

Research Application Summary

**Assessment of indigenous chicken production in Western Kenya**

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**Abstract**

Indigenous chicken (*Gallus gallus domesticus*) are valued in Kenya for their important role of providing food in form of eggs and meat and also income to rural households especially in Western Kenya. However their productivity is low and their products are also of low quality as compared to exotic chicken. A baseline survey was thus conducted in Siaya, Busia and Kakamega Counties of Western Kenya during late February to early March 2016. A questionnaire was used to collect information related to indigenous chicken production. Three production systems were observed mainly free range, semi free range and intensive. Majority of the farmers in the three Counties practiced free range and semi free range systems of production. Farmers practicing free range production system were 60%, 58% and 29% in Kakamega, Busia and Siaya Counties, respectively. Semi-free range production system was practiced by 35%, 42% and 70% of farmers in Kakamega, Busia and Siaya Counties, respectively while intensive production system was minimally practiced (Kakamega (5%), Busia (0%) and Siaya (2%)). The study also revealed that chicken were fed once per day before they were released out to scavenge the rest of the day. Indigenous chicken production involved the use of various types of feeds ranging from whole grains to compounded feeds (chick mash and layer mash, among others). Most farmers feed their chicken on locally available feeds including kitchen remains. Therefore, there is need to improve the quality of these feeds through quality analysis and advisory services to the farming communities.

Key words: Chicken feeding, indigenous chicken, production systems, Western Kenya

**Résumé**

Les poulets locaux jouent un rôle important dans l'approvisionnement en nourriture, en termes d'œufs et de viande, et fournissent également des revenus aux ménages ruraux non seulement à l'Ouest du Kenya, mais aussi à l'échelle mondiale. Cependant, leur productivité est faible et leurs produits sont également de faible qualité. Une enquête de base a été menée dans les comtés de Siaya, Busia et Kakamega à l'Ouest du Kenya. Plusieurs types d'échantillons ont été collectés, y compris les échantillons de provende, d'œufs, de muscles ou d'organes de soixante (60) poulets. Un questionnaire a été utilisé pour recueillir les informations. Trois systèmes de production ont été observés; élevage en libre-parcours,

semi-libre-parcours et intensive. La majorité des agriculteurs des trois comtés ont pratiqué des systèmes de production en libre-parcours et en semi-libre-parcours. Les agriculteurs qui pratiquent un système de production en libre-parcours étaient respectivement de 60%, 58% et 29% dans les comtés de Kakamega, Busia et Siaya. Le système de production en semi-libre-parcours a été pratiqué respectivement par 35%, 42% et 70% des agriculteurs dans les comtés de Kakamega, Busia et Siaya, tandis que le système de production intensive a été pratiqué à des niveaux faibles dans les comtés de Kakamega (5%), Busia (0%) et de Siaya (2%). L'étude a également révélé que différents régimes d'alimentation existent, avec la majorité (38%) des producteurs des trois comtés qui nourrissent leurs poulets une fois par jour avant de les libérer. La production locale de poulet a impliqué l'utilisation de divers types d'aliments allant des grains entiers aux aliments composés. La plupart des producteurs nourrissent leurs volailles à base des aliments localement disponibles, y compris les restes de cuisine. Ainsi, Il s'avère nécessaire d'améliorer la qualité de ces aliments grâce à une analyse de qualité.

Mots clés: Aliments pour poulet, régime d'alimentation, poulets locaux, systèmes de production animale

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## Introduction

Indigenous chickens play an important role in providing food in form of eggs and meat for home consumption and also as a source of income to rural households of Western Kenya region, as well as in Eastern Uganda (Kogunza *et al.*, 2008). Indigenous chicken form a heterogeneous populations which exhibits wide variation in size, plumage colour, comb type and skin colour (Ndirangu *et al.*, 1991). Over 81% of poultry population in Kenya are indigenous chicken (Omiti, 2011). Their performance depends on feeding regime, production system and disease prevalence. A survey conducted in Siaya, Busia and Kakamega Counties revealed that Indigenous chicken are wide spread across the three Counties. This indicates that indigenous chickens have adaptive potential to local environmental conditions, diseases, and other stresses (Halima *et al.*, 2007). Most farmers feed their chicken on locally available feeds such as maize grain, sorghum, millet, cassava tubers, home-made rations, kitchen remains (especially Ugali), fish (Omena), bananas and boiled sweet potatoes. Majority of the farmers feed chicken of different age groups together once a day, majorly in the morning and are released to scavenge for the rest of the day. This is also the case in Tunisia (Larbi *et al.*, 2013). These chickens are also known to feed on vegetation as they scavenge in the field.

Most communities in Kenya, particularly in the Western region, view indigenous chicken production as a solution to food insecurity and source of income (Munyasi *et al.*, 2009). Women and youth are the major players in indigenous chicken production across Western Kenya. This is attributed to their hardiness and survival with minimal inputs and still be able to produce (Mailu *et al.*, 2012). However their productivity is still low as compared to their exotic counterparts. Okeno *et al.* (2010) attributes this to poor quality feed. This study was undertaken so as to find out the common production systems and feeding regimes of indigenous chicken among rural households.

## **Materials and Methods**

The baseline survey was carried out in three counties of Western Kenya namely; Siaya, Busia and Kakamega. Three sub counties were covered in each County; Siaya (Gem, Alego and Ugenya.), Busia (Teso South, Matayos and Nambale) and in Kakamega (Lurambi, Lugari and Navakholo).

A total of 180 farms were visited, sixty (60) in each county. A multi- stage (3-stage) sampling technique was used. Siaya, Busia and Kakamega counties were purposively selected based on indigenous chicken population. In every county, three sub-counties were purposively selected depending on the number of farmer groups and in each sub-county two Wards were purposively selected based on the activity of the farmer groups. In each Ward two locations were identified whereby two farmer groups (youth and women groups) were selected and from each group five members were randomly selected to complete a questionnaire. An individual farmer was identified in every Sub-County to represent those indigenous chicken farmers who were not in any group (the individual farmer replaced one member of the group concerned). All selected farmers participated by completing a semi structured questionnaire. Together with two (2) University of Eldoret students at masters level and two (2) undergraduate interns and frontline field Extension Officers the survey was conducted for three weeks (from late February to mid-March 2016). Feed samples were collected from the selected farmers; the first, the third and the fifth farmer. Egg samples were collected from the first and fifth farmers while chicken meat/organ samples were collected from the first farmer in each group per Sub-County. In total 60 eggs were collected and 60 chickens were slaughtered and from each chicken liver, kidney, breast and thigh muscles were collected for laboratory analysis, giving a total of 240 tissue samples.

## **Results**

The study revealed variations in types of chicken reared, that included indigenous, improved-Indigenous, crosses and others (exotic ones) among the rural households in the study area (Table 1). A proportion of the farmers in the three Counties practiced free range and semi free range systems of production. Farmers practicing free range production system were 60%, 58% and 29% in Kakamega, Busia and Siaya Counties, respectively. Semi-free range production system was practiced by 35%, 42% and 70% of farmers in Kakamega, Busia and Siaya Counties, respectively while Intensive production system was minimally practiced in Kakamega (5%), Busia (0%) and Siaya (2%), (Table 2). On the other hand most of the indigenous chicken farmers in Nambale , Lugari and Navakholo sub-Counties practiced free range system (80% , 70% and 70%, respectively) while in Alego , Lurambi , Matayos and Gem they practiced mostly semi free range (55%, 55%, 50% and 50%, respectively), however less than 5% of the farmers practiced intensive system across the sub-Counties (Table 3). Most youths (56%) aged between 19-40 years preferred keeping poultry under free range system compared to adults (33%) aged between 41-60 years (Table 4). Most farmers in the three Counties practiced Intensive (75%) and Semi free range (58%) systems, as compared to free range (37%), for less than five (5)

years. However 26.1% of the farmers had practiced free range for over 15 years (Table 5).

Table 1. Common types of chicken and their numbers from sampled farmers in Siaya, Busia and Kakamega Counties of Western Kenya

County	Types and number of chicken			
	Indigenous	Improved indigenous	Crosses	Others
Siaya	1768	455	78	37
Busia	2547	57	11	10
Kakamega	1882	861	57	80
Total	6197	1373	146	127

Table 2. Indigenous chicken production systems in Siaya, Busia and Kakamega Counties of Western Kenya

Counties	Production systems		
	Free range %	Semi free range %	Intensive %
Siaya	28.8	69.5	1.7
Busia	58.3	41.7	0.0
Kakamega	60.0	35.0	5.0

Table 3. Indigenous chicken production systems in different sub Counties of Siaya, Busia and Kakamega Counties of Western Kenya

County	Sub County	Production systems		
		Free range %	Semi free range %	Intensive %
Siaya	Gem	45.0	50.0	5.0
	Alego Usonga	45.0	55.0	0.0
	Ugenya	65.0	35.0	0.0
	Teso South	65.0	35.0	0.0
Busia	Matayos	50.0	50.0	0.0
	Nambale	80.0	20.0	0.0
	Lurambi	40.0	55.0	5.0
Kakamega	Lugari	70.0	30.0	0.0
	Navakholo	70.0	25.0	0.0

Table 4. Participation of farmers by age group (years) in the different chicken production systems in Western Kenya

Production systems	0-18 (Young youth)	19-40 (mature youth)	41-60 (adults)	>60 (elders)
Free range %	0.9	55.7	33.0	10.4
Semi free range %	1.4	45.1	42.3	11.3
Intensive %	0.0	0.0	66.7	33.3

Note: The age group is applied for the purpose of this study only.

Table 5. Length of farmers' involvement in indigenous chicken production systems in Siaya, Busia and Kakamega Counties of Western Kenya

Production System	Duration of keeping chicken			
	<5 years	5-10 years	11-15 years	>15 years
Free range %	38.6	23.9	11.4	26.1
Semi free range %	58.0	17.0	4.5	20.5
Intensive %	75.0	25.0	0.0	0.0

About 50% of the farmers practicing semi free range system disposed off their chicken at the age of 16-30 weeks. On the other hand most (68%) of farmers practicing intensive systems disposed off their chicken at 0-15 weeks of age while farmers practicing free range disposed off their chicken at 16-20 weeks of age (Figure 1).

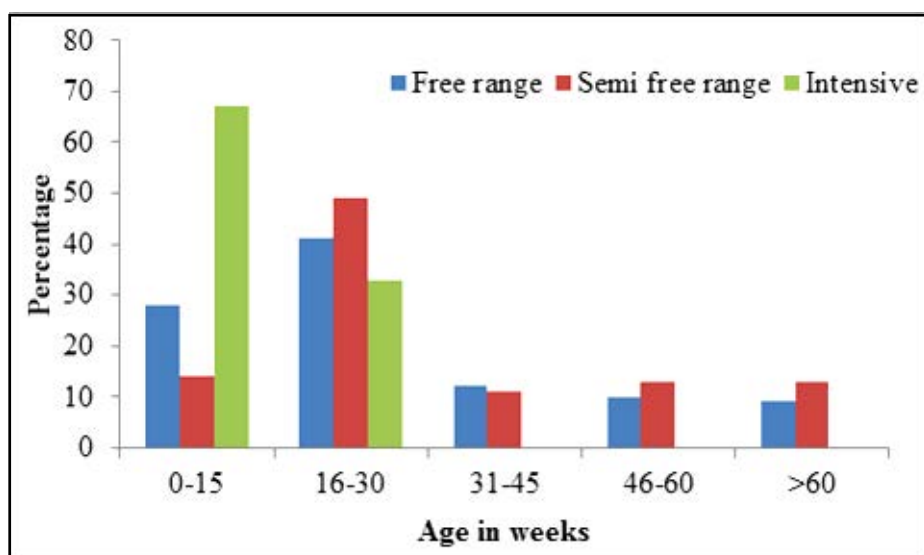


Figure 1. The age (in weeks) at which chicken were disposed off in different production systems in Siaya, Busia and Kakamega Counties of Western Kenya.

## **Discussion and conclusion**

Indigenous chicken production involves the use of various types of feeds ranging from whole grains to compounded feeds (like chick mash and layer mash by some farmers). Most farmers fed their chicken on locally available feeds including kitchen remains. Indigenous chicken production was carried out in three major systems, namely, free range, semi free range and intensive systems. Free range and Semi free range systems was more popular as compared to intensive system since majority (75%) of farmers had practiced it for less than five years. The other two major production systems had been practiced for more than 15 years, however, semi free range system was less popular (20%) as compared to free range system which had been practiced for more than 15 years by 26.1% of the farmers. This could be due to ease of management unlike for the intensive and semi intensive which need closer attention and feeding. Feed shortage could have also contributed to choice of production system since in free range chicken fend for themselves the whole day.

Youth and women were the major keepers of indigenous chicken where the youth preferred free range system while women preferred semi free range. This could be attributed to the fact that most youth have other engagements apart from keeping chicken as compared to women who are engaged at home. Some farmers had improved their chicken through the use of improved cocks supplied by the Kenya Agriculture and Livestock Research Organization (KALRO). Although most farmers showed a lot of interest in indigenous poultry, they were faced with challenges such as predation, theft, lack of housing, feed shortages and diseases (such as Newcastle, Fowl typhoid, Avian Coryza, Gumboro and Coccidiosis according to local veterinary records). According to Mangesha *et al.* (2011), lack of separate house for the chicken can expose them to infection and predators and this can also negate productivity of indigenous chicken. Therefore housing and equipment should be provided so as to minimize diseases and improve production of indigenous chicken. Variation in age of chicken disposal is due to cost of management and chicken growth rates where those under intensive system grow faster due to better feeding as compared to those under free range and semi free range systems. Eggs and live chickens were mostly for household consumption as previously reported by Natukunda *et al.* (2011).

The results of this study suggest a need to modernize indigenous poultry production in terms of housing and equipment and to encourage cottage factories to produce feeds at village level so as to improve quality of feeds. Further, the Government and Non-Governmental Organization (NGOs) should provide adequate poultry health and nutrition information to indigenous poultry farmers so as to minimize disease incidence and improve production.

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