O R E G O N E X P E R I M E N T S T A T I O N

James T. Jardine, Director.

Circular of Information No. 35.

COST OF PRODUCING COMMERCIAL EGGS

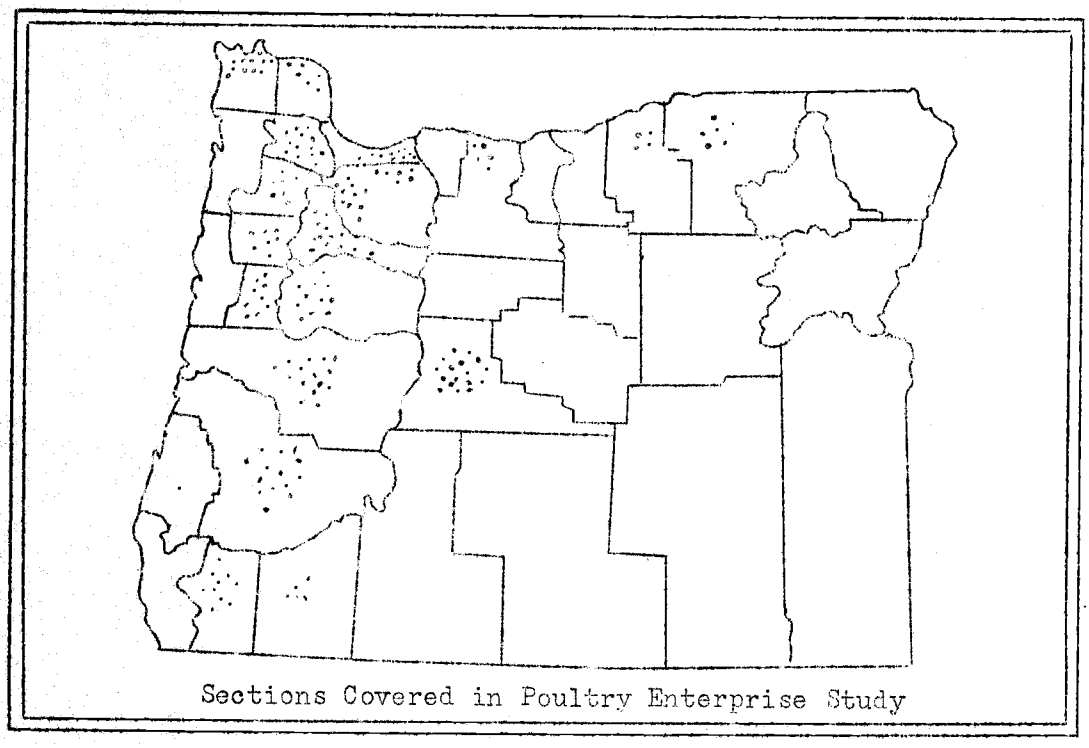
For the year November 1, 1927, to November 1, 1928
With Three Year Summary.

Progress Report No. 3

by

H. D. Scudder and A. S. Burrier
Department of Farm Management

A. G. Lunn and F. L. Knowlton
Department of Poultry Husbandry



Sections Covered in Poultry Enterprise Study

Purnell Fund

Corvallis, Oregon
December, 1929

Oregon Experiment Station

POULTRY ENTERPRISE STUDY

INTRODUCTORY

Three years ago at the request of the poultrymen and with their cooperation, the Oregon Experiment Station undertook a careful study of the poultry enterprise in this state.

The first purpose of the study was to determine:

1. The cost of producing commercial eggs.

2. The factors in the operation and the internal organization of the poultry farm which influence cost.

3. Adjustments in the farm organization and operation which should increase efficiency and reduce cost, thus bringing the poultry farmer a better net income.

To obtain the facts needed, a careful record of each year's business was taken from a large number of typical commercial egg producing farms in all the major poultry sections of the state.

To eliminate from the final results, variations in cost, variations in operations, and variations in production, due to varying seasonal conditions, the records were taken each year for three years in succession, so far as possible from the same farms.

A summary of the cost of producing commercial eggs on these Oregon poultry farms for each of the years 1926 and 1927 has been issued in Progress Reports No. 1 and No. 2. Copies of these reports, together with a statement of the individual costs of each farmer cooperating in the study have been returned to each farmer each year.

The cost of producing eggs for the year 1928 together with a summary of the average cost on all farms for the three year period is presented in this report.

ACKNOWLEDGEMENTS

The Oregon Experiment Station and the writers, personally, wish to express their appreciation and thanks to the many poultry farmers who have contributed to this study, for the painstaking and sincere cooperation these farmers have given throughout the course of this investigation. Also to G. W. Kuhlman, Assistant in Farm Management, Oregon Experiment Station, for valuable aid in carrying through the field work; to the Pacific Cooperative Poultry Producers Association for certain data supplied by the officers; and to County Agricultural Agents Hall, McWhorter, Inskeep, White, Beck, Briggs, Fletcher, Holt, Morse, McDonald, Tucker, McMindes, Nelson, Leedy, Howell, and Fowler, and Superintendent H. K. Dean, of the Umatilla Branch Experiment Station, Hermiston, for constant helpful service in their respective counties.

THE RESULTS OF THIS THREE YEAR STUDY HAVE GIVEN US FOR THE FIRST TIME A COMPLETE AND ACCURATE PICTURE OF THE FACTS REGARDING THIS IMPORTANT ENTERPRISE.

THE SITUATION

It is now becoming generally recognized that the transportation and marketing methods of today have brought the egg producer of Oregon in direct competition with egg producers in every other section of the country.

As a consequence, the producer who survives and prospers in this enterprise is he: (1) whose cost of production is lower than that of his competitors elsewhere, and (2) whose marketing organization is sufficiently strong and competent to sell the state and regional surplus of eggs at reasonable prices against competing production elsewhere.

While Oregon offers certain advantages in commercial egg production such as favorable climatic conditions, low land cost, low building cost, relatively low feed cost, abundance of high quality breeding stock, etc. -- yet these advantages are of no value unless capitalized by using and translating them into profits through efficient production and efficient marketing.

Fortunately, an efficient and successful marketing organization has been developed in this state which with continued and increasing support from our poultrymen as the enterprise expands, should be able to take care of our marketing situation.

The chief remaining need of the enterprise, therefore, is the development of such efficiency in production as will meet successfully the growing competition in other sections of the country that are closer to the great markets.

While no national surplus in egg production has as yet occurred, the growth of the enterprise has been very rapid in recent years, national and local consumption is well supplied, and a limited surplus might be produced at any time. If such a surplus should occur the resulting depression in prices could be survived only by the operator whose costs were less than those of his competitors.

HOW WELL PREPARED IS OREGON TO MEET COMPETITION IN EGG PRODUCTION?

The facts found in this three year study show clearly and accurately:

1. That efficient low cost methods of production have already been developed in this state.

2. That the enterprise as a whole is highly successful in this state.

3. That successful and proved methods have become standardized in Oregon to such an extent that experimentation on the part of the individual farmer is unnecessary and usually dangerous.

4. That those who are not making satisfactory incomes in poultry farming in Oregon are those who have not as yet adopted a sound farm organization plan and proved methods of efficient operation.

5. That notwithstanding his distance from the great surplus consuming egg markets, the Oregon poultryman can and does compete successfully with poultrymen in every other state on these markets.

MAY POULTRY PRODUCTION BE EXPANDED SAFELY?

With the facts just stated in mind it is clear that expansion of the poultry enterprise in this state is safe for the low cost producer at any time for the high cost producer is never safe. The low cost producer can survive a price depression that would wipe out many average cost producers and probably nearly all high cost producers. To a considerable degree, it is the elimination of marginal producers during a depression that restores prices to normal.

The extent of the expansion of the enterprise in Oregon, therefore, is of no particular importance. It is the character of the expansion that is important. Is the expansion made by experienced and established low cost producers? Then it is good. We cannot have too much of it. Or, is it made by inexperienced experimenters and speculators plunging into the enterprise for a prospective profit without sound knowledge and experience in efficient methods? Then, it is bad and will likely lead to disaster.

OUR NEED , THEN, IS A MORE WIDESPREAD USE ON OUR POULTRY FARMS OF SUCH METHODS OF FARM ORGANIZATION AND OPERATION AS THIS STUDY DISCLOSES ARE EFFECTIVE IN MAINTAINING LOW COSTS OF PRODUCTION. WITH THIS ACCOMPLISHED, EXPANSION OF THE ENTERPRISE HERE OR ELSEWHERE NEED NOT CAUSE ANY ALARM.

With these general observations in mind let us proceed to the findings of the survey.

* * * * * *

EXTENT OF STUDY

For the year 1928 complete records of the year's business were taken by the Experiment Station from 154 farms, giving the cost of producing 1,354,986 dozen eggs from 95,835 hens.

FOR THE THREE YEARS, 1926, 1927, and 1928, A TOTAL OF 441 COMPLETE FARM RECORDS WERE OBTAINED, COVERING THE COST OF PRODUCING 3,864,162 DOZEN EGGS FROM 271,337 HENS.

The large number of records, covering as they do a period of three successive years, and taken by experienced men, directly from typical farms as found in major poultry sections of the state, makes the results of the study reliable and accurate.

REGIONS STUDIED

For the year 1928 records were taken from 94 farms in the Willamette Valley, the major producing section of the state, 20 farms in Eastern Oregon, 14 farms in the coast section, and 26 farms in Southern Oregon, or a total of 154 farms in all sections.

For the three year period, the total number of farm records taken by counties (see title page map for approximate location) were as follows:

Willamette Valley Counties - Multnomah 25, Washington 34, Clackamas 47, Yamhill 21, Marion 31, Polk 26, Linn 23, Lane, 37, Benton 24; total in Willamette Valley 268.

Eastern Oregon Counties - Umatilla and Morrow 39, Deschutes 33, Wasco 5; total Eastern Oregon 67.

Coast Counties - Clatsop 32, Columbia 14; total coast counties 46.

Southern Oregon Counties - Douglas 33, Josephine 9, Jackson 18; total Southern Oregon 60.

TYPE OF FARMS

As cost and efficiency in commercial egg production was the objective, only commercial egg producing flocks were included in the study. Eggs produced by the ordinary small farm flocks, although constituting the bulk of egg production in the aggregate, are, from the enterprise standpoint, largely a by-product of general farming, their cost difficult if not impossible to obtain, and not the objective of this study. The purpose of the study is to determine cost and organization for the farmer who makes a business of egg production. For the same reason the specialized poultry breeding farms, producing hatching eggs, baby chicks, pullets and cockerels as a major undertaking, and commercial eggs as a by-product or minor source of income, were not included in the study. It is possible that the specialized poultry breeding farm may be covered in a similar study at a later period.

THE POULTRY FARM ACREAGE

The amount of land employed in the commercial egg farms of the state was found to depend largely upon the extent to which these farms were diversified; that is, the extent to which other enterprises were included in the farm organization. The total acreage per farm varied all the way from 2 1/4 acres to 450 acres and had very little to do with the success of the poultry enterprise itself, since only a very small amount of land is required for the exclusive use of the poultry enterprise. Either a specialized or diversified poultry farm may be successful on less than 10 acres if properly laid out.

As indicated in Table I, a composite picture of all of the farms covered in the three years of study shows the average farm upon which commercial egg production is an important, major, or even exclusive enterprise, to be a comparatively small farm of about 60 acres. Only half of this farm is in cultivation and one-quarter of it consists of non-tillable land of relatively low value. The acreage of fruit and other crops grown indicates that on many of these farms there is some other source of income beside the poultry enterprise. As indicated in the average, many of these farms could readily increase the crop acreage and the volume of business by means of clearing and utilizing a considerable amount of tillable land now in woods and pasture.

It is noticeable that the largest farms were those of Eastern Oregon, chiefly in the irrigated sections where the farms were more diversified, although a few large dry land wheat farms in Wasco County are also covered. In Southern Oregon the farms were smaller than elsewhere, due to scarcity of tillable land, nearly half of the land in these farms being non-tillable.

Table I. THE POULTRY FARM ACREAGE
Average of 3 years - 1926, 1927, 1928.

Utilization	Eastern Oregon	Willamette Valley	Coast Section	Southern Oregon	All Sections
	(Acres)	(Acres)	(Acres)	(Acres)	(Acres)
Crop Land	47.3	23.1	12.4	12.5	24.0
Fruit	1.0	3.1	.2	2.7	2.4
Woods & Pasture, Tillable	26.2	12.1	25.2	8.4	15.2
Non-Tillable	34.8	9.6	15.9	19.2	15.3
Waste & Farmstead	2.9	2.4	2.4	2.4	2.5
TOTAL ACREAGE	112.1	50.2	56.1	45.2	59.4

Roughly, of all the farms studied about 40% were less than 20 acres in total area, 20% ranged from 20 to 40 acres, 20% from 40 to 80 acres, and 20% were over 80 acres, the degree of diversity being the chief factor influencing the total acreage employed.

THE SIZE OF FLOCK

The average size of all the flocks covered in the survey increased slightly each year, being 599 hens in 1926, 619 hens in 1927, and 622 hens in 1928.

The average size of flock per farm from all records taken during the three periods was 615 hens. There was little variation in this average size of flock in any of the different sections of the state studied.

The extreme range in size of flock was from 119 hens, the smallest flock record taken during the three years, to 2640 hens, the largest flock.

While effort was made to secure records from large flocks and avoid small flocks, there were found decidedly more small flocks (of less than 400 hens) than any other size. However, flocks of 400 to 600 are common, 600 to 800 are frequent, while flocks of over 1,000 hens are rather rare as yet. As the commercial enterprise develops, no doubt the number of large flocks will increase.

THE VOLUME OF BUSINESS AND THE SIZE OF THE NET INCOME COULD READILY BE INCREASED ON MANY OF THESE AND OTHER OREGON FARMS BY INCREASING THE SIZE OF THE FLOCK.

While a flock of 400 hens properly managed will give satisfactory returns on a diversified farm which has other sources of income, usually a flock of 600 hens or more on such a farm permits greater efficiency in management.

COMPOSITION OF FLOCK

During the three-year period of the survey, there was practically no variation in the compsition of the average flock. The average flock for

the three-year period as shown in Table 2 gives a very good picture of the normal flock composition. The flock (based on the number of fowls in the flock at the beginning of each year) consists of 60% pullets, 31% one-year old hens, and 9% of older hens.

The chief variation in this make-up is in the Eastern Oregon section where heavier culling or a larger number of beginning flocks were found, hence a larger percentage of pullets. Where the flocks were not being increased each year by the addition of extra pullets, the practice of replacing half the flock annually with new stock seems well established.

Oregon Experiment Station
Poultry Enterprise Study

Table 2. COMPOSITION OF AVERAGE FLOCK.
Average of 3 years - 1926, 1927, 1928
(Based on Flock at Beginning of Year)

Section	Pullets		Yearlings		Hens, 2 yrs. and over		Total	
	Number	%	Number	%	Number	%	Number	%
Willamette Valley	438	59.6	233	31.7	64	8.7	735	100
Coast Region	456	57.2	259	32.4	83	10.4	798	100
Eastern Oregon	424	68.8	155	25.1	38	6.1	617	100
Southern Oregon	367	54.6	213	31.7	92	13.7	672	100
ALL SECTIONS	428	60.3	217	30.6	65	9.1	710	100

CULLING AND MORTALITY

As shown in Table 3, there is some variation in the different sections from the average practice of culling out about 40% of the flock each year. Eastern Oregon and the Willamette Valley are culling, at present, more heavily than the other sections. The average death loss from the flock through the year is about 12%, being somewhat higher in the major and older producing sections, due perhaps to greater soil contamination.

Oregon Experiment Station
Poultry Enterprise Study

Table 3. CULLING AND DEATH LOSS PER FLOCK
Average of 3 years - 1926, 1927, 1928

Section	Hens Culled*		Hens Died*	
	Number	%	Number	%
Willamette Valley	292	39.8	101	13.7
Coast Region	253	31.7	82	10.3
Eastern Oregon	264	42.8	77	12.5
Southern Oregon	229	34.1	68	10.1
ALL SECTIONS	274	38.6	91	12.8

*Based on average flock of 710 at beginning of year.

It will be noted that culling and death loss combined call for a replacement of 51% of the flock to maintain its original size. Since many of the flocks under study are being increased in size, the extra pullets added to the normal replacement of 51% of a flock accounts for the higher percentage of pullets shown in the average flock pictured in Table 2. Of every 60 pullets, 51 are used for replacement and maintenance of the original size of the flock, and 9 pullets are added to increase the original size of the flock.

CAPITAL INVESTMENT

To those who wish to increase their flocks or are about to begin in the enterprise, the capital investment required is of considerable interest. There was little variation in the average capital requirement in any of the three years studied. Table 4 gives an accurate picture of the average investment involved over a period of years for those engaged in this enterprise.

It should be noted in the items listed only the amounts chargeable directly to the poultry enterprise for each item are given. For example, only a portion of the automobile or truck investment is chargeable against the poultry enterprise since on many farms these are also used for other purposes.

The average total investment chargeable to the poultry enterprise is only $2805 per farm, or $4.56 per hen. Of this the two major items are for the poultry stock itself - 33% of the total investment - and for the laying houses - almost the same amount, or 30% of the total. It is interesting to find that the average investment in the laying house is $1.38 per hen. These poultry buildings are of course of all ages and hence the investment required if newly built at the same prices for materials and labor would be somewhat greater than that shown in the table, since the table shows the average present inventory value after allowance for depreciation according to age has been made. First year investment costs, however, would not necessarily be higher than those shown, since frequently the buildings are gradually completed as the returns from the enterprise permit further capital expenditures.

Oregon Experiment Station
Poultry Enterprise Study

Table 4. INVESTMENT PER FARM AND PER HEN

Average Size of Flock 615
Average of 3 years - 1926, 1927, 1928.

Investment Item (Amt. Chargeable to Poultry Only)	Ave. Invest. per farm (441 Records)	Ave. Invest. per hen (271337 Hens)	Percentage of total Investment
Auto and Truck	$ 96.98	$ .16	3.5%
Other Mach. & Poul. Equip.	103.52	.17	3.7
Poultry Feed (Average Inventory)	111.43	.18	4.0
Stock	918.28	1.49	32.7
Poultry Land	379.00	.62	13.5
Laying Houses	850.97	1.38	30.3
Other Poul. Bldgs.	344.75	.56	12.3
TOTAL	$2804.93	$4.56	100 %

Most noticeable, as compared with other farm enterprises, is the small investment required for land. This is the chief reason for the lower capital requirement for poultry farming as compared with other types of farming, making it an easier type either to start or expand. It should be remembered also that not all of the capital investment shown is necessarily cash capital, since much of the investment in buildings and stock consists of the labor of the operator himself.

Attention also should be called to the fact that no charge is entered against the poultry business for the value of the family residence. However, necessary the home for the family on the farm may be, it is not chargeable against the farm business, anymore than the merchant's residence in town is chargeable against his business. The farm home is a personal, not a business expense.

THE COST OF PRODUCING COMMERCIAL EGGS IN 1928

Table 5 shows very fully and in detail the average cost of commercial egg production in Oregon for the year 1928, as determined by the third year's survey. The cost for this year is almost identical with the cost for the preceding years.

It should be clearly understood that Table 5 shows the total cost of production, not the cash cost, which is a very different figure as shown later in Table 7. Total cost of production in any business properly includes in addition to cash costs, such non-cash items as reasonable wages for the operator, allowance for depreciation of all equipment, and at least a minimum charge for interest on the capital employed. However, the cost statement given is so fully itemized that it is possible for those who wish to do so, to instantly figure cost exclusive of interest, or exclusive of any other items desired.

In round numbers, the average flock of 622 hens in 1928 totalled a net cost of $2456 for the year, or $3.95 per hen, producing an average of 170 eggs per hen, at a net cost of 27.9¢ per dozen. The net cost constituted 83% of the gross cost.

The major items of cost were, for feed $2.63 per hen, or 55% of the gross cost, and 84¢ for labor, or about 18% of the gross cost.

Nearly all of the feed was purchased, while nearly all the labor was furnished by the farm operator and his family. The feed purchased totalled $1462 per farm for 622 hens, and the accompanying replacement stock. This purchased feed amounted to $2.35 per hen, or 16.6¢ per dozen eggs, and was 49% of the total gross cost. No wonder the feed question is a vital one to the poultryman.

Under miscellaneous costs the chief items were for baby chicks, auto and truck operation, flock decrease, crates, and express. Under the item Baby Chicks, the figure 14¢ is not the price paid for baby chicks purchased. It is the distributed average annual cost per hen for all baby chicks purchased or home raised. Flock decrease represents that part of the flock depreciation not met by flock replacement. Wherever the replacement exceeded the depreciation a credit was entered in the receipts under Flock Appreciation.

The costs for depreciation and interest are relatively low because of the small capital investment. All interest was computed at 5%.

Oregon Experiment Station - Poultry Enterprise Study

TABLE 5 - COMMERCIAL EGG COST SUMMARY FOR YEAR 1928

Average of 154 farms; 95,835 hens; producing 1,354,986.4 dozen eggs
Average flock 622 hens, producing 170 eggs per hen

Expense Item	Cost per Farm	Cost per Hen	Cost per Doz. Eggs	% of Total Cost
	Dollars	Dollars	Cents	Percent
Operator's labor (2.1 hrs. per hen)	383.44	.62	4.4	12.9
Unpaid Family labor (.7 " " ")	107.80	.17	1.2	3.7
Hired labor (.1 " " ")	18.59	.03	.2	.6
Contract labor				
TOTAL MAN LABOR (2.9 " " ")	509.83	.82	5.8	17.2
Horse labor	9.38	.02	.1	.3
TOTAL LABOR	519.21	.84	5.9	17.5
Grain, mash, bone, grit, etc. purchased	1462.39	2.35	16.6	49.3
Milk and buttermilk purchased	28.36	.05	.3	.9
Grain (Farm grown)	88.25	.14	1.0	3.0
Green Feed (Farm grown)	33.86	.05	.4	1.1
Milk (Farm)	21.56	.04	.3	.7
TOTAL FEED	1634.42	2.63	18.6	55.0
Crates and Fillers	52.82	.09	.6	1.8
Litter Purchased	26.18	.04	.3	.9
Litter (Farm)	7.55	.01	.1	.3
Lights	5.06	.01	.1	.2
Taxes	15.06	.02	.2	.5
Spray and Medicine	9.27	.01	.1	.3
Freight or Express	50.06	.08	.5	1.7
Brooding Fuel	15.98	.02	.2	.5
Pullets and hens purchased	34.08	.06	.4	1.1
Auto and Truck Operation	42.63	.07	.5	1.4
Baby Chicks	90.48	.14	1.0	3.0
Use of Males	41.54	.07	.5	1.4
Repairs	7.74	.01	*	.3
Flock Decrease	135.55	.22	1.5	4.6
Hatching Eggs (Farm)	16.15	.03	.2	.5
Hatching Eggs (Purchased)	5.62	.01	*	.2
Miscellaneous	19.05	.03	.3	.6
TOTAL MISCELLANEOUS	574.82	.92	6.5	19.3
Auto and Truck Deprec.	24.18	.04	.3	.8
Poultry Equip. "	10.28	.02	.1	.4
Laying House "	48.32	.07	.5	1.6
Other Bldg. "	24.87	.04	.3	.8
TOTAL DEPRECIATION	107.65	.17	1.2	3.6
Int. on Auto & Truck	4.17	.01	-	.1
Int. on Equip. and Machinery	4.49	.01	.1	.2
Int. on Feed Investment	4.43	.01	.1	.1
Int. on Stock Investment	47.02	.07	.5	1.6
Int. on Poultry Land	18.02	.03	.2	.6
Int. on Laying Houses	42.02	.07	.5	1.4
Int. on Other Buildings	16.67	.02	.2	.6
TOTAL INTEREST	136.82	.22	1.6	4.6
TOTAL GROSS COST	2972.92	4.78	33.8	100.0
Receipts other than eggs	516.14	.83	5.9	17.3
NET COST 1928	2456.78	3.95	27.9	82.7
NET COST 1927	2477.28	4.00	28.1	-
NET COST 1926	2441.19	4.06	28.2	-

*Less than 1¢ per dozen.

The net cost was determined by deducting the receipts for poultry products other than eggs from the gross cost, since it was found the cost of these other products practically equalled the price received for them.

CAREFUL STUDY OF THIS COST SUMMARY WILL REVEAL MANY INTERESTING FACTS.

THREE YEAR AVERAGE COST OF PRODUCING COMMERCIAL EGGS

Table 6 shows, completely itemized, the average cost of commercial egg production on the farms studied for the entire three-year period, 1926, 1927, and 1928. Since there was little variation in the cost from year to year, this three-year summary gives the best final cost picture of the commercial egg enterprise in terms of dollars and cents. (The unit cost of producing commercial eggs in hours of labor, units of feed, etc., is reserved for the final publication.)

For convenient use a few figures from Tables 6 and 7 are extracted and repeated here.

THREE-YEAR AVERAGE COST -	PER HEN	PER DOZEN EGGS
TOTAL NET COST	$4.00	28.1¢
Total Net Cost Exclusive of Interest	3.77	26.5¢
CASH COST (Table 7)	3.19	18.3¢
COST OF PURCHASED FEED	2.41	16.9¢
TOTAL COST OF FEED	2.67	18.7¢

In the last three lines of both Table 5 and Table 6 the net cost for each of the three years is given for comparison. The fact that the cost of production for each of the three years is so nearly the same is of considerable interest. It indicates that a fairly uniform standard method of production has become established in our poultry farms, - that information as to the best methods of production has been widely disseminated and largely put into practice, - that "any old way" or one way one year and another the next has not been found successful. In other words, it indicates that good methods have become standardized in Oregon to a considerable degree. This appears true since the average cost varies chiefly from year to year only as the prices for feed and labor, the chief cost items, vary, and as a matter of fact the prices for feed and rate for labor have varied but slightly during the three-year period.

THE COST IN CASH

Frequently farmers say to us: "I am sure that my cost of production is not as high as your studies indicate." This is because many farmers do not figure all of their costs, but habitually think only of the cost they pay in cash - their "out-of-pocket" costs.

Not all of the costs of production in any business are actually paid out in cash. Examination of Table 7 will make clear the difference between total cost of production as given in Table 6 and the cash cost with which the farmer is most familiar.

Since the variation in the proportionate cash cost was very slight from year to year, Table 7 gives the average cash and non-cash cost for the entire three-year period. The average annual gross cost per hen is $4.91, of which 65% or $3.19 is paid out in cash, and the balance, or 35%, is labor and other items furnished by the farm.

Oregon Experiment Station - Poultry Enterprise Study

TABLE 6 - COMMERCIAL EGG COST SUMMARY - Ave. of Three Years 1926, 1927, 1928

Average of 441 farm records; 271,337 hens; producing 3,864,162 dozen eggs
Average flock 615 hens, producing 171 eggs per hen

Expense Item	Cost per Farm	Cost per Hen	Cost per Doz. Eggs	% of Total Cost
	Dollars	Dollars	Cents	Percent
Operator's Labor	439.73	.72	5.0	14.6
Unpaid Family Labor	100.47	.16	1.2	3.3
Hired Labor	20.16	.03	.2	.7
TOTAL MAN LABOR	560.36	.91	6.4	18.6
Horse Labor	8.60	.01	.1	.3
TOTAL LABOR	568.96	.92	6.5	18.9
Grain, Mash, Bone, Grit, etc. Purchased	1452.16	2.36	16.6	48.0
Milk and Buttermilk Purchased	29.00	.05	.3	1.0
Grain (Farm Grown)	100.56	.17	1.1	3.3
Green Feed (Farm Grown)	35.18	.05	.4	1.2
Milk (Farm)	21.37	.04	.3	.7
TOTAL FEED	1638.27	2.67	18.7	54.2
Grates and Fillers	51.83	.09	.6	1.7
Litter Purchased	26.27	.04	.3	.9
Litter (Farm)	8.27	.01	.1	.3
Lights	4.93	.01	.1	.2
Taxes	18.16	.03	.2	.6
Spray and Medicine	8.56	.01	.1	.3
Freight or Express	54.48	.09	.6	1.8
Brooding Fuel	17.19	.03	.2	.6
Pullets and Hens Purchased	15.61	.03	.2	.5
Auto and Truck Opr.	51.55	.08	.6	1.7
Baby Chicks	107.54	.17	1.2	3.6
Use of Males	40.57	.07	.5	1.3
Repairs	10.96	.02	.1	.4
Flock Decrease	94.82	.15	1.1	3.1
Hatching Eggs (Farm)	21.89	.04	.2	.7
Hatching Eggs (Purchased)	4.33	.01	.1	.1
Miscellaneous	20.64	.03	.2	.7
TOTAL MISCELLANEOUS	557.60	.91	6.4	18.5
Auto and Truck Depreciation	27.56	.04	.3	.9
Poultry Equip. "	11.10	.02	.1	.4
Laying House "	49.01	.08	.6	1.6
Other Bldg. "	26.17	.04	.3	.9
TOTAL DEPRECIATION	113.84	.18	1.3	3.8
Int. on Auto & Truck	4.86	.01	.1	.2
Int. on Equip. and Machinery	5.18	.01	.1	.2
Int. on Feed Investment	5.56	.01	.1	.2
Int. on Stock Investment	45.92	.07	.5	1.5
Int. on Poultry Land	18.96	.03	.2	.6
Int. on Laying Houses	42.55	.07	.4	1.4
Int. on Other Buildings	17.23	.03	.2	.5
TOTAL INTEREST	140.26	.23	1.6	4.6
TOTAL GROSS COST	3018.93	4.91	34.5	100.0
Receipts other than Eggs	560.51	.91	6.4	18.6
NET COST (3 Year Average)	2458.42	4.00	28.1	81.4
NET COST 1926	2441.19	4.06	28.2	-
NET COST 1927	2477.28	4.00	28.1	-
NET COST 1928	2456.78	3.95	27.9	-

On this basis the cash cost of eggs is 18.3¢ per dozen, and it is this cost that many farmers have in mind when discussing costs.

Of the cash items feed is much the largest, while farm labor is the largest non-cash item. Table 7 shows the distribution of the other items of cash and non-cash costs.

Oregon Experiment Station
Poultry Enterprise Study

Average of 3 years - 1926, 1927, 1928

Table 7. CASH AND NON-CASH COSTS PER HEN
(Based on Gross Cost)

Expense Item	Cash Cost		Non-Cash Cost	
	Cash Cost per Hen	% of Total Cost	Non-Cash Cost Per Hen	% of Total Cost
Hired Labor	$ .03	.7	$ --	--
Operator's Labor	--	--	.72	14.6
Unpaid Family Labor	--	--	.16	3.3
Horse Labor	--	--	.01	.3
TOTAL LABOR	.03	.7	.89	18.2
Purchased Feed	2.41	49.0	--	--
Farm Grown Grain*	.08	1.6	.09	1.7
Farm Produced Milk	--	--	.04	.7
Farm Grown Green Feed	--	--	.05	1.2
TOTAL FEED	2.49	50.6	.18	3.6
Crates and Fillers	.09	1.7	--	--
Baby Chicks	.17**	3.6	--	--
Taxes	.03	.6	--	--
Litter	.04	.9	.01	.3
Use of Males	.03	.6	.04	.7
Flock Decrease	--	--	.15	3.1
Hatching Eggs	.01	.1	.04	.7
Miscellaneous	.30	6.2	--	--
TOTAL MISCELLANEOUS	.67	13.7	.24	4.8
DEPRECIATION	--	--	.18	3.8
INTEREST	--	--	.23	4.6
TOTAL GROSS COST PER HEN	$3.19	65.0	$1.72	35.0
Net Cost per Dozen	18.3¢		9.8¢	

* About one-half the cost of producing grain on the farm is cash cost, hence one-half of the farm grown grain fed to poultry was charged as a cash cost.

** This figure (17¢) is not the price paid for baby chicks purchased. It is the distributed average annual cost per hen for all baby chicks purchased or home raised.

VARIATION IN COST OF PRODUCTION

THE FEASIBILITY OF REDUCING COSTS, INCREASING PROFITS, AND SURVIVING AGAINST THE STEADILY INCREASING COMPETITION IN THE POULTRY ENTERPRISE IS STRIKINGLY DEMONSTRATED BY THE LARGE NUMBER OF POULTRYMEN THROUGHOUT THE STATE WHO ARE PRODUCING EGGS AT A COST SUFFICIENTLY LOW TO LEAVE A VERY SATISFACTORY MARGIN OF PROFIT AT NORMAL PRICES FOR THE PRODUCT.

As shown in Table 8, grouping of all the farm records taken during the three-year period discloses that 22 records showed egg production at a cost of less than 18 cents per dozen. From 90 records, 25% of all the eggs in the survey were shown produced at a cost of less than 23¢ a dozen.

Since the weighted average price at which all of the market eggs covered in the three-year study were actually sold, was 28.7¢ per dozen -- THESE LOW COST FARMS, THROUGH GOOD ORGANIZATION AND MANAGEMENT, ARE MAKING AN EXCELLENT MARGIN OF PROFIT FROM THEIR POULTRY ENTERPRISE AND CAN WITHSTAND SUCCESSFULLY AND PROBABLY INCREASE IN COMPETITION AND OVERPRODUCTION AND TEMPORARY PRICE DEPRESSIONS RESULTING THEREFROM.

If so large a group as this can produce eggs at so low a cost, any farm can do so if it is equally well organized and managed, for these successful farms had no peculiar advantage as to location or other physical feature. They were found in every section. THEY WERE SIMPLY BETTER ORGANIZED AND MORE EFFICIENTLY OPERATED.

Table 8 shows that over half of the total egg production covered in the survey was at less than the average cost of 28.1¢ per dozen, and less than the average price received, which was 28.7¢ per dozen. In other words, the poultry enterprise on about half the farms in the survey was a successful business undertaking, making from a fair to a very good profit above total cost of production.

On the other hand, the need for a careful examination of costs and a correction of organization and operation methods on many farms is indicated by the groups in Table 8 whose costs were higher than the average cost of production.

For example, poultry enterprises in the fourth group in Table 8 were not breaking even -- that is, were not being paid in full (see Table 6 and 7) for the operator's own labor, his home grown feed, or his depreciation and interest on investment in the poultry enterprise.

Again, the last three groups in Table 8, comprising nearly 24% of all the records taken, were receiving very little or nothing at all for these non-cash items of cost, and even in some cases were not selling enough eggs to cover all of their cash outlay. It is these farms, of course, that can not continue in the poultry business unless improvements in organization and operation are made.

Study of the last column of Table 8 indicates one major factor in profitable poultry farm operation.

Oregon Experiment Station
Poultry Enterprise Study

Average of 3 Years - 1926, 1927, 1928

Table 8. RANGE AND VARIATION IN THE COST OF PRODUCING EGGS

Ave. Net Cost per Dozen - All Farms - 28.1 cents
Ave. Price Received - Market Eggs - 28.7 cents

Range in Cost per Dozen	No. of Records	AVE. COST PER DOZEN	No. of Hens	% of Total Hens	Cum. % of Hens	Dozens* of Eggs Produced	% of Total Prod-uction	Cum. % of Prod.	Ave. No. of Eggs Per Hen
Below 20¢	22	17.7¢	9,818	3.6	3.6	157,404	4.1	4.1	193
20 - 24	68	22.3	44,981	16.6	20.2	673,656	17.4	21.5	180
24 - 28	127	26.1	84,860	31.3	51.5	1,253,812	32.5	54.0	178
Ave. Cost									
28 - 32	119	29.7	75,312	27.7	79.2	1,055,224	27.3	81.3	169
32 - 36	57	33.8	33,574	12.4	91.6	444,455	11.5	92.8	159
36 - 40	20	38.3	9,578	3.5	95.1	127,403	3.3	96.1	160
40¢ or more	28	43.4	13,214	4.9	100.0	152,206	3.9	100.0	138
Totals and Averages	441	28.1¢	271,337	100.0	--	3,864,162	100.0	--	171

*Fractions omitted.

YIELD IS A VITAL FACTOR

The great importance of good production per hen is more clearly shown in Table 9. Here all the flock records for the three years were grouped according to the average yearly egg production per hen by flocks, and the cost of eggs from high producing flocks compared with that of low producing flocks.

While the total annual cost per hen increases with increasing egg production, the cost per dozen steadily declines. Higher egg production also requires better feeding, as the feed cost column indicates, yet with good hens better feeding pays, as is disclosed by the group of 61 records showing an average annual production per hen of 213 eggs at the highest feed cost, but at the lowest cost per dozen eggs. Separate analysis of each year's results showed exactly the same effects of high yield as is shown in this three-year summary.

SOURCES OF THE POULTRY INCOME

Table 10 is presented to display in detail all of the different sources of income from the poultry flocks on the average farm over the entire three-year period of the study. On many farms, of course, there were other sources of income than from poultry alone, but this factor, diversity in production, is reserved for discussion in the final publication. Table 10 shows that the

average annual receipts per hen from commercial eggs alone was $4.05, which constituted almost 82% of the total poultry receipts. By returns from other by-products indicated, 91¢ per hen was received, making total annual receipts $4.96 per hen. The item Flock Appreciation, accounts for the inventory increase in the size and value of the flock at the end of the year over the beginning of the year, due to extra pullets added beyond those required to maintain the original size of the flock.

Oregon Experiment Station
Poultry Enterprise Study.

Average of 3 years - 1926, 1927, 1928.

Table 9. THE RELATION OF PRODUCTION PER HEN TO COST

Production Per Hen*	No. of Records	Ave. Eggs Per Hen	Net Cost Per Hen	Net Feed Cost Per Hen	Net Cost Per Dozen (Cents)
Below 140 eggs	53	128	$3.68	$1.84	34.5
140 to 160 eggs	91	152	3.81	2.01	30.1
160 to 180 eggs	128	169	3.91	2.07	27.8
180 to 200 eggs	108	187	4.11	2.23	26.3
200 or more eggs	61	213	4.58	2.42	25.8
ALL FARMS	441	171	4.00	2.11	28.1

*Based on average flock for year.

Oregon Experiment Station
Poultry Enterprise Study.

Average of 3 years - 1926, 1927, 1928

Table 10. POULTRY RECEIPTS

Receipts	Average Receipts Per Farm	Average Receipts Per Hen	% of Total Poultry Receipts
Commercial Eggs	$2329.58	$ 3.79	76.4%
Hatching Eggs*	95.44	.15	3.1
Eggs Consumed*	43.48	.07	1.4
Eggs Set*	21.93	.04	.7
TOTAL EGG RECEIPTS	2490.43	4.05	81.6
Cull Hens	146.66	.24	4.8
Broilers and Cull Pullets	117.68	.19	3.9
Baby Chicks	21.05	.04	.7
Pullets	27.81	.04	.9
Poultry Consumed	24.64	.04	.8
Hatching Egg Premium	57.69	.09	1.9
Flock Appreciation	159.69	.26	5.2
Miscellaneous Receipts	5.29	.01	.2
TOTAL FOR BY-PRODUCTS	560.51	.91	18.4
TOTAL POULTRY RECEIPTS	$3050.94	$4.96	100.0%

*At commercial egg value.

COMMERCIAL EGG PRODUCTION IN OREGON IS PROFITABLE

Heretofore this and previous reports on this project have dwelt only upon the cost of production. A knowledge of costs is a fundamental necessity for such analysis and measurement of the processes of any business, as will permit a determination as to its weaknesses in organization and operation, and the method and extent to which these weaknesses may be corrected.

Until all of the evidence as to cost was obtained and verified, the question of profits has been left in the background. Profits depend primarily on cost, secondarily on price. Let us summarize and translate our findings as to cost and price, into the language of profits.

The actual net price received by the farmer for all of the eggs (nearly 4 million dozen) sold from the farms covered in this three-year study, was 28.7¢ per dozen, and the net cost for producing these eggs, as we have shown, was 28.1¢.

On the basis of these facts, this business as a whole paid back to the producers in cash the following:

(1) All of his cash costs.
(2) All depreciation suffered.
(3) Good farm wages to operator and family for all time expended.
(4) A profit of 5% interest on the total investment.
(5) A clear profit above this of .6¢ per dozen.

That the business of producing commercial eggs in Oregon is, as a whole, a profitable business, can not be questioned. This careful three-year study of representative commercial egg producing farms in all major sections of the state gives sound basis for such a conclusion. However, not all farmers shared equally in these returns. Many earned very much higher profits than the average, while others suffered heavy losses and failure. Table 11 supplies, in different colors, a good picture of both the bright and the dark side of the enterprise.

The term profit as here used is the return above all costs and beyond the earning of 5% interest on the investment. It is a clear profit, or "velvet" as business men sometimes express it. Returns are also expressed in other terms, as defined below the table.

It will be observed that a small group made an average clear profit of $1.92 per hen. This is a profit of 60% above the total cost of production of this group. It is a return to the operator for his labor of $2.75 per hen after all other costs, including interest on the investment, have been paid, or a return of $3.01 per hen for both labor and investment.

A large group made an average clear profit of $1.00 per hen, or 29% profit above the cost of production for the group. This is a labor return of $1.75 per hen, or a return for both labor and capital investment of $1.96 per hen, after all other costs have been paid.

These first two groups combined constitute 19% of all the records taken, and the whole group obtained an average clear profit of $1.15 per hen, or about 36% profit above the cost of production of the group.

On the other hand, at the bottom of the table is found the highest cost group, which is suffering an annual loss of $2.00 per hen. In this group the receipts from poultry sales, after paying interest and all other costs, lack 70¢ per hen of being sufficient to pay for the labor of the operator actually expended upon the enterprise. In this group it is obvious the poultry enterprise can not survive unless radical improvements are made in organization and operation immediately.

The last two groups combined, constituting 18% of the total records taken, show an average annual loss of $1.34 per hen, and in this group receipts are still insufficient after paying all other costs to pay for the labor of the operator expended on the enterprise.

Oregon Experiment Station
Poultry Enterprise Study

Average 3 years - 1926, 1927, 1928.

Table 11. PROFIT AND LOSS*

Profit or Loss Per Hen	No. Records	Percent of Total	Cum. % of Total**	Ave. Profit Per Hen	Labor Return Per Hen	Labor & Cap. Return Per Hen	Ave. Net Cost Per. Doz.
1.50 or more profit	19	4.3	4.3	$ 1.92	$2.75	$3.01	18.9¢
.75 to 1.50 profit	65	14.8	19.1	1.00	1.75	1.96	22.5
0 to .75 profit	142	32.2	51.3	.36	1.16	1.38	26.1
AVERAGE - ALL FARMS	441	--	--	.05	.93	1.16	28.1
0 to .75 loss	134	30.4	81.7	-.30	.61	.83	30.1
.75 to 1.50 loss	57	12.9	94.6	-1.11	.02	.27	36.2
1.50 or more loss	24	5.4	100.0	-2.00	-.70	-.42	43.8

* Profit as here used, is the money return over and above the total cost of production - (that is, above all cash costs, and all non-cash costs such as depreciation, wages for operator, interest on investment, etc., See Tables 6 and 7)

Loss is the amount by which receipts from all poultry products failed to meet total cost of production.

Labor return is the return above all costs other than for operator's and family labor.

Labor and capital return is the return above all costs other than for operator's and family labor and interest on capital investment.

** Cumulative % of total number of records.

FACTORS THAT DETERMINE COSTS AND PROFITS

As indicated, a very large percentage of our Oregon commercial egg producers are highly successful. This is not a result of accident but of design.

If 20 out of every hundred producers can make from 39% to 60% clear profit above cost in this business, why should not every farmer be able to do so? Obviously there is no necessity for failure with so large a group of successful farms to point the way. The requirement involved is to determine and adopt more completely throughout the enterprise the efficient methods these farms employ.

What are the factors in the organization and operation of these successful farms that influence cost and determine profit? The marked effect of yield or production per hen (See Table 9) has already been shown, but what are the factors influencing yield? Method of renewing the flock, character of feed, type of housing, etc., are factors involved no doubt. But there are also many other factors beside yield.

What is the effect of the size of the flock upon cost? What profit is there in hatching-egg production? How does the diversified poultry farm compare with the specialized farm? What are the best means of diversifying? What is the effect of disease and methods of sanitation? What is the effect of fluctuation in monthly production, or of the quality of eggs produced, upon the profits? How does the farm lay-out influence efficiency and cost?

These and many other factors bearing upon reduction of costs, remain to be discussed in the final publication on this project. Meanwhile a thorough study and knowledge of his individual costs should be of great value to every poultryman.

INDIVIDUAL FARM COSTS

To be of the greatest possible service to the poultrymen cooperating in this study, a report of his individual costs in comparison with the average and with the high and low cost groups, is returned to each farmer. These individual cost figures are confidential and go only to the one man concerned and are not published or accessible to anyone else. The time and expense required to render the individual cost service are justified by the importance of the information to the individual farmer and warrant his careful study of the figures.

The last page of this report shows in the last column of the table written in in ink, the production costs respectively, of each farmer cooperating in the study. This sheet covers costs for the year 1928 only and may be compared with the individual cost sheets received in previous years.

Comparison, item by item, should indicate where the individual costs are satisfactory and where they may be improved and thus be helpful in making the poultry enterprise a better business.

For those readers who are not cooperators, comparison of high, low and average costs by items as shown, should be of interest.

---oOo---

O R E G O N E X P E R I M E N T S T A T I O N
Poultry Enterprise Study

INDIVIDUAL COST REPORT FOR YEAR 1928
(Confidential)

Farm of _____

Address _____

Cost Item	Average Cost Per Hen			
	Fifteen High Cost Farms	Fifteen Low Cost Farms	Average of All Farms	YOUR FARM
	Dollars	Dollars	Dollars	Dollars
Hired Labor	.03	.00	.03	
Operator and Family Labor	1.09	.64	.79	
Horse Labor	.02	.01	.02	
Purchased Feed	2.57	2.10	2.40	
Farm Grown Feed	.24	.38	.23	
Litter	.06	.04	.05	
Flock Decrease	.56	.09	.22	
Baby Chicks	.17	.12	.14	
Auto and Truck Operation	.07	.07	.07	
Misc. (Frt, Crates, Fuel, Taxes, etc.)	.59	.48	.44	
Depreo. on Bldgs. & Equip.	.19	.15	.17	
Interest on Invest. (5%)	.28	.21	.22	
TOTAL GROSS COST	5.87	4.29	4.78	
Receipts From By-Products	.95	1.26	.83	
TOTAL NET COST PER HEN	4.92	3.03	3.95	
TOTAL NET COST PER DOZEN	.416	.197	.279	
Average Number of Hens	503	510	622	
Pullets in. Flocks*	59%	57%	62%	
Eggs per Hen	142	185	170	

*Based on the flock on hand November 1, 1927.