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Trends in Management Practices on U.S. Table-Egg Farms, 1999–2013

In 2010, the U.S. Food and Drug Administration (FDA) implemented an egg safety rule to control *Salmonella* Enteritidis on U.S. farms with 3,000 or more birds that produce eggs for human consumption.¹ The FDA used information from the USDA's National Animal Health Monitoring System (NAHMS) Layers '99 study while assessing the need for and economic impact of the egg safety rule. As practices on table-egg farms have changed substantially since 1999, it was determined that updated information would be useful to the poultry industry and government agencies. As a result, in summer 2013 NAHMS conducted the Layers 2013 study to describe current management practices on U.S. table-egg farms and, in particular, management practices relevant to controlling *S. Enteritidis*.

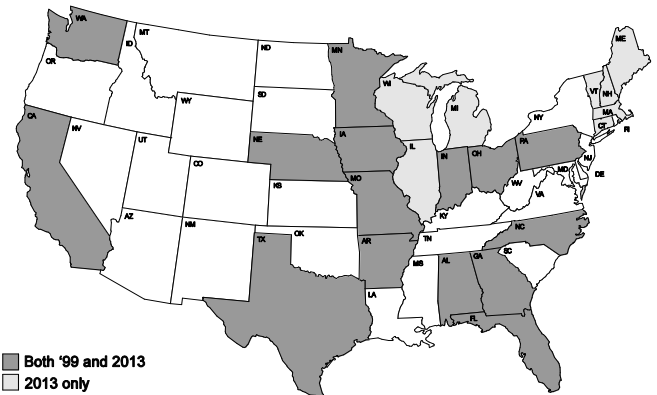
The 1999 study sample was selected from the USDA's National Agricultural Statistics Service's list of table-egg operations with 30,000 or more hens in 15 States.² The 2013 study sample was selected from the FDA list of all registered egg producers with 3,000 or more laying hens in 19 States³; a subset of farms with 30,000 or more hens was used for comparison to the 1999 study. Results from the two studies are highlighted in this document.

¹Code of Federal Regulations, Title 21, Volume 2, Part 118 Production, storage, and transportation of shell eggs.

²Alabama, Arkansas, California, Florida, Georgia, Indiana, Iowa, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Pennsylvania, Texas, Washington.

³Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Pennsylvania, Texas, Washington, Wisconsin, New England (CT, MA, ME, NH, VT) considered one State.

Study States for Layers '99 and Layers 2013*



*New England States (CT, MA, ME, NH, VT) were considered one State for study analyses.

Changes in layer management

Cage-free housing

Cage-free housing increased substantially from 1999 to 2013. For example, in 1999 only 0.8 percent of farms (0.6 percent of houses) had at least one cage-free house compared with 18.7 percent of comparable size farms (11.8 percent of houses) in 2013. A considerable difference in housing practices between large and small farms was seen in the 2013 study. Nearly all farms with fewer than 30,000 layers (95.4 percent) used cage-free housing (figure 1).

Molting

The percentage of farms that routinely molted their flocks decreased from 82.6 percent in 1999 to 57.0 percent (comparable size farms) in 2013. A considerable difference in molting practices between large and small farms was seen in the 2013 study. Very few farms with fewer than 30,000 layers (6.2 percent) routinely molted their flocks

(figure 1). For farms that molted their flocks in 2013, the most common procedure was to feed an alternative diet rather than to restrict or withhold feed.

Changes in egg handling

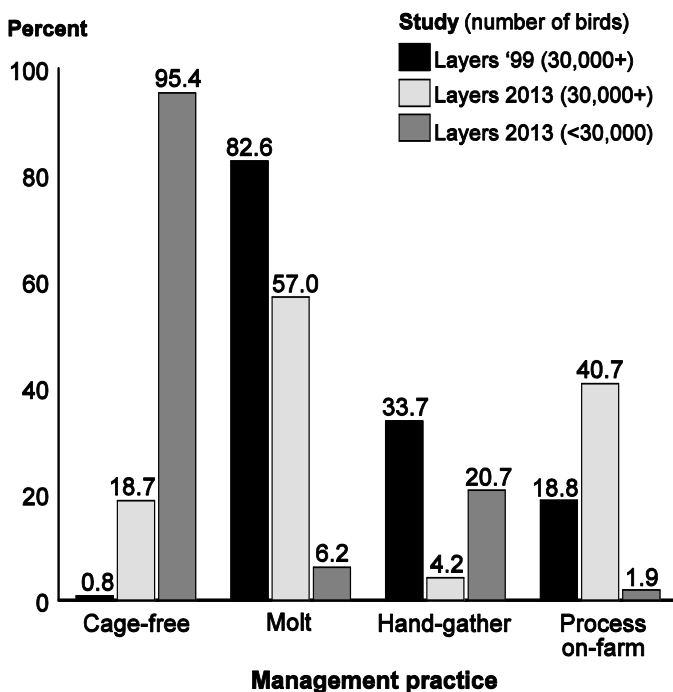
Hand-gathered eggs

The percentage of farms that gathered any eggs by hand decreased from 33.7 percent in 1999 to 4.2 percent (comparable size farms) in 2013. The percentage of eggs gathered by hand decreased from 10.6 percent in 1999 to 0.4 percent in 2013. A higher percentage of small farms gathered eggs by hand in 2013 compared to large farms (20.7 and 4.2 percent, respectively). In addition, 8.2 percent of eggs on small farms were hand-gathered compared with 0.3 percent of eggs on large farms) [figure 1].

On-farm processing

The percentage of farms that processed eggs on-farm increased from 18.8 percent in 1999 to 40.7 percent in 2013 (comparable size farms); however, only 1.9 percent of small farms processed eggs on-farm in 2013 (figure 1).

Figure 1. Percentage of farms by management practices and by study



Changes in *Salmonella* Enteritidis control practices

Quality assurance program

A higher percentage of farms participated in an egg (*S. Enteritidis*) quality assurance program in 2013 than in 1999 (81.5 and 56.1 percent, respectively) [figure 2]. This trend is especially true of participation in State-sponsored programs, which increased from 22.7 percent of farms in 1999 to 48.9 percent in 2013 (data not shown).

Environmental testing

The percentage of farms that routinely tested for *S. Enteritidis* in the layer houses increased from 58.0 percent in 1999 to 98.7 percent in 2013 (figure 2). The FDA egg safety rule requires environmental testing in layer houses when hens are 40 to 45 weeks of age; farms that only produce eggs for the breaker market are exempt from this testing requirement.

Monitoring pullets

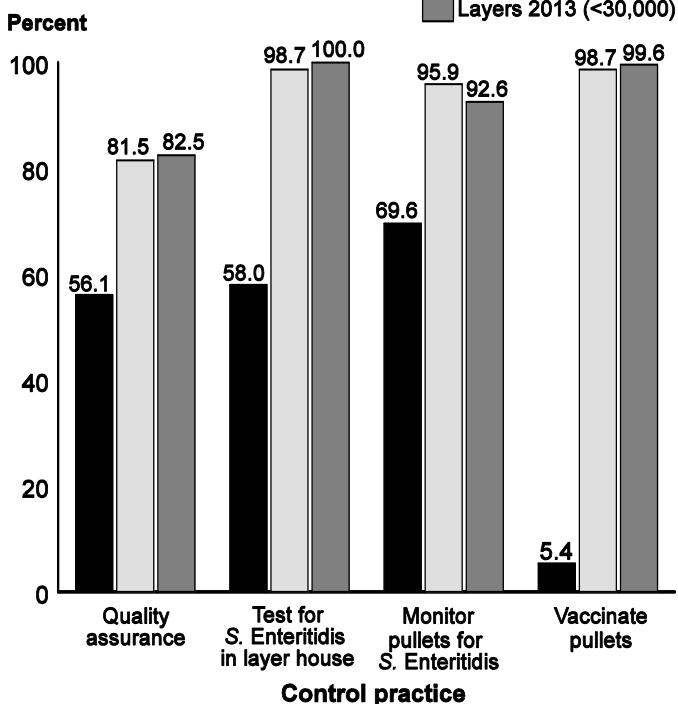
The percentage of farms that placed *S.-Enteritidis* monitored⁴ pullets increased from 69.6 percent in 1999 to 95.9 percent in 2013 (figure 2). The FDA egg safety rule requires farms that produce shell eggs for human consumption to test pullet-house environments when pullets are 14 to 16 weeks of age.

Vaccinating pullets

In 1999, only 5.4 percent of farms (14.6 percent of layers) placed birds that had been vaccinated against *Salmonella* as pullets (figure 2). In 2013, 98.7 percent of farms (99.5 percent of layers) placed birds that had been vaccinated as pullets.

⁴ Test “dead-on-arrival” chicks or chick-box paper; culture environment or manure; PCR (Taqman, BAX) or other rapid test (SDIX, Neogen) of environment or manure; test live birds; and serology.

Figure 2. Percentage of farms by *Salmonella* Enteritidis control practices and by study



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Conclusion

For farms with 30,000 or more laying hens, the percentages of farms with cage-free housing and that processed eggs on-farm increased from 1999 to 2013, while the percentage of farms that routinely molted their flocks and that gathered eggs by hand decreased. The percentage of farms that participated in a *S. Enteritidis* quality assurance program, routinely tested for *S. Enteritidis* in the layer house, monitored *S. Enteritidis* in pullets, and vaccinated pullets for *Salmonella* increased from 1999 to 2013.

The percentages of farms that used various *S. Enteritidis* control practices (figure 2) were similar for large and small farms in 2013.