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A COMPARISON OF THE PROFITABILITY OF REARING GEESE AND DUCKS ON A FAMILY FARM

Introduction

One of the main segments of the global food economy is the animal products sector. The agri-food industry, and poultry farming in particular, play a vital role and attract considerable consumer interest. The consumption of eggs or meat is widely accepted among interested buyers, and an additional attribute that increases demand is that it is permitted for consumption by people of all religions worldwide. The main factor in the development of poultry product sales outlets is the exceptional nutritional value of eggs and poultry meat. The ease of keeping and breeding animals is characterised by the very high efficiency of feed utilisation and the widespread potential to reduce costs associated with mechanisation in the production process, thereby significantly lowering the prices of animal products. [Mroczek et al. 2018].

Intensive adherence to the principles of healthy, rational nutrition and a marked increase in consumer awareness in recent years have led to greater consumption of poultry products and meat. According to the FAO/WHO, poultry meat has been recognised as one of the most valuable dietary components because it is a source of complete animal protein. It has a higher nutritional content than beef or pork due to its lower collagen and connective tissue content and higher protein content. An additional advantage of poultry meat is that it is easily digestible and provides a wide range of nutrients and minerals, including potassium, phosphorus, sodium, iron, and calcium. The short preparation time, relatively low price, high flavour and taste qualities, and wide availability of

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poultry products have led to a noticeable increase in demand for them [Duma et al. 2016].

Due to the ease of maintenance and the climate, waterfowl breeding and rearing are particularly beneficial for the country and individual farms in terms of financial inflows. The speed of maturation and ease of reproduction translate into lower rearing costs, making the product readily available and in high demand on domestic and international markets. The populations of ducks and geese increase particularly during the summer, when producers can provide the most favourable rearing conditions, with access to feeding grounds. It is not only the easiest time to obtain chicks, but also the most profitable time for production due to weather conditions and temperature.

Currently, approximately 50% of the global poultry meat production is located in China, Brazil and the United States. The structure of domestic poultry farming can be broken down as follows: 85% chickens, 7% turkeys, 4% ducks, 3% geese, and 1% other domesticated birds. [Mroczek et al. 2018].

The poultry industry is one of the most rapidly developing sectors with an established position on the Polish and foreign markets. In Europe, a significant decline in duck production was recorded in 2019-2020, while our country was the only one to show an upward trend. In 2021, as much as 78% of the world's duck meat production was produced in Poland. Poland is followed closely by China, which is the largest poultry producer overall. Only in the case of turkeys does this country give way to the United States.

According to ARiMR data from 1 July 2024, there were 9,799 poultry farms registered in Poland, which kept 380.4 million poultry. The most significant number, 352.5 million, was chickens, followed by 16.8 million turkeys, 5.9 million ducks, 4.8 million geese, and 0.4 million guinea fowls, Japanese quails, bar-headed geese, muscovy ducks, ostriches and garbonose geese. [https://www.topagrar.pl/notowania/drob-i-jaja/polska-nadal-jest-liderem-w-produkcji-drobiu-co-czeka-drobiarstwo-2516247 (accessed on 21 April 2025).

The rapid pace of development in this area of production is clearly visible, as Poland offers favourable environmental and climatic conditions for this species of waterfowl. Polish researchers are working to select the appropriate duck genotype for a given region to achieve the highest possible efficiency in breeding, veterinary prevention, and feeding methods. [Biesiada-Drzazga et al. 2018].

The growing problem of avian influenza is becoming increasingly visible, posing significant economic risks and causing uncertainty among consumers. Although avian influenza does not pose a threat to humans consuming the product, the most frequently affected animals are disposed of. A country where an outbreak of avian influenza has been detected is prohibited from exporting poultry and poultry products from the affected region. It also depends on the extent of the problem; sometimes the entire country is affected, resulting in significant financial losses.

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There are many strains of avian influenza, which are assigned the following symbols: H5N1, H5N5, H5N8, HPAI. The viruses are genetically variable and spread very rapidly, which is why, in many cases, preventing the development of infection is crucial.

According to data from the Chief Veterinary Inspectorate, in the first three months of 2025, 47 outbreaks of avian influenza were detected in commercial flocks in Poland, and 10 outbreaks were detected in farms keeping birds exclusively for their own use. Between January and 17 March 2025 alone, 3.2 million poultry were culled as a result of avian influenza [Troska 2025].

This study aims to compare the profitability of goose and duck farming on a family farm. The study considers research findings showing significant differences in profits and costs across farms raising different species of waterfowl. The paper describes the conditions required to maintain basic animal welfare. The study was conducted on a family farm in the municipality of Olszewo Borki, Ostrołęka County.

Aim, subject and method of research

The study subjects were two flocks of geese and ducks, totalling 5,000 birds, observed at various intervals from placement until slaughter. The experiment was conducted at a family farm in the municipality of Olszewo Borki. The primary objective was to illustrate the profitability of production and the factors underlying differences in breeding practices. The first object of the study was geese, and the second was ducks, with 5,000 chicks placed in the poultry house.

Both the goose and duck flocks were subject to the study from the moment the chicks were contracted to the farm until their final sale for slaughter. The first observation of the goose flock was carried out in the summer, from 24 April 2023 to 14 August 2023, over a period of 16 weeks. The second observation of the ducks took place from 15 February 2024 to 28 March 2024, spanning 6 weeks. On the farm in question, the geese were reared for 112 days and the ducks for 42 days.

The research method consisted of comparing profitability ratios, i.e., net profit from the sale of ducks and geese. The study aimed to calculate the profit generated and determine the level of profitability using all the tangible and intangible resources available on the farm.

The study of the goose and duck flocks aimed to specify all production costs for both rearing cycles, including feed, water, electricity, gas, litter, veterinary services, taxes, unloading and loading services, disinfection, own and casual labour, and to compare the income from sales. The profits and costs presented are average amounts based on data from purchase invoices and purchase and sale agreements from the farm.

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The parameters used to determine the profitability index for breeding two flocks of poultry included the income and expenditure book, as well as calculations of income, expenses, profits and losses. In addition, to assess animal growth, weight analyses were conducted on geese at 6, 12, and 16 weeks of age and on ducks at 1, 4, and 6 weeks of age. In both flocks, the study consisted of selecting a random batch of 10 live geese and ducks and weighing them using an electronic platform scale. The information on weight gain was used to analyse various actions taken, such as increasing or changing the feed ration, or the final decision after reaching the optimal weight and sending the flock to slaughter.

The breeding log served as a source of comments throughout the production period for ducks and geese. The main aspects of comparison and analysis of conclusions were primarily: the price of livestock, the length of the rearing period, the method of feeding and feed availability, the course of work with bedding and labour, loading, the likelihood of disease, access to pastures and paddocks, and the maintenance of welfare. All these factors are of great importance to the breeder when comparing the rearing of geese or ducks.

Research results

In order to present the differences in the profitability of goose and duck production, three types of research were included in the analysis:

- observation of measurements of poultry growth based on weight
- calculation of costs incurred and revenues obtained
- observation of breeding differences

The first study consisted of observing differences in weight gain across different weeks of their lives. One key factor for these birds is their appropriate weight. Based on measurements of the average weight of a flock of geese or ducks, we obtain key information about the direction of production and whether breeding will ultimately result in a profit or a loss. Both geese and ducks can vary in weight depending on how they are fed and the conditions they are kept in. The weight of birds also depends on several factors, such as breed – some breeds of geese are known for their greater body weight, while others are lighter.

Nevertheless, breeding conditions, such as feeding and access to space, can affect growth rate and final weight. The selected measurement method is an electronic platform scale.

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Table 1. Average growth weights over rearing cycles from 6-16 weeks using a random sample of 10 geese.

No.	*Weight at 6 weeks Weight at 6 weeks [g]*	*Weight 12 weeks Weight 12 weeks [g]*	*Weight 16 weeks [g]*
Goose 1,	*3150*	*4950*	*6120*
	2903	*4860*	*6205*
Goose 3	*3105*	*4985*	*6004*
Goose 4	*3124*	*4894*	*5980*
Goose 5	*3003*	*4980*	*5900*
Goose 6	*2960*	*4920*	*6010*
Goose 7	*3210*	*4825*	*6050*
Goose 8	*3230*	*4946*	*6210*
Goose 9	*3058*	*4952*	*6020*
Goose 10	*2980*	*4890*	*6140*
Total average weight Total average weight	*3072*	*4920*	*6063*

Source: Own calculation based on breeding diary data of average gains.

Ten randomly selected birds were weighed individually on electronic scales at intervals during their growth period. After the final measurement, the average was calculated and compared with the standard weight for the given bird species, and a visual assessment was made based on breeding standards.

Table 1 shows the weight of geese based on average growth measurements between 6 and 12 weeks of age. On average, weight increased by 60%, while between 12 and 16 weeks of age, it increased by 23%. Table 2 shows the weight of ducks at 1-4 weeks of age, after which the average weight increased by 326%, while at 4-6 weeks of age, the weight increased by 134%.

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Table 2. Average growth weights of ducks over rearing cycles from 1-6 weeks using a random sample of 10 ducks.

No.	*Weight 1 week* ***Weight 1 week*** *[g]*	*Weight 4 weeks Weight Week 4 [g]*	*Weight Week 6 Weight Week 6 [g]*
Duck 1	*225*	*1565*	*3250*
Duck 2	*230*	*1580*	*3700*
Duck 3	*240*	*1590*	*3800*
Duck 4	*210*	*1540*	*3300*
Duck 5	*242*	*1585*	*3350*
Duck 6	*230*	*1550*	*3600*
Duck 7	*250*	*1620*	*3650*
Duck 8	*210*	*1550*	*3500*
Duck 9	*220*	*1560*	*3550*
Duck 10	*215*	*1580*	*3300*
Total average weight Total average weight	*227*	*1572*	*3500*

Source: Own calculation based on breeding diary data of average increments

Tables 1 and 2 show rapid growth in the first weeks of life, while in subsequent weeks the increase is significantly lower. In general, during the final phase of rearing, the weight remains almost unchanged, varying by only a dozen or so grams. As a result, the breeder needs to collect the flock as soon as possible and send the fattened geese or ducks for slaughter—each subsequent week of rearing beyond the optimal weight results in excessive production costs.

The presented research results show that the average weight achieved is satisfactory for each rearing cycle compared to the standards adopted for poultry. It should also be remembered that the weight of animals after delivery to the slaughterhouse may vary slightly due to loading and transport, as well as driver downtime, during which the animals remain without food and water for several hours or more, and their final weight decreases.

The second study was a calculation of all costs incurred in rearing geese (16 weeks) and ducks (6 weeks).

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Table 3. Costs incurred in rearing geese and ducks

Cost	*Geese (16-week cycle)* *Geese (16-week cycle)*	*Ducks (6-week cycle)* *Ducks (6-week cycle)*
Disinfection of the building *Disinfection of the building*	*PLN 2,000*	*PLN 2,000*
Flock insertion (purchase of chicks) *Flock insertion (purchase of chicks)*	*PLN 90,000.00*	*PLN 24,250.00*
Feeding (purchase of fodder) *Feeding (purchase of fodder)*	*PLN 140,000.00*	*PLN 50,000*
Mulching (purchase of straw) *Mulching (straw purchase)*	*PLN 12,000.00*	*PLN 8,000.00*
Heating of the building (purchase of gas) *Heating of the building (purchase of gas)*	*PLN 2,000.00*	*PLN 2,000*
Lighting - electricity consumption *Lighting - electricity consumption*	*PLN 10,000*	*PLN 2,000.00*
Staff remuneration *Staff remuneration*	*PLN 18,000.00*	*PLN 7,000.00*
Veterinary services, medicines *Veterinary services, medicines*	*PLN 15,000.00*	*PLN 3,000*
Loading - employee remuneration *Loading - employee remuneration*	*PLN 10,000.00*	*PLN 4,000.00*
Poultry disposal *Disposal of poultry*	*PLN 2,000.00*	*PLN 1,000*
Depreciation + (purchase of new machinery or parts) *Depreciation + (purchase of new machinery or parts)*	*PLN 20,000*	*PLN 5,000.00*
Taxes and insurance *Taxes and insurance*	*PLN 3,000.00*	*PLN 1,000.00*
Financial obligations – loan repayment *Financial obligations – loan repayment*	*PLN 24,000.00*	*PLN 5,000.00*
Other costs *other costs*	*PLN 30,000.00*	*PLN 5,000.00*
Total costs: *total costs*	*PLN 378,000.00*	*PLN 119,250.00*

Source: own compilation based on the farm income and expenditure book.

Table 3 presents a comparison of the costs associated with rearing one flock of geese and one flock of ducks. The costs incurred for rearing ducks were significantly lower. It is mainly because the goose-rearing system is 10 weeks longer, resulting in significantly higher costs. It should also be noted that ducks are 3 times lighter, so the price per carcass will be much lower. On the farm

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analysed, all costs associated with rearing geese are more than 217% higher than the costs incurred in rearing ducks.

Table 4. Average sales value of ducks and geese – revenue

Type of poultry *Type of poultry*	Number of units *Number of units*	Quantity kg *Quantity kg*	Price per kg *Price per kg*	Average weight per unit in kg *Average weight per unit in kg*	Value in PLN Value in PLN
Geese	5,000	30,000	15.30	6	459,000.00 PLN
Ducks	5,000	17,500	7.50	3.5	PLN 131,250

Source: own elaboration based on the transfer of carcasses to the slaughterhouse and contract price

The average weight of geese is 58% higher than the average weight of ducks. The price per goose carcass is also twice as high as that of a duck. The value obtained for 5,000 geese was PLN 327,750.00 higher than that for the same number of ducks, as shown in Table 4.

Table 5 Income generated from rearing geese and ducks.

Type of poultry *Type of poultry*	Revenue *Revenue*	Costs *Costs*	Income *Income*
Geese	PLN 459,000	PLN 378,000.00	PLN 81,000.00
Ducks	PLN 131,250.00	PLN 119,250.00	PLN 12,000.00

Source: Own compilation based on the obtained income and expenditure books

Based on the income and expenditure book kept by the poultry farm, a final economic analysis of the project was carried out, which determined whether the costs incurred were not higher than the income. The final financial results showed that the farm made a profit during the period. The income from geese was 675% higher than that from ducks, as shown in Table 5.

Due to our experience in poultry farming, we consider the two flocks presented above to be average due to various variables related to production, including the occurrence of diseases, deaths and weight gain in grams, broken down by week, and above all, the variable price of carcasses caused by various factors on the market.

From the above tables, the profitability in a given period of poultry production was as follows.

Goose breeding: PLN 81,000.00 (income) : 112 (days) = PLN 723.21/day
Duck farming: PLN 12,000.00 (income) : 42 (days) = PLN 285.71/day

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The study showed that, calculated per working day, goose breeding is definitely more profitable. The difference in profitability between duck and goose breeding was PLN 437.50/day, which means that the profit on a flock of geese is 253.12% higher than on a flock of ducks.

Summary and conclusions

The profitability of goose and duck production is linked to many factors that determine satisfaction and financial success. An important aspect is the increase in demand for healthy poultry meat in Poland and worldwide. To discuss profitability, there must be an appropriate balance among maintenance costs, sales prices, and supply and demand. The lower purchase prices of chicks and feed relative to the higher price of the carcass sold should ensure a good financial result, which will translate into achieving the intended goal. [Wojciechowski, Mońko 2015]

Improved farm management and the introduction of appropriate preventive measures to enhance poultry's immune status can undoubtedly also yield significant financial benefits for the farm. The right choice of breeds and varieties, maintaining proper rearing conditions, and appropriate hygiene and disinfection can eliminate most of the risks that threaten the success of flock management. Ensuring the proper health status of the flock from the very beginning of rearing will unconditionally translate into the productive potential and physiological condition of the animals. [Urbanowski 2015]

On the farm analysed, particular attention is paid to animal health and welfare. Due to the high costs of treatment and increasingly stringent restrictions under current EU regulations, poultry producers are trying to reduce the use of medicines and antibiotics and are introducing preventive measures in animal treatment instead. It is of great importance in terms of economic benefits, as preventing the spread of disease significantly reduces deaths and ensures the quality of the livestock produced is sufficiently high.

The study shows that the poultry production business is being run correctly. Producers minimise the risk of a crisis on the farm by rearing two species of poultry (ducks and geese) throughout the calendar year, using their own material resources and physical capabilities. This approach strengthens their stable position in the event of market fluctuations.

Based on our own experience and the literature cited, the following conclusions can be drawn:

1. Measuring the weight of birds is one of the factors determining the proper conduct of animal production. According to the results obtained, the growth rate of ducks is significantly faster than that of geese:

• the average weight gain of geese between 6 and 12 weeks of age increased by 60% on average, while between 12 weeks and the final 16 weeks of age, the weight increased by 23%,

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• The average weight gain of ducks between 1 and 4 weeks of age increased by 326%, while between 4 weeks and the final 6 weeks of age, it increased by 134%.

2. The profitability of goose rearing is 253.12% higher than that of duck rearing, but the goose rearing cycle is 10 weeks longer.

3. Maintaining a flock of geese requires more labour due to the more extended rearing period and the need for daily grazing.

4. The longer period of maintaining a goose flock entails higher financial outlays and greater risk..

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Abstract

The study's subject of observation was a flock of geese and ducks reared in the same livestock facility under appropriate living conditions. The ducks were kept in a closed building, while the geese had free range and pasture. The study analysed two flocks: 5,000 ducks and 5,000 geese. The study is based on actual income and expenditure obtained from the documentation kept on the farm. The analysis showed that geese performed significantly better in terms of profitability, but that rearing them is much more demanding. After calculating and evaluating the farm, it was concluded that goose production is more financially attractive, but it is impossible to run it year-round due to the lack of grazing and access to pastures in winter.

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The study aimed to compare the issues and profitability of rearing geese and ducks using different husbandry methods, with identical flock sizes, and to assess the final financial outcome in the profitability study based on available farm documentation. The experiment was conducted in 2023 and 2024 on a family poultry farm in a building designed for waterfowl breeding.

The farm fully utilises its earning potential throughout the calendar year, maintaining alternating breeding, i.e. duck breeding in winter and goose breeding in summer.

After the experiment, which measured the birds' weight at the most crucial moments of rearing, it appears that the farm's profitability is significantly higher for geese than for ducks.

Keywords: costs, Goose, duck, poultry, profitability, agribusiness, issues

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