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DETERMINANTS OF OUTPUT IN COMMERCIAL EGG PRODUCTION IN CALABAR, CROSS RIVER STATE.

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ABSTRACT

In the study, the effects of feed intake, mortality rate and floor space per bird on egg production in some commercial egg producing enterprises in Calabar and the efficiency of resource use (feed) by them were determined. A survey of fifteen farms that kept Lohman brown breed of birds were chosen for the study. The production records of the farms were used in obtaining information on feed intake (kg), mortality of birds, floor space (m^2) and amount of egg laid. A multiple regression analysis was carried out and the results indicated that, there was a significant and positive effect of feed intake (X_1) on egg output in farms in the area. The coefficients of mortality rate (X_2) and floor space (X_3) per bird carried negative signs and were significant at the 5 per cent level. The results further showed that the farmers were not efficient in their production with regards to amount of feed given to the birds. It was therefore suggested that, farmers should be advised to increase the amount of feed given to their birds as well as adopting good management techniques in their production.

The double logarithmic form was chosen as the lead equation and used in the discussion. The linear equation was rejected because the coefficient of feed intake (an important derterminant of egg output) was not significant. The coefficient of feed intake per bird (X_1), mortality rate (X_2) and floor space per bird (X_3) carried the expected signs. The adjusted coefficient of determination (R_2) indicated that the explanatory variables explained about 97 per cent of the variability in egg output while the F-ratio was 132.41.

The positive sign of the coefficient of feed intake (X_1) indicated that an increase or decrease in feed intake will lead to a corresponding increase or decrease in egg output. This is similar to results obtained by Effiom (1992). Sampson (1997), Ekong (1998). Mortality rate and floor space per bird. These coefficients were also significant at the 5 per cent level. These results also support the assertions of Wells (1981) and Oluyemi and Roberts (1988).

In the double logarithmic function, the coefficients represent the elasticities. Therefore, the elasticity of production with respect to feed was 0.201. This implies that a 10 per cent increase or decrease in feed intake will lead to 2 per cent increase or decrease in egg production respectively. The elasticities of production with respect to mortality rate and floor space per bird were 0.050 and 0.103 respectively. Implying that a 10 per cent increase in mortality rate will lead to a 0.5 prt vrny snf 1.03 per cent decreases respectively in egg lay, vice versa.

Efficiency of Resource Use by Commercial Egg Producers in the Area

The estimated marginal product of feed was 1.98. Since the price of a bag of feed is N610.00 per 25kg bag, therefore the price per kg of feed consumed will be N24.40. To produce an egg, a laying bird is expected to consume about 0.232kg of feed, therefore the cost of feed per egg produced will be N5.60. Given that the price of egg is N10.00 each, the marginal value product of feed will therefore be N19.80.

Since the marginal value product is greater than the price per kg of feed per egg laid (N5.60). the commercial egg farmer in the area were not ra-

tional in their decision to produce.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study has revealed that feed intake, mortality rate and floor space per bird are important variables in determining the output of egg in commercial egg enterprises in the area. More so, the farmers were not efficient in their resource use, especially in amount of feed given to the birds.

Recommedations

Based on the findings the following recommendations are made:

Farmers should be advised to increase the amount of feed given to laying birds on their farms in order to increase egg output and therefore equate the marginal value product with the price of feed so as to be efficient in their production.

Proper management techniques should be adopted to forestall a higher rate of mortality that may result in depreciation of laying birds.

Farmers should be educated on the need to adopt the recommended optimum floor space per bird to enhance egg lay per bird.

METHODOLOGY

Study Area

The study was carried out in Calabar comprising Calabar South and Calabar Municipal Council in Cross River State. The area is the capital of Cross River State with a good population that has demand for egg as a protein source. It is also the home of Nigeria's premier Export Free Trade Zone.

Method of Data Collection

Information on the number and locations of poultry farmers in the area was obtained from poultry feed dealers, veterinary clinics or stores, egg sellers and vegetable growers through a preliminary survey. This was quite necessary since there was no existing formal register of poultry farmers in the area. Forty poultry enterprises were identified. However, only 15 of them who were still in business kept up to date production records and kept the Lohmann Brown

breed. This breed is the most common high egg-producing breed kept by most of the farmers in the area. The information obtained from their records included, number of laying birds, number of eggs laid daily, quantity of layers mash fed per day and number of deaths recorded. The researcher using a measuring tape measured the floor space of the different farms. The floor space per bird was obtained by dividing the total floor area of each pen by the number of birds. The records covered only forty-eight weeks from point of lay.

Method of Analysis

A multiple regression analysis involving the use of ordinary least Square (OLS) estimation technique was used to determine the effect of the variables on egg output in the area.

Two functional forms (Cobb-Douglas and Linear) were used as models in the study. This was used because most production function studies in livestock production especially make use of both (Heady and Dillon (1972), Ekong (1998) and Ekpo (1998).

The models took the form below:

Linear functional form

$$Y = b_o + b_1 X_1 + b_2X_2 + b_3 X_3 + U$$

Double logarithmic functional form (Cobb-Douglas)

$$LnY = Lnb_o + b_1L\, nX_1 + b_2LnX_2 + b_3\, nX_3 + U$$

Where Y = Total number of eggs laid

X_1 = Feed intake (kg)

X_2 = Mortality rate

X_3 = Floor space per bird (m_2)

B_o , b_t , b_2 and b_3 are the coefficients.

U is the error term.

The greater the quantity of feed fed to the birds, the greater the egg output. Similarly, the greater the floor space per bird, the greater the egg output. Accordingly, it is expected that b_1 and b_3 should carry positive signs. On the other hand, the higher the mortality rate, the less the egg output. It is thus, expected that b_2 should carry a negative sign.

The marginal value product (MVP) of feed was also estimated and equated with the price of feed to determine the

efficiency of resource use by the commercial egg producers. A farmer is deemed efficient in production when the marginal value product of his input is equals to the input price (i.e MVP = Px.) The elasticities of production with respect to the important variables were computed. In the linear model the elasticity is computed using the formula: Ep=bXy

Where Ep = elasticity of production

X=Mean level of input

Y=Mean level of output

However, in the double logarithmic model, the coefficients of the independent variables are their corresponding elasticities.

RESULTS AND DISCUSSION

The double logarithmic form was chosen as the lead equation and used in the discussion. The linear equation was rejected because the coefficient of feed intake (an important derterminant of egg output) was not significant. The coefficient of feed intake per bird (X_1), mortality rate (X_2) and floor space per bird (X_3) carried the expected signs. The adjusted coefficient of determination (R_2) indicated that the explanatory variables explained about 97 per cent of the variability in egg output while the F-ratio was 132.41.

The positive sign of the coefficient of feed intake (X_1) indicated that an increase or decrease in feed intake will lead to a corresponding increase or decrease in egg output. This is similar to results obtained by Effiom (1992). Sampson (1997), Ekong (1998). Mortality rate and floor space per bird. These coefficients were also significant at the 5 per cent level. These results also support the assertions of Wells (1981) and Oluyemi and Roberts (1988).

In the double logarithmic function, the coefficients represent the elasticities. Therefore, the elasticity of production with respect to feed was 0.201. This implies that a 10 per cent increase or decrease in feed intake will lead to 2 per cent increase or decrease in egg production respectively. The elasticities of production with respect to mortality rate and floor space per bird were 0.050 and 0.103 respectively. Implying that a 10 per cent increase in mortality rate will lead to a 0.5 prt vrny snf 1.03

Table 1: Summary of Regression Statistics

Functional form	Regression Coefficients				F-ratio	R^{-2}	D.W
	Constant	Feed intake X_1	Mortality X_2	Floor space/bird X_3			
Linear	192.46	1.175	-0.985***	-236.54***	186.65	0.97	1.98
	(52.624)	(0.972)	(0.306)	(50.409)			
Double log	3.358	0.459***	-0.05**	1.103	132.41	0.97	2.1
	(0.772)	(0.201)	(0.017)	(0.039)			

Source: Regression Analysis

Note: **Significant at 5 per cent

***Significant at 1 per cent

The figures in parentheses are standard errors.

per cent decreases respectively in egg lay, vice versa.

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Farmers should be educated on the need to adopt the recommended optimum floor space per bird to enhance egg lay per bird.

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