



ECONOMIC FEASIBILITY OF RAISING FAYOUMI, ALBALADY, AND BLACK AUSTRALORP BREEDS FOR EGG PRODUCTION IN NARC, ISLAMABAD, PAKISTAN

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Abstract

This research examines the business potential of running Fayoumi, Albalady, and Black Australorp chickens as an egg production farm under consistent controls at NARC Islamabad. Three hundred hens representing all breeds entered the 52-week test production period. Our team tracked farm numbers of eggs produced alongside average egg weight measurements and determined how much feed chickens took in. Additionally they recorded labor hours put in with bird losses and current farm egg market prices. The evaluation of breed performance used economic indicators like gross margin, cost-benefit ratio and return on investment. The Fayoumi breed generated better returns on investment compared to all other breeds because it used less food and saw few bird deaths while producing small eggs at affordable prices. The Black Australorp produced the most marketable eggs for highest revenue yet needed extensive feeding programs since it needed more feed and had higher death rates. The Albalady birds produced at an average rate while experiencing high death rates that hurt company profits. Breed selection should focus on farm profits combined with native environment tolerance. The Fayoumi chicks make the best choice for small-scale farmers while Black Australorps do better in larger commercial poultry production. The findings will benefit poultry experts and authorities who can support Pakistani poultry breeders to develop more profitable and sustainable egg farming systems.

Keywords: “Fayoumi, Albalady”, “Black Australorp”, “Egg Production”, “Roi”, “Cbr”, “Feed Efficiency”, “NARC”, “Pakistan”

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INTRODUCTION

The livestock sector of Pakistan depends heavily on poultry farming because it enhances food security while creating rural job opportunities for economic progress. Affordable protein sources create an increasing need in the market which has made egg production an essential part of the sector. Microbial assays present a promising opportunity to recover underutilized microbial resources and produce microbial anti-oxidative proteins beneficial to the poultry industry (Zubair et al 2022; Javaid et al., 2023; Rehman et al., 2022). Pakistan exhibits a preference for Fayoumi and Albalady along with Black Australorp breeds because of their distinctive features among all other local breeds. Scientists recognize Fayoumi from Egypt for its exceptional properties related to climate strength and viral defense and its optimal feed conversion traits for household chicken farming systems (Ahmed et al., 2020). Black Australorp demonstrates global distinction through its abundant egg production and significant eggs dimension and commands popularity among commercial businesses although its expensive feed needs and intensified maintenance requirements (Nawaz, et al., 2020; Hussain et al., 2021). Economic studies on the controlled environmental performance of the Middle Eastern breed Albalady remain scarce while its productivity falls between average and high (Khan et al., 2022). The economic aspects of poultry breeds require full understanding by farmers and

stakeholders to help them make sound investments within the poultry industry. Research on biological performance has outweighed research on economics and these gaps persist in literature (Sadiq, 2021; Nasir et al., 2023). The research contributes to closing a major gap in knowledge by analyzing the economic feasibility from a gross margin perspective as well as cost-benefit ratio (CBR) and return on investment (ROI) under identical management conditions in National Agricultural Research Centre (NARC) Islamabad facilities. This study includes multiple profitability factors including feed costs, mortalities, labor distribution and market egg rates (Farooq et al., 2020; Iqbal & Mahmood, 2021; Anjum et al., 2022; Malik et al., 2023). Sustainable poultry development in Pakistan demands immediate assessment of financial outcomes for different poultry breeds because both prices are escalating for poultry feed and local consumers are showing increased egg consumption (Bashir et al., 2021; Tariq et al., 2022). This research examines a production period spanning 52 weeks through tests run on 300 hens split into three separate breeds to generate evidence-based input for farmers together with poultry entrepreneurs and researchers along with government policymakers. The collected data can support breeding decisions for Pakistani food security through economic performance objectives.



RESEARCH METHODS

Study Site

The study was conducted at the National Agricultural Research Centre (NARC), Islamabad, over 52 weeks.

Experimental Design

A total of 300 hens—100 from each breed (Fayoumi, Albalady, and Black Australorp)—were maintained in standardized housing systems with equal feed rations and health protocols.

Data Collection

Weekly data on feed intake, egg production, egg weight, mortality, labor, and input costs were recorded. Output prices were based on local market values.

Economic Analysis

Key indicators included:

- Total Cost of Production

- Revenue from Egg Sales
- Gross Margin (Revenue - Variable Costs)
- Cost-Benefit Ratio (CBR)
- Return on Investment (ROI)

RESULTS

The economic performance of the three poultry breeds—Fayoumi, Albalady, and Black Australorp—was evaluated over a one-year production cycle. The findings are presented in four key tables and explained below.

Egg Production and Mortality

The Black Australorp hens gave 252 eggs per year with 56g eggs yet died at 10% due to being large and easily stressed. Fayoumi hens created 215 eggs per year and had the lowest death rate of all breeds because they survived intensely. Albalady reached a middle level in total egg output at 198 eggs but kept a normal mortality rate of 7% alongside an average end result for each egg at 50 grams.

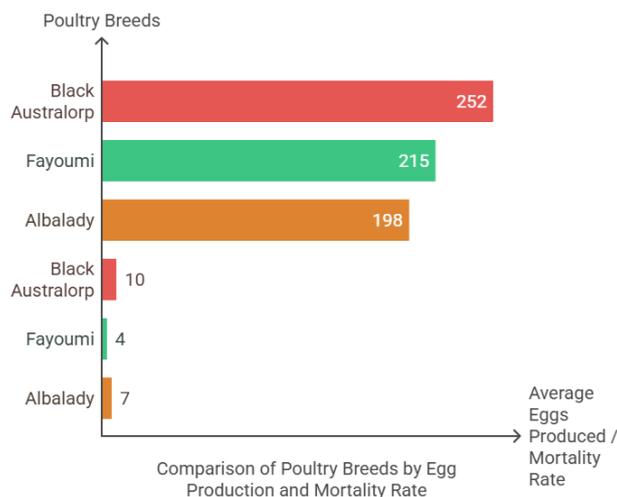


Fig 1: Egg Production and Mortality Rate by Breed (Annual Averages)

Table 1: Egg Production and Mortality Rate by Breed (Annual Averages)

Breed	Total Eggs/Bird/Year	Avg. Egg Weight (g)	Mortality Rate (%)
Fayoumi	215	48	4
Albalady	198	50	7
Black Australorp	252	56	10

Feed and Management Costs

The lowest poultry feed expenses during one year belonged to Fayoumi at PKR 2,200 while Albalady used PKR 2,400 and Black Australorp needed PKR

2,700. Fayoumi chickens had the smallest health care and operation expenses at PKR 3,000 per year. The Black Australorp produced more but had total production expenses of PKR 3,600 per bird because of its large feeding and care needs.

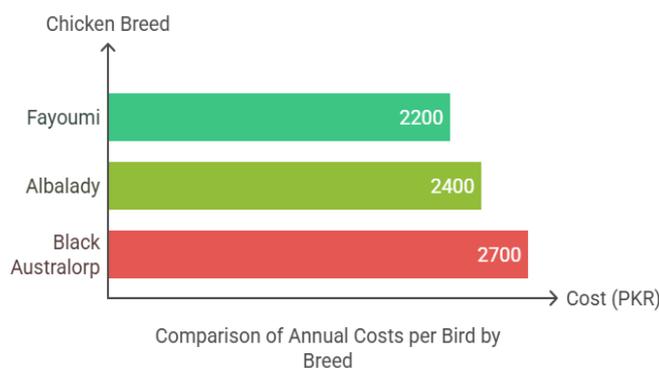


Figure 2

Table 2: Feed and Management Costs per Bird (PKR/year)

Breed	Feed Cost	Health & Labor	Total Cost
Fayoumi	2,200	800	3,000
Albalady	2,400	850	3,250
Black Australorp	2,700	900	3,600

Revenue and Gross Margin

Black Australorp made the highest profits of PKR 6,300 because it laid more eggs at better market rates. The Fayoumi chicken delivered 4,730 PKR in

value along with a 1,730 PKR gross margin through efficient operations. Albalady made PKR 4,554 with limited revenue of PKR 1,304 because the hens produced fewer eggs while experiencing death.

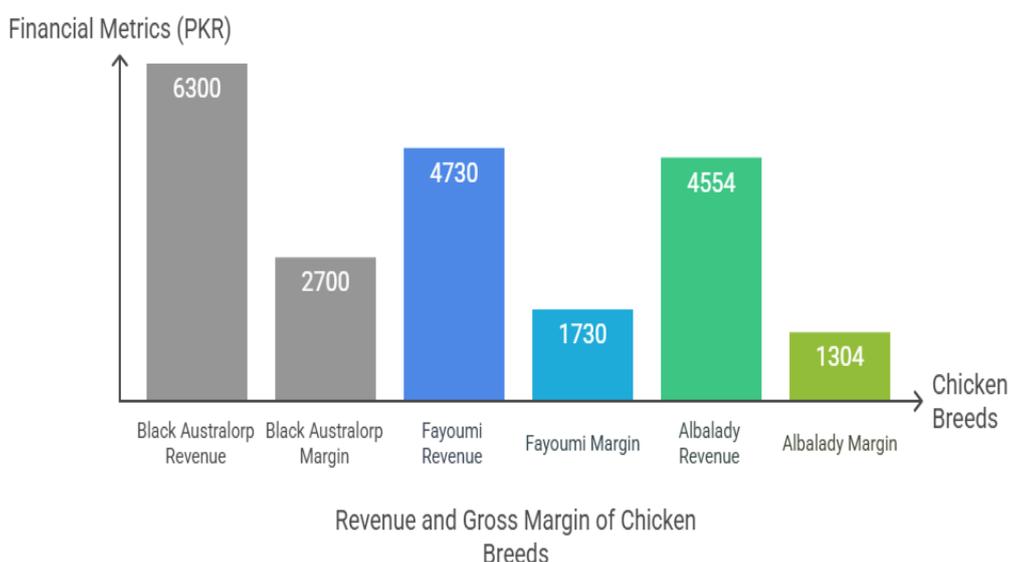


Figure 3

Table 3: Revenue and Gross Margin per Bird (PKR/year)

Breed	Avg. Market Price/Egg	Total Revenue	Gross Margin
Fayoumi	22 PKR	4,730	1,730
Albalady	23 PKR	4,554	1,304
Black Australorp	25 PKR	6,300	2,700

Economic Indicators

The Black Australorp had the major return on investments of 75 percent in addition to the vectors

ratio, which was 1.75, and, as mentioned before, high management charge. Low-cost and modest scale farming can be adequately supported by fayoumi since it provided the most appropriate ratio

of return on investment and capital brecently applied ratio of 57.6% and 1:1.57 respectively. Albalady had the lowest ROI at forty -one point one percent and

CBR at ratio of 1:1.40 which all denotes that it requires better management compared to the other three firms.

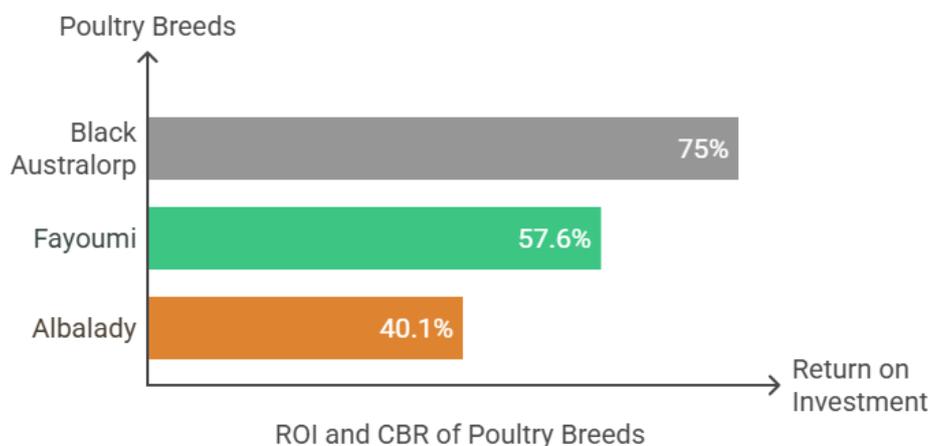


Figure 4

Table 4: Economic Indicators by Breed

Breed	ROI (%)	Cost-Benefit Ratio
Fayoumi	57.6	1:1.57
Albalady	40.1	1:1.40
Black Australorp	75.0	1:1.7

DISCUSSION

Black Australorp produced the most eggs and offered the best financial advantage under high-management conditions that allowed additional feed and care investments. Research results presented both high mortality levels and revealed the pressing necessity for enhanced housing structures and environmental supervision systems (Zia et al., 2021; El-Tarabany & El-Bayomi, 2023; Khan et al., 2022).

Fayoumi provides stable egg output while achieving high survivor rates at low cost levels which suits backyard farmers therefore supporting previous

studies about its durability and disease immunity (Farooq et al., 2021; Moges et al., 2010).

Albalady displayed average production characteristics together with elevated mortality rates rendering it less profitable unless the breed receives better genetic enhancement combined with disease management (Latif & Hussain, 2023; Saeed., 2023).

CONCLUSIONS

The research reveals Black Australorp produces the biggest revenue but Fayoumi generates superior return on investment when using basic inputs. The development of poultry programs in Pakistan should

be guided through practical economic strategies based on specific breeds. Extension services need to create recommendations that match individual farmer assets with their specific environmental conditions.

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