RESPONSE of LAYING HENS to SUDDEN FEED CHANGES

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NUMEROUS CAUTIONS and warnings have been issued by leaders in poultry husbandy against sudden feed changes.

These citations state that birds will go off feed and suffer an interruption in egg production and probably go into a partial or complete molt as the result of sudden feed changes. There are very little experimental data available on this subject and all tests were completed more than a decade ago. In recent years there is less variation between brands of feed than several years ago and breeders have been successful in developing strains of layers that show less tendency to molt or decrease in egg production.

If sudden feed changes could be made without affecting rate of lay, it would aid manufacturers in formulating cheaper rations as price of ingredients change. It would also allow the poultryman to bargain periodically with various feed manufacturers in his locality and take advantage of price differences. This report provides more definite information on the effects of changing feed.

Stout *(9)* stated, that, "If changes are made from one feed to another, they should be gradual." Card and Kirkpatrick *(1)* suggested gradual changes of feed to avoid any possible setback in growth. Spencer *(8)* stated that, "Young chicks are quite sensitive to any changes of feed." Card *(2)* pointed out that cheaper feeds may be substituted, but that change should be made gradually to avoid a drop in egg production or possible molt. Kempster *(5)* reported that changes may be advantageous in poultry rations, but that all changes must be gradual, otherwise there may be a reduction in egg production accompanied by a partial molt. Heuser *(3)* also advised that changes or substitutions in laying rations should be made gradually. Sipe and Polk *(7)* reported that suddenly changing the feed of laying birds did not reduce egg production or cause birds to molt during the first month after the change. In fact, the annual average egg production of birds subjected to 4 sudden changes of feed during 1 year was higher than that of 4 comparable lots with feed unchanged. Platt *(6)* reported that absence of mash for 6 days, if grain was available on the cafeteria basis, did not have a serious effect upon egg production. Heuser *(4)* reported on a test where the laying mash was replaced for 2 weeks during April by a mixture of 40% cornmeal, 20% wheat middlings, 20% wheat bran, and 20% ground oats. The total feed consumption decreased somewhat and there was a drop in egg production of about 15% the week after the mash without animal protein was fed. These reports indicate sudden feed changes may lower egg production. However, many of the reports were based on opinions and some tests involved changes from an adequate to an inadequate ration.

PROCEDURE

Leghorn pullets raised on uniform feed reaching 5 months of age on October 16, 1961 and September 1, 1962 were randomly divided into 10 laying houses with 40 pullets per house. Conventional floor management practices were followed throughout the test. Three different commercial all-mash rations (A, B, and C) were fed for a 10-month laying period. The feeds selected were manufactured by mills of medium size having distribution in a 2- to 3-state area. Each maintained a nutritionist for formulation, conducted limited research on their feeds, and utilized a chemical

TABLE 1. FEEDING SCHEDULE FOR EACH PEN BY MONTHS

Pen No.	Months									
	1	2	3	4	5	6	7	8	9	10
1	(A, B, and C feeds mixed equally and fed constant throughout test)									
2	A	A	A	A	A	A	A	A	A	A
3	B	B	B	B	B	B	B	B	B	B
4	C	C	C	C	C	C	C	C	C	C
5	A	B	C	A	B	C	A	B	C	A
6	A	C	B	A	C	B	A	C	B	A
7	B	A	C	B	A	C	B	A	C	B
8	B	C	A	B	C	A	B	C	A	B
9	C	A	B	C	A	B	C	A	B	C
10	C	B	A	C	B	A	C	B	A	C

laboratory in manufacturing feed. The feeding schedule for each pen is given in Table 1. In pens 5 through 10 where the feed was changed on the first day of each month, the complete change was made all at one time.

Trap nest egg records were taken 5 days each week in 1961-62 and 3 days each week in 1962-63. Feed consumption, mortality, and rate of lay were calculated and analyzed statistically.

RESULTS AND DISCUSSION

Rate of lay calculated on a hen day basis for 1961-62 is shown in Table 2 and for 1962-63 in Table 3.

Feed consumed per dozen eggs produced by each pen is given for both test periods in Table 4.

There appears to be no difference in the feed consumed per dozen eggs produced between flocks receiving a constant brand of feed and those receiving a different brand of feed each month.

Mortality for the 10-month laying period for each pen during each test period is given in Table 5.

Mortality varied considerably between pens. At no time was there an outbreak of any particular disease and rate of mortality was no higher for the period immediately following a change in feed than at other periods. Although pens receiving a change in feed each month had the lowest average mortality the differences are not significant.

TABLE 2. EFFECT OF SUDDEN FEED CHANGES ON AVERAGE EGG PRODUCTION BY PENS BY MONTHS 1961-62

Pen No.	1	2	3	4	5	6	7	8	9	10	2-3-4	5-10
Feed	ABC	A	B	C	*	*	*	*	*	*	Av.	Av.
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Nov.	62.3	50.3	61.4	64.0	50.8	60.8	59.1	56.8	54.8	54.4	58.6	56.1
Dec.	68.4	58.0	59.8	69.8	59.5	55.4	66.7	67.2	64.1	56.7	62.5	61.6
Jan.	69.4	56.5	60.9	68.1	54.2	63.7	54.3	67.6	71.1	53.9	61.8	60.8
Feb.	63.8	51.7	54.6	67.9	57.9	59.9	58.3	65.4	69.3	61.8	58.1	62.1
Mar.	68.2	56.7	54.2	63.9	54.4	60.4	60.9	62.2	72.5	59.5	58.3	61.7
Apr.	65.8	53.8	50.7	58.9	53.9	57.0	58.0	63.0	69.0	56.8	54.4	59.6
May	66.5	48.5	46.8	59.8	49.8	63.0	56.0	66.7	69.5	61.3	51.7	61.1
June	63.0	44.5	44.2	54.1	46.8	60.1	53.5	62.7	65.4	56.5	47.5	57.4
July	58.5	42.5	39.5	49.7	43.9	53.3	50.5	53.8	57.5	41.2	43.9	50.0
Aug.	55.9	46.5	29.1	46.4	44.1	53.9	45.2	52.0	59.4	45.6	40.7	50.0
Av.	64.2	50.9	50.1	60.3	51.5	58.8	56.3	61.7	65.3	54.8	53.8	58.1

* Feed changed each month as indicated in Table 1.

TABLE 3. EFFECT OF SUDDEN FEED CHANGES ON AVERAGE EGG PRODUCTION BY PENS BY MONTHS 1962-63

Pen No.	1	2	3	4	5	6	7	8	9	10	2-3-4	5-10
Feed	ABC	A	B	C	*	*	*	*	*	*	Av.	Av.
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Sept.	54.6	52.8	57.0	56.1	48.6	51.8	63.9	58.0	46.3	58.9	55.3	54.6
Oct.	69.6	67.4	67.6	66.7	71.3	63.7	76.3	66.0	63.6	66.1	67.3	67.8
Nov.	59.5	68.6	67.9	69.3	76.4	66.1	74.2	68.3	64.6	60.1	68.6	68.3
Dec.	62.6	62.2	58.7	62.2	76.0	65.2	66.9	55.7	62.8	62.2	61.0	64.8
Jan.	55.0	52.8	61.5	60.9	66.3	60.4	64.3	60.0	60.4	54.6	58.4	61.0
Feb.	57.1	58.4	57.8	60.2	63.7	61.8	66.1	54.4	49.7	57.1	58.8	58.8
Mar.	58.4	56.0	58.5	58.1	70.5	67.0	55.8	50.9	56.4	56.6	57.5	59.4
Apr.	57.0	56.1	63.0	51.8	66.9	63.6	56.9	56.3	55.0	56.1	56.9	59.1
May	56.2	50.1	59.1	48.5	61.6	63.0	57.9	54.9	51.0	61.1	52.6	58.3
June	46.9	44.9	54.5	45.1	54.3	58.6	54.7	51.1	46.9	47.9	48.2	52.2
Av.	57.7	56.9	60.6	57.9	65.6	62.1	63.7	57.5	55.7	58.1	58.5	60.4

* Feed changed each month as indicated in Table 1.

In each of the two tests the pens receiving a change in feed on the first day of each month (Pens 5-10) laid at a higher average rate than the pens receiving a constant feed (Pens 2, 3 and 4). The difference in favor of changing feed amounted to slightly over one dozen eggs per hen over the 10-month period in 1961-62 and ½ dozen eggs per hen over the 10-month period in 1962-63. These results indicate that laying hens may be changed abruptly from one good commercial feed to another as often as once each month without lowering the rate of lay. In fact eight times out of ten the rate of lay would be higher after the change.

SUMMARY

These tests show that farmers may change brands of laying mash every month without lowering egg production. Feed is the biggest cost item in producing eggs. If a farmer can lower his costs 30¢ per 100 pounds by bargaining with various feed mills each month he will reduce his cost of producing eggs about 1½¢ per dozen and therefore increase his profits per hen per year by about

TABLE 4. FEED CONSUMED PER DOZEN EGGS LAID, POUNDS

Pen No.	1	2	3	4	5	6	7	8	9	10	2-3-4	5-10
Feed	ABC	A	B	C	*	*	*	*	*	*	Av.	Av.
1961-62	4.5	5.7	6.0	4.7	5.4	4.6	4.8	4.6	4.3	4.6	5.5	4.7
1962-63	4.9	5.0	4.7	5.0	4.4	4.9	4.6	5.0	5.1	5.1	4.9	4.9

* Feed changed each month as indicated in Table 1.

TABLE 5. PER CENT MORTALITY

Pen No.	1	2	3	4	5	6	7	8	9	10	2-3-4	5-10
1961-62	5.0	15.0	15.0	15.0	12.5	10.0	17.5	15.0	12.5	2.5	15.0	11.7
1962-63	15.0	15.0	10.0	17.5	10.0	10.0	2.5	15.0	17.5	2.5	14.2	9.6

30¢. Care of course should be exercised in selecting the brands of feed used to prevent an inadequate ration that might be available at an extremely low price.

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