

Broiler Production Management for Potential and Existing Growers

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Introduction

Broiler production is the largest agricultural revenue generator in Maryland. A broiler is a chicken produced specifically for meat production. Broiler production includes small fryer to large roaster type chickens. Approximately 40 percent of cash farm income in Maryland was from broilers in 2009. Maryland produced 291,900,000 broilers (1,401,100,000 pounds) in 2009 and ranked eighth among the states in the number of broilers produced. Broiler production has grown dramatically in the past twenty-three years to \$640 million in 2009 compared to \$426 million in 1986. Maryland ranks ninth in the nation in value of production. Five counties on the Eastern Shore of Maryland are among the leaders of broiler production in the United States, ranking in the top 100. Contract broiler production is concentrated in eight counties on the Eastern Shore of Maryland.

The Delmarva Peninsula ranks in the top ten largest poultry producing areas in the U.S. The success of contract broiler production is directly related to the success of poultry companies (integrators) and grain farmers located on Delmarva. (All or most production aspects are owned and controlled by an individual company or integrator.) Typically, corn and soybeans grown in this region are used by the local poultry companies for broiler feed. Delmarva has benefited from the integrators' expansion to capitalize on increased consumer demand for poultry products.

This bulletin discusses factors that someone evaluating broiler production as a farm enterprise or as an alternative or complementary farm enterprise should consider. Current broiler producers also might find this bulletin helpful. Among the factors to consider are the availability of an integrator, nutrient management, and environmental requirements. This bulletin discusses these management issues along with other considerations important for broiler management and production.



Availability of an Integrator

Commercial broiler production used to be concentrated in a relatively small radius around an integrator's feed mill and other facilities, but now the radius has increased to approximately 75 miles. Because the costs of building a hatchery, feed mill, and processing facilities can run into several million dollars, integrators will not likely build facilities in a new area. The poultry company will, if possible, operate multiple shifts and maximize use of their existing plant capacity. Since the integrator's facilities tend to be centrally located, an expansion of the grower territory means higher transportation costs for the delivery of chicks and feed and for hauling broilers from the grower to the processing facilities.

Contract Production

Virtually all broilers grown in Maryland and in the Delmarva region are produced under a contract between an integrator and the grower. The poultry company furnishes chicks, propane, and feed; supervises growth of the broilers through a field service representative, and may also provide an energy allowance during the summer months. The grower provides the land, broiler house, equipment, labor, and normal operating expenditures.

Compensation to the broiler producer includes performance pay based on the number of pounds of meat moved, birds produced, fuel (propane) usage, and feed conversion. Feed conversion is the amount of feed consumed by the bird per unit of body weight and is expressed as pounds of feed per pound of gain. Producers compete against one another at time of settlement and are ranked based on their flock's performance.

Before agreeing to produce broilers under contract, the grower should thoroughly examine the contract and be familiar with its terms. Contracts are for the protection of both the producer and the integrator and should clearly spell out all important details. These details should include terms of grower payments, production practice requirements, incentive clauses, and production items to be furnished by each party and those to be jointly furnished. A potential grower should be aware of the details and responsibilities while considering such events as a flood, snow storm, hurricane, power outage or any catastrophic event destroying a broiler house, or an integrator deciding to reduce broiler production. Firm written answers to any questions about the integrator's role or expectations should be obtained prior to signing. A well written contract that is understood by both parties is an essential beginning for successful long-term broiler production.

Advantages and disadvantages of contract production can be evaluated from several different perspectives: the producer (contract grower), the producer's lender, and the integrator (contractor). Among the advantages for the producer are that market price

risk is reduced, management assistance is provided as part of the contract, and a predictable cash flow is expected. Possible disadvantages for the producer include the elimination of extra profit opportunities, sharing or giving up some control of management decisions, and no equity in the birds, because the birds are owned by the integrator. When an integrator's profit margins are being eroded, a legitimate concern may be whether the company will continue to supply birds, or how many flocks the integrator will provide per year, especially until the broiler house is paid for. The producer assumes sole responsibility for nutrient management which includes the utilization of the poultry litter, biosecurity, and environmental practices that are subject to state and federal regulations.



Photograph courtesy of Edwin Remsburg, University of Maryland.

The grower's lender may perceive as positive the decrease in market risk and management assistance. The negative aspects of contract broiler production, from the lender's perspective, include the lack of equity in animals and the dependence on contract continuation for loan repayment.

From the integrator's viewpoint, contract production provides security with respect to production capacity, allows fast expansion of the company, requires less capital for growth (reduced land, building or equipment investments), and may make growers more productive because company representatives provide management assistance. It allows the company to maximize the use of plants and mills (thus reducing overhead costs per unit of production) by keeping all phases of the operation running at full capacity. The disadvantages for the integrator may include taking all the short-term risk of low market prices and growers who may or may not be highly productive. Integrators are also being pressured to assume increasing responsibility for environmental, animal welfare, and biosecurity issues.

Financing for Broiler Buildings and Equipment

Lenders have historically preferred to make broiler facility loans to a diversified farm operator who has been successful in other enterprises. Such an operator has other income to rely on in the event an integrator decides to reduce the number of flocks per year or does not renew the grower's contract. Today's lenders are making loans to producers that are not diversified. In either situation, a reliable source of farm or off-farm income may be necessary to assure a lender the ability to repay the broiler facility

loan, as the returns from broiler production may not be sufficient in the early years to cover both the family living expenses and debt retirement.

The cost of a broiler house will vary with size and specifications. An estimate for fully equipped houses currently being constructed is approximately \$9.66 per square foot (see Table 1). This figure does not include the cost of the land and may vary with different building designs, equipment, and location with reference to water, roads, and available electric power.

Building and Equipment Requirements

Each integrator will have specific building design, equipment specifications, and location requirements. Poultry houses are built on a level pad above ground level, have a smooth level area at the end of the building for a mechanical loader, and must be accessed by a well graveled roadway with turnaround for large tractor trailers. Houses must be sufficiently insulated to prevent heat loss in winter and minimize heat build-up in summer. They must also have sufficient ventilation for year-round comfort of the birds.

Multiple house operations are preferred so that feed and chick delivery costs and broiler transportation costs can be minimized. Integrators attempt to fill all broiler houses on a farm with chicks of the same age so that the integrator can deliver one kind of feed, make a minimum number of deliveries or pick-ups, and once again minimize transportation costs.



Each integrator, depending upon the bird size being produced, has a requirement for the amount of floor space per square foot per chick. Most poultry houses currently being built are 50 to 66 feet in width and up to 600 feet in length. The houses listed in Table 1 are each 33,000 square feet, which is within this range. Additionally, an integrator may place more birds per square foot in the winter months as compared to the summer months, due to bird heat production. Each poultry farm must

have a stationary generator, since power outages can occur during a storm or due to a traffic accident knocking down a power pole. The generator will be sized by kilowatts according to the size of the poultry and farm operation.

The integrator will provide the required specifications for feeders, water nipples, heating and cooling systems, vent boxes, fans, and lights. Specific recommendations may be made on equipment brands. It is always best to check the energy efficiency of all equipment purchases.

Labor and Management Requirements

The success of a broiler grower will depend, to a great extent, upon how well an integrator's management program is carried out by the grower. Management of the broiler house is the responsibility of the producer with the assistance of the field service representative provided by the integrator. The service person may assist the grower on decisions not specifically covered in the contract, such as ventilation, litter management, rodent and fly control, and dead bird composting. Broilers need daily attention and new producers will need to work closely with their field service representative to develop an appropriate care schedule. It may be appropriate to have several family members familiar with the poultry operation so that they can substitute for the primary caretaker, if necessary. Extra labor may be required at different points throughout the production period.

Daily chores for the broiler grower include checking mechanical equipment to ensure correct operation, adjustment of pressure in water lines and height adjustment of water and feed lines, adjusting ventilation, monitoring feed bins, removing dead birds, disposal of dead birds and keeping records. Other routine chores include cleaning and repairing equipment, cleaning out houses, rodent control, ordering feed, preparing for chick arrival, and preparing for shipment to the processing plant.

Equipment Consideration

Careful consideration should be given to the types of equipment needed to use in conjunction with the poultry operation. A tractor with a loader will be needed for handling manure, and collecting and composting dead birds. Check with your local Soil Conservation office for State low interest rate programs or state tax credits on manure handling equipment. After chickens are removed from the poultry house, the litter will need to be crusted (taking off the top layer of litter) or windrowed (in house manure handling practice) depending on the integrator's preference. House



Photograph courtesy of Bud Malone (retired), University of Delaware

sanitation is important between flocks. Some producers may purchase their own equipment, such as a back pack blower and/or a pressure washer; other producers will have this done by a custom operator or the producer may purchase the equipment. Maintaining your property is very important; a bush hog/finishing mower and box scrape will be needed. The box scrape can be used for not only road/lane maintenance but also for leveling out new shavings and leveling the house before new birds are placed. A blower will also be needed to clean the poultry house between flocks.

Nutrient Management Regulations

The Water Quality Act of 1998 requires all Maryland agricultural producers of eight or more animal units (an animal unit is defined as one thousand pounds of live animal weight) or with a gross income of \$2,500 to have a Maryland Nutrient Management Plan prepared for their farming operation. The components of the plan include: soil and manure analysis, a general description of your farming operation, map of the farm designating fields with acres, an estimate of the amount of manure generated by the poultry farm, manure and fertilizer recommendation for the crops to be grown on the farm, and important record keeping information. This plan can be written, free of charge, by your local University of Maryland Extension (UME) office. Ask for the Nutrient Management Advisor or contact a private Nutrient Management Consultant for an estimate. A list of Certified Nutrient Management consultants can be found at: http://www.mda.state.md.us/resource_conservation/nutrient_management/consultant_information/index.php.

Some counties in Maryland will require a copy of the nutrient management plan when applying for the construction permit. The producer will also need a copy of the nutrient management plan when participating in any cost share programs with Soil Conservation and/or Natural Resource Conservation Service (NRCS).

Mortality and Litter Management Regulations

Litter management is an important component of poultry production, and is the sole responsibility of the grower. Current state regulations require growers to manage all litter and dead birds, to assure beneficial use of the litter and mortality and also to prevent adverse effects to the environment. Mortality and litter management costs are a part of the production expenses that may not be recognized in standard production budgets. Poultry litter is a valuable by-product, because it contains nutrients that can be utilized in field crop production. With current fertilizer prices (2011), Table 1 values the litter at \$12/ton. The nutrient management plan will include approximate poultry litter production amounts and the final destinations of the poultry litter, whether it is on a farm field or transferred to another farmer. The poultry producer must maintain records of poultry litter removed from the premises and/or land applied on the

premises. Litter application records must show rates and dates of application. Records must also be kept of any poultry litter that is sold or given to other individuals, including the date of removal, the name and address of the recipient and the amount removed from the operation.

Registration/Certification/Education

In Maryland, poultry producers and individuals spreading poultry litter and compost on more than ten acres per year are required to obtain a Nutrient Applicators Voucher. The Maryland Department of Agriculture (MDA), Nutrient Management Department is responsible for developing rules and enforcing the Water Quality Improvement Act of 1998. UME is responsible for producing training curricula and conducting the training. This voucher can be obtained by attending educational classes provided by your local UME office. When you call the office, ask for the Agriculture Extension Educator. The initial three hours of training covers all aspects of litter and compost management, and three hours of update training is required every three years, thereafter.



A composting certification course is offered by UME. This is a day-long class teaching the approved techniques of composting dead birds. This certification is needed to obtain cost share funds from NRCS for the construction of the manure and composting facility.

If the poultry producer is planning to apply any restricted use pesticide, a private pesticide applicators license will need to be obtained. For more information call your local UME office.

Cost Share Opportunities

Contact your local Soil Conservation Office and the NRCS office for information regarding the following cost share programs:

- Manure Storage Building
- Composting Structure
- Heavy Use Areas (cement pads on end of poultry houses or manure storage building)
- Vegetative Environmental Buffers
- Poultry Litter Amendments

From time to time there are special programs offered by NRCS to poultry producers through Environmental Quality Incentive Programs (EQIP) and Agriculture Management Assistance (AMA). When applying or signing up for these programs, make sure you understand all the conditions. Once these contracts are signed, funds are set aside. Therefore, you will not be able to change your mind or back out of the program. Additionally, any cost share money received from any of these programs must be reported as income when filing taxes to the Internal Revenue Service.

Contact the Delmarva Poultry Industry, Inc. for information on any of their cost share programs, (<http://www.dpchicken.org/>).

Environmental Considerations

All poultry litter must be analyzed by a private lab yearly as part of the information required for the producer's nutrient management plan. For more information on litter testing, contact your local UME Office. The amount of poultry litter that may be land applied on the premises of the poultry operation is limited according to nutrient management guidelines established by The University of Maryland recommendations. These guidelines only allow litter use as a beneficial fertilizer to pasture or cropland, not as a disposal system. If poultry litter cannot be used according to nutrient management guidelines on the premises, the producer must arrange to have it moved to a location where it can be used properly. In some cases, the producer may sell or give the poultry litter to crop producers in trade for crusting, windrowing, or clean-out services.

MDA offers a Manure Matching Service. This service helps match sending and receiving farms with manure. A Manure Transportation Program also helps poultry producers with the cost of transporting excess manure off their farm. For more information or for a registration form, call 1-877-7MANURE or go to the web at: http://www.mda.state.md.us/resource_conservation/financial_assistance/manure_management/index.php.



In addition to programs offered by the state, there are other options available for removing poultry litter from poultry farms. The first of its kind in Maryland, <http://www.agtrader.org>, is a free exchange for farmers and others to buy, sell and trade manure, compost, farm equipment and commodities. As discussed above, producers can usually sell litter under current conditions to surrounding farmers. Perdue AgriRecycle, LLC is the first-ever, large scale litter pelletizing plant in the U.S.

They provide clean-out services to Delmarva poultry producers who do not have adequate land for application of litter or for producers who are looking for an alternative to land application.

The proper disposal of poultry carcasses to prevent environmental and health problems is also very important. Acceptable disposal methods include approved composting, approved incineration, and disposal in a rendering plant.

Guidelines for approved dead bird disposal can be obtained from your local UME Office. Growers have expressed considerable interest in composting dead birds because this method, when managed properly, produces a product that, like litter, can be a valuable fertilizer and soil conditioner.

The MDA Nutrient Management Division inspects poultry operations routinely to determine whether there are any violations. They may also visit when investigating pollution complaints alleging that a disposal problem exists. If a poultry operation is found to be disposing of litter or mortality in such a manner to contaminate surface or ground water, that operation will be required to implement management practices to correct the problem. Check local, state, and federal regulations pertaining to Animal Feeding Regulations (AFO). The Maryland Department of Environment (MDE) website, <http://www.mde.state.md.us/>, also has state regulations for AFOs and Concentrated Animal Feeding Operations.

Concentrated Animal Feeding Operation Regulations

The Maryland General Discharge Permit for Animal Feeding Operations, applicable to Concentrated Animal Feeding Operations (CAFOs) and Maryland Animal Feeding Operations (MAFOs) became effective December 1, 2009. MDE defines a CAFO as a medium (37,500-124,999 chickens and less than 100,000 ft²) or large (more than 125,000 chickens or greater than or equal to 100,000 ft²) animal feeding operation that discharges or “proposes to discharge” manure, litter or process wastewater from the production area to waters of the state. MDE defines a MAFO as a large animal feeding operation that does not discharge or “propose to discharge” manure, litter, or process wastewater. The regulations and General Discharge Permit are designed to control nutrients from Maryland’s largest agricultural animal operations.

A Notice of Intent (NOI) must be submitted to MDE and constitutes notice to MDE that the applicant intends to be authorized by a State/National Pollutant Discharge Elimination System (NPDES) General Discharge Permit issued for the discharges from the animal feeding operation identified in the NOI. Authorization to discharge will begin upon notification to the applicant of acceptance of the NOI by MDE.

MDE also has New Source Performance Design criteria for poultry operations. These design criteria should be used when new poultry houses are constructed. A complete list of these standards can be found at:

http://www.mde.maryland.gov/programs/land/solidwaste/cafomafo/documents/www.mde.state.md.us/assets/document/new_source_cafodesigncriteria.pdf

All CAFOs must have a Comprehensive Nutrient Management Plan (CNMP) developed for their operation in accordance with NRCS technical standards. A CNMP is a conservation plan that contains additional components not found in a nutrient management plan.

If you have any questions regarding the Maryland CAFO/MAFO program, please call Gary Kelman at 410-537-4423 or send an e-mail to gkelman@mde.state.md.us.

In addition to CAFO/MAFO requirements, MDE issued a tentative determination in May 2010 to modify the General Discharge Permit for Stormwater Discharges associated with Construction Activity. Projects that disturb one or more acres of earth must apply for either a General or Individual Permit for Stormwater associated with construction activity. If you have questions regarding this program, please call Karen Smith (MDE Compliance Program) at 410-537-3510 or send an email to ksmith@mde.state.md.us.

Biosecurity



Biosecurity is a set of practices designed to keep disease from a farm and to prevent the transmission of disease from an infected farm to neighboring farms. An inadequate biosecurity program increases the risk of disease, which may result in high mortality in a flock and contribute to loss of farm income.

Ideally, new poultry houses should be constructed at least one to two miles from other commercial or private poultry facilities. However, this concept is not always practical especially in a densely poultry-populated region such as the Delmarva Peninsula. Locating new houses as far as possible from roadways that handle high volumes of poultry vehicles should also be considered prior to construction.

A good biosecurity program is composed of six components, which includes a risk assessment of your farm, traffic control, sanitation, pest control, communication and audits. First, all main biosecurity risks must be identified. For each biosecurity risk, a

biosecurity measure must be determined and implemented to biosecure the farm. Once these measures are in place, risks and measures should be periodically monitored to ensure adequate protection is maintained, and if necessary, the program should be adjusted to address any new or changing risks. A contact list should also be established and maintained. This is a list of individuals who should be contacted if a significant infectious disease occurs. Communication is a key component of any biosecurity program. The US Poultry and Egg Association has designed an excellent biosecurity training program that is available free on CD to growers and others involved in the poultry and egg industry (<http://www.poultryegg.org/Biosecurity/>).

Profitability and Cash Flow

A farm broiler production enterprise budget is presented in Table 1 and a cash flow statement in Table 2. The budget presents income, variable costs, fixed costs, profits, and investment amounts for two houses of a particular size and various other management factors. Adapting the enterprise budget to a particular situation will help a grower determine if broiler production is possible.

For the cash flow statement, total cash revenue and cash costs are presented along with cash flow from the operation. The cash flow statement has the purpose of estimating the cash available from production to make loan payments and to pay other farm cash requirements. The statements also include revenue, costs, and required investments on a square footage basis, which is an industry standard for costs, revenue and investments. While the numbers presented are believed to be reasonable, contracts will vary among integrators and over time. Costs and investment will also vary among growers because houses vary in square footage. Growers must carefully study information provided by the integrators and their lenders about their potential revenues and costs and modify the budget and cash flow statement as needed to determine potential returns. The square footage values in the financial statements can be multiplied by different house sizes to do these modifications.

The budget presented is to be considered a tool for potential growers to use in analyzing expected receipts and costs. The budget (given stated assumptions and relatively high utility costs) suggests that during the loan repayment period, cash flow may be a problem for shorter loans.

Investments

The investments to start broiler production are included at the bottom of Table 1. The tunnel house is the current best housing and the largest item, estimated to cost \$180,000 per house. The total cost for two houses is \$360,000. The next largest expense is the equipment for inside the house, which totals \$180,000. Electrical purchases, site

preparation, tractor and farm equipment, manure shed, shelterbelt, well and watering system, and stone for a road on the farm are also included. Total investment is \$637,800.

Some of the investments may vary for producers, based on their current situation. If they currently own the necessary tractor and farm equipment, this investment is not necessary. In addition, if current roadways on the farm are well graveled, stone expenses outlays may be less.

Gross Income

Broiler producers are paid based on the pounds of meat produced on the farm that are sent to the processing facility. Estimates of receipts are frequently based on a contract amount that assumes average production cost for all growers. The amount actually paid to the grower depends upon whether the grower's production efficiency is above or below average production. New poultry houses will have a guaranteed fifteen year contract. Most grower contracts have a stated floor price that the grower is guaranteed regardless of production efficiency. The contract price is paid on pounds moved; thus, a high death loss can substantially affect a grower's income. The grower contract price used here is \$280 per 1000 birds, which reflects average payment from the integrator. Growers have an opportunity to earn bonus pay for above average performance. Check with the integrator about different birds programs ranging from a small broiler to a roaster.

The budget includes gross income from payments for growing the chickens from the integrator and from the sale of litter. In Table 1, the gross income totals \$137,800 for two poultry houses. This budget includes 5.5 flocks of birds grown per year. Each house is 33,000 square feet and has a bird density of 0.75 square feet per bird. Income from grower payments is \$135,520 and selling 190 tons of litter at \$12/ton gives an income from litter sales of \$2,280. If the litter is used on the farm, the litter would not result in a cash flow, but would probably reduce fertilizer purchases. Cash receipts from the integrator and sale of the litter are also included in the cash flow statement in Table 2.

Costs and Expenses



Costs in the budget are grouped into variable or operating costs and fixed costs. Variable costs change with the level of output (number of birds produced) and do not occur when the producer does not grow broilers. Variable costs include the money outlays for purchased inputs that are used in a production period, such as electricity, telephone and alarm service,

repairs, house clean out and crust out, and supplies. Interest on operating expenses is also included for financing these expenditures. For this production situation, the budget includes \$31,712 for total variable costs. Utilities are the largest expected variable cost. Check with the electric supplier for savings during peak demand. Some growers have participated in electric buying groups to help reduce costs of electricity. These costs are all cash costs so cash expenses are the same as variable costs in the budget. Growers must either have the cash or be able to borrow funds to cover these costs.

Fixed costs, on the other hand, do not change with the level of production. In fact, fixed costs remain the same whether or not any birds are produced. Fixed costs include depreciation on buildings and equipment, taxes, insurance and interest payments on building and equipment investments. Fixed costs are listed in Table 1 in the section under the variable costs section. The largest costs are depreciation and interest on the buildings and equipment and other investments. Because this budget is based on owner's labor being used for production, labor is included as a fixed cost. Also included is cash rent on the land used in the production system.

Many of the fixed costs are not cash costs. These costs are for items owned by the farmer. A farmer's labor and owned land are obviously such non-cash costs. Depreciation is the allocation of the investment in the house and equipment over time. The house is depreciated over 20 years and the equipment over 15 years. The interest is also included here as a non-cash cost that reflects the owner's investing his/her own funds in the house.

These non-cash costs are considered opportunity costs. If the farmer was not involved in broiler production, these resources could be used for production of other animals or crops. These costs are what the producer gives up elsewhere for broiler production. In other production situations, these opportunity costs could become cash costs. If the house is financed with a loan, the interest would be a cash cost. Similarly, the labor and land charge would be cash costs if they are not furnished by the owner. Labor is valued at \$8.00 per hour in the budget. If the operator hires all labor for tending the birds and maintaining the building and equipment, expected cash outlays will be approximately \$8,800 more.

With this production situation, total fixed costs are \$70,226 (Table 1). Total costs are, the sum of total variable costs and total fixed costs, \$101,938. For total cash expenses, the cash variable costs and cash fixed costs must be added. As stated above, all the variable costs are cash costs. In this situation, the only fixed costs that are cash expenses are insurance and taxes, which are included in Table 2 with the variable costs, so total cash expenses are \$36,325.

Total cash expenses are just a bit more than one third of total costs listed above. This fraction is smaller than for most agricultural production enterprises. It exists for broilers

because the integrators furnish feed and veterinary services that are variable cash costs for most other animal production. This situation does identify an important advantage for broiler production; the grower does not have to finance these major inputs while the broilers are being produced.

Profitability

With the gross income and cost levels in Table 1, net income over variable and fixed costs is \$106,088. Net income is obtained by subtracting total variable and fixed costs from total gross income. This net income amount indicates that broilers are profitable under the conditions in Table 1. This profitability explains why so many farmers produce broilers. As stated above, a grower needs to substitute income and costs into Table 1 that is consistent with the actual farm production being considered in order to have an accurate calculation for a specific farm.

Factors most likely to affect a broiler producer's profitability are:

1. The grower's management skills, which impact the broiler growth rate and death losses. From a management standpoint, an operator can increase profits by watching for feed waste and making the necessary adjustments to reduce it, observing for leaking drinker nipples, keeping the litter dry and clean, staying alert to fan breakdowns, and paying attention to signs of stress and disease.
2. If offered, the bonus that the grower receives affects profitability. For example, a bonus may be paid if the production efficiency is better than average cost of production for the group of producers with a particular integrator in a specific time period. Note that the bonus may not reflect a producer's management ability versus that of an average grower, but of the other growers who sell birds the same week as he or she sells. If a grower is unfortunate enough to market birds at the same time as several above average producers, he or she may receive no bonus and may, in fact, be penalized for below middle cost efficiency.

Net Cash Flow

A farm broiler production cash flow is presented in Table 2. The cash flow includes cash receipts, cash expenses, and mortgage and equipment payments. Total cash expenses of \$36,325 are subtracted from total cash receipts of \$137,800 to obtain net cash flow of \$101,475. This amount is what would be available to finance a loan to purchase the house and other investments. Alternatively, part of net cash flow could be used for other farm or personal expenditures. When the loans for the house and other investments are repaid, the net cash flow would be the cash profits from the broiler production.

Potential loan payments to finance the broiler production system are given at the bottom of Table 2. All investments in Table 1, excluding the tractor, are financed with a fifteen year loan at 6.5 percent interest. This loan has the same length as the life of the equipment. Total annual mortgage payments are \$63,213 with quarterly payments of \$15,803. This payment is less than annual cash flow so the loan is feasible. Table 2 also includes a payment for a short term loan for the equipment, which includes a tractor, loader, box scrape and a mower. The amount of this loan is \$35,000 and it is financed for six years at six percent interest. This loan has total annual payments of \$6,989. This loan is also paid quarterly; the payment can be determined by dividing the total annual payment by four. Adding the payments for these loans together, total loan payments are \$70,202 each year.

These loans are feasible because the total payments are less than the net cash flow of \$101,475. Thus, the producer has cash flow greater than the payments as a cushion for lower receipts or higher expenses. If not needed for broiler production, it can be used for other purposes.

Producers can finance the production system with loans with a shorter period of time. With a shorter repayment period, part of the payment would have to come from other farm operations, off-farm work, or other sources.

Other Considerations

Two sources of water are preferred where possible to ensure an adequate supply of water for broiler houses. Other factors a potential broiler grower must consider are



**Photograph courtesy of Bud Malone (retired),
University of Delaware.**

rural zoning, air pollution laws, and “nuisance” lawsuits if neighbors are close to planned building sites. Developing and maintaining good neighbor relations is important for all poultry producers. Some issues that may arise include odor, dust, noise, insects and other pests. Getting to know your neighbor, proper manure handling, and maintaining farm appearance can help build and maintain good neighbor relations. The Delmarva Poultry Industry Inc. (DPI) has a vegetative environmental buffer (VEB) program available for poultry growers. This program provides guidelines for growers for installing and maintaining a VEB around poultry houses. VEBs help alleviate dust and ammonia, support

biosecurity, and improve farm appearance. For more information on DPI's VEB program, go to <http://www.dpichicken.org>.

Summary and Conclusions

Individuals who are seriously considering the broiler business should learn as much as they can about broiler production by talking with other growers and integrators in their area. The potential broiler grower should determine whether an integrator services the area and if the integrator is accepting new growers. No one should buy land or move into an area expecting to grow broilers without a contract from an integrator. Contracts should be studied to determine their acceptability. A lender should be contacted to determine the availability and terms of financing for a broiler enterprise. Individuals considering broiler production should discuss and evaluate with their families how the broiler enterprise fits into short- and long-term family and business goals. The family should discuss their willingness to commit time and energy to a seven-day per week operation with breaks limited to periods between flocks of birds. Because the broiler house is a specialized facility, the commitment to production must be long term in order to ensure that investment costs are recouped.

Table 1. FARM BROILER PRODUCTION ENTERPRISE BUDGET (2011)

SQUARE FEET OF HOUSE (60' X 550')	33,000	FLOCKS/YEAR	5.5
BIRD DENSITY	0.75	BIRDS/YEAR	484,000
NUMBER OF BIRDS/FLOCK	88,000	NUMBER OF HOUSES	2

ITEM	UNIT	QUANTITY	PRICE	TOTAL	DOLLARS/SQFT
GROSS INCOME					
GROWER PAYMENTS *	1,000 BIRDS	484	\$280	\$135,520	\$2.05
LITTER	TONS	190	\$12	\$2,280	\$0.04
Total Gross Income				\$137,800	\$2.09

ITEM	UNIT	QUANTITY	PRICE	TOTAL	DOLLARS/SQFT
VARIABLE COSTS					
ELECTRICITY	FLOCK	5.5	\$2,500	\$13,750	\$0.21
TELEPHONE/ALARM		1	\$500	\$500	\$0.01
SUPPLIES AND MISCELLANEOUS	HOUSE	2	\$1,850	\$3,700	\$0.06
BUILDING & EQUIPMENT REPAIRS	HOUSE	2	\$5,000	\$10,000	\$0.15
CRUST OUT OR WINDROW	FLOCK	5.5	\$325	\$1,788	\$0.03
PARTIAL HOUSE CLEAROUT	ANNUAL-HOURS	8	\$50	\$400	\$0.01
FULLHOUSE CLEANOUT	HOURS	4.16	\$50	\$208	\$0.00
INTEREST ON OPERATING CAPITAL	YEAR	\$30,346	4.5%	\$1,366	\$0.02
TOTAL VARIABLE COSTS LISTED ABOVE				\$31,712	\$0.49
NET INCOME OVER VARIABLE COSTS LISTED ABOVE				\$106,088	\$1.61

FIXED COSTS					
(DO NOT DUPLICATE COSTS LISTED ABOVE)					
OWNER'S LABOR	HOURS/FLOCK	200	\$8	\$8,800	\$0.13
BUILDING DEPRECIATION	TOTAL	\$360,000	5%	\$18,000	\$0.27
EQUIPMENT DEPRECIATION	TOTAL	\$242,500	7%	\$16,975	\$0.25
INTEREST ON INVESTMENT	AVG. INVEST	\$301,256	7%	\$21,088	\$0.31
PROPERTY TAXES				\$1,613	\$0.02
INSURANCE				\$3,000	\$0.04
LAND CHARGE	ACRE	6.00	\$125	\$750	\$0.01
TOTAL FIXED COST LISTED ABOVE				\$70,226	\$1.06
TOTAL VARIABLE AND FIXED COST LISTED ABOVE				\$101,938	\$1.55
NET INCOME OVER VARIABLE & FIXED COSTS LISTED ABOVE				\$35,862	\$0.54

FIXED INVESTMENT	UNIT	QUANTITY	PRICE	TOTAL	DOLLARS/SQFT
TUNNEL HOUSE	HOUSE	2	\$180,000	\$360,000	\$5.45
GENERATOR, WIRING, & ALARM	HOUSE	2	\$12,500	\$25,000	\$0.38
EQUIPMENT	HOUSE	2	\$90,000	\$180,000	\$2.73
SITE PREPARATION ***	HOUSE	2	\$10,000	\$20,000	\$0.30
MANURE STORAGE AND COMPOSTING SHED	FARM	1	\$2,500	\$2,500	\$0.04
TRACTOR, LOADER, BLADE, & MOWER	FARM	1	\$35,000	\$35,000	\$0.52
VEGETATIVE SHELTERBELT**	FARM	1	\$1,300	\$1,300	\$0.02
WELL AND WATER SYSTEM	HOUSE	2	\$4,500	\$9,000	\$0.14
STONE	FARM	1	\$5,000	\$5,000	\$0.08
TOTAL INVESTMENT				\$637,800	\$9.66

*Average payment from Integrator
 ** Assumes cost share is obtained from Natural Resource Conservation Service
 ***Cost will depend on soil types at site

Table 2. FARM BROILER PRODUCTION CASH FLOW (2011)

SQUARE FEET OF HOUSE (60' X 550')	33,000	FLOCKS/YEAR	5.5
BIRD DENSITY	0.75	BIRDS/YEAR	484,000
NUMBER OF BIRDS/FLOCK	88,000	NUMBER OF HOUSES	2

ITEM	UNIT	QUANTITY	PRICE	TOTAL	DOLLARS/SQFT
CASH RECEIPTS					
GROWER PAYMENTS*	1,000 BIRDS	484	\$280	\$135,520	\$2.05
LITTER	TONS	190	\$12	\$2,280	\$0.04
TOTAL CASH RECEIPTS				\$137,800	\$2.09
CASH EXPENSES					
ELECTRICITY	FLOCK	5.5	\$2,500	\$13,750	\$0.21
TELEPHONE/ALARM		1	\$500	\$500	\$0.01
SUPPLIES AND MISCELLANEOUS	HOUSE	2	\$1,850	\$3,700	\$0.06
BUILDING & EQUIPMENT REPAIRS	HOUSE	2	\$5,000	\$10,000	\$0.15
CRUST OUT OR WINDROW	FLOCK	5.5	\$325	\$1,788	\$0.03
PARTIAL HOUSE CLEANOUT	ANNUAL-HOURS	8	\$50	\$400	\$0.01
HOUSE CLEANOUT	HOURS	4.16	\$50	\$208	\$0.00
INTEREST ON OPERATING CAPITAL	YEAR	\$30,346	4.5%	\$1,366	\$0.02
PROPERTY TAXES	YEAR	1		\$1,613	\$0.02
INSURANCE	YEAR	1		\$3,000	\$0.05
TOTAL CASH EXPENSES				\$36,325	\$0.55
NET CASH FLOW				\$101,475	\$1.54
LOAN PAYMENTS					
MORTGAGE PAYMENT	15 YEARS	QUARTERLY	6.5%	\$63,213	\$0.96
EQUIPMENT PAYMENT - TRACTOR, LOADER, BLADE, MOWER	6 YEARS	QUARTERLY	6%	\$6,989	\$0.11
TOTAL LOAN PAYMENTS				\$70,202	\$1.07
*Average payment from Integrator					

Resources

University of Maryland Extension Poultry web site: <http://www.mdchick.umd.edu/>

University of Maryland Agricultural Nutrient Management Program:

www.anmp.umd.edu

Delmarva Poultry Industry Inc: <http://www.dpichicken.org>

University of Maryland, College of Agriculture and Natural Resources:

<http://agnr.umd.edu/>

Maryland Department of Agriculture: <http://www.mda.state.md.us/>

Maryland Cooperative Extension Publications: <http://pubs.agnr.umd.edu/>

Maryland Department of Agriculture offers a Manure Matching Service call 1-877-7MANURE or on the web at:

http://www.mda.state.md.us/resource_conservation/financial_assistance/manure_management/index.php

Natural Resources Conservation Service: www.nrcs.usda.gov/

Ag Trader: <http://www.agtrader.org>

Maryland Department of Environment website: <http://www.mde.state.md.us/>

Environmental Protection Agency (EPA): <http://www.epa.gov/>

US Poultry and Egg Association biosecurity training program:

<http://www.poultryegg.org/Biosecurity/>

Vegetative environmental buffer program : <http://www.dpichicken.org>

MDA Nutrient Management Consultant List :

http://www.mda.state.md.us/resource_conservation/nutrient_management/consultant_information/index.php

MDA Poultry Registration:

http://www.mda.state.md.us/animal_health/poultryreg/index.php

References

Doye, D., B. Freking, J, Payne. (F-202). *Broiler Production: Considerations for Potential Poultry Growers*. Oklahoma Cooperative Extension Service.

Delmarva Poultry Industry, Inc.

USDA's National Agricultural Statistics Service