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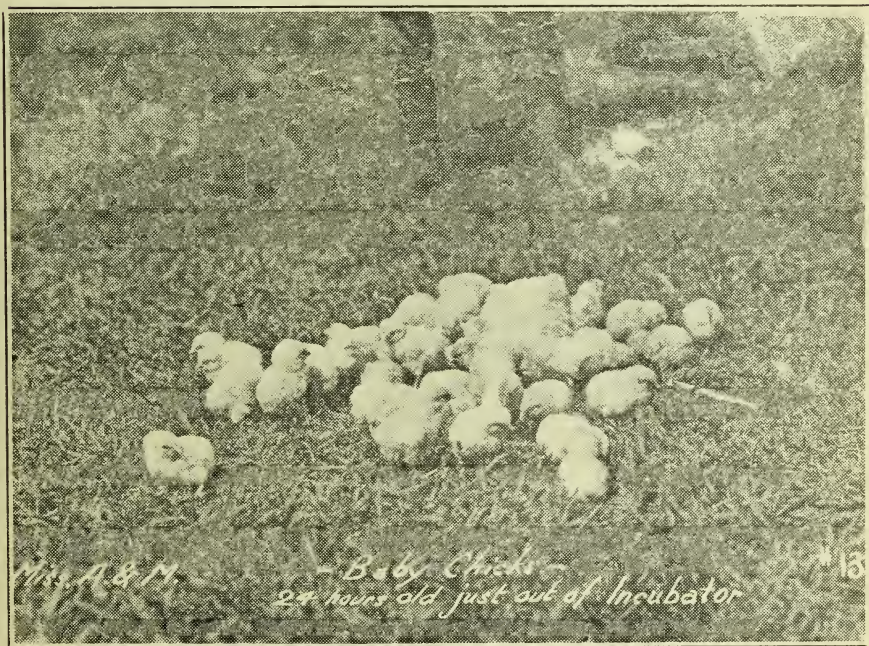
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MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

1920 and 1921 Experiments With Poultry.

By
E. P. CLAYTON
and
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BABY CHICKS

Agricultural College, Mississippi
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Some Outstanding Features in this Bulletin.

1. Leghorns are more profitable egg producers than the general purpose breeds.
2. Hens will not lay well without some form of protein. Milk is the best form of protein to feed to laying hens and growing stock.
3. It is more profitable to feed the surplus milk to chickens than to pigs.

1920 and 1921 Experiments with Poultry

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Many people are unaware of the profits and losses made on a single fowl or a group of fowls due to not keeping accurate records. This department has endeavored to put clearly before the people just what to expect from a flock of fowls and has for the past two years conducted an experiment with four breeds to determine which would produce the most profits under ordinary conditions from egg production alone.

In this experiment we have not credited the fowls with any breeding stock or eggs sold. The only credits they have received have been the market value of the eggs laid. The average market price for 1920 was around 41 cents and for 1921 around 38 cents, showing a difference of about 3 cents for the year. The basis upon which we worked was the prevailing market prices each month.

The first year of this experiment was conducted under abnormal prices, feed being higher than for many years before. Eggs were also higher than ever before so the results obtained will hold true even under normal prices. The second year found both feed and eggs declining toward normal, feed dropping more in comparison than did eggs. A close study of tables No 1 and 2 will show several interesting things.

1920—TABLE NO. 1—SHOWING PRODUCTION, COST AND PROFITS.

Breeds	No. of hens	Total feed consumed	Cost of feed	Eggs laid doz.	Value of eggs	Cost eggs doz.	Eggs per hen	Feed per hen	Cost per hen	Profit per hen
Rhode I. Reds...	140	10,038 lb	\$414.47	1396	\$ 582.00	30c	112.5	72 lb	\$2.96	\$1.20
White Leghorns...	47	3,231 lb	\$137.21	614	\$ 243.50	22c	157	69 lb	\$2.92	\$2.26
Brown Leghorns...	66	3,988 lb	\$161.81	694	\$ 283.35	23c	126	60 lb	\$2.45	\$1.84
Barred P. Rock...	39	2,952 lb	\$121.26	347	\$ 132.24	35c	107	76 lb	\$3.10	\$0.29
Totals -----	292	20,209 lb	\$834.75	3051	\$1,241.09	27c	126	69 lb	\$2.85	\$1.40

1921—TABLE NO. 2—SHOWING PRODUCTION, COST AND PROFITS—1921

Breeds	Number hens	Total feed consumed	Total milk consumed	Cost of milk and feed	Eggs laid dozens	Value of eggs	Cost per dozen eggs	Eggs per hen	Feed per hen	Cost per hen	Profit per hen
Rhode I. Red Pullets	87	6074lb	5848lb	\$189.22	1065	\$ 396.13	17c	149	69lb	\$2.12	\$2.33
Rhode I. Red Hens	95	6507lb	5649lb	\$200.82	891	\$ 343.82	23c	123	71lb	\$2.07	\$1.55
White Leghorn Hens	20	1281lb	1297lb	\$ 38.57	287	\$ 98.33	13c	163	63lb	\$1.82	\$2.80
Brown Leghorn Hens	40	2260lb	2481lb	\$ 69.34	515	\$ 184.72	11c	156	57lb	\$1.68	\$3.15
Brown Leghorn Pullets	23	1219lb	975lb	\$ 37.18	263	\$ 106.32	14c	142	55lb	\$1.59	\$2.73
Barred Plymouth Rock Hens	18	1414lb	1384lb	\$ 47.24	160	\$ 51.72	30c	104	73lb	\$2.46	\$0.35
Totals	303	18755lb	17632lb	\$582.37	3181	\$1,181.04	18c	140	65lb	\$1.95	\$2.15

First compare the egg breeds. The White Leghorns ate an average of 69lb of feed the first year, produced 157 eggs each with a profit per hen of \$2.26. The Brown Leghorns ate an average of 60lb per hen of feed, produced 126 eggs per hen and made a profit of \$1.84 each.

The White Leghorns ate 63lb of feed the second year, laid 163 eggs each with a profit of \$2.80 per hen. The Brown Leghorns ate 57lb of feed, laid 156 eggs with a net profit of \$3.15 each.

During the test the White Leghorn hens made a profit each month, reaching the maximum in January 1921 with a profit of 49 cents each. The Brown Leghorns also reached their maximum in January 1921 with 48.7 cents each but were losers in September and October 1920, losing 4 cents in September and 8 cents in October.

The White Leghorns made a profit of \$5.06 for the two years. During the two years each hen produced 25 dozen eggs and ate 132lb of feed. She produced over ten times her weight in eggs. The Brown Leghorns made \$4.99 profit in the two years, laid 23½ dozen eggs and ate 117lb of feed. She also produced about ten times her weight in eggs. It would be hard to choose between the Browns and Whites here as efficient egg producers. There is a difference of only 7 cents in favor of the Whites during the past two years. The Whites led during 1920 and the Browns during 1921.

In comparing the Reds and the Rocks, the Reds are far in the lead. The Rocks produced almost as many eggs as did the Reds but they were produced during the spring and summer when prices were low and very few produced during the fall and winter when prices were high.

Table No. 1 shows us that the Reds laid 112.5 eggs, ate 72lb of feed and made a profit of \$1.20 each during 1920. The Rocks ate 76lb of feed, laid 107 eggs each with a profit of \$0.29 each. The Reds made a profit of \$1.55, ate 71lb of feed and laid 123 eggs each during 1921. The Rocks ate 73lb of feed,

laid 104 eggs each and made a profit of \$0.35 each in 1921. The Reds made a profit every month except September 1920 and lost less than 1 cent each that month. Their maximum was reached in January 1921 with a profit of 24 cents each. The Barred Rocks lost in eight months of the test. These months were August, September, October, November, and December 1920 and in September and October 1921. Their highest profit was reached in March 1921 with 21 cents each.

The Reds made \$2.75 profit during the two years. Each hen produced 19½ dozen eggs and ate 143lb of feed. Each hen produced five times her weight in eggs. The Rocks ate 149lb of feed and made \$0.64 profit while on test. They produced 17½ dozen eggs or four times their weight in eggs.

The Reds proved to be the best winter layers of the two general purpose breeds on test. The Barred Plymouth Rocks produced almost as many eggs but they were produced in late winter, spring and summer. If broilers and roasters had been considered, no doubt the Rocks would have shown up better.

SKIM MILK FOR EGG PRODUCTION.

To determine the value of skim milk or buttermilk for laying hens, we used four pens of White Leghorn pullets of equal numbers (16 to the pen), and equal in production as well as could be judged. Each pen had a mixed grain twice per day and dry mash before them all the time.

Pen No. 13 was fed a mash composed of equal parts by weight of corn meal, wheat bran, wheat shorts, and cotton seed meal. Cotton seed meal being the protein for this pen.

Pen No. 14 had the same as 13 except beef scrap was substituted for cotton seed meal.

Pen No. 15 had the same as 13 and 14 except milk (all they could drink) was substituted for the protein.

Pen No. 16 was the same as 13, 14, and 15 except no protein was used. This was the check pen.

The results of this test are shown in table No. 3.

TABLE NO. 3—SHOWS THE COMPARISON BETWEEN COTTONSEED MEAL, BEEF SCRAPS AND SKIMMED MILK AS A PROTEIN FEED FOR CHICKENS. NOTE PEN NO. 16 WHICH DID NOT HAVE ANY PROTEIN IN THEIR FEED.

	No of hen	Total feed consumed	Total milk consumed	Total cost of feed	Eggs laid doz.	Value of eggs	Cost per doz. eggs	Eggs per hen	Feed Cost per hen	Profit per hen
Pen No. 13-----	15	614lb	000lb	\$14.59	110	\$31.76	13.2c	88	\$0.97	\$1.14
Pen No. 14-----	16	649lb	000lb	\$15.47	133	\$38.97	11.6c	99	\$0.96	\$1.47
Pen No. 15-----	14	509lb	1524lb	\$16.43	145	\$42.54	11.3c	123	\$1.14	\$1.86
Pen No. 16-----	16	510lb	000lb	\$12.05	75	\$21.74	29.0c	56	\$0.75	\$0.60

NOTE—This experiment has been running for only eight months. It will be continued for several years and results given out from time to time.

Pen No. 13 consumed 88lb of crude protein during the test, produced 110 dozen eggs worth \$31.76 and made a profit of \$1.14 each.

Pen No. 14 consumed 101lb of crude protein, produced 133 dozen eggs worth \$38.97 and made a profit of \$1.47 each.

Pen No. 15 consumed 103lb of crude protein, produced 145 dozen eggs worth \$42.54 and made a profit of \$1.86 each.

Pen No. 16 got no protein except what was in the regular ration. They ate only 57lb of crude protein, produced 75 dozen eggs worth \$21.74 and made a profit of 60 cents each.

From this test and others it is evident that plenty of protein is essential for maximum egg production and that milk is the best form of protein.

SKIM MILK FOR GROWING CHICKS.

On May 10 we began a test with two lots of baby chicks, twenty-five to each lot. The first lot (the results of which are given in table No. 4) was fed a regular chick ration and in addition was given all the milk they would drink. The second lot (the results of which are given in table No. 5) was fed a regular chick ration, the same as was fed to lot No. 1 except that they received no milk.

When the chicks were one month old there was no difference in their weight, but at two months of age it was found that lot No. 1 had gained 1.4lb while Lot No. 2 had gained only .9lb, Lot No. 1 gaining $\frac{1}{2}$ lb more than Lot No. 2. There was a difference of 11 cents per bird profit, due to the skim milk.

At three months of age we find that there is nearly a pound difference between the two chicks. Lot No. 1 weighed 2.3lb while Lot No. 2 only weighed 1.5lb. At five months we find that the skim milk bunch weighed 4.55lb each, have consumed 41 cents worth of feed each and made a profit of 65 cents per chick. The water bunch weighed 2.5lb each, consumed 34 cents worth of feed each and made a profit of 26 cents per chick. There is a difference of 39 cents in favor of the skim milk. Considering that this difference is due to the skim milk, it would place a value of 11 cents per gallon on it when fed to young chicks.

A very interesting part of this experiment was the result obtained after the five months was up by taking half of the birds that had been getting milk and giving them water. We also took half of the birds that had been getting water and gave them milk. The lot that was changed from water to milk, we call No. 3 and the lot that was changed from milk to water we will call No. 4. This was continued for one month with the following results: Lot No. 1 gained one pound each per bird, Lot No. 2 gained $\frac{1}{4}$ pound each per bird, Lot No. 3 gained one pound per bird, while Lot No. 4 gained less than $\frac{1}{4}$ pound per bird.

This is conclusive evidence that skim milk is one of the best and cheapest feeds that we can feed to young chicks. You will notice how rapidly the birds began to gain as soon as changed from water to milk and how readily they stopped gaining when changed from skim milk to water.



MILK FED VERSUS WATER FED.

Figure No. 1 gives a clear cut comparison of the relative sizes of the two birds. The largest, a milk fed cockerel, weighed $6\frac{1}{2}$ pounds when 5 months old; the smaller, a water fed cockerel, weighed $2\frac{1}{2}$ pounds when 5 months old. The pullets in Lot No. 1 began laying in December while the pullets in Lot No. 2 will not lay before February or March.

TABLE NO. 4—SHOWING RESULTS OF FEEDING MILK TO YOUNG CHICKS AND GROWING STOCK.

"This lot received milk."

Age	No. of Chicks	Weight per Chick	Gain per Chick	Grain per Chick	Mash per Chick	Milk per Chick	Feed cost per Chick	Profit per Chick
1 day	25	. 1lb	. 1lb	. 0lb	. 0lb	. 0lb	. 0c	. 0c
1 month	25	.75lb	.65lb	. 4lb	. 4lb	1. 5lb	2c	14c
2 months	25	1.50lb	.75lb	1. 0lb	1. 0lb	4. 0lb	6c	12c
3 months	25	2.30lb	.80lb	1. 4lb	1. 4lb	6. 5lb	9c	11c
4 months	16	3.60lb	1.30lb	2. 0lb	2. 0lb	8. 0lb	12c	15c
5 months	16	4.55lb	.95lb	2. 0lb	2. 0lb	8. 0lb	12c	13c
TOTALS	16	4.55lb	4.45lb	6. 8lb	6. 8lb	28. 0lb	41c	65c

TABLE NO. 5—SHOWING RESULTS OF FEEDING MILK TO YOUNG CHICKS AND GROWING STOCK.

"This lot received water."

Age	No. of Chicks	Weight per Chick	Gain per Chick	Grain per Chick	Mash per Chick	Feed cost per Chick	Profit per Chick
1 day	25	. 1lb	. 0lb	. 0lb	. 0lb	0c	0c
1 month	25	.75lb	.65lb	.4lb	.4lb	2c	14c
2 months	25	1. 0lb	.25lb	1. 0lb	1. 0lb	5c	1c
3 months	25	1. 5lb	.50lb	1. 4lb	1. 4lb	7c	6c
4 months	16	2. 1lb	.60lb	2. 0lb	2. 0lb	10c	5c
5 months	16	2. 5lb	.40lb	2. 0lb	2. 0lb	10c	0c
TOTALS	16	2. 5lb	2.40lb	6. 8lb	6. 8lb	34c	26c

SKIM MILK FOR PIGS AND COMPARATIVE GAINS WITH CHICKENS.

On July 26 we put two pigs on the milk feed and two on the water feed. The pigs receiving milk weighed 32lb at the beginning of the test and 121lb at the end of 45 days. Those receiving water weighed 37lb at the beginning of the test and 64lb at the end of the 45 days. This gives the milk pen or Lot No. 1, 89lb gain in 45 days with a profit of \$4.15, and the water pen or Lot No. 2, a gain of 27lb in 45 days with a profit of 43 cents.

To make sure that this gain was due directly to skim milk, we reversed the experiment on September 13 and put Lot No. 1 on water and Lot No. 2 on milk ration. One month later Lot No. 1, now on water, weighed 140lb or a gain of 19lb with a loss of 69 cents. Lot No. 2, now on milk, weighed 147lb or a gain of 83lb with a profit of \$3.72.

These pigs received the same feed with the exception of the skim milk. They were fed a grain ration of corn chops and mash composed of equal parts of corn meal, wheat bran, and wheat shorts. For the first 45 days each lot consumed 50lb of grain and 50lb of mash. The skim milk lot consumed 75 gallons of milk.

For a month after the experiment was reversed, each lot consumed 60lb of grain and 60lb of mash, with the skim milk lot getting 80 gallons of skim milk.

Considering that the difference in gains was due to the skim milk it would place a value of 5 cents per gallon on it when fed to pigs. Comparing the gains made by the pigs on skim milk and the gains made by the chickens on skim milk, we find there is a difference of 6 cents per gallon in favor of the chickens. That is the chickens paid 11 cents per gallon for all the skim milk they drank, while the pigs paid only 5 cents for the milk they drank. Chickens were worth 25 cents per pound and pigs were worth 8 cents per pound.