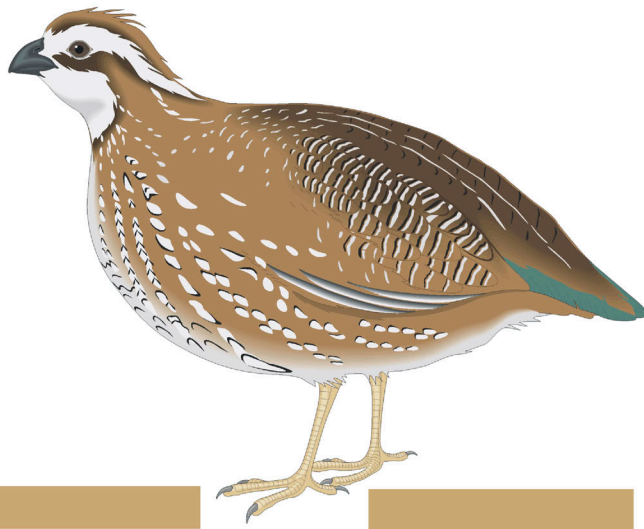


Economic Assessment



Of Bobwhite Quail Production

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Bobwhite quail hunting has been viewed as a southern tradition for sportsmen over many decades. Due to the declining wild Bobwhite quail population, this popular sport may become a memory.

In 1960, approximately 4 million Bobwhite quail were harvested. By 1996, the number of harvested birds had declined to only 630,000. Land use changes are the primary reason for the declining Bobwhite quail population. The number of farms has decreased, but the size of the remaining farms has increased to become more profitable due to narrow profit margins associated with the modern family farm. In order to increase farm acreage, farmers have increased the size of fields by removing hedgerows between small fields. This practice has destroyed previous quail habitat. Another factor contributing to a reduced quail population has been the increased use of herbicides and pesticides associated with row crop farming. Bobwhite quail need weeds and insects as food sources. Pine tree production is also thought to add to the low Bobwhite population. In the late 1980s and early 1990s, landowners received financial incentives to plant their fields in pine trees. After the first 5 years, pine tree stands provide a poor habitat for Bobwhite quail.

Given the declining wild Bobwhite quail population, purchasing pen-raised Bobwhite quail has become a popular method for plantation owners to ensure their hunting clientele an adequate population of Bobwhite quail. Georgia produces approximately 5 million flight-ready quail. Due to the problems associated with row cropping such as drought and volatile market prices, farmers in Georgia are seeking alternative enterprises for their farming operations to meet cash flow demands. Producing Bobwhite quail for hunting plantations has stimulated much interest for some of Georgia's farming operations.

Typical market prices for flight-ready quail is in the range of \$2.80-\$3.00/bird. Feed cost, livability, and facility cost are primary factors that influence profitability of raising flight-ready birds. For those considering entering the business of producing Bobwhite quail, having access to an estimated economic analysis would be a useful tool to determine if producing Bobwhite quail is the right decision. This publication will briefly describe the two types of Bobwhite quail production systems and present economic budgets for each system.

Economic Assessment of Bobwhite Quail Production

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Production Systems

Most producers purchase day-old Bobwhite quail from a reputable hatchery and raise these birds until about 17 weeks of age, then market them as flight-ready Bobwhite quail to plantation owners. The two basic production facilities used for producing Bobwhite quail are referred to as *flight pens* and *quail barns*. These two production systems differ considerably in design and building cost. Several variations of flight pens are used. Actual cost depends on the size of the structure and materials available on the farm. A typical flight pen size would be approximately 120 feet long, 30 feet in wide, and 12 feet high. Materials consist of 4" x 4" posts and netting, with approximately 20 percent of the area enclosed for brooding. The brooding area includes waterers, feeders and a supplemental heating source. Most producers are able to buy used feeding and watering equipment from broiler growers. Quail are housed in the brooding area until approximately 6 weeks of age.

One of the problems encountered by producers is that quail lose their feathers due to other quail picking the feathers. The loss of feathers with quail is referred to as *bare backs*. The incidence of bare backs is often increased when raising quail in flight pens because bird activity is stimulated by light exposure. A strategy to minimize the occurrence of bare backs is to limit the bird density in the flight pens to 1.0 bird per square foot.

A high rate of mortality is another disadvantage with raising Bobwhite quail in flight pens

that have been mismanaged. Flock mortality has been noted as much as 30-40 percent with Bobwhite quail reared in the flight pen environment. Cold and wet conditions contribute to flock morbidity and mortality in a flight pen environment. The greatest advantage with flight pens is the low cost of construction.

To minimize the incidence of bare backs and mortality, a few producers have started raising Bobwhite quail in scaled down versions of broiler houses, referred to as *quail barns*. The advantage of a quail barn is that the amount of light entering the facility can be restricted, reducing bird activity and thus decreasing the incidence of bare backs. Since this type of facility is totally enclosed, it can provide a dry and warm environment leading to lower incidence of bacterial and viral infections. Field observations show the occurrence of mortality to be less than 5 percent with Bobwhite quail produced in barns. Because quail barns can control the amount of light entering the house and have superior housing conditions, quail barns can have a higher bird density than flight pens (2.0 vs. 1.0 birds/square foot).

A typical quail barn would be 160 ft x 40 ft. A facility of this size could house approximately 13,000 Bobwhite quail. Access to materials and labor would help defray the cost, but one should anticipate construction cost of \$7-\$8 per square foot. One alternative to reduce the cost of quail barns is to renovate abandoned livestock and poultry facilities (*i.e.*, swine or broiler houses). Producers in south Georgia have been able to retrofit abandoned swine facilities, which has

proved to be cost effective. It appears the reduction in mortality and increased bird density economically justify using quail barns. For additional information related to Bobwhite quail production, management, and nutrition (see University of Georgia Extension Publications *Bobwhite Quail Production and Management Guide* and *Nutrition of the Bobwhite Quail*).

Startup Costs

A wide range exists in what an individual can spend to get started in Bobwhite quail production. The level of investment will depend on the type of construction and the capital assets available. Startup costs can range between \$5,000 to \$50,000 for facilities necessary to grow a minimum of 5,000 birds to as many as 20,000 birds, depending on the type of production system. Flight pens typically require less investment than quail barns. However, retrofitting existing facilities such as an old swine barn can significantly reduce the cost of investment for quail barns. The initial capital assets required for raising Bobwhite quail flight birds include land, housing, a flight pen, feeding equipment, watering equipment, a heat source and ventilation. Estimates for the two types of production systems — a traditional flight pen and a quail barn — are given in Tables 3 and 4 (pages 6 and 7) as examples. The budgets assume new construction costs, but they can be modified to reflect used equipment and facilities.

The flight pen example assumes a typical flight pen with 3,600 bird capacity (1.0 bird/sq ft. density) and the following dimensions: 120 feet long x 30 feet wide x 12 feet high. One acre of land is presumed at a cost of \$800 per acre. An enclosed feeding area is needed for brooding and is assumed to be 20 percent of the total flight pen dimensions. Construction costs are estimated at \$2.50 per square foot for the brooding house and \$0.70 per square foot for the flight pen. A 15-year life is assumed for the brooding house and a 7-year life for the flight pen. Feeding equipment to feed 2,500 birds is estimated at \$2,500 with an economic life of 10 years salvage value. Miscellaneous supplies are included at \$250. Total investment cost for a 3,600 bird capacity flight pen is estimated to be \$9,120.

Table 1. Flight Pen Startup Costs

| | Unit | Quantity | Price (\$) | Cost (\$) |
|-----------------------|-------------|-------------------|------------|-----------|
| Land | Acre | 1 | 800 | 800 |
| Flight Pen | Sq. Ft. | 3,600 (120x30) | 0.70 | 2,520 |
| Brood House | Sq. Ft. | 720 (24x30) | 2.50 | 1,800 |
| Feed Line | 2,500 birds | 1.5 | 2,500 | 3,750 |
| Supplies | | 1 | 250 | 250 |
| Total Investment Cost | | | | 9,120 |

Startup costs for a typical quail barn will be significantly higher due to more enclosed square footage and higher costs of new construction. Land required is assumed as for a flight pen, at \$800 per acre. The 160-foot long by 40-foot wide quail barn is estimated to cost at least \$5 per square foot to construct. Heating, ventilation and the watering system are assumed included in the housing cost estimate. A feed line capable of feeding 12,800 birds is assumed at a cost of \$2,500 per 2,500 birds. Miscellaneous supplies are included at \$750, for a total investment cost for the quail barn of \$46,050.

Table 2. Quail Barn Startup Costs

| | Unit | Quantity | Price(\$) | Cost(\$) |
|-----------------------|-------------|------------------|-----------|----------|
| Land | Acre | 1 | 800 | 800 |
| Housing* | Sq. Ft. | 6400 (160x40) | 5 | 32,000 |
| Feed Line | 2,500 Birds | 5 | 2,500 | 12,500 |
| Supplies | | 1 | 750 | 750 |
| Total Investment Cost | | | | 46,050 |

Production Costs for Raising Bobwhite Quail

The production costs for raising Bobwhite quail flight-ready birds include chicks, feed, utilities, insecticides, disinfectants, rodent control, labor, interest on capital and repairs and maintenance including clean-out. The costs will vary according to the type of production system and the level of management. These costs are estimated in the budgets presented in Tables 3 and 4 (pages 6 and 7) according to consultations with current growers. The examples assume using new facilities.

Growing Bobwhite quail begins by obtaining day-old chicks from a breeder. The budgets estimate the cost of day-old chicks at \$0.30 per bird. Purchasing chicks is the second highest expense after the purchase of feed. Feed consumption is figured at 0.06 pounds per day per chick for an average of 112 days, or 6.72 total pounds per bird. You can buy feed in bags or in bulk from a feed mill. It is assumed that feed is bought in bulk at \$260 per ton or \$0.13 per pound. The number of birds to purchase depends on the capacity of the flight pen or quail barn and the number of flocks raised. The flight pen used in this example has 3,600 square feet. Using the recommended stocking rate of 1.0 bird per square foot, 3,600 birds would be purchased for the flight pen for a total cost of \$1,080. The quail barn example has 6,400 square feet for a capacity of 12,800 birds, which would cost \$3,840.

The quail hunting season in Georgia typically opens in mid-October and runs through the end of February in the Southern zone and mid-March in the Northern zone. Depending on when hunting preserves want birds delivered, it is possible to raise two flocks for the hunting season. For example, to have birds ready for delivery in October, chicks would be purchased in June. A second flock would be purchased in October and raised for a January/February delivery. Raising two flocks increases the working capital required for purchase of birds and feed but allows fixed costs to be spread across more birds. The example budgets assume raising two flocks a year.

The budgets for a quail barn and flight pen systems estimate the total economic cost of each system. Total economic cost consists of variable costs and fixed costs including a charge for overhead and management. Variable costs are those expenses that vary according to the level of production. They are often referred to as operating or production costs and are largely cash or out-of-pocket expenses. A positive net return above variable costs indicates the operation can continue production in the short run as long it

generates enough cash to cover debt obligations. Long run profitability, however, requires a positive net return to total economic costs in order to replace capital assets.

The breakeven price to cover total costs for the quail barn production system is estimated at \$2.01 per bird. The breakeven price for the flight pen system is estimated at \$2.39 per bird. A price of \$1.59 and \$1.92 is required to cover the variable costs shown in the quail barn and flight pen budgets respectively. A sale price of \$2.75 per bird is used to calculate total receipts. At this price, the flight pen system with two flocks shows a \$2,231 net return or \$0.15 per bird profit. The quail barn system with two flocks gives a \$17,414 net return or \$0.37 per bird profit. These returns are sensitive to the mortality rate, feed price and chick price. The quail barn is assumed to achieve a mortality rate of 8 percent versus 15 percent for the flight pen. Feed will account for 40 percent and 50 percent of the variable costs, so a change in feed prices greatly affects the profitability of raising Bobwhite quail from a production standpoint. The sale price for flight-ready birds can fluctuate as well, varying between seasons and during the production season according to hunting demand.

Summary

1. Using a flight pen facility was estimated to have a breakeven cost of \$2.39/bird and a profitability as \$0.15/bird.
2. An operation with a quail barn facility was computed to have a break-even price of \$2.01, which translates to a net profit of \$0.37/bird.
3. It is recommended that for growers entering the business to start out growing between 5,000-10,000 quail in flight-pen facilities. If raising quail appears to be a long term enterprise for your operation, then it may behoove you to seriously consider constructing a quail barn or retrofitting an old swine or poultry building for production facilities.

Table 3. South Georgia Bobwhite Quail Budget: 160x40 Quail Barn

Capacity 12800
 Mortality 8%
 Batches Per Year 2

| ITEM | UNIT | QUANTITY | PRICE | AMOUNT |
|--|------------|----------|-----------|---------------|
| Variable Costs | | | (\$/Unit) | (\$) |
| Day-Old Chicks | Birds | 25,600 | 0.30 | 7,680 |
| Feed | Lbs. | 172,032 | 0.13 | 22,364 |
| Utilities | | | | |
| Electricity | Sq. Ft. | 6,400 | 0.075 | 480 |
| Fuel (Gas) | Sq. Ft. | 6,400 | 0.20 | 1,280 |
| *Miscellaneous | 1000 Birds | 25.6 | 10 | 256 |
| Repairs/Maintenance. on Bldg./ Equip. | % of Cost | 46,050 | 1% | 460.5 |
| Labor | Hrs | 500 | 6 | 3,000 |
| Clean Out | Times | 2 | 375 | 750 |
| TOTAL OPERATING EXPENSES | | | | 36,271 |
| Interest on Operating Capital | | 36,271 | 9% | 1,088 |
| TOTAL VARIABLE COST PER YEAR | | | | 37,359 |
| <i>*Miscellaneous includes Insecticides, Disinfectants, Rodent Control & Phone</i> | | | | |
| Fixed Cost | \$ | 4,391 | 1 | 4,391 |
| Overhead | % | 37,359 | 5% | 1,868 |
| Management | \$ | 37,359 | 10% | 3,736 |
| TOTAL FIXED COST | | | | 9,995 |
| TOTAL COST | | | | 47,354 |
| TOTAL RECEIPTS | Birds | 23,552 | \$2.75 | 64,768 |

| | |
|--------------------------------------|----------|
| NET RETURNS TO LAND & MANAGEMENT | \$17,414 |
| PROFIT PER BIRD | \$0.37 |
| BREAKEVEN PRICE ABOVE VARIABLE COSTS | \$1.59 |
| BREAKEVEN PRICE ABOVE TOTAL COSTS | \$2.01 |

160 X 40 QUAIL BARN

| ITEM | UNIT | QUANTITY | PRICE | COST | LIFE | \$/YEAR |
|-----------|------------|--------------------------------|-------|--------|------|--------------|
| Land | Acre | 1 | 800 | 800 | | |
| Housing | Sq. Ft. | 6,400 | 5 | 32,000 | 15 | 2,133 |
| Equipment | | | | | | |
| Feed Line | 5000 birds | 5 | 2,500 | 12,500 | 10 | 1,250 |
| Supplies | | 1 | 750 | 750 | 10 | 75 |
| | | TOTAL | | 46,050 | | 3,458 |
| | | Interest on Average Investment | | | | 311 |
| | | Taxes & Insurance | | | | 622 |
| | | TOTAL ANNUAL FIXED COST | | | | 4,391 |

Table 4. South Georgia Bobwhite Quail Budget: 120x30x12 Flight Pen

Capacity 3600
 Mortality 15%
 Batches Per Year 2

| ITEM | UNIT | QUANTITY | PRICE | AMOUNT |
|--|------------|----------|-----------|---------------|
| Variable Costs | | | (\$/Unit) | (\$) |
| Day-Old Chicks | Birds | 7,200 | 0.30 | 2,160 |
| Feed | Lbs. | 48,384 | 0.13 | 6,290 |
| Utilities | | | | |
| Electricity | Sq. Ft. | 720 | 0.075 | 54 |
| Fuel (Gas) | Sq. Ft. | 720 | 0.20 | 144 |
| *Miscellaneous | 1000 Birds | 7.2 | 10 | 72 |
| Repairs/Maintenance. on Bldg./ Equip. | % of Cost | 9,120 | 1% | 91.2 |
| Labor | Hrs | 400 | 6 | 2,400 |
| Clean Out | Times | 2 | 100 | 200 |
| TOTAL OPERATING EXPENSES | | | | 11,411 |
| Interest on Operating Capital | | 11,411 | 9% | 342 |
| TOTAL VARIABLE COST PER YEAR | | | | 11,753 |
| <i>*Miscellaneous includes Insecticides, Disinfectants, Rodent Control & Phone</i> | | | | |
| Fixed Cost | \$ | 1,082 | 1 | 1,082 |
| Overhead | % | 11,753 | 5% | 588 |
| Management | \$ | 11,753 | 10% | 1,175 |
| TOTAL FIXED COST | | | | 2,845 |
| TOTAL COST | | | | 14,599 |
| TOTAL RECEIPTS | Birds | 6,120 | \$2.75 | 16,830 |

| | |
|--------------------------------------|---------|
| NET RETURNS TO LAND & MANAGEMENT | \$2,231 |
| PROFIT PER BIRD | \$0.15 |
| BREAKEVEN PRICE ABOVE VARIABLE COSTS | \$1.92 |
| BREAKEVEN PRICE ABOVE TOTAL COSTS | \$2.39 |

120 X 30 Flight Pen & 24 X 30 Enclosed Feeding Area

| ITEM | UNIT | QUANTITY | PRICE | COST | LIFE | \$/YEAR |
|--------------------------------|------------|----------|-------|--------------|------|--------------|
| Land | Acre | 1 | 800 | 800 | | |
| Housing | Sq. Ft. | 720 | 2.5 | 1,800 | 15 | 120 |
| Flight Pen | Sq. Ft. | 3600 | 0.07 | 2,520 | 7 | 360 |
| Equipment | | | | | | |
| Feed Line | 2500 Birds | 1.5 | 2,500 | 3,750 | 10 | 375 |
| Supplies | | 1 | 250 | 250 | 10 | 25 |
| TOTAL | | | | 9,120 | | 880 |
| Interest on Average Investment | | | | | | 79 |
| Taxes & Insurance | | | | | | 123 |
| TOTAL ANNUAL FIXED COST | | | | | | 1,082 |



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Gale A. Buchanan, Dean and Director