



Original Contribution

ANALYSIS OF FACTORS INFLUENCING THE PRIME COST OF SHEEP-BREEDING PRODUCTS IN OF CORIDEL BREED AND CORIDEL AND TEXEL CROSSBREED

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ABSTRACT

The aim of the current survey was to examine the influence of some factors on the prime cost of the sheep- breeding products (wool, weight gain for lambs).

For each of these factors (productivity, forage for ewes, etc), the factorial analysis may be expanded in relation to other factors that influence on their effective use.

The results of the survey indicate that the strongest influence on the prime cost of both products appears to be the productivity factor. Its increase reduces the product prime cost. This is the fundamental factor that influences the prime cost reduction in this specific model.

Key words: wool, weight gain for lambs, prime cost, productivity

INTRODUCTION

Prime cost is a monetary expression of the cost of production, implementation and management of production. It is one of the most important quality parameters characterizing the performance of the business. It reflected all the positive and negative aspects of production and economic activity, since it depends on the use of workforce and assets, the degree of efficiency of the organization of production, labor and management.

The prime cost is a compulsory element in determining the profitability of production and one of the main indicators of production efficiency. Level and its dynamics largely determine the level and dynamics of profitability and profit of the company. Reduction of its other conditions being equal

means increased profitability and competitiveness of production.

MATERIAL AND METHOD

The production costs are in themselves an expression of the investment made for any particular production in its variety of forms, which can be treated as production factors (1). Most crucial about the expenses is their amount per production unit or the product prime cost (2).

The aim of this study is to make a factor analysis of the prime cost of sheep-breeding products for sheep of Coridel breed and Coridel and Texel crossbreed in the sheep-breeding farm at KOS in the city of Yamlol.

This prime cost analysis is based on the isolated effect of some selected factors as well as on a database that shows the overall influence of these factors (3).

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RESULTS AND DISCUSSION

The analysis on the influence of these selected factors on the prime cost of 1 kilogram of wool for the crossbreeds is given in **Table 1**:

Table 1. Prime cost of 1 kilogram of wool for Coridel and Texel crossbreed at KOS farm, Yambol:

Y	X ₁	X ₂	X ₃	X ₄
1.11	6.256	44.05	26.43	33.04
1.50	6.442	101.38	50.69	59.91
1.58	5.605	71.75	49.33	76.23
1.22	6.114	77.24	38.92	41.77
1.18	6.318	66.32	44.32	39.12
1.34	5.840	77.12	44.32	41.17
1.62	5.702	88.92	46.12	43.36
1.31	5.712	91.07	39.16	41.18
1.19	6.313	78.82	41.06	38.86
1.66	5.312	79.66	43.12	48.81
1.55	5.706	77.22	39.91	42.12
1.25	6.202	62.12	34.18	39.96

Y – Prime cost of 1 kg of wool (BGN)

X₁ - Average yield of wool per ewe (kg)

X₂ - Material cost per ewe (BGN)

X₃ - Feed (BGN)

X₄ - Labor cost per ewe (BGN)

Coefficients of elasticity (E_i)

E₁ = -1,297

E₂ = 0.079

E₃ = 0.302

E₄ = 0.089

Coefficients of regression (a_i)

a₁ = -0.299

a₂ = 1.432

a₃ = 1.017

a₄ = 2,702

Standardized coefficients of regression (β_i)

β₁ = -0.55

β₂ = 0.108

β₃ = 0.344

β₄ = 0.162

Coefficient of determination (R²) = 0.8008

Coefficient of multiple correlation (R) = 0.894

The above results show that the yield of wool per ewe is the factor having the highest absolute and relative influence. Each increase of wool production by 1 % reduces the prime cost of this product by 1.3% (E₁ = -1.297).

The significance and the potential of this factor in the crossbreeds are the largest (β₁ = -0.55) compared to the other three factors. A factor that shows a considerable influence towards prime cost increase is the feed (in BGN per ewe) (β₃ = 0.344)

This factor analysis can go deeper with respect to finding out the influence of the feed cost, its quality, rationing patterns and others factors featuring the influence of the feed on the prime cost of 1 kg. of wool.

The influence of material cost and labor cost per ewe is insignificant, which means that reducing the prime cost per kg. of wool could be possible achieved by influencing the yield of wool and feed consumption. The coefficients of determination and multiple correlation are high, which means that the so selected factors for this model are determinant for the prime cost per kg. of wool with the crossbreeds.

An analysis of the factors influencing the prime cost per kg of live weight increase

with the crossbreeds is shown in **Table 2**.

Table 2. Prime cost of 1 kilogram of weight increase for Coridel and Texel crossbreed at KOS farm, Yambol

Y	X ₁	X ₂	X ₃	X ₄
2,49	21,98	44,05	26,43	33,04
4,89	23,75	101,38	50,69	59,91
4,77	20,81	71,75	49,33	76,23
2,96	22,14	77,24	38,92	41,77
3,14	22,85	66,32	44,32	39,12
3,58	23,16	77,12	44,32	41,17
5,37	27,74	88,92	46,12	43,36
3,29	23,47	91,07	39,16	41,18
2,63	22,33	78,82	41,06	38,86
5,72	22,79	79,66	43,12	48,81
4,68	23,08	77,22	39,91	42,12
3,79	24,13	61,12	34,18	39,96

Y – Prime cost of 1 kg of weight increase (BGN)

X₁ - Average weight increase of lambs prior to weaning (kg)

X₂ - Material cost per ewe (BGN)

X₃ - Feed (BGN)

X₄ - Labor cost per ewe (BGN)

Coefficients of regression (a_i)

a₁ = -0.257

a₂ = 0.00045

a₃ = 0.002

a₄ = 0.006

Coefficients of elasticity (E_i)

E₁ = -1,524

E₂ = 0.0009

E₃ = 0.213

E₄ = 0.640

Standardized coefficients of regression (β_i)

β₁ = -0.513

β₂ = 0.006

β₃ = 0.122

β₄ = 0.586

Coefficient of determination (R²) = 0.621

Coefficient of multiple correlation (R) = 0.788

The factor having the greatest influence on the prime cost of 1 kilogram of weight increase with the crossbreeds is the weight increase of lambs itself. This factor reduces the prime cost.

The influence of the cost-related factors (material cost incl. feeds, labor cost) is insignificant to prime cost which means that their potential to affect prime cost has been reduced to a large extent. Therefore, the main factor that may produce prime cost

reduction is the higher fertility and the higher rate of weight increase of crossbred lambs.

The analysis of the factors affecting the prime cost of 1 kilogram of wool for Coridel pure-breed sheep shows that most significant for prime cost reduction is the yield of wool (β₁ = -0.447 – **Table 3**)

Table 3. Prime cost of 1 kilogram of wool for Coridel breed ewes at KOS farm, Yambol

Y	X ₁	X ₂	X ₃	X ₄
1,24	5,674	44,64	26,79	33,48
1,33	5,803	93,90	56,34	61,03
1,55	5,441	68,18	45,45	72,73
1,48	5,728	76,32	39,71	41,27
1,39	5,861	69,31	41,36	38,91
1,42	5,517	75,82	47,23	41,56
1,73	5,489	82,47	43,92	43,80
1,46	5,417	83,56	38,62	41,92
1,28	5,836	71,62	44,58	39,24
1,76	5,637	74,95	46,32	48,97
1,58	5,531	66,89	37,64	42,33
1,37	5,436	57,42	35,73	40,58

Y – Prime cost of 1 kg of wool (BGN)

X₁ - Average yield of wool per ewe (kg)

X₂ - Material cost per ewe (BGN)

X₃ - Feed (BGN)

X₄ - Labor cost per ewe (BGN)

Coefficients of elasticity (E_i)

E₁ = -1,72

E₂ = 0.203

E₃ = 0.0018

E₄ = 0.0024

Coefficients of regression (a_i)

a₁ = -0.449

a₂ = 0.004

a₃ = 0.006

a₄ = 0.008

Standardized coefficients of regression (β_i)

β₁ = -0.447

β₂ = 0.319

β₃ = 0.0028

β₄ = 0.0052

Coefficient of determination (R²) = 0.812

Coefficient of multiple correlation (R) = 0.759

Each increase in the yield of wool by 1 % reduces the prime cost of this product by 1.7%

(E₁ = - 1.72).

A factor that shows a considerable influence towards prime cost increase is the material cost for the ewes (feeds cost not included). The aforesaid gives reasons for the assumption that precise analysis should be made for the influence of the other material costs such as medical treatment, current repairs and these expenses shall be well considered.

The coefficient of determination (R² = 0.812) shows the involvement of a large number of sheep breeding factors that influence on the prime cost of a kilogram of wool.

The analysis of the factors influencing the prime cost of a kilogram of weight increase for Coridel breed lambs shows once again the definite significance of the weight increase factor (β₁ = -0.678)

The weight increase of lambs by 1 kilogram reduces prime cost by 0.55 BGN.

Its high relative influence is identical since the weight increase by 1 % reduces the prime cost of weight increase by nearly 3% (E₁ = -2,99)

The influence of the remaining three factors is towards prime cost increase and yet this influence in this particular case is insignificant (**Table 4**)

This factor analysis can go deeper with respect to finding out the influence of the feed cost, its quality, rationing patterns and others factors featuring the influence of the feed on the prime cost of 1 kg. of wool.

The influence of material cost and labor cost per ewe is insignificant, which means that

reducing the prime cost per kg. of wool could be possible achieved by influencing the yield of wool and feed consumption. The coefficients of determination and multiple

correlation are high, which means that the so selected factors for this model are determinant for the prime cost per kg. of wool with the crossbreeds.

Table 4. Prime cost of 1 kilogram of weight increase for Coridel breed at KOS farm, Yambol

Y	X ₁	X ₂	X ₃	X ₄
2,69	20,35	44,64	26,79	33,48
4,86	21,67	93,90	56,34	61,03
4,86	19,71	68,16	45,45	72,73
3,19	21,18	76,32	39,71	41,27
3,36	22,36	69,31	41,36	38,91
3,71	22,85	75,82	47,23	41,56
5,12	23,56	82,47	43,92	43,80
3,93	23,20	83,56	38,62	41,92
2,84	21,65	71,62	44,58	39,24
5,32	21,87	74,95	46,32	48,97
4,81	22,51	66,89	37,64	42,33
3,68	22,76	57,42	35,73	40,58

Y – Prime cost of 1 kg of weight increase (BGN)

X₁ - Average weight increase of lambs prior to weaning (kg)

X₂ - Material cost per ewe (BGN)

X₃ - Feed (BGN)

X₄ - Labor cost per ewe (BGN)

Coefficients of regression (a_i)

a₁ = -0.549

a₂ = 0.0008

a₃ = 0.0008

a₄ = 0.0086

Coefficients of elasticity (E_i)

E₁ = -2,99

E₂ = 0.143

E₃ = 0.008

E₄ = 0.971

Standardized coefficients of regression (β_i)

β₁ = -0.678

β₂ = 0.109

β₃ = 0.006

β₄ = 0.013

Coefficient of determination (R²) = 0.685

Coefficient of multiple correlation (R) = 0.827

CONCLUSIONS

The influence of material cost and labor cost per ewe is insignificant, which means that reducing the prime cost per kg. of wool could be possible achieved by influencing the yield of wool and feed consumption. The coefficients of determination and multiple correlation are high, which means that the so selected factors for this model are determinant for the prime cost per kg. of wool with the crossbreeds.

The influence of the cost-related factors (material cost incl. feeds, labor cost) is insignificant to prime cost which means that their potential to affect prime cost has been reduced to a large extent. Therefore, the main

factor that may produce prime cost reduction is the higher fertility and the higher rate of weight increase of crossbred lambs.

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