One of the objectives of the new tax act was to simplify the tax code. The Tax Cuts and Jobs Act is anything but simple. The questions are vast and varied. Unless specifically mentioned, most of the changes became effective January 1, 2018 and will sunset December 31, 2025. One thing is certain, the new tax act will affect everyone.

**New Tax Rates and Brackets**

We have found that the new tax rates and brackets alone produce tax savings for most taxpayers. The new tax rates range from 10% to a high of 37% (down from a high of 39.6%). The act increases the standard deduction to almost double the current amounts. This change increases tax savings and lowers the number of taxpayers who will itemize deductions. One negative aspect of the new act is the elimination of the deduction for personal exemptions. To counter the loss, the child tax credit (available for children under 17) was increased from $1,000 to $2,000. The phaseout of this credit went from income of $110,000 to $400,000. This will allow more middle-class families, who were previously phased out, to receive this credit. Also, a $500 tax credit is available for children 17 and over and elderly relatives claimed as a dependent.

See the example on the top of page 2: married filing joint taxpayers with 2 children under the age of 17. Notice that even though the taxpayer lost the $16,200 personal exemption and taxable income increased by almost $15,000 the tax savings is $3,621

**Changes to Various Itemized Deduction**

The three most common itemized deductions are state and local taxes, mortgage interest and charitable contributions, all of which were changed by the new law.

✔ State and local taxes when paid on your personal income or personal residence is now limited to $10,000 of the aggregate of state income taxes, real estate taxes and personal property taxes.
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1 Data on file.

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EMERGING TRENDS
A Newsletter of the Mississippi Poultry Association

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EMERGING TRENDS  | 1
Mortgage interest under the old law was limited to indebtedness of up to $1,000,000 plus an additional $100,000 related to home equity debt. Under the new law mortgage interest is now limited to indebtedness of up to $750,000 with no addition for home equity debt. The law originally stated that home equity debt would not be deductible; however, the IRS has since given clarification to the new law stating that home equity debt would be deductible if it did not cause the taxpayer to exceed the $750,000 mortgage limit and it was related to acquiring or significantly improving your residence. Home equity debt used to pay off credit cards or to pay for education will not be deductible as mortgage interest.

Charitable contributions under the old law were limited to 50% of your adjusted gross income. This increases to 60%. A negative change is that any donation paid for college athletic seating rights is no longer deductible.

Finally, the overall limitation on itemized deductions has been suspended. If your income was over a certain limit under the old law your itemized deductions were limited. Under the new law this has been removed, but will come back for tax year 2026.

**Corporate Tax Rate and the Qualified Business Income Deduction**

For companies formed as a regular corporation the new law makes permanent a flat corporate tax rate of 21% (under old law, graduated rates ranged from 15% to 35%). One of the most significant additions from the new law is the deduction for pass-through entities called the qualified business income deduction (QBID). This affects farmers/farms operating as a sole proprietors, partnerships, or S Corporations.

So, what is the qualified business income deduction? That depends on several factors. But in an attempt to simplify, the deduction is the lesser of:

- 20% of qualified business income,
- 20% of taxable income without regard to capital gains, or

The greater of 50% of W-2 wages from the business (excluding the owner’s wages) or 25% of the W-2 wages plus 2.5% of the unadjusted basis of the property in the business.

Here is an example showing the tax savings this deduction will have to farmers and business owners. This farmer has farm income of $110,000, wages of $45,000 and pays wages in the farm of $50,000:

<table>
<thead>
<tr>
<th>Tax Year</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule F - Taxpayer</td>
<td>$110,000</td>
<td>$110,000</td>
</tr>
<tr>
<td>Wages - Spouse</td>
<td>45,000</td>
<td>45,000</td>
</tr>
<tr>
<td>Total Income</td>
<td>155,000</td>
<td>155,000</td>
</tr>
<tr>
<td>1/2 SE Tax Deduction</td>
<td>7,771</td>
<td>7,771</td>
</tr>
<tr>
<td>Adjusted Gross Income</td>
<td>147,229</td>
<td>147,229</td>
</tr>
<tr>
<td>State and local taxes</td>
<td>12,500</td>
<td>12,500</td>
</tr>
<tr>
<td>Mortgage Interest</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Contributions</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Total Itemized/Standard Deductions</td>
<td>22,500</td>
<td>24,000</td>
</tr>
<tr>
<td>Exemptions</td>
<td>16,200</td>
<td>-</td>
</tr>
<tr>
<td>Taxable Income</td>
<td>116,620</td>
<td>113,229</td>
</tr>
<tr>
<td>SE Tax</td>
<td>15,543</td>
<td>15,543</td>
</tr>
<tr>
<td>Tax</td>
<td>18,610</td>
<td>18,589</td>
</tr>
<tr>
<td>Child tax credit</td>
<td>-</td>
<td>(4,000)</td>
</tr>
<tr>
<td>Tax after credits</td>
<td>34,153</td>
<td>30,532</td>
</tr>
<tr>
<td>Tax Savings</td>
<td>$ 3,621</td>
<td></td>
</tr>
</tbody>
</table>

This could mean significant tax savings but the deduction is complex. Don’t leave this deduction on the table. Please contact a tax professional for assistance in trying to calculate this deduction.

**Bonus Depreciation and Sec 179 Expensing**

For property placed in service after September 27, 2017, a 100% first year deduction is allowed for qualifying property. What qualifies? Tangible personal property with a depreciable life of 20 years or less (ie. Farm equipment), computer software that can be purchased by the general public and qualified improvement property. Under the old law taxpayers could not take bonus depreciation on used property. Under the new law bonus depreciation can be taken on both new and used property.

Sec 179 expensing also changed under the new law. The maximum amount of expense that can be taken went from $500,000 in 2017 to $1 million in 2018. Doubling this deduction will allow farms and business a much larger deduction for qualified items. Be aware that Sec 179 expensing can only be taken if there is income; it cannot create nor increase a loss.

We have outlined just a few of the important aspects of the new tax law. There are many more changes that may affect you. This new law will impact every single
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REFERENCES
1 Data on file.  
2 Data on file.

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taxpayer in America. We encourage you to meet with your tax professional to be sure you are getting the most benefit possible on your taxes under the new law. A vast majority of the clients we have met with have left our office knowing they will pay less Federal tax next year. Good News!! Please contact us if we can help you with any questions.

Michelle R. Stonestreet, CPA and Charles R. Lindsay, CPA are both shareholders with Matthews Cutrer & Lindsay, PA. They have offices in Yazoo City and Ridgeland, MS. Contact them at 601-898-8875.

MPA IN THE 21ST CENTURY: BOOSTING EDUCATION, REDUCING TAXATION AND REGULATION

The Mississippi Poultry Association turned 80 in 2017 and this article is the last in our series on the history of the association as recorded in the MPA minutes. The 21st Century brought its own problems and opportunities for the association and the industry.

Since 2000, the association has created and built up a foundation to educate a new generation of poultry leaders and successfully lobbied the Legislature to reduce the taxes on plants and farms.

Transitions continued in the 2000s in company ownership as B.C. Rogers became part of Koch Foods and Choctaw Maid was bought by Tyson Foods and Marshall Durbin was sold to Mar-Jac Poultry MS, LLC. The transitions at the association saw Mike McAlpin replaced by Mike Pepper and Pepper by Mark Leggett as president.

MPA’s greater focus on education, you could almost say, fell out of the sky. In 2004, the MPA Board set aside $1,000 for a scholarship then in the summer of 2005, Hurricane Katrina hit the Gulf Coast, travelling up through the poultry farms of S.E. Mississippi.

In the fall of 2005, Eli Lilly, gave MPA a $25,000 donation to assist with hurricane recovery. The board wisely created the Mississippi Poultry Foundation, a 501(c)3 charity, to make scholarships. There was no MPA convention in 2005 due to the hurricane, but the next year’s convention began the auction that MPA Administrative Assistant Becky Beard has built into the crowing event of the annual convention.

The live and silent auction on the last night of the convention brings in from $15,000 to $25,000 per year and has allowed the Foundation to expand the ways it furthers education. The Mississippi Poultry Foundation has increased its awards from two $1,000 scholarships the first year to four $4,000 scholarships annually. In 2016, the Foundation Trustees created an Endowment at Mississippi State University with the intention of growing the amount in the coming years.

The Foundation also annually supports the MSU Extension Service’s 4-H Poultry Chain competition. As the Foundation has grown, it has attracted contributions from MPA members who with their donations have created scholarships to reward leadership and research by MSU students. First Financial Bank, International Paper, BankPlus and Southern Ag Credit donate funds for annual scholarships.

The Foundation has received more than $260,000 in contributions since 2005 and has awarded $100,000 in scholarships to 78 individual students, many of them growers’ children.

At the Legislature, MPA has succeeded in reducing the tax burden on growers and companies and in preventing burdensome regulations at the state and local levels of government. MPA also works closely with regulatory agencies to implement fair rules or reduce unnecessary burdens.

The Association has since 2000 worked with other agriculture groups to:
• Eliminate the sales tax on electricity, propane and natural gas for plants and for farms.
• Lower the sales tax on farm equipment and parts and labor for repairs to farm implements to 1.5%. This includes poultry house equipment and parts.
• Double the amount farmers can borrow from the Emerging Crops Loan Program.
• Prevent local governments from imposing their own duplicative regulations on farms or bans on certain food items and so preventing a patchwork of local requirements.
• Ensure stable funding for MSU divisions important to the poultry industry such as the Extension Service, the Agricultural and Forestry Experiment Stations and the College of Veterinary Medicine.
• Maintain a transportation system that meets the needs of 3,000 trucks per day visiting hatcheries, farms, feed mills, and leaving processing plants with chicken to feed the world.
• Reduce the time and paperwork burdens of environmental permits.

MPA will continue working to ensure the industry is profitable in 2037, the association’s 100th anniversary, and beyond.
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Introduction

Your fans are the engine of your mechanically ventilated chicken house. The fans are the force behind the exchange of air that is necessary to maintain a healthy environment for the birds and the people that look after them during every season of the year. Because of rising electricity costs, selecting the right energy efficient fan can result in thousands of dollars a year in energy savings. Fans impact energy usage in two different ways. First, they use energy to operate (especially during the summer), but, second, how the fans are managed will impact the efficiency of the heating system within the building during cooler times of the year. Fan management is critical to keeping birds alive in hot weather. However, it is also important in winter to prevent over-ventilating, which exhausts heat needlessly and increases the gas bill. Therefore, when building a new house or retrofitting an older one, selecting the proper fan is one of the most important decisions a grower makes. It is important to compare fans not only on initial cost but also on performance and operating costs in the coming years. Often times, the cheapest fan is not the best option.

Principles of Fan Selection

Static pressure: Static pressure is the difference in pressure that a ventilation fan creates between the inside and outside of the chicken house. Static pressure can be measured with a Magnehelic static pressure gauge (Figure 1). When running, fans create a vacuum within a building by exhausting air and creating a low pressure area within the building. The indoor environment, having a lower pressure than outdoors, will pull air in through sidewall or cool cell inlets in an attempt to equalize the pressure. This is called a negative pressure system. Many poultry houses operate at a static pressure between 0.04 and 0.12 inches of water. However, some newer and tighter houses may operate at a static pressure of 0.15 in full tunnel with all the fans running.

Efficiency: Fan efficiency is the amount of air delivery that a fan will provide per unit of electric power used, usually given in cubic feet per minute per watt (cfm/W). Generally, small fans are less efficient than larger fans. Efficiency ratings range from about 5 cfm/W to 25 cfm/W.

Air delivery: Air delivery is the amount of air that a fan will move under different conditions. The term is expressed as volume of air movement per unit of time. The standard unit is cubic feet per minute (cfm). The greatest amount of air is moved at 0.00 inches static pressure. As static pressure increases, a fan must work harder and the amount of air moved decreases.

Air flow ratio: Air flow ratio is an indicator of how well a fan will hold up as static pressure increases because of dirty shutters, clogged cool cell pads, baffle curtains, or a restriction in air flow (tunnel curtains or doors not fully open). The air flow ratio is determined by dividing the amount of air a fan moves at 0.20 inches pressure by the amount of air it moves at 0.05 inches pressure. Air flow ratios usually vary from 0.50 to 0.85. A higher ratio indicates a better fan, meaning the fan is less affected by high static pressures. An air flow ratio of 0.50 means a fan will lose up to 50 percent of its air moving capacity in a worst case scenario while a fan with an air flow ratio of 0.85 will lose only 15 percent of its air moving capacity.

Selecting Tunnel Ventilation Fans

Any fan that you are considering should have been rated by an independent lab to show air delivery and efficiency as a function of static pressure. Fans are run through a series of standardized performance tests by a certified laboratory. The standardized tests help in ventilation system design and comparison shopping. Most fan manufacturers send their fans to the Bioenvironmental and Structural Systems (BESS) laboratory at the University of Illinois for performance testing. Fans are tested with accessories such as shutters, guards, and discharge cones in place to determine their air moving capacity and energy efficiency ratings at static pressures ranging from 0.00 inches to 0.20 inches.

Test results for current tests as well as archived test data are available from the BESS laboratory at www.bess.uiuc.edu. You can look up data on a number of agricultural fans at this site by clicking on Agricultural Ventilation Fans, then Performance Tests, then Current (or Archive) Tests, then Fan Frequency (this will be 60 Hz in the U.S.), then Power Supply (usually 1 phase, 230 volts in the U.S.), your Manufacturer name (Acme, etc.), and Fan Diameter (48”, 52”, etc.), then click Submit. At the bottom of the report for any particular fan model you will see something like this:

<table>
<thead>
<tr>
<th>Fan description:</th>
<th>Static Pressure</th>
<th>Speed</th>
<th>Airflow</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>48” belt drive, 1 hp Magnetek C782</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>motor, galvanized steel slant housing</td>
<td>0.00</td>
<td>528</td>
<td>24,300</td>
<td>22.6</td>
</tr>
<tr>
<td>aluminum shutter, guard and discharge cone</td>
<td>0.05</td>
<td>526</td>
<td>23,400</td>
<td>20.8</td>
</tr>
<tr>
<td>0.10</td>
<td>525</td>
<td>22,300</td>
<td></td>
<td>19.0</td>
</tr>
<tr>
<td>0.15</td>
<td>523</td>
<td>21,100</td>
<td></td>
<td>17.1</td>
</tr>
<tr>
<td>0.20</td>
<td>522</td>
<td>19,700</td>
<td></td>
<td>15.4</td>
</tr>
<tr>
<td>0.25</td>
<td>520</td>
<td>17,200</td>
<td></td>
<td>13.0</td>
</tr>
<tr>
<td>0.30</td>
<td>519</td>
<td>16,100</td>
<td></td>
<td>11.8</td>
</tr>
</tbody>
</table>
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Accessories are important and necessary for the fan to function properly. However, **accessories often reduce air flow and efficiency**. Shutters can be especially detrimental to air flow, depending on placement location. You should expect a 10 to 15 percent reduction in air flow using inlet-side shutters and a 15 to 25 percent reduction using discharge-side shutters. Choose shutters that will open to a full horizontal position. Air flow will be decreased if the shutters do not fully open. For the safety of people and animals near the fans, guards are necessary and must be in place. Round ring guards are less detrimental to air flow than wire mesh guards with square or rectangular openings. Properly designed guards should disrupt air flow and efficiency by less than 5 percent. A well-designed housing and discharge cone can improve fan performance by decreasing air turbulence. A discharge cone and proper housing design can improve air flow at least 15 percent.

**Set High Standards and Maintain Your Fans**

Do not choose a fan based strictly on its diameter. In addition, never assume that two fans of equal size will always perform the same. Different motors, the curvature of the blades, and other features will have a huge effect on a fan’s performance. Most agricultural fans are equipped with propeller-type blades. Propeller fans are excellent at moving large amounts of air at low static pressures seen in poultry houses. However, conditions inside most chicken houses are harsh, requiring heavy gauge blades made of corrosion resistant materials. Blades may be constructed of many different materials including steel, aluminum, cast aluminum, molded fiberglass, and various plastics. Testing of several 50-inch fans has demonstrated that the air delivery (at 0.10 inches of water) ranged from 18,000 to 28,600 cfm, and the efficiency ranged from 14.3 to 24.5 cfm/W (Harmon et al., 2010). Therefore, set your standards high when selecting for energy efficiency. If you consider a fan with an energy efficiency ratio of not less than 20 cfm/W at 0.10 inches static pressure and an air flow ratio of at least 0.73, you will be choosing one of the best fans tested by BESS Laboratory. This type fan may be initially more expensive, but will be less expensive to operate over the life of the fan.

Realize that a “cheap” fan is probably not the most efficient choice you can make. While it is easy to be persuaded by a “cheap” initial price, keep in mind that this could cost you more in operating expense and upkeep than if a higher quality fan were chosen in the beginning. Fans are like everything else. You get what you pay for. Efficient motors cost more. They have more copper windings and are, therefore, more expensive to produce. It may take two to three years to see the payback from reduced electrical consumption but a high quality fan continues to save you money long after that. High-efficiency motors are available to be used on well-designed agricultural fans but make sure you are not sacrificing air flow for efficiency. Efficiency will be of little value if you can’t move enough air to keep the chickens alive. Some power companies provide rebate incentives for ventilation fans that meet their high cfm/W standards. Power providers can help you calculate the electricity savings when comparing new fans or the payback time in electricity savings when replacing older fans. By taking advantage of these opportunities, growers can determine which efficiency upgrades are the most economical.
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Fan maintenance must be a part of your overall management program. Dirty shutters are a common problem in many poultry houses. However, dirty shutters and fan blades can reduce air delivery by as much as 40 percent (Wheeler, 2002). Clean the shutters, blades, and guards after every flock of chickens. Check pulleys, fan belts, and belt tensioners because belt slippage can reduce air flow and increase belt wear. It’s a good idea to replace belts on tunnel fans every spring before hot weather arrives. Be cautious when relying on a visual fan inspection. It may be difficult to spot a problem that is costing you a 5 to 10 percent loss in fan power. However, if you have multiple fans that are losing 5 to 10 percent of their air moving capability, you will soon have an overall reduction of 25 to 30 percent in wind speed down the house. Instead of the 600 to 800 feet per minute you thought you were pulling, you may only have 420 to 560 feet per minute. This could be devastating on a hot afternoon in July or August with big birds on the farm.

It is wise to individually static pressure test each fan between flocks. Most growers conduct static pressure tests to determine the tightness of their house. The same principle is used to monitor fan performance over time (Brothers et al., 2014). Close all sources of incoming air and ensure that curtains are up, vents are closed, inlets and doors are closed tight, and fan shutters are working properly. Then, turn on one individual fan and record the static pressure of that one fan. Now, turn that fan off and do the same to the next fan until all the fans have been tested and the static pressure recorded for each fan. Any fan that is 0.02 points less than the average of all the other fans should receive immediate attention. Keep in mind that the fans that also do most of the minimum ventilation may be the fans that show a problem first because they are doing double duty and will likely show power loss before the others.

A full tunnel test can also be performed on the house to look for problems. To do this, put the house in full tunnel mode and turn on all the fans and record the static pressure. If the pressure goes down the next time you test or at a later date, you may have maintenance issues or electrical issues or both. In this case, you might do individual fan tests to see if individual fans may be causing the problem. If the static pressure goes up since the last test, there may be a restriction in air flow entering the house. Clogged cool cell pads could cause such a restriction or a tunnel inlet not open completely.

Factors to Consider

How many fans will it take? Integrators will specify a certain number of fans for new house construction or for retrofitting older houses. How do they come up with this number of fans? There must be enough fans to exchange the air in the house at least once per minute. With the trend being to grow bigger birds, an air exchange of more than once per minute is becoming more popular. Air speeds of 800 feet per minute or higher are common in many new and retrofitted houses today.

How can I tell what my air velocity needs to be? If you have a 500 foot long house, your air velocity needs to be 500 feet per minute to exchange the air in your house in one minute. To calculate your actual air velocity, you divide the total fan capacity of your house by the cross-sectional area of the house (width of your house times the average ceiling height). Let’s say your house is 50 feet wide by 500 feet long and you have fifteen 50 inch fans installed with a cfm capacity of 27,000 cfm for each fan. Fifteen times 27,000 is a total fan capacity of 405,000 cfm. If you have an average ceiling height of 10 feet, and your house is 50 feet wide, the cross-sectional area of your house is 500 feet (10 ft x 50 ft). If you divide 405,000 by 500, you will get 810 feet per minute. This is how much air speed you will have down the house under the given conditions. What if you are operating against a higher static pressure and your fans are only moving 25,000 cfm each? Fifteen times 25,000 is a total fan capacity of 375,000 cfm. If you divide 375,000 by 500, you will get 750 feet per minute air speed down the house.

The cross-sectional area of your house will make a huge difference in the air velocity you can achieve and the air exchange rate. If your house does not have a drop ceiling or at least baffles, the greater volume of air inside your house that must be exchanged will slow the air speed down considerably. This may be a concern during periods of hot weather with big birds on the farm. However, you likely have a few extra cfm above the minimum required and that will be a good thing in this case. In most cases, fan capacity numbers do not exactly match the requirements of your house and you end up slightly exceeding the minimum. Having a few extra cfm in reserve will be beneficial as fan wear begins to accumulate over time, dust and dirt build up on shutters and blades, and fan belts begin to slip (Donald, No date). Also, air velocity is usually slightly lower at bird level than it is above their heads so having a little extra cushion of cfm will be useful when dealing with periods of extreme heat and the increased heat load associated with growing larger birds.

Static pressure increases are also a drain on air velocities. As the house is operated at a higher static pressure, the air velocity will drop because the fans are working harder to move air against a higher pressure. For example, evaporative cooling pads usually increase the static pressure slightly. The fans must work harder to pull air through the holes in the pads vs. pulling air through a big hole in the wall if the pads were not there. In addition, the fans work even harder to pull air through a wet cool cell pad vs. a dry cool cell pad.

We have mainly discussed fans but the fans are not the only piece of the ventilation puzzle. The amount of cool cell space on each side of your house, the condition of the cool cell pads themselves, the tunnel curtains or doors, and the number, size, and design of your minimum ventilation inlets all play critical roles in the overall ventilation capabilities of your house and all are equally important. Each of these pieces will need attention and maintenance from time to time.

Summary

Fans make poultry production in environmentally controlled houses possible. Good quality fans are essential for mechanically ventilated poultry houses to perform efficiently. In most cases, the cheapest fan is not the best option over the long run. Inefficient fans waste
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Eggs and wings brought a crowd from the Capitol to the legislative luncheon sponsored by MPA and the Mississippi Egg Marketing Board on February 21.

Commissioner of Agriculture and Commerce Cindy Hyde-Smith welcomed legislators and staff who were lined up to have omelets made by legislators and other “celebrity chefs.” MPA Chairman Ray Ables with Tyson Foods asked the blessing on the food.

Sanderson Farms provided wings and chicken nuggets. The luncheon provided a relaxed setting at Galloway United Methodist Church in the middle of the day that lawmakers faced the deadline to pass appropriation and revenue bills.

energy. In addition, inefficient or mismanaged fans may result in poor air quality that can stress birds. Birds that are stressed are more susceptible to disease outbreaks and are less efficient in the areas of growth and feed efficiency. When choosing fans, select a model that has been rated and tested by an independent laboratory. Most fan manufacturers use the BESS testing lab at the University of Illinois. This laboratory has both current and archived data on line for practically every agricultural fan on the market. Verify how different fans perform against a static pressure of at least 0.10 inches of water. Also check the efficiency, air delivery, and air flow ratio of the fan you are considering. Do not change or replace fans or any part of your ventilation system without talking to your service technician first. The Extension Service has tools that can help you measure the wind speed, static pressure, and rpms on your fans to determine if your house is operating efficiently. Let us know if you would like for us to assist you or your service technician in this endeavor.

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POULTRY TOPS STATE’S AG VALUE LIST AGAIN

Ms. Bonnie A. Coblentz, MSU Extension Service

Poultry remains the state’s top agricultural commodity, bringing an estimated $2.8 billion in production value in 2017.

STARKVILLE, Miss. -- The poultry industry is the giant in the state’s agricultural economy, as its estimated 2017 production value of $2.8 billion nearly doubles the value of forestry.

Early figures from the Mississippi State University Extension Service show the industry grew at an estimated 13.4 percent from the 2016 value. Brian Williams, Extension agricultural economist, said higher broiler prices are responsible for the value increase.

“Pounds of production are actually down a little this year, but prices are up, and that is what is actually driving the value,” Williams said. “Average price per pound in 2017 was 7 cents higher than prices in 2016.”

The state is estimated to produce about 4.6 billion pounds of broilers in 2017, down slightly from the 4.7 billion pounds produced in 2016. The estimated pounds of production for 2017 is likely due in part to several companies that have begun growing slightly smaller birds.

Egg production value increased as well, up an estimated 18.6 percent from 2016. The number of eggs produced stayed relatively stable, but Williams said average egg price per dozen rose from $1.91 in 2016 to $2.27 in 2017. This figure is averaged across all eggs, including cagefree, free-range, organic and brown eggs, in addition to the standard commercial eggs produced.

“The poultry industry reaches pretty far into the state’s economy,” Williams said. “The poultry industry’s demand for feed causes Mississippi to be a grain-deficit state, which brings up prices for our row-crop producers.”

Mary Beck, head of the Department of Poultry Science at MSU, said poultry companies’ shortterm expansion plans in the state are indications of the health of the industry.

“Demand for chicken remains strong, and chicken competes well with pork and beef as it costs less to produce,” Beck said. “As long as companies are looking to expand, this indicates the industry is in very good shape.”

The value of poultry to Mississippi goes far beyond the actual farm-gate value of the commodity. Many of the state’s other industries are affected as poultry production requires housing, processing equipment, litter management, animal health, transportation, labor and more.

Beck said the state’s poultry industry benefitted in 2017 from relatively low feed costs. Corn and soybeans make up the majority of poultry feed.

“Feed cost is 70 percent of what it takes to get a flock of chickens to market, but feed costs have been relatively low this year because there was a good harvest last year,” she said.

Growers did not face many challenges this year from disease pressure, but Beck praised Mississippi industry personnel for their attention to biosecurity measures.

“The last big industry disease outbreak was about 10 years ago,” Beck said. “There is a little bit of disease in backyard flocks from time to time, but biosecurity measures in place have prevented the industry in Mississippi from being affected.”

Mississippi remains No. 5 in the nation in poultry production, and industry personnel are optimistic for 2018.

Released: December 19, 2017 Contacts: Dr. Brian R. Williams, Dr. Mary McLean Beck
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The MPA Poultry Management School is scheduled for May 16th and 17th at the College of Veterinary Medicine at Mississippi State University.

We will begin at 1:00 p.m. on May 16th, finish up the first day around 4:30 pm and then head out the VFW for some hospitality time, Bones Crawfish will be onsite cooking this year. Other foods for those who can’t eat crawfish will be served.

There will be buses running to take you to the VFW and back to your hotel.

The next morning, May 17 we will begin at 8:00 a.m. and finish up around noon with a great lunch sponsored by First South Farm Credit.

We have lined up a very informative school with excellent speakers. Please take a look at the attached schedule.

Also, for your convenience, we have reserved blocks of rooms, single and double, for those that want to spend the night. Please reserve your rooms before April 23, 2018. Please mention MPA/Management School when you contact the hotels so you will receive the special room rate of $119.00.

The Hilton Garden Inn (662) 615-9664.
The Holiday Inn Express (662) 324-0076.

Please use the attached registration form to register.

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Registration Fee $125.00 per person for members, $175.00 per person for non-members, and free to MPA Grower Members. Due to Contractual obligations, MPA cannot refund registration fees after May 1, 2018. Make checks payable to MPA or call the MPA office (601) 932.7560 with credit card info. Checks must accompany your registration forms. Mail to: MPA, 110 Airport Road South, Suite C, Pearl, Mississippi 39208.
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As I write this article, we are in the first week of March, which historically is our highest risk for Avian Influenza. The US Department of Agriculture, Wildlife Services has been conducting AI surveillance on waterfowl since December, and have found an increased number of Low Path Avian Influenza (LPAI) positive ducks over last year. The past few outbreaks in the US have occurred between January and May, so we are still at high risk in our commercial poultry industry.

Avian Influenza isn’t the only disease of concern, Mycoplasma gallinarium (MG), Mycoplasma synoviae (MS) and Infectious Laryngotracheitis (LT) are also disease that are commonly found in backyard poultry and pose a huge risk to our commercial industry. Practicing biosecurity is the only defense against these diseases, since there is no way to eliminate them from wildlife or backyard populations of birds. In fact, USDA has a new rule in process that requires audits of biosecurity practices as a prerequisite for receiving indemnity with positive AI flocks. Most of these diseases are introduced into the poultry house on shoes, clothing or equipment that have been exposed to diseased birds.

It isn’t enough anymore to keep the disease off the farm, our biosecurity processes must begin at the entrance to each poultry house, taking care not to bring disease from outside to inside the house. USDA announced recently that the funds to fight LPAI have diminished to a point, where it is going to fall to the state and the company to handle most of the expenses incurred in response to the disease.

The current proposed legislative budget for the Board of Animal Health does not provide adequate funding to make up for the USDA deficit, putting more burden on the company and grower to respond to the disease. Prevention through biosecurity to keep the disease out in the first place is more important than ever.

Important biosecurity practices include:
1. If you have been hunting, exposed to wildlife or on another premises with poultry, you should shower and change clothes prior to going on your poultry farm.
2. There should be a footbath at the entrance to each house.
3. Dedicated overalls and boots or plastic boot covers in control room of each house to be used each time that house is entered. (at minimum put on disposable boots prior to entering poultry house).
4. Hand washing between houses.
5. Daily mortality pick up and proper use of composter or incinerator.
6. Any equipment or vehicles that have been exposed to other poultry should be cleaned and disinfected prior to going onto another farm.

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Since opening their doors in 1947, Mississippi Ag has seen a lot of changes in the landscape over the course of 71 years. Mississippi and Arkansas farmers and landowners have seen growth, loss, revitalization, devastation, and beauty. And while that cycle is likely to continue, through it all, Mississippi Ag’s mission has and will remain the same - to empower customers and employees to enjoy life through their passion for the land, dedication to service, and commitment to success.

However, they know talk means nothing without action. Any dealership can sell you a piece of equipment, but it’s what happens afterwards that makes the difference.

“We have found over the years that buying the equipment is just one step, but enjoying the equipment for years after is very important. That’s why we put so much emphasis on taking care of people, having the parts, the service, and the knowledge. That’s what you can expect in any one of the locations of Mississippi Ag”, said Victor Jones, Salesman.

With their recent expansion in Hattiesburg in March 2017 and their upcoming expansion into Pearl, Mississippi Ag serves Mississippi with 11 locations and Arkansas with 5. Even with this growth, they continue to fuel their passion for and dedication to community involvement.

Jamie Swafford, Marketing Manager, feels that giving back is important to company growth - whether that means spearheading a toy drive for Blair E. Batson or supporting the kids competing in the Dixie National.

“All locations have some level of community involvement and support for our high schools, our 4-H club, and in other local organizations as much as possible. We are strongly focused on family and community, as we should be.”

Mississippi Ag is committed to expanding their inventory to include equipment that will help crop farmers, hobby farmers, landowners, and poultry farmers, like the Lewis Brothers Housekeeper. It is one of the most popular pieces of poultry equipment that is one-man operated, simple to use, and a cost-effective solution to litter management.

From providing tips on how to prepare food plots and farming in the heat to hosting educational planter/sprayer clinics to servicing equipment to bring the most value to customers’ investments, Mississippi Ag is very transparent about their mission to do more than sell equipment.

Mississippi Ag values the importance of their state’s poultry farmers and strives to work towards helping them achieve their goals beyond the equipment they can provide. Visit agup.com for more information or call 662.314.9078.
The 2018 elections will have both of Mississippi's U.S. Senators on the ballot along with the four Congressmen and all of the state's judges.

U.S. Sen. Roger Wicker is up for election this year and then Sen. Thad Cochran announced his retirement effect April 1. Early in January, Third District Rep. Greg Harper announced his retirement, drawing nine candidates to that open seat race.

Gov. Phil Bryant named Cindy Hyde-Smith to fill Sen. Cochran’s seat until the regular election on Nov. 6, but the race to replace Sen. Cochran will be a special election to fill the remainder of his term that ends in January 2021.

One of the nine state Supreme Court Justices, four of the 10 Court of Appeals judges and all circuit and chancery judges will be on the ballot in November. The qualifying deadline for the non-partisan judicial elections is May 11. We will run a list of judges in the next Emerging Trends.

Prior to Sen. Cochran’s announcement, a total of 12 Democrats and 12 Republican candidates qualified to run for the Senate and the U.S. House. Six Mississippi state legislators, two Republicans and four Democrats, announced they are seeking one of the five federal offices on this year's ballot. Party primaries are June 5, runoffs June 26 and the general election is Nov. 6.

State Sen. Chris McDaniel, R-Ellisville, announced he was running against incumbent U.S. Sen. Roger Wicker, R-Tupelo, who received the endorsement of President Donald Trump. After Cochran announced his retirement, McDaniel said that he would run for the open U.S. Senate seat.


State Sen. Sally Doty, R-Brookhaven, is running in the 3rd Congressional District seat left open when U.S. Rep. Greg Harper, R-Pearl, announced his decision in January not to seek re-election. She is one of six Republican candidates seeking the GOP nomination. On the Democratic side, state Rep. Michael Ted Evans, D-Preston, qualified to run in the Democratic primary where he faces one other candidate.


### Candidates Who Qualified to Run

**U.S. Senate**

**Democrats:** David Baria, Bay St. Louis; Jensen Bohren, Benton; Jerone Garland, Kosciusko; Victor G. Maurice, Jr., Pass Christian; Omeria Scott, Laurel; and Howard Sherman, Meridian.

**Republicans:** Roger Wicker, Tupelo; Richard Boyanton, Bay St. Louis and Chris McDaniel, Ellisville.

**Reform:** Shawn O’Hara, Hattiesburg;

**Libertarian:** Danny Bredwell, Columbus.

**1st Congressional District**

**Democrats:** Randy Mack Wadkins, Oxford.

**Republicans:** Trent Kelly, Saltillo.

**Reform:** Tracey Lou O’Hara, Petal.

**2nd Congressional District**

**Democrat:** Bennie G. Thompson, Bolton.

**Reform:** Irving Harris.

**Independent:** Troy Ray, West.

**3rd Congressional District (OPEN)**

**Democrats:** Michael Aycox, Newton, and Michael Ted Evans, Preston.

**Republicans:** Sally Doty, Brookhaven, Morgan Dunn, Magee; Michael Guest, Brandon; Whitt Hughes, Madison; Perry Parker, Seminary; and Katherine Tate, Jackson.

**Reform:** Matthew Holland

**4th Congressional District**

**Democrat:** Jeramey Anderson, Moss Point.

**Republicans:** Steven Palazzo, Biloxi, and Brian Rose, Ocean Springs.

**Reform:** Lajena Sheets, Hattiesburg.

### Candidates Who Have Announced They Will Run in the Open U.S. Senate Seat

**Democrat:** Mike Espy, Madison.
Gov. Phil Bryant named Cindy Hyde-Smith as the state’s next U.S. Senator to replace Sen. Thad Cochran, who set his retirement for April 1.

Gov. Bryant made the announcement in downtown Brookhaven, her hometown, on March 21. Hyde-Smith will serve until a special election, expected to be on Nov. 6? Sen. Cochran’s term expires in January of 2021. She is the first woman to represent the State in the U.S. Senate in the state’s 200 year history.

Commissioner Hyde-Smith is an ex-officio member of the Mississippi Poultry Association Board of Directors. She has been active in defending and promoting the poultry industry, the state’s largest agricultural industry. Prior to her first election as Commissioner of Agriculture, she was a State Senator from Brookhaven for three terms and served for two of those terms as Chair of the Senate Agriculture Committee.

We will miss her input at MPA Board meetings, but MPA commends Gov. Bryant on his choice and we know Sen. Hyde-Smith will be a strong advocate for the poultry industry and all Mississippi agriculture in Washington.

Sen. Cochran, 80, announced on March 5 that he would step down after serving for 40 years in the U.S. Senate. Sen. Cochran has served as Appropriations Committee Chair 3 times, including in the aftermath of Hurricane Katrina. Sen Cochran was first elected to the U.S. House in 1972.

Gov. Bryant will now name a new Commissioner of Agriculture and Commerce replace Sen. Hyde-Smith and serve until the November 2019 statewide elections.

This year’s elections for federal offices will only be the second time in the 104 years since the passage of the 17th amendment requiring election of U.S. Senators that both Senators from Mississippi have been on the ballot. Sen. Roger Wicker is up for re-election this year for another six-year term. In 2010, Sen. Cochran was on the ballot for re-election to another six-year term and Sen. Wicker was named to replace Trent Lott. Wicker won the seat a special election that November.
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Gov. Phil Bryant signed legislation on March 16 that bans cities and counties from imposing regulations on farmers who are already regulated by state agencies. The bill became law the day it was signed.

The Miss. Poultry Association, the Miss. Farm Bureau Federation, the Miss. Forestry Association, the Miss. Cattlemen’s Association, and the National Federation of Independent Business of Mississippi supported the bill to protect the right to farm. The Miss. Municipal League opposed the measure.

The need for the bill became apparent last fall when the Monroe County Board of Supervisors doubled the setback requirements from property lines and from neighboring residences for poultry farms in Monroe County. MPA and Farm Bureau appealed the decision in circuit court and had legislation drafted to clarify that state agency regulations will govern farms.

House Bill 1122 was amended in the Senate and passed 45-6 on Feb. 28. On March 6, the bill got a 117-0 approval to send the bill to Gov. Bryant’s desk. The law:

- Took effect immediately.
- Says “No governing authority of any municipality or of any county shall adopt or impose any ordinance, regulation, rule or policy that prohibits or restricts activities on agricultural land or land that is otherwise unclassified if the land is used for an agricultural operation, forestry activity or traditional farm practices. Additionally, if the activities being conducted on the land are regulated by the Mississippi Department of Environmental Quality, the Mississippi Department of Agriculture and Commerce or the Mississippi Forestry Commission, the provisions of those agencies’ statutes or the regulations promulgated by those agencies shall govern.”
- Says the new law “Shall not affect any ordinance, regulation, rule or policy that is in effect adopted or amended prior to the effective date of this act.” Only Monroe County, which has one poultry farm and one under construction, has an ordinance adding to state regulations on farming.
- Does not “affect the discretion of a county or municipal governing authority to reclassify property from one zone to another as otherwise permitted by law.” This applies to a city or county’s ability to rezone property. Nearly all municipalities have zoning, but only 12 counties have zoning ordinances.

House Agriculture Chairman Bill Pigott of Tylertown and Sen. Billy Hudson of Hattiesburg, both farmers, guided the bill to passage.

Ted Mangum was recently elected by the Grower Advisory Committee to serve as their new Chair. Cindy Tucker, 2016-2017 Chair, will take the role as Vice Chair.

Mr. Mangum and his wife, Patricia, have been poultry producers for Wayne Farms for 22 years. He became interested in poultry when he invented the first alarm system for poultry houses. Mr. Mangum was a preacher for 35 years and has a master’s degree in vocational education. He has a love for antique cars and attends many car shows. If you have attended a car show before, you might have seen him riding in his large, motorized Radio-Flyer wagon that he built himself.

The Grower Advisory Committee is made up of growers from Mar-Jac, Peco, Sanderson Farms, Tyson and Wayne Farms. Members of the committee provide insight and recommendations to MPA on the needs of poultry producers on legislative and regulatory concerns.

MPA looks forward to working with Mr. Mangum to help further the needs of Mississippi’s number one agricultural commodity. His term officially began on January 1, 2018.
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As I read the recent decision of the U.S. Supreme Court in National Association of Manufacturers v. Department of Defense, __ U.S. __, No. 16-299, 2018 WL 491526 (Jan. 22, 2018) (“NAM”), I was reminded of the Beatles’ song “The Long and Winding Road.” NAM arose out of the government’s most recent attempt to define “waters of the United States” (“WOTUS”) for purposes of the Clean Water Act (CWA). This time, the challenge was to a 2015 final rulemaking by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (“2015 WOTUS Rule”). The rule was challenged in a number of district courts and courts of appeal, most notably the U.S. Court of Appeals for the Sixth Circuit.

The issue considered in NAM was limited to whether the CWA requires challenges to the WOTUS Rule to be filed in the (1) federal district courts across the country or (2) the circuit courts of appeal. In a unanimous opinion authored by Justice Sotomayor, the Court held that the 2015 WOTUS Rule challenges must begin in the district courts. This creates a potentially very long and winding road before we will have legal clarity regarding the meaning and application of the WOTUS definition within the CWA. Theoretically, this means that lawsuits in all fifty states can challenge the WOTUS definition simultaneously and independently of each other.

Now that the U.S. Supreme Court has determined that federal district courts have original jurisdiction for WOTUS Rule challenges, the next round of litigation regarding WOTUS is already beginning and the lawsuits are first focusing on district court challenges to two rules issued by the Trump Administration EPA rather than challenges to the 2015 WOTUS Rule:

(1) a rule intended to replace the 2015 WOTUS Rule, “Definition of ‘Waters of the United States’—Recodification of Pre-Existing Rules,” 82 Fed. Reg. 34,899 (July 27, 2017) (“the Replacement Rule”); and

(2) a rule intended to delay the WOTUS Rule “so that it will not go into effect before February 2020,” “Definition of ‘Waters of the United States’—Addition of an Applicability Date to 2015 [WOTUS] Rule,” 80 Fed. Reg. 5200 (Feb. 6, 2018) (“the Delay Rule”).

The Replacement Rule would set a new and narrower definition of WOTUS for purposes of CWA jurisdiction while the Delay Rule seeks to ensure that, upon the issuance of the Sixth Circuit’s mandate, the 2015 WOTUS Rule never has a realistic chance of going into effect. Parties have already begun to challenge or defend the Replacement and Delay Rules and seek to have the existing district court suits that were previously stayed pending the Court’s jurisdictional decision to proceed. In fact, challenges to the Delay Rule have already been filed in several district courts. In addition, a group of states has asked the Eleventh Circuit to remand challenges to district courts so that substantive WOTUS-related challenges can begin. As I stated earlier, it’s going to be a long and winding road before there are definite answers regarding the meaning of WOTUS now that legal challenges in the district courts have been allowed to proceed.

If you have any questions or need additional information concerning this article, please feel free to contact John Milner, MPA Counsel, at jmilner@brunini.com or (601) 291-4696.
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The fifth Annual MPA Poultry Health Seminar on February 14 drew about 75 industry professionals to hear the latest research on battling poultry diseases.

The meeting at the Mississippi Agriculture and Forestry Museum in Jackson featured two presentations on Salmonella, a presentation on avian influenza, fowl cholera, LT, mycoplasma, as well as viral diseases. Speakers offered suggestions on improving livability and tips for antibiotic-free production.

Making presentations were:

- Dr. Martha Pulido-Landínez – Poultry Research and Diagnostic Lab MSU
  - Prioritized Live Side Salmonella Interventions: What To Do To Decrease Salmonella in the Primary Production
- Dr. Alejandro Banda - PRDL-MSU
  - Findings in the Diagnosis of Viral Poultry Diseases in Mississippi
- Dr. Leslie Johnson - MSU post-DVM student
  - An Investigation of Variables Associated with Livability in A Broiler Complex in Mississippi
- Dr. Natalie Armour – PRDL-MSU
  - Protecting the Flock: Recommendations for Enhanced Mycoplasma Surveillance
- Dr. Jessica Hockaday - MSU post-DVM student
  - The Last Two Years at PRDL
- Dr. Enrique Montiel - Boehringer Ingelheim
  - LT Vaccination: A Model for Field Vaccination
- Dr. Amy Delgado, USDA-APHIS-VS (Center for Epidemiology and Animal Health)
  - Epidemiology of AI in US
- Dr. Scott McKenzie - MWI
  - Hatchery Sanitation: Most Strategic Interventions for NAE and Everybody
- Dr. Pratima Adhikari - MSU Poultry Science -
  - Dietary Interventions to Reduce Salmonella in Poultry
- Dr. Tim Cummings - Zoetis
  - How to Assess Chick Quality and First Week in the Field
- Dr. Jaime Ruiz - Elanco
  - Pasteurella Control in Breeders

The next two educational events for MPA members are the Poultry Management School on May 16-17 on the MSU campus and the Breeder-Hatchery Seminar August 15 and 16 in Pearl and Collins.
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Introduction
Frequently, there are no reports of clinical disease in broiler chickens caused by *Salmonella sp (S)*, and even no negative effects on the productive results are reported in the broiler farms. Apparently, everything is normal: low mortality and good productive performance. However, the main concern would be a high *Salmonella sp* prevalence reported in the processing plant and the shorter shelf time of the chicken meat. These conditions are especially recurrent when *Paratyphoid Salmonella* (not adapted to a specific host) are the ones identified after isolation from carcass rinses.

The no effect of some *Salmonella* serotypes such as *Enteritidis*, *Typhimurium*, or *Heidelberg* on the chicken health and performance would act against the improvement of results in the control of these bacteria in vertical integrations because sometimes the chicken sector is not aware of its high percentage of participation in a result of presence of *Salmonella* in the processing plant. For this reason, control programs in vertical integrations needs a holistic (“all inclusive”) approach with a great joint work in all the integration sectors. There is a co-responsibility between broiler farms and processing plant in the detection of *Salmonella* positives in a chicken carcass because an apparent low load of these bacteria in the farms may increase the loads in the processing plant when handling large numbers of chickens simultaneously would promote the increase in *Salmonella* counts due to the cross contamination.

Effective Salmonella control requires strong link between live production and processing

Be aware that the first component of the presence of *Salmonella* in the processed chicken carcass would be the presence of this bacterium in the broiler farm, may promote the implementation of specific “on farm interventions”, looking for low loads of *Salmonella* being delivered from the farm to the processing plant. Consequently, decreasing the number of *Salmonella* cells present on the chicken carcass and parts. So, working in the broiler farm to decrease *Salmonella* loads, food safety programs will be most effective.

For the poultry industry, controlling the prevalence of *Salmonella* is important for several reasons. First, regarding food safety, this zoonotic agent can cause foodborne diseases, having a remarkable impact on public health. On the other hand, the presence of this bacterium may constitute an international sanitary barrier. Finally, because of its possible effects on the health of the birds, *Salmonella* can cause a serious economic impact.

One of the most important challenges for the poultry industry in the 21st century is offering safe poultry products with no antimicrobial residues and no antibiotic resistant bacteria. This significant situation in the poultry current scenario presents a picture that in many cases can be worrisome because there are fewer drugs available for the treatment of diseases of commercial birds.

**Practically speaking, it is necessary to know what *Salmonella* serotype we have in our chickens and in the chicken house environment?**

The genus *Salmonella* exhibits a great diversity. To date, more than 2,649 serotypes have been identified. Additionally, *Salmonella* has a large variety of hosts (cattle, pigs, birds, reptiles, rodents, vegetables, etc.). The most important serotypes are those that are not restricted to a single species affecting humans and animals (zoonotic *Salmonella*), causing the so-called foodborne diseases.

Sometimes, the wide variety of serotypes makes *Salmonella* identification difficult. Another factor contributing to the problem is the multiplicity of existing sources of infection that make this bacterium’s control a complete nightmare. Interestingly, some serotypes are more adapted to the environment, others are adapted to the ingredients used to produce the chicken feed. Frequently, because of their resistance, routinely control interventions could be not effective. *Salmonella* is a complex and difficult bacterium to manage in the poultry production, and a holistic approach is needed to get good results.

Keeping in mind where, how long, and how *Salmonella* can survive in the chicken house may provide good ideas about how to decrease these bacteria in the poultry environment, leading to low levels of *Salmonella* inside and out the bird. For example, *Salmonella* can survive more
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John R Dear (john.dear@bellsouth.net) New Member Representative
than 148 days in chicken liver at 20°C and more than 90 days in bone marrow; it means that collecting mortality frequently is necessary to decrease horizontal transmission related with cannibalism and dark beetle’s presence. In flies, Salmonella can survive up to 15 days. In feces of rats Salmonella can survive more than 121 days. Salmonella in dust can survive up to 60 days. This information must stress the importance of good sanitation practices and pests control as part of the biosecurity program.

In chicken feces, Salmonella stays for 8 to 39 days. Therefore, feathers and legs contaminated with feces can be an important source of these bacteria for the processing plant. Knowing this information, one can understand why Salmonella can survive in the chicken house for long time, and on consecutive flocks, and why control of chicken internal and external Salmonella is crucial to decrease Salmonella loads delivered to the processing plant.

So, if the objective is to try to achieve a minimum level of chickens infection with Salmonellas that are important for public health (such as S. Enteritidis, S. Typhimurium, and S. Heidelberg), many basic biosecurity measures may help in getting a goal to decrease these Salmonella levels in the chicken house.

Salmonella can survive in different poultry related materials (Salmonella sources) for long time. Knowing where and how long these bacteria can survive, may provide ideas about what we must control in order to decrease its presence.

**Chicken house environment and Salmonella presence:**

Depending on the housing condition and chicken’s management, some serotypes may cause a very important clinical and performance impact. Some serotypes with low frequency of presentation in poultry such as Mbandaka, Urbana, Agona, Muenchen, Braenderup, and Senftenberg, among others, have been identified as a cause of foodborne diseases associated with different animal products. These serotypes are related mainly with the chicken house environment, and frequently are isolated from samples of dust, litter, chicken feces, and boot swabs. Other serotypes isolated from poultry samples show affinity to adaptation to special conditions. For example, some serotypes are adapted to vegetable raw materials used as ingredients in animal rations. Among these, Yoruba has been reported in Europe as contaminant of raw soybean from Brazil. One of the most resistant Salmonella serotypes is Senftenberg. It is easily found in raw ingredients, poultry feed, and environment of poultry houses, hatcheries, and feed mills. Some strains of this serotype show resistance to acidification, heat treatment, desiccation, and irradiation. These bacteria characteristics may lead to unsuccessful control programs.

Another factor that must be considered as contributor to the diversity of Salmonella serotypes present in poultry is the close interaction between different species in the same ecological niche. As examples of this condition, several serotypes commonly present in cows such as Typhimurium, and others with occasional occurrence such as Cerro, Mbandaka, Muenster, Livingstone, and Tennessee; have been identified frequently in samples collected from chicken houses environment and processing plants. The presence of these serotypes in chicken houses and poultry products rises an important question: is it good idea to keep cows close to the chicken houses?

**The importance of a correct, complete and opportune Salmonella diagnostic:**

Constant monitoring of different points within a vertical integration (breeder farm, hatchery, broiler farm, processing plant and feed mills) allows the identification of potential risk factors that may contribute to the cross-contamination at different levels of the production process that may facilitate the spread of Salmonella within a poultry operation. Constant monitoring and identification of specific serotypes are crucial for the formulation of appropriate control schemes.

The “presence - absence” of *Salmonella sp* is often determined by traditional bacteriological methods which limits the possibility of carrying out adequate sampling, due to cost and time - labor they consume. Hence, the development of screening techniques for Salmonella has improved the effectiveness of sampling in a high percentage. However, these highly sensitive techniques, usually molecular type, can lead to the detection of a greater number of false positives. For this reason, frequently the results obtained by these tests must be submitted to confirmation by traditional bacteriology. Additionally, characterization of all Salmonella serotypes present in poultry vertical integrations is important not only because the specific identification of serotypes related to clinical and productive problems is essential to instrument control and treatment programs, but also because they can be contaminants of poultry products and may have an impact in public health.

Considering Salmonella diversity, better identification leads to better Salmonella control programs

**Salmonella on broiler vertical integrations:**

The increase in the results of the presence of *Salmonella sp* in the processing plants turn on the alarms regarding the plant itself. However, considering the chicken as the most important input of a processing plant, the plant is in a high percentage the reflex of what is happening in the primary production. Therefore, the management in the broiler farms plays a crucial role in the fulfillment of
objectives of a processing plant. In the same way, Salmonella sp presence in the broiler farms depends not only on the farm management itself, but also in the day-old chicken placed there and the feed they are eating. For this reason, broiler meat production must start with Salmonella free day-old chicken being fed with Salmonella free feed. This concept implies that breeder farms, hatcheries and feed mills must be Salmonella free, too.

Salmonella control in vertical integrations means that each sector in the integration must identify its critical points, in order to establish its own indicators. Based on these indicators, poultry companies must formulate interventions to be carried out and constantly evaluated.

**Live Side Salmonella Interventions: “back to the basics”, a powerful tool to control Salmonella in broiler farms:**

Many on farm interventions contribute to decrease Salmonella horizontal transmission through fomites.

**On-farm Salmonella intervention 1: Biosecurity.** Constant use of personal protection equipment (PPE) and disinfectant boot dips may contribute to decrease Salmonella horizontal transmission through fomites.

**On-farm Salmonella intervention 2. Good sanitation practices:** Salmonella free chickens placed in Salmonella free environment. Correct cleaning of chicken houses between flocks are important to reduce Salmonella in primary production.

**On-farm Salmonella intervention 3. Intestinal health:** Natural gut barriers (innate immune defenses) prevent Salmonella adherence to the epithelial cell and removes physically bacteria from the intestine. Keeping these barriers in good condition, contributes to the Salmonella reduction avoiding its replication. On the other hand, when these natural barriers prevent Salmonella adherence to the intestinal cell, they are helping to the reduction of Salmonella loads reduction, decreasing its shedding and spread. It means that Salmonella loads in the chickens and in the environment will decrease.

**On-farm Salmonella intervention 4. Environment:** dust control and litter condition: Poultry dust is a mixture of bird feed, bedding material (wood shavings/shreds or straw), chicken feces, feathers and dander (dead skin), dust mites and storage mites, and micro-organisms such as bacteria and fungi.

Since the most important sources of dust are the birds and their feces, and Salmonella could be present in the feces, the logical conclusion is that this bacterium, as long as others, can be present in the dust. Dusty environments promote Salmonella presence in respiratory system being this route one important way of Salmonella horizontal transmission. Considering that the most important activities in chicken houses generating poultry dust are day one chickens placement and harvesting, baby chicken could be breathing Salmonella since their very first moment in the chicken house, and chickens caught to go to the processing plant may have high loads of dust containing Salmonella on their feathers. Some studies show that reducing airborne dust levels by 50% can reduce airborne bacteria by 100-fold or more.

The cleanest walls and roofs, the cleanest environment with low loads of Salmonella on/in the chickens going to the processing plant.

Wet litter increases quantities of Salmonella in the chicken house. So, contaminated chicken feathers, legs and foot pads with litter and feces may be important source of Salmonella to processing plants. Managing the moisture and pH levels in poultry litter is essential to reducing and controlling Salmonella in live-production operations. Salmonella can decrease 20 to 25% when the litter is managed correctly.

Special interventions to improve the litter condition includes to maintain low water activity, to decrease litter moisture avoiding drinkers malfunction and keeping an adequate gut integrity.
Because Salmonella “loves” humidity, malfunctioned drinkers can promote spread of Salmonella

**On-farm Salmonella intervention 5. Feed.** Broiler chickens must be fed with Salmonella-free feed. It means the feed mill must implement the use of antimalammonella products for ingredients and feed, and heat – thermal treatment. However, on-farm feed interventions are mainly related with the prevention of Salmonella feed re-contamination. It includes to maintain an excellent pests control (rodents, insects, and wild birds), feed bins and mills must be secured to prevent contamination by wild birds or rodents, spilled feed must be cleaned up promptly. So, it does not attract wild birds and rodents, and avoid feed contact with Salmonella positive litter and feces.

On the other hand, feed withdrawal time can cause chickens to get Salmonella because when they are out of food, they can start eating litter. Therefore, to decrease Salmonella being acquired during this period, it is necessary to have a complete control of the off-feed time and processing schedule. Additionally, considering birds with no food tend to drink more water, the use of organic acids in drinking water could contribute decreasing Salmonella on the crop and gizzard.

**Five on-farm Salmonella basic interventions**

| 1. Basic biosecurity          | • Constant use of personal protection equipment (PPE).  
                                   • Disinfectant boot dips must be used before to go inside the chicken house. |
|-------------------------------|----------------------------------------------------------------------------------------------------------|
| 2. Good sanitation practices  | • Salmonella free chickens placed in Salmonella free environment.  
                                   • Correct cleaning of chicken houses between flocks. |
| 3. Intestinal health          | • Keeping these barriers in good condition, contributes to the Salmonella reduction. |
| 4. Environment: dust and litter condition. | • Reducing airborne dust levels by 50% can reduce airborne bacteria, including Salmonella, by 100-fold or more. |
| 5. Feed – prevent on farm feed re-contamination | • Feed bins and mills must be secured to prevent contamination by wild birds or rodents.  
                                   • Spilled feed must be cleaned up promptly.  
                                   • Avoid feed contact with feces/litter. |
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CHICKEN WINGS WITH GORGONZOLA DIP

The National Chicken Council

2 pounds chicken wings cut into 2 pieces at joint, tips discarded.
4 tablespoons butter
4 tablespoons hot pepper sauce
1 tablespoon white wine vinegar
1/2 teaspoon salt
1/8 teaspoon freshly ground pepper.
2 cups of vegetable oil for frying
1 small bunch watercress washed and trimmed for garnish

Directions:
In deep fryer or large, deep skillet over medium-high heat, heat oil to 375 degrees F. Testing with a kitchen thermometer, pat wings dry and season with salt and pepper, drop the wings into oil and fry, turn occasionally, until golden brown and crisp, about 10 minutes. Don’t overcrowd the skillet, fry wings in small batches. Remove from oil and drain on paper towels. Transfer to a large bowl.

In a small saucepan melt butter over medium heat. Mix in hot pepper sauce and vinegar. Pour mixture over wings and toss to coat. Arrange wings on serving platter, garnish with the watercress and serve with Creamy Gorgonzola Dressing.

CREAMY GORGONZOLA DRESSING

2/3 cup mayonnaise
1/4 cup sour cream
1/4 cup Gorgonzola cheese, crumbled
3 tablespoons, freshly squeezed lemon juice
1 clove of garlic, minced

In medium bowl, combine all ingredients until well-blended. Serve with wings.

Mississippi State University recognized Dr. Sue Ann Hubbard as one of the first College of Agriculture and Life Sciences (CALS) Distinguished Fellows in a March 8 ceremony on MSU’s campus. The College named nine Distinguished Fellows.

A senior account manager and technical service veterinarian for Merck Animal Health, Dr. Hubbard is a poultry grower member of MPA. Sue Ann and her husband Lyle own Jaynesville Farms and raise broilers for Wayne Farms, LLC.

The Mount Olive resident received her Bachelor of Science and Master of Science in Poultry Science in 1990 and 1993, respectively. She earned a Master of Science in Avian Medicine and a Doctorate of Veterinary Medicine concurrently in the College of Veterinary Medicine in 1997.

Dr. Hubbard worked in the MSU Poultry Research and Diagnostic Lab in Pearl before going to work for Merck. Throughout her career she has provided expert assistance to MPA member companies and growers and is a frequent speaker at MPA seminars.
UPCOMING EVENTS:

At all events involving growers, please practice strict biosecurity procedures.

- Beef & Poultry Expo
  THURSDAY, APRIL 12
  Smith County Agricultural Complex, Raleigh

- MPA, Inc.
  Poultry Management School
  MAY 16-17
  MSU College of Veterinary Medicine

- Breeder/Hatchery Seminar
  AUGUST 14 and 15
  Pearl Lab (14) & Collins Civic Center (15)

- MPA, Inc. Convention
  SEPTEMBER 13-16
  Hilton Sandestin Golf & Tennis Resort, Destin, FL

The Grower Advisory Committee will meet quarterly at the call of the Chairman.