THE CHICKEN BUSINESS IN CALIFORNIA

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The chicken business

in California . . .

. . . either for egg production or chicken meat production, is a very intensive enterprise. A large number of birds are raised in a small area and are fed purchased feed. Most production is on specialized poultry farms, but equally intensive methods are used when the enterprise is operated as a side line.

MANY PEOPLE enter the chicken business each year and many fail, but some poultrymen continue in business and make a good living over the years. The margin between income and costs is small. Efficiency of production must be high to yield a satisfactory income.

THIS CIRCULAR endeavors to answer the question: "What may I reasonably expect from my chicken business?"—a question asked by established poultrymen and those considering entering the business. The answer may be based on averages of records in poultry management studies over the last 26 years. These records indicate that

- Profit in any year varies widely among individual poultry farms.
- Profit varies from year to year in profit cycles.
- Planning for adequate size of business and facilities will help attain the desired income.

Averages of costs, income and earnings are given, and samples of inputs and costs which will help in planning and improving your business.

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Profit cycles

California, with its large and growing nonfarm population, furnishes a market for more eggs and poultry than are produced in the state. The long-time outlook for the chicken business is fairly good. But production can quickly expand, or consumer purchasing power can decline, to a point where prices are depressed and only the best operators can make a living. Under low prices many fail and production is reduced. With the smaller supply, prices improve and the business becomes profitable again. These profit cycles are short, usually about three years from good year to good year. But the depression from 1931 to 1933 resulted in almost six years of low earnings. The war and postwar period brought good earnings in all years except 1946 and 1950.

The beginner would do well to start in a low-profit year with a better one to follow. However, he can start at any time if he is financially prepared to weather a brief period of no profits. As this is written in early 1951, profits have improved over the previous year and should continue good for a year or two. But if history repeats, good earnings will result in overexpansion and lower prices and profits, perhaps by late 1952 or in 1953, provided an all-out war is avoided. Then would be a better time to buy in—chicken farms may be for sale at lower prices if further inflation has not occurred. Profits should again improve after such a period of low prices unless there is a serious depression.

Outlook

Successful operators in the chicken business continuously watch the egg, poultry meat, and feed prices immediately ahead. The egg-feed ratio and the poultry-feed ratio indicate what to expect in the way of profit opportunities (see page 4).

Table 1. California Chickens, Eggs, Prices, Cash Receipts, and Cost Ratios

	Hens and pullets January 1	Eggs produced	Price per dozen eggs	Cash receipts, eggs	Egg-feed ratio	Total chickens and broilers raised	Average price per pound, fryers*	Poultry-feed ratio	Cash receipts, all chickens
	thousands	millions	cents	$1,000	pounds	thousands	cents	pounds	$1,000
1941	13,665	1,743	27.8	36,233	13.9	33,628	18.3	9.0	13,648
1942	15,784	2,001	34.0	51,283	14.6	36,958	26.0	9.7	19,900
1943	16,588	2,225	42.2	71,424	15.1	45,702	30.0	10.1	31,548
1944	18,502	2,538	37.6	72,975	12.3	36,203	30.0	8.4	27,513
1945	16,377	2,302	43.4	75,805	14.1	48,640	30.0	9.0	35,282
1946	17,512	2,345	44.8	80,229	12.3	35,109	34.0	8.0	30,191
1947	16,310	2,389	53.5	97,593	12.1	39,821	36.0	7.3	36,557
1948	17,568	2,614	54.8	110,605	11.9	41,803	38.0	7.3	41,506
1949	18,531	2,985	51.4	119,591	12.5	50,750	31.0	7.1	41,401
1950	21,314	3,233	41.5	104,857	10.3	51,954	30.8	6.6	46,141

Source: California Crop and Livestock Reporting Service, California Annual Poultry Hatchery Report, Summary for 1950.

* Fryers of heavy and cross breeds of around three pounds. These are called broilers in eastern states and in government reports.

EGG-FEED or POULTRY-FEED RATIO

To get the egg-feed ratio at any given time, divide the price per dozen being offered for eggs, by the cost per pound of feed. Thus if eggs are selling for 60 cents a dozen and feed costs 5 cents a pound, the egg-feed ratio is 12—one dozen eggs will buy 12 pounds of feed.

The poultry-feed ratio is arrived at by the same method, using the price per pound of poultry by the cost per pound of feed. If chickens are selling for 40 cents a pound and feed costs 5 cents a pound, the poultry-feed ratio is 8—one pound of chicken will buy 8 pounds of feed.

The egg-feed ratio is the main figure to watch where the chief interest is in an egg enterprise. When this ratio is high, as it was in 1943 (15.1), the production of eggs is relatively profitable; but when this ratio is low, as it was in 1950 (10.3), there is not so much profit. This may be seen in table 2 (pages 6 and 7), which shows earnings on actual poultry farms.

The poultry-feed ratio is the figure to be watched by the producer of poultry meat. The greater the number of pounds of feed a pound of chicken will buy, the larger the profit margin.

If the outlook is good, it may be wise to go ahead with larger business and personal outlays. If poor, all but essential business expenditures should be curtailed during the bad period. Generally, it will pay to operate to comfortable capacity in good times or bad as long as income is a little above costs. But when income will not pay feed costs and other bills, it may be better to discontinue or liquidate.

There are three types of chicken enterprises that may be suitable for the beginner

In farming an enterprise is considered as one crop or one kind of livestock or poultry raised for profit. A single enterprise may be the entire business of a specialized farmer, or only one of several for the diversified farmer. A poultry enterprise may be the farmer's entire farm business, as on the specialized poultry farm, or it may be carried on in connection with an orchard, grain, or general farm.

There are three main types of commercial chicken enterprises in California:

Egg Production
Egg and Meat Production
Chicken Meat Production

Breeding and hatchery enterprises are not numerous but they are important as a source of the baby chicks for profitable commercial production. Since a high degree of technical ability and considerable experience and capital are required to run a breeding farm and hatchery, these enterprises are not suited to the beginner.

Egg enterprises

The egg-producing enterprise in California consists mainly of the keeping of hens, usually White Leghorns, for market-egg production. Occasionally part of the flock may be used in the spring for the production of hatching-eggs. Some meat is produced as a by-product through the raising of replacements and sale of cull hens, but market-eggs are the main product. The first section of table 2 shows averages for about 95 commercial egg records for 11 years.

Size. Egg flocks on which records were obtained had an average size of 2,143 hens over the ten years 1940–1949. Some were as small as a few hundred, and some as large as 12,000 hens. The average number died and lost during a year was 17.4

per cent, or about 370 hens annually in a flock of 2,143 hens. Notice that this percentage has declined slightly in recent years. Notice also that the number culled and sold has been increasing and averaged over 74 per cent. This means that about 92 per cent of the average number of hens go out the flock each year, from deaths and culling, and must be replaced by new layers if the flock is to be maintained.

Production. Egg production per hen shows a slight recent upward trend, and for the ten years 1940–49 averaged 180 eggs, or 15 dozen.

Earnings. Earnings are shown in two ways, as management income and as farm income, in table 2. Management income is the amount by which total income exceeds total costs, with the latter including the value of the operator's own labor, and interest on the total investment at 5 per cent. Farm income is the amount by which income exceeds cash costs and depreciation. It is the amount the operator receives from his business for his management, labor, and invested capital. It is the amount he has left for living and payment of debt.

Farm income for the egg flocks varied from a low of $1.03 per hen in 1940 to a high of $3 in 1943, and averaged $2.28 per hen. This ten-year period (1940–1949) was a profitable one with high consumer purchasing power. The previous ten years (not shown in this table) were not as good: a high in 1938 of $1.38, a low in 1933 of $0.44 and an average farm income for the ten years (1930–1939) of $0.75 per hen. However, a dollar then would buy 52 per cent more than during 1940–49.

Combined egg and meat enterprises

The combined egg and meat enterprise is composed of a laying flock (sometimes of the heavy, dual-purpose breeds) and considerable production of broilers and fryers for meat. The second section of table 2 shows averages for about 10 records on this type of enterprise over 10 years. In the combination flocks, egg production represented about two-thirds of the business and meat production one-third, although this may vary from flock to flock and year to year.

Size. The average number of hens per flock was smaller as compared to the egg flocks, but the net stock income per hen was larger—an average of $3.18 as compared to $0.41 in the egg flocks. This net stock income is the value of the poultry raised in excess of the cost of chicks and other stock bought. Notice that quantities of feed and labor per hen are higher in the combination egg and meat flocks, as are total income, costs, and average farm income.

Earnings. Farm income in the egg and meat combinations varied from a low of $1.08 per hen in 1940 to a high of $4.55 in 1945, and averaged $2.96 for the ten years. This is more per hen than for the strictly egg flocks, but represents more business. A man cannot care for as many hens with more young stock.

Comparison of egg and combined enterprises

Using data from table 2, earnings from a man-year of labor may be computed for comparison.

In egg flocks, requiring 1.8 hours per hen, one man could care for about 1,600 hens in 2,920 hours, or 365 eight-hour days. At the ten-year average of $2.28 a hen, net farm income could be $3,648 a year.

In the combination flock, requiring 3.1 hours per hen, one man could care for 941 hens plus the young meat birds. At $2.96 a hen, net farm income would be $2,785. These figures may indicate the reason most California poultrymen stress commercial egg production.

Actually there is no clean-cut division between the two types of enterprises. In recent years most of the egg men have

Table 2. Poultry Management Study Record Averages

Record year	Average number hens per flock	Per cent of hens		Eggs		Feed		Hours of labor per hen	Net stock income per hen	Total income	Total cost	Management income	Farm income
		Died and lost	Culled and sold	Number laid per hen	Price per dozen, cents	Pounds per hen	Cost per cwt., dollars		Dollars per hen				
Commercial egg flocks													
1940	1,767	20.8	60.9	178	20.5	110	1.65	1.8	.11	3.41	2.91	.50	1.03
1941	1,795	18.7	63.1	174	28.2	115	1.89	1.9	.27	4.68	3.45	1.23	1.80
1942	2,000	18.7	65.2	175	35.2	115	2.23	1.8	.26	5.69	4.11	1.58	2.33
1943	2,328	17.5	76.2	176	41.5	115	2.52	1.9	.39	6.86	4.62	2.24	3.00
1944	2,427	18.8	83.3	183	38.6	119	2.88	1.8	.43	6.75	5.33	1.42	2.25
1945	2,401	16.1	81.1	179	42.6	120	2.94	1.7	.60	7.48	5.55	1.93	2.78
1946	2,406	14.6	89.1	166	44.8	118	3.64	1.6	.43	7.11	6.45	.66	1.52
1947	2,185	15.5	76.7	187	53.1	123	4.22	1.7	.44	9.26	7.49	1.77	2.81
1948	2,167	15.7	73.7	186	56.1	127	4.32	1.9	.68	9.69	8.02	1.67	2.85
1949	1,952	17.6	76.6	195	48.9	129	3.83	1.7	.46	8.67	7.48	1.19	2.43
10-yr. average, 1940–1949	2,143	17.4	74.6	180	41.0	119	3.01	1.8	.41	6.96	5.54	1.42	2.28
1950	1,881	16.3	76.5	202	42.8	129	3.63	1.6	.49	7.93	7.06	.87	2.13

Source: Poultry Management Studies are based on detailed records provided by poultrymen and compiled by local offices of the Agricultural Extension Service in several counties. Above figures represent averages of 95 egg flock records, and seven combined egg and meat flock records, for the ten years. There were no combined records in 1950.

Table 2. Poultry Management Study Record Averages (continued)

Record year	Average number hens per flock	Per cent of hens		Eggs		Feed		Hours of labor per hen	Net stock income per hen	Total income	Total cost	Management income	Farm income
		Died and lost	Culled and sold	Number laid per hen	Price per dozen, cents	Pounds per hen	Cost per cwt., dollars		Dollars per hen				
Combined egg and meat flocks													
1940	1,114	22.8	69.3	157	21.0	166	1.74	3.7	1.53	4.80	4.78	.02	1.08
1941	1,178	26.2	80.6	181	28.4	162	2.03	3.7	1.65	6.42	5.35	1.07	2.03
1942	1,062	28.1	73.9	168	34.3	148	2.32	3.5	1.72	7.26	5.68	1.58	2.79
1943	535	22.3	93.2	165	43.3	184	2.74	3.9	4.00	10.25	8.49	1.76	3.79
1944	783	29.2	100.9	175	37.4	182	3.23	2.9	2.90	9.02	9.10	−.08	1.93
1945	554	20.4	185.5	187	48.3	240	3.26	3.8	6.50	14.77	12.86	1.91	4.55
1946	1,056	24.4	102.6	192	45.9	189	3.61	2.1	2.30	10.27	9.58	.69	2.26
1947	1,110	16.0	84.9	197	56.9	187	4.27	1.9	3.43	13.53	10.97	2.56	4.49
1948	913	18.9	110.6	191	60.9	190	4.87	2.9	3.64	13.84	13.48	.36	3.03
1949	871	20.6	127.6	220	54.0	219	4.26	2.6	4.17	14.52	13.58	.94	3.60
10-yr. average, 1940–1949	918	22.9	102.9	183	43.0	187	3.23	3.1	3.18	10.47	9.39	1.08	2.96

Source: Poultry Management Studies are based on detailed records provided by poultrymen and compiled by local offices of the Agricultural Extension Service in several counties. Above figures represent averages of 95 egg flock records, and seven combined egg and meat flock records, for the ten years. There were no combined records in 1950.

been buying baby pullets for raising replacements so have sold very little poultry meat except cull hens. However, some purchase straight-run chicks and sell the cockerels for meat, and occasionally put in an additional brood or two for meat. Also the combination man may vary his operations at times by raising fewer meat birds and concentrating more on eggs.

The figures in table 2 are probably from better-than-average poultrymen. In no year since 1925 (when records were started) was there an average minus net farm income for all records, although there were minus management incomes for the three years, 1931 to 1933. But these averages do not show the range in individual flocks. In every year some records show a minus management income or loss, and in most years a very few show a minus net farm income.

Success of a poultry enterprise is a

Table 3. Poultry Meat Study Record Averages

	Los Angeles County		San Diego County, 1949	Los Angeles and Fresno counties, 1950
	1947	1948		
Average number of birds raised per flock	15,990	14,089	3,843*	33,018
Per cent mortality	11	11	2	10
Average weight per bird sold, pounds	3.4	3.5	3.5	3.3
Average price received per bird sold	$1.29	$1.39	$1.09	$0.99
Pounds of feed per pound poultry produced	4.4	4.1	3.4	3.2
Cost of feed per hundred pounds	$4.96	$5.06	$4.93	$5.01
Hours of labor per bird raised	.14	.10	.11	.07
Average value per hour of labor	$0.77	$0.88	$1.00	$0.93
	Cents per lb.	Cents per lb.	Cents per lb.	Cents per lb.
Cost per pound live poultry produced				
Feed	21.9	20.9	16.8	16.3
Labor	3.3	2.6	3.0	1.9
Fuel and miscellaneous	1.3	1.0	.7	1.6
Depreciation	.7	.7	.5	.9
Interest on investment	.8	.7	.4	.4
Chick cost	5.7	5.9	5.5	5.6
Total cost	33.7	31.8	26.9	26.7
Less miscellaneous income	.9	.5	.1	.0
Net cost per pound poultry produced	32.8	31.3	26.8	26.7
Average value per pound produced	38.1	40.4	30.2	29.9
Management income per pound	5.3	9.1	3.4	3.2
Farm income per pound, including value of operator's labor and interest	8.9	11.7	6.8	5.2

Source: Poultry Meat Studies, conducted by the Agricultural Extension Service.
* The San Diego study covered a single brood over a period of about three months, while the others covered a whole year with several broods.

matter of individual management and perhaps some luck. Observations indicate that the best poultrymen show a profit every year; the average have a profit in good years and a loss in bad—perhaps just make their wages and interest over a long period of years; and poor poultrymen show a loss practically every year as long as they remain in the business.

Chicken meat enterprises

Specialized meat production in former years was a less stable business than the other two types of enterprises. There were times when the price of fryers scarcely covered the feed cost, and production had to be discontinued. But during and since World War II, increased consumption, population, and purchasing power have resulted in fairly stable and profitable poultry meat production in California. A considerable amount is also shipped in from the midwest to meet California's growing demand. With adequate finances and management, this enterprise should be successful for some time in the future.

Most meat producers specialize in raising heavy breed or cross-bred chicks to the fryer stage of around 3½ pounds. Also, since it became possible to sort day-old chicks as to sex, egg producers now use the day-old pullets for replacements, making available to meat producers the day-old Leghorn cockerels at a much lower cost than straight-run chicks. These cockerels are raised to the broiler stage of about 2 pounds.

Studies of poultry meat enterprises are summarized in table 3.

Hours of labor per fryer raised in the four years covered by these studies were .11. Hence in 2,920 hours with continuous year-round operation, a man should be able to raise around 26,400 birds, or 89,760 pounds of meat a year. At 5.2 cents a pound farm income, this would have meant a total net farm income of $4,668 in 1950.

For comparison, the commercial egg man, making a net farm income of $2.13 per hen in 1950, would have made $4,260 on 2,000 hens.

How big should the business be in order to provide a living for the family?

Any chicken business must be large enough to produce the desired income. If it is a side line to supplement income from a pension, a small orchard, or a part-time job, it need not be as big as if it must provide a complete family living.

Compared with other farm enterprises, it takes a relatively small investment to get into poultry raising on a small scale. Thus the temptation to start a small chicken ranch has a great appeal to many inexperienced people. Flocks ranging in size from a few dozen to a few hundred chickens may be justified for providing eggs and meat for family consumption, and for "egg money" for the farmer's wife. But as a sole source of income they are inadequate.

Egg farm

A minimum of 2,000 hens is recommended for a commercial egg farm that is the main support of an average California family. It is a mistake to start with inadequate capital on a much smaller scale in the hope of expanding to adequate size from future earnings. If the enterprise is too small, there will not be enough surplus over operating and living costs for extra buildings and more stock.

A good commercial egg flock should produce an average net income over the years of $1.50 per hen, under current and near-future conditions, as compared to $1 in the 1930's. Hence 1,000 well-managed hens should provide a $1,500 income—some years more, some less.

A goal of $2,000 prewar, or $3,000 now, for family living calls for a commercial egg flock averaging about 2,000 hens. One man with a little help from his wife or children should be able to do practically all the work.

Meat farm

The same necessity of adequate size applies to a fryer farm. Do not count on more than 12 cents a bird or 4 cents a pound of net farm income. Hence, a net income of $3,000 a year means raising about 26,000 birds or 80,000 pounds a year. The standard in table 7 is an illustration based on raising 26,400 birds from 30,000 baby chicks started.

Combination farm

A combination of hens for egg production and fryers from heavy breeds can be in any proportion of the one-man units described above. But heavy hens and chicks require a little more space and more feed per bird than Leghorns, so 10,000 chicks brooded, and an average of 800 heavy hens for the year would utilize the available space and operator's labor on the chicken farm illustrated in the drawing on page 12. Calculations show the combination would not be as profitable as commercial egg production with a lighter breed, except when production of fryers and heavy hens is exceptionally profitable because of high meat prices, or when direct retail selling is done, and also when hatching-eggs are sold through most of the year.

Advantages of the two-man farm

The advantages of a larger chicken business should not be overlooked in planning the future chicken farm. The 365-day-a-year routine is confining. Yet a single worker can handle twice the birds on an emergency basis for a short while. A two-man egg farm of 4,000 to 6,000 hens not only provides a living for two families but also an opportunity for vacations and relief in case of sickness. The larger business also justifies better equipment and larger-scale buying and sometimes grinding, mixing, and storing of feed. An owner and hired worker, or father-and-son partnership can result in a more profitable and pleasant business. So it might be well to get a farm or piece of land that will permit future expansion of the business.

Careful planning before purchase will tend to help the chicken farm pay off

Location. Successful commercial chicken enterprises can be located in practically any part of California. It is best, however, to avoid the handicap of excessive transportation costs on eggs and feed. A location near a good local market or one of the large consuming centers usually entails high land costs, but always insures access to market outlets. But a location in the path of a growing city should be avoided because of the risk of being forced out. Most commercial chicken farms are located within a radius of 60 miles around large consuming centers, such as Los Angeles, San Francisco, Sacramento, Stockton, Fresno, and San Diego. In more distant locations, egg and poultry prices are usually lower to the extent of shipping costs to the larger markets and sometimes feed costs are higher. There are a few local areas, however, where eggs and poultry are shipped in, and where more local production would be profitable. It is well to locate in an area where there are good feed distributors and egg and poultry marketing agencies, such as branches of one of the poultry coöperatives which serve most of

the commercial poultry districts. Patronage dividends of coöperatives sometimes provide quite a little additional income.

Climate. Insofar as production efficiency is concerned, the year-round climate is not an important factor in selecting a location. There are successful enterprises in many districts in California—from the cool coastal region through interior valleys with hot summers to the mountains with severe winters; from the dry, desert region in the southeast to the high-rainfall region in the northwest. With housing and other facilities suited to the climate, the chickens will not be affected seriously. The operator should consider climate more from the standpoint of where *he* would prefer to live and work.

Land. The amount of land required for a specialized poultry enterprise is small and its quality is unimportant, except that it should be well-drained. Land near a city is higher in price than that farther out but has advantages of lower hauling costs. It is important to be on an electric power line to have electricity for lights in the laying houses to lengthen winter days. It is not so important to be on a gas main although natural gas is usually a cheaper fuel for brooding and for use in the home than electricity or tank gas. The water supply need not be large, but it must be adequate and dependable. A good well with enough water for chickens, green feed, garden, and dwelling is essential.

Space requirements. The poultry farm capacity with conventional "on the floor" housing should be based on 3.5 square feet (including brooder pens) per average hen of the Leghorn breed, and 4.5 square feet per bird of the heavy breeds.

Adequate feeding space is an important consideration. At least 6 inches of usable hopper space per hen at all times should be provided. A hopper 5 feet long, usable on both sides, would provide 10 feet of feeding space, enough for 20 hens.

An egg enterprise averaging 2,000 hens will require floor space for 2,300 in the fall months after replacements are made.

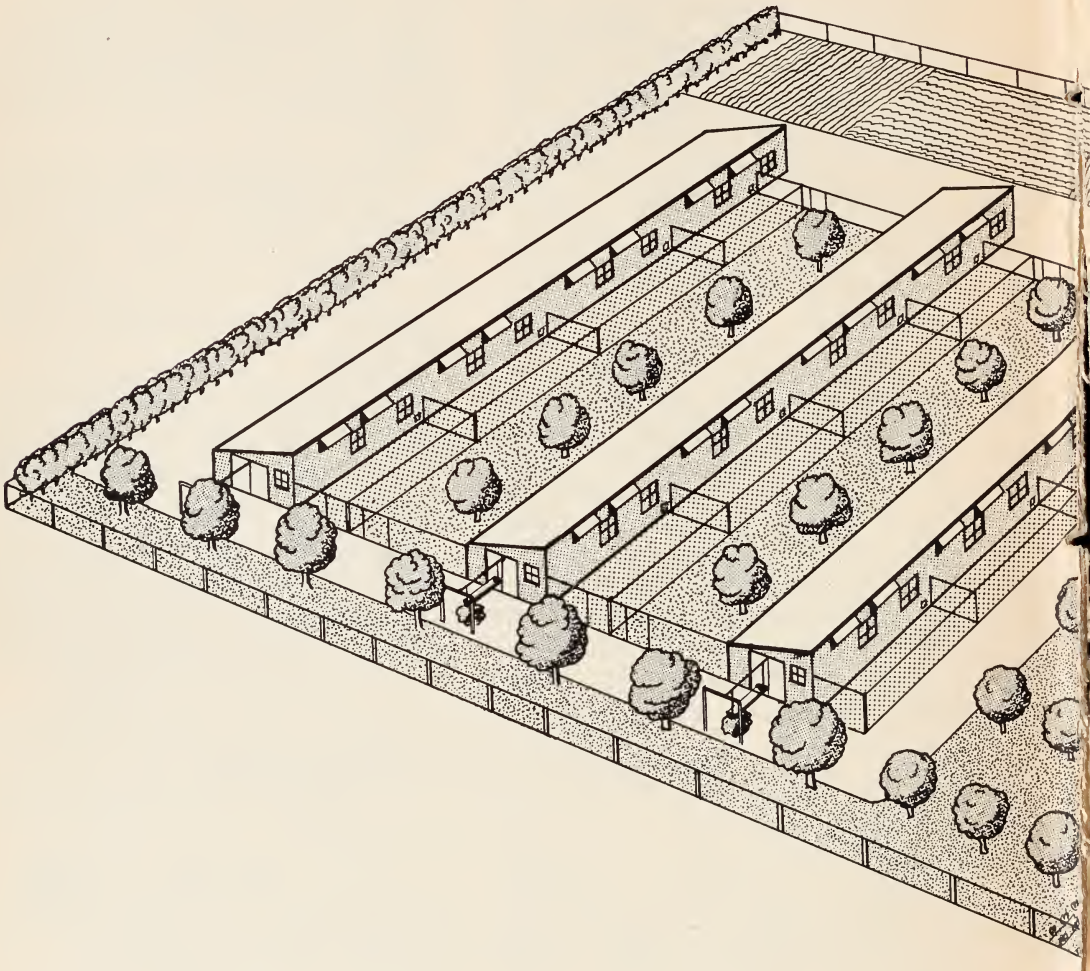
Table 4 gives floor space recommendations to cover a number of conditions.

Housing for birds. In California, shelter for protection from rain and heat is a requirement in chicken and egg production. Sunlight, ventilation, and good work arrangements are important.

Table 4. Poultry Farm Floor Space Recommendations

Battery floor space		On the floor with small yards					Feed hopper space per bird
		Leghorns			Heavy breeds		
Age in weeks	Sq. ft. per bird	Age in weeks	Sq. ft. per bird	Pen capacity 18′ × 20′	Sq. ft. per bird	Pen capacity 18′ × 20′	
0–1.....	.06	0–6	.5	720	.6	600	2″
2–3.....	.13	.....	...	...	...	...	..
4–5.....	.17	7–12	.8	450	1.0	360	4″
6–7.....	.25	.....	...	...	...	...	..
8–9.....	.31	13–18	1.4	260	1.8	200	6″
10–12.....	.42	.....	...	...	...	...	..
12.....	.52	19–24	2.0	180	2.5	144	6″
Individual cages							
Hens.....	1.5	25 and over	2.5	144	3.5	103	6″

Here is a possible layout for a



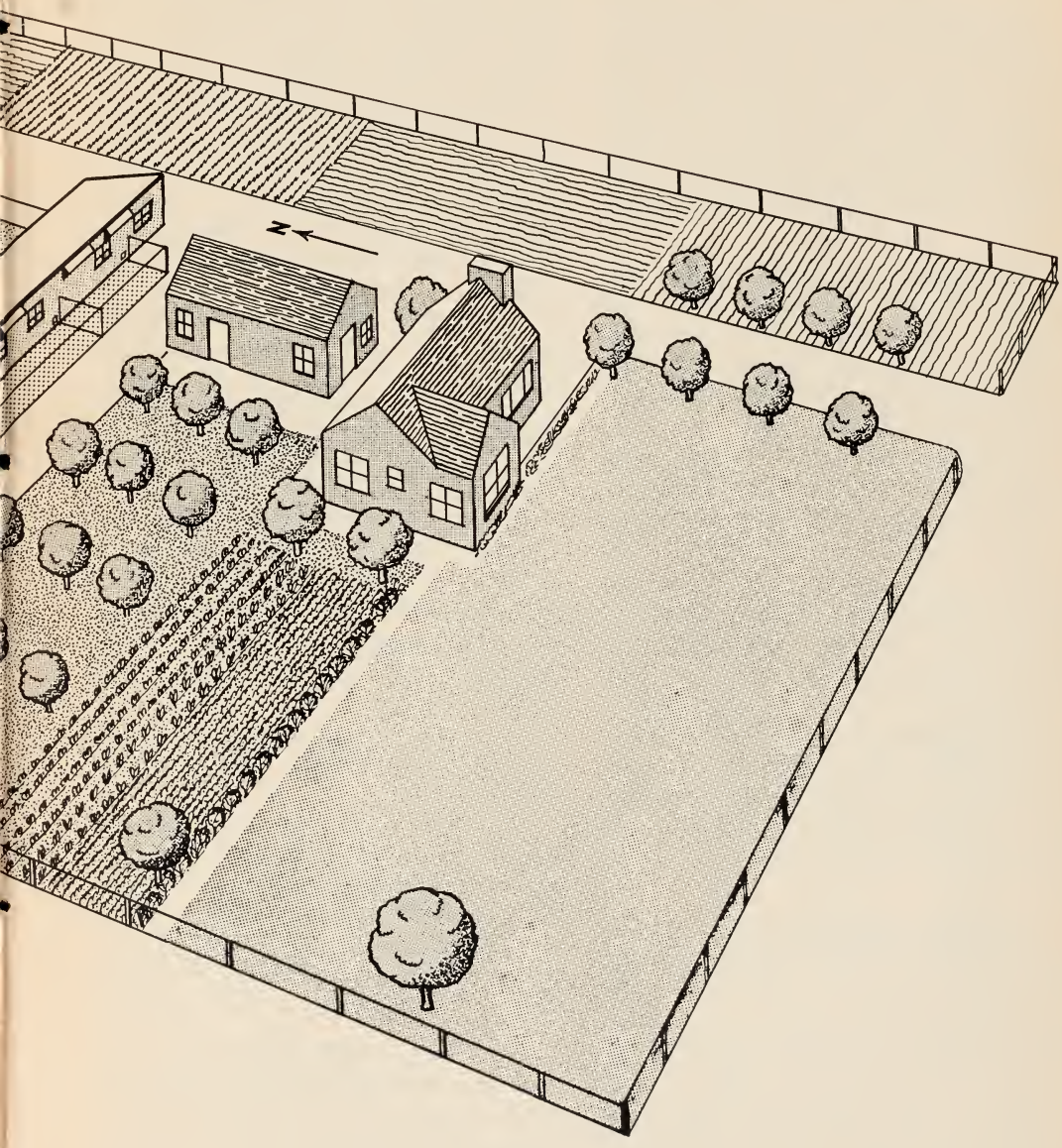
This illustrative layout includes three chicken houses with feed rooms, a service building with egg room, and a dwelling. The particular layout shown uses 2.12 acres of land. This could be condensed or expanded to fit the land available.

This layout should be considered an example and not a universal recommendation, since sizes of pens and houses and their arrangement should be varied to fit the size and shape of the particular farm.

About the same area would accommodate fourteen 144 bird cage houses plus brooding and pullet houses.

2,000-hen commercial egg farm

A detailed discussion of the layout shown here, together with figures for recommended floor space, probable investment costs, and other factors begins on the following page.



A shed-roof type of poultry house 18 or 20 feet wide and of varying length is often used and is satisfactory in any section of California. The front is open for sunlight and ventilation, but can be closed against driving rains. A south facing is preferred since it admits maximum sun in the winter and minimum in the summer. Other types of houses and facings designed to fit the terrain or locality are equally satisfactory and will give good service.

Here is a discussion of the illustrative layout for a commercial egg farm

The 2,000-hen commercial egg farm is suggested as the most suitable goal for the farmer who is in the chicken business to make a living. Over the years, with good management, it will provide as much net income and gainful employment as any other enterprise of similar size and investment.

Buildings. The commercial egg farm illustrated has 6,912 square feet of pen space in three houses, about 2.7 square feet per hen at the maximum of 2,800 hens, or 3.5 square feet per average hen for the year.

The layout has three chicken houses each 18′ × 140′. Each chicken house contains four pens each 18′ × 32′, a feed room 12′ × 18′, and has a 12-foot concrete yard along the front of the pens. The chicken house nearest the dwelling is equipped for brooding and would be used each spring for the brooding of replacements.

The suggested plan includes a service building 20′ × 50′. This allows for a two-car garage, a shop and storage room 18′ × 20′, an insulated egg room 12′ × 14′, and the pressure water system in a room 6′ × 12′.

Possible adaptation. The commercial egg farm layout, illustrated on page 12, could be used for fryer and broiler production by brooding in two of the houses. A total of around 20,000 chicks can be raised in a year—with some increase in rearing space and brooding in all three houses this could be increased to 30,000. An advantage of using an egg farm for fryer production would lie in ease of shifting to egg production when fryers were less profitable.

There is great variation in the sizes and types of fryer-broiler enterprises. Many start with a few battery brooders in a garage or small building and if successful, expand with additional batteries and rearing units. Whether to brood and rear on the floor in large units, or in the smaller wire-bottom batteries, is a choice which depends most upon personal likes and dislikes. Good facilities would require about the same investment under either system, and floor brooding and rearing might require a little less labor.

Equipment. Considerable equipment is needed for the efficient handling of chickens. In addition to the usual required facilities such as brooders, hoppers and fountains, the following items will prove extremely useful in any commercial farm:

An overhead track and carrier, for carrying litter and feed into the house and taking eggs out.

Lights with a time switch, for a longer winter day in the laying houses. Hand cart for moving feed or chickens and eggs between buildings. Pickup truck, or larger motor truck, justifiable on most chicken farms for hauling feed and supplies to the farm, and eggs and poultry to market.

Cost. The probable current investment represented by the commercial egg farm in the sample layout is shown in table 5. In figuring the original cost of this layout assumed unit costs were: for poultry

houses, $1.25 a square foot; for service building, $2.00; and for the dwelling, $6.00. This is somewhat less than current (1951) high construction costs, but above prewar. Only under the most favorable circumstances could buildings be constructed for these costs today. Yet a much greater investment is scarcely justified.

The "average value" column in table 5 is figured at one-half the original cost for the items: poultry buildings and improvements, poultry equipment, and dwelling and personal facilities, because during its useful life a facility is assumed to decline in value through depreciation from original cost to zero.

Investment in the standard, or example, layout can be compared with the actual investment average from poultry management study records for 1947.

Replacement cycle

Poultry management studies show high culling and replacement, with a resulting high proportion of pullets, to be the most profitable. The studies over the years have also shown spring-hatched replacements to be more profitable than those hatched in the fall of the year.

For a 2,000-hen flock the annual brooding of 2,400 baby pullets about March 1 is suggested. These should furnish 1,800 good six-month-old pullets about September 1. Such birds will lay heavily during their first year. They should be culled constantly and heavily and be reduced to about 900 by the following September. These may be held a few months into their second production year until sold in February to make room for chicks.

This brooding once a year, with proper culling and sale of birds, will result in a plant comfortably filled to capacity the year round. Most eggs will be laid in the fall and winter when egg prices are highest, and production per average hen will be higher than when replacement pullets are raised in both spring and fall. However, special market outlets may make a more uniform production of eggs through the year more profitable. Brooding at any other time than in the spring does not result in such high production per hen or as high a proportion of eggs in the fall, when they are higher in price. It is seldom justified except in heavy egg and meat flocks, and to keep individual cages filled to capacity.

Table 5. Investment, Commercial Egg Farms

	Estimated investment for suggested layout			Actual investment, 1947 management studies
	2,000-hen farm		Average value per hen	Average value per hen
	Original cost	Average value		
Land (standard 2.12 acres at $500)	$ 1,060	$ 1,060	$0.53	$0.32
Poultry buildings and improvements	13,020	6,510	3.26	2.23
Poultry equipment	3,250	1,625	.81	.49
Feed and supplies	800	800	.40	.45
Poultry stock	3,500	3,500	1.75	1.58
Total poultry enterprise	$21,630	$13,495	$6.75	$5.07
Dwelling and personal facilities	7,000	3,500	1.75	....
Grand total	$28,630	$16,995	$8.50	.....

Green feed production

Production of fresh green feed is recommended where space, labor, and water are available on the poultry farm. A quantity up to 20 per cent of the weight of the total mash and grain can be utilized advantageously. It furnishes certain essential vitamins and other nutritional requirements. Estimates of cost of growing and harvesting indicate that it is as economical as the purchased feed replaced. Ladino clover and alfalfa are the best sources of fresh greens during the long, hot, dry summers, but their production requires frequent irrigation. An acre of either crop on good soil will produce 40,000 pounds or more during the growing season from March to November—an ample amount for a flock of 2,000 hens during this period. Winter greens can be produced from barley, wheat, chard, kale, or other annual crops. Space around and between houses can be so utilized and some of the greens pastured off by using temporary fences to confine the birds to the desired area. When developing a new poultry farm, try to provide from one-half acre to one acre of green feed land for the one-man unit, as shown in the illustration.

Where fresh greens are not practicable, the need may be met by alfalfa meal in the mashes. A large proportion of the chickens produced in California are raised without fresh greens being included in their diet.

Here are some sample input and cost figures to use for comparison purposes

Good chickens are pretty much alike, and under similar conditions will require the same space, labor, feed, and other expenditures from year to year. From records over the last 20 years a standard of inputs and costs has been developed for use in planning or comparing poultry enterprises.

Input is something put into the enterprise such as feed and labor. The manager has some control over what he puts into a chicken business. Usually he profits most by getting his birds to eat as much as possible. Heavy feed consumption promotes heavy egg and meat production.

The standard for egg production is given in table 6, and a standard for chicken meat production is given in table 7. These standards are sample calculations for use as a guide in estimating costs and net income for any place and time. The poultryman need only substitute current or expected prices.

Standard for egg production

The following explanation of terms in the tables should be noted:

Interest on investment at 5 per cent, and depreciation, are based upon the average investments as shown in table 5.

Costs will vary with prices from year to year. Use this schedule as a guide and refigure it with current prices. In estimating future egg prices remember that the eggs sold will contain all sizes and grades, so they will average below the price of large, first-quality eggs.

Table 6 is based on a Leghorn flock with facilities as shown in the drawing and an average investment from table 5.

High efficiency is assumed with 1,800 six-month-old pullets added in the fall from 2,400 baby pullets. The sale of 180 eggs, or 15 dozen, per hen is about average for the records from 1940–49, as shown in table 2. Today, however, 200 or more eggs per hen are attainable. An egg price of 48 cents a dozen and feed cost of $4.02 per hundredweight give a feed-egg ratio of 11.9. This is slightly less favorable than the average for the last ten years, as shown in table 1, but at the prices shown, net farm income per hen would be $1.82.

Table 6. A Standard of Inputs and Costs for Commercial Egg Production

	Quantity		Unit price	Value		
	2,000-hen flock	Per hen		2,000 hens	Per hen	Per dozen
			dollars	dollars	dollars	cents
Stock and miscellaneous income						
Cull hens sold	1,525	.76	.70	1,067	.53	....
Cockerels and cull pullets sold	200	.10	.50	100	.05	....
Less—baby pullets bought	2,400	1.20	.40	960	.48	....
Net stock income	.....	...	...	207	.10	....
Sacks sold	2,000	1.0	.10	200	.10	....
Manure and used litter, cubic feet	3,000	1.5	.04	120	.06	....
Total income not egg	....	...	...	**527**	**.26**	**1.8**
Inputs and costs						
Mash, laying and chicks	120,000 lb.	60 lb.	4.50	5,400	2.70	18.0
Grain	110,000	55	3.50	3,850	1.93	12.9
Subtotal mash and grain	**230,000**	**115**	**4.02**	**9,250**	**4.63**	**30.9**
Grit and shell	10,000	5	1.00	100	.05	.3
Fresh greens—cost home grown, except labor	40,000	20	....	60	.03	.2
Total feed cost	....	....	....	**9,410**	**4.71**	**31.4**
Hired labor—occasional extra help	200 hr.	.1 hr.	1.00	200	.10	.6
Operator's and family labor	2,800	1.4	1.00	2,800	1.40	9.3
Litter, shavings, straw, etc.	.....	....	....	140	.07	.5
Electricity and brooder fuel	.....	....	....	120	.06	.4
Taxes $175, and fire insurance $85	.....	...	....	260	.13	.9
Vaccines and miscellaneous	.....	....	....	300	.15	1.0
Pickup truck, cash expense	3,000 mi.	1.5	.07	200	.10	.7
Depreciation, poultry buildings and equipment	.....	....	....	650	.32	2.2
Interest on average investment	.....	....	....	675	.33	2.2
Total expense of production				**14,755**	**7.37**	**49.2**
Less income not egg from above				527	.26	1.8
Net cost of eggs sold				**14,228**	**7.11**	**47.4**
Assumed income—eggs, 30,000 dozen, 15 dozen per hen, at 48 cents per dozen				14,400	7.20	48.0
Management income				**172**	**.09**	**.6**
Farm income, including value of operator's labor and interest on investment				**3,647**	**1.82**	**12.1**

Standard for chicken meat production

Table 7 is based on raising 88 per cent of the 30,000 chicks started to an average weight of 3.4 pounds. With the prices and costs assumed, net farm income for this plant would be comparable to the example for egg production in table 6.

Combined egg and meat production

It is possible to obtain a high egg production per average hen with some strains of heavy birds. But it takes more space and feed per hen and per dozen eggs, and more feed and time to bring a pullet into production. The eggs of most heavy breeds are not white and may not bring as high a price. To offset these handicaps the young, heavy pullets after a few months of production bring a higher price than would a cull Leghorn. They weigh 1 to 2 pounds more and bring about 5 to 8 cents a pound higher price. There is a year-round demand for hatching-eggs of the meat breeds, so up to 30 per cent of the eggs produced in a heavy flock may often be sold as hatching-eggs at a premium of 30 to 40 cents a dozen over market eggs. Utilization of brooding and rearing capacity with three or four broods enables the operator to market broilers and heavy fryers and roasters most of the time, and to practice strict selection of pullets for layers.

The proportion of egg and meat production will vary widely between operators and from year to year, therefore no attempt is made to provide a layout or standard of inputs and costs for a combination egg and meat farm. There are many records with good profits over the years on this type of enterprise, particularly on a small or side-line scale, where most of the eggs and meat birds are sold locally at retail. There are combinations where one or two broods of meat birds are raised and sold in connection with a Leghorn commercial egg flock.

If the egg farm layout illustrated on page 12 were used as a combination, about 10,000 chicks could be brooded and a laying flock of 800 heavy or 1,000 Leghorn hens could be maintained. On the average such an enterprise is likely to be less profitable than straight egg production.

These are the factors that make for success in the chicken business

To be successful in chicken farming over the years requires a good start with adequate capital on an adequate scale and then good management thereafter. It is important to get pullorum disease-free chicks from breeder-hatcherymen who have a stock of superior health and producing capacity. It may be necessary to order such chicks many months ahead to obtain them at the desired time.

The poultryman's biggest expense item is for feed; hence, his greatest opportunity to reduce costs and improve profits is in wise feed buying of adequate, yet economical mashes and grains through the best channels and at the best time.

Low mortality in chicks and hens and high production per bird in eggs or meat are essential to profits. Positive sanitary and disease-control measures, such as vaccination, are necessary. Proper feeding and care are essential at all times. Also, constant and heavy culling is essential in an egg production flock. All these things call for technical information, physical skill, and industry. Good financial management—adequate record keeping and a balanced budget—is an aid to financial success and security.

Table 7. A Standard of Inputs and Costs for Broiler-Fryer Production (Heavy Breeds)
(Based on Raising 26,400 3.4-lb. Fryers from 30,000 Chicks (89,760 Pounds)

	Quantity		Unit price	Value		
	26,400 birds	Per bird sold		26,400 birds	Per bird sold	Per pound sold
			dollars	dollars	cents	cents
Inputs and costs						
Mash or mash, pellets, grain, etc	314,160 lb.	11.9 lb.	4.80	15,080	57.1	16.8
Grit and other feeds	.....	.....	....	80	.3	.1
Total feed cost	.....	.....	....	15,160	57.4	16.9
Hired labor	200 hrs.	.01 hr.	1.00	200	.7	.2
Operator's and family labor	2,800 hrs.	.11 hr.	1.00	2,800	10.6	3.1
Baby chicks and baby cockerels	30,000	1.14	.18	5,400	20.5	6.0
Fuel for brooding	.....	.....	....	300	1.1	.3
Litter	.....	.....	....	160	.6	.2
Miscellaneous, taxes and insurance	.....	.....	....	400	1.5	.5
Auto expense	3,000 mi.	.11 mi.	.07	200	.7	.2
Depreciation	.....	.....	....	600	2.3	.7
Interest on investment	.....	.....	....	550	2.2	.6
Total cost of production				25,770	97.6	28.7
Less miscellaneous income, sacks, and manure				300	1.1	.3
Net cost of fryers sold				25,470	96.5	28.4
Sales of fryers, 89,760 pounds at assumed price of 29 cents				26,030	98.6	29.0
Management income				560	2.1	.6
Farm income, including operator's labor and interest on investment				3,910	14.9	4.3

Buy, rent, or build

There are some advantages in building up a new poultry plant on new land. More modern materials and design, better suitability to the needs, a new clean location of your choice, and the opportunity to do much of the construction yourself, all favor a new place. But it will take more time and probably cost more than the purchase of an existing idle plant that can be cleaned up and put in operation more quickly. The suitability of existing buildings on an old place and their condition should be carefully studied. If they have been idle for some time and are carefully cleaned before being put to use, the carryover of diseases and parasites can be minimized. The long waiting period before production can result in net income must be provided for under any method, as well as the probability that new construction or even rehabilitation of an old place will cost more than anticipated. One common misconception should be avoided, namely, that people with limited capital can start on a small scale and make enough to support themselves and expand their operations. It takes a considerable size of business to yield any profit; considerably more to make a living; and more yet to provide the surplus for additional capital outlay.

Renting. Some poultry farms are rented, usually because the owner cannot find a buyer. Rent is commonly paid in cash monthly with the tenant furnishing the stock and such equipment as is needed to supplement that going with the place. Where part of the net income must be paid as rent, the tenant or operator must either live on less net income or must have a larger business. A fair rental of a poultry farm should cover the owner's costs of taxes, insurance, repairs, depreciation and interest on his current investment. The example shown on page 12 and table 5, at average value based on half the construction cost, would have a value of land and buildings and part of the equipment of around $12,000. A fair rent would be $1,700 a year or 85 cents a hen capacity, dwelling included. The tenant would need enough capital to clean up, equip, stock the farm with poultry, pay rent, and to live for six months. With $4400 to raise the stock, $900 for living, and $850 rent for six months, this would come to around $6,150. Special deals where the owner of a going concern furnishes the stock, operating capital, and some supervision are very rare and usually limited to gradual ownership transfers, partnership and inheritance within family relationships.

Capital required. To illustrate operating capital needs as a laying flock is developed, monthly cash production expenses and income for starting a 2,000 hen flock have been calculated. Feed price and other cost levels are as illustrated in the standard in table 6.

The first year is based on the brooding of 2,400 baby pullets in January and 2,400 straight-run chicks in April in order to obtain 2,860 six-month pullets for egg production in the fall. The second year and thereafter is based upon the brooding of 2,400 baby pullets March 1. Table 8 shows the resulting figures. The cash expenses are just the poultry enterprise expenses and do not include living costs or wages for any labor or any debt or rent payments.

Under the conditions assumed as to prices, the net cash cost of raising pullets during the first six months was about $4,400. This would be below the cost of buying good young layers but does not include depreciation on facilities or the value of the operator's labor. To this ac-

Table 8. Monthly Income, Cash Expenditure, and Net Cash Income for Starting a 2,000-Hen Egg Farm

Months	First year					Second year and thereafter			
	Average number of hens	Cash income	Cash expense	Net cash income		Average number of hens	Income	Cash expense	Net cash income
				Monthly	Accumulative				
January	....	$ 0	$ 1,277	$ −1,277	$ −1,277	2,490	$ 1,604	$ 898	$ 706
February	....	3	381	− 378	−1,655	2,080	1,625	723	902
March	....	73	1,132	−1,059	−2,714	1,820	1,103	1,763	−660
April	....	13	923	− 910	−3,624	1,780	1,037	971	66
May	....	603	784	− 181	−3,805	1,530	1,265	976	289
June	....	225	789	− 564	−4,369	1,365	857	906	− 49
July	1,900	993	876	117	−4,252	1,335	826	873	− 47
August	1,860	1,254	883	371	−3,881	1,100	952	828	124
September	2,770	1,699	974	725	−3,156	2,700	1,561	851	710
October	2,710	1,998	940	1,058	−2,098	2,640	1,666	853	813
November	2,680	2,064	918	1,146	− 952	2,610	1,749	844	905
December	2,650	1,834	1,017	817	− 135	2,550	1,642	941	701
Total	1,214*	$10,759	$10,894	.....	$ − 135	2,000*	$15,887	$11,427	$4,460

* Average number of hens on an annual basis.

cumulative net cash outlay should be added the cost of living for the period, plus any rent or installments on purchase debt. If minimum living costs were $150 a month or $900 for the six months, the minimum operating capital needed would be about $5,300 without rent or debt payments.

These figures should not be taken too seriously since production and prices are never stable in the poultry business. A business might do a little better or much worse. It would be better to have $6,000 to stock the place, in addition to purchase payments or rent for the first six months. Do not plan to repay much debt during the second six months because it is necessary to carry over some of the high fall earnings to cover the low-income and high-cost brooding period from March to August of the second year.

Credit. Poultry farming with a considerable investment in birds of short and uncertain life is difficult to finance on borrowed capital. Purchase credit is obtainable on the land and buildings. One lending institution will loan up to 65 per cent of the appraised normal or long-term value of land and buildings. But the long-time value of poultry farms reflects poultry earnings over the long term and is somewhat below current land and new building construction costs.

It is reasonable to suppose the sample farm illustrated would appraise at around $11,000 and that a $7,000 loan would be obtainable. A 20-year amortized loan at 4 per cent would call for annual installments of $80.20 per $1,000 or $561.40 per year, about $47 a month. This could be carried by the business, but a $7,000 loan is not much on a land purchase and construction cost of around $24,000 at the original costs in table 5.

Additional credit for raising the first pullets would seldom be obtainable by the beginner. The established poultryman who has proved his ability can obtain credit for feed purchases or development of additional birds. The schedule of net cash income for the second year and thereafter shows a six-month period from March through August when operation and living costs must come from an operating capital reserve or short-term credit. But the beginner faces the necessity of having adequate capital to purchase his place and have enough operating capital to stock it and to live until he is producing a substantial net cash income.

Obtaining experience and capital. The man with no experience and little capital should consider working for wages on a successful poultry farm before going in business for himself. He must first find out that he really likes the business and is not allergic to the dust and feathers. He will learn much by doing and by observing. A considerable number of poultry hands are employed in major poultry districts and a good man might be able to get such a job even though inexperienced. Employment would be steady and perhaps pay enough to permit some savings toward increasing the capital for going in business.

Start with chicks. To avoid diseases and parasites birds older than day-old chicks should never be brought on a clean poultry farm. This means the beginner should start with baby chicks or baby pullets and will need to wait six months before egg checks will cover the feed and other bills. Starting this way will cost little if any more than buying pullets already raised. It will also insure better flock health and production than is ordinarily obtained with usual stock on a going poultry farm, where the common struggle against diseases and pests is already on. Starting with chicks also enables the poultryman constructing his buildings to start brooding in his first building and build up his flock as construction progresses.

When to start. In poultry meat production which is continuous through the

year, the start can be made as soon as facilities are ready. For commercial egg production, it is best to start in early spring with the brooding of chicks so the pullets will come into production in the fall. Fall-hatched pullets are not as profitable as those hatched in the spring. They come into heavy production in the spring when egg prices are lowest and they lay more small- and medium-sized eggs. By fall they lay fewer eggs. The spring-hatched pullet lays well in the fall when egg prices are higher and also lays good-sized eggs the following spring, so is a more profitable bird. By proper planning and use of baby pullets for raising replacements, houses can be kept filled the year round by spring-brooding only. Try to time possession or construction to start raising early spring-hatched pullets; January to April is best. If the place is ready in the fall, raise a brood or two of chicks for meat before starting the layers the following spring.

Technical advice and information

The Farm Advisor's office in each county is the place to go for sound practical advice, as well as printed information, to help get started in the chicken business. The Agricultural Extension office is the local office of the University of California coöperating with the United States Department of Agriculture.

Situation reports and forecasts for egg, poultry, and feed prices are issued frequently by the Department of Agriculture, the California Crop and Livestock Reporting Service, and the College of Agriculture. These are usually available at the Agricultural Extension Service.

A number of publications of the university relate to the poultry business. These also can be obtained from the Farm Advisor.

Coöperative Extension work in Agriculture and Home Economics, College of Agriculture, University of California, and United States Department of Agriculture coöperating.
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J. Earl Coke, Director, California Agricultural Extension Service.

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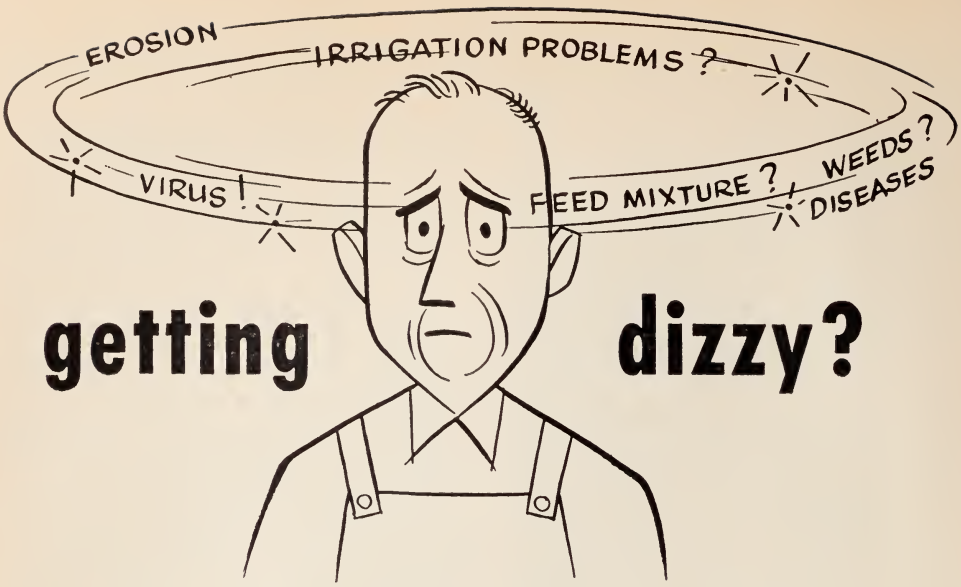

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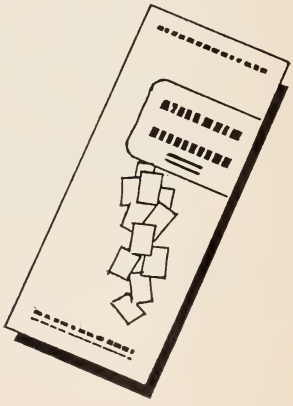

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