

AN ASSESMENT OF NATURAL AND SOCIO- ECONOMIC IMPACTS ON INDIGENOUS CHICKEN PRODUCTION:-A CASE STUDY OF KATANGI AND IKOMBE DIVISIONS OF YATTA SUB-COUNTY.

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Abstract

The purpose of this study was to identify the natural and socio economic factors that affect indigenous chicken production and the level of their impact in Katangi and Ikombe divisions of Yatta sub-county, Machakos County. Data were collected using the questionnaires as the main research instruments. The questionnaires were subjected to 150 respondents composed of farmers, extension officers and animal Health Officers. The study sought to identify the main predators, diseases and pests and their impact on indigenous chicken production, to establish the level of gender influence on indigenous chicken production, determine the effects of household incomes on indigenous chicken production, and to determine the market and marketing challenges in Katangi and Ikombe divisions of Yatta Sub-county. Data for this study was analyzed by both descriptive and inferential statistics. Under descriptive analysis, frequency distribution tables were constructed showing the categories, responses and percentages which were used in analyzing the data. Under inferential statistics, several hypothesis were formulated which were tested using Pearson's correlation coefficients to test the strength of the relationship between the independent and dependent variables, Chi- square test was used to test whether there was statistical independence between gender and poultry keeping. Chi-square test was also used to test the relationship between poultry keeping and household income. All the analyses were done using statistical package for social scientists (SPSS). The study established that the main challenges to poultry keeping were disease and predators. It was also revealed that 20% of the respondents use the conventional way of disease control while 80% use indigenous technical knowledge (ITK). There was a strong negative relationship between diseases /predators and poultry keeping. It was also established that majority of poultry farmers in the rural areas were female. They also market the poultry. There is significant relationship between gender and poultry keeping and also between poultry keeping and household income. That means poultry keeping is a significant economic activity in enhancing livelihood for the communities and food security. The study also revealed that the majority (50%) of the respondents keep poultry for selling, while only 12.5% and 7.5% were keeping poultry for eggs and meat respectively. This is the main economic activity for majority of the respondents. Majority (60%) of poultry farmers were selling their poultry at the farm gate while 40% were selling at the local market. If these poultry were sold in the major markets and hotels they would earn more.

Key words: Diseases/predators, gender, household incomes, marketing

INTRODUCTION

Over 70% (24 million) of the Kenyan population live and derive their livelihood from livestock related enterprises of which poultry is the most abundant. The estimated poultry population of 32 million birds (MoLD, 2009). Of these 75% (24 million) consist of indigenous chicken kept under a free range system in small flocks of less than 30 birds by over 90 % of the rural households. These birds are mostly owned and managed by resource poor farmers who are mainly women and children (Gichohi, 1992). But despite their numbers, indigenous chicken have low productivity and only contribute 60% and 50 % of the chicken meat and eggs respectively consumed in the country ((Njue *et al* 2001)). This low productivity has been attributed to among others frequent disease outbreaks, inadequate feed, cultural practices, low farmers' incomes, marketing constraints and housing (Njue *et al* 2001), lack of information, knowledge and skills in poultry production. Improvement in the agricultural output in rural areas could be greatly enhanced by the proper harnessing and utilization of local resources (Ndegwa *et al* 2000).

Indigenous chicken is a resource that, if well managed, could ease the poverty burden of the people (Mbugua, 1990). Reasons for keeping indigenous poultry are diverse but could be summarized to four major ones. These include a resource of value for future monetary exchange (sell when there is need to solve household petty problems), for home consumption, for entertaining visitors and provision of gifts (gifts to wedding friends, new born and to spouses in the event of successful delivery)

Further reasons for keeping indigenous chicken are based on cultural systems that recognize indigenous chicken as major inputs to ethno-medical and healing operations. Families could improve their incomes and supply of poultry product (meat and eggs) by practicing a combination of poultry integrated management practices. These include feeding the birds with balanced diet, water in specific protective housing, proper breeding shortening the reproductive cycle, serial hatching, synchronized hatching, proper management of chicks and prevention of disease and pests (Ondwasy *et al* 2006).

Indigenous chicken is an appropriate livestock for the rural farmers when viewed in terms of its scavenging for most of its nutritional requirements (Nzioka, 2000) and are hardy; well adapted to the arid and semi arid conditions and survive with minimal inputs and still produce (Ndegwa *et al* 1996). Chicken therefore can provide the much-needed source of protein for the vulnerable groups which include HIV infected persons, children and the old in the ASALS and at the same time generate income from sales of surplus birds and eggs (Tuitoek *et al* 1998). Despite this potential many households in the ASALS do not consider poultry farming important and as such they do not keep chicken (Nzioka, 2000). Most farmers do not view poultry farming as a commercial undertaking and as such they practice it as a hobby in small scale and hence do not harness the commercial benefits associated with poultry farming. In addition, studies have documented various challenges as hindering poultry farming including predators, feeding, marketing and ecto-parasites (Danda *et al* 2008). To this end, the constraints affecting chicken production in ASALS and in particular Machakos County have not been studied. Therefore the research was carried out to determine the impact of natural, socio-economic factors on the level of indigenous chicken production.

Statement of the problem

Many households in the ASALS do not consider poultry farming important and as such they do not keep chicken (Nzioka, 2000). Most farmers do not view poultry farming as a commercial

undertaking and as such they practice it as a hobby in small scale and hence do not harness the commercial benefits associated with poultry farming. In addition, studies have documented various challenges as hindering poultry farming including predators, feeding, marketing and ecto-parasites (Danda *et al* 2008). To this end, the constraints affecting chicken production in ASALS and in particular Machakos County have not been studied. Therefore the research was carried out to determine the impact of natural and socio-economic factors on the level of indigenous chicken production.

Materials and methods

The study covered Katangi and Ikombe divisions of Yatta sub-county in Machakos County. The main reason for choosing these areas was to document information on poultry production in the areas. This is not adequate justification for choosing this area.

This study adopted a descriptive survey design.

The study covered the 9410 farm families and 15 active organized groups that keep indigenous birds. Each farm family was treated as a unit of sampling.

Simple random sampling was used to generate sample size required for the study. The study used a sample size of 150 respondents.

The study employed self administered questionnaires with the help of enumerators. The leaders of organized groups were conducted in order to determine appropriate time for interviews and issuing of questionnaires. Selected buyers and sellers at Katangi open market were interviewed in order to obtain information regarding marketing of indigenous chicken.

RESULTS AND DISCUSSIONS

Demographic data for the respondents

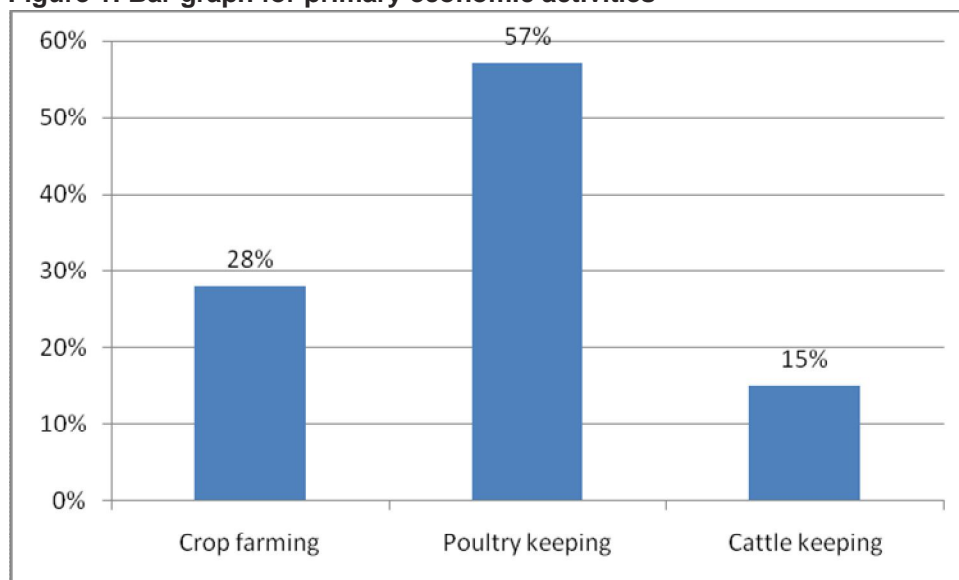
All the 150 questionnaires for the study were returned.. Majority of the indigenous chicken farmers in Katangi and Ikombe divisions of Yatta sub-county, were aged between 10 and 50 years (95%). Among these farmers, 55% were single while 50% were illiterate. Majority of the respondents had big families with 5- 8 family members. The major economic activity for the respondents was poultry keeping (57%).

Table 1: Distribution of respondents by academic qualification

Category	Frequency	Percentage (%)
Illiterate	75	50%
Primary	40	27%
Secondary	23	15%
University/College	12	8%
TOTAL	150	100%

Table 2: Respondents family size

Family size	Number of households	Percentage
1- 4	40	27%
5-8	60	40%
over 9	50	33%
Total	150	100%

Figure 1: Bar graph for primary economic activities

3.2 Predators, diseases, pests and indigenous chicken production

The study established that the main predators affecting indigenous chicken production in Katangi and Ikombe divisions of Yatta sub-county, includes eagle, mongoose and hawks with eagles and mongoose being the most prevalent. On the other hand the main diseases and pests include Newcastle, chicken fox and Coccidiosis with the most severe disease being Coccidiosis (Table 5). These diseases seem to be a major challenge to the indigenous chicken producers. This agrees with Guèye (1997) and Mungube et al (2008), that the major constraints in the production of poultry under rural settings include diseases, poor nutrition and predation.

On disease control, the study established that to a great extent (13%) of the respondents used convectional method to control diseases and pests while a small percentage (87%) used the ITK control method. This agrees with the Jabbar et al (2005) who argued that at least 80% of people in developing countries depend largely on indigenous practices for the control and treatment of various diseases affecting both human beings and animals.

The increase in diseases and pests decreases the level of chicken production as implied by the correlation coefficient of $r=-0.80$ between diseases/predators and the level of chicken production.

This agrees with (Ndegwa et al 2000) who argued that improvement in the agricultural output in rural areas could be greatly enhanced if diseases/predators were well controlled.

Table 4: Disease control methods

Responses	Responses	Percentage (%)
Conventional	20	13%
		87%
ITK	130	

Table 5: Ranking of chicken Diseases according to their severity

Disease	Responses	Percentage
Coccidiosis	90	60%
Newcastle	56	37%
Chicken pox	4	3%
Total	120	100%

Table 6: Ranking of chicken predators according to their severity

Predator	Responses	percentage
Eagles	120	80%
Mongoose	20	13%
Hawks	10	7%
Total	150	100%

Table 7: Correlation between diseases / predators and poultry keeping

		Disease/ Predators	Poultry keeping
Diseases/ Predators	Pearson Correlation	1	-0.8
	Sig. (2-tailed)		0.084
	N	150	150
Poultry keeping	Pearson Correlation	-0.8	1
	Sig. (2-tailed)	0.084	
	N	150	150

3.3: Gender influence on indigenous chicken production

χ^2_{computed} (20. 627) is greater than ($>$) 3.8414 (χ^2 from the table) implying that there is a strong association between gender and poultry keeping (Table 7). This agrees with Ibrahim and Abdu (1996) who showed that, whereas men may assist in the construction of housing (night shelters for the animals) and in some localities in bringing birds and eggs to the market, women and children

are, as a general rule, the ones who feed and water the birds, clean the housing and apply treatments.

Table 9: The influence of gender on the level of chicken production

O	E	O - E	$\frac{(O - E)^2}{E}$
56	40	-6	0.9
24	39	15	5.7692
20	35	15	6.4286
50	34	16	7.5294

$$\sum \frac{(O - E)^2}{E} = 20.627$$

Table 7: Contingence table of poultry keeping and gender

	Keep poultry	Don't keep poultry	Total
Female	56	24	80
Male	20	50	70
Total	76	74	150

3.5 Effects of household incomes on indigenous chicken production

The correlation coefficient $r = 0.86$ implies that the more income a household has the more poultry they keep, and the less income a household has the less the poultry kept. This is because the amount of household income affected the number of chicken obtained, method of controlling diseases and pests, and the marketing strategy.. This agrees with Guèye (1997) and Mungube et al (2008) who argued that the major constraints in the production of poultry under rural settings are; income to control diseases, poor nutrition and predation.

Table 10: Relationship between household income and indigenous chicken production

		Household income	chicken production
Household income	Pearson Correlation	1	0.86
	Sig. (2-tailed)		0.002
	N	150	150
Poultry keeping	Pearson Correlation	0.86	1
	Sig. (2-tailed)	0.002	
	N	150	150

Table 11: Sources of household income

Income in Kshs per year	Employment	Sale of Poultry	Sale of Food crops	Sale of other livestock
1,000-5,000	12.5%	8.3%	29%	40%
6,000-9,000	67%	47%	57%	37%
10,000 -15,000	20.5%	29%	14%	23%
16,000 -20,000	0%	7.5%	0%	0%
Above 20,000	0%	8.3%	0%	0%
Total	100%	100%	100%	100%

3.5 The marketing challenges for indigenous chicken products

The reasons for keeping indigenous poultry in Katangi and Ikombe divisions of Yatta sub-county, includes meat, eggs and selling. Most of chicken(80%) were sold at the farmgate. The poultry mostly sold includes hens and cocks. Marketing was done either at the farm gate, local markets and hotels/shops. There was a significant difference ($P < 0.05$) between the market strategies with farm gate selling leading with 60% for hens and 57% for cocks. This agrees with the mapping of utilization patterns by Danda *et al* (2008) which indicate that local (neighborhood) purchases and middlemen are the most significant market outlets. The enterprise is characterized by 2 to 4 market players that include; the farmer, at least two middlemen and the final buyer. Pricing mechanism is on bargain basis for a willing buyer/seller. The prices are also based on size and condition of the birds. A crude hand –weighing estimation is often used by middlemen. This leads to exploitation of farmers (Danda *et al* 2008) . A study by Bett *et al* 2009 found out that more men than women participated in marketing of indigenous chicken and eggs in the existing market both in rural and urban areas.

Majority of the respondents(80%) were keeping poultry for sale with a few(12.5% and 7.5%) keeping for meat and eggs respectively. This was also advocated by Danda *et al* (2008) who argued that indigenous chicken play a vital role in the human livelihoods and contribute significantly to food security of the rural communities as chicken products have no cultural or religious taboos. Therefore rural poultry is an important element in diversifying agricultural production and increasing household food security. Majority of the farmers (80%) did not access loan facilities, a factor that could be attributed to the high levels of illiteracy as revealed earlier on and lack of extension services.

Table 11: Reasons for keeping poultry

Reason	Responses	Percentage
Meat	18	12.5%
Eggs	12	7.5%
Selling	120	80%
Total	150	100%

Table 12: Poultry sold in the last three months

Market	Hens	Cocks
Farm gate	90(60%)	85(57%)
Local markets	40(27%)	35(23%)
Hotel/shops	20(13%)	30(20%)
Total	150(100%)	150(100%)

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study established that the main challenge to poultry keeping is disease and predators. It was also revealed that 80% of the respondents are using ITK for disease control while 20% are using conventional. ITK is readily available, cheap, effective and acceptable. There was a strong negative relationship between diseases /predators and poultry keeping.

Majority of poultry farmers in the rural areas were female and market the poultry. There is significant relationship between gender and poultry keeping.

The household income affected the number of chicken kept, method of controlling diseases and pests, and the marketing strategy significantly. It was also established that majority (50%) of the respondents were keeping poultry for selling only while 12.5% and 7.5% were keeping poultry for eggs and meat respectively.

Majority of poultry farmers were selling their poultry at the farm gate which might have not earned them better income hence a great need for market expansion. If these poultry were sold in the major markets and hotels they could earn more.

Recommendations

The study recommends that:

- (i) The Government should increase the extension officers to assist poultry farmers on control of diseases and predators so as to increase productivity.
- (ii) The Government should give incentives in form of loans and grants to poultry farmers so as to encourage both women and men to participate more in poultry keeping.
- (iii) The ministry of agriculture should advise the poultry farmers on how to increase their production so as to increase their income.

Suggestions for further research

Further research can be done on:-

- i) The factors influencing the choice of poultry diseases and predators control methods.
- ii) Factors influencing female participation in poultry keeping.
- iii) The effect of poultry keeping on family income.
- iv) Factors influencing the marketing strategies of indigenous poultry keeping.

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