

## Impact of Feeding Methods and Early Lay

C. Gibson, J. Spradley, A. Davis and J. Wilson  
University of Georgia  
Athens, GA

Broiler breeder females are sensitive to how they are fed during sexual maturation and possibly the early weeks of lay. Two studies conducted at the University of Georgia over the last three years indicates that hens will lay more eggs over the production period if fed daily verses skip-a-day in the first study or twice daily verses once per day in the second study.

Background and theory: When pullets move from 8 hours of light to 14 hours of light, they undergo hormonal changes that result in ovary and oviduct growth. This process is related to nutrient availability. When nutrient intake is low or infrequently available animals delay sexual maturity until nutrient intake is sufficient to sustain reproductive development. If skip-a-day feeding is continued into the laying house after the birds are on long day length and through 1-5% egg production, maturing pullets are receiving mixed reproductive signals. On the days birds are fed, nutrients are abundant but on off feed days they are exposed to negative hormonal signals. Feeding twice a day is an extension of this same theory that going 24 hours between feeding periods maybe insufficient to sustain positive hormonal signals for optimum ovary development.

The first study examined whether providing daily nutrient intake during the critical period of ovarian development that follows photostimulation for reproduction improves subsequent egg production. Pullets and cockerels were fed on a skip-a-day basis during rearing. Pullets were weighed at 20 weeks of age and then distributed into 30 laying pens such that each pen had a similar body weight distribution. Each individual laying pen consisted of 35 hens and 4 roosters. At 21 weeks of age the birds were photostimulated for reproduction and 15 of the laying pens were placed on an every day feeding schedule while the other 15 pens were maintained on a skip-a-day feeding schedule until they reached 8% egg production at 26.5 weeks of age. From 26.5 - 65 weeks of age all hens were fed on an every day basis. The coefficient of variation of body weight did not differ between the hens of the two treatment groups at any point from 21-65 wk of age. Weekly percent hen day egg production was significantly greater in the hens fed every day versus skip-a-day after photostimulation from week 25 of age to 65 weeks of age except for week 35, 37-39, and 47 of age. Total hen day egg production through 65 weeks of age in the hens that were provided feed every day after photostimulation was significantly greater (172 versus 155 eggs/hen) than in hens fed on a skip-a-day basis until 26.5 weeks of age. These results suggest that continuing skip-a-day feeding after photostimulation until 8% egg production does not improve body weight uniformity, but does cause lasting reproductive dysfunction in broiler breeder hens.

In the second study, the typical daily feeding of a restricted amount of feed was compared to feeding the hens the same restricted amount of feed split into a morning and afternoon feeding after photostimulation. In a commercial flock, birds rapidly consumed their feed

and experience a fasting period until they are fed the next day. Pullets and cockerels were reared using a skip-a-day feeding program. All pullets were weighed at 20 weeks of age and then distributed into 30 laying pens such that each pen had a similar body weight distribution. Each individual laying pen consisted of 35 hens and 4 roosters. At 21 weeks of age the birds were photostimulated for reproduction and 15 of the laying pens were placed on a once a day feeding schedule while the other 15 pens were placed on a twice a day feeding schedule. The total amount of feed provided per day to all the laying pens was the same but the birds fed once a day received all of their feed at 06:30 am, while the birds fed twice a day received 60% of their total feed allotment at 06:30 am and the other 40% at 3:00 pm. Even though both treatment groups began egg production at the end of week 23, the birds fed twice a day laid more eggs through 42 weeks of age than those fed once a day. Additionally, the average egg weight for the entire production period which lasted until the birds were 60 weeks of age was greater for the hens fed twice a day versus once a day. Overall body weight uniformity for the entire laying period was significantly better for hens fed twice a day versus once a day. Cumulative mortality was significantly higher, however, for hens fed twice a day than those fed once a day. The results indicate that feeding broiler breeder hens twice a day after photostimulation may enhance reproductive performance during the early lay period.

These studies suggest that more regular feeding of photostimulated birds encourages positive reproductive development that results in greater egg production than when feeding is limited to every other day or once per day in maturing broiler breeders.