

Ampule of frozen turkey semen.

it consists of three circular folds of muscular tissues, covered with a heavily ciliated mucosal epithelium, which effectively separates the vaginal and shell gland regions of the oviduct. By removing the cilia, we discovered that the sperm-host gland apertures were confined to one fold adjacent to the shell gland. This explains why fertility is curtailed when there is a hard-shelled egg in the shell gland at the time of insemination. Apparently, the pressure of the hardshelled egg compresses the tissue and seals many of the apertures so that sperm entry is effectively blocked. It also points out the need for deep and multiple inseminations to maintain optimum fertility in the turkey hen.

We also are developing techniques for the long-term storage of turkey semen. This would: (1) enable the turkey industry to utilize in subsequent years male lines that had been disposed of because of maintenance costs; (2) permit early sale of male stock used for routine multiplying inseminations rather than keeping them for an entire season; and (3) permit the retention and preservation of unique germplasm such as mutants and endangered breeds.

We have studied the best cryoprotective agent for freezing; the optimal cooling rate; the optimal thawing rate

for frozen semen; and the procedure for the removal of the cryoprotective agent before insemination. But precise information is still lacking, and freezing turkey semen remains economically unsuccessful. However, progress has been made. Progeny have been obtained when the thawed, frozen sperm are introduced into the magnum, which lies between the two sperm storage sites, by a surgical procedure.

-F. X. Ogasawara

Turkey cage management

In several years of testing, the reproductive performance of Broad Breasted White breeder males was studied under different systems of management including cages, cubicles, and floor pens. Our results indicated that males kept in cages from 30 to 52 weeks of age produced more and better semen than comparable males kept in cubicles or on the floor. The ratio of average feed consumption to average body weight was approximately the same for males in all managements.

Further studies showed that males showing a marked decline in semen volumes at 52 weeks of age could be recycled to a second period of semen production by being subjected to an 8-week period of non-stimulatory light (8L:16D) followed by a 20-week period of stimulatory light. Males rejuvenated in this manner produced considerably more semen per bird than comparable males kept continuously on stimulatory light.

Other tests indicated that turkey hens kept in cages produced slightly more eggs than comparable hens kept on the floor, but fertility and hatchability were about 5 percent below that for hens kept on the floor. It was also noted that the incidence of soft-shelled and cracked eggs was approximately 5 percent greater from hens in cages than from floor birds. After three years of intense selection for better shell quality, we were only able to reduce the incidence of soft-shelled and cracked eggs by about 2 percent.

-Allen Woodard

Controlled feeding of leghorn layers

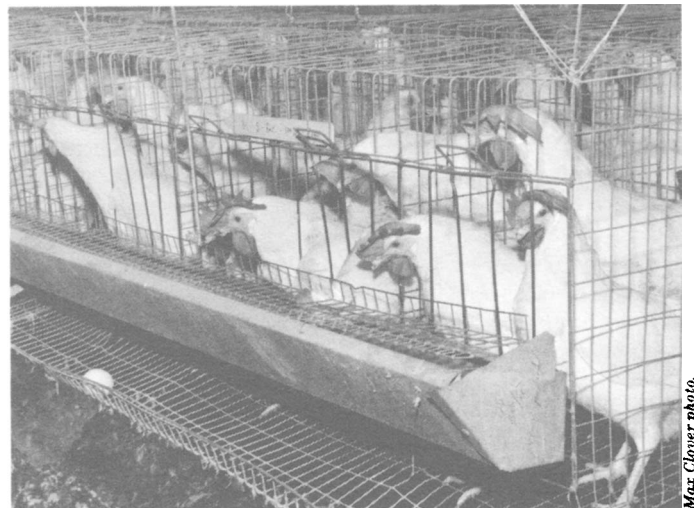
Feed represents up to 70 percent of the cost of producing eggs. Therefore, one of the best opportunities to reduce costs is to increase feed conversion efficiency. This might be accomplished by limiting body weight gains through restricted feed intake. Heavy broiler-breeder strains are routinely maintained on controlled feeding programs to prevent excess fat deposition, but Leghorn layers are normally full-fed with access to feed 24 hours a day.

Controlled feeding experiments which we conducted at four field locations indicate that some flocks of Leghorn layers do over-consume energy when full-fed. In these cases, reducing feed intake by 8 to 12 percent slightly lowered rate of lay and egg size, but the trend was toward a higher egg income over feed cost of one to two cents per dozen compared with full-fed controls. Strain of layer significantly affected the response to feed restriction.

Although additional research is needed to refine the method, controlled feeding is being tried on a limited basis by some commercial egg producers. Equipment manufacturers

are designing feed delivery systems to simplify adaptation of the technique.

Milo Swanson
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Max Clover photo.

Leghorns on restricted feed test.