

Poultry Health & Management Report

Brought to you by the National Institute for Animal Agriculture
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In This Issue

[New Gentler Line](#)

[Litter Treatments Good Investment](#)

[Sufficient Water & Bird Performance](#)

[RSS, Femoral Fractures in Toms](#)

[Improve Your Negotiation Skills](#)

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New Gentler Line of Laying Hens, Eggs to Industry Standard

A line of less aggressive laying hens that produce eggs to industry standard has been developed by a team of Agriculture Research Service (ARS) scientists. As a result of this development, the researchers also cut mortality losses among the birds without the usual beak trimming.

ARS documentation shows the selected line of hens had significantly lower annual mortality at 58 weeks of age than the control group and a commercial line of laying hens. When housed in communal cages, the more gentle line had a 20 percent mortality rate compared to 54 percent for the control line and 89 percent for the commercial line.

Under the same conditions, egg production was increased in the kinder birds compared to the control group and the commercial line.

In designing their research project, ARS biologist Heng-wei Cheng and his team selected birds based on production traits as well as competitive interactions among the birds in a communal setting. This selection program shifted from "survival of the fittest" that emphasizes the individual to "survival of the adequate" that emphasizes the group.

Further research will be conducted to look at physiological alterations that explain the less aggressive behavior in the new line of hens, paying particular attention to a decrease in dopamine levels in the birds.

Litter Treatments Good Investment

It's simple: To lower the cost of keeping birds warm during cold weather, you need to limit the amount of cold air entering the house. Dr. Michael Czarick, extension engineer, and Dr. Brian Fairchild, extension poultry scientist-both with the University of Georgia-point out that the more fresh air brought into your house either unintentionally or intentionally, the higher your heating costs will be.

Drs. Czarick and Fairchild created the table below to show how many gallons of propane have to be burned to heat various volumes of fresh air based on the difference between inside and outside temperature.

| Minimum Ventilation Rate | Seconds on out of 300 (two 36" fans) | Temperature Differences (inside-outside) | | | | | | |
|--------------------------|--------------------------------------|------------------------------------------|-----|-----|-----|-----|-----|-----|
| | | 10F | 20F | 30F | 40F | 50F | 60F | 70F |
| 1,000 | 15 | 3 | 5 | 8 | 10 | 13 | 16 | 18 |
| 2,000 | 30 | 5 | 10 | 16 | 21 | 26 | 31 | 36 |
| 3,000 | 45 | 8 | 16 | 23 | 31 | 39 | 47 | 54 |
| 4,000 | 60 | 10 | 21 | 31 | 42 | 52 | 62 | 73 |
| 5,000 | 75 | 13 | 26 | 39 | 52 | 65 | 78 | 91 |
| 6,000 | 90 | 16 | 31 | 47 | 62 | 78 | 93 | 109 |
| 7,000 | 105 | 18 | 36 | 54 | 73 | 91 | 109 | 127 |
| 8,000 | 120 | 21 | 42 | 62 | 83 | 104 | 125 | 145 |
| 9,000 | 135 | 23 | 47 | 70 | 93 | 117 | 140 | 163 |
| 10,000 | 150 | 26 | 52 | 78 | 104 | 130 | 156 | 182 |

"Of course, we have to ventilate our birds if we want to keep them healthy and our floor dry, but, with rising propane prices, it is important you are not actively over-ventilating your houses," Dr. Fairchild states. "One of the most common reasons for growers ventilating too much is excessive ammonia levels during partial house brooding.

"Yes, it is very important to control ammonia levels during brooding, but lowering ammonia through ventilation alone is an expensive proposition."

Drs. Czarick and Fairchild explain that a producer "has basically three ways of lowering their heating costs in a house with built-up litter." Their list includes: 1) Not increasing ventilation rates to control ammonia and the resulting high ammonia levels will result in decreased weight gains and increased feed conversions as well as the strong possibility of blind and/or sick birds. 2) Clean out the house to the ground and bed the house in 4 inches or better of dry shavings, solving the ammonia problem and leading to lower heating costs. They add, however, that dry shavings can be difficult to obtain and are becoming increasingly expensive. 3) Simply apply some type of litter treatment before placing the chicks, allowing the use of a more economical minimum ventilation rate. They stress that the third option is "typically the most cost effective option for most growers."

They add that properly treating the brooding area of a 40-foot by 500-foot house with litter treatment will typically cost about \$200 and should do a good job of controlling ammonia levels from seven to 10 days.

"With ammonia levels under control-providing the litter is dry, producers should be able to decrease their minimum ventilation rates to more reasonable levels resulting in a relatively quick payback."

Sufficient Water & Bird Performance

To achieve maximum growth rate, birds must have plenty of good, fresh

water available and nipples must supply enough water. Dr. Berry Lott, extension professor, of poultry science, Mississippi State University, points out that research confirms that body weights and yields can be dramatically affected by a lack of water supply to the farm and/or an inadequate water quantity supplied by the nipple drinker.

Dr. Lott says the design criterion for a house is 10 gallons of water per minute to each house that has cool cells or foggers.

"The amount of water available should be based on the worst-case scenario that might occur," he states.

A table developed by Dr. James Thompson, agricultural engineer, Mississippi State University, shows a general guideline of pipe and water meter supply capability.

Table: Effects of size on flow rates of PVC pipes and water meters in gallons per minute

| Pipe Size | Flow Rate* | Meter Size | Flow Rate |
|-----------|------------|------------|-----------|
| 1 inch | 14 | 5/8 inch | 20 |
| 1 ½ inch | 44 | ¾ inch | 30 |
| 2 inch | 87 | 1 inch | 50 |

*Recommended maximum flow rate

"The farther you are away from a house with the supply source, the more friction-pressure loss will occur," Dr. Lott adds. "Going up hill or down hill will influence the amount of pressure and, thus, the amount of water a given pipe will deliver."

He explains that a 1-inch pipe coming from the main line to supply four houses with cool cells is probably inadequate for the summer but could be sufficient in the winter.

With the small difference in price of PVC pipe, Dr. Lott contends that a producer should never consider using a pipe of less than 1 ½-inch diameter. He notes that size of pipe should be sized to the water meter being used.

Soybean Checkoff Solicits Research Advice from Feed Industry Experts

The versatility of U.S. soybeans has provided the soybean industry with many opportunities. However, as the soybean checkoff explores new uses for soy, its farmer-leaders have not forgotten about the importance of the livestock, poultry and aquaculture industries.

Animal feed remains the biggest use of most U.S. soybeans. That's why U.S. soybean farmers want to produce the best soybeans suited for feed. To reach

this goal, the soybean checkoff has ranked the health and growth of the animal agriculture industry as its top priority.

One of the main ways U.S. soybean farmers work to protect domestic livestock and poultry producers is through checkoff-funded research. To ensure the research being funded is on target and will actually benefit the livestock and poultry industries, the soybean checkoff developed the Animal Nutrition Working Group (ANWG). ANWG members come from the feed industry through companies such as Land O'Lakes, JBS United, Inc., and Cargill, as well as major poultry integrators and other feed companies. Members also provide insight into soybean meal research that will meet the changing needs of U.S. soybean farmers' leading customers - poultry, livestock and other sectors of the animal ag industries.

The ANWG has three priorities for soybeans in animal utilization: composition, processing and measurement, which could lead to benefits such as reduced feed costs and enhanced animal performance. These also lead to a better product for U.S. soybean farmers, which should help maintain and grow overall demand for U.S. soy.

The soybean checkoff remains committed to learning more about what traits in U.S. soybeans will be best suited to meet the changing needs of domestic and international soy users and ensuring that livestock and poultry production in the United States remains a strong and vital industry.

Green Tea? Plum Powder Supplements?

Strengthening the poultry immune system was the focus of work undertaken by Agricultural Research Service (ARS) researchers who studied the effects of adding commercial probiotics to poultry diets.

The results of their research showed that chickens consuming ground green tea for two weeks prior to parasitic infection produced significantly fewer fecal *E. maxima* oocysts than the control group-and researchers say this finding could help reduce the spread of infection in poultry houses.

Chickens eating diets supplemented with *Pediococcus*-based probiotics reduced their oocyte production, increased the production of cytokines essential for a strong immune response and experienced improved weight gain.

Poultry immunities got a similar boost from a combination of *Pediococcus* and a yeast-based commercial probiotic product. Chickens that consumed a probiotic combination of lactic acid bacterium and yeasts also showed a significant antibody response to parasites.

Collaborating with scientists at the Rural Development Administration, South Korea's national agricultural research organization, ARS researchers and

colleagues also investigated whether other phytonutrients might also be beneficial and found that plum powder supplements stimulated spleen immune cell production and killed tumor cells. Infected poultry fed with the supplement also gained weight and reduced parasite shedding. Supplements of safflower, which have been used by traditional Chinese practitioners for thousands of years, were found to be similarly beneficial.

Research Results: RSS, Femoral Fractures in Toms

Brief summaries are available on two recently completed research projects undertaken by the U.S. Poultry & Egg Association: "Identification and Characterization of Novel Astro- and Reoviruses Associated with Runting Stunting Syndrome (RSS) and the Development of Reagents for Diagnostic Detection in the Field" and "Integrated Analysis of Factors Influencing Spiral Femoral Fractures in Toms."

Dr. Holly Sellers, head researcher, College of Veterinary Medicine, University of Georgia, said RSS research results showed that "novel astroviruses and reoviruses isolated from flocks experiencing RRS caused significant body weight suppression and mild to moderate enteritis by 12 days of age in commercial broilers inoculated at day of age." She added that histological evaluation of the gastrointestinal tract, however, did not reveal cystic enteropathy, a hallmark lesion in RSS-affected birds.

"While challenge with virus isolates did not result in the full clinical manifestation of RSS as evidenced by lack of cystic enteropathy, bird health and body weight gain was compromised to a degree that would be unacceptable at the commercial level," Dr. Sellers adds.

Work undertaken by six researchers at North Carolina State University and an ARS researcher established normal and abnormal gait parameters for turkeys and correlated born strength at market age and provided a connection between visible gain abnormalities and weak bones.

Summaries of the two recently completed research projects are online at http://www.poultryegg.org/mediacenter/docs/CompletedResearch8_7_09.pdf

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12 Tips to Improve Your Negotiation Skills

You can negotiate and compromise with skill and confidence when these 12 tips are followed:

1. Have a positive attitude, as your attitude is essential to the outcome.
2. Meet on mutual ground and avoid negotiating via email as lack of facial expressions, vocal intonation and other cues can result in a negotiation breakdown.
3. Clearly define and agree on the issue.
4. Do your homework, taking into consideration any history or past situation that might affect the negotiations.
5. Take an honest inventory of yourself, being conscious of aspects of your personality that can help or hinder the process.
6. Look for shared interests and common goals so the problem can be tackled jointly.
7. Deal with facts, not emotions by addressing problems and not personalities.
8. Be honest and clear about what is important to you and communicate why your goals, issues and objectives are important to you.
9. Present alternatives that demonstrate willingness to compromise and frame options in terms of the other person's interests.
10. Be an expert communicator by asking questions, listening, rephrasing what you heard to check for understanding and take a genuine interest in the other side's concerns.
11. End on a good note. This could be agreeing on the action steps--who is responsible for each step, how success will be measured and how and when the decision will be evaluated--or being open to accepting an impasse for non-critical issues or even agreeing to disagree.
12. Enjoy the process and reflect and learn from each negotiation.

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The National Institute for Animal Agriculture provides a forum for building consensus and advancing proactive solutions for animal agriculture--the beef, dairy, swine, sheep, goats, equine and poultry industries--and provides continuing education and communication linkages for animal agriculture professionals. NIAA is dedicated to programs that work towards the eradication of disease that pose risk to the health of animals, wildlife and humans; promote a safe and wholesome food supply for our nation and abroad; and promote best practices in environmental stewardship, animal health and well-being. NIAA members represent all facets of animal agriculture.

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