

North Carolina Poultry Industry Joint Area Newsletter

May, 2008

Inside This Issue

2008 Broiler Supervisors' Short Course.....	1
Federal Disaster Programs ..	2
Poultry Youth Programs Update	3
Contact Information	3
Reducing Energy Use with Solar Transpired Walls in Poultry Houses	4
NCSU Poultry Judging Team	4
Probiotics for Turkeys?	6

Contact Us

North Carolina State University
Department of Poultry Science
234 D Scott Hall, Box 7608,
Raleigh, NC 27695-7608
Telephone: 919-515-5407
Fax: 919-515-7070
Website:
<http://www.ces.ncsu.edu/depts/poulsci/>

Issue Editor: Dan Campeau
Issue Layout: Susan Graham

Distributed in furtherance of the acts of Congress of May 8 and June 30, 1914. North Carolina State University and North Carolina A&T State University commit themselves to positive action to secure equal opportunity regardless of race, color, creed, national origin, religion, sex, age, or disability. In addition, the two Universities welcome all persons without regard to sexual orientation. North Carolina State University, North Carolina A&T State University, U.S. Department of Agriculture, and local governments cooperating.

2008 NC Broiler Supervisors' Short Course



*Front Row: Roger Whitaker, Darrell Ritter, Tommy Harris, Kelly Atkinson, Jacob Caviness
Back Row: Jim Ingold, Darrell Phillips, Sam Pardue, Billy Rollings, Bob Ford*

On April 17, the service tech personnel from the main integrator broiler companies with business in North Carolina participated in the 2008 NC Broiler Supervisor's Short Course. This is an annual event that has been held at the McSwain Extension Center in Sanford, North Carolina. This year the program included talks to improve energy efficiency in broiler houses, litter management and biosecurity, water quality and broiler performance, leg health in large broilers, runting and stunting syndrome, laryngotracheitis epidemiology and control methods, and coccidiosis control.

The panel of speakers included Mr. Mike Sanderson from Hog Slat Inc., Dr. Kenneth Macklin from Auburn University, Dr. Marco Quiroz from Novus International Inc., Dr. Edgar O. Oviedo from NC State University, Dr. John Smith from Fieldale Farms Corp., and Dr. Hector Cervantes from Phibro Corporation. More details and the proceedings of this event are available in the following website:

http://www.ces.ncsu.edu/depts/poulsci/supervisors_shortcourse.html

During the same event the 2008 Broiler Service Persons Awards were announced. This award is recognition of the Integrator Companies, the NC Poultry Federation, and NC State University to those individuals that have done an outstanding service for the Companies and their growers in the previous year. The following is a picture of the recipients in 2008 with Dr. Samuel Pardue, Head of the Department of Poultry Science and Mr. Bob Ford, Director of the NC Poultry Federation.

*Edgar O. Oviedo-Rondón, DVM, PhD.,
Dip. ACPV; Assistant Professor/Extension
Specialist, Department of Poultry Science,
North Carolina State University*

NC State University
A&T State University
**COOPERATIVE
EXTENSION**

Empowering People • Providing Solutions

Federal Disaster Programs

Scott Marlow, Rural Advancement Foundation International

In recent years, two federal disaster programs, the Emergency Conservation Program and the Livestock Indemnity Program, have been amended to include coverage for contract livestock producers. 2007 losses are covered under these programs, but the changes increase the possibility that contract producers will be able to receive benefits in the future.

Federal disaster programs become active in the event of a federal disaster declaration, either by the president or the Secretary of the Department of Agriculture. Programs are administered through the county Farm Service Agency office, but depend on congressional appropriations for funding for specific disasters.

Federal funding for disaster assistance can take place years after a disaster, so farmers should save documentation of work that could be covered by programs even when no funding is available. Appropriate documentation includes photos of damage, logs of labor and equipment use, written estimates for work, and bills for work done by a contractor. Farmers must be able to document expenses in order to receive assistance.

The Emergency Conservation Program

For disasters since 2005, the Emergency Conservation Program (ECP) has provided cost-share assistance to contract farmers for mortality disposal and for the repair or disposal of damaged facilities. ECP is a standing disaster program that

“provides emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland damaged by natural disasters and for carrying out emergency water conservation measures in periods of severe drought.”

ECP provides a maximum of 75% cost-share, but this amount is determined by the state and county committees, and is often significantly lower than 75% based on the funds available. In order for the farmer to receive cost-share funding through ECP, actions must be approved in advance unless there is an emergency need.

ECP is not currently funded to provide benefits for the 2007 drought, although programs have been extended to cover the 2007 drought declaration. All applications must be made before any work is begun. A fact sheet on the Emergency Conservation Program is available from the Farm Services Agency web site at http://www.fsa.usda.gov/Internet/FSA_File/ecp1206.pdf.

The Livestock Indemnity Program

In recent years, the Livestock Indemnity Program (LIP) has been amended to include compensation for contract producers. This program covers losses due to livestock mortality, and provides a specific per-animal payment. For instance the 2007 program provided contract poultry producers \$0.12 per layer or \$0.06 per broiler.

The LIP requires that livestock mortality “have died in an eligible county as a direct result of an eligible disaster event(s).” This requirement has proven to be a frequent challenge for farmers to receive benefits. For instance, several farmers who had poultry production losses when generators overheated in

the high temperatures of the 2007 drought were denied benefits because the losses were due to equipment failures.

A fact sheet on the Livestock Indemnity Program is available from the Farm Service Agency web site at http://www.fsa.usda.gov/Internet/FSA_File/lip08.pdf.

Crop Insurance Not Available

Federally-subsidized crop insurance is the core of federal agricultural disaster response and risk management, and forms the basis for other disaster programs and access to credit. There is currently no federal crop insurance program that addresses losses to production contract producers. All crop insurance programs require ownership of the production in order to access insurance.

We have seen individual farmers obtain private production insurance, but are not intimately familiar with these policies. Private policies would, however, tend to be more expensive without federal subsidy.

For more information about these programs or other disaster assistance issues, contact your local FSA office, NC Cooperative Extension Service or the Rural Advancement Foundation International – USA (www.rafiusa.org) at 919 542-1396.

Poultry Youth Programs Update

Melissa Taylor Scherpereel, Department of Poultry Science, North Carolina State University

Youth Market Turkey Show – NC State Fair

Registration is now CLOSED! We cut off registration when we reached 300 participants. Anyone that wishes to be involved next year can email or call us to be added to our turkey show listserv and will receive advance notice of our call for registration (usually February or March). The day old turkey poult will be distributed June 4th and 5th from the poultry teaching unit off of Lake Wheeler Road in Raleigh for registered participants ONLY. A special “thank you” to our 2008 poult donor, Tarheel Hatchery of Raeford, NC. We look forward to seeing you at the fair for our turkey show on Oct. 17, 2008.

Poultry Science Summer Institute – August 3 – 7, 2008

We have stopped accepting applications for our next summer institute and again received more than we could accept. When considering applications, we primarily look at the student's high school or home school GPA and SAT scores when available. We also read their personal statement as to why they would like to attend the institute very carefully. This helps us to see who is truly interested and who might be a future poultry science student here at NC State. Speaking of future students, we are extremely excited that 5 of the 10, 12th grade participants from last years program have been ac-

cepted and will be poultry science freshmen this fall.

We are so happy that there is such interest in this new program. This year's group will be a little larger than last years 18 and will be made up of 24 rising juniors and seniors that are interested in learning more about poultry and the poultry industry in NC. We hope for another great week and to encourage more youth to choose a career in poultry!

We also have openings for two adults (teachers, agents, etc.). Please contact us if you have any questions at www.poultry4h.info or contact Melissa Scherpereel at 919-515-5403.

Annual Poultry Poster Contest

The Poultry Poster Contest is designed to be an educational activity for youth to learn about our poultry industry. The theme for the 2008 Poultry Poster Contest is "chick chat" - (*baby poultry*).

Youth should incorporate this theme into their posters. County winners are due July 31st to the State office. The age categories are (9-12, 13-15 and 16-19). First place winners at the state level will receive \$50, second place \$35 and third place \$25 in each age division. Be sure and visit our website at <http://www.ces.ncsu.edu/depts/poulsci/4h/postercontest/poster.html> and learn about how to enter the contest. Counties can conduct their contest at anytime during the year. The first place winning posters will be on display at the State Fair Youth Markey Turkey Show held in October.

Contacts for the North Carolina Poultry Industry Newsletter

On-Campus Contact

Mike Wineland, Ph.D., Dept Extension Leader
Dept of Poultry Science, NCSU
www.ces.ncsu.edu/depts/poulsci/
email: mike_wineland@ncsu.edu
telephone: 919-515-5529

Field Faculty Contacts

Kathy Bunton, Area Specialized Agent, Poultry

*Iredell, Wilkes and Alexander Counties
<http://iredell.ces.ncsu.edu>
email: kathy_bunton@ncsu.edu
telephone: 704-878-3154

Dan Campeau, Area Specialized Agent, Poultry

*Chatham, Harnett, Lee, Moore and Randolph Counties
<http://chatham.ces.ncsu.edu>
email: dan_campeau@ncsu.edu
telephone: 919-542-8202
cell: 919-726-0004

Richard Goforth, Area Specialized Agent, Poultry

Anson, Cabarrus, Montgomery, Richmond, Scotland, Stanly and *Union counties
<http://union.ces.ncsu.edu>
email: richard_goforth@ncsu.edu
telephone: 704-283-3743
cell: 704-363-2359

James Parsons, Area Specialized Agent, Poultry

*Duplin, Sampson and Wayne Counties
<http://duplin.ces.ncsu.edu>
email: james_parsons@ncsu.edu
telephone: 910-296-2143



18 USC 707

Reducing Energy Use with Solar Transpired Walls in Poultry Houses

*Sanjay Shah, Assistant Professor, BAE Dept., North Carolina State University
Bob McGuffey, NC Solar Center*

Editor's Note: This article originally appeared in the Winter, 2008 edition of this newsletter. But has recently been updated by the authors and is being reprinted in this edition.

The Energy Information Administration reported that in North Carolina, wholesale propane prices increased by a whopping 42% to \$1.57/gallon in March 2008 compared to March 2007. However, it is not just the increase in price but the market uncertainty that makes decision-making difficult. While the DOE forecasted that propane prices will remain steady during the next heating season, propane prices are tricky to forecast because they depend on the weather. A cold snap in the New England states can increase propane prices in North Carolina. Since energy is a large part of poultry production cost, reducing energy use can lessen the effects of the volatile propane market.

The high price of propane has caused poultry producers and integrators to look beyond just energy efficiency and toward renewable energy sources. The USDA has also been eager to help through the Renewable Energy and Energy Efficiency (REEE) Program. The program offers grants and/or guaranteed loans to animal producers to make energy efficiency improvements and install renewable energy generators. (For more details, go to: <http://www.rurdev.usda.gov/rbs/farmbill/>). The USDA will fund solar energy projects because it is renewable and it also reduces air pollution by reducing the release of gases such as car-

North Carolina State University Poultry Judging Team

Kenneth E. Anderson, Ph.D., Department of Poultry Science, North Carolina State University

The NCSU Poultry Judging team for the US Poultry and Egg Association National Poultry Judging Contest was made up of Jenna Bunton, from Alexander County, Whitney Hill, from Columbus County, Sarah Tilley, from Alamance County, and John Tart, from Wayne County. They competed with 13 other teams from universities across the country and were successful. Individual awards went to John Tart and Whitney Hill who were 1st and 2nd in Production Judging and John Tart who was 4th High Individual in Breed Selection. The team won 1st in Production Judging, 5th in Breed Selection, and Overall the Team was 3rd in the country.



*Back row: Dr. Carm Parkhurst, John Tart, Dr. Ken Anderson
Front Row: Jenna Bunton, Whitney Hill, Sarah Tilley*

bon dioxide. In NC, you may be able to sell renewable energy to your electricity provider at the avoided cost (about \$0.05/unit) plus a marked-up price paid by NC Green Power. NC Green Power will pay up to \$0.15/unit for solar energy, depending on availability of funds and whether they still have space in their portfolio for solar energy. Renewable energy investments will also qualify for substantial federal and state tax credits. These factors have increased interest in using solar energy in animal houses.

Solar energy can be used in two ways to meet the energy needs of

poultry houses, namely, (a) using photovoltaic (PV) cells and (b) using transpired walls. Using the PV method, solar energy is converted into electrical energy by PV cells on solar panels. To meet all of its electricity needs in peak summer, a broiler house may need a PV unit 10 to 12 kW in size. The PV unit costs about \$8,000 to \$10,000 per kW to install, with paybacks of 5 to 9 years; this takes into account federal and state tax breaks but no USDA support. The shorter payback period occurs when you can get price support from NC Green Power. Due to the high initial investment and rela-

(Continued on page 5)

Reducing Energy Use with Solar Transpired Walls in Poultry Houses

(Continued from page 4)

tively long payback with the PV method, many producers may be inclined to take a wait-and-watch approach. The lower-cost transpired walls may be appealing to producers who are more interested in reducing heating costs instead of generating and selling electricity. Canadian research indicated that transpired walls reduced propane use by about 25% in pig nurseries.

Transpired walls have been used in industrial and commercial buildings in Canada, Germany, and even in North Carolina (Figure 1). In Canada, more than 400 transpired walls have been installed on livestock farms. The transpired wall consists of a dark-colored porous metal wall that is placed on the sunny side the house. When air is drawn through the minute holes in the transpired wall, which being a solar collector, will heat up the passing air. Conserval Engineering, the original inventor of the transpired wall (along with the US Dept. of Energy) reported that the incoming air can be preheated by as much as 63°F though the actual heating will depend on the orientation of the wall (south facing wall is the best) and cloud cover. Conserval Engineering further reported that transpired walls could supply between 150,000 and 350,000 Btu/ft²-yr. Figure 2 shows the principle of operation of the transpired wall.

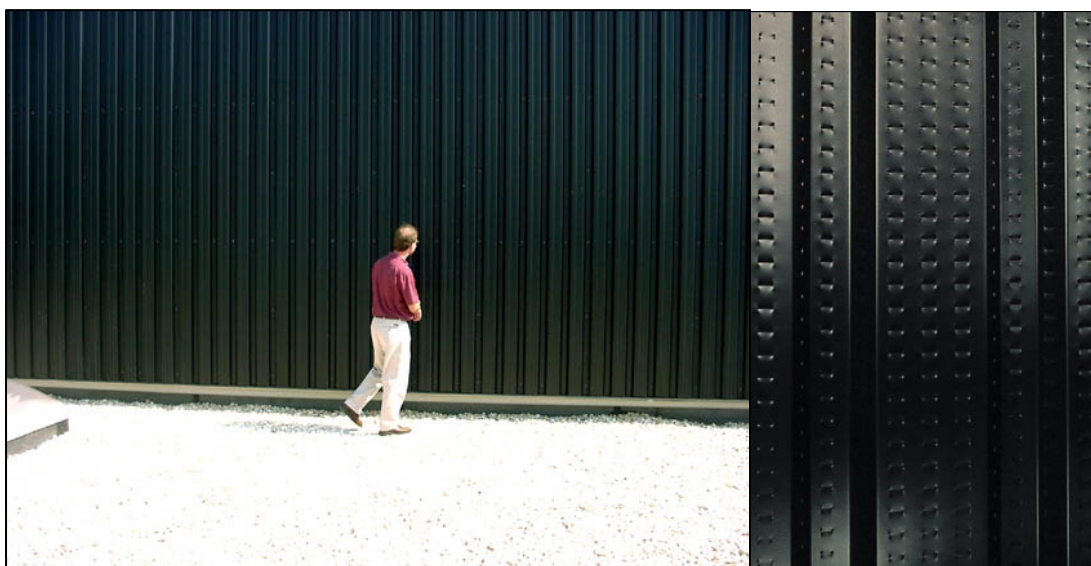


Figure 1. Transpired wall at INTEK in Aberdeen, NC. Close-up view of transpired wall shown on the right.

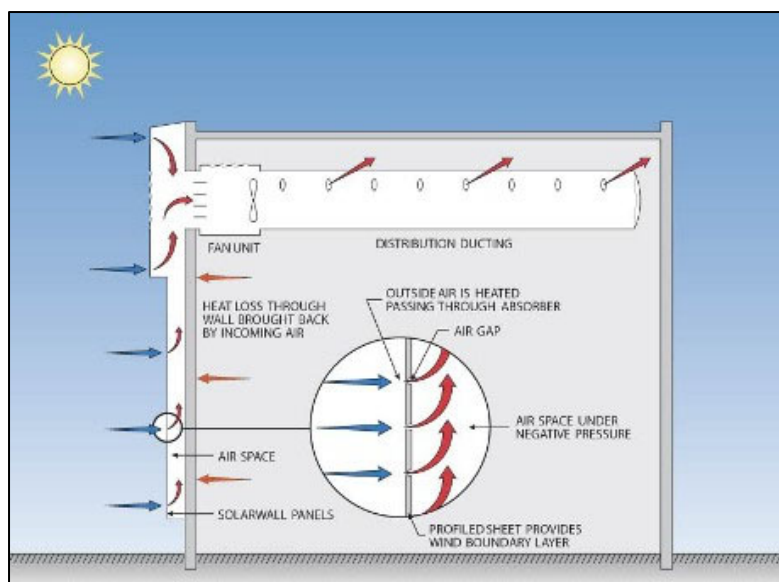


Figure 2. How the transpired wall works at the INTEK facility in Aberdeen, NC

Reducing Energy Use with Solar Transpired Walls in Poultry Houses

(Continued from page 5)

It should not be too difficult to use the transpired wall in broiler or turkey brooder houses. It should be placed on the sunny side of the house, in front of the ceiling or wall inlets (Figure 3). During brooding or in winter, when the minimum or mild weather fans come on opening the inlets, air drawn through the minute holes in the transpired wall will be heated up. Given that air inside the broiler house has to be heated up to 92-93°F during the first week of brooding, tempering the fresh air during daytime under clear skies can result in substantial energy saving. Tempering 1,000 cfm of fresh air at 50°F and 50% relative humidity to 80°F (30°F increase) using a transpired wall will save nearly 2 gallons of propane over a 5-hour sunlight duration. (For reference, a 36 in. fan will move 9,000-10,000 cfm at the house static pressure.) This tempered air is also drier (relative humidity of 18%) and hence, more effective in removing excess moisture from the poultry house. Reducing propane consumption by 2 gallons will also reduce carbon dioxide and water vapor buildup in the house by 25 and 14 lb, respectively, since these two compounds are formed when you burn propane. During nighttime in cool weather, the transpired wall will reduce heat losses from the house. An important benefit of the transpired wall is that maintenance is minimal since it has no moving or liquid components. However, it is important to prevent accumulation of dust and debris on the transpired wall which can reduce the ventilation rate.

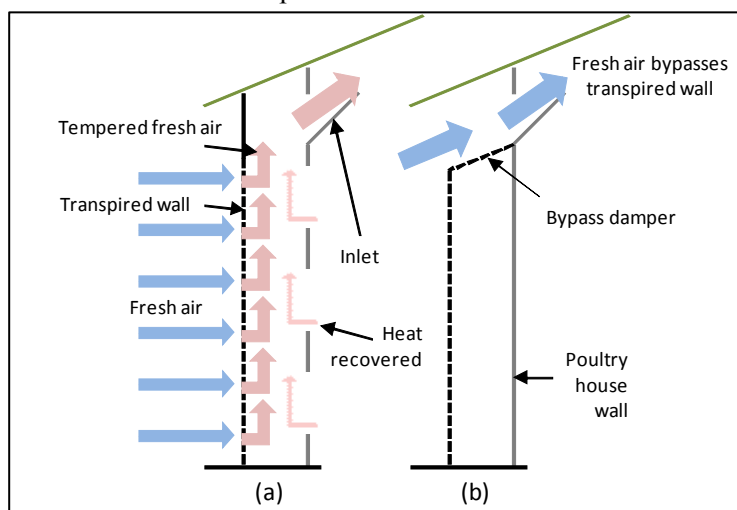


Figure 3. A view of a transpired wall.

Figure 3(a) shows fresh air being tempered by the transpired wall and figure 3(b) shows the fresh air bypassing the transpired wall for mild weather ventilation.

However, transpired walls may not be for everyone. You need to consider the orientation of your poultry house. In the northern hemisphere, we get the most sunlight on the south side during winter and on the north side during the summer. So, a poultry house built along the east-west axis will allow you to install the transpired wall on the south, though south-east and southwest facing walls are also acceptable. The transpired wall will reduce the ventilation rate by increasing static pressure; so, you will need to run your fans longer (by about 20%). While there are no studies done in poultry houses using transpired walls, heat energy savings will likely offset increased electricity use. Also, during transitional or mild ventilation (between minimum and tunnel ventilation), to prevent the fresh air from being tempered, a bypass damper (Fig. 1) will allow the fresh air to bypass the transpired wall.

Recently, the North Carolina Solar Center did a study on installing transpired wall in a broiler house in eastern NC. The total cost of installing a transpired wall was \$11 per square foot with after tax payback period of 13-14 months, without any USDA support. As a start, a poultry producer could consider installing enough square footage of transpired wall on the south side that would cover half of the minimum ventilation rate provided by, say, two 36-in. fans (small birds and/or cold weather). The other half of the air would come from the north side that has no transpired wall. Since the two fans would require a total of 15-16 inlets, to cover the eight 44-in. inlets on the south side, you would need a total area of about 500 sq. ft. of transpired wall which would cost about \$5,500 per house. If the USDA were to provide a 25% grant, your cost would be correspondingly lower. Of course, you would also qualify for Federal and state tax credits for improving energy efficiency that would amount to more than half of the remaining cost. So, if your heating season is long, you raise smaller birds (i.e., you run more flocks through the house), and the orientation of your houses are favorable for installing transpired walls, you may want to give transpired walls serious thought.

Probiotics for Turkeys?

Jesse L. Grimes, Ph.D., Professor of Poultry Science and Nutrition, Extension Turkey Specialist, Department of Poultry Science, North Carolina State University

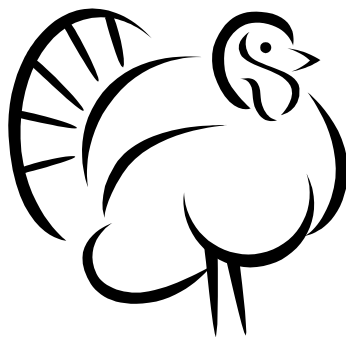
Feed borne antibiotic growth promoters (AGP) have been fed to livestock in the US and other countries for about 50 years to improve growth performance. Early indications of improved performance in poultry were reported by Moore et al.

(1946). However, most of the AGP labels list no specific claims to control disease. Debate over the generation of antibiotic resistance among bacteria such as *Escherichia coli* (*E. coli*) and *Salmonella* has generated the strongest objection to using antibiotics. Antibiotic resistance of indigenous *E. coli* of poultry has remained at a relatively high level since the 1950's. In the US, reports from the Institute of Medicine and the Council for Agricultural Science and Technology recommended reduction or elimination of AGP in livestock feeds even though neither of these reports provided evidence proving that AGP resistant microorganisms were responsible for contributing to antibiotic-resistant infections in humans. Although this debate continues, there is interest in developing alternatives to AGP such as probiotics. The term "probiotic" has generally referred to live cultures fed to poultry and livestock in an attempt to improve the animal's intestinal health and, therefore, the animal's performance.

Alternatives to antibiotics, such as competitive exclusion (CE) treatments, have been developed to encourage a protective barrier of bacteria in the digestive tract of poultry to prevent the colonization of growth

depressing and/or pathogenic microorganisms. Some CE cultures have included undefined normal avian gut microflora or have included defined cultures using bacteria such as *Lactobacillus* spp. The reduction or elimination of *Salmonella* from the intestinal tract of poultry is of special interest because of the prevalence of human food borne diseases caused by *Salmonella* with poultry products serving as a vehicle for human salmonellosis.

The term "probiotic" has been used to refer to feed additives that contained both live cultures and other products such as non-digestible feed ingredients that enhance host digestive tract microflora. This would include many of the indigestible sugars such as oligosaccharides. Therefore, the Association of American Feed Control Officials and the US Food and Drug Administration have recommended the term "direct-fed microbials" (DFM) be used to describe live culture feed additives.



Other types of probiotics that are not live cultures have been referred to as "prebiotics". There are numerous reports of DFM, including *Lactobacillus* spp., being fed to poultry including turkeys. However, there are few reports where the feed containing the DFM was pelleted.

Therefore, the objectives of a recent study at NCSU were to determine 1) the effect of a dietary DFM on turkey poult performance, 2) the susceptibility of turkey poults fed a DFM to *Salmonella* challenge, and 3) the effect of feed pelleting on the efficacy of the dietary DFM.

Day-of-hatch Large White female poults were placed in two rooms and fed one of four dietary feed treatments. One room housed non-*Salmonella* challenged poults while in the other room, poults were challenged with an oral dose of *Salmonella*. A single batch of starter ration was split into four parts and used to provide four dietary treatments: 1. mash feed with no DFM, 2. mash feed with DFM (Primalac® 0.9 kg/ton feed), 3. pelleted and crumbled feed with no DFM, and 4. pelleted and crumbled feed with DFM. Liver, spleen, total and lower intestinal tract weights and intestinal length and most probable number *Salmonella* populations were determined for a sample of birds from each treatment. Feeding processed feed resulted in improved 3 week body weight and feed conversion as expected. Feeding the DFM improved 3 week feed conversion in birds not dosed with *Salmonella*. *Salmonella* populations were slightly reduced by feeding DFM.

The commercial DFM product tested in this study resulted in improved poult performance similar to results reported with broilers using the same product and also reduced intestinal *Salmonella* colonization and changes in intestinal morphology. These effects were independent of feed processing. Further work with market age turkeys, both in pen studies and in field trials, is warranted.