

Economic Impact of Feeding Methods on Small Scale Poultry Production

By: Lynn A. O'Brien, Resource Educator Cornell University Cooperative Extension

Best utilization of resources is essential for small scale farming operations. 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.

Project Activities

Three breeds of chickens were raised in each of 3 systems, half fed 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 41 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 a second farm. All feed was purchased from one source and weighed per group to determine total pounds fed to each of the 18 individual groups.

The 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.

Chicken samples were 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 of the 3 breeds required different growth period to reach fryer stage.

Table 1. Summary of Production Results

# 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.

Conditions

Initially the late arrival of the Cornish cross and 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 a rapid increase in temperature that resulted in heat stress in the birds. The only late losses in the Buff Orpingtons were the result of hawk predation, 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 birds 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 groups on natural feed during 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 to on the finishing table.

From this project it appears that forage consumption does not provide adequate nutrition to reduce supplemental grain intake. As noted earlier this may have been impacted by forage quality that was lower than normal due to extremely wet weather conditions.

Meat samples were not tested for nutritional value as it relates to human consumption. This step may add support due to the value of grass-fed meat products thereby assisting farmer in marketing of their grass-fed poultry. This may allow for increased price

per pound off setting additional cost associated with labor and land resources needed in pasture pen or free range feeding systems.

The time required in care and feeding varied more between individual farms than between housing system. Management experience, facility lay out and distance form storage area all has an impact on labor required. As anticipated pasture and free range systems required more time than confinement raised birds.

Collaborating Farmers

Pasture Pen Raiser

John Simpson & Lynn O'Brien
Wild Geese Farm
8499 Agett Rd
Franklinville, NY 14737
585-437-5433
wildgees@localnet.com

Free Range Raiser

Gloria/Anthony Iacono
6989 Coyle Hill Road
Friendship, NY 14739
585-365-8128

Confinement Housing Raisers

Kim Shaklee & Janice Brown
3642 Worden Road
Canaseraga, NY 14822
585-466-7680

Raymond & Beth Dennis
182 Dalton Road
Angelica, NY 14709
585-466-7191

Dave Wesche
249 Middle Road
Angelica, NY 14709
585-466-7952

Technical Advisor

Lynn A. O'Brien, Resource Educator Cornell University Cooperative Extension
5435A County Road 48, Belmont, New York 14813
Phone: (585) 268-7644 ext. 18
Fax: (585) 268-5939
lao3@cornell.edu

This project was funding in part through a Northeast SARE Farmer/Grower Grant. Funding for the work reported in this fact sheet was provided by the USDA Sustainable Agriculture Research and Education Program. Fact sheet prepared and printed through Cornell University Cooperative Extension Allegany/Cattaraugus County New York.