

## **Farmer/Grower Grant Final Report**

**Project Title:**     **Economic Impact of Feeding Methods on Small Scale Poultry Production – FNE04-529**

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### **Goals**

In order to determine the true cost of production or benefit of practices such as pasture raising, small scale farmers need to understand the impact of feeding and management systems. By looking at the six distinct systems, producers will be better able to determine which system is best suited to their individual enterprise.

### **Farm Profile**

Wild Geese Farm consists of 52 acres, located in the northeast corner of Allegany County, New York. Having owned and operated the farm on a part-time basis for 30 years, I am looking to expand operations to full-time in 2005. Since 1994, cropland has been solely in forage production. Twenty-seven acres are utilized for hay production and pasture rotation for beef cattle and horses, with 16 acres of permanent pasture. Chickens and turkeys have been raised free range and primarily for family consumption in the past. In 2003, I raised meat birds in pasture pens for a processing workshop as part of the educational series these were marketed direct from the farm. In addition, layers were also raised in pasture pen during summer and into fall. Experiences gained in 2003 identified other questions which I hope to answer through this proposal.

Having been involved in the poultry processing workshops and educational programs offered by Cornell Cooperative Extension during the past two years, coupled with the availability of the mobile processing unit within the county, meat bird production offers a viable opportunity for the farm. In order for the enterprise to be sustainable it is necessary to have a better understanding of the impact of feeding methods and management systems in order to determine marketing potential and profitability for the farm.

### **Participants**

Cornell Cooperative Extension Educator, Lynn O'Brien, served as technical advisor for the project. This was a natural extension of her position as Agriculture Economic Development Resource Educator with responsibility for small farm and livestock programming.

Cooperators for the project included 7 farmer growers and an additional 7 participants in the processing phase of the project. The six groups for birds raised in pasture pens were at our farm. The six groups raised free range were at the farm of Tony and Gloria Iacona. The Iacona's had been raising some birds for layers but were new to raising meat birds. The six groups raised in confinement housing were farmed out to 3 additional farms. The Cornish cross broilers raised by Janice Brown and Kim Shaklee; Kosher Kings raised by David Wesche; and the Buff Orpingtons raised by Beth and Raymond Dennis (Grower Letter Appendix 1). These producers had raised meat birds prior to involvement in this project. Each grower maintained records on individual groups raised (Data Sheet Appendix 2).

Additional help included processing birds and surveying consumers at Farmers Markets. Processor's helped weigh live birds, butcher birds, and collect carcass weights. In addition to the growers listed above, Sam Brown-Shaklee, Jennifer Simpson, Susan Steer, Casey, Justine, Shannon, and Shawn Wesche participated in various phase of the processing. Jennifer Simpson and Lynn O'Brien survey consumers regarding taste preference and poultry consumption habits (appendix 3).

## **Project Activities**

Best utilization of resources is essential for small scale farming operations. This farmer/grower grant will look at the economic impact of feeding methods in relation to management system.

Three breeds of chickens were raised in each of 3 systems, half feed commercial feed and half whole grain feed with no additives (antibiotics, hormones, animal by-products). The focus was on meat production using cockerel Cornish Cross, Kosher King, and Buff Orpington. Group 1 fed in confinement housing, group 2 in rotated range, and group 3 in pasture pens.

There were a total of 18 groups with 40 birds per group. Day old chicks were purchased from one source, divided up and delivered to collaborating farmers. Cornish cross were selected due to their fast growth rate; being double breasted and yellow skinned, this breed is likely to be viewed by customers as product they are used to seeing. Kosher King are slower growing but marketed by breeders as a better grazing breed, the black skin and variation in carcass may require more consumer education to command premium price. Buff Orpington represents a white skinned breed which may be raised for egg production with adjunct meat production.

Control groups for each species were fed in confinement housing with 100 square feet per group half receiving free choice commercial feed and half free choice whole grain rations. All 18 groups were raised in brooder boxes to the age of 21 days. Six 10' x 10' pasture pens, two per breed were used and moved daily. Group three birds were raised with stationary houses adjacent to 500 square foot paddocks. These birds were not turned out as soon as originally planned, nor were paddocks moves as often. As with the control group, both groups had access to free choice commercial feed or free choice whole grain rations.



All systems provided free choice fresh water with vitamin/mineral supplementation. To minimize forage variability, all 6 pasture pen groups were raised at same farm and all 6 in rotational system raised on second farm. All feed was purchased from one source and weighed per group to determine total pounds fed to each individual group.

Feed ratio was calculated and incorporated with other variable costs of production. An analysis of each breed, per management system and feed method was performed to determine the cost of production.

Finished product was made available at local Farmers Markets for consumer taste testing. Consumers were surveyed concerning poultry consumption habits and taste preference. Educational brochures about the different raising methods and differences between breeds were distributed to interested consumers, along with information of proper handling of poultry products and recipes.

## Results

Collaborating farmers recorded amount of time spent in care and management of the birds within their respective raising systems. Feed was weighed for each of the 18 groups. Three processing days were held, one per species as each breed required different growth period to reach fryer stage.

<b>Table 1. Summary of Production Results</b>					
# of Birds Harvested	Group Description	Average Carcass Weight	Average Live Weight	Dressing Percentage	Feed Consumption
30	Cornish Comm. Confined	5lbs. 6oz.			544 lbs
40	Cornish Natural Confined	5lbs. 0oz			646 lbs.
40	Cornish Comm. Pasture	4lbs. 9oz	6lbs. 6oz	72.55%	615 lbs.
25	Cornish Natural Pasture	5lbs. 6oz	7lbs. 12oz	74.76%	416 lbs.
30	Cornish Comm. Range	4lbs. 15oz			515 lbs.
28	Cornish Natural Range	5lbs. 12oz			483 lbs
34	Kosher King Comm. Confined	3lbs. 12oz			520 lbs.
38	Kosher King Natural Confined	4lbs. 6oz			625 lbs.
40	Kosher King Comm. Pasture	4lbs. 0oz	6lbs. 0oz	68.75%	535 lbs.
37	Kosher King Natural Pasture	4lbs. 3.5oz	6lbs. 8oz	66.35%	584 lbs.
40	Kosher King Comm. Range	3lbs. 15oz			610 lbs.
39	Kosher King Natural Range	4lbs. 4oz			567 lbs.
39	Orpington Comm. Confined	2lbs. 7oz			570 lbs.
39	Orpington Natural Confined	2lbs. 9oz			575 lbs.
39	Orpington Comm. Pasture	2lbs. 8oz	3lbs. 14oz	64.51%	570 lbs.
41	Orpington Natural Pasture	2lbs. 11oz	4lbs. 3oz	64.18%	580 lbs.
36	Orpington Comm. Range	2lbs. 7oz			465 lbs.*
38	Orpington Natural Range	2lbs. 9oz			424 lbs.*

\* Orpington's moved between paddocks due to size they were able to pass through fence. Feed Consumption pounds represents amount provided in individual pen, does not account for consumption from neighboring paddocks.

Consumers were surveyed concerning poultry consumption habits and taste preference. Of those who expressed a difference in taste between the Cornish and Kosher King (68% tasted a

difference, 32% no difference), 61% thought the Kosher King had more flavor. Additionally, only 17% of those surveyed had purchased chicken directly from a producer (See Appendix 3).

## **Conditions**

Initially the late arrival of the Cornish cross Buff Orpingtons posed a challenge. The birds were in transit for an additional day which may have contributed to the higher death loss in these two breeds as compared to the Kosher Kings. In addition, it is difficult to assess whether or not the delayed arrival of the chicks also affected growth and efficiency. The day these chicks arrived overnight temperatures sunk to 34 degrees, this too may have contributed to the early deaths; 8 Buff Orpington and 7 Cornish Cross within first week, and an additional 8 Cornish Cross in week two compared to 2 Kosher King losses total within the first two weeks.

Having the wettest season in more than 30 years in 2004 was a challenge for the project. This may have affected the feed consumption and growth rate in the groups raised on pasture. Birds consumed forage but it did not dramatically reduce grain consumption and/or increase weight of birds as anticipated.

The moisture also created problems in keeping the birds dry. The grower raising the Cornish Cross in confinement noted 2 birds lost following rain which caused dampness problems in their facility as a result of water saturation of floor boards from water running under pen. The same group of birds, receiving commercial feed, had an additional 6 birds died within the 12 days. Conversely, high death losses occurred in the pasture group receiving natural feed. These losses occurred following rapid increase in temperature cause heat stress in the birds. The only late losses in the Buff Orpingtons were the result of hawk predation of 2 birds in the free range system.

## **Economics**

Cost per chick is higher for Cornish (\$1.09/chick) than for Kosher Kings (\$.62) and Buff Orpington (\$.92); but even with loss of bird being drastically higher in the Cornish Cross, these birds offer the highest return due to carcass weight. In addition, these birds were raised to 55 days of age, compared to 63 days for Kosher Kings and 88 days for the Buff Orpington, reducing labor costs.

Consumers are use to buying double breasted chicken and therefore require less education about the bird. This allows the producer to focus on the benefit of birds raised in their particular system and feeding method. The feed cost is higher for certified natural, and higher still for organic, so this appears to be a more important decision in the economic return of producers. In the nature feed groups in this project average carcass weights were higher than those feed commercial feed (exception Cornish confinement raised). Visual observations during eviscerating, commercial feed groups had higher fat content removed and fat was oilier in texture than natural group. This may be the result of a more balanced ration or differences in quality of feed ingredients between the 2 feed types of feed (both were 20% protein).



## **Assessment**

The Kosher King and Buff Orpingtons appear to be more resistant to disease and stresses caused by weather conditions. But due to the slower growth rate in these 2 breeds, the Cornish Cross remains the most economical to produce. These birds can be grown in a shorter time frame and are easiest to process, requiring less time on the finishing table.

From this project it appears that forage consumption does not provide adequate nutrition to reduce supplemental grain intake. However, we did not test meat samples for nutritional value for human consumption. This step may add support to the value of grass-fed meat products thereby assisting farmer in marketing of their poultry. This may allow for increased price per pound offsetting additional cost associated with labor and land resources needed in pasture pen or free range feeding systems.

Time required in care and feeding varied more between farmers than between housing system. Management experience, facility layout and distance from storage area had an impact on labor required. As anticipated pasture and free range systems required more time than confinement raised birds. The couple working with the free range group was new to this management system which added time required as they worked through the project.

## **Adoption**

We will continue to raise birds using the pasture pens at Wild Geese Farm and each of the participating producers plan to continue with their same housing systems. What has come from the project is the generation of new ideas regarding feeding. In addition at our farm we will continue to raise the Cornish Cross Broilers for meat sale and the occasional Buff Orpington that comes along with a group of pullets. We will continue to focus on development of pasture area for our birds and buy a quality grain supplement. We are going to try a 16-18% protein feed versus a 20% for the 2005 season.

## **Outreach**

A farm tour was held at our farm during the growing period which allowed farmers and perspective farmers to view project and ask questions concerning production methods. Photos were shared showing the set up at other participating grower's facilities. Processing days were open to perspective producers as a teaching/demonstration day; four individuals chose to participate.

The "Economic Impact of Feeding Methods on Small Scale Poultry Production" fact sheet is in the final stages of formatting. This will be made available to anyone upon request and available on the Allegany/Cattaraugus Cornell Cooperative Extension web site.

**Report Submitted by: Lynn A. O'Brien on behalf of John Simpson, March 29, 2005.**

## Appendix 1

Date: May 3, 2004

To: Janice Brown & Kim Shaklee  
Tony & Gloria Iacono  
Beth Dennis  
Dave Wesche

From: John & Lynn

Re: SARE Poultry Project

Hi All,

We wanted to update our fellow growers with important dates for the SARE project. To begin with THANK YOU for agreeing to help us out!

The Kosher King chicks will be arriving May 26 or 27, and the others will be arriving May 27 or 28. We will be delivering equipment (let us know what you need if you have not already done so), bedding and feed on Monday May 24<sup>th</sup> and expecting to deliver chicks during the morning on 26 and 27<sup>th</sup>.

We will be using a 20% protein feed for both groups. The "commercial group" will be fed 100# of medicated starter and finished on non-medicated feed from local mills. The "natural group" will be fed non-medicated certified natural feed from start to finish (no additives-antibiotics, hormones, animal proteins). All birds will receive vitamin & mineral supplement in water (will be supplied). Each pen of chickens will have 40 birds.

We will also provide you with a data sheet to record time spent in daily care, any loses of birds and cause, total pounds of feed per pen (please bring excess feed to processing day to be weight and subtracted), bedding usage, etc.

Processing days are scheduled for July 24 (Cornish), July 31 (Kosher), and August 7 (Bufs). Please let us know which dates you will be available to assist in processing. These will be long days as we will have ~240 birds per processing day and will need to weigh groups in before and after processing. Growers will receive ~75% of the birds as payment for daily care and record keeping, the remaining birds will be used to educate consumers at farmers markets. Individuals that participate in processing days will receive payment based on number on hours (mid-September following project completion and receipt of payment from SARE). We will be looking for outside processing help so if you are aware of some good hands please let us know. Any equipment we purchase will be for sale at the end of the project, growers will have first change to purchase items if interested (we'll put together list and prices once orders received).

If you have any questions, please feel free to give us a call 585-437-5433. We have an answering machine so if you leave a message please let us know the best time to call back. If you'd rather not talk to the machine it's best to call between 9-10 PM or you can reach Lynn at the extension office 585-268-7644 ext.18 or cell number 716-498-3783.



## Sample Data Sheet

[illegible]

## Appendix 3

### Poultry Consumer Survey - Results 2004 Farmers Markets – Belmont, Cuba, Franklinville, Olean

**1. Have you ever purchased chicken directly from a farmer?**

83% No

17% Yes, 75% Pasture Raised        Free Range Raised 8% Confinement Raised  
       Organic 17% Not Sure

**2. How many times a week do you eat chicken?**

0-1: 17%    1-2: 43%    3-4: 37%    More: 3%

**3. When you purchase chicken (regardless of location, i.e. Farm Market, grocery store), do you buy:**

14% Whole Bird    9% Processed Products  
58% Parts    19% Whatever's On Sale

**4. When you buy meat (regardless of type, i.e. chicken, beef, pork) do you look for products labeled...**

9% Organic    13% Natural  
11% Locally Grown    67% Whatever's There



## Appendix 4

**Direct Mailing to Poultry Producers/Perspective Producers (48 pieces - Also sent as news release to local papers)**

Date: June 28, 2004

To: Poultry Producers

From:

Lynn A. O'Brien  
Resource Educator

Re: Poultry Gathering

We will be hosting a poultry meeting for current and prospective poultry producers on Thursday July 15, 2004 beginning at 7 PM at the Wild Geese Farm in Rushford. Participants will have an opportunity to learn more about the SARE Farmer/Grower research project (comparing feeding methods and breeds) and observe the chickens being raised in portable pasture pens.

Whether you're looking for ideas or have ideas to share, we hope you will be able to join us, rain or shine. Directions to the site are given below but feel free to call me at 1-888-256-2762 ext 18 if you need directions from a specific location.

Directions to Wild Geese Farm

From Cuba: Take Route 305 North, turn left onto North Shore. Follow around Cuba Lake to Rawson Rd, turn right. Stay on Rawson (7-8 miles) to Hardy Corners Rd make right on Hardy Corners Rd take first left onto Aggett. Farm is first place on the left, big barn with blue roof.

From Belmont: Take Route 19 North to Caneadea, turn left onto Route 243 (6 miles) to Rushford. Past Jac n' Mary's Restaurant take first left on Main St. Follow Main St to 4-way stop light at Rushford Corner Market and turn left. Continue out of town past school (3 miles) to first right, Aggett. Farm is first place on the left, big barn with blue roof.