Lancaster Farming

POULTRY NOTES

Benchmarks in Layer Performance

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It is easy to document progress in the layer industry with the excellent records that are kept on commercial white egg strains today. In his "Egg Economics Update" Don Bell, poultry specialist at Riverside, Calif. looked back on 18 years of summarizing performance records of table egg flocks and the progress that has been made (Table 1).

During the period from 1973 to 1991, eggs per hen housed has improved 45.4 eggs, or 2.5 eggs per hen per year. The average rate of egg production has increased by 13.4 percent or .74 percent per year. Mortality percentages have gone down weekly from .33 to .15 percent, while total figures have dropped from 10.6 to 6.0 percent (.26 percent per year). Birds today tend to weigh less than they did 20 years ago, and with this trend feed consumption has been reduced from .234 pound per hen per day to only .212 pound. This represents an annual improvement of .12 pound per 100 hens per day during the 18-year period. Feed conversion (pounds of feed per dozen eggs) has improved from 3.86 to 3.19 pound in 18 years, with an annual drop of .04 pound per dozen per year.

Table 1.

Year	HH eggs	HD %	Mortality % Weekly	Mortality % Total	Feed lb/100 hd. (from 25 to 60 wks)	Feed lb/doz. (from 25 to 60 wks)	Under-grade %
1973	172.0	66.3	.33	10.6	23.4	3.86	
1974	183.3	6.94	.26	9.9	24.3	3.81	
1975	184.6	70.9	.27	10.1	23.6	3.71	
1976	186.4	70.8	.29	11.0	23.4	3.60	
1977	185.5	70.8	.30	11.3	22.9	3.56	
1978	190.0	71.8	.28	10.5	23.6 (from 21 to 60 wks)	3.62	
1984	205.4	76.0	.20	8.0	22.4	3.54	
1985	205.4	76.4	.22	8.8	22.1	3.48	5.50
1986	204.2	75.4	.22	8.8	22.0	3.50	5.51
1987	207.1	76.1	.22	8.6	21.9	3.45	5.61
1988	210.5	76.5	.20	7.9	21.7	3.41	5.33
1989	212.5	76.6	.20	8.1	21.7	3.38	4.86
1990	214.6	78.6	.71	6.8	21.3	3.26	4.97
1991	217.4	79.7	.15	6.0	21.2	3.19	4.02

Table 2

1991 flocks	HH eggs to 60 wk	Hen-Day ave %	HD peak 28-31 wk	Mortality %	Feed lb/100 hd	Feed lb/doz	Under-grade %
Best 25%	229.1	83.4	92.7	2.6	19.2	2.92	2.2
Poorest 25%	204.3	75.3	85.2	10.6	23.0	3.45	5.7

While these numbers are not the most that can be expected from today's laying hens, they represent an "average" and demonstrate the progress that has been made over 18 years of keeping records. Ranges in performance are shown for 1991 in Table 2. These are the corresponding "best 25 percent" and "poorest 25 percent" records of 360 flocks summarized.

Compared to the 1991 average flock, there is the opportunity to get an additional 11.7 eggs to 60 weeks. Don't be satisfied with an average 79.7 percent hen day egg production when the best 25 percent are getting 83.4 percent and peaks of 92.7 percent. Furthermore, better flocks have less mortality, fewer undergrades, and do it all with less feed.

As a target, you can compare your flocks with this range of performance, and ask the hard questions: why is my flock not performing as well in certain categories listed below? Without good records, and the time to really look them over and evaluage flocks performance, it's difficult to get to the bottom of a bird health, equipment, or performance problem.

Dietary Treatment For Laying Hens With Kidney Damage

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Researchers at Penn State University have shown that when Leghorn pullets are fed laying hen diets during the growout period (6 to 18 weeks), formation of kidney stones or uroliths are induced in the ureters and urine collecting ducts of the kidney.

Compared with the young pullets requirements, layer rations contain high levels of calcium (3.5 to 4.o percent) and relatively low levels of available phosphorus (.4 to .5 percent). Pullets fed these rations will exhibit, in addition to stones, kidney atrophy, fiber formation, tissue mineralization, asymmetry and a reduction in the number of urine filtering units.

These symptoms are similar to the degenerative renal disease "urolithiasis". In addition, infectious bronchitis virus (IBV) has been suspected as a cause of urolithiasis, based on the evidence that some strains of IBV cause kidney damage similar to field outbreaks of urolithiasis.

In experimental work combining the effects of the "Gray" strain of IBV and layer rations, urolithiasis incidence has been observed at between 8.6 and 25 percent, and kidney damage between 25.8 and 58 percent.

Unfortunately, the degree of kidney damage may not be realized until later in the adult life of the hen when accumulated kidney calcium deposits and loss of functional tissue results in a drop in egg production and increase in hen mortality! What is a egg-producer to do if these circumstances happen to your birds?

Prevention is the best cure, by closely monitoring the calcium levels fed to your pullets and ensuring adequate IBV protection with a polyvalent vaccination program. If you still are faced with kidney damaged hens, there are some remedial treatments that can be applied in preventing further growth of the kidney stsones. These calcium deposits are caused in large part because of a metabolic alkalosis brought on by an increase in the cation:anion ratio of the ration. This leads to an increase in urine calcium concentration, a decrease in the H+ ion concentration, and providing an excellent medium for precipitation of calcium-urate, the primary mineral in avion uroliths.

Treatment lies with the strategy of increasing dietary H+ ion concentration (more acid) in hopes of reducing urine pH and dissolving urinary calcium. Calcium solubilized by urine acidification can then be excreted without precipitation in the kidney. These are several means of modifying dietary pH or H+ ion concentration to prevent kidney stone enlargement and dissolve preformed deposits. Ammonium chloride added to the diet at the 0.5 percent level has been successful in reducing calcium-induced kidney damage and stone formation, however, it

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