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Factors Which Make for Success in Orcharding

By H. P. Gaston

**MICHIGAN STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION**

SECTION OF HORTICULTURE

East Lansing

Fruit Growers Who Would Be Successful

MUST:

1. Be horticulturally well-informed
2. Choose a frost-free location ✓
3. Choose a good orchard soil ✓
4. Fit the crop to the soil ✓
5. Manage the soil carefully
6. Have bearing orchards of desirable age ✓
7. Obtain abundant yields ✓
8. Grow standard commercial varieties ✓
9. Produce high-grade fruit
10. Recognize and meet changing conditions

SHOULD:

1. "Grow up" in the business
2. Live on their farms
3. Devote the major part of their time and effort to fruit growing
4. Grow a diversity of fruit crops
5. Operate relatively large, bearing orchards ✓
6. Be adequately equipped
7. Have access to adequate and conveniently located storage facilities
8. Keep books

MUST BE:

1. Industrious
2. Good managers
3. Keen observers
4. Wise economizers
5. Able to associate with people
6. Able to capitalize on assets
7. Salesmen (or be in a position to employ the services of good salesmen)

Factors Which Make for Success in Orcharding

BY H. P. GASTON

IT commonly happens that certain fruit growers achieve success while others, with essentially the same opportunities, find it difficult to make ends meet. Because of the complexity of the orchard enterprise, it is usually difficult, and often impossible, for even an experienced observer to discover just why one man succeeds while his neighbor fails.

HOW THIS STUDY WAS CONDUCTED

It was thought that a systematic study of the methods employed by a group of successful operators and a like number of unsuccessful ones would throw light on this problem. A preliminary survey of more than 100 fruit farms was accordingly made. This number included 20 of the most outstanding orchards in Michigan and 80 others, chosen more or less at random. After becoming acquainted with both owners and orchards, 36 of these farms were selected for more intensive study. Included was a group of 12 growers who had, or at least seemed to have, achieved outstanding success, an equal number of producers who were apparently unsuccessful, and a third group which seemed to lie between the two extremes. These farms were visited at frequent intervals for a period of several years. The orchards, the operators, the methods employed and the results obtained were all carefully observed, analyzed and evaluated.

After this phase of the work had been completed, the tentative classifications made earlier were discarded and the orchards reclassified on the basis of the observer's knowledge of the degree of success attained. Each grower was placed in one of three groups—*Successful*, *Intermediate* and *Unsuccessful*. These groups were then studied and compared on the basis of (1) the location and character of the orchard, (2) the equipment used, (3) the methods employed and (4) certain personal and managerial qualities of the operator himself. It was essentially a case study of successful and unsuccessful orchard enterprises.

Success may be defined in many ways, and it will be well for the reader to bear in mind that the growers, who will, in the course of the following discussion, be referred to as *Successful* were chosen from among the most prominent in Michigan. All of these men had A-1 ratings with their local

bankers. All owned large, prosperous, well-equipped orchards and were making good returns on their investments. In addition to having achieved notable financial success, these growers were, in every case, the sort of men who command the respect and admiration of neighbors and friends. Each had, as a matter of fact, achieved what might well be termed outstanding success.

Few growers possess all of both the personal and material characteristics essential to outstanding success. Some of the circumstances which help to bring about notable achievement are, however, within the control of the operator; and a knowledge of the essential factors involved may enable some of those who are not satisfied with their present attainments to alter their circumstances for the better.

On page 2 of this bulletin are listed some of the requisites and desirable attributes or advantages which go to make for successful fruit growing. Let us now examine these individually in the light of long observation of the 36 orchardists and their properties with which the study dealt.

FRUIT GROWERS WHO WOULD BE SUCCESSFUL *Must:*

1. BE HORTICULTURALLY WELL-INFORMED

The writer visited a number of growers soon after it had been publicly announced that considerable primary apple scab infection had occurred and that in many cases it would be necessary to guard against secondary infection. Although many of them had not checked their trees to make sure that primary infection was present in their orchards, all of the growers in the *Unsuccessful* group were either applying a fungicide or were preparing to do so. On the other hand, Grower No. 8, of the *Successful* group did not include a fungicide in his cover sprays. He said that a careful examination had failed to reveal primary infection in his orchard and it was therefore unnecessary to apply a fungicide for the purpose of controlling a secondary infection because he was sure it would not occur. Grower No. 8 was well-informed. He knew the life history of apple scab and could identify the disease in different stages of development. This information enabled him to make the most of control measures when necessary and to eliminate those which were unnecessary; this in turn, saved him money and reduced his costs for the year.

Several of the growers in the *Unsuccessful* group could not identify many of the common orchard insects and diseases. They not infrequently sprayed for pests which were not present. At other times infestations, so serious that they threatened the entire crop, passed unnoticed. In both instances their costs of production needlessly mounted.

Grower No. 31 lost every tree in a six-acre block of peaches by the improper use of a dormant season oil spray. Grower No. 36 owned large solid

blocks of Northern Spy and Rhode Island Greening. Although these trees were 26 years of age, neither of the blocks had ever yielded satisfactorily. The grower did not realize that both of these varieties are virtually self-sterile, and unsatisfactory pollinizers of each other. He had made no provision for cross-pollination and, in consequence, produced only light crops. Other *Unsuccessful* growers made costly mistakes because they lacked horticultural knowledge.

Many essential orchard operations can be effectively directed or performed only by growers who are horticulturally well-informed. As the study progressed it became evident that ultimate success depends, to a considerable extent, on horticultural information. The men in the *Successful* group seldom missed a horticultural school or demonstration held in their vicinity; they took pains to obtain and read the latest publications pertaining to their work; most of them are members of and regularly attend the functions of state and local horticultural societies.

2. CHOOSE A RELATIVELY FROST-FREE LOCATION

Total commercial production of apples in Michigan within a decade sometimes varies as much as 100 per cent. These differences are due largely to frost injury in the spring. Favorably located orchards are seldom damaged seriously; losses in unfavorably located plantings are not only serious, but they occur at frequent intervals. When the crop in a number of unfavorably located orchards is destroyed, total production is materially curtailed and the growers with relatively frost-free sites have fruit to sell when prices are high.

The growers included in this study were asked to estimate their losses due to frost within the preceding 10-year period to the best of their ability. The estimates made by the *Successful* and *Unsuccessful* growers are presented in Table 1. It is significant that none of the *Successful* growers estimated his average annual losses at more than 10 per cent. The group

Table 1. *Estimated Average Percentage Reduction in Apple Yields Attributed to Frost Damage During a 10-year Period.*

12 Most Successful Growers		12 Least Successful Growers	
Percentage reduction.....	0 0 1 1 1 3 3 5 6 8 8 10	Percentage reduction.....	0 1 1 2 4 5 10 10 15 20 25 30
Average.....	3.7	Average.....	10.2

average is only 3.7 per cent. Four of the growers in the *Unsuccessful* group estimated their losses at 15 per cent or more, and the average for this group was more than 10 per cent. Though these figures represent only estimates, their general accuracy was attested by the actual yield records during the last three of the 10 years in question.

During the three years in which yield records were obtained by the writer, Grower No. 28 suffered an almost total loss of one apple crop and very serious damage to another because of frost (Table 2). His total production during this period was slightly more than half what it might otherwise have been (See Fig. 1) and his estimated average annual monetary loss from frost injury was \$4,700 (Table 2). As most

of the cultural operations—spraying, cultivation, pruning—were performed, even though the trees did not bear, overhead expenses remained high.

When the fruit grower chooses an orchard or plants a block of trees, he should remember that though a frost-free location may not guarantee success, there is good reason to believe that without it outstanding success is impossible.

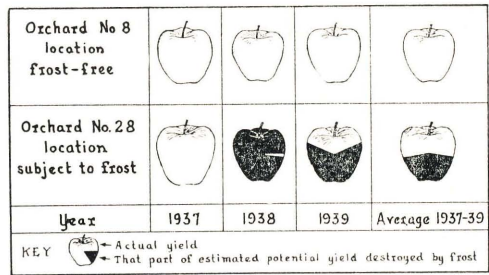


Fig. 1. How frost affected yield in an unfavorably located, Unsuccessful orchard.

Table 2. How Frost Affected Yields and Returns in Two Orchards Included in This Study.

	Orchard No. 8 (Location frost-free)	Orchard No. 28 (Location subject to frost)
Yield 1937 (bu.).....	12,000 (No frost damage)	12,500 (No frost damage)
Yield 1938 (bu.).....	9,000 (No frost damage)	400 (Crop almost totally destroyed by frost)
Yield 1939 (bu.).....	11,000 (No frost damage)	5,000 (Crop severely damaged by frost)
Total.....	32,000	17,900
Average annual returns*.....	\$10,666	\$5,966
Per cent.....	100	56

*All apples were figured at \$1 per bushel to eliminate price differences due to variations in variety, grade and pack.

3. CHOOSE A GOOD ORCHARD SOIL

The best orchards grow on deep loam soils underlain by clay loam to clay subsoils that have a good level of fertility. Other factors being equal, yields and returns from orchards grown on such soils are relatively high. Good orchards sometimes grow on land that appears sandy and light. Large and vigorous trees are, in such cases, an almost certain indication of favorable factors such as an abundant subsoil moisture reserve, which must be taken into account. For the purposes of this discussion, the author has classified as *Good* both of these types of land, on the basis of tree response. If the soil is light and sandy, and lacks the subsoil moisture reserve mentioned above, or if it is too heavy and wet the trees are likely to be relatively small and unfruitful. Such land has been classified as *Poor*. The average or intermediate land has been listed as *Fair*.

Of course the liberal use of manure, organic matter in the forms of cover crops, and mulch, will do much for a light soil. A wet soil can often be made more productive by tiling, and one sometimes sees vigorous trees on relatively poor soil. Manure, mulch and tile are, however, expensive and the cost of growing and maintaining a good orchard on a poor soil is so high that the profit, if any, is likely to be small.

Four of the orchards classified as *Unsuccessful* were located on *Poor* land. Five of the remaining eight were planted on soil classified as *Fair* and the other three *Good*. Within the group of *Successful* growers conditions in this respect were quite different. Eight of these men had *Good* soil. That of the remaining four was classified as *Fair*. All this indicates that though a good orchard soil may not be a guarantee of success, profitable orchards are difficult to grow on *Average* or *Fair* soils, and are almost never found on *Poor* land.

4. FIT THE CROP TO THE SOIL

It was observed that most of the growers in the *Successful* group were very careful to fit the crop to the soil. Several of those in the *Unsuccessful* group were not so careful.

One grower in the latter group had a 10-acre block of nine-year-old peach trees which had never produced as much as one bushel per tree. These low-yielding, unprofitable trees stood in heavy land altogether unsuitable for peaches. A row of pear trees along the road was doing nicely and producing well. Had the entire field been planted to this fruit, both yield and profit would probably have been satisfactory.

Another grower stated that he had tried, during 10 years, to grow a block of sweet cherries on land which proved unsuitable. Some of the trees had been reset four or five times, and the grower estimated that, besides the loss of time, the futile effort had cost him at least \$500. Plums were later set in this field and returned a satisfactory profit on the investment.

Almost 99 per cent of the tree crops grown by those men in the *Successful* group was produced on land that was well-suited to them. The corresponding figure for *Unsuccessful* growers was 93 per cent. Had some of these men been more careful about choosing crops to fit the soil, they might have achieved greater success.

5. MANAGE THE SOIL CAREFULLY

For the purpose of this study, good soil management was defined as including: (1) the steps necessary to prevent excessive erosion, (2) the conservation of organic matter, either by means of a sod mulch or cover-crop system of culture, and (3) the addition when necessary of adequate quantities of manure, lime and commercial fertilizer.

Nine of the 12 men in the *Successful* group were rated as employing *good* soil management methods and the other three were classified as *fair*. Ratings in the *Unsuccessful* group were very different. Only three of these men used what were considered *good* soil management methods. Five other growers were rated as *fair* and four were classified as *unsatisfactory*. One *Unsuccessful* grower was losing money on a farm which had for a time paid a handsome return on the original investment. Continuous clean cultivation had burned out much of the essential organic matter and promoted excessive erosion. No manure was readily available and commercial fertilizer had not been used. The soil on this once fertile farm had been mismanaged. The trees were no longer making satisfactory growth, the foliage was yellowish green and the tonnage of fruit produced was less than half what it should have been.

Though good soil management is not a guarantee of favorable results, without at least fair management even temporary success is difficult and continued success is impossible.

6. HAVE BEARING ORCHARDS OF DESIRABLE AGE

Apple trees do not ordinarily commence to bear abundant crops until they are at least 12 to 15 years of age. With some exceptions, the grade of fruit produced by trees more than 35 to 40 years old tends to be unsatisfactory. The periods during which other important orchard fruits prove most profitable are: Peaches, 5 to 10 years; pears, 15 to 40 years; sour cherries, 10 to 20 years. Favorable circumstances and good management may enable the grower to extend the profitable life of his trees somewhat beyond the limits mentioned; but, generally speaking, orchards consisting of trees between the ages listed are most profitable. The grower whose trees are young must wait for production and income. If any considerable percentage of the trees is too old he is likely at best to be only moderately successful and he may even be unsuccessful, usually because of some deterioration in the grade of his fruit. Table 3 shows how the two orchard groups compared

with respect to ages of bearing trees. The differences are also shown graphically in Fig. 2.

Grower No. 27 operated an orchard which consisted of:

24 acres of apples	55 years of age
6 acres of apples	15 years of age
10 acres of pears	34 years of age
11 acres of peaches	15 years of age

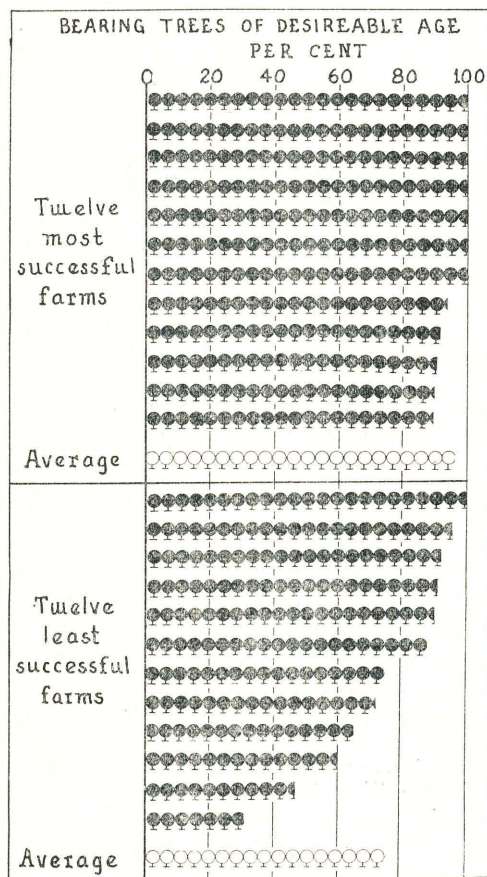


Fig. 2. At least 90 per cent of the bearing trees on all of the Successful farms were of desirable age. This was not true of the Unsuccessful group.

The orchard was acquired 17 years before the study was begun. The owner planted peaches and more apples during his second year on the farm. Although the location is good, the man industrious, and the fruit crops well-diversified, the grower was classified as *Unsuccessful*. The reason for his poor showing was not at first apparent but closer examination showed that the trees on only 16 of the 51 acres of orchard were of desirable age. The old apple orchard and the peach trees were both producing fruit of inferior grade. Only the pears and the 15-year-old apple trees were at the stage when both yield and grade are high. Under such circumstances the grower fights a losing battle.

It is worthy of note that the *Successful* growers not only owned bearing orchards composed, for the most part, of trees in the prime of life but were taking steps necessary to perpetuate their position. Seven of the producers in this group had plantings of from 40 to 75 acres which had not as yet come into bearing. Two others had blocks

of young trees 30 to 35 acres in extent, respectively. One of the three remaining growers had already purchased additional land which he expected to plant at an early date. The other two were contemplating the acquisition of additional acreage for the same purpose. In other words, all of the *Successful* growers had either planted, or expected to plant, trees which would come into

Table 3. Percentages of Bearing Trees of Desirable Age of the Most and Least Successful Growers.

Most Successful Growers		Least Successful Growers	
Per cent		Per cent	
Per cent	100	Per cent	100
	100		96
	100		92
	100		91
	100		90
	100		88
	100		75
	94		72
	92		65
	91		60
	90		47
	90		31
Average	96	Average	75

bearing by the time age caused their producing orchards to become less profitable. In contrast to the *Successful* growers, only three of the *Unsuccessful* group had 20 or more acres of young orchard. Although most of the others in this classification recognized the need of young, productive trees, these men were not in a position to finance the purchase and subsequent care of replacement blocks.

Owning an orchard made up for the most part of trees of desirable age may not be a guarantee of achievement but without such an orchard, outstanding success is unlikely.

7. OBTAIN ABUNDANT YIELDS

Only one of the *Successful* growers produced average annual yields of less than 250 bushels of apples per acre and this producer had certain unique advantages which enabled him to make an outstanding record despite the

Table 4. Average Per-acre Yield of Apples for the Three-year Period During Which Records Were Kept.

Successful Growers		Unsuccessful Growers	
Yield in Bushels	460	Yield in Bushels	256
	410		213
	381		206
	330		180
	322		179
	320		166
	304		152
	270		141
	258		138
	252		120
	250		92
	237		88
Average	317	Average	161

handicap of medium or below medium yields. The group average was 317 bushels per acre. The corresponding figure for the *Unsuccessful* group was 161 bushels per acre (Table 4). In other words, the *Successful* orchards were almost twice as productive as were the *Unsuccessful* ones. The differences in productivity are shown graphically in Fig. 3. In large part, the high yields of the *Successful* group were due to good location, good soil and good soil management methods. Although high per acre yields are not a guarantee of success, as evidenced by several fairly high-yielding orchards in the *Unsuccessful* group, there is good reason to believe that without them outstanding accomplishment is impossible.

8. GROW ONLY STANDARD* COMMERCIAL VARIETIES

When the grower is receiving 90 cents to \$1 per bushel for standard varieties of apples, such as Jonathan, McIntosh, Delicious and Northern Spy, he will probably be selling such varieties as Ben Davis, Hubbardston and Duchess at from 50 to 60 cents. In 1937 Grower No. 32 produced 8,000 bushels of apples. Approximately 38 per cent of these were of inferior varieties for which he received \$1,200 less than for an equivalent number of bushels of his standard varieties. This was enough to mean the



Fig. 3. Average per-acre yield of apples on the Successful farms was almost twice that of the Unsuccessful orchards.

*Standard commercial varieties are those for which there exists substantial demand in readily accessible markets. Circumstances may, in some cases, justify the inclusion of additional varieties, but for the purposes of this study only the ones here listed were considered standard:

APPLES: Northern Spy, McIntosh, Jonathan, R. I. Greening, Wagener, Steele Red, Wealthy, Baldwin, Delicious and its red strains.
 PEACHES: Elberta, South Haven, Halehaven, J. H. Hale and Rochester.
 PEARS: Bartlett, Bosc and Kieffer.
 SOUR CHERRY: Montmorency.
 SWEET CHERRIES: Black Tartarian, Schmidt, Bing and Windsor.

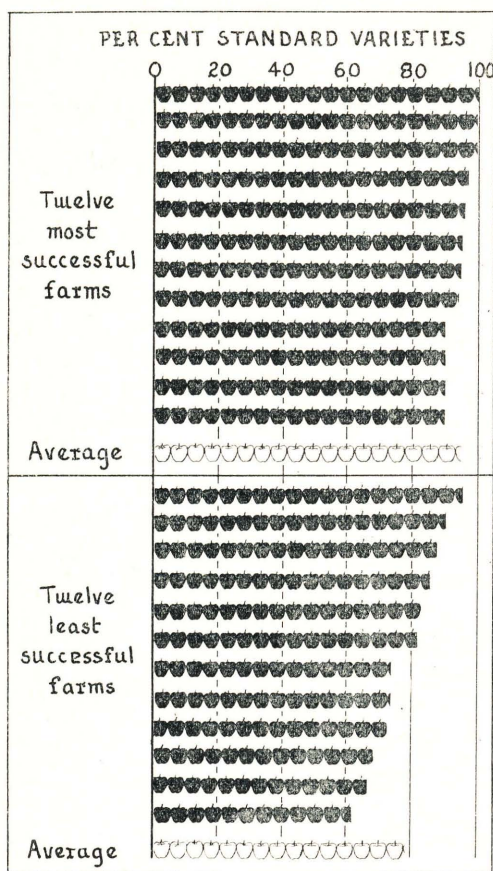


Fig. 4. Ninety-five per cent of the fruit produced by the average orchard in the Successful group was of standard varieties. Only 79 per cent of that produced by the Unsuccessful group measured up to the same standards.

cent graded out as U. S. No. 1. Total returns in this case were \$8,760. The difference, amounting to \$2,240, was due for the most part to difference in grade. Had Grower No. 34 applied more fertilizer, thinned his crop, done a better job of spraying and handled the fruit more carefully, his opportunity for being successful would have been greatly enhanced.

Not one of those growers, rated as *Successful*, produced apples which, on the average, graded out less than 70 per cent U. S. No. 1. In most instances the percentage was 75 or higher. Table 6 lists the average percentages of U. S. No. 1 apples* produced by the *Successful* and *Unsuccessful*

difference between a profit and a loss, between success and failure, on the enterprise as a whole.

What has been said of apple varieties also holds true in a general way for other fruits. It is a significant fact that on the average, 95 per cent of the fruit grown by men in the *Successful* group was of standard commercial varieties, while 21 per cent of that produced by those growers classified as *Unsuccessful* was, on the average, of inferior varieties. (Table 5, and Fig. 4.)

While the growing of standard varieties is not a guarantee of success, the orchard owner who fails to do so invites disaster.

9. PRODUCE HIGH GRADE FRUIT

When apples of U. S. No. 1 grade are selling at \$1 per bushel, the average for undergrade fruit is not likely to exceed 50 cents. In 1937, a typical year, Grower No. 8 produced 12,000 bushels of apples, approximately 85 per cent of which were of U. S. No. 1 grade. Total returns amounted to slightly more than \$11,000. Grower No. 34 produced about 12,500 bushels, but only 42 per

*The figures on apple grades are used because this is the only fruit grown by all producers studied, and hence the only one on which comparisons could be based. However, a similar situation holds for pears, peaches and other fruits.

Table 5. *The Fruit Produced by the 12 Most Successful and 12 Least Successful Growers, Classified as to Varieties.*

Most Successful Growers	Least Successful Growers
Per cent standard varieties..... 100	Per cent standard varieties..... 96
100	91
100	88
97	86
96	83
96	82
95	74
94	74
91	73
90	69
90	67
90	62
Average..... 95	Average..... 79

ful growers for the three-year period 1937-39. Figure 5 shows graphically differences in the grade of fruit produced. The average *Unsuccessful* grower produced fruit only 61 per cent of which was of U. S. No. 1 grade. It was difficult to measure the effect of the individual factors which combined to cause the low grade fruit produced by these men. There was, however, a tendency among them to neglect the operations of spraying, thinning and pruning. There can be little doubt that more attention to these practices would have enabled them to produce better fruit.

10. RECOGNIZE AND MEET CHANGING CONDITIONS

Fruit growers in general are beginning to be conscious of the need for home-owned storage facilities and many such storages are being built. Most of the *Successful* growers not only have storages, but have had them for

Table 6. *The Apple Grading Records of the 12 Most and the 12 Least Successful Growers Studied.*

Most Successful Growers	Least Successful Growers
Per cent U. S. No. 1*..... 86	Per cent U. S. No. 1*..... 72
85	70
85	68
84	67
82	64
80	62
78	59
77	59
76	58
75	54
71	52
70	42
Average..... 79	Average..... 61

*While the U. S. No. 1 grade was used as a basis of comparison most of the *Successful* growers used more rigid grading standards. In converting other grades to U. S. No. 1 it was necessary to estimate percentages.

some time. These men recognized the need, provided the facilities, and were reaping the benefits long before many of their less successful competitors had convinced themselves that home-owned storages were practical.

Here is another example of readiness to adopt the new: All the *Successful* growers were using some form of wettable sulphur for their after-blossom sprays when this study was begun. These men had been doing so, to some extent at least, for several years. Most of these growers were also using arsenical correctives in the late cover sprays. Such a spray program means better foliage and fruit of better size and finish, but such a schedule will not give good commercial control unless the job is well done. The *Successful* growers had sensed the need for such a schedule as soon as the materials for it were perfected, had provided themselves with the necessary equipment and were already cashing in on its benefits. Some of the *Unsuccessful* growers were still using a so-called caustic schedule when the study here reported was completed and in consequence were often burning their foliage and dwarfing fruit.

All the men in the *Successful* group were characterized by the ability to recognize needs for new methods and devices and act accordingly. This fact undoubtedly affords at least a partial explanation of why they have succeeded.

In addition to the things which the outstanding grower *MUST HAVE* OR *MUST DO*, there are still other conditions which, although not absolutely essential, are, to say the least, powerful aids to success. These factors will now be discussed under the heading:

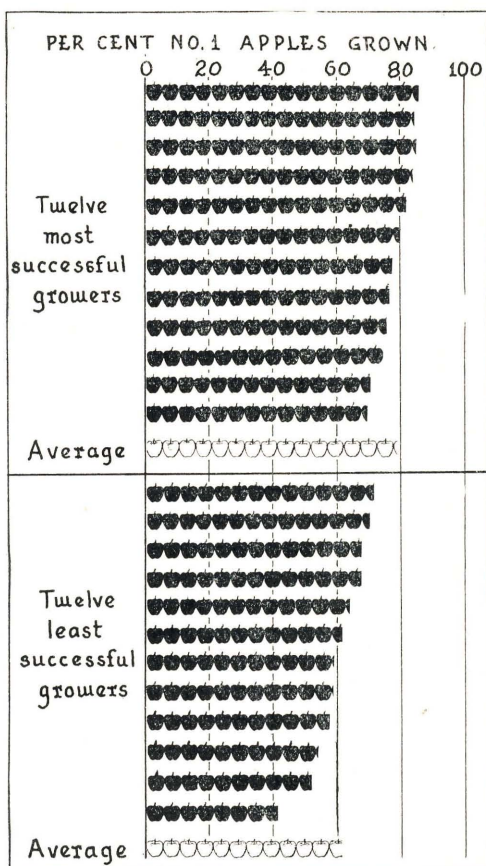


Fig. 5. The average grower in the *Successful* group produced 18 per cent more No. 1 apples than did the average *Unsuccessful* grower.

WHAT THE FRUIT GROWER *Should* HAVE OR DO

1. GROW UP IN THE BUSINESS

Fruit growing is a business that cannot be learned quickly. Among the growers in the *Successful* group, 11 had been born and raised on either fruit-type farms or farms where at least some fruit was produced. Several of them were, in fact, the grandsons of fruit growers. The one exception became interested in fruit early in life and had been in this work for 30 years. Most of the growers in the *Unsuccessful* group had also had the benefit of long experience. One of them, however, was a comparative newcomer, having been in the business less than five years. This capable and industrious man had not as yet achieved success. He is not likely to do so until he has had more time in which to acquire that fund of information which is the result of long experience.

It should not be inferred from what has been said that it is impossible for an "outsider" to become a successful fruit grower in time. The author wishes only to emphasize the fact that to do so is not easy. The general farmer who wishes to enter this field should plant one block of trees at a time and make the change gradually, gaining experience as he goes along. The uninitiated would probably do well to work for a successful grower and acquire some experience before making an effort to establish himself.

This suggestion is made because professional and business men, 50 or more years old, frequently decide to become fruit growers. Such men think that because they have been successful in some other line of work they will do just as well as orchard managers. This supposition is not true and frequently leads to impoverishment and hardship.

2. LIVE ON THEIR FARMS

All of the orchards in the *Successful* group were managed and directed by resident owners who were in almost constant attendance throughout the year. The owner of Orchard No. 33 moved from the farm to a nearby city soon after the study was begun. Although he visited the orchard at frequent intervals and directed operations, this formerly profitable orchard became much less profitable and the owner was eventually classified as *Unsuccessful*. Fruit growing is a complex enterprise in which important decisions must be made at frequent intervals. One of the factors essential to success in such a venture is wise and constant supervision. The results of the study here reported led to the conclusion that the resident owner makes the best manager and his personal direction is essential to satisfactory profit.

3. DEVOTE THE MAJOR PART OF THEIR TIME AND EFFORT TO FRUIT GROWING

Fruit growers who achieve outstanding success almost invariably devote most of their attention to orcharding. It was found that on the average

66 per cent of the land operated by the growers in the *Successful* group was planted to fruit and, of course, an even greater proportion of the tillable land was in fruit. On these farms other crops were in comparison, of secondary importance. In the *Unsuccessful* group, only 55 per cent of the total was, on the average, planted to fruit. Two of the growers in this class planted other crops which they considered of major importance and to which they devoted a considerable part of their attention. Several of the men in the *Unsuccessful* group worked away from home when they might better have spent the time in their own orchards. One grower, classified as *Successful* at the beginning of this investigation, was later reclassified as *Unsuccessful* because his orchard suffered when he began to divide his time between it and the business of trucking fruit.

4. GROW A DIVERSITY OF FRUIT CROPS

The crew that is organized in June to thin peaches can be used a little later to pick cherries. When late apples have been thinned and early apples harvested, peaches will be ready to pick. When this is completed, the same men can harvest winter apples. Such a sequence of work is possible only on a diversified fruit farm. If the crew which has been hired to thin peaches on the undiversified farm cannot be otherwise employed, they may have to be discharged until the fruit is ready to harvest. By that time some of the men will probably be working for the neighbors and it will be difficult to get enough really good pickers.

Diversity not only means a better distribution of labor, but provides several sources of income. It is significant that only one of the orchard enterprises in the *Successful* group lacked some diversity of fruit crops.

Table 7. *Diversity of Fruit Crops Produced by Successful and Unsuccessful Growers.*

Successful				Unsuccessful			
Percentages of total bearing acreage				Percentages of total bearing acreage			
Apples	Peaches	Cherries	Other fruit crops	Apples	Peaches	Cherries	Other fruit crops
30	45	15	10	41	39	20	0
48	20	20	12	59	22	0	19
50	50	0	0	66	19	11	4
51	25	18	6	70	18	0	12
68	32	0	0	71	0	20	9
70	21	6	3	74	14	0	12
73	23	4	0	76	11	6	7
75	25	0	0	87	13	0	0
80	0	9	11	91	9	0	0
81	11	4	4	100	0	0	0
82	16	2	0	100	0	0	0
100	0	0	0	100	0	0	0
Av. 67	22	7	4	78	12	5	5

Eight of these men grew three or more fruit crops and three of the remaining four produced two kinds of fruit. Three of those in the *Unsuccessful* group produced only one kind of fruit. These men almost invariably had trouble getting help in rush periods and experienced other difficulties incidental to managing a single fruit crop. This undoubtedly contributed to their classification as *Unsuccessful*. (Table 7. See also Fig. 6.)

It is of course possible to obtain diversity by the inclusion of crops or enterprises other than fruit. In addition to diversity of fruit crops, four of the *Successful* growers had gone into the production of other crops. By so doing, they proved that diversity on outstanding fruit farms need not necessarily be confined to fruit crops alone. The fact that several of the *Unsuccessful* growers also varied their activity by adding crops other than fruit indicates, however, that such a practice is, by no means, a guarantee of success. The study leads to the conclusion that although diversity of some kind is very desirable it need not necessarily be confined to fruit crops alone.

While diversity does not guarantee success, without it outstanding results from orchard management, under average Michigan conditions, are difficult to attain.

5. OPERATE A RELATIVELY LARGE BEARING ORCHARD

Within certain limits, success in fruit growing depends upon having an orchard of adequate size. The average size of the bearing orchards on the *Successful* farms was 79 acres; the average size of the orchards on the *Unsuccessful* farms was 42 acres (Table 8). The differences in size are shown graphically in Fig. 7. Small orchards are often at a distinct disadvantage. Modern orchard machinery can, for example, be used to best advantage in relatively large blocks of trees and the overhead cost of such equipment, per unit of crop produced, is considerably greater when the orchard is small.

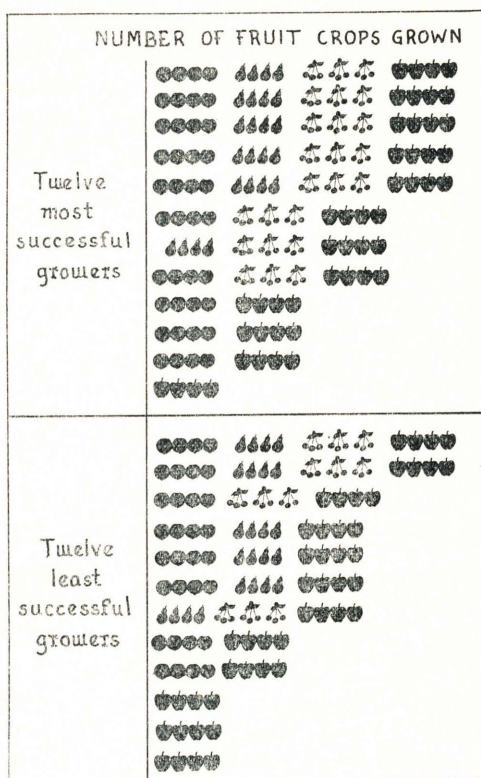


Fig. 6. The Successful producers grew a greater diversity of fruit crops than did the Unsuccessful.

Table 8. Size of Bearing Orchards Operated by Successful and Unsuccessful Growers.

Successful Growers		Unsuccessful Growers	
Acres.....	150	Acres.....	130
	100		72
	95		51
	86		41
	90		36
	76		30
	74		27
	67		26
	65		25
	61		24
	56		22
	40		20
Average.....	79	Average.....	42

One *Unsuccessful* grower was unable to obtain commercial control of insect pests and diseases because of the inadequacy of his spray rig. Returns were, on this account, proportionately less. However, he did not think that the size of his orchard warranted the purchase of a new rig. Another producer in the same group borrowed money with which to purchase a modern high-pressure outfit but was unable to use it to advantage on his 27-acre orchard. The high overhead cost of this and other orchard equipment was one of the factors which prevented him from making a good record. These men, as well as others in this group, were handicapped because of the comparatively small orchards which they operated.

The smallest orchard in the *Successful* group was a 40-acre planting. Most of the orchards in this classification were between 60 and 100 acres in extent, and although there are men who can successfully operate larger blocks, the most practical size probably lies between those limits. Eight of the 12 *Unsuccessful* orchards

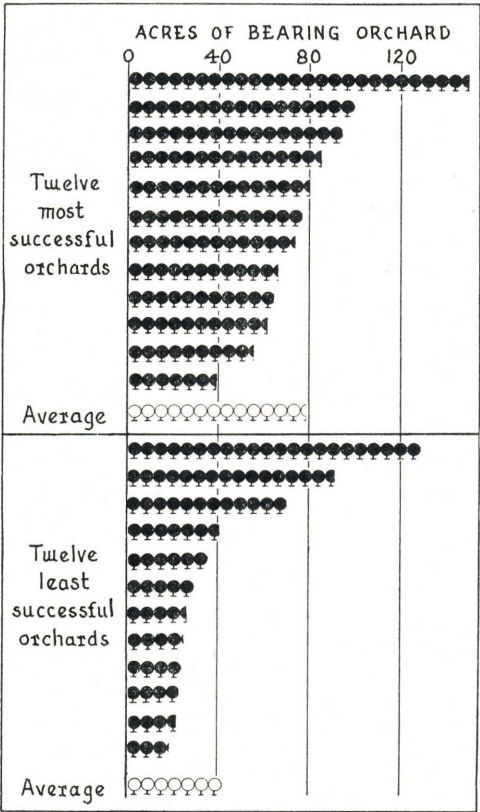


Fig. 7. The average orchard in the Successful group was almost twice the size of the average Unsuccessful orchard.

were less than 40 acres in extent, the size of the smallest orchard in the *Successful* group. Failure could not, of course, be charged directly to lack of size, but it was probably a contributing factor in most of these orchards.

The idea has often been advanced that a 40-acre orchard unit probably represents the most practical size and many readers will no doubt be surprised to learn that all but one of the orchards in the *Successful* group were somewhat larger. In this connection it should be remembered that the power and effectiveness of orchard machinery have been materially increased during the last few years and that the increased capacity of these machines makes possible the effective operation of larger blocks. Efficient management of larger orchards tends to decrease per-unit costs of production and results in increased profits and a larger measure of financial success. It is worthy of note that more than half of the men in the *Successful* group increased the size of their holdings either during or just previous to the time of this investigation.

Although the data indicate that outstanding success is impossible on an orchard of small size, it may be well to remind the reader that the 12 *Successful* growers are among the most prominent in Michigan and that each one is a recognized leader in his community. There are, in addition to these outstanding men, hundreds who, though not outstanding, have nevertheless achieved success, as judged by the usual standards, on orchards of smaller size.

6. BE ADEQUATELY EQUIPPED

Unsuccessful Grower No. 31 and *Successful* Grower No. 7 were once visited on an afternoon when both were cultivating their orchards. Grower No. 31 was using a two-section harrow which made it necessary to go down each row three times. Although this man did not keep a record of such matters, it was estimated that during the season he would spend a total of about 21 10-hour days doing this type of work. The total cost, figured at \$1.50 per hour, amounted to \$315. Grower No. 7 was using a three-section harrow which enabled him to cover the ground with two trips in each row. When checked later the record kept by this man showed that during the season he had devoted 14½ days to this work. The cost in his case was \$217.50. The two orchards were of approximately the same size and adequate tractor power was available in each case. The two-section harrow used by Grower No. 31 did not enable him to operate efficiently. The inadequacy of this piece of equipment cost him \$97.50 during the season under consideration. It will probably continue to cost him a like amount annually as long as it is used in his particular orchard.

Control of fruit insects and diseases depends to a considerable extent upon thoroughness and proper timing of spray applications. Some of the growers in the *Unsuccessful* group were so poorly equipped that they were unable to maintain spraying pressure which would enable them to do good

work on the tops of large trees. Others found it impossible to complete one spray application before another was due. Although he started reasonably early, Grower No. 29 had several breakdowns and it took him so long to complete his dormant season application of oil that some of his trees had reached the pre-pink stage and the foliage was injured. Parts of subsequent sprays were applied too late and the results were not satisfactory.

Thoroughness and proper timing depend, to a considerable extent, upon adequate equipment, but just what does one mean by the term "adequate equipment"? A coating of spray material protects foliage and fruit, even under adverse weather conditions, for at least four or five days; it is seldom if ever necessary to spray a given block of trees more frequently. It was observed that pressures of 400 to 500 pounds are usually sufficient to force a mist spray into the tops of large trees. Well-cared-for sprayers and tractors which have been in service for not more than five years are usually very dependable. Adequate spraying equipment was, on this basis, defined as equipment which will (1) enable the grower to cover his bearing apple orchard* in four days or less, (2) maintain pressures which enable the grower to do a thorough job in the tops of tall trees, (3) do the work without serious breakdown. Table 9 lists the tractor and sprayer equipment of the 12 most successful and 12 least successful growers.

Table 9. Tractor and Sprayer Equipment Maintained by Growers in the Most Successful and in the Least Successful Orchards.

Time Required (days) to Spray Bearing Apple Orchards		Pressure Maintained (minimum)		Age of Sprayer (years)		Age of Tractor (years)	
Most successful	Least successful	Most successful	Least successful	Most successful	Least successful	Most successful	Least successful
2.0	1.5	500	500	5	3	10	(Horses)
2.0	2.0	500	350	4	9	4	(Horses)
2.5	2.0	600	400	2	6	2	(Horses)
2.5	2.0	600	400	1	7	1	11
2.5	2.5	500	300	1	10	5	(Horses)
3.0	2.5	600	600	1	2	1	(Horses)
3.0	3.0	600	400	4	8	10	4
3.5	3.0	600	350	4	9	4	10
4.0	3.5	500	350	4	11	4	(Horses)
4.0	4.0	500	400	2	7	3	8
4.0	4.5	500	350	2	9	3	6
4.0	5.0	600	500	4	5	4	7
Av. 3.1	3.0	550	410	2.8	7.2	4.2	7.7

Another item worthy of special mention is that of water supply. A sprayer of good design and large capacity is of little avail unless the supply of water is both convenient and abundant. The *Successful* growers were without exception provided with good wells, pumps of ample capacity and

*Apples are the largest and most important crop in all cases reported.

large, well-located storage tanks. A check of the *Unsuccessful* growers revealed serious deficiencies in two orchards. In one instance, the well and storage tank were on low ground. This location meant that every tank of spray material went on a long up-hill haul before being used. In another orchard the water reservoir was small. After exhausting this reserve, the grower had to fill his sprayer tank with water pumped directly from the well. This operation required from 15 to 20 minutes. The result was impaired efficiency and high cost.

All growers in the *Successful* group had the equipment necessary to cover their most important fruit crop (apples) in four days or less. The average time required was 3.1 days. It was possible in each case to maintain pressure of at least 500 pounds. No sprayer, excepting those held in reserve for emergencies, was more than five years old. The average was 2.8 years. In only two instances had the tractors been in use for more than five years. One of the men had a second auxiliary horse-drawn sprayer for use in emergencies. In the other instance, the new sprayer, although normally drawn by the tractor, was independently powered and could be pulled by horses should the tractor fail. All those in the *Successful* group made it a point to keep other equipment on par with their tractors and sprayers. In other words the *Successful* growers were adequately equipped.

With two exceptions, the growers in the *Unsuccessful* group could cover their bearing apple orchard (provided there was no breakdown) in four days or less. The average time required (three days) was in fact slightly less than the corresponding figure for growers in the other group. This difference was due, however, not to superior machines, but to the fact that the blocks of trees were on the average considerably smaller. Although these growers covered the ground, less than half the sprayers were capable of maintaining pressure of 500 pounds. None of the growers who operated these machines obtained good control of insects and diseases. In most instances, failure to do so could be traced to lack of protection in the tops and central portions of their trees due to weak delivery of material to the nozzles. The average age of the sprayers maintained by this group of operators was 7.2 years. Nine of the 12 machines were more than 5 years old, and all of these were inclined to give more or less mechanical trouble.

Six of the *Unsuccessful* growers used tractors in connection with spraying operations. The average age of these machines was 7.7 years. These implements also were inclined to give trouble and when, as sometimes happened, both tractor and sprayer failed during a particular application, the time lost frequently prevented the immediate protection so essential in successful fruit growing. Only two of the men in the *Unsuccessful* group were equipped to do a thorough job rapidly and without serious danger of breakdown. All the others were more or less inadequately equipped.

The data lead to the conclusion that success depends to a considerable

extent upon the use of relatively new equipment, of high power and large capacity. There can be no doubt that such machinery is essential to the efficient operation of large orchards such as those operated by the growers included in the *Successful* group. This does not, however, mean that a new sprayer, capable of delivering 35 gallons per minute at pressures of 700 or 800 pounds, is essential to the effective operation of a small orchard. As a matter of fact the purchase of such a machine would in many cases be a serious mistake. Dependable machines which will enable the grower to do rapid and thorough work are essential; but the particular size and power required depends upon circumstances. To replace a machine which is doing good work or to buy one of large capacity when a smaller size will do the job is unwise.

7. HAVE ACCESS TO ADEQUATE AND CONVENIENTLY LOCATED STORAGE FACILITIES

A home-owned, cooperatively owned, or conveniently located commercial storage enables the producer to complete harvesting operations before turning his attention to sales, thereby relieving harvest-time pressure on the grower. It also makes him comparatively independent; if the buyer's offer is not satisfactory, the grower can hold for an advance in price. A home-owned storage allows flexibility in methods of grading and packing and enables the grower to postpone most of this work until after harvest when it can be performed by experienced help and under the owner's direct supervision. A cooperatively-owned storage has essentially the same advantages. Conveniently located storage permits of frequent inspection, enables the grower to ship to the best market and gives him the advantage of advances in price. Such facilities usually enable growers to sell much of their fruit to truckers who come to the farm and by so doing save the expense of delivery to market. Taken together, these advantages may amount in dollars and cents to as much as 25 cents per bushel. Most of the *Successful* growers had been quick to recognize and take advantage of this aid. All but three of this group were provided with home-owned storages and these three were either close to commercial plants or had access to one cooperatively owned.

Just what conveniently located storages may mean in terms of additional revenue can be illustrated by a typical example. In 1939, Grower No. 6, who was prepared to hold up to 80 per cent of his apples in his own refrigerated storage, sold his 24,000-bushel crop at an average price of 97 cents. Careful estimates showed that even after deducting storage costs he realized 27 cents per bushel more than he would have obtained had he sold, as did most of the *Unsuccessful* growers, at harvest-time prices. The net gain amounted to \$6,480. Prices do not, of course, always advance so much as they did in 1939, but they almost invariably advance enough to show a net gain and conveniently located storages (preferably home-owned or cooperatively-owned) are obviously powerful aids to success.

8. KEEP BOOKS

A system of farm accounts enables the grower to discover and eliminate unprofitable crops, varieties and enterprises. They are of help in checking past performances and predicting future results and enable the grower to buy and sell with more confidence. One of the growers rated as *Successful* kept no books. There were three others whose records were not set down in detail. It should be added, however, that all of these had remarkable memories and "knew where they stood" at all times. All the others kept more or less detailed accounts and could, if the occasion arose, check the costs of production against the income from a particular block of trees. Less than half the men in the *Unsuccessful* group kept orchard accounts and several of those who did stated that they were rather incomplete. The evidence indicates that a system of farm accounts is a definite aid to successful fruit growing.

So it was demonstrated in this investigation that while a number of advantages, possessions and practices may not be the secret of success in fruit growing they are nevertheless great assets. The individuals who had or followed them all are at the top of the heap; those who were less experienced, equipped or attentive to the detail of their calling have not prospered so well.

THE PERSONAL FACTOR IN THE ORCHARD ENTERPRISE

Classification of the orchards that were studied into groups of successful and unsuccessful enterprises was not difficult. Nor was it difficult to make certain comparisons between these groups. Their soils could be readily classified as good, medium or poor, their acreages could be measured, their varieties identified, the ages of their trees determined, their yields and grading records obtained. All these factors or characteristics and a number of others could be measured quantitatively or evaluated with a fair degree of accuracy and the preceding pages present a number of comparisons based on such measurements and evaluations.

As the study progressed, however, it became more and more evident that success or failure often depended as much, in some instances more, upon factors other than those that were being thus measured or evaluated—factors more closely identified with the orchard owner than with his orchard. In other words, it was impossible to dissociate the profitable orchard enterprise from the skilful operator, the unprofitable orchard enterprise from the man of less skill or poorer judgment and an attempt was made to observe and study men and methods as well as soils, sites, trees and equipment. The observations that were made are not susceptible to tabular presentation or statistical analysis for they deal with qualitative rather than quantitative differences. They are none the less important. They are set forth in the following pages as desirable characteristics or attitudes, if not necessary qualifications, for success in the business of fruit production.

FRUIT GROWERS WHO WOULD BE SUCCESSFUL, *Must Be:***1. INDUSTRIOUS**

Several of the growers in the *Unsuccessful* group lacked industry. These men were often away from their orchards on one pretext or another and their properties showed the unmistakable evidences of neglect. Cultivated areas were allowed to grow up to weeds, and such operations as pruning and thinning were neglected. Equipment was often in need of repair and buildings frequently lacked paint. Though it is impossible to say to just what extent success depends upon industry, there can be no doubt that the relation is direct and positive.

Not one of the men in the *Successful* group lacked industry. In most cases these growers not only directed the efforts of hired help and kept the accounts, but put in long hours in the orchard. These men toiled industriously in good weather and on rainy days as well. They took advantage of slack periods to overhaul machinery, sod water-ways which were in danger of washing, and repair and paint picking ladders or haul mulch. They arranged to be doing something worthwhile at all times. The results that they achieved showed clearly that, in their cases, at least, industry paid.

2. GOOD MANAGERS

Grower No. 3 always jotted down in a small book, which he carried for that purpose, the names and addresses of the men on his crew. Notations were made from time to time regarding the abilities of these men at various kinds of work. When no longer needed, the most capable were always discharged with some remark as, "You are a good tractor man, Hugh, and I would like to have you back next spring when I start breaking that piece of new ground." If the man was a particularly good thinner, the grower might say, "Charlie, you are one of the best thinners who ever worked for me. Can I count on you to start with peach thinning next summer?" This grower always had plenty of good help lined up ahead and was never short-handed, even in rush seasons. He always had a supply of props on hand. He overhauled and painted his machinery during the winter and made certain that everything was ready for the spring rush. He contracted for fertilizer, spray material, packages and other supplies ahead of time and arranged for prompt delivery whenever needed. In other words, Grower No. 3 was a good manager. He was classified as *Very Successful*.

Because Grower No. 32 made little effort to contract help ahead of time, he almost invariably had difficulty in obtaining a good crew when he needed it. On one occasion he lost considerable fruit and many trees were damaged by breakage because he failed to provide a sufficient number of props. Later in the same season this man ran out of packages and his crew was held up for a full half-day while more were being procured. Grower No. 32, classi-

fied as *Unsuccessful*, found it hard "to make ends meet". The fact that all of the incidents mentioned above and others of a similar nature cost him money, either directly or indirectly, affords at least a partial explanation of his failure.

In addition to the ability to plan work and get results, the good manager is able to decide which of the several courses of action usually open to him will prove most satisfactory. A grower may spray his orchard 10 or 12 times during a given season. Each application means a decision as to material, its concentration and timing. The improper timing of a single spray may mean a serious financial loss. Grower No. 34 decided to try using wettable sulphur spray at less than the recommended strength. The result was an epidemic of apple scab which prevented his crop from grading out well and cost him several hundreds of dollars. There is the matter of the most appropriate time to begin harvesting a certain variety and how many pickings to make. The grower must decide how, when, and where to market his crop. Grower 31 decided to sell his A Grade McIntosh, of which he had several thousands of bushels, for 80 cents per bushel, the price offered by the first buyer who approached him. He was later offered \$1 per bushel for the same grade of fruit. His decision to sell at 80 cents cost him several hundreds of dollars.

The good manager makes wise decisions, plans his work carefully, arranges for necessary help and supplies in advance, takes advantage of cash discounts and is prepared for many of the emergencies which overwhelm lesser men. The poor managers lack these desirable characteristics. Because of this fact many hard working and well meaning men fail to achieve success.

3. KEEN OBSERVERS

Under favorable conditions an adequate spraying program enables the grower to control codling moth in the first brood. When this pest is wiped out in the first brood it is not necessary to spray for a second brood. During one of the years in which observations were made, the first brood infestation of codling moth was not so serious as usual. Several growers concluded that the pest had been brought under control and that second brood sprays would not be necessary. These men failed to realize that here and there first brood larvae had emerged from the apples and were busily developing. Although the number was small at first, these worms multiplied. By harvest time thousands of bushels of fruit had been infested. Many growers who thought their apples were clean were surprised to find that a large percentage was wormy and unsalable.

The growers in the *Successful* group were without exception keen observers. Although codling moth larvae commonly work in the shelter of a leaf or between fruits where they are not easily seen, most of these men could detect fresh exits while riding on a moving spray tank. All of them

know where to look for signs of insects and diseases and they never fail to be alert when walking or riding through their orchards.

The effectiveness of wettable sulphur fungicides was demonstrated experimentally several years before they were adopted by commercial fruit growers. These materials were not effective when the first commercial trials were made. The observations of one of the growers in whose orchard these materials were tried led him to conclude that the unsatisfactory results were due to the fact that the tractor used in connection with the spraying operations moved the sprayer so rapidly that the thorough coverage essential to good control was impossible. He figured that good control might be obtained by rigging up a tractor equipped with a low "creeper" gear. This equipment enabled him to do a thorough job and the resulting control was entirely satisfactory. The incident illustrates the point that good observation is the spring-board for resourceful action—and if ever a business demanded resourcefulness of those who engage in it, that business is fruit growing!

4. WISE ECONOMIZERS

Although a number of factors which tend to increase monetary returns have been discussed, little has been said about reducing expenses. Net income or profit is the difference between returns and expenditures, and this figure may be increased by reducing expenditures as well as by increasing gross returns. Growers in the *Successful* group invariably worked just as hard to keep expenses low as to increase returns.

Grower No. 30 was visited at apple thinning time. In talking about the work he said that the crew had been instructed to concentrate their efforts on the tops of the trees where the set was heavy. Attention was also called to the fact that each member of the crew carried a ladder which enabled him to reach the upper sections of the trees. Large numbers of fruits were being removed and, as most of the work was being done from a ladder, progress was rather slow and laborious. When visited later the same day Grower No. 12 was also thinning, but in a somewhat different manner. His crew had been instructed to concentrate on that fruit which grew on the lower and inner part of the tree, most of which could be reached from the ground. Two men were assigned to each tree; one worked from the ground entirely and the other carried a short step-ladder from which he worked a part of the time. Although the trees were of approximately the same size in both orchards the crew which worked low in the trees was covering more than twice as many per day. The cost of doing the work was less than half the amount spent by Grower No. 30. Though other factors may have influenced the final result, the fruit produced by Grower No. 12 was equal in grade and exceeded in volume that which came from orchard No. 30. The results indicated that in doing most of the work from the ground *Successful* Grower No. 12 was practicing wise economy. Knowing

as he did that the tops of apple trees normally produce the best sizes, he saved money by concentrating thinning effort where it did the most good.

Grower No. 26 was thoroughly convinced as to the merits of commercial fertilizer. He applied nitrogenous fertilizers at the rate of 8 to 10 pounds per bearing apple tree during each of the years in which records were kept. While the foliage and growth response was impressive, per-acre yields of fruit were low and there was good reason to believe that this producer was overdoing the matter of fertilizers. Grower No. 6 also used a nitrogenous fertilizer, but in his case the amounts applied never exceeded 5 pounds per tree and vigorous trees received somewhat less. While the growth response was not so impressive as that obtained by the other producer, it was, in the owner's opinion, entirely satisfactory and the average per-acre yield was more than twice that produced by the other orchard. Returns from fruit sold were relatively large and the fertilizer bill comparatively small.

Although economy is essential to success it must be wise economy, and the grower who would be successful must be able to distinguish between wise and false economy. Grower No. 29 thought that he should have a new sprayer, but decided to economize by making the old one serve for one more season. The old sprayer was inadequate. Thorough applications could not be made with it, and codling moth took a heavy toll. Returns from the crop were not sufficient to enable him to purchase a new sprayer. Had he bought in the spring, the amount realized from the sale of fruit of better grade would probably have been greater than the cost of a new machine.

Failure may be the result of neglecting to purchase needed equipment or to perform an important operation as well as of buying that which is not required or of doing the unnecessary. The grower who has the ability to distinguish between the essential and the non-essential possesses a powerful aid to success.

5. ABLE TO ASSOCIATE WITH PEOPLE

It is necessary for most fruit growers to employ considerable help. Supplies are usually purchased from several individuals and concerns; selling the crop often means transactions with a considerable number of buyers. The fruit grower who does not associate well with people finds it hard to succeed in a business which requires many personal contacts.

The writer was present on one occasion when a buyer came to an orchard with the hope of making a substantial purchase. The grower was picking fruit at the time of his arrival and did not stop work or descend to the ground. By the time the producer had picked and emptied three baskets of fruit the buyer was visibly annoyed. As he turned to leave the orchard he remarked: "Mr. X, I have come more than 100 miles to your orchard, but I will not follow you up into the top of a tree to do business." This grower found it difficult to deal not only with buyers, but with dealers from whom he purchased and the help which he employed.

6. ABLE TO CAPITALIZE ON ASSETS

Grower No. 11 recently added a small nearby orchard to his other holdings, which were situated on a side road. The new farm was located on a trunkline highway and afforded an excellent location for a farm market. The new owner proceeded to build an attractive salesroom and within a short time was disposing of a considerable part of his crop through this channel. The original owner failed to recognize the potential worth of his location.

Grower No. 1 included several varieties in his original planting of peaches. One of these not only grew unusually well, but proved more popular than all others with the local trade to which most of his peaches were sold. Future plantings were confined almost entirely to that one variety which he could grow and market to best advantage. He built up an enviable reputation as a grower of superior peaches and his fruit almost always sold at a premium. Producer No. 7 has capitalized on his ability to grow unusually fine McIntosh apples. Sweet cherries are very difficult to grow, and few farms are suited to the culture of this fruit in his area; so Grower No. 6 is making the most of his ability to produce this attractive and readily salable fruit.

7. SALESMEN

In one of those years during which records were kept, the fruit growers included in this study received from 75 cents to \$1.10 per bushel for A Grade McIntosh (2½ inches and up). Sometimes the differences were even greater. In one instance under observation, a particularly good salesman sold his 15,000-bushel crop for more than \$15,000. His figures showed that he had received \$1.01, on the average, per bushel. A neighbor who sold at about the same time realized only 68 cents per bushel for a crop of comparable size, grade and varietal composition. This difference, amounting to more than 30 per cent, (almost \$5,000) was the direct result of differences in ability to sell.

In some instances, variations in price may have been due in part, to factors such as proximity to market and the volume available. It was nonetheless true that the good salesmen almost invariably received from 10 to 25 cents per bushel more for their fruit than did their less gifted neighbors.

Good salesmanship is possibly an inherited trait. Nevertheless, a poor salesman can obtain appreciably better results if he adopts the methods employed by those who are more successful. It was observed that the men who consistently received high prices were careful to keep well-informed. They studied crop estimates, checked market quotations from day to day and kept in touch with important producers and buyers. They almost invariably were aware of what they had invested in their crops and what they must receive to make a profit. Before talking with buyers, they usually decided on a minimum price—then tried to get more.

There are several cooperative organizations in Michigan which pack and sell the fruit produced by members. The managers are usually trained fruit salesmen. When such an organization is conveniently located, growers who lack the inclination or the ability to do their own marketing often solve the merchandising problem by becoming members of such a cooperative.