The Frequency and Some Correlates of Rabbit Meat Consumption in Kenya

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Abstract

With a gaining interest in rabbit production in Kenya, a survey was undertaken in 7 counties covering a total of 300 rabbit farmers. Another 100 non-rabbit keeping farmers where similarly interviewed for comparison purposes. The study sought to scan the consumption pattern of rabbit meat among households. Questions on the survey instrument sought to identify consumption patterns of rabbit meat among a sample of rabbit farmers. Results were subjected to chi square test for association in an attempt to identify characteristics of respondents that might be pointers to rabbit meat consumption. Education, actual rabbit rearing as well as the number of rabbits kept were strong pointers towards consumption of rabbit meat. The frequency of rabbit meat consumption was found to be very low, even among rabbit keepers with 48 percent of this group doing so at most, once every 12 months compared to 67 percent for non-rabbit farmers. The prices on offer for rabbits could be directed more for those seeking breeding animals, which might not compete favorably with competing meats such as poultry. Some ideas for improving the market for rabbit meat are discussed alongside these results.

Keywords: Consumption frequency, prices, market segments

Introduction

Over the last 50 years, rabbit meat production has increased 2.5 fold with China being the world's largest producer producing 700,000 t/ year (Dalle-Zotte and Szendrö, 2011). Even in countries of Latin origin (Italy, France, Spain), who practice traditional cuisine, rabbit meat production represents only about 3.7% of total meat production in France and Spain and slightly larger (11.4%) in Italy (Dalle-Zotte, 2004). With an estimated population of about 600,000 rabbits, Kenya—just like many developing countries, which account for only 18% of the world rabbit population—is still in the initial stages of developing a vibrant rabbit sector. Exact estimates for Kenya are not currently available but it might not be too far to assume that households keeping rabbits are still as few as what was observed in Uganda where only 1.1% of households keep rabbits, holding an average of 5.2 rabbits per household (Republic of Uganda, 2009).

In Kenya, rabbitry dates back to the colonial period and a 1980 bilateral agreement between the Government of Kenya and German International Development Agency (GTZ) saw the revamping of the National Rabbit Breeding Centre at Ngong Veterinary Farm with an objective of providing breeding material for farmers throughout the country. This did not catch the attention of many farmers at the time since rabbit keeping was traditionally an activity for young boys. As a consequence, other multiplication farms in Machakos, Embu, Wambugu F.T.C., and Kilifi were later closed down (Borter & Mwanza, 2011). The industry still lagged for several reasons which might include the lack of viable and well-established markets, insufficient promotion, erratic product

supply, unreasonable prices, and competition from other meats (Lukefahr and Cheeke, 1991). The authors describe a logistic approach to market development starting with small-scale rabbit projects ultimately leading to a more sophisticated market infrastructure (Lukefahr & Cheeke, 1991).

In Egypt, as incomes increase, the increase in demand for rabbit meat might not rise in equal proportion to this income increase. Whether this is equally true in the Kenyan situation is only a conjecture at the moment. In Kenya, a recent study classifies indigenous poultry as a necessity Bett *et al.* (2012), an indication that there has been some effort devoted by researchers for some, but not the rabbit value chain. To the best of our knowledge, there has not been similar work in relation to rabbit meat. The two related survey questions of interest in this paper were: What fraction of farmers consume rabbit meat and at what frequency does this consumption happen? 2) What are the possible correlates to consumption? To answer these questions, we use responses to a set of questions including one which simply sought to find out whether respondents had consumed rabbit meat during the reference 12 month period.

The next section summarizes the literature revolving around the market for rabbit meat from different parts of the world. A methodology section provides a summary of methods employed in collecting and summarizing the data used to respond to these questions. Next, the results are discussed and the paper concludes by uncovering more research lines to be pursued.

Literature review

In Nigeria, there appears to be a bigger proportion of the population keeping rabbits (about 3.4-5.2 percent of Nigerian population) than what the Ugandans report (Abu *et al.,* 2008, Republic of Uganda, 2009). Out of a list of 18 countries, Kenyan farmers were seen to be marketing their rabbits at 7 months against an average of 3.7 months (Lukefhar and Cheeke, 1991), possibly an indication of a paucity of markets for rabbits in Kenya. Rabbit's potential remains unrealized in many developing regions which contribute substantially less than 20% of total world rabbit meat production (Lebas *et al.,* 1997). In Kenya for instance, export of rabbit meat in the period 2000-2010 was paltry with the highest stated exports worth 0.49 million to Sudan in 2008 (EPC website). In Kenya, many factors constrain the industry, which in the past was seen as a part-time for young boys. However, it appears that the most important constraint in the region is that rabbit meat consumption is not very common as a traditional dish.

Luzobe (1987) reported that only 35.5% of Ugandans had ever consumed rabbit meat, a pattern that is not very different from the situation in Nigeria. In South Africa, Sonandi *et al.* (1996) outlined some of the main factors inhibiting the popularity of rabbit meat in South Africa and they included a lack of consumer appeal since respondents found whole rabbit carcasses to resemble a cat or human infants. The taste of meat could also be a deciding factor influencing consumption (Dalle-Zotte, 2002). In Oyo and Osun states of Nigeria, only 8.8 percent of farmers would choose rabbit over poultry and a larger proportion, 18 and 27 percent would choose rabbit over goat and beef, respectively. This resonates well with the finding among Hungarian households where most declared an unwillingness to pay more for rabbits than what they paid for poultry meat (Bodnar and Horvath, 2008). Still, in Nigeria, Kalio *et al.,* (2008) studied rabbit meat consumers and concluded that taste, availability, cheapness, and tenderness were ranked as important to consumers in decreasing order of importance. Kallas and Gil (2011) also investigated hedonic/ extrinsic (e.g. price, presentation) and intrinsic (e.g. colour, fat content, marbling) qualities in determining consumer preferences, while Dalle-Zotte (2004) concludes that hedonic qualities are important.

In Mexico City, Olivares *et al.* (2005) concluded that 26.2 percent of people consume rabbit meat regularly but the proportion is higher in municipalities (46 percent) of the state of Mexico than rural settings. In Italy, consumers are attracted by quality, appearance, carcass weight, and quality-to-price ratio in order of

decreasing importance (De Carlo, 1998). In Louisiana and Texas where rabbit meat prices are comparable to those of bone and skinless chicken breast, research suggests that men, Catholics, and nonwhite collar workers are more positive about rabbit meat than their counterparts (McLean-Meyinsse *et al.,* 1994; McLean-Meyinsse, 2000). In the Southern United States, Beal *et al.* (2004) conclude that rabbit meat consumers are men aged over 36 years and with an income below $50,000. Szakály *et al.* (2009) on the other hand conclude that in Hungary, dietary habits are important in influencing rabbit meat consumption but the price of rabbit meat is not, while on the contrary, in Burkina Faso, Hoffman *et al.* (1992) state that price is an important determinant in rabbit meat consumption. In Kenya where the share of rabbit in total food expenditure is most likely lower than the 9.6% for poultry Gamba *et al.,* (2005); then any initiative targeted at improved productivity should be accompanied by those that can translate productivity gains into affordable rabbit meat consumer prices. In Burkina Faso, people who had never tried rabbit meat were found to be unwilling to spend more on rabbit than they would do for poultry (Hoffman *et al.,* 1992) a similar feeling among Hungarian households (Bodnar and Horvath 2008). In Nigeria, Dario *et al.* (2012) reported that rabbit meat ranks 4th behind beef, bush meat and chevon and just ahead of poultry in terms of preference, where 17% of those interviewed consumed rabbit meat. In Egypt, the share of rabbit meat in household meat consumption was estimated as a mere 3.3% (Alboghdady and Alashry 2010). Here, rabbit meat consumption was estimated at 0.7 kg/capita in 1992 (Galal and Khalil, 1994). In Egypt, just like beef and duck meat, rabbit meat is classified as a necessary good unlike chicken described as a luxury. In Nigeria, a growing demand for rabbit meat is reported to act as a substitute for poultry meat (Abu *et al.,* 2008).

Methodology

The study was carried out through the National Council for Science and Technology (NCST) funded project 'Strategies to promote the rabbit value chain in Kenya'. A structured questionnaire was designed to collect household data pertinent to rabbit production and consumption. Information on some important aspects including rabbit numbers and breed types, housing structures and equipment, feeds and feeding practices, diseases, consumption and marketing and some of the most important constraints limiting the industry were collected. Many questions took a close-ended format but were also interspersed with open-ended questions so as to break the monotony associated with the former. The questions were designed to aid the interviewer and interviewee with some order so that questions led naturally to the next and those related to one aspect were grouped together in respective sections. The questionnaire was pretested in Ngong during August 2011 and later adjusted to take account of interview length while some questions were reformulated based on observations from the pretest and tested again in Naivasha and Nakuru. During August 2011, a review the final questionnaire was done and final changes to the survey instrument as well as the accompanying interviewer's manual made.

Selected interviewers underwent a one-day induction workshop to share the objectives of the entire project. For additional quality control, questionnaires filled during the first week of data collection were scrutinized for completeness and any inconsistencies noted and flagged with the survey supervisor. Officers from the Ministry of Livestock Development provided the required logistical support to the interviewers and identified respondents. A total of 400 respondents were targeted from the counties viz; Nakuru, Kiambu, Taita Taveta, Nyeri, Meru, and Tharaka Nithi, of whom 25% were non-rabbit keeping households. Data collection was conducted between August and September 2011. The interviewers took about 50 minutes with each respondent keeping rabbits during the first week (and 15 minutes for non-rabbit keepers), which went down to an average of 45 minutes during the remainder of the interviews accomplished after the review of the survey questionnaire after a pre-test. The data were keyed into MS access and the statistical package (SAS V9.0) used to analyze the data.

To tackle the related objectives of the study, we used responses to a set of questions from the survey described above. These included questions relating to rabbit meat consumption and the frequency of reported consumption. Among other data collected included household characteristics such as expenditures, gender, age, and education level of household heads, the number of rabbits kept as well as their realized prices.

Results and Discussion

In total, 71 percent of the respondents had consumed rabbit meat. Among rabbit keepers, 82 percent had consumed rabbit meat as opposed to 38 percent of non-rabbit keepers making rabbit keeping an important correlate of consumption. A chi-square test confirms that keeping rabbits has a significant association with the consumption of rabbit meat (Table 1). This 38 percent is comparable to 47 percent in the Western Cape-South Africa (Hoffman *et al.,* 2004) or 31 percent in Hungary (Szakaly *et al.,* 2009) among the general population. Since rabbit keeping in Kenya may just be closely comparable to the situation in Uganda where probably 1.1 percent of the population actually raises rabbits (Republic of Uganda, 2009), it implies that there is some scope for developing a market for rabbit meat among the population that does not keep rabbits. The education level of the household head was also shown to be an important determinant of the consumption decision. Rabbit meat is known for its superior qualities of low fat, cholesterol, calories and high protein (Hernández, 2008). This is possibly the reason why it appears that those with more formal education are likely to consume the meat. For instance, only 47 percent of households headed by one without a formal education consumed rabbit meat compared to well over fifty percent for households whose head had attended some formal schooling. However, for perspective, only 4 percent of the household heads did not have any formal education while the figure was 13 and 3 percent for mid-level college and university graduates, respectively. The bulk of the household heads had primary level (41 percent) or secondary level (39 percent) graduates.

The age of the household head on the other hand (here representing the temporal stage of the household) does not show any association with consumption of rabbit meat ($\chi2=4.938$; $p=0.2936$). This clearly puts to test the feeling that rabbit keeping (and possibly consumption) is a pass time for the young.

County of residence only had a marginal effect on rabbit meat consumption ($\chi2=10.17$; $p=0.11$) as shown in Table 1. Tharaka Nithi County appears to have a population where less than half of the respondents (47 percent) consumed rabbit meat while in all other counties, at least half of the respondents consumed rabbit meat. Geographic segmentation of rabbit consumption is therefore not very strong implying that marketing consumption campaigns would need to take a different route rather than segment the market on a geographic basis. However, an argument for Kirinyaga as a special case would do since at least 80 percent of the respondents consumed rabbit meat.

As incomes (expenditures) per household are modest, Kirinyaga farmers slaughter on average 16 rabbits a year while in Kiambu this is 22 rabbits per year. In the rest of the counties, consumption is less than 10 rabbits on average. A similar conclusion can be made for income (expenditure quintiles) which shows a weak association with rabbit meat consumption ($\chi2=6.56$; $p=0.16$). This result suggests that incomes do not have a strong association with rabbit meat consumption and therefore at present, income elasticity is at best, modest.

Revenue that farmers would get on the sale of one rabbit (present prices) was used as a substitute for the price of rabbit meat. Since only those who had rabbits were able to give this estimate, this analysis relates to those who kept rabbits. The prices, however, did not show any association with consumption as would have been expected ($\chi2=0.78$, $p=0.85$). However, the prices quoted were quite high (averaging 11.15USD/rabbit) compared to poultry 5.09USD /bird). Among the most important reasons for keeping rabbits were consumption and income generation (Serem, *et al.,* 2013). With low apparent consumption,

Table 1: Cross tabulation of rabbit consumption and socioeconomic variables

Variable	Categories	Consume	Do not consume	χ2	p-value
		(%)	(%)		
Sample		71.6	28.4		
Expenditure quintiles	1000-5000	68.3	31.4	6.56*	0.16
	5500-7000	73.9	26.1		
	7500-10000	77.5	22.5		
	11000-15000	72.5	27.4		
	17000-90000	58.7	41.3		
County	Kirinyaga	81.2	18.8	10.17*	0.11
	Meru	75.8	24.2		
	Nyeri	78.5	21.5		
	Taita Taveta	65.0	35.0		
	Tharaka	47.4	52.6		
	Kiambu	73.8	26.2		
	Nakuru	70.9	29.1		
Gender of household head	Male	72.0	28.0	0.64	0.82
	Female	71.0	29.0		
Keep rabbits	Yes	82.3	17.7	69.11****	<.0001
	No	39.0	61.0		
Education of household head	None	47.1	52.9	9.33***	0.053
	Primary school	75.6	24.4		
	High school	68.8	31.2		
	Middle-level college	71.4	28.6		
	University	91.7	8.3		
Rabbit price	100-400	81.4	18.6	0.78	0.85
	450-500	84.9	15.1		
	550-1000	80.0	20.0		
	1200-2000	84.8	15.2		
Number of rabbits kept	1-3	75.4	24.6	10.04***	0.03
	4-6	86.8	13.2		
	7-10	72.7	27.3		
	11-23	89.7	10.3		
	>24	88.9	11.1		

Significant at ****1%, ***5%, **10%, *20%

these relatively high prices strongly suggest that breeders dominate in the supply side of the rabbit market, multiplying these bunnies for sale to other farmers. In fact, a separate analysis shows that the scale of production and prices are negatively related, with large scale farmers enjoying relatively better prices than their counterparts. Indeed, it was only in

the two counties of central region (Kiambu and Nyeri) where relatively large to medium scale producers are to be found, bringing in a geographic dimension to pricing. The proximity of Kiambu to Nairobi might be one of the drivers for this price premium.

With regard to the number of rabbits kept, there was a significant association between the number of bunnies kept and whether a household consumed rabbit meat. It appears as though the number of rabbits kept by a farmer could improve the chances of the farmer consuming rabbits. From the data, it is not clear why nearly all the small scale farmers are not consumers of rabbit meat from their own farms as would be expected since small-scale is usually related to subsistence production. An important segment of the population is that one that does not keep rabbits but consumes rabbit meat estimated to be about 1 percent of the farming population who keep rabbits. Given the right signals, this segment can provide a viable market for rabbit meat.

Of the rabbit farmers that had consumed rabbit meat, 31 percent had done so at least once yearly (Figure 1). Among non-rabbit farmers, this figure was roughly 24 percent. Most striking among non-farmers was that close to half (42 percent) were very rarely consuming rabbit meat doing so at most, once every 2 years. Overall, 30 percent of all respondents that had consumed rabbit meat did so once each year followed by those consuming rabbit meat once every 2 years (21 percent) and once every 6 months (11%). This indicates that many consumers (60 percent) are infrequent rabbit meat consumers. Sixty-seven percent of non-farmers consume at most; once every year while for rabbit farmers, this is 48 percent. This also reflects a finding reported in Hungary where 70 percent of respondents consume rabbit meat only once or twice a year (Bodnar and Horvath 2008, Bodnar, 2009) or put differently, 60 percent consume more rarely than once every other month (Szakaly *et al.,* 2009).

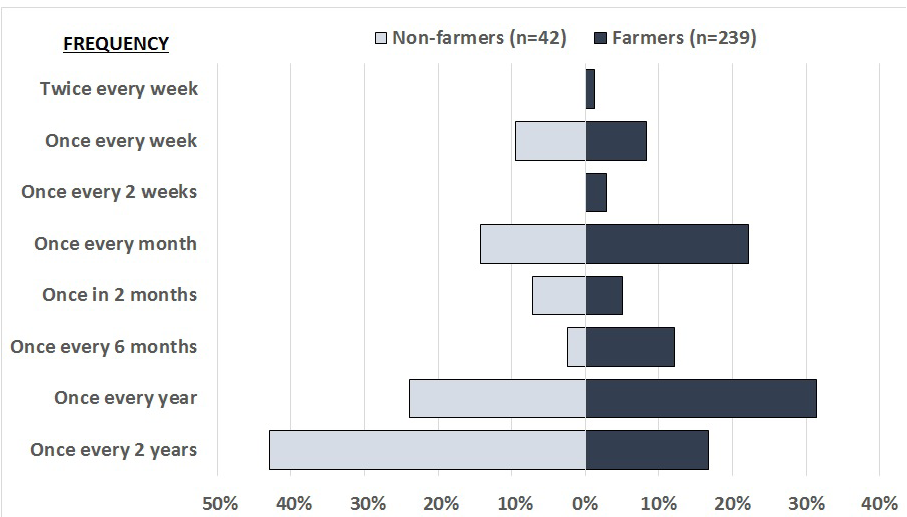

Figure 1: Frequency of rabbit meat consumption

A significant proportion (58 percent) of the general population (we use the proportion of non-farmers to proxy for the general population) do not consume rabbit meat. This provides some evidence that rabbit meat consumption is concentrated within a narrow band of the population.

Among the rabbit meat consumers interviewed in this dataset, nine percent consumed rabbit meat once every week and another one percent doing so twice a week. This could be an important constituency of interest as it forms-though a small fraction-a consistent market segment. Such frequent consumers can be "micro-

targeted" in a market campaign designed to try out new recipes and/or rabbit-derived products. None of the non-rabbit farmers who consumed rabbit meat do so more than once each week.

Retaining and satisfying intermittent customers is much more difficult than maintaining more loyal customers. This less consistent consumer segment which is the largest segment needs to be grown. We do not subscribe a method for doing so of doing so here, but it would be helpful to first gain a more in-depth understanding of this segment. For the loyal rabbit customers, strategies aimed at maintaining quality, satisfaction and value need to be enhanced in order to retain them.

In many demand studies, prices and income are important demand drivers. Therefore, in an attempt to approximate the relationship between these drivers and consumption, we make several assumptions. The data available do not provide an opportunity to directly derive expenditure and price elasticities for example by use of the Almost Ideal Demand System (AIDS)[1]. We split the sample into expenditure quintiles and estimate naïve income and price elasticities (Table 2) for both rabbit and its presumed competitor (poultry). The number of rabbits slaughtered over a 12 month period is 10 while for poultry, this evaluates to about 13 birds (Table 2). One surprising result is that the price elasticity for rabbits is positive while that of poultry is as expected, negative. The price elasticity of poultry is negative for all expenditure quintiles meaning that as poultry prices rise, households are inclined to consume less poultry. In the case of rabbits, however, when the price of rabbits increases, households are inclined to consume more rabbits. That means that as prices increase, consumers are possibly going to slaughter more rabbits. This result is probably driven by the correlation of higher prices and some geographies (e.g. when production occurs close to large cities). The expenditure elasticities are positive for both rabbits and poultry. However, poultry is marginally more responsive to expenditure increases than rabbit since the expenditure elasticity for poultry is 0.17 compared to rabbit which is 0.12. However, given the data used, we are unable to make further discussion about the nature of these elasticities and thus further work is recommended to uncover more robust economic descriptors of rabbit meat.

Table 2: Price and expenditure elasticities for rabbit and poultry for households in different expenditure quintiles

	Expenditure quintile					
	All	**1**	**2**	**3**	**4**	**5**
Mean monthly expenditure (KSH)	10,899	4,080	6,788	9,761	13,934	30,666
No. of rabbits slaughtered	10.9	8.2	4.2	17.4	9.2	19.4
No. of poultry slaughtered	13.5	8.2	7.9	12.3	13.6	14.6
Expenditure elasticity wrt rabbits	0.12	0.55	-1.74	6.01	-1.39	-0.74
Expenditure elasticity wrt poultry	0.17	0.12	0.27	3.97	1.46	-0.31
Rabbit price elasticity	0.31	0.19	0.27	0.31	0.63	0.19
Poultry price elasticity	-0.17	-0.18	-0.05	-0.08	-0.37	-0.76

1 There are some doubts about the reliability of the results obtained by this method but given the data at hand, broad orders of magnitude may be sufficient for this exposition. Better models such as the Almost Ideal Demand System or the Rotterdam models are better suited at estimating these parameters.

Conclusion

The results presented above uncover a number of important points about rabbit consumption. The results show that the frequency of rabbit

meat consumption is still low, even among rabbit keepers. The scale of production is still low, and these numbers are dependent on region with commerce being among the main stated objectives of raising rabbits. As most of the consumers are those keeping rabbits this means that there is a need for sustained initiatives to encourage more consumption of rabbit meat beyond this group.

The observation that price may not be a major determinant of rabbit meat consumption provides a pointer that the sector is still developing. Whereas over 50 percent of respondents kept rabbits for commercial purposes, lack of a market prompted some to drop out. That some farmers ceased rabbit production for this reason points at a weakness on the demand side. The study proposes that research could be employed to establish the nature of these weaknesses. Understanding their nature could be part of a strategy towards strengthening market linkages which we suspect are part of the problem which farmers describe as lack of a market for rabbit meat.

The non-rabbit farmers who consume rabbit meat become another important market segment to understand. This is so since much consumption is infrequent, yet this forms a major potential market. However, several unknowns still exist. For instance, questions of interest include; what intrinsic factors push consumers to purchase rabbit meat and what are the limiting factors towards consumption or rabbit meat? What influences the frequency or repeat consumption of rabbit meat? What mode should marketing take in a campaign aimed at promoting consumption of rabbit meat? Would mass media be an appropriate vehicle for promotional messages or is a tailored campaign designed to reach different customer segments a more feasible alternative?

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References

Abu, O.A.; Onifade, A.A., Abanikannda, O.T.F.; Obiyan, R.I. (2008). Status and promotional strategies for rabbit production in Nigeria. In: G. Xiccato, A. Trocino & S.D. Lukefahr, (eds). Proceedings of the 9th World Rabbit Congress. Verona, Italy: Fondazione Iniziative Zooprofilattiche E Zootecniche Brescia, pp. 1499-1504

Alboghdady, M.A., and Alashry, M.K., (2010). The demand for meat in Egypt: An almost ideal estimation. *African Journal on Agricultural and Resource Economics* 4(1):70-81

Beal, M., McLean-Meyinsse, E. and Atkinson, C. (2004). An analysis of household consumption of rabbit meat in the Southern United States, *Journal of Food Distribution Research* 35(1):24-29

Bett, H.K., Musyoka, M.P., Peters, K. and Bokelman W. (2012). Demand for meat in the rural and urban areas of Kenya. A focus on the indigenous chicken, Economics Research International, 11th July 2012 http://www.hindawi.com/journals/econ/aip/401472/

Bodnar, K. and Horvath, J. (2008). Consumer opinion about rabbit meat consumption in Hungary, In: G. Xiccato, A. Trocino & S. D. Lukefahr, (eds). Proceedings of the 9th World Rabbit Congress. Verona, Italy: Fondazione Iniziative Zooprofilattiche E Zootecniche Brescia, pp, 1519-1522

Dalle-Zotte, A. (2002). Perception of rabbit meat quality and major factors influencing the rabbit carcass and meat quality. *Livestock Production Science,* 75(1): 11-32.

Dalle Zotte, A., (2004). Le lapin doit apprivoiser le consommateur Viandes Prod. Carnés 23(6):161-167

Dalle Zotte, A., and Szendro, Zs (2011). The role of rabbit meat as a functional food. *Meat Science,* doi:10.1016/j.meatsci.2011.02.0017

Dario, F.A.S., Abi, H.M., and Oluwatusin, F.M. (2012). Social acceptability of rabbit meat and strategies for improving its consumption in Ekiti State, southwestern Nigeria, Livestock Research for Rural Development Vol 24 Article#94 Retrieved August 28, 2012 from http://www.lrrd.org/lrrd24/6/dair24094.htm

Galal, E.S.E. and Khalil M.H. (1994). Development of rabbit industry in Egypt. In Baselga, M., and Marai I.F.M. (eds.). Rabbit production in hot climates. Zaragoza: CIHEAM-IAMZ, 1994. p. 43-55 (Cahiers Options Méditerranéennes; n. 8). 1. International Conference of rabbit production in hot climates, 1994/09/06-08, Cairo (Egypt).

Gamba, P., Kariuki, D. and Gathigi, B. (2005). Urban domestic consumption patterns for meat: trends and policy implications, Tegemeo Working Paper No. 12, 2005, 9th July 2012 http://www.tegemeo.org/documents/conference2005/papers/urbanmeat.pdf

Hernández, P., (2008). Enhancement of nutritional quality and safety in rabbit meat. In: G. Xiccato, A. Trocino & S. D. Lukefahr, (eds). Proceedings of the 9th World Rabbit Congress. Verona, Italy: Fondazione Iniziative Zooprofilattiche E Zootecniche Brescia, pp. 367-383.

Hoffmann I.M., Kobling S., Stier C.H., and Gall C.F. (1992). The potential of rabbit meat marketing in Bobo-Dioulasso, Burkina Faso, *Livestock Research for Rural Development.* 4(1): 1-7

Hoffman, L.C., Nkhabutlane, P., Schutte, De W., and Vosloo C. (2004). Factors affecting the purchasing of rabbit meat: A study of ethnic groups in the Western Cape. *Journal of Family Ecology and Consumer Sciences.* 32: 26-35

Kalio, G.A., Etela, I. and Ginika, V.E. (2008). Rabbit meat as a preferred animal protein source in Ekpeye Kingdom of Rivers State, Nigeria. *Livestock Research for Rural Development.* Volume 20, Article #9. Retrieved August 14, 2012, from http://www.lrrd.org/lrrd20/1/kali20009.htm

Kallas, Z. and Gil, J.M., (2011). A Dual Response Choice Experiments (DRCE) design to assess rabbit meat preference in Catalonia: A Heteroscedastic Extreme-Value Model, Paper prepared for presentation at the EAAE 2011 Congress Change and Uncertainty, Challenges for Agriculture, Food and Natural Resources, August 30 - September 2, 2011, ETH Zurich, Zurich, Switzerland

Lebas, F., P. Coudert, H. de Rochambeau, and R.G. Thébault, (1997). (2nd Ed.). The Rabbit: Husbandry, Health and Production, FAO Animal Production and Health Series No. 21, Accessed 19th September 2012 from http://www.fao.org/docrep/t1690E/t1690E00.HTM

Lukefahr, S.D., and Cheeke P.R. (1991). Rabbit project development strategies in subsistence farming systems, World Animal Review, 68 Retrieved 17th August 2012 from http://www.fao.org/docrep/U4900T/U4900T00.htm

Luzobe, S. (1997). Rabbitry: Is there a market? The Market Place, July 11-17, p.6 1997.

McLean-Meyinsse, P.E. (2000). Assessing the Market Outlook for Rabbit Meat in Louisiana and Texas. *Journal of Food Distribution Research.* 31(1):139-144

McLean-Meyinsse, P.E., Hui, J. and Meyinsse J. (1994). Consumer perceptions of, and attitudes towards rabbit meat. *Journal of Agribusiness* 21(1):55-67.

Olivares, R., Soriano, R., López, M., Rivera J., and Losada, H. (2005). Consumption patterns of rabbit meat in the metropolitan area of Mexico City, Proceedings - 8th world rabbit congress – September 7-10, 2004 – Puebla, Mexico 2005 pp. 1152-1156

Republic of Uganda (2009). The National Livestock Census Report 2008, Ministry of Agriculture, Animal Industry & Fisheries and Uganda Bureau of Statistics

Serem, J., Wanyoike, M., Gachuiri, C., Mailu, S., Gathumbi, P. K., Mwanza, R. N., Kiarie, N., and Borter, D.K. (2013). Characterization of rabbit production

systems in Kenya. *Journal of Agricultural Science and Applications,* 2(3), 155-159.

Sonandi, A., Masika P.J., and Van Averberke W. (1996). Rabbit production systems in selected areas of five provinces in South Africa. Proceedings of the 6th World Rabbit Congress, Toulouse 3:429-434

Szakaly, Z., Szigeti, O., Szente, V. and Polereczki, Z. (2009). Consumer habits on the market of Hungarian beef and rabbit meat. 4th Aspects and Visions of Applied Economics and Informatics, March 26 - 27. 2009, Debrecen, Hungary