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J. F. Harriott

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Returns from farming may be expressed in terms that apply to the farm business as a whole, or to the separate enterprises which make up that business. For example, workers in the field of Farm Business Studies find use for such terms as Labor Income, Labor Earnings, Management Return, and Return on Investment to show the financial returns from the business as a whole. In farm cost accounting, financial returns from income producing enterprises are usually expressed in terms of Returns, Income, Gain, Profit and Loss. Prefixing Gross or Net to any of these latter measures may help to make the term more definite and more significant. However, the best use of these measures of financial returns from various enterprises results when they are expressed on a per acre, per head, per animal unit, per unit of product, per hour of labor, or some other such basis.

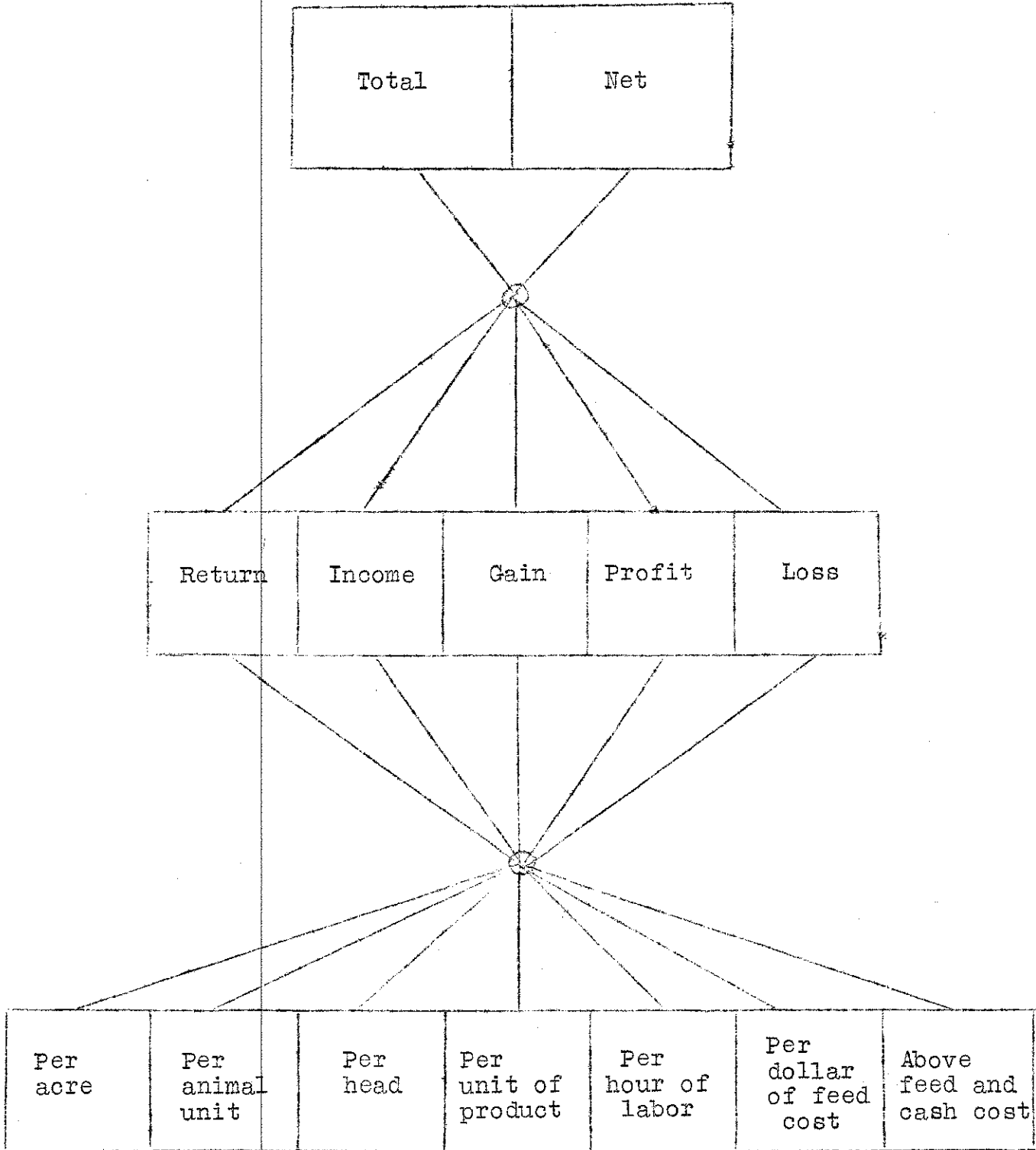
This graphic sketch is not an attempt to classify and arrange all of the useful measures of financial returns from farm enterprises, but simply an illustration of the variety of methods now used in farm accounting work. Some of the methods here suggested may be very useful in the analysis of crop accounts, but useless in the analysis of accounts with livestock enterprises. The best way of expressing financial returns for an enterprise in one region may not be the best for that same enterprise in some other region. Accounts with extensive enterprises may call for quite a different analysis than accounts with intensive enterprises.

Where labor is the scarce and high cost factor, one of the chief concerns of the farm operator is to get high returns for labor. If capital is the high cost factor, return on investment is important. If capital in the form of land is scarce or high priced, return per acre is important.

For a large part of the United States, good and dependable farm labor is expensive. Efficient use of labor is an ever increasing problem. Our farmers are very much interested in knowing what are the returns from each of their enterprises, and the more labor they hire, the more interested are they in measuring the relative profitableness of various enterprises in terms of labor returns.

In the cooperative cost accounting work that is being carried on between New York farmers and the Cornell University Agricultural Experiment Station, a popular and useful way of expressing the financial results of enterprise accounts is by the "Return per hour of man labor". This phrase or term may be worth a brief definition or explanation.

FIGURE I. METHODS OF EXPRESSING FINANCIAL RETURNS FROM FARM ENTERPRISES FROM THE RESULTS OF COST ACCOUNTS



If from the total returns from any enterprise, all costs except those for man labor are deducted, the remainder which we might term "labor returns" represents what the farmer had for the labor on that enterprise. Dividing this remainder (labor returns) by the total hours of man labor on the enterprise gives the return per hour of labor. In other words, such a calculation shows how much of a wage any enterprise has actually paid. If costs, other than labor, exceed total returns from any enterprise, the deficit is divided by the total hours of man labor and a minus sign prefixed to the quotient. To say that return per hour of man labor on oats for the past 5 years averaged minus 21 cents, is to say that the farmers have, on the average, paid 21¢ an hour for the privilege of working on this crop.

The emphasis placed on this factor of return per hour of labor is justified on the basis of facts like these:

The ledger headings in the 1929 farm account books for a group of 35 selected farms in various parts of New York show a total of 54 income producing accounts, 36 of which were crops, 9 were animal accounts, and 13 were accounts with operations other than the production of crop or livestock products. In another group of farms centering around Batavia, Genesee County, a region usually considered as a cash crop region, the 1929 farm accounts show an average of 14 income producing enterprises per farm. Further, one-third of the total hours of man labor on these farms was spent on dairy cattle, and one-half of the total hours of man labor was spent on livestock of all kinds. With the wide range that our farmers have in the selection of enterprises, certainly they should know something of the relative profitableness of these different enterprises. Return per hour of labor is probably the best single measure of the relative profitableness of these various enterprises.

Here in New York, results from about 20 years of farm accounts have been made available. Accounts over such a period of years not only give us a good indication of average returns for any period of years, but also point out a few striking changes in the relative profits of certain enterprises, changes that are of a more or less permanent nature. Because some enterprise has paid very well, we cannot assume that it will always be profitable, or if it is unprofitable for a time, that increased efficiency may again make it profitable. Failure to make a profit on any enterprise may be due to more than a short crop, a low price for this year's crop, or low efficiency.

Consider the hay enterprise as illustrative of this point. For the seven years, 1914-1920, the average return per hour of labor from this crop on farms with cost accounts was 88 cents. For the 16 year average, 1914-1929, return per hour on hay was 47 cents, and for the five years, 1925-1929, return per hour of labor averaged 5 cents. Timothy and the mixed hay crops do not look very promising as cash crops for New York farmers. We have, in a large measure, lost our market for this kind of hay. This, apparently, is a permanent change and calls for adjustments in the systems of farming in those areas where hay was formerly a good cash crop.

Wheat paid New York farmers an average of 57 cents per hour during the period 1914-1920, 23 cents per hour for the 16 year average, 1914-1929, and an average of 19 cents per hour for the past five years. In 1929, the short crop of wheat on New York farms resulted in an average return per hour of labor of 21 cents. If wheat would average \$1.25 per bushel in value, the New York farmer must get a yield of 25 bushels or more per acre to earn wages on this crop.

Eastern farmers used to earn a few cents an hour growing corn for grain and buckwheat. Altho profits never were high on these crops, they did add some to the total farm income. But now, farmers must pay quite a little for the privilege of growing these crops. Oats, barley, oats and barley together, and the combination of oats, barley and peas are now in the same class with corn and buckwheat. None of these crops have been very profitable to New York farmers in recent years, and give little promise of becoming profitable in the near future. These crops may be continued on a large number of farms because of their place in a definite rotation, or as catch crops, or nurse crops, or other similar reasons. Only with yields or prices considerably higher than average, or costs much lower than average, can the eastern farmer hope to make money on the grain and mixed hay crops.

While most of the intensive cash crops, such as potatoes, cabbage, and apples are of a speculative nature, they have, in the long run, proven quite profitable on farms where cost accounts have been kept. No matter whether you consider the pre-war average, the long time average, or the average of recent years, these crops show very favorable labor returns. There is an occasional year with any of these crops when costs exceed returns, but the average for any period of years is good. In 1928, for example, some up-state New York farmers keeping cost accounts produced an average of 194 bushels of potatoes per acre at a cost of 72 cents per bushel. The average value of those potatoes was only 57 cents per bushel. In 1928, these growers received only 6 cents an hour for the time spent on potatoes, while the average cost of an hour of man labor was 43 cents. In five of the past 16 years, the average return per hour of labor on potatoes has been lower than the average cost per hour of labor. But the average return per hour of labor on potatoes for the long period is 71 cents. A comparison of the return per hour of labor and the average cost of labor shows that apples paid more than wages in all but 2 of the last 10 years; potatoes paid more than wages in 11 of the 16 years; cabbage paid more than wages in 7 of the 16 years, and alfalfa paid more than wages every year. Every year some farmers lose money on these enterprises and likewise, every year some farmers actually make a little on corn, oats and other enterprises generally considered unprofitable.

Occasionally the New York dairy farmer is obliged to take a low rate of pay for the time he spends on the cow enterprise.

Seldom is it necessary for him to donate all of his labor and then pay something for the cow's company, as is the case with most of those few New York farmers who persist in raising beef and hogs. Looking back over the figures from the dairy enterprise, we find that in 1921, New York dairymen received an average of only 10 cents an hour for all the time they spent on cows that year. On the other hand, they averaged 60 cents an hour for their time on cows in 1928. Results from the accounts with the dairy enterprise indicate that it is one of the most conservative of all enterprises for New York farmers, quite dependable year in and year out, and with serious losses very infrequent.

During the past five years, hens have paid just about as well as have dairy cows. For the period 1925-1929, hens have paid an average of 49 cents for each hour of labor, while cows have paid 48 cents an hour. In 1929 hens paid 52 cents an hour for the time spent on them and cows paid 53 cents.

Table 1 does not, of course, tell the whole story concerning the relative profitableness of certain enterprises. These figures are averages, and while they tell what the returns have been and give some indication of what, in general, may be expected of certain enterprises, they may be misleading to those individuals who are able to get yields or prices higher than the average, or costs lower than the average.

Some of the most pertinent facts brought out by studies in farm cost accounting are the relations between yield and cost, and yield and returns. Our studies along these lines show that for practically all enterprises, high yields mean low costs and high return per hour of labor. In all our accounts there is little indication of having reached the stage of diminishing returns. In other words, even the highest yields on farms with cost accounts were economical yields and show the most favorable returns. To be sure, costs do not decrease, nor returns increase at the same rate for all enterprises, as yield increases. In general, the more intensive the enterprise, the greater the advantage of getting a high yield.

Figure 2 shows the effect of yield per acre of hay on cost per ton and return per hour of labor. A yield of 1 $\frac{3}{4}$ tons of hay per acre just about pays all costs other than labor. A yield of 2 $\frac{1}{2}$ tons per acre results in a return per hour of about 50 cents. To realize \$1.00 per hour for time on the hay crop, a yield of 3 tons per acre is necessary. The range of data available indicates that cost per ton might be further decreased with an increased yield, and that also return per hour would be further increased with an increase in yield.

Figure 3 is a similar graph for potatoes. As yield increases, the cost per bushel decreases and return per hour of labor increases.

TABLE 1.

RETURNS PER HOUR OF LABOR ON SOME OF THE MORE IMPORTANT ENTERPRISES

How to calculate returns per hour of labor :

If the total charges except those for man labor are deducted from the total returns from any enterprise, the remainder (labor returns) represents what the farmer has as pay for the labor on that enterprise. Dividing this remainder by the hours of man labor on that enterprise gives "returns per hour of labor".

Enterprise	Average for			
	7 Years 1914-20	16 Years 1914-29	5 Years 1925-29	1929
Alfalfa	\$.97	\$.84	\$.81	\$.64
Apples	--	.78(a)	.83	.83
Barley	-.03	-.07	-.07	-.08
Beans *	.12	.09	0	.64
Buckwheat	.07	-.09	-.37	-.10
Cabbage	.51	.48	.61	.81
Corn (Canning factory)	--	--	-.02(b)	.29
Corn for grain	.14	-.01	-.14	-.11
Cows	.33	.33	.48	.53
Hay	.88	.47	.05	.09
Oats	.01	-.13	-.21	-.73
Oats and barley	--	--	-.30	-.32
Oats, barley and peas	--	--	-.18	-.53
Peas (Canning factory)	--	--	.52(e)	.41
Potatoes	.55	.71	1.25	1.47
Poultry	.67(c)	.55(d)	.49	.52
Wheat	.57	.25	.19	-.21
a. 10 year average		*The bean crop was practically a total loss on farms keeping cost accounts for the years 1925 and 1927.		
b. 2 "	"			
c. 6 "	"			
d. 15 "	"			
e. 3 "	"			

FIGURE 2.

HAY
 RELATION OF YIELD PER ACRE, COST PER TON, AND RETURNS PER HOUR OF LABOR
 152 Accounts 1934-38

X = Returns O = Cost

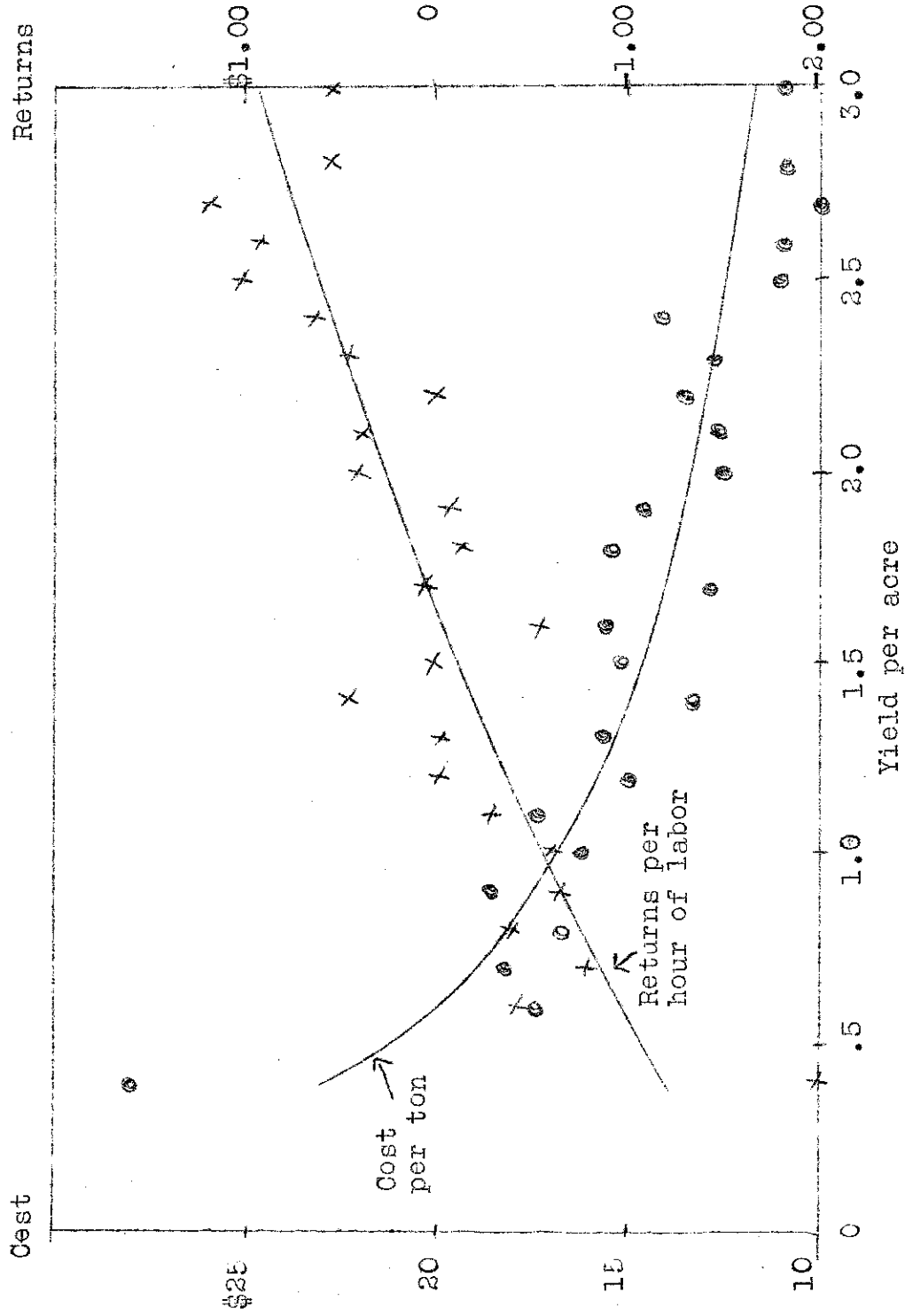


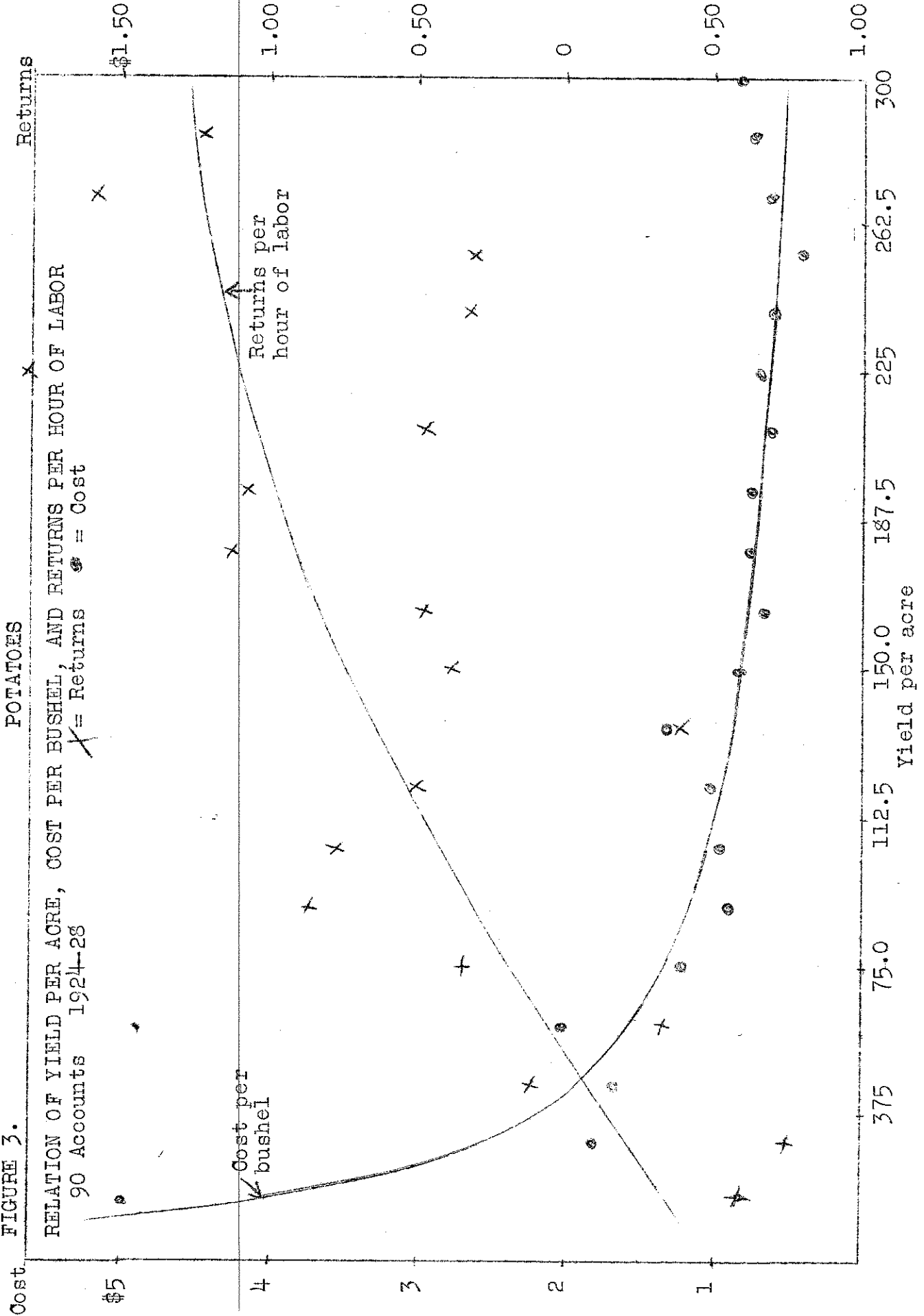
FIGURE 3.

POTATOES

RELATION OF YIELD PER ACRE, COST PER BUSHEL, AND RETURNS PER HOUR OF LABOR

90 Accounts 1924-28

X = Returns = Cost



The selection of farm enterprises that pay well is just one of the many problems farmers have in the organization of their business. For our conditions, the average return per hour of labor on various enterprises gives some indication of the relative profitability of these enterprises. Farm cost accounts for a few years on any farm will check or correct these general conclusions with the facts on that farm. After the selection of the enterprises on a particular farm has been decided upon, it will usually pay to work for a good yield. But with all this, we should not overlook the fact that farm profits as a whole is the main consideration. Excellence in any one enterprise does not guarantee the success of the farm business as a whole. A moderate degree of excellence in all enterprises usually results in the greatest farm profits.

TABLE 3. RELATION OF YIELD, COST PER UNIT, AND RETURNS PER HOUR OF LABOR FOR SOME NEW YORK FARM ENTERPRISES 1924-28

Enterprise	Num-ber of ac- counts	Unit for yield and costs	Average Yield per acre or animal			Average Cost to produce a unit			Average Returns per Hour of man labor		
			High	Middle	Low	High	Middle	Low	High	Middle	Low
			third in yield	third in yield	third in yield	third in yield	third in yield	third in yield	third in yield	third in yield	third in yield
Alfalfa	71	Tons	3.0	2.1	1.6	\$11.11	\$15.04	\$15.01	\$1.15	\$.73	\$.47
Apples	43	Bushels	219	135	64	.57	.76	1.28	1.38	.67	.44
Barley	41	Bushels	41	28	17	.91	1.17	1.86	.39	.02	.64
Beans	36	Bushels	17	8	1	3.35	5.98	9.61	.90	.24	-1.27
Buckwheat	27	Bushels	24	17	9	1.18	1.78	5.04	.09	.55	-1.78
Cabbage	48	Tons	125.	77	40	9.11	14.00	24.69	.53	.60	.21
Corn for grain	41	Bushels	52.	34	23	1.38	2.03	2.21	.24	.15	.24
Corn silage	96	Tons	11.5	7.6	4.5	6.35	7.59	11.03	--	--	--
Hay	152	Tons	2.4	1.7	1.0	12.37	14.59	16.82	.51	.10	.35
Oats	80	Bushels	56	41	27	.66	.82	1.30	.29	.03	.51
Oats & barley	31	Bushels	48	36	20	.77	1.00	1.40	.19	.11	.77
Oats, barley & peas	33	Bushels	45	34	21	.75	1.05	1.52	.21	.01	.88
Potatoes	90	Bushels	229	136	60	.67	.90	2.09	1.10	.64	.02
Wheat	81	Bushels	30.	18.	11.	1.38	1.98	3.21	.69	.13	.64
Dairy cows	91	100# milk	92.31	69.74	52.97	2.52	2.69	2.87	.45	.39	.23
Hens	43	Doz. eggs	12.1	9.8	8.3	.36	.38	.45	.70	.59	.17