non-leguminous cover crops, and their plowing under for a soil nitrogen and humus supply. Through such a system of cultivation and maintenance of the nitrogen and humus content of the soil, it is believed that much more profitable returns from home orchards may be anticipated.

UNPROFITABLE TREES

A careful study of the growth, adaptability, and production of the various kinds of trees used in the home orchard planting indicates that, in general, it would not be profitable for the average farmer to plant the Persian walnut, varieties of the so-called paper-shell or southern pecans, hardy varieties of the almond, or the so-called heartnut.

This is true because the fruit buds and fruiting wood of the Persian walnut are usually killed by the low temperatures of the winter season.

Varieties of the pecan grown mainly in the southern states and known as the soft-shelled or paper-shelled pecans require generally a longer growing period than that of Missouri. In the case of the hardy varieties of the almond, not more than about two crops out of five have survived Missouri's late spring freezes. It is true, also, that the crops produced are rarely abundant enough or of sufficient quality to be profitable even for the home orchard.

Like the other nuts, the so-called heartnut, *Juglans cordiformis*, also known as the Japanese walnut, has not been a profitable producer under the conditions of this experiment. It would, therefore, be wiser and more profitable if nut trees are desired to use named varieties of the black walnut, common hazelnut, native varieties of the pecan or named sorts adapted to this section, and the chestnut instead of the nut trees described briefly as unprofitable.

The varieties of sweet cherries used, Bing and Long-stemmed Waterhouse, proved unprofitable due to the fact that the trees bloom early and frosts and freezes generally destroy the essential organs of the flowers and prevent fruit setting and development.

HAIL STORM DAMAGE IN 1929

Due to the occurrence of a severe hail storm shortly after the blooming period of apples, the crops from the home orchard in 1929, taken as a whole, were reduced considerably more than one-half. The major returns for this year, which were dependent mainly upon the apple crop, were diminished about 50%. Moreover, the fruit harvested, on account of the hail marks or severe blemishes, was of low quality and did not command satisfactory prices on the local markets.

PROFITS MAY INCREASE

For such fruit and nut trees as the apple, pear, cherry, plum, persimmon, black walnut and chestnut the production should increase materially during the next several years. In fact, greater production should add considerably to the annual returns from this three-fourths acre home orchard project.

The above statement cannot be seriously doubted when it is generally known by most farmers that apple orchards under average care generally reach their maximum production when about 18 to 25 years old. Furthermore, it may be said that at least the apples, pears, nut trees, and persimmon trees under good care may be more profitable when 20 to 26 years of age, or older, than at any earlier period.

FOR AND AGAINST THE HOME ORCHARD

From the data presented it is clear that the home orchard is not a heavily paying proposition from a financial point of view. If, however, we compare the earnings with those which may be obtained by growing other crops, the returns may be considered satisfactory.

A study of the detailed cost account given in Table 1 may tend to discourage the average individual who contemplates the planting of a home orchard. It is true, the annual profits are not large and the work involved is of a specialized nature, requiring a knowledge of such practices as spraying, pruning, and fertilizing, which often are not generally understood by the average farmer. The lack of information in handling such problems may be found discouraging to some home orchardists.

On the other hand, a better understanding of the project may lead to encouragement. This will be particularly true for the grower who lives on the farm and takes an active and dynamic interest in the supervision of the farm enterprise, including the home orchard.

Moreover, no one can actually measure the true value of a home orchard from a dollars-and-cents point of view. The satisfaction in the use of fresh, crisp, wholesome fruits of the desired varieties alone may go a long way toward justifying the establishment and maintenance of the home orchard. It has been shown, also, that a majority of farmers who depend upon timely purchases of fruit to meet the needs of the home rarely supply their families with adequate quantities of fruit in season.

A supply of fresh edible fruit is assured from spring until late fall. Adequate quantities may be had for storage, canning, drying, and preserving. Such a food supply, besides helping materially to reduce the living expenses throughout the entire year, contributes greatly to the family's health and happiness.

Most persons living in the country, as well as those in towns and cities where there is a space which may be devoted to the growing of fruit plants, will agree that a home orchard is desirable and an asset to the farm or suburban property, providing it produces good fruit.

MAINTAINING A HOME ORCHARD

In general, it is believed from a study of this investigation that the home orchard will be a success or a failure due to the following factors: (1) wise selection of the varieties and kinds of fruits with particular attention to their adaptability to the region where they are to be grown, and (2) subsequent care and attention of the orchard. The success of the home orchard may depend largely upon this factor.

Many may think that the home orchard will require an undue amount of work. This is not true for the home orchard of one acre or less in extent; in fact, the care amounts to so little that no farmer, if his work is properly managed, should be handicapped or delayed in handling other farm enterprises.

FRUIT FOR THE FAMILY

It is of paramount importance that the prospective home orchardist keep in mind the main or true object of the home orchard; namely, to supply enough fruit for the family. Too often more trees are planted than are needed for this purpose, and as a result the work of caring for the trees and plants is neglected and the orchard project becomes a failure.

The results from this investigation indicate very forcefully that for Missouri conditions the average farm should not maintain a home orchard of more than three-fourths of an acre, while an orchard of one-half acre or less is likely to prove more profitable. With proper care and attention no similar area on the farm is likely to produce for the time and effort employed as great returns to the yearly food supply of the family and as much genuine enthusiasm and satisfaction as the home orchard.