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"THROUGH RESEARCH"

TRENDS IN LAYER PERFORMANCE

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In 1977, a study of over 500 commercial laying flocks was initiated to develop standards of performance relative to age and season for various performance traits. Since then, two additional studies have been made. This report is intended to summarize the three studies and to illustrate the trends observed during the twelve years of hatch dates represented.

Table 1. Egg Production and Mortality* to 60 Weeks of Age

Year of Hatch	No. of Flocks	Hen-Housed Eggs	Hen-Day (%)	Mortality (%)	
				Weekly	Total
1973	55	172.0	66.3	.33	10.6
1974	84	183.3	69.4	.26	9.9
1975	76	184.6	69.9	.27	10.1
1976	58	186.4	70.9	.29	11.0
1977	143	185.5	70.8	.30	11.3
1978	87	190.0	71.9	.28	10.5
1984	440	205.4	76.0	.20	8.0
1985	487	205.5	76.4	.22	8.8

Table 2. Feed Consumption and Conversion* 26 to 60 Weeks of Age

Year of Hatch	No. of Flocks	Feed Consumption (lbs/100 hen-days)	Feed Conversion (lbs/dozen)
1973	43	23.4	3.86
1974	69	24.3	3.81
1975	65	23.6	3.71
1976	39	23.4	3.60
1977	119	22.9	3.56
1978	72	23.6	3.62
20 to 60 Weeks of Age			
1984	440	22.4	3.54
1985	487	22.1	3.48

* 1973 through 1978 records are all from California. The 1984 and 1985 data represents national laying flocks.

An analysis of this magnitude includes a wide variety of management practices, strains of chickens, and hatch dates. Because of this, wide differences in performance are observed. Some can be attributed to specific factors, others cannot (Table 3).

During this 12-year period, average hen-housed egg production improved by 33.5 eggs, mortality rates have been reduced by 1.8%, and feed conversion improved by 0.38 pounds per dozen. The number of flocks reaching 200 eggs at 60 weeks is shown in Table 4.

Table 3. Ranges in Performance Factors, 20 to 60 Weeks of Age

Performance Trait	Year of Hatch	Range in Results: High 5 Flocks	Low 5 Flocks	High 25% Flocks	Low 25% Flocks	Average
Hen-Housed Eggs	1973-78	215.6	134.2	201.0	166.0	184.0
	1984	228.2	180.6	216.7	194.0	205.4
	1985	229.6	183.2	217.9	192.9	205.5
Hen-Day Production (percent)	1973-78	81.1	54.8	75.1	65.2	70.1
	1984	83.5	65.1	80.5	71.5	76.0
	1985	84.4	68.1	80.6	72.1	76.4
Percent Mortality	1973-78	26.6	3.5	18.5	6.2	10.8
	1984	18.5	2.9	11.8	4.1	8.0
	1985	18.1	3.3	12.9	5.6	8.8
Feed Consumption (lbs/100 hen-days)	1973-78*	28.7	20.3	25.6	21.8	23.6
	1984	25.8	19.3	24.0	20.8	22.4
	1985	27.6	19.0	24.0	20.5	22.1
Feed Conversion (lbs/dozen)	1973-78*	5.0	3.1	4.1	3.3	2.7
	1984	4.2	3.0	3.8	3.3	3.5
	1985	4.2	2.9	3.8	3.2	3.5

* 26 to 60 weeks of age.

Table 4. Hen-Housed Egg Production

Year of Hatch	Percent of Flocks: 200 Eggs	210 Eggs	220 Eggs
1973-78	12.1	2.0	0.2
1984	77.7	40.2	9.3
1985	71.7	34.9	7.2

The 1985 hatch analysis included a comparison of performance associated with the month each flock reached 60 weeks of age. In other words, the hatch date would have been 8 weeks earlier during the previous year. Table 5 (below) summarizes these results.

Flocks reaching 60 weeks of age in July demonstrated a significantly lower hen-day and hen-housed rate of egg production. These would have been hatched in May and, therefore, would have been reared during the summer months. In addition, they would have been brought into lay during a period of decreasing day lengths. It would appear that April, May, and June hatches have a 3 to 4 egg disadvantage over flocks hatched during other months (see figures 1 and 2 on page 4).

Feed consumption is highest in late winter and early spring hatches. These flocks eat 5% more feed than flocks hatched during other seasons. The flocks which reach 60 weeks of age in April, May, and June eat between 22.7 and 22.8 pounds per 100 hens per day compared to 21.6 to 22.2 pounds for flocks in other months. This higher feed consumption rate is because a greater proportion of their laying period is concentrated in the colder months. A similar relationship exists for feed conversion (see figures 3 and 4 on page 5).

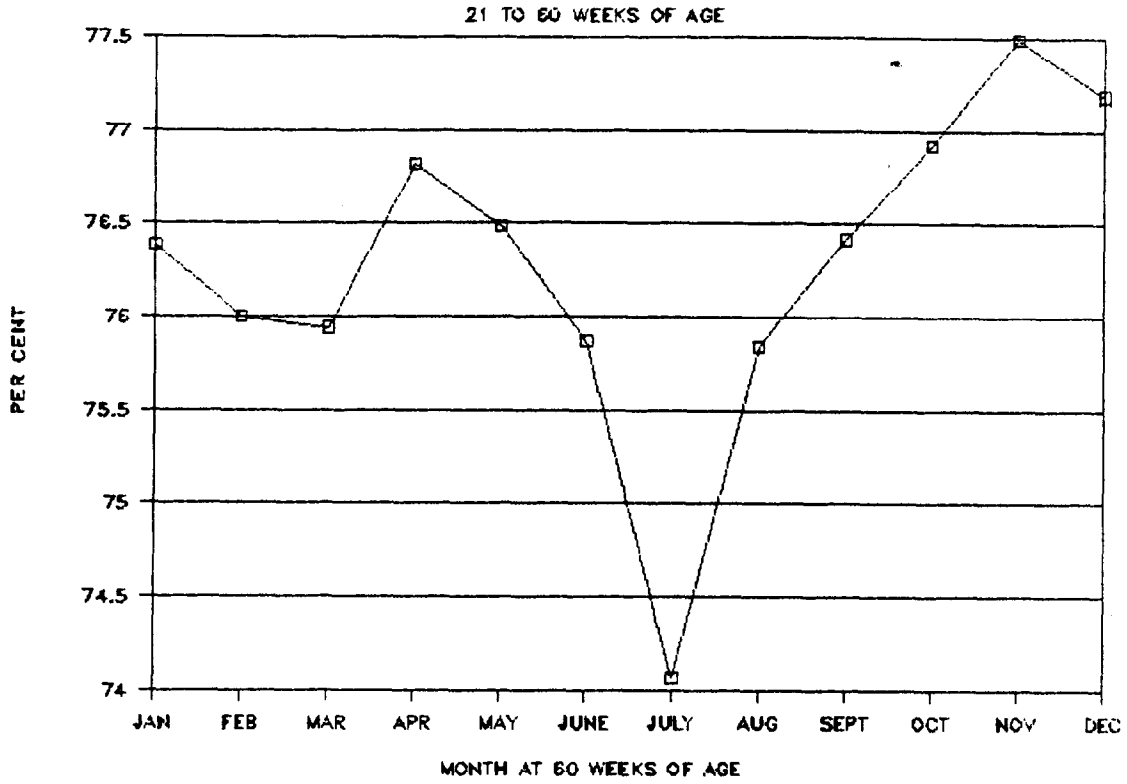
Adult mortality, on the other hand, is highest in those flocks which reach 60 weeks of age in August through November. These are the flocks which are hatched between June and September and start to lay during the winter months. Lowest mortality is observed in flocks hatched during the winter or spring months (see figure 5 on page 6).

Table 5. Performance by Month at 60 Weeks of Age (20 to 60 Weeks of Age)

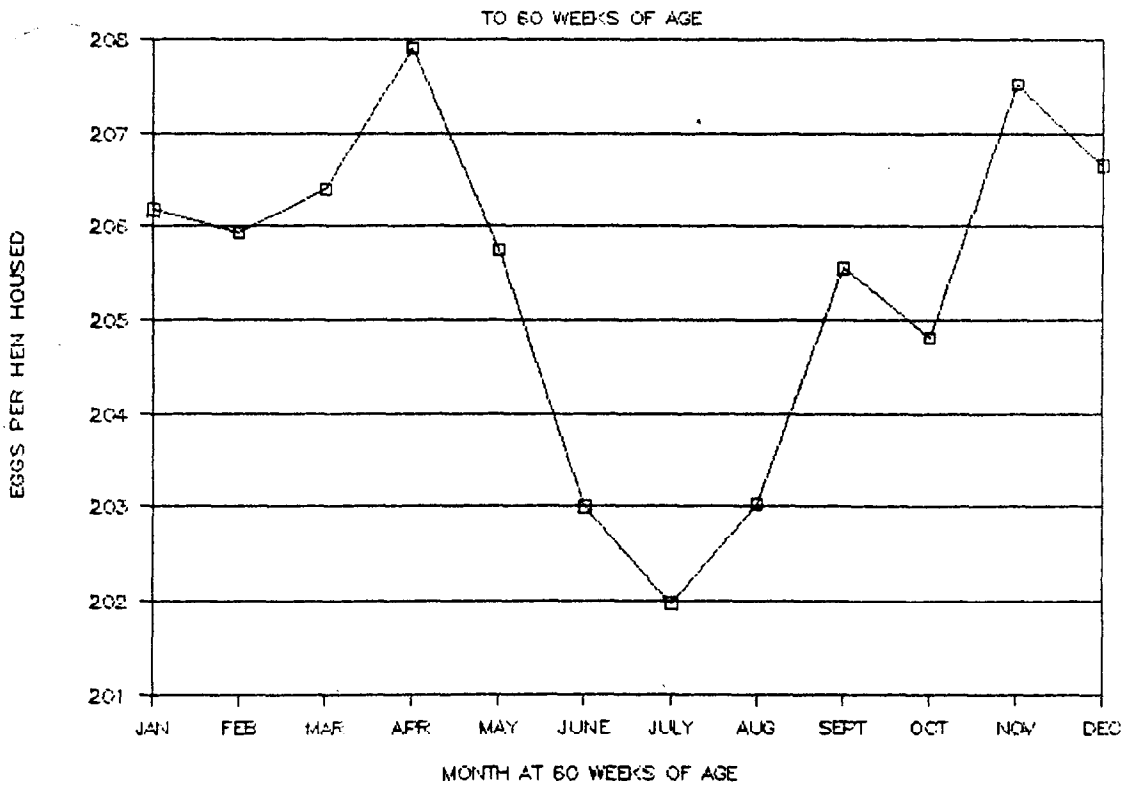
Month	No. of Flocks	Hen-Day Production		Hen-Housed Eggs	Percent Mortality	Feed Consumption (lbs/100 hen-days)	Feed Conversion (lbs/doz)
		Average (%)	Peak* (%)				
Jan	43	76.39	87.17	206.19	8.52	21.66	3.41
Feb	46	75.00	85.94	205.93	8.34	21.88	3.46
Mar	37	75.94	85.73	206.41	9.04	22.04	3.48
Apr	32	76.82	87.01	207.91	7.95	22.86	3.56
May	36	76.48	88.43	205.75	8.67	22.90	3.63
Jun	39	75.87	87.05	203.00	8.03	22.72	3.59
Jul	33	74.06	87.25	201.97	8.47	22.25	3.60
Aug	45	75.84	88.33	203.02	9.33	22.04	3.50
Sep	38	76.42	88.37	205.55	9.30	22.09	3.47
Oct	34	76.93	88.42	204.82	9.91	21.65	3.38
Nov	61	77.50	88.63	207.52	9.33	21.65	3.35
Dec	43	77.19	88.43	206.65	8.62	21.87	3.40
Average/ Total	487	76.35	87.60	205.49	8.82	22.09	3.48

* 4-week average.

AVERAGE HEN DAY EGG PRODUCTION

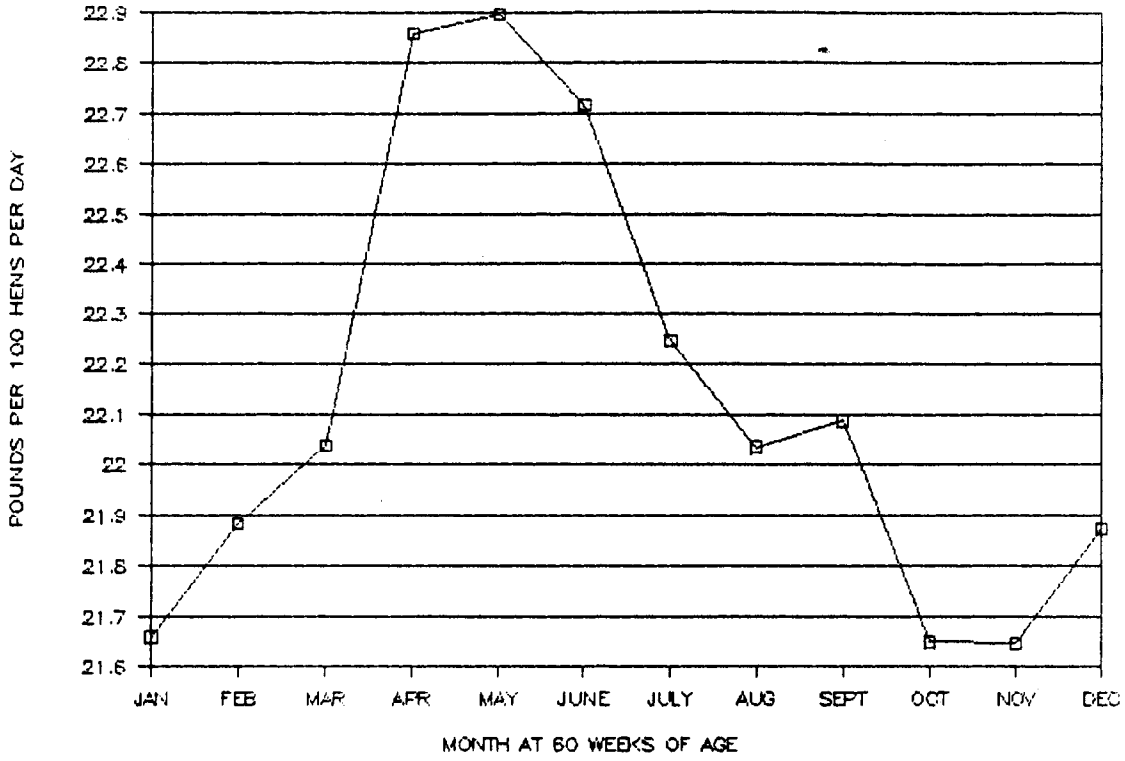


HEN HOUSED EGG PRODUCTION



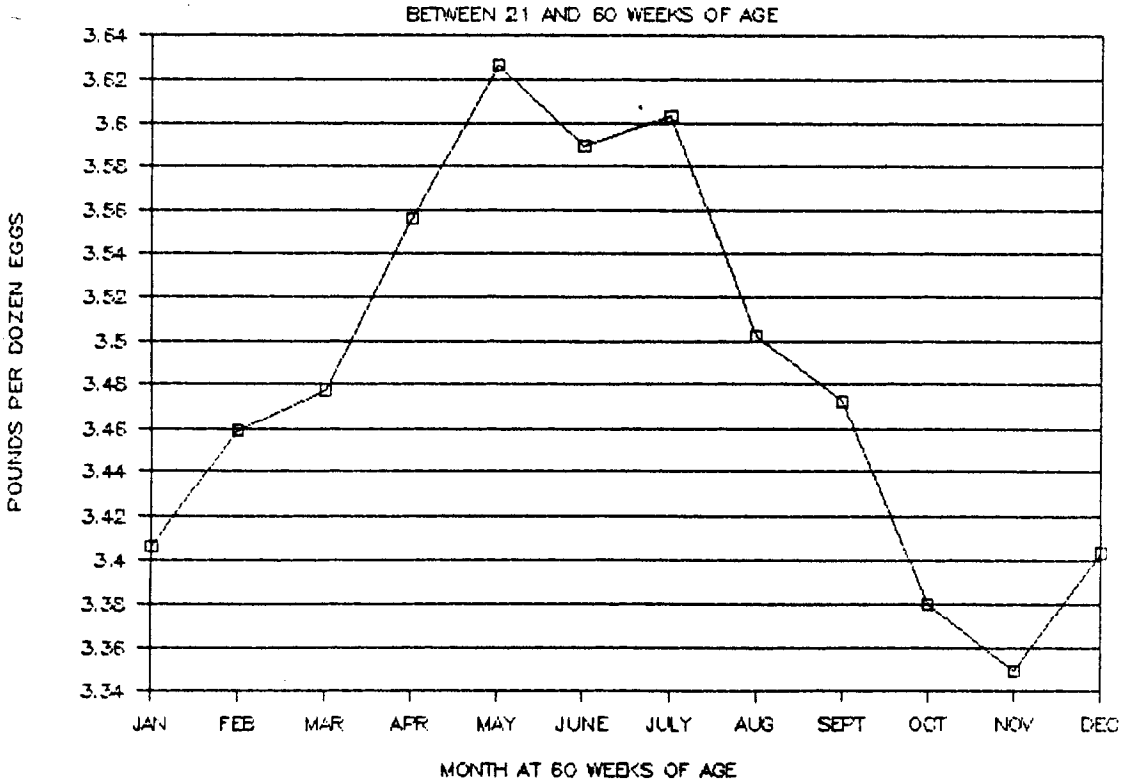
AVERAGE DAILY FEED CONSUMPTION

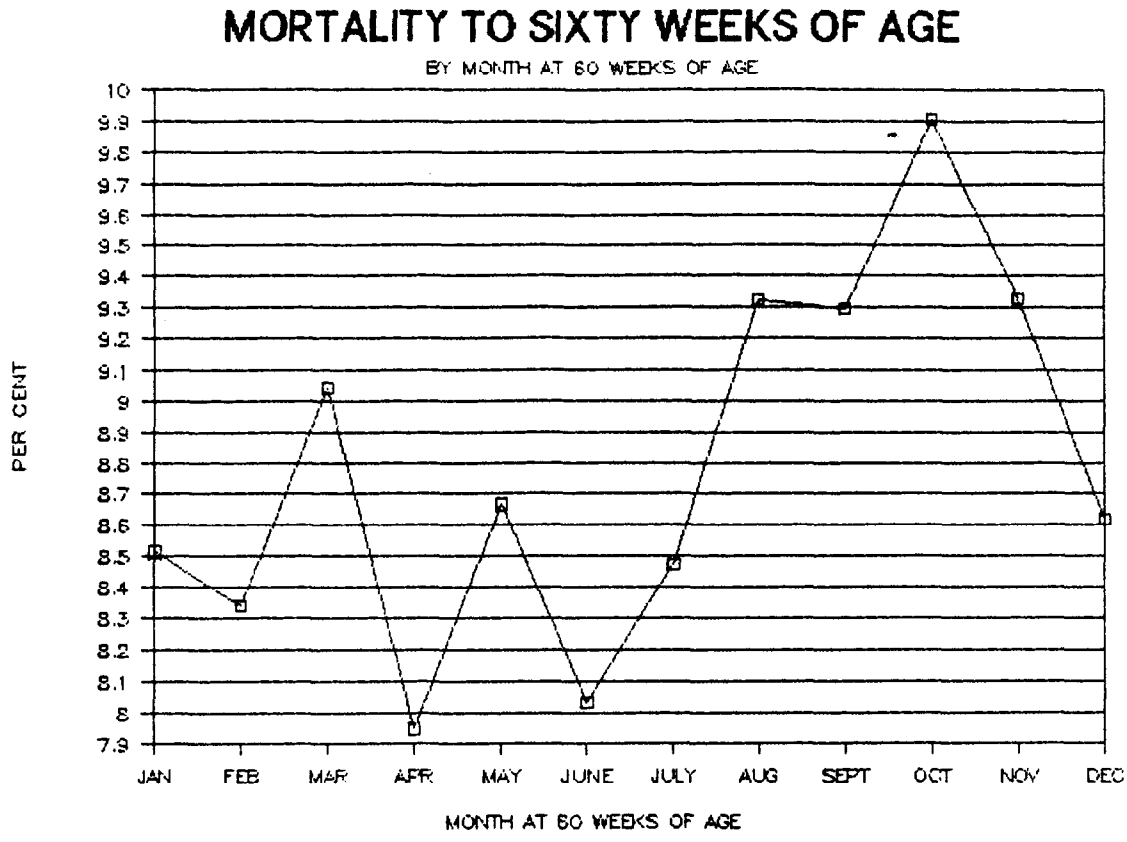
BETWEEN 21 AND 60 WEEKS OF AGE



AVERAGE FEED CONVERSION

BETWEEN 21 AND 60 WEEKS OF AGE





Performance differences observed in 40-week periods (20 to 60 weeks of age) may be lessened over longer periods when all seasons are represented. Sixty weeks was used in this analysis since many flocks are molted between 60 and 70 weeks of age and many of the records would be unusable if a longer laying period was used.

Acknowledgments

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Distribution of PROGRESS IN POULTRY is made to industry leaders and fellow researchers. Anyone wishing to be placed on the mailing list may send a request to the Editor.

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