Kentucky Poultry Federation

Cheeps & Chirps

. . . . . Points for Poultry Profitability

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INSIDE THIS ISSUE:

2008 Kentucky Poultry Federation scholarship recipients understand the importance of poultry and agriculture to Kentucky

Three outstanding students were awarded $1,000 scholarships each at the Kentucky Poultry Federation Annual Hall of Fame Banquet on Saturday, October 4, 2008.

Through the generosity of our members and allied companies, a scholarship fund was established to assist and encourage graduating high school students to continue their education. The scholarship program was created to benefit the children and grandchildren of our poultry complexes' producers and employees; along with also assisting one other student who is pursuing a career in agriculture. Funds for the Kentucky Poultry Federation Scholarship Fund are raised through our Annual Silent Auction that takes place annually at the Kentucky Poultry Festival.

Each applicant is judged on their standardized test scores, GPA, extracurricular activities, awards and honors, and a 500 word essay. The essays were to be written on "What Kentucky's poultry industry has done for you, your family or community"; or "Why is agriculture vital for Kentucky's future."

One scholarship is awarded to a student who is not involved in the poultry industry, but is pursuing a career in agriculture. *Zachary Rambo* of Cunningham was awarded the agriculture major scholarship.

Zachary is a senior at Carlisle County High School with plans to obtain a degree in Horticulture, Plant and Soil Science with an emphasis in Turfgrass Science.

In his essay, Zachary stated: "*Without rural communities in Kentucky like the one I live in, Kentucky's future would not be very bright. Some people think food comes from the grocery store and clothes come from the mall, but I know first hand it comes from the hard working farmers that live in Kentucky. As the world's population continues to grow it will give us more opportunities to sell our goods, which will help secure our financial future*."

The other two scholarships are awarded to students who are involved in the poultry industry. They were award to Amanda Duvall of Franklin and Chassity House of Clinton.

Amanda is the daughter of Ron Duvall, employee of Equity Group - Kentucky Division, LLC. Amanda is attending Campbellsville University where she is pursuing a career in Elementary Education with a minor in Spanish. Amanda was not able to attend the banquet to receive her award.

In her essay, Amanda stated: *"The poultry industry has grown to the number two money maker, behind horses, in the state. It is based on helping to keep the family farm striving and protecting and making the environment better each and every day. .. The poultry industry touches all farmers."*

Chassity is the daughter of Alan House, producer for Pilgrim's Pride, Inc. Chassity is currently attending West Kentucky Community and Technical College where she is majoring in Elementary Education.

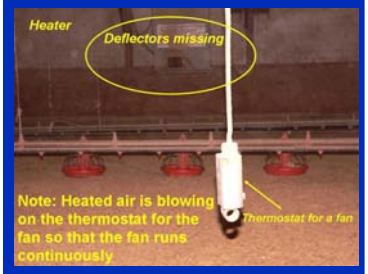
According to Chassity. *"[Our] chicken barns have been an extra source of income that has allowed our family to live on a farm and have vast opportunities [to] learn how to raise animals such as cattle and chickens. My family has benefited from chicken barns for over 12 years by allowing my mother to stay home and care for the four barns and my father has been able to keep this public job. I have learned a sense of responsibility by helping my parents with the work that goes along with raising chickens.*"

Congratulations to these three outstanding students.

Winter poultry house maintenance

Easy fixes for house maintenance:

- *Complete any required curtain repair*
- *Clean and repair fan belts, blades and shutters*
- *Check vents to make sure they operate correctly and close completely*
- *Check heater and accessories*
- *Check location and operation of thermostats*



Winter will officially be here soon. With the colder weather comes the increase in fuel burned to maintain house temperatures. There are several things that producers can do to minimize their fuel costs.

1. House tightness. In order for the equipment to efficiently maintain the required in-house environment, it is important that the house be free of leaks. Pressure checks should be completed to identify problem areas. To conduct a pressure check, close all doors, vents, fan shutters, etc.; turn on one 48-inch fan; and then check the static pressure. A house needs to be able to pull a 0.12 (inches water) static pressure.

If your house does not pull 0.12, here are some things you can do to tighten up your house:

- Curtains should be cinched up tight with curtain laps over the tops and lumber strips at the bottom. All holes in the curtains should be patched.
- All leaks in the side and end walls should be sealed with caulk or spray foam insulation.
- Seals around doors and vents should be maintained. Thermal imaging or smoke testing houses will help find leaks.

2. Fan maintenance. Fans should be routinely checked between flocks to ensure that belts are tight and shutters are clean and operating properly. Fan blades should be clean. Grease any bearings as needed. Replace worn fan belts and repair bent shutters and any others that do not close.

3. Vent maintenance: Vents cycle open and closed routinely during the winter months. Check the status of the cable or rod systems, pulleys, insulation on the back of the vent doors, vent hinges, as well as the gears and fittings. Make sure vents close tight.

4. Heater maintenance: A heater that is not operating properly is wasting fuel. Check that the burner and pilot orifices are not plugged; direct spark igniters will fire; regulators are operating properly; and check the pressure. If the system is operating at too low pressure, check all plumbing fittings for leaks.

Make sure that the deflectors are in place so that heated air is directed to the correct location (see photo on the left bar).

5. Correct placement of thermostats for heaters and fans. Placing the heater thermostats by fans will result in the heaters running continuously. Similarly, placing fan thermostats in the path of hot air for heaters will keep the fans running. Every time you enter your houses check to see which fans are running. If the same fans are running every time, you may have a problem.

6. Insulation maintenance: Even with new solid sidewall houses there are two places in every house that are nearly always subject to heat loss – the tunnel inlet and fans. It is difficult to add insulation to the tunnel inlets because they have to be left so that they can be operable during emergency situations. Tunnel doors that seal properly are a great remedy to the problem.

Summary written by
Dr. Jacquie Jacob
University of Kentucky

Vegetative buffers take advantage of 'out of sight, out of mind' principle (see page 3 for more information)

Sand as an alternative litter material

Sand could be an alternative if no other bedding material is available and your integrator accepts it as a suitable litter material

Different types of materials are currently used as litter by the poultry industry. Traditional bedding materials include hard-wood or pine shavings and rice hulls. The choice of material used is dependent upon local availability and relative cost of the materials. In many regions of the U.S., including Kentucky, the availability and cost of conventional litter sources has become a problem, increasing interest in alternative litter materials. A number of universities have been studying the use of sand (commonly mortar sand) as litter in broiler houses.

Mortar sand has been screened and washed free of fines. It is the finest sand generally available and has a high percolation rate (i.e., the rate, usually expressed as a velocity, at which water moves through saturated granular material – a high rate indicates that water will drain through at a very high rate). The removal of fines results in a material with minimal binding qualities. This type of sand is great for creating very loose soil mixes. The particles are slightly smaller than washed concrete sand.

Use of sand allows producers to grow consecutive flocks over long periods without completely removing all organic matter. Field trials in sand houses in Alabama have produced more than 20 consecutive flocks of broilers while only removing a small portion of the organic matter. Problems could arise with this practice, however, due to concerns of accumulation of nutrients and organic matter while rearing consecutive flocks.

Because rearing broilers on sand is a new technique for American producers, many questions are yet to be answered. Research has shown that broilers raised on sand perform as well as or better than those raised on pine shav-

(Continued on page 3)

Trees good for odor and emissions control as well as energy conservation

Research by Mr. George (Bud) Malone at the University of Delaware has shown that planting three rows of trees around poultry farms can cut nuisance emissions of dust, ammonia, and odors from poultry houses; a major step to reducing neighbor complaints.

The planted trees serve as a **vegetative filter**. In a six-year study, Mr. Malone found that a three-row plot of trees of various species and sizes reduced total dust by 56%, ammonia by 53%, and odor by 18%.

The use of vegetative filters is being adopted in many areas in the Delmarva area (Delaware, Maryland and Virginia). About 35% of Delmarva's 2,000 farms have developed vegetative buffers.

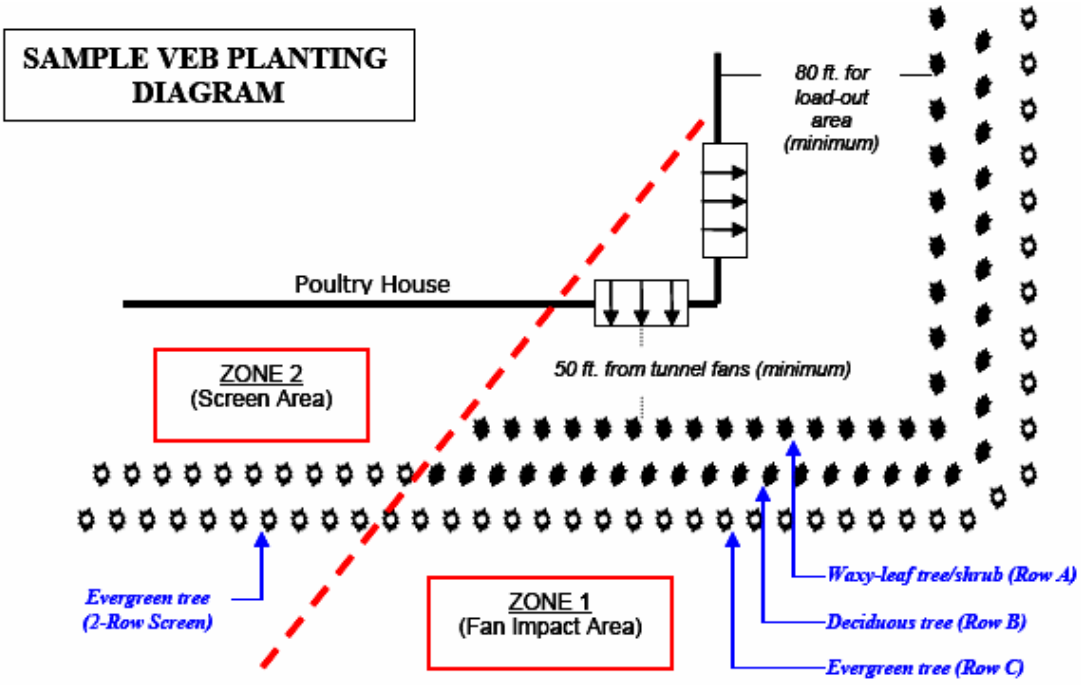
Mr. Malone's research has shown that when it comes to vegetative filters, not all trees are created equal. They get the best results when the first row nearest the fans is either a deciduous tree or a tree with a waxy leaf surface. The other two rows should be evergreens. There are a number of factors that need to be taken into consideration for tree selection and planting design. What works for the soil and climate in the Delmarva area may not be suitable for other locations. If you are interested in planting a vegetative filter contact your local county agent or forestry department.

Certain species of trees can grow 8 to 10 feet per year so it does not take many years for the vegetative filter to become established.

The use of vegetative filters has other advantages:

- The planting of the trees has also been shown to **reduce energy consumption**. The trees provide shade and cooling in the summer and act as a buffer reducing heating costs in the winter.
- The trees have also been shown to improve water quality around poultry farms because they can filter pollutants from soil and groundwater.

Written by:
Dr. Jacquie Jacob
University of Kentucky



Sand as an alternative litter material .... continued

(Continued from page 2)

ings. In fact, in some cases male broilers raised on sand outweighed their counterparts raised on pine shavings. It has been speculated that this is due to a depression of feed intake resulting from litter consumption in broilers reared on pine shavings. Foot pad quality has also been shown to improve with broilers raised on sand. With the increased relative value of paws today, this is an important consideration. Additional positive benefits associated with the use of sand as litter include less dust, lower darkling beetle levels, and less caking.

There are reports of beneficial effects related to litter temperatures, with the temperature being 2°F cooler in summer and 2°F warmer in winter months.

Bacteriologically, sand is equivalent or slightly superior to pine shavings when used as poultry litter. Coliform (including *E. coli*) and aerobic plate counts were significantly lower when sand was used as the litter material. Wood fiber-based litter materials have been reported to contain relatively high aerobic bacteria counts and fungal populations.

Sand litter does have potential problems, however. Initial weight of the sand is typically 8-9 times greater than pine shavings. This amount of weight may require modification in methods that are typically used in handling litter. Weight could also be a problem in relation to transportation. Typically, as the weight of a material increases, the cost of transportation also increases. Depending on the depth, the quantity of sand needed to bed a 40 x 500 ft broiler house would be 187-280 tons.

The amount and type of bedding, frequency of removal, broiler market weights, nutrition and feed utilization efficiency, and numerous management factors influence litter rates and values. Poultry litter, on average, contains a fertilizer value of 3-3-2 (N-P-K). It has been reported that phosphorus levels were nearly 10% less in sand litter. This finding is considered environmentally desirable because poultry litter application rates are based on phosphorus levels in many regions.

Because sand weighs 300 to 400% more than pine shavings, increased acres of cropland would be needed when sand litter is ap-

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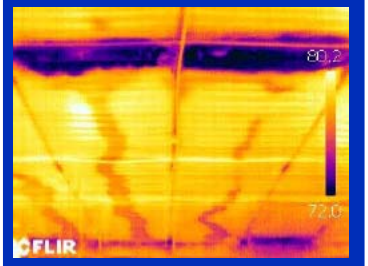
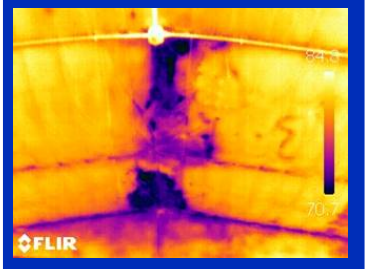
How much attic insulation?

Simple payback (in years) is calculated by dividing the cost of the investment by the savings per year



Thermal image: Roof leaks have damaged insulation in the dark areas near the center of the building and in the dark trains where water has run on top of the ceiling down toward the eave



Thermal image: Damaged ceiling insulation and air leakage at end wall

Energy savings in broiler production can be done in many ways, including attic insulation, closing curtain-sided buildings, and using fluorescent light bulbs and more energy efficient fans (higher cfm/watt ratings). In principal, this savings can directly translate into improved profitability for your operation, right? Well, not exactly.

Simple Payback

If the cost of housing modifications is free, then all the money saved is money earned. However, most modifications will have materials and labor costs. How do you decide whether the cost will be a good investment? A simple approach often used is to determine the simple payback, in years, of how long before the savings you realize have paid off the initial investment. "Simple" payback is so-called because we neglect depreciation and time-value of money. It is a gross estimate to let you decide if you are on the right track.

Information required for calculations

To determine how much additional attic insulation is appropriate, you need the following information:

- Dimensions of your building, separated into brooding and growing areas
- Type and quantity of insulation currently in your attic (and its R-value — see Table 1)
- Base the estimate on three winter flocks per year
- The temperature difference between the house and attic (For Kentucky conditions: a reasonable estimate is 35°F difference for 10 days during brooding and 27°F for 12 days during growout)
- What is the cost of the additional insulation you are considering?

Example calculation

- 40' x 500' broiler house with half house brooding
- Currently have 2 inches of loose-fill cellulose (R value of 3.5 per inch - see Table 1)
- Three winter flocks per year
- Brood for 10 days with supplemental heat for an additional 12 days of the growout period
- Cost of blown-in cellulose estimated to be 4.3¢/ft^2 for each inch of depth added

Square feet of brooding area = (40 x 500)/2 =		10,000
Temperature difference between house and attic during brooding	X	35
Brooding time (24 hr/day x 10 day x 3 flocks/year) =	X	720
Current insulation value (hr ft^2 °F/Btu) = 3.5 x 2 inches	/	7
Convert Btu to gallons LPG	/	85,560
SUBTOTAL = 421 gallons LPG / year		
Square feet of growout area = (40 x 500) =		20,000
Temperature difference between house and attic during growout	X	27
Time with supplemental heat (24 hr/day x 12 day x 3 flocks/year) =	X	864
Current insulation value (hr ft^2 °F/Btu) = 3.5 x 2 inches	/	7
Convert Btu to gallons LPG	/	85,560
SUBTOTAL = 779 gallons LPG / year		

Total current propane use = 1,200 gallons LPG/year

Next, repeat the calculations above using the final height of insulation. For example, doubling insulation from 2 to 4 inches cuts fuel use in half. The fuel savings would be 1,200 - 600 = 600 gallons. At $2/gal, this would be savings of $1,200 per year.

Cost of adding the additional 2 inches of blown-in cellulose = 2 inches x $0.043/inch x 20,000 ft^2 = $1,714

Simple payback, in years = Cost of insulation / Annual fuel savings = $1,714 / $1,200 = 1.43 years (about 17 months).

By calculating the fuel costs for the different levels of insulation, you can use this method to help decide how much insulation is appropriate.

Table 2 shows some estimated simple payback values for adding insulation to an attic that initially has either 2" or 4" of blown-in cellulose insulation and is increased to 4" to 18". Of immediate interest is that, for these assumptions, if you already have 4" of insulation in the attic and you double it to 8" it will take over 5 years to payback the cost! However, if you have 2" and increase to 6" (R-21 if using cellulose), the payback is 2.14 years.

How much attic insulation? .... continued

Table 1. R-values (hr ft² °F/Btu) for different insulation materials that can be used in poultry houses.

Insulation Type	R-value per inch (hr ft2 °F/Btu)	
	range	average
Fiber glass or batt	2.9 - 3.8	3.2
Hi perf fiberglass/batt	3.7 - 4.3	3.8
Loose-fill fiberglass	2.3 - 2.7	2.5
Loose-fill rock wool	2.7 - 3.0	2.8
Loose-fill cellulose	3.4 - 3.7	3.5
Perlite/vermiculite	2.4 - 3.7	2.7
Expanded polystrene board	3.6 - 4.0	3.8
Extruded polystrene board	4.5 - 5.0	4.8
Polyisocyanurate board, unfaced	5.6 - 6.3	5.8
Polyisocyanurate board, foil-faced		7
Spray polyurethane foam	5.6 - 6.3	5.9

Source: http://www.insulation-r-values.com/default.htm#3

Table 2. Estimated simply payback values for addition of loose-fill cellulose attic insulation based on an installation cost of 4.3¢/ft² per inch of added insulation.

Initial depth of 2 inches		Initial depth of 4 inches	
Final depth (inches)	Payback (years)	Final depth (inches)	Payback (years)
4	1.43	4	0
6	2.14	6	4.29
8	2.86	8	5.72
10	3.57	10	7.14
12	4.29	12	8.57
14	5.00	14	10.00
16	5.72	16	11.43
18	6.43	18	12.86

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2008 KENTUCKY FAMILY FARM ENVIRONMENTAL EXCELLENCE AWARDS

The Kentucky Poultry Federation awarded three farms with KY Family Farm Environmental Excellence Awards at the 2008 Kentucky Poultry Festival Hall of Fame Banquet on Saturday, October 4, 2008. This annual award recognizes Kentucky poultry producers for the exemplary environmental stewardship in poultry production.

Each winner received $500, an all expenses paid trip to Louisville and each winner is automatically a nominee for the U.S. Poultry & Egg Association Family Farm Environmental Excellence Award. All of these winners display true environmental stewardship by adopting best management practices and following their Ag Water Quality Plan.

The application for the award contains several categories including dry litter and liquid manure management, nutrient management planning, community involvement, innovative nutrient management techniques and participation in educational programs.

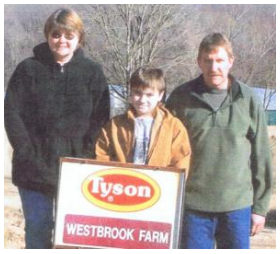
The R & K Wilson Farm, owned by Richard and Kenneth Wilson was the first recipient of the Kentucky Family Farm Environmental Excellence Award. The R & K Wilson Farm raises poultry for Pilgrim's Pride, Inc. in Hickory, Kentucky.

On the R & K Wilson farm manure is applied in accordance to a farm-specific nutrient management plan. Samples of litter are routinely analyzed and applied to the field according to crop needs. Crops are rotated each year. Soil tests are taken every three years to assure that nutrients are kept at safe levels.

The second recipient was Mark Turner owner of Turner Farms in Livermore, Kentucky. The Turners produce poultry for Perdue Farms, Inc. in Beaver Dam, Kentucky.

The Turners also implement a farm-specific nutrient management plan. Soil tests are taken annually using GPS markers. This technology allows them to evaluate soil fertility for specific places in a field and apply only the amount of fertilizer needed. Poultry litter is applied every other year and used where corn production will take place in the coming year. Working with the local Natural Resource Conservation Service office they have built waterways, filter strips and catch basins to minimize run-off, erosion and water contamination.

Jimmy Westbrooks, owner of Westbrooks Poultry, LLC, was the last recipient of the KY Family Farm Environmental Excellence Award. Westbrooks raises poultry for Tyson Foods, Inc. in Union City, Tennessee. The Westbrooks were unable to attend the banquet to receive their award.



The Westbrooks Poultry Farm is surrounded by ditches that are tributaries to the Bayou De Chien Creek which is home to the relict darter, an endangered fish species. To protect these fish a portion of the farm was put into a CRP filter strip and sown in fescue and clover to help prevent runoff. They are currently working with the KY Fish & Wildlife Division to have the floor of the litter shed and load out pad concreted.

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Sand as an alternative litter material ... continued

(Continued from page 3)
plied on a per-ton basis. Although sand may allow producers to avoid cleaning out for a number of years, total weight of litter at the end of that period may be close to what would have been removed from houses bedded with pine shavings with yearly cleanout. When sand litter is completely removed, an alternative disposal method may be needed unless sufficient agronomic acreage is available.

Brooding on sand litter *could* be more difficult than with current bedding types. Results showed significantly higher chick mortality and feed conversion from the houses bedded with sand. This may be related to brooding temperatures. Low brooding temperatures have been shown to adversely affect broiler performance and increase mortality.

Depending upon the cost of alternative litter sources, brooding and clean-out programs, and market age, sand has a payback period of 1.5 years. Previous reports from poultry producers using sand bedding have stated that the cost of sand is similar to the cost of pine shavings over a 1.5- to 2-yr period. Sand is sustainable economically but may turn producers away because of high initial placement cost.

Pros:
- May be local sources available
- A reusable bedding material
- Reduced darkling beetle activity

Cons:
- Substantial increase in the amount of material needed
- Need to use the correct type of sand
- Higher initial cost
- Specialized equipment required
- May require initial heating of the sand before placing a flock.

Summary written by
Dr. Jacquie Jacob
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What do you want to read about?

We want to know what you want to read about. Please e-mail topics of interest to Jacquie.jacob@uky.edu.

Past issues of the Cheeps and Chirps newsletter are available online at http://www.kypoultry.org/.