

Research Application Summary

What is the effect of management interventions package on productivity of indigenous chicken in Western Kenya?

Ochieng, J.^{1,2}, Owuor, G.¹ & Bebe, B.O.³

¹Department of Agricultural Economics and Agribusiness Management, Egerton University, P. O. Box 536, Egerton, Kenya

²African Economic Research Consortium (AERC)/CMAAE, P. O. Box 62882-00200 Nairobi, Kenya

³Livestock Production Systems Group, Department of Animal Sciences, Egerton University, P. O. Box 536, Kenya

Corresponding author: jastopheli@yahoo.com

Abstract

This study examined different management packages for improving indigenous chicken productivity in Kenya. The management interventions package comprised feed supplementation, housing, chick rearing, brooding and vaccination study. Farmers were allowed to modify and selectively select components of the package. The effect was analyzed using log linear regression model which takes the form of Cobb-Douglas production function. The results indicated that farmers who had adopted full management intervention package as recommended by extension had higher productive performance than farmers who modified and selectively adopted components of management intervention package. Farm production assets, expenditure on feeds, labour, access to extension, group membership and female gender significantly influenced productivity of indigenous chicken. Therefore, rural farm households should adopt management intervention package as recommended to increase productivity thereby improving financial and food security in rural areas.

Key words: Cobb Douglas, indigenous chicken, management intervention package, productivity

Résumé

Cette étude a examiné les différents programmes de gestion pour améliorer la productivité de poulet autochtones au Kenya. Le progiciel de gestion des interventions comprenant le complément en alimentation, le logement, l'élevage de poulet, l'incubation et l'étude de vaccination. Les agriculteurs ont été autorisés à modifier et sélectionner les composants de l'emballage. L'effet a été analysé en utilisant le log modèle de régression linéaire qui prend la forme de « Cobb-Douglas fonction de production ». Les résultats indiquent que les agriculteurs qui ont adopté l'ensemble d'interventions de gestion tel que recommandé par l'extension ont eu des meilleures

performances de production que les agriculteurs qui ont modifié et adopté de manière sélective les composants de l'ensemble d'intervention de gestion. Les outils de production de la ferme, les dépenses en alimentation, le travail, l'accès à la vulgarisation, l'appartenance au groupe et le genre féminin ont influencé de façon significative la productivité des poulets indigènes. Par conséquent, les ménages agricoles en milieu rural devraient adopter ensemble d'interventions de gestion comme il a été recommandé, afin d'accroître la productivité en améliorant la sécurité alimentaire et financière dans les zones rurales.

Mots clés: Cobb Douglas, poulet local, ensemble d'interventions de gestion, la productivité

Background

Smallholder indigenous chicken farmers face the challenge of how to increase food production and reduce poverty in rural areas. Poultry has potential of contributing to food and income security of rural households in Kenya. This challenge is particularly great in Western Kenya where majority (80%) of the rural households keep indigenous chicken. Here, indigenous chicken production is characterized by low levels of inputs and outputs (Okitoi *et al.*, 2007) with limited application of management interventions. Technical recommendation from extension service is that farmers should adopt recommended management intervention package but instead they modify and selectively adopt some components of the package. The management interventions package comprises feed supplementation, vaccination, housing, brooding and chick rearing. Smallholders often regard them as costly, unprofitable, risky, and inaccessible and that they require high technical knowledge (Aklilu, 2007). This study examined the effect of adopted management interventions on productivity of indigenous chicken.

Literature Summary

Several past efforts to improve productivity of resource-poor farmers have often failed to achieve the desired outcomes, especially when implemented without appropriate knowledge and skills to enable them commercially exploit unique attributes of the indigenous chickens (Tedelle *et al.*, 2000). Management interventions will only be sustainable if they fit the limited physical and economic resources of farming households (Aklilu, 2007). Farmers have not been able to adopt the management interventions package despite the relentless efforts by the Non-Governmental Organizations (NGOs), government extension

service and other agencies involved in rural development in Kenya.

Study Description

Data for this study were collected through a cross-sectional survey of smallholder households in two districts (Rongo and Homabay) of Western Kenya. The districts are within the Lake Victoria basin and have an estimated 54% of the households living below the poverty level (RoK, 2005). In each district, two divisions were selected with one representing low indigenous chicken population density and low markets while the other division represented high indigenous chicken population density and high markets. The sampling frame was obtained from the list of farmers provided by Kenya Poultry Farmers Association (KEPOFA) and Poultry Farmers Associations in the two districts. Application of simple random sampling yielded 30 farmers from each of the four divisions giving a total of 120 respondents. Log linear regression model which takes the form of Cobb-Douglas production function was used in the analysis. This transformation into logs allows estimation by traditional OLS procedure where $\ln Y_i$ is a linear function of logs of regressors, logs of X's (Gujarati, 2003).

Research Application

The estimated coefficient of adopted components of management intervention package was positive and highly significant, indicating that there was a significant difference in indigenous chicken productivity between farmers selectively adopting components of management interventions package and full package adopters. The smallholder farmers intensifying their production by using full package had higher productivity. Productivity thus increases as farmers increased adoption of components of management intervention package.

Productivity increases as innovations related to improved management are adopted into the production system. Adoption of productivity enhancement packages is however largely influenced by the socio-economic characteristics of households. It would appear that intensification of indigenous chicken production would require large amount of inputs making many farmers to shy away from adopting management interventions package. KARI, (2006) also reported that indigenous chicken was profitable if managed well and common diseases controlled to improve survival rate of chicks by at least 30% while improved feeding, housing and disease control increased survival rate up to 80%.

Other key determinants of indigenous chicken productivity include available production assets, expenditure on feeds (local and commercial feeds), labour input, access to credit facilities and extension service and group membership.

Table 1. Multiple regression estimates for determinants of chicken productive performance.

Parameters	Dep: ln value of output (Kshs)	Std coefficient	Std error t-value
Constant	2.59	2.29	1.13
Female gender (0,1)	0.508	0.300	1.69**
Age (years)	-0.567	0.418	-1.36
Group membership (0,1)	0.714	0.309	2.31***
Access to extension (0,1)	0.439	0.264	1.66**
Access to credit (0,1)	0.0086	0.252	0.03
Flock size (#)	0.0652	0.203	0.32
Value of feeds (Kshs)	0.299	0.134	2.24***
Labour (Kshs)	0.344	0.206	1.67**
Production assets (Kshs)	0.177	0.0993	1.78**
Adopted interventions (1-3) ¹	0.177	0.151	2.50***
R-squared	0.48		
Model test (F(10, 92))	8.41***		
Variance inflation factor (VIF)	1.44		
Number of observations (n)	103		

Notes: ¹Dummy for adopted management interventions (1= Feeding supplementation and Brooding, 2=Feed supplementation and Vaccination 3= Full Package) The signs **, *** indicate significance at 10% and 5% respectively.

Recommendation

Based on the results it is recommended that smallholder farmers adopt management interventions package based on their socioeconomics conditions. However, adoption of management interventions package highly increases productivity thereby improving financial and food security in rural areas.

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