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Tampering with Food by Laying Hens

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(Received May 27, 1985)

Key words: Feeding behavior, food tampering, pecking, hen

In recent years, many efforts have been made to express the feeding behavior of chickens quantitatively. Head movement of hens while in the feeder has usually been regarded as an indication of eating. For example, Ito and Mimura equiped both sides of a feeder with near-infrared detectors, and the cumulative time in which a beam synchronized with the switch of a digital clock was interrupted by the head or neck of a hen was considered an index of the total time spent in feeding. It has been said, however, that caged hens spend considerable time just tampering or playing with their food. The present authors are also of the opinion that some pecking at feed is simply pecking for leisure, so to speak. Consequently, further research must be carried out to devise a means which would demonstrate that such behavior actually exists on the part of hens. We have devised a method utilizing a VTR-system for distinguishing actual eating from simply food tampering.

Materials and Methods

Each of six White Leghorn hens (Shaver, 10 months old) was placed in a separate cage exposed to light for a period of 14 h (06:00–20:00) each day. The temperature was maintained at 20 ± 1°C. At 10:00 A.M., each hen was provided with 150 g of pelleted feed (CP, 17%; ME, 2830 kcal/kg) in the feeder open at one side for viewing by a video camera. The feeder was long (60 cm) enough to prevent scattering of the pellets. The mean weight of each pellet was 54 ± 4 mg. Feed intake was measured every 30 min. By using two sets of the VTR-system (video camera, National WV-1300 A; lens, FF 16 S; video deck, NV-8950) placed at the side of the feeder fixed to either end of a line of cages so as to provide the best possible view of eating activity, feeding behavior was observed on total of six different hens, two hens a day, for three days. The following time schedule was adhered to: 06:00–07:00, after lighting; 09:00–11:00, before and after feeding; 19:00–20:00, before dark period. A slow reproducing analysis of the video tape made it possible to distinguish between actual...
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eating and food tampering.

Results and Discussion

Discrimination could be made between actual eating and tampering with food during normal eating time, but in some cases, the hens curved their necks in such a way that their beaks were at a dead angle, making discrimination impossible. This problem may be obviated through use of X-ray film such as that employed by Zweers in his report using pigeons. An examination was made of observations conducted on 6 hens for 8 periods of 30 min. each, exclusive of those times beaks were at dead angles and no pecking occurred. The proportion of actual eating to all pecks at feed was about 50% just after lighting and feeding (06:00-06:30, 10:00-10:30) and 20-30% at other times. The relation between calculated feed intake (peck number in actual eating, multiplied by 54 mg, the mean pellet weight; X g) and practical feed intake (Y g) during each period is shown in Fig. 1. The regression equation was found to be $Y=1.04X-0.18$ ($r=0.996$, $P<0.01$). This equation shows that the hens consume one pellet by one peck in actual eating. We have already reported the probability that hens eat one pellet at a time when fed pelleted feed, and that more than half the total pecks at feed is likely to be without actual intention to eat. This is supported by the data of the present report. If the number of pecks at feed is known, play pecking at feed may be calculated from the following equation: No. of pecks at feed–(Feed intake/Mean pellet weight). We formerly regarded all pecks at feed without eating as play eating, but some of them may actually represent pre-consummatory or post-consummatory behavior. However, a few cases were observed in which the amount of feed intake was zero even though there were more than 100 pecks (maximum: 673 pecks) during a 30 min. feeding period. Such pecking

![Fig. 1. Relationship between calculated and practical values of feed intake during each 30 min. period.](image)

1) Number of pecks in actual eating multiplied by mean pellet weight (54 mg)
may possibly arise from the same urge responsible for pecking at the wire floor of the
cage.

Our data make it clear that hens peck at feed both for actual eating and out of
a sense of play, as was also suggested by Gentle et al.\textsuperscript{2)} Thus, pecking at feed does
not necessarily indicate actual eating.

Additional research will be necessary to distinguish between these two aspects of
behavior in mash fed hens.

Acknowledgments

The authors wish to thank Prof. Dr. K. Mimura for his critical advice in carrying
out the present research.

References

Japanese)
1984. (in Japanese)