The Economic Feasibility of Producing Pasture Poultry for Limited Resource Farmers in Southeastern North Carolina

[1]Kelli N. Ennis, [2]Kenrett Y. Jefferson-Moore, and [3]Jarvetta S. Bynum

[1]Former Graduate Research Assistant in the Department of Agribusinss, Applied Economics and Agriscience Education
North Carolina A&T State University, Greensboro, North Carolina
Phone: (336) 334 – 7943. Fax: (336) 334 – 7793 Email: kellennis@hotmail.com

[2]Assistant Professor in the Department of Agribusiness, Applied Economics and Agriscience Education
North Carolina A&T State University, Greensboro, North Carolina
Phone: (336) 334 – 7943. Fax: (336) 334 – 7793 Email: jykenret@ncat.edu

[3]Research Associate in the Department of Agribusinss, Applied Economics and Agriscience Education
North Carolina A&T State University, Greensboro, North Carolina
Phone: (336) 334 – 7943. Fax: (336) 334 – 7793 Email: jsbynum@ncat.edu

Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Dallas, Texas, February 2 – 6, 2008

The Economic Feasibility of Producing Pasture Poultry for Limited Resource Farmers in Southeastern North Carolina

Keywords: Alternative Enterprises, Agricultural Prosperity, Pasture Poultry Production, Limited Resource Farming

Introduction

The tobacco industry has been a prominent industry for the state of North Carolina and a lucrative enterprise for many farmers in the state. However, due to the tobacco buyout, many farmers, especially limited resource farmers (LRFs), are finding it extremely hard to maintain their farm operations and support their families. Moreover, as farm sizes are increasing while the number of farms decreasing, LRFs are also having a difficult time competing with the larger farms. Factors such as these along with the vulnerability and sensitivity of the agricultural sector have contributed tremendously to the economic conditions of LRFs. Therefore, LRFs have been forced to find other enterprises to help supplement for the losses that they have incurred from previous and current enterprises. It is more evident than ever that traditional cash crops and livestock productions are no longer sufficient in providing satisfactory economic conditions for farmers in North Carolina. As a result, it is necessary that farmers find a way to diversify their farm operations in an attempt to improve their incomes.

In the past two decades, the United States food industry has introduced an array of new food products in response to changes in consumer demographics, lifestyles, and in their awareness about diet, health, and nutrition (Gallo, 1996: Kinsey and Senauer, 1997; Senauer, Asp, and Kinsey, 1992). Likewise, because consumer demand is such a powerful force in the food industry, farmers must address the many different issues that concern consumers when purchasing food products. The overall success of farmers will solely depend on their ability to produce a quality product efficiently while at the same time, addressing market demands.

In an effort to advance the economic conditions of LRFs in the southeastern region of North Carolina, it is imperative for farmers to find profitable and supplemental enterprises that require little land and capital but provide higher revenues. These enterprises include new and improved varieties of traditional cash crops and other nontraditional enterprises such as fruits, vegetables, herbs and spices, ornamentals, and specialty animals. These enterprises are thought to be good prospects for diversification of production agriculture due to their relatively low capital and high returns.

The Southeastern Region of North Carolina

The geographical region selected for this study began from a statewide initiative in North Carolina in an effort to generate economic growth, in particular, to spark job creation through entrepreneurship. The overall intent of the initiative was to develop strategies of adjustment for the recent economic devastation in the furniture, textile, and tobacco industries triggered by globalization and the outsourcing of jobs. In spite of statewide programs promoting entrepreneurship as a means of economic growth, there was a population of existing and aspiring rural entrepreneurs (primarily farm-based) within the state that had not been reached in terms of the various resources available. Through the development of the North Carolina Rural Center, incorporated 1987, based in Raleigh, North Carolina, the state has initiated outreach efforts extending resources for rural communities. The primary responsibility of the Rural Center is to assist the 85 rural counties in economic development programs. The Rural Center defines a rural county as having a population density of less than 200 persons per square mile.

The southeastern economic development region of North Carolina includes Bladen, Brunswick, Columbus, Cumberland, Hoke, New Hanover, Pender, Richmond, Robeson, Sampson, and Scotland counties. Several community colleges, universities, and community-

based organizations have formed alliances in combating issues of globalization and the outsourcing of jobs by instituting entrepreneurship as a catalyst to business growth and job creation. The Rural Center reported that small businesses consist of the majority of all businesses in rural North Carolina and are a major contributor to jobs and wages, business and job growth, and are critical to rural community life. However, small businesses are subject to constant transformations; for instance, from 1990 to 2000, rural North Carolina gained over 100 thousand jobs due to gains and losses in the workforce through business expansions and closures, respectively. In 2005, the mean unemployment rate for the state of North Carolina was 5.2%. During the same time period, the unemployment rate for the southeastern region of the state ranged from 3.9% to 9.9%. Also, median household incomes for the region were between $28,803 and $39,379 in 2005 compared to the median household income of $40,863 for the state (N.C. Rural Center, 2007).

A survey administered by Heifer International in an effort to profile producers of pasture poultry in Little Rock, Arkansas was conducted in 2002. Results from these surveys assist in profiling producers in southeastern North Carolina due to the similarities of the two geographical locations. Survey results showed that producers are open to the proposal of starting and/or expanding their poultry operations, however, the high cost are of much concern to producers. Seventy three percent of producers who were surveyed have on-farm non-inspected processing operations due to high processing cost. Sixty-two percent are dissatisfied with current processing labor requirements and sixty four percent are dissatisfied with government regulations. Along with the high costs associated with processing, this is due to the ambiguity of the regulations and how confining the regulations can be. However, without these regulations, producers are confined to only having 1000 birds for sale per farm per year. In the long run, this can hurt

producers needing to sell above and beyond this limit in order to maintain their farm operations and support their families.

Pasture Poultry Production as an Alternative

Pasture poultry production has the potential to provide momentum to alternative agricultural enterprises and to increase net farm income. It is a diverse venture that falls under specialty animals and an enterprise such as this could be both cost-effective and advantageous for LRF's, giving them the edge that they need to recover their farm operations and their incomes. For instance, pasture poultry has gained statewide recognition in Kentucky and has become very popular among consumers in the state. A case study of LRFs/family farms producing pasture poultry in Kentucky was conducted in 2003. The farms profiled process some of the highest quality poultry in the United States and has discovered a niche market for pasture poultry. Strong demand for this specialty poultry product allows the case farm to sell their birds at higher prices. In some instances, the producers can get as much per pound for their home-raised poultry as the major supermarkets receive for a whole two to three pound bird. Additionally, the marketing of these specialty products earn a profit of close to $3 per bird. This includes the expenses of the extra marketing that is involved with marketing the pasture poultry products. Production is growing on a large scale in Kentucky and the LRFs profiled simply are not meeting the current demand from both restaurants and individual consumers. These results support the idea that pastured raised poultry as a supplemental enterprise is a good opportunity for the small farmer. Although producing pasture poultry will not support an entire farming operation, it is an enterprise that would definitely make a difference for many LRFs.

This study intends to provide the financial feasibility of two production systems of pasture poultry (pen production and day-range production) in southeastern North Carolina. The

southeastern region will serve as a superior location for such a product due to the regions high poverty rates and limited resource farms (LRF). By determining the economic feasibility of the two production systems, this will aid farmers in production practices and investment alternatives when making decisions of supplemental income for the farm. If the two production systems are found economically feasible for pasture poultry in the southeastern region of North Carolina, then the production of such alternatives could serve as an additional alternative for LRFs in the region. Therefore, the purpose of the study is to determine the economic feasibility of pasture poultry production as an alternative enterprise on limited resource farms in southeastern North Carolina. The objectives are as follow: (1) to evaluate the profitability of pen production and day-range production with custom processing of pasture poultry as limited resource enterprises in southeastern North Carolina and (2) to determine the effects of financial leverage and cost of capital on the financial feasibility of pen production and day-range production of pasture poultry in southeastern North Carolina.

Conceptual Framework

Pasture Poultry Production Systems

The two poultry production systems that will be used in this research study are the pasture pen operation and the net range (or day range) operation. The pasture pen operation involves small batches of birds which are kept in floorless pens and are moved to fresh pasture daily. The net range operation involves a poultry house that is surrounded by movable net fencing. The netting is moved every few days and the house may be moved as well to allow the birds to consume fresh pasture. Requirements that producers of both production systems have to

consider includes climate, soil and land, water (septic system or municipal water), building and facility, equipment and machinery, and management and labor.

Appropriate climate temperatures are required for a successful production season. If the climate is too hot or too cold, then outdoor production could be limited which could ultimately affect the entire operation. Soil pH, moisture, fertility, and acreage are some factors to be considered as these factors are a very vital portion of both production systems. The flow rate, volume, and location are important when determining water quality. The higher the water quality, the higher a producer's output would be. Specifically for range operations, in terms of housing, this is often minimal for this operation due to the fact that existing resources can be used for this operation. Other building and facility requirements include a place for cold storage and poultry products. Heaters, pasture pens, feed storage, feeders, and waterers are the most important aspects needed for equipment and machinery. Due to the nature of these operations, not a lot of processing equipment is needed. Marketing equipment may be needed, such as a refrigerated truck or trailer to transport dressed birds to market. In addition, equipment should be scaled according to individual producers operation.

Planning and organization are important necessities to the management and labor functions. Considerable knowledge and diverse skills are needed for both production systems. Both operations can be labor intensive, especially with processing, and require many hours of management. Since many poultry producers have diversified farms, it is important that the poultry enterprise complements rather than conflicts with the labor peaks of other farm enterprises (Heifer International, 2002)

Net Present Value (NPV) Method

Net present value method of analysis is used to determine the profitability of an investment. For the purpose of this study, it will be used to determine which two production systems (pen and net range) would be viable operations. The Net Present Value (NPV) method is used to project the long term costs and benefits of the investment and it is the present value of an investment's cash inflows minus the present value of its outflows (Degregori, et al., 2000). The use of the NPV method in analyzing investments has been well documented. It is defined as the sum of the present values of the annual cash flows minus the initial investment. The annual cash flows are the net benefits (revenues minus costs) generated from the investment during the life of the investment. These cash flows are discounted or adjusted by incorporating the uncertainty and time value of money. The goal of the NPV equation is to determine the value created from the initial investment. In this study, the NPV model will serve the purpose of presenting the NPV values for both pasture production systems when the cost of capital is different in three separate scenarios. The formula to calculate the NPV is as follows:

$$NPV = \left[\sum P_n \big/ (1-i)^n\right] - C$$

where:

NPV = net present value,

Pi = net cash flow in year n,

i = discount rate (where i = 1, 2,…,n),

C = initial cost of the investment, and

n = the number of time periods.

The NPV method has four key elements to evaluating an investment. The time value of money, where NPV recognizes the concept that a dollar earned today is worth more than a dollar earned five years from now. Secondly, the cash flows, where NPV calculates a project's expected cash flows and include the unique risks of obtaining those cash flows. Using NPV helps eliminate accounting inconsistencies, since the cash flows represent the benefits of the project and not just the profits. Thirdly, the NPV method evaluates risk by incorporating the risks associated with a project via the expected cash flows and/or discount rate. Lastly, NPV provides flexibility and depth, since the NPV equation can adjust for inflation and can be used with other analytical tools. The criterion for deciding whether an investment is acceptable using NPV is based on the following:

1. If the NPV is greater than zero, then it is considered an acceptable investment.
2. If the NPV is equal to zero, then the investor may be indifferent.
3. If the NPV is less than zero, then it is considered as an unacceptable investment.

Financial Feasibility

Financial feasibility is a method used to determine an enterprise's financial possibilities. It is the process of determining whether an investment is financially viable and should be conducted after an investment analysis (Degregori, et al., 2000). During the feasibility analysis, a negative value in any year suggests that the cash outflow exceeds cash inflow. This suggests an infeasible investment, which means that in that year, the investment would not be able to carry itself. Moreover, a deficit in even one year would mean that the investment is unprofitable even if the investment was predetermined to be profitable. These are the decision criterion for accepting or rejecting an investment based on a financial feasibility analysis. To calculate the

financial feasibility of an investment, there are several components needed. These components are the tax rate, discount rate, down payment, loan term, loan type, and the loan interest rate. When all of these components are known, then leverage ratios are used to determine the financial feasibility of an investment.

Leverage ratios are measured by total debt to total equity and when they are greater than one, more loans are required for the cost of debt. When the leverage ratio is 0.0, it implies that the investment will be made through existing assets. When the leverage ratio is 1.0, then half of the investment will require debt capital and owners' equity is required for the other half. When the leverage ratio is 2.0, then two-thirds of the investment will require debt capital and one-third will require owners' equity. When the leverage ratio is 3.0, then three-fourths of the investment requires debt capital and one-fourth requires owners' equity.

There are capital requirements that must be considered when investing in an enterprise such as pasture poultry. These requirements are known as the cost of capital. The cost of capital is defined as the rate at which future income cash flows are discounted. It is calculated by adding together the cost of debt and the cost of equity. It is also referred to as the cutoff, hurdle, target, or minimum rate of return that must be achieved for an investment to be deemed as minimally acceptable. In other words, if the cost of capital is estimated to be 12%, then investments yielding 12% or more are considered to be feasible (or acceptable) investments.

Data and Methods

The financial data in this study is based on enterprise budgets for both production systems. Assumptions are based on the farm operating at full production capacity. The enterprise budgets are used as general guidelines to illustrate what would be required to invest in either one

of the aforementioned production systems. Base case scenarios for each operation are used to develop the three scenarios that are to be used for each production system. Each scenario will be evaluated at a different cost of capital level (10%, 7.5%, and 5%). For the base case scenarios, there is no cost of capital because there is no debt or equity used to finance the investment. Using various costs of capitals assist in illustrating the affects on net present value and show how cost of capital affects the financial feasibility of each operation.

Enterprise Budgets

The original enterprise budgets are based on a 4 pen case and show how much capital would be needed to invest in these operations. However, to illustrate the results of what would happen if a producer enlarged the pasture poultry operation, the budgets expand to show an 8-pen and 12-pen operation. The values for 8 pens were derived by multiplying the figures for 4 pens by 2. The values for 12 pens were derived by multiplying the figures for 4 pens by 3. Table 1 shows the enterprise budget for the pasture pen operation.

The pasture pen operation is a seasonal production process occurring only in the spring, summer, and fall. Four batches are produced each year and each batch contains three weeks and twelve hundred birds are placed each year. Each bird consumes about 15 pounds of feed and there is a ten percent death loss. Seven point five percent of the birds are loss to processing and seven percent are kept for home consumption. Birds have a dressed weight of 4.5 pounds each (without giblets) and the price received is $2.00 per pound. There are a total of 999 birds for sale each year and they are directly marketed to customers and contain no labels.

The net range operation is a seasonal production process also. As opposed to four batches of birds being produced each year, there are six batches produced for this operation. Each batch

contains one thousand birds which are housed between four houses. Six thousand birds are placed each year and the growout period is eight weeks. Each bird eats about fifteen pounds of feed and ten percent of the birds are loss due to death and two percent due to processing.

The dressed weight for each bird is 4.5 pounds (without giblets) and is priced at $2.00 per pound. Five thousand and ninety two birds are sold each year with eighty four percent of the birds being sold whole and the remaining sixteen percent are sold cut up. Birds are marketed directly from the plant and the producer is not responsible for the transportation of the birds. The values for 8 pens were derived by multiplying the figures for 4 pens by 2 and the values for 12 pens were derived by multiplying the figures for 4 pens by 3. This illustrates the expansion of the pasture pen production system for producers who may have more farm land and resources to invest with compared to producers who may only be able to invest in the four pen operation. Table 2 shows the enterprise budget for this production system.

Results

Scenarios

Three scenarios were developed for both pasture poultry production systems. As mentioned before, each scenario illustrated the effects on NPV when the cost of capital was at a different percentage. In scenario 1, for both production systems, the cost of capital is 10%. In scenarios 2 and 3, the costs of capital are 7.5% and 5%, respectively, for both production systems. As the cost of capital increases, the investments become less profitable. Therefore, as the cost of capital decreases, investments become more profitable. Each scenario shows a time period of 20 years and takes into account the useful life of any assets used. Taxes were also regarded at a 12% tax accrual rate. A present value discount factor, which was established

Table 1: Pasture Pen Enterprise Budget – (Base Year, 2007)

	4 Pens	8 Pens	12 Pens
Income			
Sell 999 Birds	$8,991.00	$17,982.00	$26,973.00
Expenses			
Fixed			
Brooder House	$ 320.00	$ 640.00	$ 960.00
Processing Equipment	320.00	640.00	960.00
Processing Building	157.86	315.70	473.58
Pens	160.00	320.00	480.00
Composter	50.00	100.00	150.00
Brooder Waterer/Feeder	10.00	20.00	30.00
Brooder	17.86	35.72	53.58
Dolly (to move pens)	20.00	40.00	60.00
Total Fixed Expenses	1,055.72	2,111.44	3,167.16
Variable			
Chicks	$ 684.00	$ 1,368.00	$ 2,052.00
Bags and Staples	79.92	159.84	239.76
Wood Chips	150.00	300.00	450.00
Utilities	20.00	40.00	60.00
Feed	2,520.00	5,040.00	7,560.00
Marketing	400.00	800.00	1,200.00
Labor Production	1,584.00	3,168.00	4,752.00
Labor Processing	1,152.00	2,304.00	3,456.00
Liability Insurance	250.00	500.00	750.00
Pasture rent per acre	30.00	60.00	90.00
Miscellaneous	400.00	800.00	1,200.00
Total Variable Expenses	7,269.92	14,539.87	21,809.76
Total Expenses	8,325.64	18,762.72	28,144.08
Net Income	665.36	1,330.72	1,996.08
Cost per bird (Breakeven)	8.33	16.66	24.99
Net income per bird	0.67	1.34	2.01

Source: National Center for Appropriate Technology and Kerr Center for Sustainable Agriculture, 2002. Note: Assumptions are that price and cost have not varied over the past five years.

Table 2: Net Range Enterprise Budget – (Base Year, 2007)

	4 Pens	8 Pens	12 Pens
Income			
Sell 5,292 birds	$ 47,628.00	$95,256.00	$142,884.00
Expenses			
Fixed			
House	$ 213.33	$ 426.66	$ 639.99
Composter	50.00	100.00	150.00
Brooder Waterer/Feeder	10.00	20.00	30.00
Brooder	77.86	155.72	233.58
Bulk Feed Storage	92.86	185.72	278.58
Fencing	136.00	272.00	408.00
Fence Charger	18.75	37.50	56.25
Battery	32.50	65.00	97.50
Total Fixed Expenses	631.30	1,262.60	1,893.90
Variable			
Chicks	$ 3,420.00	$ 6,840.00	$ 10,260.00
Wood Chips	1,152.00	2,304.00	3,456.00
Utilities	1,152.00	2,304.00	3,456.00
Feed	12,600.00	25,200.00	37,800.00
Marketing	400.00	800.00	1,200.00
Transportation	384.00	768.00	1,152.00
Labor (production)	4,032.00	8,064.00	12,096.00
Cleanout Cost	00.00	00.00	00.00
Tractor/loader rental	60.00	120.00	180.00
Manure Spreader	55.44	110.88	166.32
Custom Processing	16,200.00	32,400.00	48,600.00
Liability Insurance	500.00	1,000.00	1,500.00
Transportation crate rental	810.00	1,620.00	2,430.00
Miscellaneous	400.00	800.00	1,200.00
Total Variable Expenses	41,165.44	82,330.88	123,496.32
Total Expenses	42,428.04	84,856.08	127,284.12
Net Income	12,277.44	24,554.88	36,832.32
Cost per bird (Breakeven)	7.76	15.52	23.28
Net Income per Bird	2.32	4.64	6.96

Source: National Center for Appropriate Technology and Kerr Center for Sustainable Agriculture, 2002. Note: Assumptions are that price and cost have not varied over the past five years.

by the cost of capital, was used to determine the present value of cash flows for each year for each scenario.

Once the total present value of cash flows is determined, then the NPV was calculated for each scenario. For the pen operation, the assumptions are that the initial investment would cost $19,734.92 and leverage ratios are incorporated at levels 1.0, 2.0, and 3.0. Assumptions for the net range operation are that the initial investment would cost $41,076.74 and leverage ratios are incorporated at levels 1.0, 2.0, and 3.0. The loan term for both investments is for a total of five years.

Results of Scenario Simulations

Table 2 presents the results for the pasture pen operation. The costs of capital (10%, 7.5%, and 5%) for each scenario are shown and the results for NPV are as expected. As cost of capital decreases from scenario one to scenario three, there is an increase in net present value although the values are negative. For the pasture pen production system, when cost of capital is 10%, NPV is $(33,098.95). When cost of capital is 7.5% and 5%, the NPVs' are $(31,841.04) and $(30,144.05), respectively. These values indicate that investing $19,734.92 in the pasture pen operation today cost more than the future benefits of investing in the pasture pen operation. Investing $19,734.92 in this operation will yield $(33,098.95), $(31,841.04), and $(30,144.05), which are negative, in 20 years at the respected cost of capital percentages. Also for this operation, for all three scenarios, leverage ratio results were negative. As the leverage ratio increased, the financial feasibility of the operation decreased resulting in negative values or deficits for each year of the operation. Since net present value is negative, this indicates that the investment is unacceptable. Moreover, the table shows that as the cost of capital for the investment increases, the less profitable the investment becomes.

Table 3: Net Present Value and Financial Feasibility for Pasture Pen Operation - (Base Year, 2007)

Cost of Capital	(10%)	(7.5%)	(5%)
	Scenario #1	Scenario #2	Scenario #3
NPV	$(33,098.95)	$(31,841.04)	$(30,144.05)
Financial Feasibility			
Leverage Ratios			
1.0	Reject	Reject	Reject
2.0	Reject	Reject	Reject
3.0	Reject	Reject	Reject

Source: Author's calculations. Note: Assumptions are that price and cost have not varied over the past five years.

The leverage ratios for the pasture pen operation show that the investment should be rejected because it is not financially feasible. This is due to there being a deficit in at least one or all of the years for the loan term which is assumed to be five years. The negative values or deficits indicate that cash outflows exceeded cash inflows for that year. The deficits specify that in that year, the investment would not be able to carry itself which makes the total investment unprofitable. These results imply the pasture pen operation is unacceptable and it is not financially feasible.

Table 4 lists the results for the net present value and financial feasibility analysis for the net range operation. The NPV results are as expected for each scenario at the respective costs of capital levels (10%, 7.5%, and 5%). For this operation, when cost of capital is 10%, NPV is $(33,068.10). When the cost of capital is 7.5% and 5%, the NPVs are $(24,007.44) and $(10,932.80), respectively. Under the net range operation, in scenario 1, the values for leverage

ratio 1.0 were negative. This indicates that this operation is not financially feasible at this leverage ratio when cost of capital is 10%. However, in scenario 1, values were positive showing a surplus for each year of the operation at leverage ratios 2.0 and 3.0. This shows that the net range operation is financially feasible at these leverage ratio levels. Scenarios 2 and 3 also had positive values for leverage ratios 1.0, 2.0, and 3.0 which implied that the pasture pen operation is a financially feasible investment at all leverage ratio levels and when the cost of capital is 7.5% and 5%.

Table 4: Net Present Value and Financial Feasibility for Net Range Operation - (Base Year, 2007)

Cost of Capital	(10%)	(7.5%)	(5%)
	Scenario #1	Scenario #2	Scenario #3
NPV	$(33,068.10)	$(24,007.44)	$(10,932.80)
Financial Feasibility			
Leverage Ratios			
1.0	Reject	Accept	Accept
2.0	Accept	Accept	Accept
3.0	Accept	Accept	Accept

Source: Author's calculations. Note: Assumptions are that price and cost have not varied over the past five years.

As the cost of capital decreases from scenario one to scenario three, net present value increases even though the results are negative. This indicates that the investment is unacceptable due to the net present values being negative. As the cost of capital for the investment increases, the investment becomes less profitable. Under leverage ratio 1.0 for scenario 1, the investment should be rejected because it is not financially feasible when cost of capital is 10%. This

signifies a deficit or negative values in either one or all five of the years of the loan. However for leverage ratios 2.0 and 3.0 under scenario 1, the investment for this operation can be accepted because it is financially feasible when the cost of capital is 10%. In other words, there are not any deficits in any year of the operation making the investment profitable. In scenarios 2 and 3, the investment can be accepted at each leverage ratio (1.0, 2.0, and 3.0), because it is financially feasible when the cost of capital is 7.5% and 5%.

The overall results show that both operations have negative net present values. Since the NVP values are less than zero for both operations, this suggests that today's costs are more than the sums of the future benefits of investing in either one of these pasture poultry production systems based on the assumptions presented in this study. Moreover, the pasture pen operation showed results of rejection at all leverage ratio levels and at all cost of capital percentages. This implies that the pasture pen operation is not financially feasible and not a profitable operation for a producer to invest in. The net range operation is not acceptable, but it is the financially feasible investment compared to the pasture pen operation. It requires more resources and is more labor intensive, but the analysis illustrates that making the investment in this operation will provide better financial means and that it is the more viable operation for a producer to invest in providing they meet the necessary financial requirements based on the assumptions made in this research study.

Conclusion

The economic and financial feasibility analysis indicates that the pasture pen production system is not an economically or financially feasible investment for pasture poultry producers. The net present value model suggests that an investment in this system would be considered unacceptable because net present values are negative, or less than zero. This was the case for all

three scenarios when cost of capital was 10%, 7.5%, and 5% at leverage ratios 1.0, 2.0, and 3.0. Based on the cost of the initial investment for the pasture pen operation, at leverage ratios 1.0, 2.0, and 3.0, an investment in this system should be rejected because there are one or more years that the operation would not be able to carry itself. In other words, the investment is deemed unprofitable. These results are based on the assumption that producer's are in the financial condition that is identical to the scenarios that have been described in this study.

On the other hand, results for the net range operation support the idea of investing in a pasture poultry production system due to its financial feasibility. The net present value model for this production system suggests that investing in this production system would be considered unacceptable and this is due to the net present values for this operation resulting in negative values as well. Still, the net range operation is considered to be financially feasible when cost of capital is 7.5% and 5% at leverage ratios 1.0, 2.0, and 3.0. While cost of capital was 10%, the operation was not financially feasible at a leverage ratio of 1.0, but it was considered financially feasible at leverage ratios 2.0 and 3.0 when cost of capital was 10%. As stated previously for the pasture pen operation, the results for the net range operation are based on the assumption that producers are in the financial condition that is identical to the scenarios that were illustrated in this study.

In conclusion, the current situation for health foods and the current economic situation of the small farm sector may influence an increase in pasture poultry production in the southeastern region of North Carolina. Due to the high unemployment and poverty levels, pasture poultry production could provide a financially sound alternative enterprise for producers in the region. Not only can it provide producers with an alternative or supplemental enterprise for their farm operation(s), but it can also provide consumers with an affordable

healthy food alternative. On the other hand, costs of capital must be considered. The costs of capital for this research study were chosen arbitrarily. Producers may require a much higher rate of return than the cost of capital projected and be less willing to engage in the proposed enterprise. This is due to the fact that small farmers (or LRF's) do not have the resources (land and/or capital) to take risks. However, more research must be done to determine the economic advantages of producing pasture poultry in this region. If producers are looking for a niche market to take part in, then producing pasture poultry may be an important economic alternative or supplemental enterprise of the food product industry that can benefit both producer and consumer.

Furthermore, building or finding a market for pasture poultry in the southeastern region of North Carolina is a major economic factor that must be considered if pasture poultry production is to be a profitable and financially feasible enterprise. Despite the possibility of high net returns, market access is definitely a prerequisite for the success of LRF's in the region. Nevertheless, producers will be faced with the demanding task of having to determine which production system is the better system for their farm operation and financial circumstance(s). As a result of the initial cost associated with the pasture pen and net range operations, producers will have to be aware of how much they are willing to invest in either operation. They will also have to consider their opportunity cost of investing in the production system that will be the most beneficial to them. Moreover, they will be faced with the issue of developing a product that is consistent in quality, and they must be able to maintain a dependable supply of the product to consumers.

References

Barry, Peter J., Paul Ellinger, John A. Hopkin, and C.B. Baker (2000), *Financial Management in Agriculture,* Prentice Hall.

Caudill, Tess and Emily Branstetter. "Free Range Poultry for Kentucky Farmers." Marketing Matters. [Online]. Available at http://www.kyagr.com/mkt_promo/MarketingMatters. Accessed – August 18, 2006.

Degregori, Thomas R., Ralph W. Battles, and Robert C. Thompson. (2000). *Fundamentals of Agribusiness Finance.* San Antonio, TX: Blackwell Publishing.

Gallo, A.E. "The Food Marketing System in 1995." AIB 731, U.S. Department of Agriculture. December 1996.

Heifer International. (2002, October). Growing Your Range Poultry Business: An Entrepreneurs Toolbox. Contributors: Anne Fantico, David Redhage, Nancy Grudens Schuck, Wayne Knoblauch, and Judy Joanna Green. [Online]. Available at http://www.attra.ncat.org/attra-pub/PDF/poultrytoolbox.pdf. Accessed January 8, 2006.

Kinsey, J. and B. Senauer. (1997). Food marketing in an electronic age: implications for agriculture. *Choices*. Second Quarter: 32 – 35.

The North Carolina Rural Economic Development Center. "The Importance of Small Business in Rural North Carolina." [Online]. Available at http://www.ncruralcenter.org/forum2004/SmallBusinessFactSheet.pdf, Accessed on December 8, 2007.

Senauer, B., E. Asp, and J. Kinsey. (1992). *Food Trends and the Changing Consumer*. St. Paul, MN: Eagan Press.