

SELLING FARM MANAGEMENT TO ADULT FARMERS
(A SUGGESTED TEACHING AID TO VOCATIONAL AGRICULTURE TEACHERS)

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for

AGRICULTURAL EDUCATION 141
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ORGANIZATION OF MATERIAL

The following material is presented with the thought of using it for two reasons:

1. Developing interest and a desire in farmers to enroll in the Minnesota Vo-Ag Cooperative Farm Management Service.
2. Suggestions on how to use the analysis after you have enrolled cooperators. This is especially true of the material from page 12 on "How Important Is The Cropping Program?"

HOW TO USE THE MATERIAL

There is no one best way to present the following material. The Following are but suggestions.

The Instructor must be sold on the value of the service and understand the many uses of the analysis if the following material is to be effective.

We understand that the following material is to be used at meetings on Farm Management. No doubt some statistics as presented in the letter could be used to stimulate interest in attending these meetings.

Here is a breakdown into possible meetings.

Meeting I

1. Chart on Income of 29 Cooperators
2. Discuss Causes of variation — *Item of rating efficiency returns*
3. Use work unit sheet and let each farmer figure out his units. (You may place the units on the board but don't use names)
4. Present chart showing the individual that was high on all Farm Management Factors and low on all.
5. This could lead to further discussion of the 7 Farm Management Factors.
6. Hand out chart page 12 and have groups figure out Labor Earning. You may give answer or wait until next meeting.

Meeting II

1. Chart on page 6
2. Chart on page 7
3. Chart on page 8
4. Chart on page 9
5. Chart on page 10
6. Chart on page 11
7. How important Is The Cropping System

** This could be one meeting if varieties were also discussed.

Meeting III

1. Return For Feed Fed To Livestock
2. Productive Livestock Units per 100 Acres
3. Size of Business. You have already touched on this
4. You could go into feeding efficiency or continue with Power, Machinery, Equipment and Building Expense per Work Unit.

MOTIVATING THE FARMER

The following letter was sent to farmers in a certain community to announce a farm management promotion meeting. The proceeding lesson materials suggest ways of making farmers feel a need for keeping farm accounts and having these records analyzed.

Dear Friend:

Can you use an extra thousand dollars? Of course you can. Let me explain why I asked such a foolish question.

One of our farm management cooperators stated last summer that a farm record could be worth a thousand dollars a year to the farmer who would carefully study his analysis report.

I had to think about his statement for several weeks before fully realizing that this was more than a generous compliment for our program. I began to study our reports and discovered that over a period of several years a good set of records could be worth thousands of dollars to a farm operator.

I am convinced that most of our cooperators could have cut their feed cost 10%. Last year the average of our thirty-nine cooperators fed ~~\$598~~ ^{\$8598} worth of feed. The average feed purchases was nearly \$3,500 (³⁴⁷⁹)

The 13 highest return farmers spent \$948 for fertilizer or nearly \$300 more than the average. How much did they gain from the extra expenditure? Did they make the most effective use of the fertilizer purchased? Each farmer would have to determine that for himself. These thirteen farmers got 11% better yields than the average of the group. No doubt most of the fertilizer programs could have been more effective and more efficient.

A little reorganization can result in hundreds of dollars more income. After carefully studying his farm analysis, one cooperator dropped a small laying flock and used the poultry house to farrow more pigs. He dropped soy beans in favor of more corn. These changes seemed logical for his particular farming setup. The two changes alone increased his profits more than a thousand dollars in one year.

The account book and analysis report makes it possible for the operator to pin-point the weaknesses or the strong areas in the business. The operator without records is shooting blind. He is likely to miss much more often than the farmer who has records.

Sincerely,

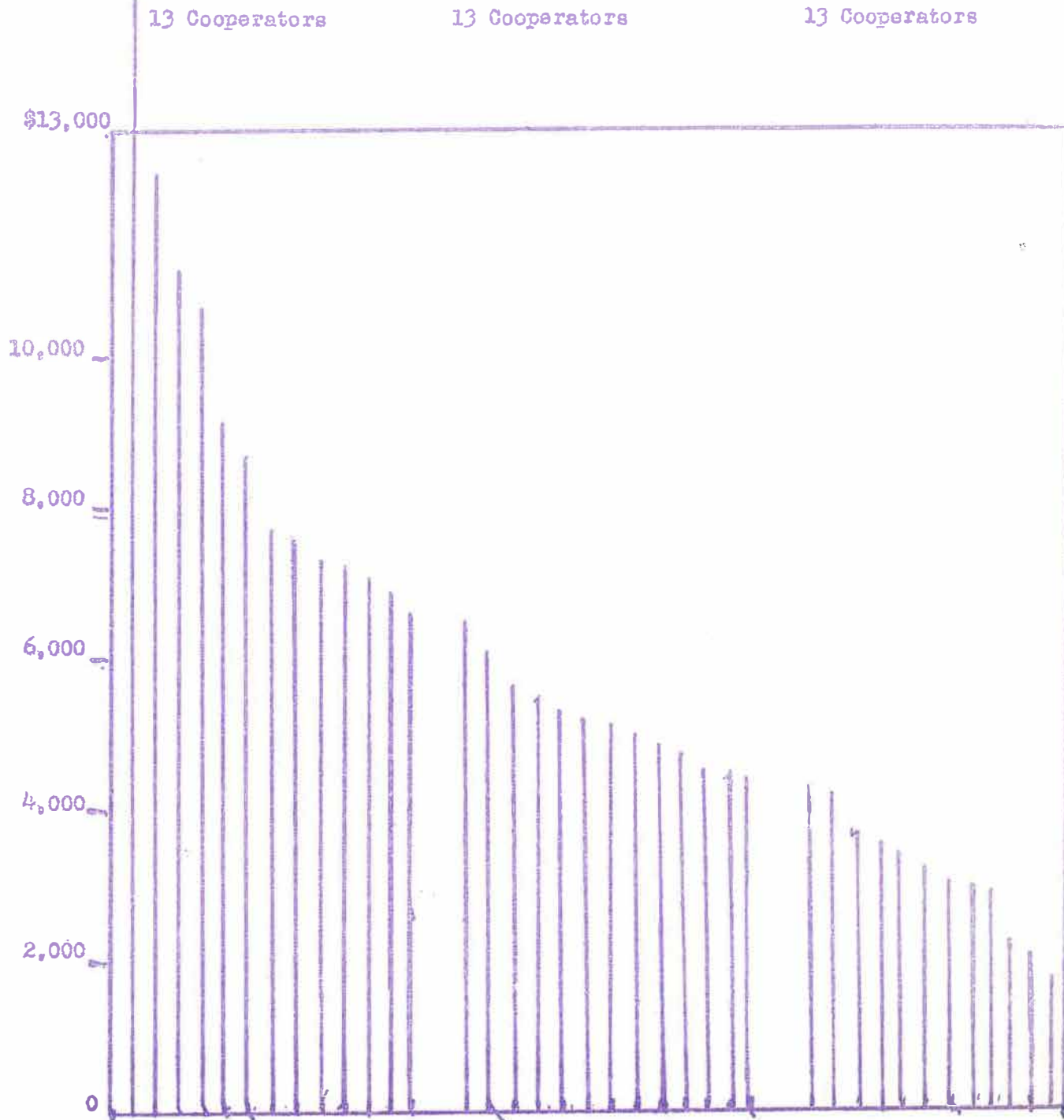
Charles Painter,
Vocational Agriculture

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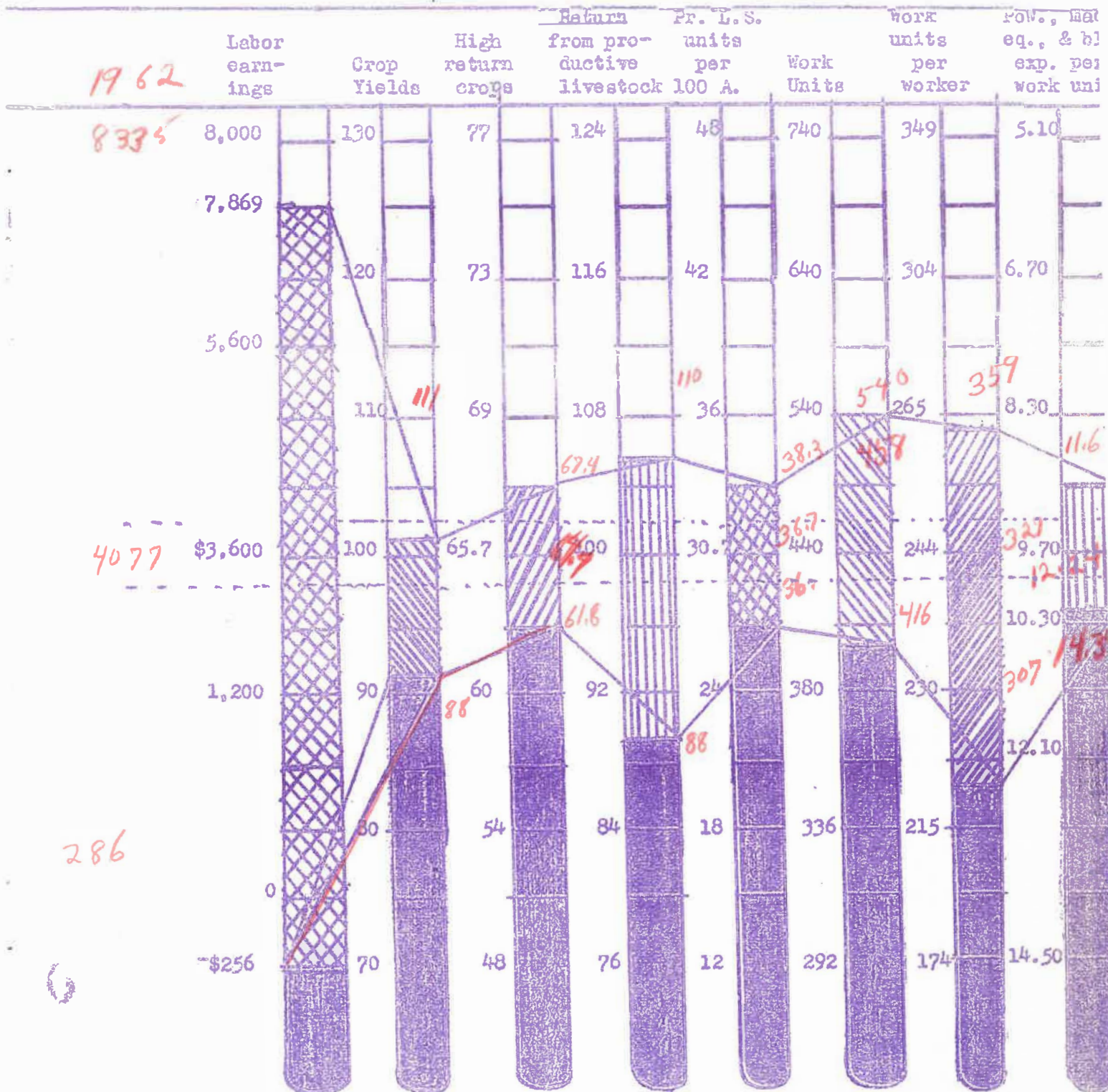
3. From livestock program
- a. Choice of most profitable livestock
 - b. Livestock fitting the total situation
 - c. Increased production or yield
 - d. Minimum expenses

RANGE IN LABOR EARNINGS

This chart shows the difference in labor earnings among 39 east south central Minnesota Voc-Ag Cooperators in 1956. The following pages will explain some of the reasons for these differences.



The chart below shows a situation that happens quite frequently. The top line shows the averages of those who were in the high 1/5 in labor earnings. The bottom line shows the averages for the low 1/5 in labor earnings. In this particular year the high 1/5 was above average in all seven factors while the low 1/5 was below average in all seven factors

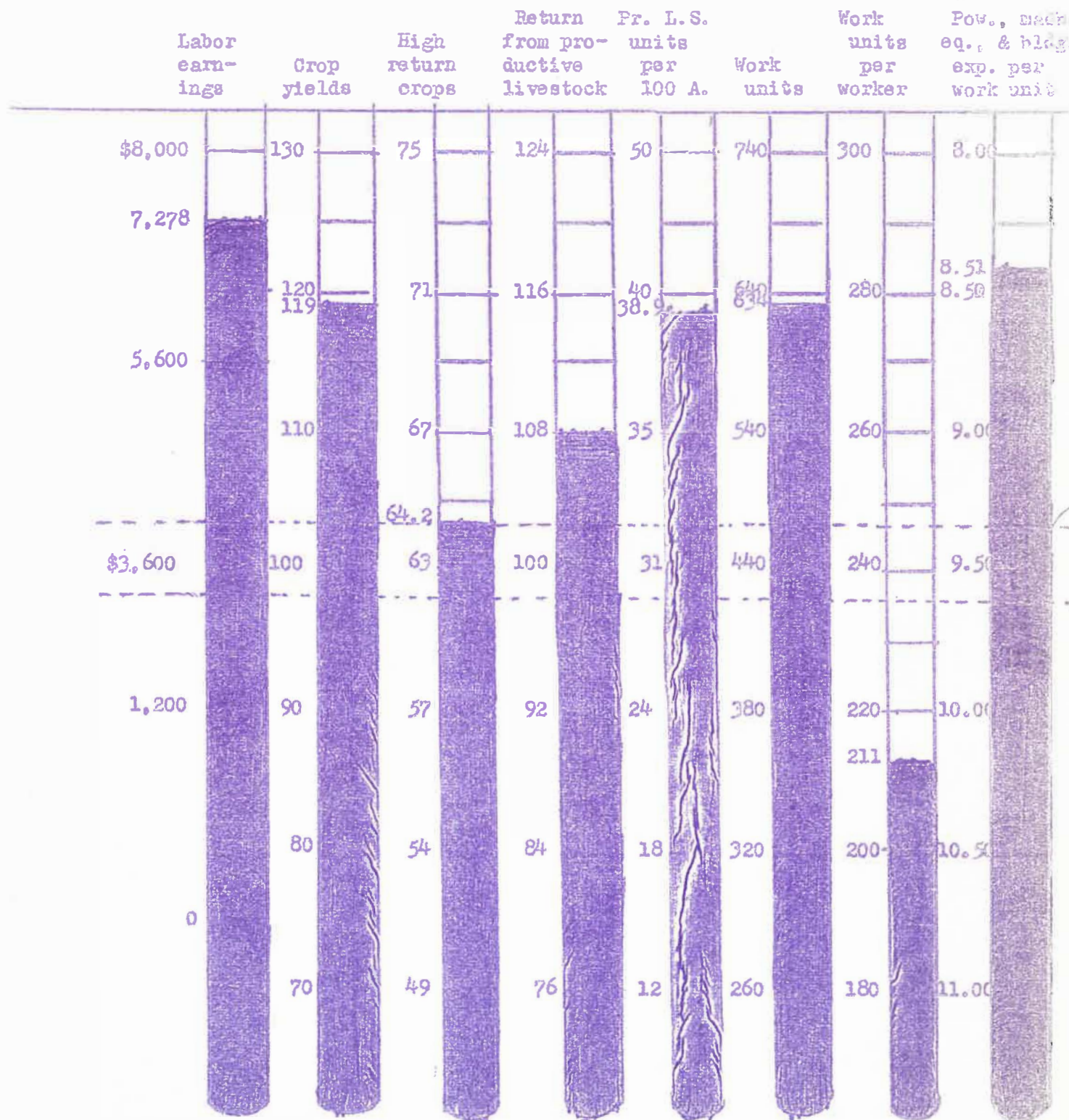


une 1962 or other.

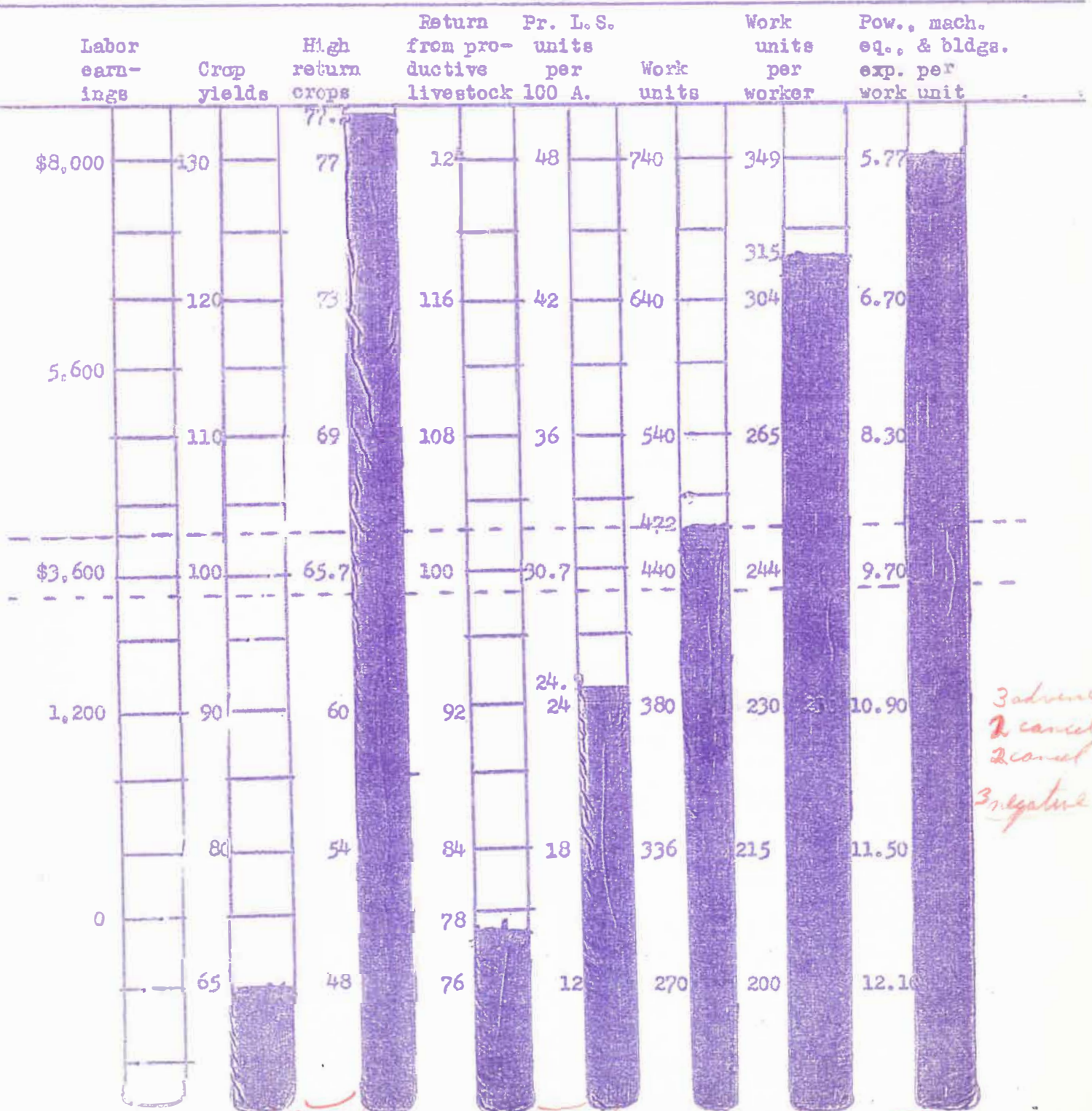
Labor earnings	Crop yields	High return yields	Return from productive livestock	Pr. L. S. units per 100 A.	Work units	Work units per worker	Pow., mach. eq., & bldg. exp. per work unit
\$8,000	130	75	124	50	740	300	6.50
	120	71	116	40	640	280	7.50
5,600	119			38.7	634		
	110	67	108	35	540	260	3.51 8.50
		64.2					
\$3,600	100	63	100	31	440	240	9.50
1,200	90	57	92	24	380	220	10.00
	80	50	84	18	320	200	11.00
						211	
0							
	70	43	76	12	260	180	12.00

Was his "labor earnings" above or below average? Would he be in the upper 1/5 of his group? The lower 1/5?

We see that this farmer was in the upper 1/5 of the cooperators in the farm management association with a labor earnings of \$7,278. His high return from livestock made it profitable to feed his crops to livestock. His farm was also heavily stocked. His situation is a little unusual in that "work units per worker" is low, yet his power machinery and buildings expense is below average.



Here is a farm that was above average in four factors but below in three. Note particularly these combinations; (1) crop yields, return to livestock, and productive livestock per 100 acres (2) work units per worker and power, machinery and building expense per work unit.

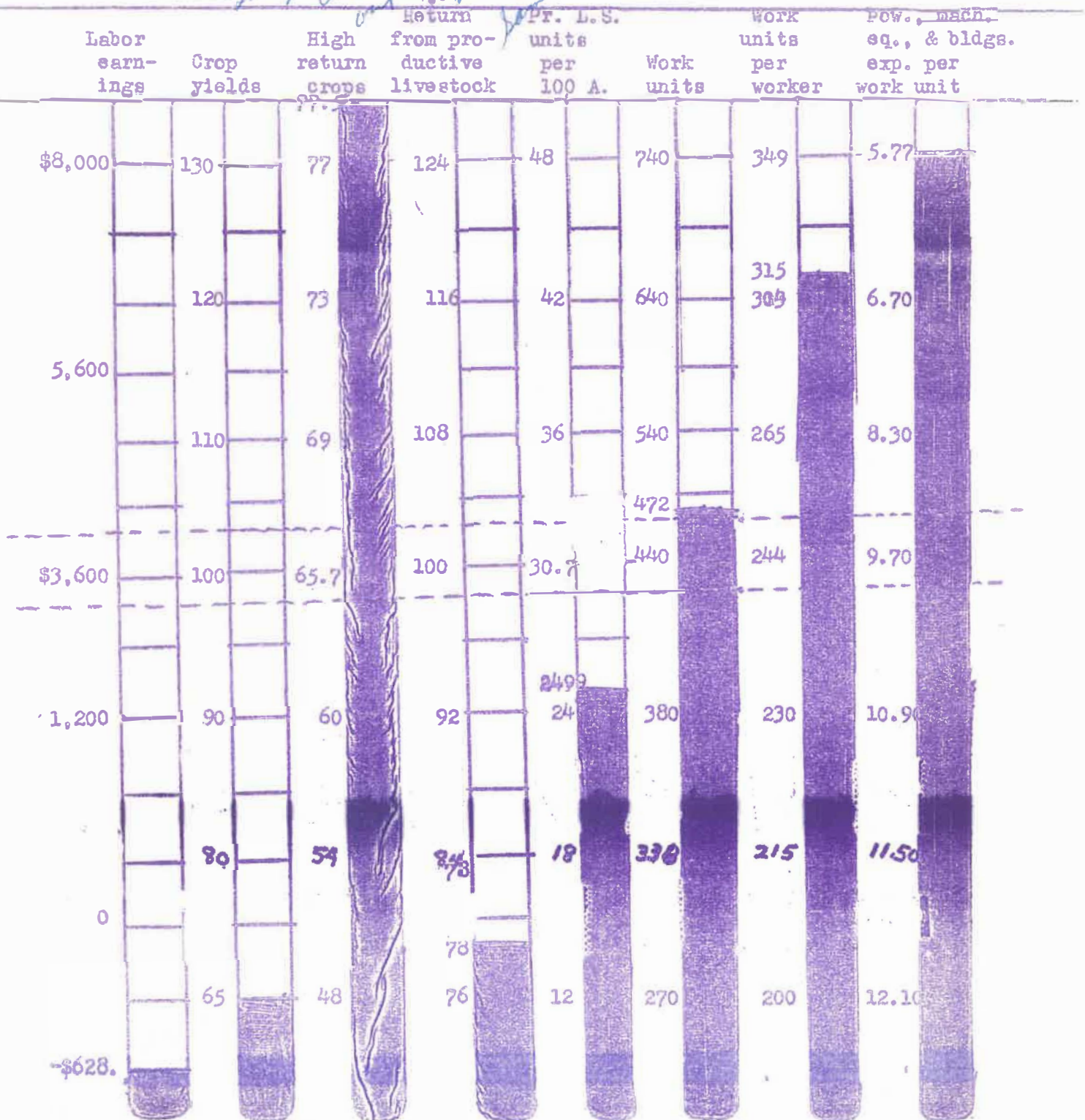


3 advance
2 cancel
2 cancel
3 negative

Was the operator's labor earnings above or below average? Would he be in the high group or would he show a loss?

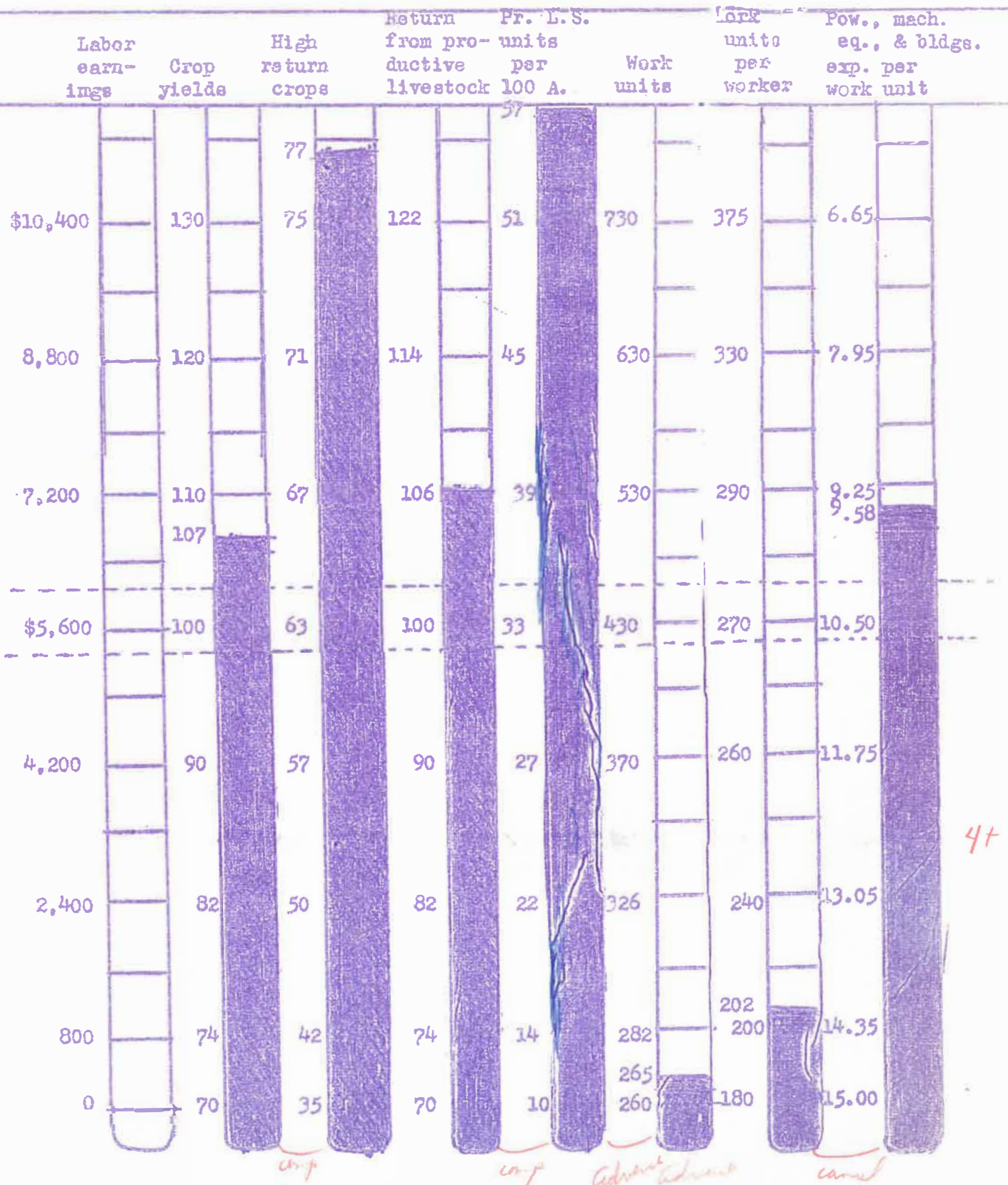
This thermometer chart actually tells quite a story. The farm showed a loss. Crop yields were so low that the rating in high return crops meant nothing. The low return to livestock probably indicated a loss on the purchased feed that was fed. Had the farm been high in livestock, his situation would likely have been even worse.

*Low yield
cancel out high return
or situation worse
same application*

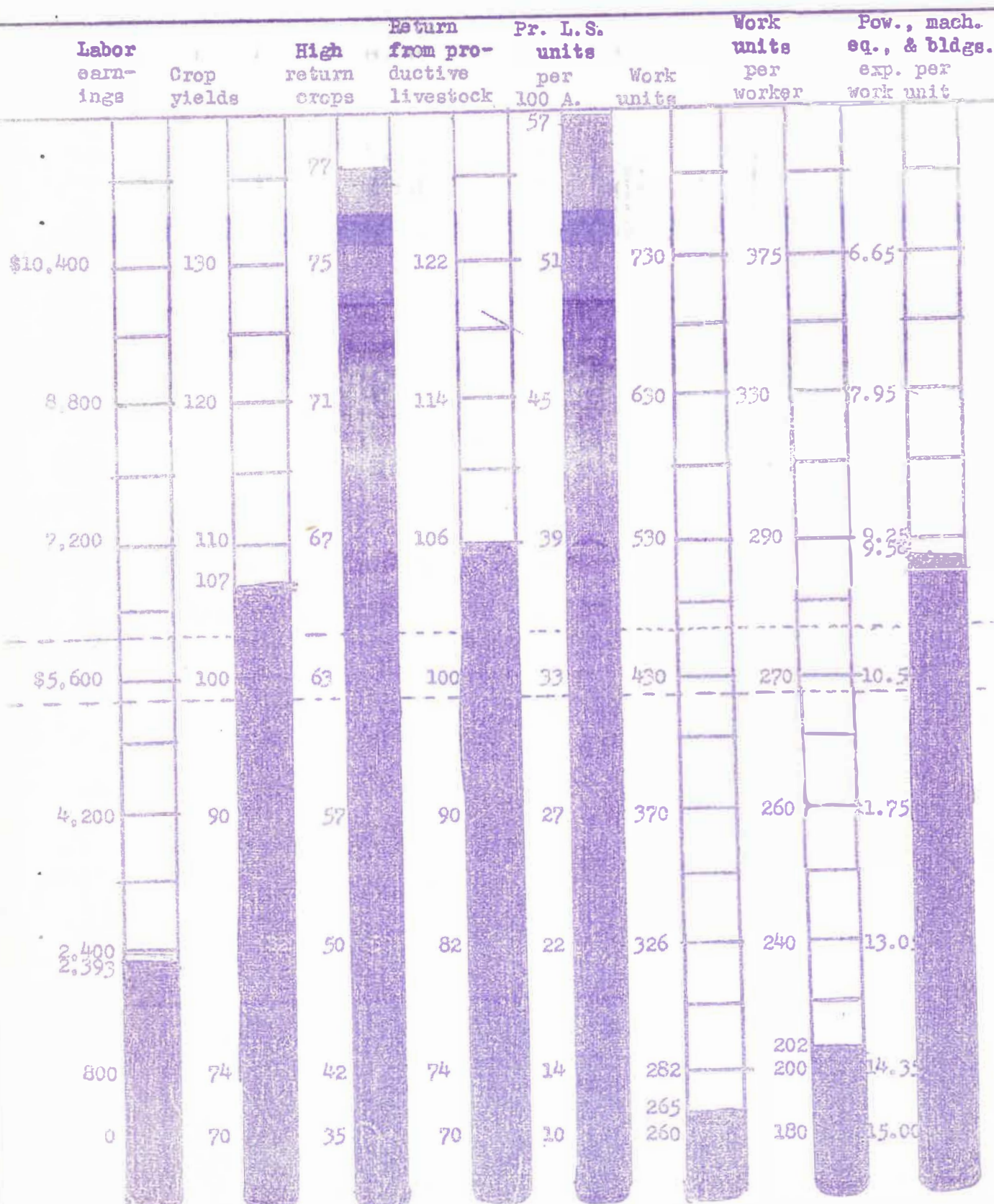


He had a very bad situation in total work units, work units per work, and power, equipment and building expense ~~and building~~ per work unit. In fact, he would have been better off to have been below average in at least two of these factors. Having a big business to run is not if the work is not done. The same applies to small businesses. He had more than he could handle. The work wasn't done so returning from livestock and crop yields were low.

This farmer has an excellent report except that his volume is small. He owns 80 acres and concentrates on dairy and hogs. He was above average in five factors. Before turning to the next page try to estimate his total earnings.



As can be seen, this farmer's labor earnings are far below average. Without volume it is impossible to have high labor earnings. In what direction should this farmer attempt to expand?



We need to know more about his buildings, his interests and the availability of more land before we can answer this question. His returns from productive livestock indicate that he should concentrate heavily in livestock. His high crop yields indicate that he should concentrate heavily in crops. His high labor earnings indicate that he should concentrate heavily in labor.

HOW IMPORTANT IS THE CROPPING PROGRAM?

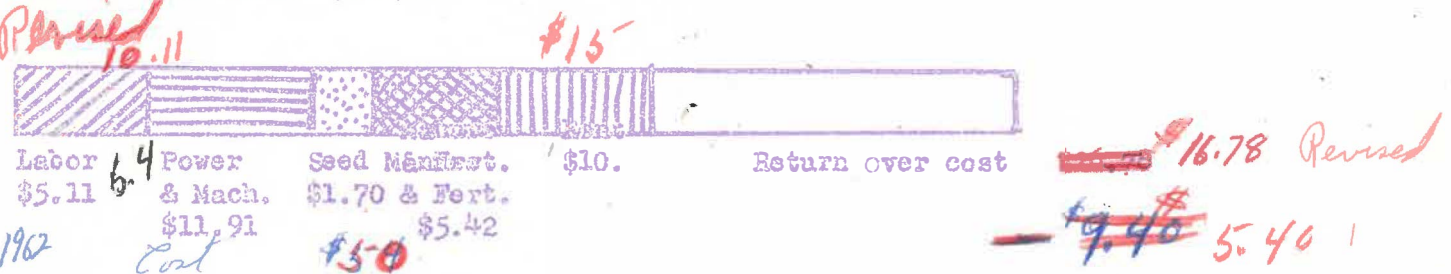
The greater the crop acreage on a farm the more important the crops become. Cropsfarms are becoming more numerous. Even for the livestock farmer the more feed that is grown the less needs to be purchased.

CROP YIELDS

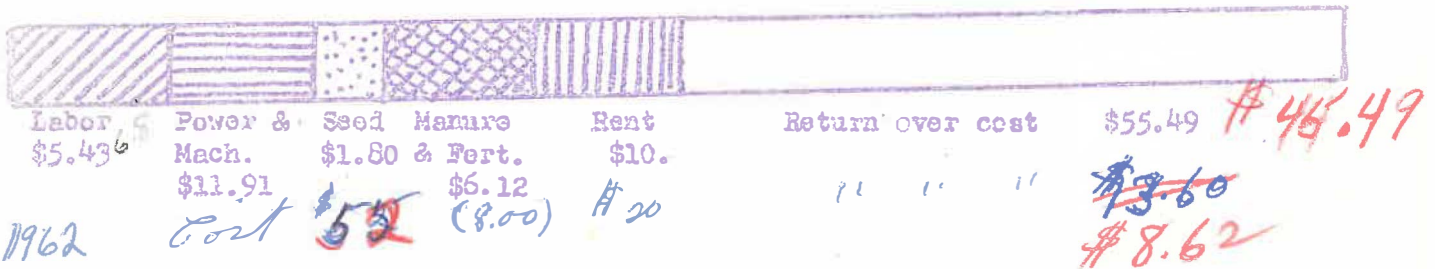
Crop yields constitute an important factor in determining farm profit on all except low crop acreage specialized livestock farms. Yields are determined by many conditions and practices. Use of commercial fertilizer is perhaps the one accorded the most attention. Because of its importance such other factors as tillage, stand, weed control, selection of seed, timing of operation, harvesting, and many other factors are sometimes overlooked.

Weather conditions are one thing over which the operator has no control. Here he can only try to adjust his operation to the condition. The importance of crop yields can be illustrated by comparison of two different years in a three year farm cost study conducted by the Department of Agricultural Economics, University of Minnesota. The bar graph below shows the various average costs and returns of co-operators growing corn for the years 1951 and 1952.

1951--Average yield 44.6 bu. per acre. Cost of crop \$33.84. Value of crop \$60.62. Net Return \$26.78.



1952 average yield 68.6 bu. per acre. Cost of crop \$35.41. Value of crop \$91.90. Net return \$55.49.



We see one important farm management principle demonstrated here. The return over cost fluctuates much more than the gross return. While the total value of the 44.6 bu. crop was two-thirds that of the 68.6 bu. crop the net return from the lower yield was less than half that of the 1952 yield.

Labor	Power and Mach.	Seed	Manure and Fertilizer	Rent	Storage and Misc.	Total	At 75 bu
(6 hrs)							\$13 net \$22 for 6 hrs
\$9.00	\$13.00	2.50	\$15	\$20	2.50	\$62	
(5 hrs) 9.00	\$16 (and misc)	2.50	\$20	\$20	\$2.50	\$78.50	\$16 net \$24 for 6 hrs

CHOICE OF CROPS

"Corn is King". This has been an oft repeated statement in the north central states. The table below demonstrates why.

	Yields		Cost		Value		Net Return	
	1951	1952	1951	1952	1951	1952	1951	1952
Corn	44.6	68.6	33.84	36.41	60.62	91.90	26.78	55.49
Oats	48.5	45.3	31.77	32.45	39.27	34.45	7.50	2.00
Barley	26.3	28.5	27.33	35.17	32.30	34.44	4.97	.73
Flax	8.	13.7	27.66	30.70	31.62	52.79	3.96	2.09
Soybeans	14.3	19.	27.08	22.28	40.30	50.40	13.22	22.28

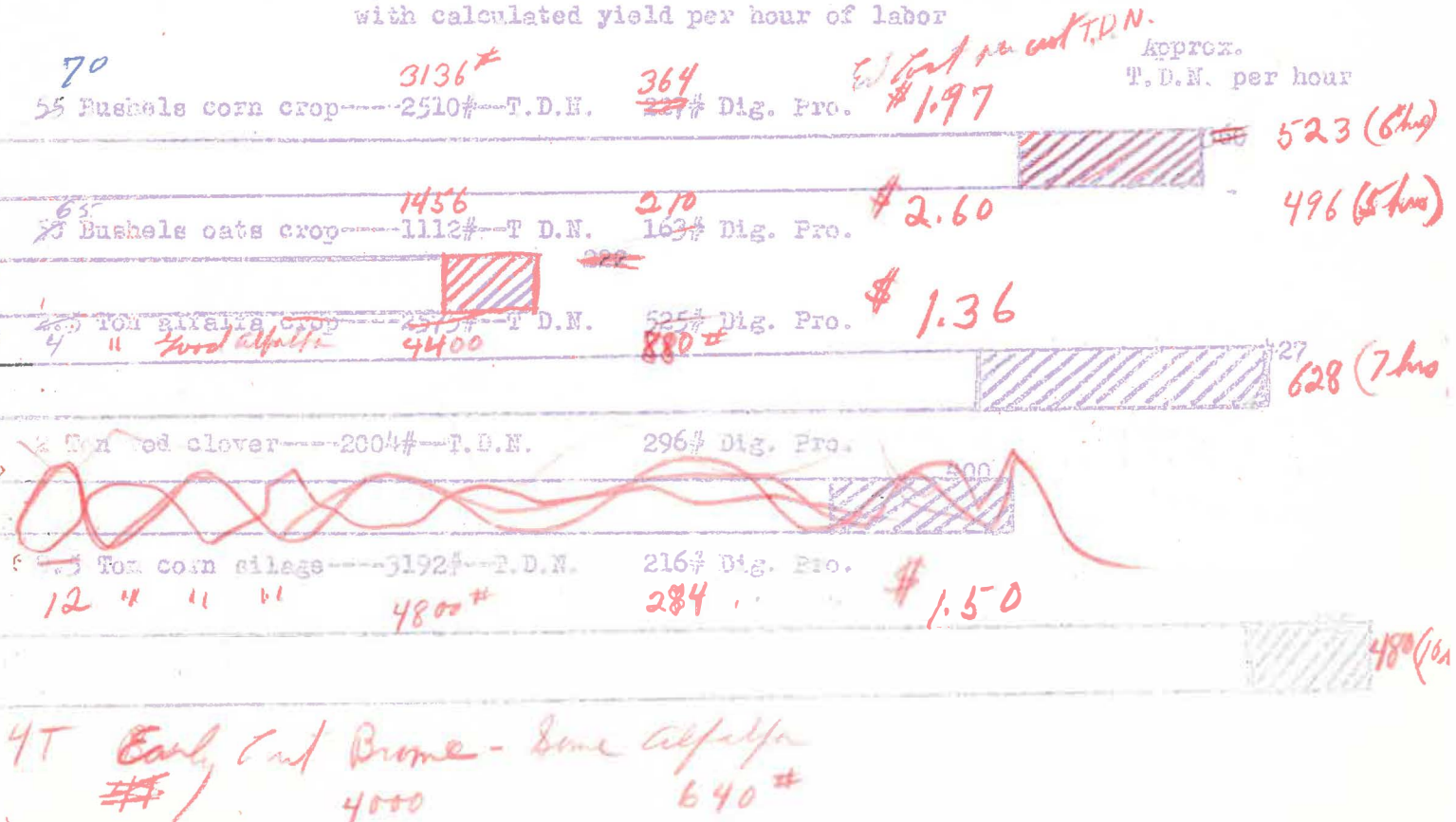
Permed
16.78 45.49

The completed three-year study showed the following for the same crops. The farm share of the auto, wagons, grain bins, cribs and a few other misc. items were omitted from the cost so returns per acre and per hour are actually somewhat lower than shown.

	Oats	Barley	Flax	Soy Beans	Corn
Average Yield	43	28	10.5	17.5	59
Labor return per acre	-\$1.90	\$1.07	\$5.83	\$14.49	\$45.33
Return per hour	-\$.34	\$.19	\$1.24	\$ 3.22	\$ 7.17

Feed values of crops need to be considered as well as market value. The graphs below show the return in total digestable nutrients (T.D.N.) and digestable protein for some common feed crops. The figure to the right of each bar is the approximate T.D.N. per hour of labor. The complete bar is T.D.N. while the lined section of the bar is digestable protein.

Feed value of Crops (From tables in Minnesota Extension Bulletin 218)
with calculated yield per hour of labor



... the

70% 45% 60

70
193
310

Feeding Efficiency - Hog Production 1950
(Feed to produce \$100 pork)

S. W. Farm Management				On-the-Farm Training		
	Average	High	Low	Average	High	Low
Corn	316	275	430	353	311	429
Grain	119	76	174	131	79	188
Comm. feed and Skim milk (dry basis)	58	55	60	44	57	47
TOTAL	492	406	664	528	447	664
Value pasture	.15	.17	.17	.15	.16	.18
Feed cost	12.20	9.73	16.55	12.30	10.55	16.33
Return \$100 feed	<u>\$166.</u>	<u>\$217.</u>	<u>\$115.</u>	\$152.	\$188.	\$107.

Feed Costs and Returns from Hogs 1956
(26 farms in east south central Minnesota)

Items	Your farm	Average of 26 farms	9 farms	9 farms
			highest in returns above feed	lowest in returns above feed
Feed per cwt. hogs produced, lbs.:				
Corn		305	271	329
Small grain		95	92	99
Commercial feeds		47	45	44
Total concentrates		449	408	477
TOTAL FEED COSTS		11.61	10.33	12.54
REQUIRE FOR \$100 OF FEED		<u>\$143.</u>	<u>\$163.</u>	\$122.

PRODUCTIVE LIVESTOCK UNITS PER 100 ACRES

The intensity of livestock production that will be profitable is dependent on (1) ~~the~~ crop acres (2) kinds and acreages of crops that can or cannot be grown (3) facilities (4) kind of livestock and (5) operator's efficiency as a livestock producer. The livestock enterprise that scarcely pays feed costs is unprofitable. The more heavily stocked a farm is in unprofitable livestock, the greater will be the loss. The livestock farm that gets \$150 return for every \$100 worth of feed fed to hogs, \$220 for every \$100 feed fed to ~~hogs~~ ^{any way}, will profit by carrying as much livestock as the housing and labor situation will permit.

The kind and quality of livestock grown has much to do with the profits from feeding. The dairy farmer with an average herd can expect no more than \$.50 per head or \$15.00 per acre for his time. With an outstanding herd her can expect more than that. If in a Grade A market area he can expect from \$1.50 to \$1.75 per head and \$50. to \$35. per acre for his time. The best breeding herd in southern Minnesota seldom pays for more than the feed consumed. Feeder cattle vary from no profit to very

high return depending on the market situation. The good cattle feeder should average from \$1.50 to \$2.50 per hour and from \$30. to \$40. per acre for his time. Efficient hog producers have been getting about \$3.00 per hour and \$60. per acre for their time. The small laying flock gives a low return per hour but a high return per acre. ~~These figures are over the minimum and the return per hour and return per acre have averaged out very variably.~~

SIZE OF BUSINESS - WORK UNITS

What is a large farm? What is a small farm? Ten thousands acres of non-irrigated farming might be considered small. A forty acre truck-garden farm would be very large. The size of a farm business cannot be determined by the number of acres, the gross income or capital investment. These are but indications of size. By combining acres and livestock into estimated work requirements we come up with work units. The work unit representing the average accomplishment for a full-hour day operated farms show the difference in size when compared on acres and work units.

	Acres	Work Units Crops	Work Units Livestock	Total Work Units
Farm A	320	159	39	198
Farm B	320	171	675	846
Farm C	180	103	1309	1412

Farm "A" is a crop farm above average for the community when measured in acres. Farm "B" is the same size while "C" is about average for the community.

When compared as to work units "A" is a small farm while both "B" and "C" are large with the 180 acre "C" farm having more than 1 3/4 times as many work units as "B", a 320 acre farm. These were three farms included in the 1956 east south central farm analysis.

A farm must be large enough to support the operator and his family. It may also have to retire indebtedness or provide capital for expansion. Minimum size should be considered by anyone who operates a farm. If the operator determines that his average labor earnings must be \$4,000 he must determine whether his business is large enough to provide that much income.

One hundred fifty acres of corn should give a labor return of \$4,000 if the corn would sell for \$1.00 to \$1.10 per bushel. A good forty cow dairy herd on 120 acres should give a labor return of \$3,000. Below are some suggested minimums & desirable standard of living and debt retirement in southern Minnesota.

not clear now

	Work Units	Gross Income	Labor Earnings
Crop Farming--2/3 corn	300	\$10,000	\$ 3,500
Dairy Farming--325# B.F.			
Grade B	500	\$14,000	\$ 3,500
Dairy and Hogs	400	\$12,000	\$ 3,500
Farm "A" (above)	199	\$17,560	\$ 5,444
Farm "B" (above)	846	\$38,035	\$11,387
Farm "C" (above)	1412	\$26,471	\$19,174

"WORK UNITS"

The total "work units" for any one farm is a measure of the size of that farm business. A work unit used in this report is the average accomplishment of a farm worker in a ten hour day. The number of work units for each class of live-stock and each acre of crop are presented in the Table below.

NUMBER OF WORK UNITS FOR EACH CLASS OF LIVESTOCK AND EACH ACRE OF CROP

Item	No. of work units	Your farm No. lbs. x Head, Acre	Your Work -Units
Dairy and dual-purpose cows	10.0 per cow	x	-
Other dairy & du. pur. cattle	3.5 per an. units*	x	-
Beef breeding herd	3.5 per an. units*	x	-
Feeder Cattle	.25 per 100 lbs.	x	-
Sheep - farm flock	1.5 per an. unit ²	x	-
Hogs	.2 per 100 lbs.	x	-
Sheep-feeders	.3 per 100 lbs.	x	-
Turkeys	2.5 per 100 lbs.	x	-
Hens	20. Oper. 100 hens	x	-
Canning peas	.5 per acre	x	-
Soybeans for grain	.5 per acre	x	-
Small grain	.5 per acre	x	-
Sugar beets	1.5 per acre	x	-
Sweet corn	.7 per acre	x	-
Corn husked	.7 per acre	x	-
Corn shredded	1.5 per acre	x	-
Corn hogged	1.4 per acre	x	-
Corn silage	1.0 per acre	x	-
Corn fodder	1.0 per acre	x	-
Alfalfa hay	.6 per acre	x	-
Soybean hay	.8 per acre	x	-
Other hay crops	1.4 per acre	x	-
TOTAL			

*Animal unit represents one dairy cow or bull, two other dairy cattle, 1½ beef cows or bull, 1 feeder steer or heifer, 3 1/3 other beef cattle, 7 sheep, 14 lambs, 2½ hogs, 5 pigs, 50 hens, or 1,100 pounds of turkey produced.

From the above table determine the number of work units of your farm.

LABOR AND OPERATIONAL COST EFFICIENCY - WORK UNITS PER WORKER

Time is the most valuable commodity in any business operation. Accomplishment per worker is mainly dependent upon three things (1) the operator's ability to plan the work and carry out his plan according to schedule (2) the arrangement of buildings and fields and (3) the use of labor-saving equipment. Some farmers work hard to accomplish 250 work units per worker. Others handle 400 work units with relative ease. Mechanization is the most important factor in achieving high work accomplishment. In order to take advantage of mechanization, volume must be large.

LABOR AND OPERATIONAL COST EFFICIENCY -
POWER, MACHINERY, EQUIPMENT AND BUILDING EXPENSE PER WORK UNIT

Operational or overhead costs are so closely related to work accomplishment that they cannot be evaluated separately. If a farmer goes from two row to four row tillage equipment, he will either have time for more leisure or more acres. Because his costs went up with the purchase of a bigger tractor and 4-row equipment he will probably be forced to increase his acreage of tillable crops

Just as the purchase of equipment calls for increased volume, and expanded business calls for increased labor efficiency at a lower operational expense per work unit.

Work Units per Worker and Operational Cost
322 Farm Mgt. Ass'n. Farms 1954

Labor Earnings

	High	Ave.	Low
Labor Earnings	\$9,989	\$3,894	-\$1,099
Work Unit per Worker	261	254	245
Power, Building, Equip.		\$10.72	
Cost per Work Unit			

TOTAL OPERATIONAL COSTS (Power, Building Equip. itemized)

Custom Work (hired)	\$559
Gas, oil (farm share)	795
All equipment repair	315
Electricity	194
Interest and Depreciation	1930
TOTAL	\$4631

OPERATIONAL COST PER WORK UNIT (power, Bldg. Equip. itemized)

Power	\$ 5.21
Crop Machinery	2169
Livestock Equipment	.69
Buildings	2.13

TOTAL \$10.72

Power, Building and Equipment Expense is justified if Work Accomplishment can be Increased Sufficiently.

	Operational	Work Units	Cost per Work Unit	Work Units per worker
Operator A	\$2,369	285	\$ 8.43	274
Operator B	\$6,665	1412	\$ 4.72	565
Operator C	\$9,583	946	\$10.13	225
Operator D	\$6,658	688	\$ 9.68	430
Operator E	\$2,913	216	\$13.48	216

Operator "A" has a rather small business, 285 work units so he kept down his expenses. His labor efficiency, 274 work units, was about average, but his cost per work unit was kept well below the average. His labor earnings were about average for the group even though the size of business was small. Operator "B" had a large operating cost \$6,665, but he built up his volume of business to where the actual cost per work unit was very low (only \$4.72). The utilization of power and equipment was also excellent -- the labor efficiency of 565 work units per worker is spectacular. He has been high in labor earnings three successive years. Operator "C" also had a large business (946 work units) but his operating costs were too high. The cost of \$9,583 did not give him a high labor efficiency. Labor efficiency was only 225 work units per worker. This is far below the average for the group. His labor earnings were a minus \$1100. Operator "D" had a high operational costs but his cost per work unit was still below average while his work accomplishment was more than 50% above the average. His labor earnings were considerably above average. Operator "E" hasn't enough business. Even with low total operational costs his cost per work unit is high. His work accomplishment is also low. He has barely broken even on his operation.

WHERE TO LOOK FOR THAT \$1,000

A 1954 Cooperator produced 52 acres of corn. His yield was 83 bu. per acre. He grew 32 acres oats at 53 bu. per acre and 28 acres of soy beans at 28.5 bu. per acre. He had 33 acres of pasture and hay. His feed purchases were \$23,491, of which more than half was spent for corn. He had a 250 hen laying flock. Hogs and broiler turkeys were the main livestock enterprises. He produced 118 thousand pounds of pork. His feed conversion was unusually good but he fed 78% of commercial feed per 100% of pork produced.

This cooperator made some changes the following year. He had to buy corn. He sold soybeans for much less than the value of the corn that could have been grown on those 28 acres. The following year he grew 92.2 acres of corn for grain and 74 acres of corn silage. His corn yield was 74 bu. per acre. Compared to the top soybean yields in the community 28 acres of shifted soybeans to corn grossed more than \$1,000 additional income with somewhat greater expense.

The laying flock was dropped and the poultry house was used for farrowing. The additional hogs produced, netted more income with less labor. The amount of commercial feed per 100% pork produced declined the following year and also in 1956. This was of course a large operation, but the operator had reached a high degree of efficiency when he started keeping the Minnesota Farm Account Book.

One cooperator paid over \$10. per hundred for commercial feed. He could have purchased high quality protein supplement, minerals and trace mineralized salt that would have averaged only half that cost. He now has a 30 cow herd. Even if the cows needed only 200% commercial feed each, the difference in the total feed cost would be \$300.

The dairyman below is probably going beyond the point of diminishing returns in order to make a high record. He is now finding it possible to reduce the amount of concentrate without any noticeable decrease in production.

His Farm

Average of 10
Highest Butterfat (1956 study)

Yearly butterfat per cow	401#	373#
Corn	3809#	1601#
Small Feeds <i>Grains</i>	1149#	1069#
Commercial Feeds	897#	550#
Legume Hay	4145#	4133#
Other Hay		98#
Silage	10071#	7196#
	CI 90 380	CI 100 401
	\$191.05	191
	169.	210
		51 184.
TOTAL FEED COST PER COW		\$151.22
		335
		333
		151
		\$222.

The average of 26 hog producers used a concentrate equivalent of 449# of feed to produce 100# of pork. The nine highest return over feed, used 408# to produce 100# pork. They showed a \$1.28 lower feeding cost. With the production of 35,000# of pork the difference is \$458.

The 13 high income farms of 39 farms spent \$948 for fertilizer. The average was \$652. The low income farms spent \$437. The high group had crop yields 11% above the average while the low was 10% under the average. Applied to 67 acres of corn this would have meant approximately 500 bushels more than average for the high group and 460 bushels less for the low group. The value of difference was 1 4/5 times the total difference in the fertilizer expenditure. Of course, some of the fertilizer went on other crops.

The cooperator should study his analysis carefully to size up the general farm organization. He should look for leaks in costs. He should also look for failures to get the highest returns from his crops and livestock. The examples given here are but a few of the many to look for when someone didn't get those extra dollars.

460
500
8960
-611
349