

Poultry Genetic Selection Must Address Public Perception Issues

ANDY ANDREWS
Lancaster Farming Staff
MANHEIM (Lancaster Co.) — It'll take more than pushing a few buttons to achieve desired traits in poultry through genetic selection.

According to an Iowa State poultry expert, traits important to the poultry breeding industry are controlled by many different genes. Finding all of them — and discovering how they interact — will lay the groundwork for an improved bird, according to Susan J. Lamont.

Lamont, professor of animal science at Iowa State University in Ames, Iowa, spoke to about three dozen poultry producers and agri-industry representatives Monday afternoon. She spoke at the Penn State-sponsored Poultry Management and Health Seminar at Kreider's Restaurant.

Finding those traits requires studying "dozens of genes," said Lamont. To bring the genes necessary into commercial lines will

require more research — and caution.

Selecting for those traits could be economically feasible, Lamont said, if they lower the cost of what you're replacing. But selecting for certain genes may require giving up other genes — a complex tradeoff.

Already, one company is making use of technology to determine the gender of eggs with 100 percent accuracy. Embrex, of Raleigh, N.C., utilized funding from the USDA small business innovative grant to sort eggs by gender.

The technology is "sound," Lamont noted, "and can be developed in the company."

Lamont quoted Catherine Ricks, vice president of Embrex research and development. "In laboratory trials," according to Ricks, "we have determined the gender in a series of eggs with 100 percent accuracy."

The company noted it plans to

use the grant money to develop a "novel device used to sort avian eggs by gender," Lamont noted.

Lamont questioned that to look at what genetics can do for poultry lines and bird health, scenarios have to be examined. "What if transgenic poultry were widely accepted?" she said. "What if sexing embryos was a routine practice? And what if the use of antibiotics in poultry was banned?"

Those are issues the industry must face.

Transgenic poultry could someday be a routine method of using hens as "bioreactors," since eggs are a very efficient producer of proteins.

But the industry must find a way to prove how important to human medicine the use of recombinant technology can be.

Already, several companies are looking into the many ways genes can be manipulated to not only produce a better bird, but to fight poultry disease and even



Poultry genetic research and public perception were highlights of a presentation by Susan J. Lamont, professor of animal science at Iowa State University, center. From left, Paul Patterson, Penn State associate professor of poultry science; Lamont; and Bob Elkin, Penn State Poultry Science department head.

improve human health. Companies include Avigenics, CIMA, OviGen, Ovo Biosciences, TranXenoGen, Vivalis, and others.

Some are looking into producing birds with specific disease-resistant capabilities, Lamont noted.

However, the "holdups" in these developments include:

- Regulatory (genetically modified organism) issues, prominent in the public's perception. Many technology-based companies didn't talk about the benefits of genetically modified products before they were released. The products must be shown to be completely "risk-free," said Lamont, even though most products aren't.

- Technical development issues need to be overcome.

- Knowledge of genes and genetic mechanisms in poultry needs to be fully understood.

A benefit to sexing the embryos — to identify the gender of the egg at the embryonic level — could have an impact. Already, three-quarters of a billion male layer chicks are killed annually. The sexing could cut these numbers dramatically.

If sexing could be done, then could actual gender alteration be far behind? Lamont noted there were no "real success stories yet," but the technology to either kill off an unapproved gender or change all the embryos to the desired sex could be possible.

"These things might not be that far off," she said.

Control of food pathogens using genetics to enhance vaccine efficiency, or creating bird genetic resistance to disease, are at the forefront of research.

Studies at Iowa and other universities are looking into ways to identify Salmonella enteritidis (SE) and other disease resistance in birds. Lamont provided detail on how DNA markers, or "microsatellites," are used and the processes that scientists incorporate in genetic selection.

Some research to identify antibiotic response levels was undertaken using leghorns, Spanish birds, and Fayoumis in the laboratory.

Whatever the scientists come up with, the industry must be cautious to observe how sire traits can effect the outcome of genetic selection.

Importantly, the industry must move cautiously. They must bring the advances through "with information about why they're valuable," said Lamont.

Public perception is critical. And sometimes the public "won't accept it very graciously," Lamont said.

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