

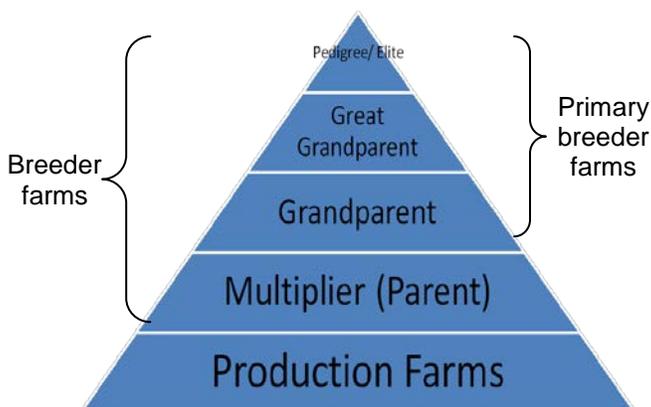
## Highlights of Health and Management Practices on Breeder Chicken Farms in the United States, 2010

The USDA's National Animal Health Monitoring System (NAHMS) conducted the Poultry 2010 study. One objective of the study was to describe farm-level health and management practices for chicken primary breeder and multiplier flocks. The poultry companies that participated in the Poultry 2010 study accounted for 100.0 percent of primary breeder, 81.2 percent of broiler, 71.7 percent of table-egg layer, and 81.5 percent of turkey production in the United States. Companies that had chicken breeder farms (either company owned or contract) participated in the breeder farm phase of the study, results of which are presented in this report.

### Background: poultry industry structure

Breeder farms are comprised of primary breeder farms and multiplier farms. The illustration below shows how chicken breeder farms in the United States are structured (figure 1). Farms with pedigree/elite, great-grandparent, and/or grandparent birds are considered primary breeder farms, all of which produce eggs for hatching. The progeny of pedigree flocks form great-grandparent flocks, and the progeny of great-grandparent flocks form grandparent flocks, and so on. The progeny of multiplier (i.e., parent) flocks become production birds on broiler (meat production) or layer (table-egg production) farms.

**Figure 1. Structure of breeder chicken farms in the United States**



### Breeder farm characteristics

Birds on all primary breeder farms and birds on over 9 of 10 multiplier farms that produced table-egg layers were owned by breeder companies. Birds on nearly all multiplier farms that produced broilers were owned by broiler production companies (table 1).

**Table 1. Percentage of farms by bird ownership and by farm type**

Bird ownership	Percent Farms				
	Farm Type				
	Primary breeder—broiler	Primary breeder—table egg	Multiplier—broiler	Multiplier—table egg	All breeder farms
	Pct.	Pct.	Pct.	Pct.	Pct.
Breeder company	100.0	100.0	1.3	90.9	13.5
Production company	0.0	0.0	98.7	9.1	86.5
Total	100.0	100.0	100.0	100.0	100.0

Primary breeder farms had an average of 14,246 laying hens while multiplier farms had an average of 19,680 laying hens.

The average ratio of hens to roosters on breeder farms was about 11:1. Fertility in breeding flocks declines as the flock ages. Young males can be added to the breeder flock, which stimulates breeding activity through competition between new and established males. This practice is called spiking. Nearly all multiplier farms (96.7 percent) and 8 of 10 primary breeder farms (80.2 percent) had introduced spiking males to stimulate breeding activity during the previous 12 months (table 2). About one-half of multiplier farms (49.5 percent) but less than 1 percent of primary breeder farms (0.6 percent) that introduced spiking males did so three or more times during the previous 12 months. The source of spiking males for nearly all farms (99.9 percent) was other farms from the same company. Nearly all breeder farms that received spiking males from other farms (99.8 percent) performed routine testing of the source farms for health

status (e.g., *Mycoplasma* or other tests) and 99.4 percent tested males (e.g., *Mycoplasma* or other tests) before placing them on the farm.

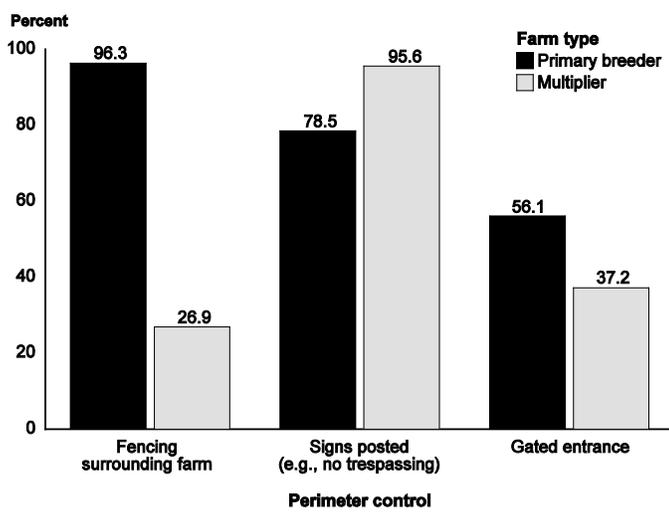
**Table 2. Percentage of farms that introduced spiking males during the previous 12 months to stimulate breeding activity, by farm type**

Farm Type	Percent Farms	
	Primary breeder	Multiplier
All farms	80.2	96.7

### Breeder farm biosecurity

Controlling access to the farm can prevent introduction of disease via people and vehicles. Nearly all primary breeder farms had fencing surrounding the farm. Signs (e.g., no trespassing) were posted on nearly all multiplier farms (95.6 percent) [figure 2]. Additionally, 88.3 percent of poultry houses had locks on doors, and 75.1 percent had anterooms that personnel had to pass through that separated the outside area from the inside area. The majority of primary breeder farms (63.4 percent) had gravel or a hard surface immediately surrounding their poultry houses, and the majority of multiplier farms (78.9 percent) had short grass immediately surrounding the houses. No breeder farms had tall grass or brush immediately surrounding the poultry houses.

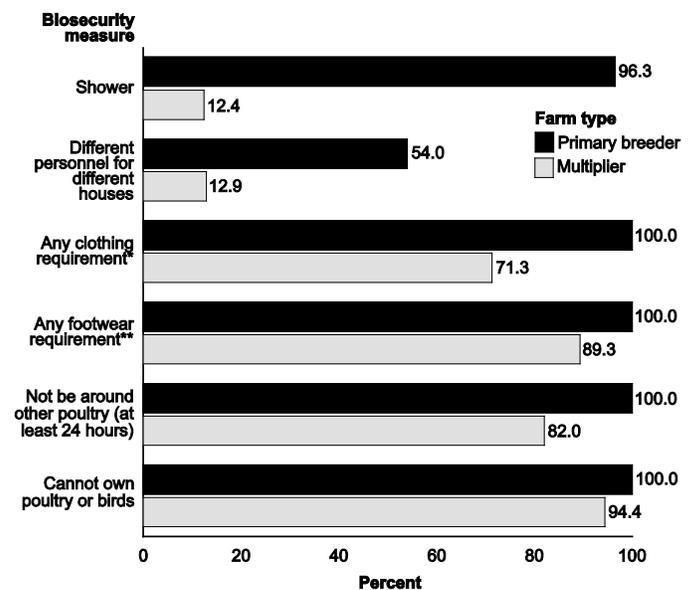
**Figure 2. Percentage of farms by perimeter control and by farm type**



Employee management is important for the prevention of disease introduction and spread. Employees worked at another commercial poultry production or processing facility for less than 1 percent of multiplier farms (0.6 percent) and for none of the primary breeder farms. All primary breeder farms and nearly all multiplier farms (93.0 percent) had written biosecurity protocols. Additionally, over 9 of 10 primary breeder farms (90.8 percent) conducted formal biosecurity training for employees.

No primary breeder farms allowed employees that entered poultry houses to own poultry or other birds, and nearly all required that the producer or employees shower before entering poultry houses. In addition, all primary breeder farms required that the producer and employees change clothing, change shoes or use shoe covers, and to not have been around poultry at least 24 hours before entering poultry houses. Over 8 of 10 multiplier farms required that the producer and employees use footwear protection, not be around other poultry, and not own poultry or birds (figure 3).

**Figure 3. Percentage of farms by biosecurity measures always or sometimes required for the producer and employees who entered the poultry houses, and by farm type**



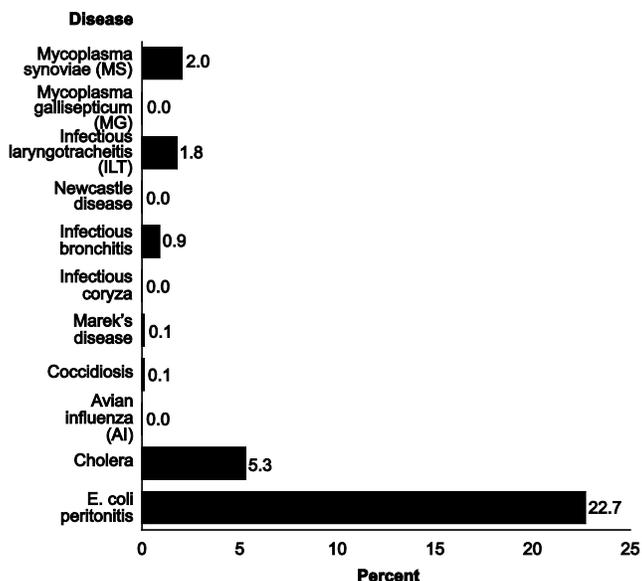
\*Wear disposable coveralls or change clothing.  
\*\*Change shoes, use shoe covers, use foot bath, or scrub footwear.

All primary breeder farms and over 90 percent of multiplier farms washed and disinfected feeders, flushed and disinfected water lines, washed down and disinfected the hoses, and cleaned the ventilation system after every flock.

### Bird health and vaccination

Very few disease problems were reported for breeder farms, the most common being *E. coli* peritonitis; 22.7 percent of farms reported at least a slight problem with *E. coli* peritonitis in the last completed flock (figure 4). None of the breeder farms had any history of infectious coryza or avian influenza.

**Figure 4. Percentage of farms that had slight, moderate, or severe problems with the following diseases in the last completed flock**



All breeder farms participated in the National Poultry Improvement Plan (NPIP) avian influenza (AI) program. All primary breeder farms and more than 85 percent of multiplier farms participated in NPIP programs for pullorum, *Mycoplasma synoviae* (MS), and *Mycoplasma gallisepticum* (MG) (table 3). Nearly all breeder farms tested their last completed flocks for MS, MG, and AI (99.7, 99.7, and 99.8 percent of farms, respectively). All primary breeder farms and 4 of 10 multiplier farms (40.1 percent) tested their last completed flock for pullorum typhoid. (Note: Flocks may have been tested as pullets before coming onto the farm.) None of the farms that tested their last completed flocks for pullorum, MG, or AI had a positive test result, and less than 1 percent of farms had a positive test result for MS (0.9 percent).

**Table 3. Percentage of farms that participated in an NPIP program for the following diseases, by farm type**

Disease	Percent Farms		
	Farm Type		
	Primary breeder	Multiplier	All farms
	Pct.	Pct.	Pct.
Pullorum-typhoid	100.0	95.6	96.1
<i>Mycoplasma synoviae</i> (MS)	100.0	85.7	87.1
<i>Mycoplasma gallisepticum</i> (MG)	100.0	85.8	87.1
Avian influenza (AI)	100.0	100.0	100.0

Primary breeder farms did not vaccinate breeding hens while in lay. About one-third of multiplier farms vaccinated hens in lay against Newcastle disease and infectious bronchitis (31.5 and 31.5 percent, respectively). Over 80 percent of primary breeder farms and multiplier farms vaccinated pullets against infectious laryngotracheitis, Newcastle disease, infectious bronchitis, *Salmonella*, infectious bursal disease, avian encephalomyelitis, chicken anemia virus, reovirus, fowl pox, and coccidiosis. All primary breeder farms vaccinated pullets for *E. coli*, and nearly all multiplier farms (98.0 percent) vaccinated pullets for cholera.

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