Thesis for Degree of M. Hort.

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THE COST OF AN ORCHARD

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I

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THESIS

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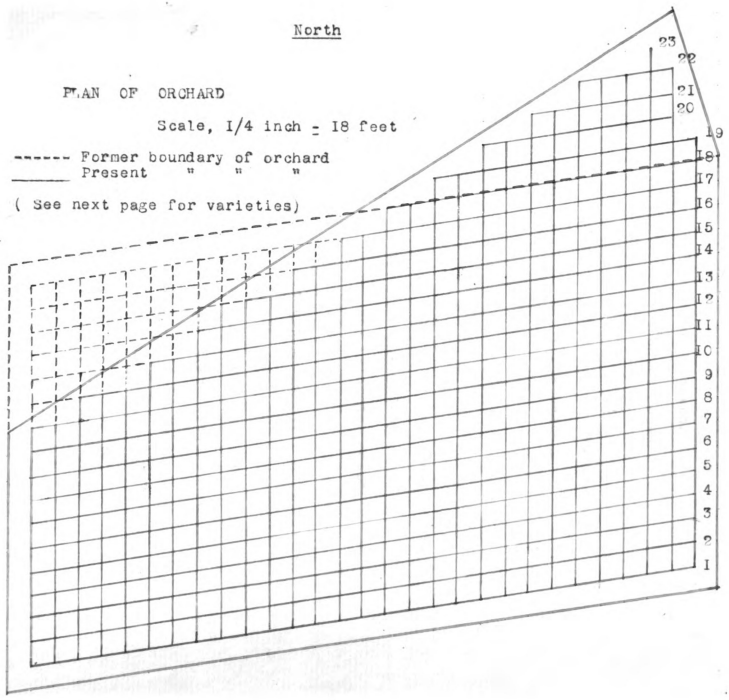
Submitted to the Honorable Board of Agriculture of the Michigan Agricultural College for the degree of Master of Horticulture, by S.B.Hartman, May, 1910.

An account of the cost and a description of the methods followed for the first five years in caring for a mixed apple and peach orchard located at Athens, Calhoun County, Michigan.

CONTENTS

Plan of Orchard,	Page I
List of Varieties,	" 2
First Year, 1905,	Pages 3-10
Second Year, 1906,	" 11-18
Third Year, 1907,	" 19-28
Fourth Year, 1908,	" 29-39
Fifth Year, 1909,	" 40-50
Summary,	" 51-60


North
PLAN OF ORCHARD
Scale, 1/4 inch = 18 feet
------ Former boundary of orchard
Present " " "
(See next page for varieties)
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

List of Varieties by Rows. (See map plan page-4-)

Row 1 King apple and Dewey peach.

" 2 Wagner apple and Dewey peach.

" 3 King apple and Dewey peach.

" 4 Wagner apple and St. John peach.

" 5 King apple and Elberta peach

" 6 Wagner apple and Elberta peach.

" 7 King apple and Crosby peach.

" 8 wagner apple and Fitzgerald peach.

" 9 Grimes Golden apple and Gold Drop peach.

" 10 Wealthy apple and Gold Drop peach.

" 11 Grimes Golden and Kalamazoo peach.

" 12 Wealthy apple and Engels Mammoth peach.

" 13 Grimes Golden apple and Beers Smock peach.

" 14 Wealthy apple and Beers Smock peach.

" 15 Grimes Golden apple and Marshalls Late peach.

" 16 Wealthy apple and Miscellaneous peach.

" 17 Grimes Golden apple and Salway peach.

" 18 Wealthy apple and Clapp's Favorite peach.

" 19 Grimes Golden apple and Bartlett pear

" 20 Wealthy apple and Anjou pear.

" 21 Grimes apple and Duchess pear.

" 22 Wealthy apple and Duchess pear.

" 23 Grimes Golden apple

FIRST YEAR, 1905.

Orchard Account, Proper.

		Dr.
120 Apple trees at 10¢	12.00	
225 Peach trees at 6¢	13.50	
Freight on trees	1.50	
Staking out orchard	2.00	
Setting trees	10.00	
Pruning trees	.50	
Spraying, 1 barrel Bordeaux mixture	1.00	
Hoeing about trees	.50	
7 Bushels oats for cover crop at 33¢	2.31	
Sowing oats	.50	
Digging peach borers	1.50	
330 veneer tree protectors at 60cents, wire 7 cents, freight 20 cents	2.25	
15 wire netting protectors at 2 cents	.30	
Applying protectors	2.00	
Hauling three loads straw for mulching trees	1.50	
Total cost		51.36
Corn and Potato Account, Cr.(See next page)		24.40
Net cost of orchard for 1905		26.96

Corn and Potato Account.

3-1/2 A. Corn, 1/4 A. Potatoes.

1905.	Dr.	Cr.
18 loads Manure at 25 cents and hauling	9.00	
5 loads Ashes at 50 cents and hauling	3.75	
Plowing, 2 days at $2.00	4.00	
Harrowing, 3 times, 1-1/2 days	3.00	
Marking for Corn and Potatoes 1/2 day	1.25	
Planting Corn, 3/4 day	.75	
Seed Corn, 1/2 bushel at $1.00	.50	
Seed Potatoes, Planting and Spraying during season	12.50	
Horse weeder, twice 1/2 day	75	
Cultivating, 7 times, 5 days at $2.00	10.00	
Cutting Corn, 3-1/2 A. at $1.50	5.25	
Husking Corn, 160 Shocks at 6 cents	9.60	
Hauling and Cribbing Corn, 2 days	3.00	
Hauling Stalks 4 loads 1/2 day	1.50	
Digging and Hauling Potatoes	1.25	
	$56.10	
300 Crates Corn at 20 cents		60.00
4 Loads of Stalks at $2.00		8.00
25 Bushels Potatoes at 50 cents		12.50
	56.10	$80.50
Balance, net profit	24.40	
		$24.40
Balance		

First Year, 1905.

Location and Soil.

The orchard, comprising about three and three fourths acres, and selected for the following account is located at the edge of a burr oak prairie, about one half being on the level upland, while the other half lies on a side hill with a north-west exposure, which drops quite rapidly about twenty feet to the bottom of a creek valley.

The soil is a gravelly loam underlaid with a clay-gravel hard pan about one and one half feet below the surface, and below this at a distance of three to four feet from the surface, clear gravel and good building sand is found. The hard pan prevents excessive leaching, and the gravel beneath affords excellent drainage, so trees on the upland never suffer from ''wet feet''. On the hillside the hard pan is nearly lacking, the soil being more sandy and less fertile.

Fertilizing and Preparing the Ground.

The field was a clover sod in a rotation of corn wheat, and clover. About five loads of stable manure and one load of wood ashes were applied per acre during March and plowed under during April. Three harrowings were given during April and early May, and the trees set early in May.

Varieties and Plan of Orchard.

The orchard was to have been set cut as follows:

Permanent apple trees; 60 King, 75 Grimes Golden, 36 feet apart.

Filler apple trees, 56 Wagner, 56 Wealthy, set in center of squares between permanent trees.

Peaches were used as fillers between the apple trees and alternating with them, making the rows of alternating peach and apple trees 18 feet apart each way The varieties of peaches were as follows: 45 Dewey, 15 St. John, 30 Elberta, 15 Crosby, 15 Fitzgerald, 30 Gold Drop, 15 Kalamazoo, 15 Engel's Mammoth, 30 Beers Smock, 15 Marshall's Late. (See plan page 1.)

Stock was ordered accordingly, but owing to a shortage we were unable to secure the Grimes and Wealthy apple trees, which were set the following spring. The balance of the orchard was set as planned. The apple trees were first grade, two year stock and cost 10 cents each at the nursery. The peach trees were second size and cost 6 cents each.

Laying Out the Orchard.

Owing to the angling highway adjoining the farm, the rows were not laid off at right angles, but so as to make the parallelograms between the trees slightly diamond shaped. A line was run at one side of the field, across each end, and through the center at the brow of the hill, and stakes set along them 18 feet apart. Then by using a line one way and sighting the other the staking was completed.

Planting of Trees.

On arrival, the trees were taken from the box and ''heeled'' in a trench at the north side of a building near the orchard. As they were taken from the trench they were root pruned slightly, the broken and badly injured roots being removed, the longest ones clipped back to a foot or less, and a fresh cut made at the under side of the tip of each of the larger roots. The trees were then placed in a barrel of water until ready to set.

The holes were dug about two feet in diameter and eighteen inches deep, the surface soil and the subsoil being thrown in separate heaps. Before setting the tree enough of the rich surface soil was thrown into the hole to bring it to the proper depth for the tree, which was usually a few inches deeper than it stood in the nursery, though we planted more deeply near the top of the hill, and less deeply near the base, which proved to be a good practice on account of soil washing.

The planting board was used to locate the tree in the hole. One man filled the hole using the surface soil in the bottom about the roots, while another held the tree, worked the fine soil about the roots with the hands, and kept the upper soil packed with the feet as the filling progressed. The heavier branches were ~~trimmed~~ turned toward the southwest and the tree leaned slightly in that direction on account of the prevailing southwest winds. A few inches of loose soil were

were thrown on the surface to conserve moisture but no water was used in setting or afterward. The trees all lived during the summer, though five peach trees died the following winter.

The trees were pruned as soon as set, most of the peach trees being cut to a whip from two to three feet in height, and the apple trees headed about two and a half feet from the ground. It was aimed to leave from three to five branches evenly distributed about the trunk and leaving it at different heights to avoid weak crotches. Where the branching was poor the tree was cut back and the head startedthe following season. On one row of peach trees branches were left about a foot in length. Little difference could be noted between these and the whipped-pruned trees after the second season.

Culture.

The trees were given the same culture as the corn crop grown between them; viz., twice over with the horse weeder and seven cultivations, in addition to one hoeing about the trees. A cover crop of oats was sown between the corn the last day of July. The details and cost of the culture are given in the "Corn and Potato" account on page 4.

Fighting Pests.

One spraying with Bordeaux mixture and Paris green was given in June, using four pounds of copper sulphate to six or eight of lime. Some of the foliage fell from the peach trees showing that the mixture was too strong for peach foliage, but the trees were not injured perceptibly.

During October all the peach trees were examined for peach borers, the soil being hoed away from the trunks and the borers ~~being~~ hunted and crushed with a wire, after which the soil was drawn about the trees and tramped firm.

Wood veneer tree protectors were wrapped about the trunks as a protection from mice and rabbits. Two small holes were bored near one edge of the protectors about three inches from top and bottom to prevent the wires which were passed around the protector from slipping off. However, we found that in a few instances the wire slipped to the base of the tree where they were missed in removing the protectors and greatly injured the tree by girdling it. We now use cord for fastening the protectors. Protectors of ordinary wire netting ~~we~~ were used on 15 trees and as will be seen from the account on page 3 they cost about three times as much

as the veneer and were little more durable as they rusted out at the lower end.

Mulching.

As the winters in this section are rather severe for peach trees, which are quite tender when young, we thought to protect the roots somewhat by mulching about the trees with straw. Three loads were used for this purpose, mostly about the peach trees. As the straw was hauled the following spring to another orchard set in sod and kept mulched, no charge is made except for the hauling.

Cost.

The cost of the orchard proper the first season, aside from the cultivation which is charged to the crop of corn grown between the trees, was $51.36. The crops of corn and potatoes grown in the orchard cost $56.10 and returned $80.50, leaving a net profit of $24.40. This deducted from $51.36, the cost of the orchard proper, leaves $26.96 as the net cost of the orchard at the end of the first season.

Manure is charged at 25 cents per load and the cost of hauling. Ashes at 50 cents and the cost of hauling.

Labor is charged at $1.00 per day for man and $1.00 for team. The use of tools, taxes, and interest on the investment are not included in the account given below, but will be computed at the end of the fifth year.

(See page 54.)

SECOND YEAR, 1906.

RASPBERRY ACCOUNT.

1/4A. Black and 3/4A. Red Rasp. and Truck Between.

1906.	Dr.	Cr.
Plowing	$1.50	
Harrowing, 3 times	50	
Marking	.20	
600 Black Raspberry and 1450 Red rasp. plants at one cent each	20.50	
Setting Plants	1.50	
Cultivating, 9times	3.35	
Hoeing, once	1.00	
Layering Black Rasp.	.60	
Seed of field corn, sweet corn and beans planted between rows of Raspberries	.20	
Planting Corn and Beans	.40	
Cutting and Husking Corn	.75	
Pulling and Threshing Beans	.50	
5 Crates Field Corn at 25 cents		$1.25
3 " " Popcorn at 75 cents		2.25
1 Bu. Beans		1.00
Sweetcorn estimated at		1.00
	$31.00	$6.00
Raspberry Account, Dr.	$25.00	

BEANS AND POTATO ACCOUNT.
About 2-3/4 A.

1906.	Dr.	Cr.
Plowing	$2.50	
Harrowing, 5 times	2.25	
Marking	40	
1/3 Bu. Seed Beans at $1.50	..50	
Planting Beans	1.00	
10 Bu. Seed Potatoes at 25 cents	7.50	
Planting ~~Seed~~ Potatoes	2.50	
Replanting and Hoeing twice	2.00	
Spraying Potatoes for Beetles	.75	
Cultivating, 6 times	5.85	
Pulling and Hauling Beans	2.75	
Digging and Hauling Potatoes	4.50	
Threshing and Cleaning Beans	3300	
10 Bu. Beans at $1.25		$12.50
75 Bu. Potatoes at 50 cents		37.50
	$ 35.50	$50.00
Bean and Potato Acct. Cr.	14.50	

ORCHARD ACCOUNT, PROPER.

1906.		Dr.	Cr.
Pruning		$ 1.00	
Removing Straw Mulch from Trees		.75	
Spraying			
Lime Sulphur, 1 application	$ .75		
Bordeaux on apple, 1 appli.	.50		
Bordeaux and Paris Green on a few trees for Red humped Caterpiller	.20	1.45	
Burning Brush		.35	
Trees to Complete Orchard			
126 Apple at 10 cents	$ 12.60		
12 Peach at 8 cents	.96		
5 Standard Pear at 25¢	.75		
4 Dwarf Pear at 15¢	.60		
Freight on Trees	1.00	15.91	
Setting 145 Trees		7.00	
Filling washouts on side hill		.50	
6 Bu Oats for cover crop at 35¢		2.10	
Sowing Oats		.40	
Digging Peach Borers		1.50	
Banking Soil about trees		.60	
120 Tarred Paper Protectors at 1/2¢		.60	
Cutting and Applying		.75	
Hauling 3 loads straw for mulching about peach trees		3.50	
Total Cost		$ 36. 41	
Raspberry Acct., Dr.		25.00	
Bean and Potato Acct. Cr.,			$14.50
Net Cost of Orchard for 1906		$46.91	
Net Cost of Orchard for 1905		26.96	
Net Cost of Orchard Jan. 1, 1907		$73. 87	

SECOND YEAR 1906.

Trees.

In early May of 1906 the orchard was filled out as planned and as shown by the dotted lines in the diagram on page 1. 75 Grimes Golden apple trees were set out for permanent trees 36 feet apart, with 51 Wealthy as fillers in the unoccupied centers of the squares between them. The peach fillers with the exception of one row of 14 trees had been set the year previous. 7 Salway peaches were set in the upper end of this row, but the lower half which extended into rather low ground, was considered too wet for peaches, and pears were set instead, 3 Standard Bartlets and 4 dwarf Duchess. 5 peach trees that died the previous year were replaced.

The trees which were the same ages and grades as those set the previous spring were planted and pruned as described under this head in the account of the previous season. (See page 6.)

Mulching.

The straw hauled about the peach trees the previous fall was removed in the spring to a sod mulch orchard. The following autumn three loads of fresh straw were spread about the peach trees as a root protection, the account being charged with the hauling only.

Spraying.

All of the trees were sprayed with home made lime-sulphur wash just as the buds were swelling. After the blossoming period, Bordeaux mixture and Paris green were applied to the apple trees. In midsummer a few apple trees were sprayed with Paris green for the red humped apple worm which was defoliating some of the small trees. Where they had just begun on a tree they were secured by picking the leaves beneath which they were clustered. A few larvae of tussock moth and yellow necked datana were found, but not in sufficient numbers to be troublesome.

The previous year the green aphis caused the foliage to be dwarfed and curled to quite an extent, but they were much less troublesome during this and the following seasons, which fact I attribute largely to the early lime-sulphur spray.

Culture.

The culture was that given the raspberries, beans, potatoes, and other crops grown in the orchard. The ground was plowed in lands, harrowed three and five times before planting, and cultivated six and nine times afterward. One and two hoeings were given. Oats were sown as a cover crop July 30, but owing to dry weather made a light growth.

Washouts.

In early June there were heavy rains which caused several bad gullies in the side hill, in some cases washing out trees, which incidentally gave us an excellent chance to observe the manner of root growth in the trees set that spring and the spring before. These observations did not appear to confirm the belief that rootlets start first from the freshly and smoothly cut ends of roots, but start rather indiscriminately from any part of the root.

This washing was encouraged by back furrows running diagonally down hill resulting from plowing in lands between rows of trees. These were filled with straw, marsh hay, and soil, tramped hard. We have not plowed this side hill since, but disked it up with a cutaway harrow and have been bothered less by gullies.

I have come to believe that a steep side hill of a sandy or gravelly nature which conveys the drainage from any considerable area above would better be left in sod and mulched, and similar side hills on our farm since planted to orchards are being handled accordingly.

Peach Borers and Banking Trees.

The peach borers were hunted and destroyed as before with a wire, the soil being hoed away from the trunks a few days before searching for the borers so as to enable one to see the fresh castings if the borer

were present. A hand trowel was used to scrape the gum and castings from the trunk, and a No. 12 wire with one end bent into a handle was used to follow up the tunnel and crush the borer. The trees, both peach and apple, were then banked a few inches high and the soil tramped firm to prevent the motion of the trunk due to wind from forming inverted cone shaped cavities in the soil about the trunk into which water could run and freeze. These conditions appeared to have caused the loss of a few trees the previous winter.

In filling and banking one row of peach trees the fall before, ashes were mixed with the soil to see if it would assist in keeping out the borers. No harm resulted either to the trees or to the borers.

Protectors.

The wood veneer and wire protectors put on the year before were not removed this season. Protectors one foot wide by 18 inches high were cut from a roll of tarred paper and applied to the trees set this year. Two holes were punched near one edge to keep the wrapping twine with which they were tied from slipping down. These protectors have lasted nearly as well as the wood veneer. The comparative cost was: Veneer 2/3 cent each, wire cloth 2 cents, heavy tarred paper 1/2 cent and the cutting, or practically the same as the wood veneer.

Raspberries.

One fourth acre of black and 3/4 acre of red raspberries were set in the orchard the rows being six feet apart and plants set three feet in the row. This gave two full rows between the rows of trees, and a broken row between the trees in the row. The black caps were Kansas and Gregg, the reds, Cuthbert, with the exception of one row of Miller. The first season beans, popcorn, sweet corn and field corn were grown between the rows, the patches of corn being separated by the beans. These crops did not make a good growth, but the raspberries did fairly well though there were some vacancies.

Beans and Potatoes.

The balance of the orchard was planted to beans and late potatoes, rowed both ways. Three rows of potatoes extended through the middle with a row of beans on each side of the row of trees and one between the trees in the row, the plan being to avoid disturbing the soil near the trees in digging the potatoes. The cover crop of oats was sown in strips along the rows where the beans were planted. On account of washing on the side hill during the early summer, and a drought in late summer, the potatoes and beans produced light crops.

Cost. 1906.

The acre of black and red raspberries set in the orchard this season cost $31.00 including a charge of $20.50 for the plants. The truck grown between the rows of raspberries is credited at $6.00, leaving a net cost of $25.00 for the raspberries.

The crops of beans and potatoes cost $35.50 and returned $50.00, a net profit of $14.50.

The cost of the orchard proper during the season, cultivation excepted, was $36.40, including $22.91 for cost and setting of trees. Adding to this the net cost of the raspberries, $25.00, and deducting the net profit from the beans and potatoes, gives $45.91 as the net cost of the orchard for the season of 1906. Adding to this $26.96, the net cost of the orchard for 1905 gives $73.87 the net cost of the orchard Jan. 1, 1907 at two years of age. (See account page 13).

Labor of man and team is charged as in previous year.

THIRD YEAR, 1907.

RASPBERRY ACCOUNT.

1907.	1A. set 1906. Dr.	Cr.
150 Plants for replacing	$ 1.50	
Labor in setting	.30	
Pruning	.75	
Posts to support 3 rows black raspberries, 12 cedar end posts at 16 cents, and short second hand line posts, and labor in setting	4.17	
One line of wire, $1.00, Stringing and tying raspberries $1.50	2.50	
Cultivating, 14 times	5.40	
Hoeing, 4 times	4.05	
Picking berries	4.30	
Packing and marketing	1.00	
Crates and boxes	1.05	
222 quarts berries sold, net		$19.00
Balance, net loss 1907		6.02
	$25.02	$25.02

STRAWBERRY ACCOUNT.

About 3/4 A. including trees.

1907	Dr.	Cr.
12 loads Manure at 25 cents and hauling	$6.75	
5 loads Ashes at 50 cents and hauling	3.00	
Plowing	.60	
Harrowing, 6 times	1.25	
Marking	.25	
3,000 home grown plants at $3.50	10.50	
Setting plants	3.00	
Cultivating, 19 times	7.30	
Picking buds, twice	.90	
Setting label stakes	.15	
Hoeing, 6 times	5.05	
Layering	7.10	
Hoeing and cutting runners, twice	8.00	
7 loads fine manure at 50 cents	3.50	
Hauling manure	1.75	
Raking manure from plants	.50	
2 loads coarse manure	.50	
Hauling manure	.50	
3loads Marsh hay mulch at $1.50 per load in stack	4.50	
Hauling and spreading mulch	2.20	
Total Cost	$70.20	

POTATOES AND POPCORN ACCOUNT.

1 A. Potatoes, 1 A. Popcorn.

1907	Dr.	Cr.
Plowing	$ 4.75	
Harrowing, 9 times	4.00	
Marking	.35	
7 Bu. seed Potatoes at 30¢	2.10	
Treating seed and planting	2.25	
Planting Popcorn	.35	
Harrowing and weeding Potatoes and Popcorn	1.35	
Cultivating, 10times	6.50	
Hoeing	1.70	
Digging and hauling 75 Bu. Potatoes	5.50	
Cutting,husking and hauling Popcorn	3.50	
75 Bu. Potatoes at 40 cents		$30.00
30 Bu. soft Popcorn at 25 cents		7.50
Corn Fodder, 1 load at $2.00		2.00
Balance, net profit	7.15	
	$39.50	$39.50

ORCHARD ACCOUNT, PROPER.

1907	Dr.	Cr.
Pruning	$ 3.00	
Spraying, two applications	3.90	
Filling Gullies on side hill	1.75	
Replacing, and filling out N. row. 6 Pears, 13 Peach	3.75	
Hoeing around trees	.45	
2 Bu. Oats at 45 cents and sowing	1.25	
Destroying red humped apple worm	.35	
Digging borers	1.25	
Replacing protectors and banking	1.50	
5 loads Ashes about trees at 50 cents and hauling	4.15	
Transplanting trees from flat to side hill	2.25	
Hauling 5 loads straw about peach trees	3.55	
Total Cost	$27.15	

SUMMARY, 1907.

	Dr.	Cr.
Orchard account proper cost	$ 27.15	
Raspberry account, net loss	6.02	
Strawberry account, net cost	70. 20	
Potato and Popcorn account, net profit		$ 7.15
Net loss on orchard, 1907		96.22
	$103.37	$103.37

Net cost of Orchard for 1907	$ 96.22
Net cost of Orchard for 1906	- 73.87
Net cost of Orchard Jan. 1, 1908	$170.09

Protectors.

During the previous season it was noticed that some of the apple trees were troubled with wooly aphis beneath the wood and paper veneer protectors, and the bark had a rather tender, unhealthy appearance. To overcome this the protectors were removed in the spring of 1907, and the trunks well soaked with home made lime-sulphur wash so that it ran down about the collar of the tree saturating the soil about the origin of the roots.

During the following seasons the protectors were removed each spring before spraying and replaced the following fall, and we have not been troubled with the wooly aphis, and the trunks have a more healthy appearance. The protectors were discontinued when the peach trees were four years of age and the apple trees five.

Spraying.

All the trees were sprayed on March 30 with home made lime-sulphur wash, and the apple trees again on June 3, with Bordeaux Mixture and Paris green. This kept the foliage in quite healthy condition.

The trees were examined during August and September, and the leaves on which the fed humped apple worm was found were picked and burned.

Fertilizing.

Five loads of wood ashes were scattered about the trees during the summer, and five loads of ashes and nineteen of baunyard manure were spread on aoout 3/4 acre that was set to strawberries this season.

Culture.

The culture was that given the crops grown in the orchard. The raspberries received 14 cultivations and four hoeings. The strawberry ground was harrowed six times and the plants cultivated 10 times and hoed 7 times. The ground planted to potatoes and popcorn received 3 harrowings, 12 cultivations, one weeding and one hoeing. Oats were sowed as a cover crop in early August.

Pruning, Mulching, Borers, etc.

The apple trees were pruned in March rather lightly, and the peach trees quite heavily, the aim being to make them low headed and stocky.

The mulch about the peach trees was removed in the spring and placed about apple trees in a sod mulch orchard, and five loads of straw were used in mulching the peach trees the following autumn.

Peach borers were removed in early fall as before, and the trees banked slightly.

Transplanting and Replacing Trees.

In laying out the original orchard, the north side was made parallel to the south one, although this brought about 1/4 acre of the northwest corner on quite low ground. By the end of the third season most of the peach trees on this corner had died, and the pear trees with which they had been replaced and the apple trees were not doing well, so the 93 that remained were removed in the fall of 1907 and set on an adjoining hill, which was left in sod and the trees mulched. (See plan page /.). This experience demonstrated to my mind the impracticability of attempting to grow fruit trees on low, wet ground.

One apple, six pear and thirteen peach trees were used in replacements, and in filling out part of the north row in the spring of 1907.

Raspberries.

One hundred fifty plants were used in replacing the acre of raspberries set in the orchard the previous year. Posts were set and a wire stretched to support the three full rows of blacks, while the two broken rows between the trees were pruned to be self supporting. The cost of these supports is considerable as shown by the account on page 19 and I doubt if it would pay to follow this method on a large scale, although more berries were obtained from the hills thus supported, and less hoeing was required, as close cul-

ture was possible. However, hill culture with cultivation both ways would off set the latter advantage.

Strawberries.

About 3/4 acre of strawberries was set in the orchard in the spring of 1907, chiefly of the Warfield, Dunlap, Clyde, Brandywine, Aroma and Glen Mary varieties. Four rows were set for fruit between each row of trees, the rows being thirty inches apart. In July and August the two center rows were layered into single hedge rows and the two outer ones into double hedge rows. The single row set between the trees was allowed to form a wide matted row from which to secure plants for next season's setting and for sale.

Potatoes and Popcorn.

The balance of the orchard was plowed early, and kept harrowed until the middle of June, when potatoes and popcorn were planted, about an acre of each. Drouth and frost injured these crops, the unusually early frost rendering the popcorn unfit for anything but feed.

Cost.

The acre of raspberries cost $25.09 for the season, and returned $19.00, leaving a net cost of $6.09. (See page 19 for detailed account).

The 3/4 acre of strawberries cost $70.20. (See account page 21).

The acre each of potatoes and beans cost $32.35, and returned $39.50, giving a net profit of $7.15. (See account page 21).

The cost of the orchard proper for the season was $27.15. Adding $6.09 for the net cost of the raspberries, and $70.20 for the strawberries, and deducting $7.15 for the profit on the potatoes and popcorn, gives $96.29, the net cost of the orchard for the season of 1907.

Adding to this $73.87 the net cost of the orchard at the close of 1906, gives $170.09 as the net cost of the orchard at the close of the third season, 1907. (See page 23) ~~Summary~~.

Labor for this and the following years is charged at $1.50 per day for man and $1.00 for team.

FOURTH YEAR, 1908.

RASPBERRY ACCOUNT.

1 A., set 1906.

1908.	Dr.	Cr.
8 loads wood ashes at 50 cents	$ 4.00	
Hauling ashes	2.00	
10 loads manure at 25 cents	2.50	
Hauling manure	3.25	
Cutting old canes	.65	
Top wire for supporting blacks	2.50	
Stretching and fastening wire	1.25	
Tying up blacks	1.25	
Pruning blacks and reds	1.00	
Removing prunings	.50	
1500 plants sold, $15.00; less digging, $2.50		12.50
Cultivating, 8 times	3.30	
Hoeing, blacks 4 times, reds once	5.60	
Spraying, blacks twice, Bordeaux mixture and arsenate of lead	1.55	
Clipping canes and cutting sprouts	.45	
Two Bu. oats at 45 cents and sowing	1.00	
Picking and packing, crates and boxes	21.30	
524 qts. Berries sold, net		67.20
Total	$52.30	$79.70
Balance	27.40	
	$79.70	$79.70
Net Profit		$27.40

STRAWBERRY ACCOUNT.

3/4 A. set 1907.

1908	Dr.	Cr.
Removing mulch from plants	$ 1.00	$
Adjusting mulch after wind	1.10	
Plants for self from patch, 4,750 at $3.00 per thousand		14.25
Plants sold, 2,000 at $3.50 per thousand		7.00
Digging and trimming plants	5.75	
Pulling weeds	1.50	
Picking and packing	22.40	
Other labor in harvesting and marketing	9.80	
Use of crates and baskets	6.40	
Berries sold		120.40
Mowing vines, raking and hauling mulch	4.50	
Cultivating 3 times and hand raking rows	2.00	
Hoeing out rows	4.50	
12 loads manure and hauling	9.55	
Raking dirt and manure from rows	1.75	
Cultivating, six times	1.75	
Hoeing, twice	5.50	
Cutting runners	.40	
4 loads of straw for mulch at $1.00	4.00	
Hauling and spreading mulch	2.50	
Total	$83.40	$141.65
Net Profit, 1908		58.25

STRAWBERRY ACCOUNT.

1-3/4 A. set 1908.

	Dr.	Cr.
1908		
Twentyone loads manure at 25 cents and hauling	$ 9.75	
Four loads wood ashes at 50 cents and hauling	3.50	
Harrowing with cutaway 5 times	3.50	
Harrowing with spring tooth and spike tooth 4 times	1.75	
Marking	.25	
4750 plants at 30 cents	14.25	
Setting plants	3.75	
Picking buds, twice	1.25	
Cultivating, 18 times	11.05	
Hoeing, 4 times	13.50	
Layering runners	3.50	
Cutting runners	3.45	
Five loads marsh hay mulch at $1.50	7.50	
Hauling and spreading	4.00	
Cost for 1908	$87.00	

ORCHARD ACCOUNT, PROPER.

1908	Dr.	Cr.
Pruning	$ 4.55	
Removing straw mulch from around trees	1.75	
Removing tree protectors	.40	
Trees for filling out N. E. corner	5.36	
Setting trees	.80	
Hoeing about trees	.50	
Spraying Peach trees and Apple trees, one application of lime-sulphur, and two of Bordeaux-arsenate	11.73	
Mowing and hauling hay in N. E. cor.	.75	
1/2 ton hay at $5.00		$ 2.50
Digging and burning 30 Yellows trees	2.25	
One Bu. peaches, net		1.50
Digging borers in peach trees	1.50	
Banking trees	1.25	
Putting on protectors	1.00	
Total	$31.84	$4.00
Net cost for 1908	27.84	

SUMMARY, 1908.

	Dr.	Cr.
Orchard account proper cost	$27.84	
Raspberry account, net profit		$27.40
Strawberry account, first patch, net profit		58.25
Strawberry account, second patch cost	87.00	
	$114.84	$85.65
Net cost of orchard for 1908		29.19
Net cost of orchard at close of 1907	170.09	
Net cost of orchard for 1908	29.19	
Net cost of orchard Jan. 1, 1909	$199.28	

Additional Plantings and Replacements. 1908.

As stated under this head in the 1907 account the remaining trees in a low corner of the orchard which were not doing well were transplanted in the fall of that year to a side hill adjoining the orchard at the northeast. The following spring this addition was filled out using Grimes Golden as permanent, and Wealthy as filler apples, and substituting Bartlett, Clapps Favorite, Anjou and Duchess pears for the peach fillers. (See plan page 1.) In all, 22 trees were set in this corner in addition to the 26 transplanted from the low portion the previous fall. This addition comprised about one-fourth acre, nearly the same amount of space as was cut off from the original orchard.

Thirteen peach trees were used in filling vacancies in the original orchard.

Mulching.

The straw which had been placed about the trees the previous autumn was removed from the part of the orchard not in strawberries and used as a mulch about trees set in sod. After this season the trees were not mulched except in the strawberry plantations where a mulch was spread over all the ground in December and left until renewing the plantation after fruiting, at which time a part of it was placed about the trees.

Pruning.

All trees were pruned as before in March, the peach trees quite severely, the apple trees less so, the latter being headed back about one-fourth of the new growth, and thick or crossing branches removed.

Spraying.

On April 16th, two and one half barrels of home made lime-sulphur wash were applied to the orchard with a hand pump, the wind being southerly. On the 20th three barrels more were put on with a north wind. The buds were swollen but not yet opened. On May 27th and on August 7th each , a barrel of Bordeaux-arsenate was applied to the apple tree s, the formula being 3 pounds arsenate of lead, 4 pounds blue vitriol, 5 to 10 pounds ground lime, and 50 gallons water.

Practically no scale could be found during the season, and insect pests did little damage. The lime-sulphur appeared to hold the scale and aphis in check, and the August spraying prevented any se rious damage by the summer pests such as the red humped apple worm.

There was almost no peach leaf curl, and very little apple scab present during the seaso n.

Culture.

The culture given the orchard during the season was that given the crops of raspberries and strawberries grown in it, with the exception of the corner added at the north-east which was left in sod and mulched with straw and manure about the trees. The grass was cut in July and used for hay.

Yellows.

During this season the Yellows first made its appearance in this orchard, the disease probably coming from neighboring orchards. There being fruit on but few of the trees, and the foliage not showing the disease in its early stages, the only indication of the disease was the pale shoots with narrow leaves which began to start from the large branches of these trees in midsummer. All trees showing this sign of infection during the season, about thirty in all, were dug out and burned at once.

Peach Crop.

A part of the trees had a few peaches on this season, enough for home use and a bushel for sale. A few of the Wagner apple trees produced a few blossoms, but no fruit.

Borers, Banking and Protectors.

Borers were dug from the peach trees as before, the trees banked slightly, and the protectors that had been removed the previous spring again placed about the trunks in the fall.

Raspberries.

During the winter and spring eight loads of wood ashes and ten of fine manure were applied to the raspberry rows, using a spreader where possible, and thus the trees were indirectly fertilized.

A second wire was fastened to the posts set the previous season to support the blacks.

Eight cultivations were given; the reds received one hoeing, and the blacks four. Oats were sown between the rows at the last cultivationin August, but did not make luxuriant growth.

The blacks were sprayed twice during the season with Bordeaux-arsenate.

About 1,500 plants and 574 quarts of berries were sold from the patch. (See account page 29.)

Strawberries.

During April the mulch applied to the patch set the previous season was parted over the rows, and the weeds which came through it were pulled during May and June.

Approximately 6,750 plants were dug from the patch, and 2100 quarts of berries sold.

After fruiting the vines were mowed, the mulch raked off, and the rows cleaned out with the cultivator and hoe, and given clean culture the balance of the season. In December a mulch of wheat straw was spread over the plants. (See account page 39.)

The balance of the cultivated portion of the orchard, comprising about 1-3/4 acres was set to strawberries in the spring of 1908. Twenty-one loads of manure and four of wood ashes had been applied, and the ground was thoroughly disked and harrowed.

As the peach trees had attained considerable size much of the ground near them could not be utilized. Three rows of plants were set three feet apart between each two rows of trees with plants three feet in the row and layered into double hedge rows for fruit. Between the trees in the row three short rows were set eighteen inches apart, these being cultivated the narrow way with a hand cultivator until July when they were allowed to form matted beds for plants.

Much of the soil in this portion of the orchard is rather light, being on a side hill, and subject to considerable washing.

4,750 plants were set, buds kept picked, cultivated eighteen times, hoed four times, early runners

layered and later ones cut, and five loads of marsh hay mulch put on in December. (See account page 31.)

Cost.

The acre of raspberries cost $52.70 and returned $79.70, leaving a net profit of $27.40.

The 3/4 acre of strawberries set in 1907 cost during the year $83.40, and returned $141.65, giving a net profit of $58.25.

The 1-3/4 acres of strawberries set in the spring of the present season cost $87.00 during the season.

The orchard proper cost $31.84, with a credit of $4.00 for 1/2 ton hay and 1 Bu. peaches, leaving a net cost of $27.84.

Combining the above figures we have a net cost of the orchard for 1908 of $29.19, which added to $170.09, the net cost of the orchard at the end of 1907, gives $199.28 as the net cost of the orchard at the end of the fourth season, 1908.

FIFTH YEAR, 1909.

RASPBERRY ACCOUNT.

1 A. set 1906.

1909	Dr.	Cr.
Cutting old canes	$ 3.05	
Pruning and tying blacks	2.00	
Pruning reds	1.75	
Eighteen hundred plants sold, $18.00, less digging and packing $2.50		$15.50
Bunching and burning prunings	1.00	
Cultivating, 7 times	3.50	
Hoeing reds once, blacks twice	6.75	
Layering part of blacks	.75	
Spraying blacks once, ½ bbl. application Bordeaux and arsenate lead	2.50	
Picking	40.32	
Crates and boxes	12.00	
Packing and marketing	16.00	
1,600 qts. berries sold, net		185.21
Total	$98.22	$200.71
Net Profit, 1909 crop		$102.49

STRAWBERRY ACCOUNT.

Both patches set 1907 and 1908, 2-1/2 A.

1909	Dr.	Cr.
Removing mulch from rows	$ 4.00	
Adjusting mulch	2.50	
Pulling weeds and spudding dock	5.25	
17,000 plants for setting, and plants sold at 50 cents per hundred		$ 85.05
Labor in digging and trimming	31.00	
Picking	49.50	
Other labor in harvesting and marketing	20.00	
Crates, baskets, etc.,	13.00	
4,700 quarts berries sold, net		311.00
Mowing vines	1.75	
Raking and hauling old mulch	4.75	
Plowing, harrowing and cultivating out rows	4.80	
Cultivating, six times	4.75	
Hoeing, three times	25.05	
Five loads manure and hauling	2.50	
Mulch, 2-1/2 loads new marsh hay at $2.00, 2 loads old marsh hay, (gratis), and 5 loads straw at $2.00	15.00	
Hauling and spreading	6.60	
Total	$190.45	$396.05
Net Profit for 1909		$205.60

ORCHARD ACCOUNT, PROPER.

1909	Dr.	Cr.
Pruning	$ 6.75	
Removing protectors	.30	
Replacing trees, 5 apple at 15 cents, 32 peach at 10 cents	5.20	
Spraying, all trees with lime-sulphur, apple trees with Bordeaux-arsenate	12.00	
Mowing, raking and hauling hay from N. E. corner	1.50	
One half load of hay at $6.00		$ 3.00
Two loads manure mulch about sod trees N. E. corner	1.00	
Thinning peaches	6.00	
Digging and burning 45 Yellows trees	4.50	
Digging borers from peach trees	1.25	
Putting protectors around smallest trees	1.00	
Picking and packing peaches	36.00	
Baskets	32.00	
Peaches sold, 1909 crop, about 300 Bu.		471.23
Total	$107.50	$474.23
Net Profit, 1909		$366.73

SUMMARY, 1909.

	Dr.	Cr.
Orchard Account, proper	$107.50	$474.93
Raspberry Account, net profit		107.49
Strawberry Account, net profit		205.60
Total	$107.50	$787.32
1909, Net profit on Orchard		$674.82
Net profit on orchard, 1909	$674.82	
Net loss on orchard, Jan. 1 1908	199.28	
Net profit on orchard Jan. 1, 1910	$475.44	

Pruning. 1909.

The trees were not pruned as heavily as they were the previous season, the intention being to induce a bearing habit in the peach trees, which had made a vigorous growth of wood and were now old enough to bear a good crop. A few trees were pruned more severely, and a few left unpruned. As nearly all the trees bore a heavy crop little difference was noted except that the pruning reduced the bearing surface and lessened th e labor of thinning.

Replacing Trees.

A few apple trees had died from girdling by the dying of the bark just above the ground for a distance of about six inches. This was probably due to a disease known as "collar rot" certain varieties, including the Grimes Golden, being especially subject to the disease. Replacements were set where the peach trees had been removed on account of the Yellows the previous season. The replacements for 1909 included five apple and thirty-two peach trees.

Protectors and Culture.

The protectors were removed before spraying in the spring and replaced only on trees four years old and less. We found no damage done to the trees the following winter by mice or rabbits except the cutting of some of the small lower branches by the latter when the snow was deep.

The culture given the trees was the same as during the previous season.

Spraying.

Two applications of home made lime-sulphur were given as on the previous year, one April 10th, with a north wind, using two and one-half barrels, applied with a power sprayer, and one on April 14th, using two barrels, the wind being south easterly. The formula was 15 pounds sulphur, 25 pounds lime, and 50 gallons of water.

On May 28th the apple and pear trees were sprayed with Bordeaux-arsenate, using three pounds arsenate of lead, three pounds blue vitriol and five to eight of lime to fifty gallons of water.

The trees appeared more free from insect pests and fungous diseases than on previous seasons. The

only pest being the grasshoppers which ate some of the foliage from the trees in sod late in the season, but did no serious damage.

Thinning Peaches.

The peaches were thinned during the strawberry season the intention being to get them about six inches apart, but the work was done by hired help and this ideal was not reached, the crop on many trees being altogether too thick. I believe this is almost invariably the case when one is thinning for the first time as it is not easy for a novice to estimate the amount the fruit left will make when it shall have reached maturity.

The Peach Crop.

Nearly all the varieties produced a full crop, especially the Elbertas, Kalamazoos, Crosby's, and Gold Drops. The Smocks, Fitzgeralds, and St. Johns were a medium crop. Forty-five trees purchased for Deweys proved to be a late white peach, and the nursery is to replace them this season. (1910.) This, however, is small compensation for the loss caused by the mistake, which cuts down the receipts for the one crop by at least one hundred dollars, aside from the five years labor on worthless trees.

About 300 bushels were sold, the majority netting

$1.50 per bushel on the home market. The select grade brought $2.00 and a few culls $1.00 Most of the bushel baskets were sold direct to local consumers, and the fifth bushels to the trade through local grocers at 35cents and 45 cents.

Yellows.

The Yellows continued to spread notwithstanding the precaution to remove all trees affected the previous season. About forty-five were removed this season entailing the sacrifice of most of their crop.

The Apple Crop.

Nearly all the Wagner trees matured one or more apples this season and two of the Wealthy variety bore specimens. The latter were but three years old and stood in the low corner where they had "wet feet" and their attempt to fruit was not a healthy one. One of these trees is now dead, the other weakened. The incident is mentioned to show the tendency of a tree weakened or injured in any way to produce fruit at the expense of its remaining vitality.

Condition of Trees.

The condition of the trees at the end of the fifth season is in the main good. Notwithstanding the fertility and moisture which has been required by the various crops, the soil has been kept sufficiently rich and moist by the addition of fertilizer and by tillage and mulching to produce a good growth of wood. During the past season most of the terminal growths on the apple trees were from two to three feet in length. The average diameter of the trees one foot above the ground is as follows:

King, five years, 2-1/2 to 3 inches; Wagner, 2-1/4 to 2-3/4 inches; Grimes Golden and Wealthy, four years, 1-3/4 to 2-1/2 inches.

The height after pruning varies from six to nine feet.

The peach trees, five years old, have a diameter of from 4-1/2 to 5-1/2 inches, and are ten to twelve feet tall after pruning. The terminal growth last season was from two to four feet.

Raspberries.

The Raspberries were cared for much as on previous seasons, receiving seven cultivations, the reds one hoeing, and the blacks two hoeings and one spraying with Bordeaux-arsenate.

About 1,800 plants and 1,600 quarts of berries were sold. (See account page 40.)

Perhaps the raspberry plants should have come out this year, but as so many of the peach trees are going out with the Yellows and the raspberries do not seriously interfere with the apple trees when kept back from them, we shall leave them for another season.

Strawberries.

About 17,000 plants and 4,700 quarts of berries we were sold from the strawberry plantations in the orchard this year. The season was late and short and the trees required considerable room and moisture, yet under these conditions the crop paid well. (See account page 41.)

After the fruiting season the vines were mowed, the mulch raked, and some of it placed about trees in sod while some was left about each tree in the patch. The ground between the rows was broken up with a plow, harrowed with a spike tooth and cultivated the balance

of the season. Much hoeing was required to clean out the spaces between the trees.

Five loads of manure and nine of marsh hay and straw for mulching were put on in the fall.

This care of the berry plantations since the harvest season is included in the 1909 account on page 41 bringing the orchard account page 42 up to January 1, 1910, including the present cost of the crops of strawberries and raspberries now in the orchard.

Cost.

The orchard proper cost $107.50 and returned $474.23, leaving a profit of $366.73 for the year.

The raspberries cost $98.22 and returned $200.71, a net profit of $102.49.

The strawberries cost $190.45 and returned $396.05, leaving a net profit of $205.60.

Combining the amounts, we get a net profit for 1909 of $674.82. (See p 43)

Deducting from this $199.38, the net loss on the orchard at the close of 1908, we have $475.44 as the net profit on the orchard at the end of the fifth season.

It will be understood that this does not include the rental of tools used, interest and taxes on the investment in land, or interest on the investment in trees and labor.

On the other hand a large part of the expense of the next season's crops of raspberries and strawberries now on the land has been charged to the account. We will consider these matters in the following summary:

SUMMARY BY CROPS.

Farm Crops. (Corn, Potatoes, Beans, Popcorn.)

Year		Dr.	Cr.
1905	Corn and Potatoes		$24.40
1906	Beans and Potatoes		14.50
1907	Popcorn and Potatoes		7.15
	Total Net Profit		$46.05

Raspberries.

1906	1/4 Acre black, 3/4 red	$25.00	
1907	" " " " "	6.02	
1908	" " " " "		$27.40
1909	" " " " "		102.49
	Total	$ 31.02	$129.89
	Profit on Raspberries		98.87

Strawberries.

1907	3/4 Acre	$ 70.20	
1908	2-1/2 Acres	28.75	
1909	" "		$205.60
		$ 98.95	$205.60
	Profit on strawberries		$106.65

ORCHARD ACCOUNT PROPER.

Year.		Dr.	Cr.
1905	Cost (Aside from cultivation)	$ 51.36	
1906	" " " " "	36.41	
1907	" " " " "	27.15	
1908	" " " " "	27.84	
1909	Profit " " " "		$366.73
		$142.76	$366.73
	Balance	$223.97	
	Net Profit		$223.97

Note-It will be noted that the net profit from the orchard account proper is more than sufficient to meet the added cost of cultivation if no catch crops had been grown.

SUMMARY OF SUMMARIES.

Orchard and Crops Grown Therein for 5 Years.

Year.	A. Summary by Crops	Dr.	Cr.
1905-7	Farm Crops		$ 46.05
1906-9	Raspberries		98.87
1907-9	Strawberries		106.65
1905-9	Orchard Proper, (aside from cult.)		223.97
	Balance	$475.54	$475.54
	Net profit on orchard, 5 years		$475.54

B. Summary by Years.

1905	Orchard Account net loss	$ 26.96	
1906	" " " " " "	46.91	
1907	" " " " " "	96.22	
1908	" " " " " "	99.19	
1909	" " " " " profit		$674.82
	Balance, Profit	475.54	
	Total	$674.82	$674.82

Net Profit, 5 years $475.54

and taxes

INTEREST ON CAPITAL INVESTED.

Interest at 6%, taxes 2%

Real Estate.

3-3/4 Acres land at $100.00 per A.	$375.00	
Interest on $375.00 for 5 yrs.		$112.50
Taxes on 2/3 of $375.00 for 5 yrs		25.00

Tools.

Estimated value of tools used including plows, harrow, sprayer, manure spreader, cultivators, hoes, pruners, etc.,	200.00	
1/4 of value (1/4 of use in the orchard under consideration)	50.00	
Deterioration of tools for 5 yrs. Average life of tools estimated at 10 years		25.00
Interest on investment in tools for 5 years		7.50
Taxes on 2/3 value of tools used ($33.34) at 2% for 5 years		3.33

Trees, Crops and Labor.

Interest on net cost of orchard for 1905 $26.96 for 4 years	6.48
Interest on net cost of orchard for 1906 $46.91 for 3 years	8.48
Interest on net cost of orchard for 1907 $96.22 for 2 years	11.55
Interest on net cost of orchard for 1908 $29.19 for 1 year	1.75
Total interest on investment for 5 yrs.	$201.55

Note-Interest paid on average working capital of $30.00 for six months each season is offset by interest on net returns of 1909 crop from harvest season until January 1, 1910.

FINAL SUMMARY.

Net profits from orchard account	$475.54
Total interest and taxes on investment	201.55
Net profit on investment Jan. 1, 1910 at end of 5th season, above interest, taxes, and use of tools	$273.99

Inventory of Orchard and Crops Therein, January 1, 1910.

119	Apple	trees,	5	years	of	age,	at $2.50	$297.50
126	"	"	4	"	"	"	" 2.00	252.00
1	"	"	3	"	"	"	" 1.50	1.50
117	Peach	"	5	"	"	"	" 2.50	292.50
9	"	"	3	"	"	"	" 1.50	13.50
2	"	"	2	"	"	"	" 1.00	2.00
30	"	"	1	"	"	"	" .50	15.00
6	Pear	"	3	"	"	"	" 1.50	9.00
21	"	"	2	"	"	"	" 1.00	21.00
	Total value of trees							$904.00
1	Acre Raspberries at $50.00							50.00
2-1/2	Acres Strawberries at $50.00							125.00
	Total Inventory							$1079.00
	Accrued Profits, Jan. 1, 1910,							273.99
	Estimated value, including net receipts, of orchard January 1, 1910,							$1352.99

SUMMARY.

Summary by Crops.

The farm crops grown in the orchard during the first three years returned a net profit of $46.05. (See account page 47.)

The raspberries gave a net profit of $98.87. (See account page 51.)

The strawberries returned a profit of $106.25. (See account page 51.)

The orchard account proper, aside from cost of cultivation, gave a net profit of $223.97. (See account page 52.)

Combining the above figures we get a net profit on the orchard at the end of the fifth season of $475.54. (See account page 53.)

Summary by Years.

The orchard gave a profit or loss for each year as follows:

1905, $26.96 loss; 1906, $46.91 loss; 1907, $96.22 loss; 1908, $29.19 loss; 1909, $674.89 profit; or a net profit of $475.54 for the five years. (See account page 53.)

Interest and Taxes on Capital Invested.

Interest at 6%, Taxes at 2%.

Real Estate.

A fair valuation of the land with a proportionate share of the buildings and improvements on the farm is $100.00 per acre, or $375.00 for the 3-3/4 acres occupied by the orchard.

The interest for five years at 6% on this investment is $112.50. As the land lies within the corporate limits of a village the taxes are about 2% on a two-thirds valuation, or $25.00 for the five years.
(See account page 54.)

Tools.

The estimated value of the tools used in doing the work in the orchard including plow, harrow, manure spreader, sprayer, cultivators, hoes, pruners, etc. is $200.00. As these tools are used in other orchards and fields, we will allow one-fourth of this value, or $50.00, as a proportionate share for this orchard. The average life of these tools should be at least ten years, which gives one half of $50.00, or $25.00, as the deterioration in the value of the tools used in five years.

Adding to this amount the interest on the $50.00 invested in tools for five years, or $7.50, and the taxes on two-thirds of their value, $3.33, we have $35.83

for the deterioration of tools and the interest and taxes on the capital invested in them. (See account page 54.)

(The rental of 50 cents per day charged for the use of a horse in the accounts is intended to pay the interest and taxes on the investment in the animal, his feed, and the deterioration in value of the animal; which it will just about do. The manure will offset the care.)

Trees, Crops, and Labor.

The interest on the net cost of the orchard in 1905, $26.91, for four years, 1905 to 1909, is $6.48; in 1906 ($46.91) for three years $8.44; in 1907, ($96.??) for two years, $11.55; in 1908, ($29.19) for one year, $1.75, or a total of $28.22. (See account page 54.)

The interest on an average working capital of $90.00 for six months each season, or until the returns from the seasons' crops are received, is offset by the interest received on the net returns of the 1909 crop from the harvest season until January 1, 1910, so no account is made of either item.

Summary of Interest and Taxes on Investment.

The interest and taxes on the investment in real estate is $137.50.

The interest and taxes on the investment in tools and lessened value of same, is $35.83.

The interest on the investment in trees, crops, and labor is $28.22. (No taxes on trees)

Combining the figures above we have a total for the deterioration of tools used, and the interest and taxes on the investment of $201.55. (See account page 57

Final Summary.

Deducting $201.55, the interest and taxes on the investment, and lessened value of tools used, from $475.54, the net profit as shown by the orchard accounts, gives a final net profit for the orchard, above interest at 6% and taxes at 2% on the investment, of $273.99.

INVENTORY.

Showing Estimated Present Worth of Orchard.

If we allow fifty cents per year as the value of a tree, the present worth of the trees as computed in the inventory on page 55 is $904.00

If we allow $50.00 per acre for the crops of raspberries and strawberries growing in the orchard, the present worth of these crops is $175.00, which brings the total estimated value of the orchard up to $1079.00.

Adding to this the ac crued profits on the orchard January 1, 1910,($273.99) we have $1352.99 as the estimated present value of the orchard, and the net receipts therefrom in excess of interest and taxes on the investment.