

Production characteristics and constraints of rabbit farming in Central, Nairobi and Rift-valley provinces in Kenya

C W Hungu, P K Gathumbi*, N Maingi* and C J Ng'ang'a* (2013). *Livestock Research for Rural Development. Volume 25, Article #3*. Retrieved March 21, 2013, from <http://www.lrrd.org/lrrd25/1/hung25003.htm>

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Abstract

Studies on rabbit production in Kenya have not included in-depth analysis of the potentials of keeping rabbits in the rural and urban household setting. In this study questionnaire and examination sheets were used to record the information.

The results of this research revealed that rabbit farmers in Central, Nairobi and Rift Valley provinces practice small scale farming essentially due to small land space, which if well adopted, can be practiced widely. There was sustained interest in rabbit farming which was shown by a large proportion of farmers (51%) who had kept rabbits between 1 and 5 years. The most common breeds of rabbits kept were New Zealand white (73%), Californian (60%) and their cross breeds (51%) which were all suitable for meat production. This study revealed that farmers had limited access to technical information in rabbit farming and this was seen in the poor design and construction of the rabbit hutches. Majority of farmers (64%) bought their breeding stock from other farmers, with only a small proportion buying from breeding centres (17%). This practice of buying replacement stock among farmers was likely to lead to inbreeding. The major constraints of rabbit farming are those dealing with production; disease (83%), predators like rats (29%), death of rabbits (69%) and unavailability of rabbit feed (19%). The results also indicated that there are opportunities and challenges to increase rabbit production in the country though access to technology and marketing strategies are major hindrances to this development.

Key words: disease, inbreeding, small scale farming

Introduction

Livestock play important roles in Kenya's socio-economic development and contribute towards household food and nutritional security (Ministry of Livestock Development Sessional paper No.2 of 2008). Rabbit production is still a new enterprise and is mainly a small-holder system that has advantages over the other livestock systems; because of the small rabbit's body size, high rate of reproduction, adaptability to inexpensive housing and useful by-products (Owen et al 1977). Inadequate food production is a critical problem throughout Africa and rabbit farming could make a significant contribution to human welfare in an area with inadequate food production (Karikari and Asare 2009). The rabbit production industry has recorded growth in Kenya over the last couple of years and farmers have earned good profit as well as formed self help groups (Ministry of Livestock Annual Report 2005). This is an important sub- system in regions where there is scarcity of land, and in areas where a large

proportion of low income earning communities may lack adequate resources to start other income generating and nutrition supporting enterprises (Payne and Wilson 1999). The characteristics of rabbit production in most parts of Africa are comparable; the producers experience almost the same climatic conditions as well as challenges. Studies based on production systems in domestic rabbits in Kenya are few due to overemphasis on larger livestock in the animal health and production sector. Consequently, there are limited focused studies on rabbit production and diseases and therefore capacity to handle diseases of rabbits and other emerging food animals is inadequate (Ministry of Livestock Sessional paper No. 2 of 2008). The aim of this study is to provide information regarding production practices in Kenya to allow the relevant authorities to maximise on the potentials of rabbit production in the country.

Materials and Methods

Study sites and duration

Nairobi area is an urban setting and is adaptable to backyard farming conditions even in poverty laden slum areas. Central province has intense farming systems with a wide variety of agricultural and livestock systems, Rift Valley province however consists mainly of agropastoral farming systems with combination of high rainfall and semi-arid type ecology. The aspects covered in the questionnaire included: farmers' age, gender, level of education and number of years involved in rabbit keeping, the production variables included breeds kept, reasons for keeping rabbits, rabbit housing, feeds, breeding, sale and acquisition of rabbits, constraints and diseases.

Data collection

This involved discussion groups, key informant interviews using a questionnaire to capture data and the factors influencing rabbit production were then analysed. Questionnaires were administered to 72 consenting farmers. Self-observation was used during the field work to re-check data collected using the questionnaires.

Data management and analysis

Literature searches and definitions related to the objectives of the research were reviewed. The factors influencing rabbit production in the studies already recorded in neighbouring countries were compared with those recorded in this study.

Results and discussion

Study farms and farmer's bio-data

Results of this study indicate that rabbit farming in Central, Nairobi and Rift Valley provinces is a small scale industry, 54% of farmers owned land between 0.06-1.59 acres, of 1.6-3.9 acres by 21% while those who owned larger pieces of land formed a small percentage 4-10 acres (13%) and above 10 acres (5%) (Table 1). A high percentage of farmers owned small pieces of land. This is in agreement with previous

reports (Colins and Lebas 1996; Lukefahr 2007; Oseni et al 2008) that the rabbit industry in the developing world is dominated by small scale units.

Table 1 Size of land owned by rabbit farmers in the study

Size of farm	Number of farms (n=72)	Percentage (%)
0.055- 1.59 acres	39	54
1.6 – 3.9 acres	15	21
4 – 10 acres	9	13
10.1 - 1280	4	5
No response	5	7

The ages of the rabbit farmers in the present study, shown in Figure 1, ranged from 23 to 78 years, indicating that rabbit farming cuts across all age groups with 44% of them being above 50 years of age, 36-49 years were 41%. The advanced age of the farmers captured in this study is a possible indicator that interest in rabbit farming among adults has risen in recent years due to the Government efforts in encouraging rabbit farming by establishing a rabbit breeding program in the country.

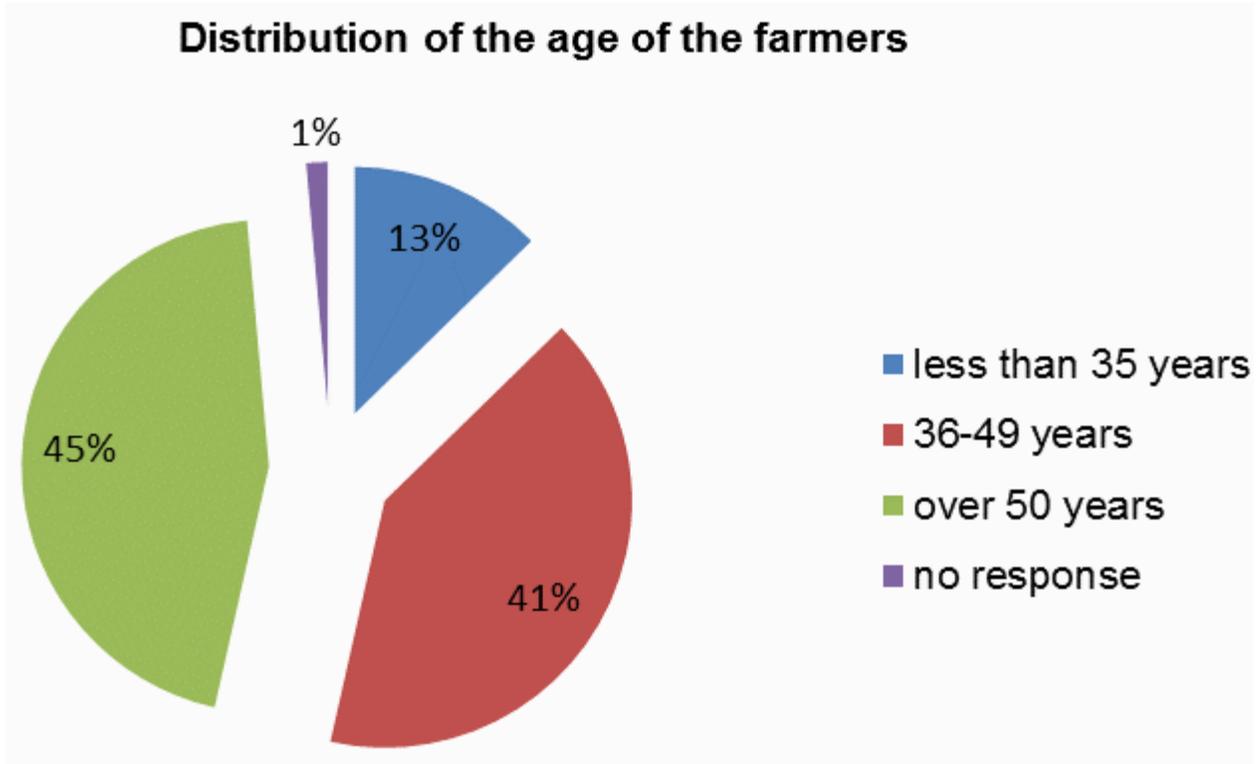


Figure 1. Distribution of the age of the farmers in the study

Figure 2 shows the response of whether rabbit farming was the main type of livestock farming in the study. Forty three per cent (43%) of the farmers interviewed indicated that rabbit farming was the main type of enterprise on farm because it requires less space than other types of livestock. This is consistent with reports from other parts of the world that the rabbit is a suitable micro-livestock (Owen et al 1977).

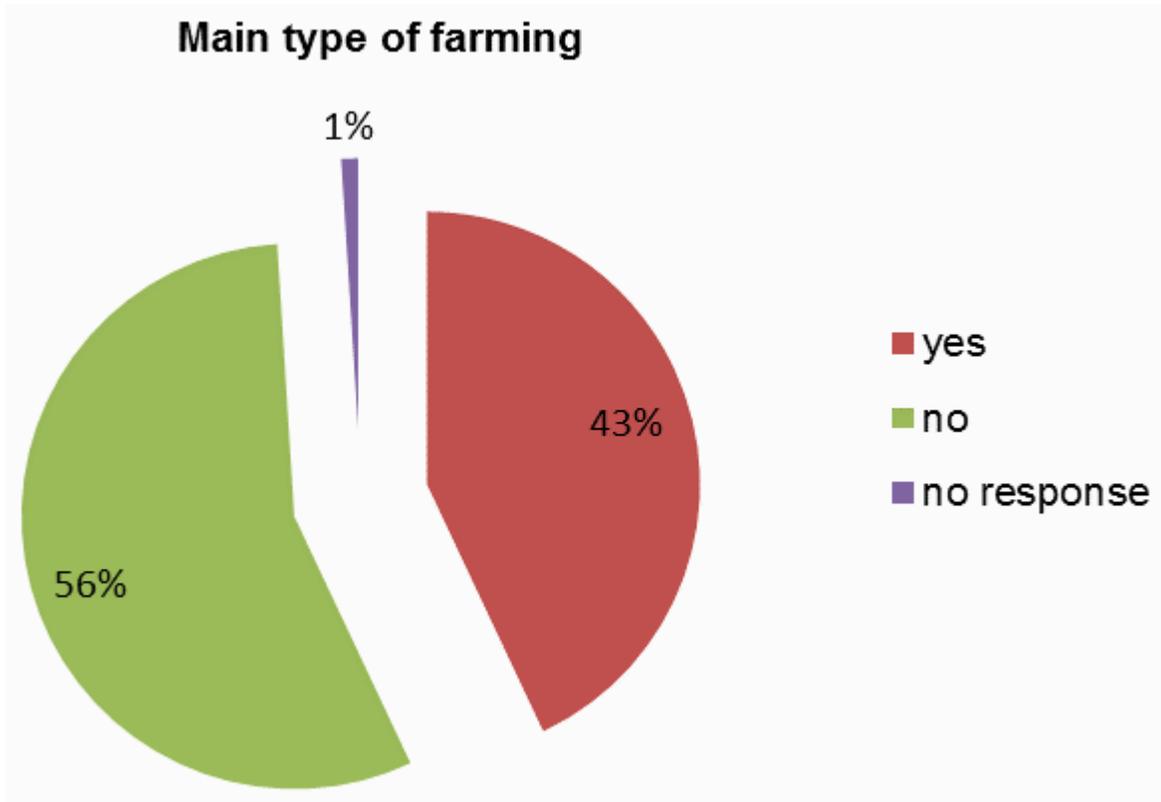


Figure 2. Rabbit farming as the main type of farming

Table 2 gives detailed information on the production practices on the farms in the study. Most of the rabbit farmers (78%) kept chicken which was another common farming enterprise in rural households. Chicken and other poultry require less space and can therefore be housed on the premises near rabbit hutches to improve income and provide animal protein for the households. Thirteen per cent (13%) of the farmers kept rabbits mainly as a source of meat, while 31% kept rabbits as a source of food and income. This is in line with the observation of Payne and Wilson (1999) that in the tropics, the domestic rabbit is raised mainly for meat and as a pet. The rabbit is potentially one of the animals that could be used to solve the problem of low animal protein intake in the developing world (Karikari and Asare 2009).

Table 2 Production characteristics of keeping rabbits in Central, Nairobi and Rift Valley, Kenya

	Frequency of responses on 72 farms	Percentage (%)
Animals kept		
Chicken	56	78
Cattle	38	53
Sheep	15	21
Goats	22	31
Other birds (geese, doves and turkey)	5	7
Reasons for keeping rabbits		
Pets	1	1
Food	9	13
Breeding	16	22
Food and breeding	22	31
Food, fur and breeding	8	11
Pets, food, breeding and fur	7	10
Pets and food	2	3
Pets, food and breeding	4	5
Pets and breeding	1	1
Food and fur	2	3

Fifty one per cent (51%) of the farmers had kept rabbits for periods ranging from 1 year to 5 years, indicating that sustained interest is increasing in this type of farming. Another 29% was comprised of new farmers, indicating that rabbit farming was gaining popularity.

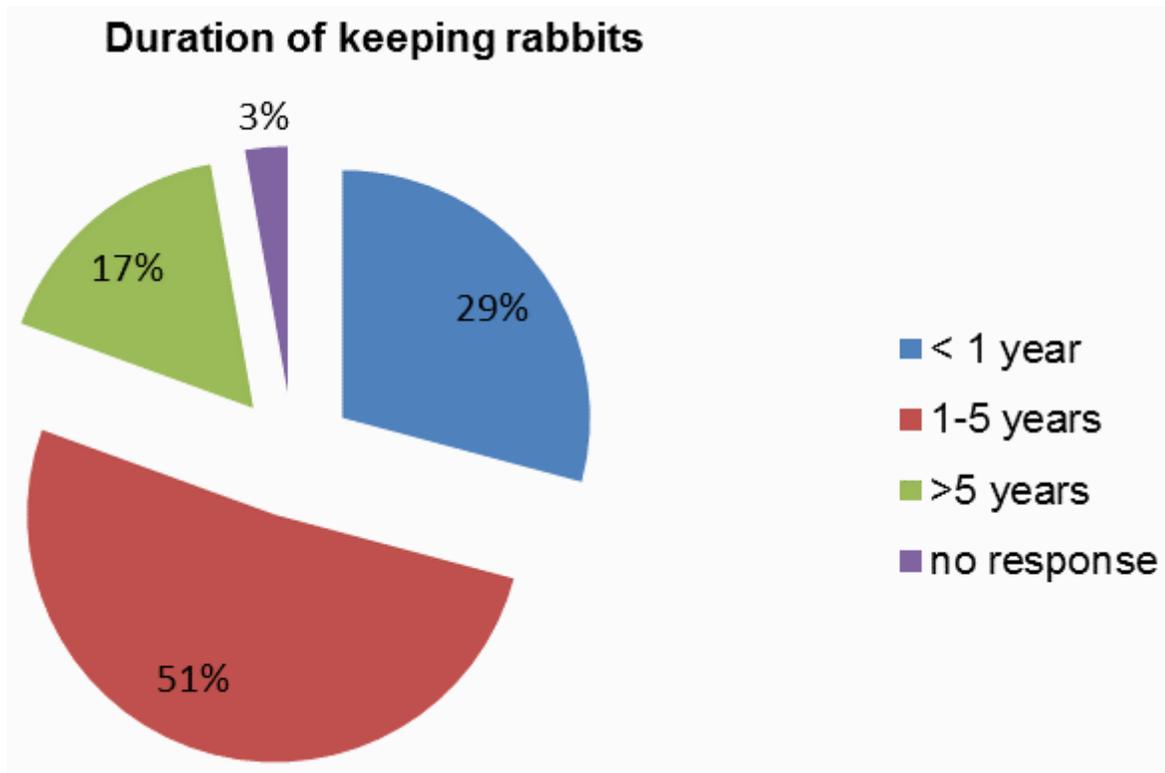


Figure 3. Duration that farmers had kept rabbits

Figure 4 shows the proportion of breeds of rabbits kept by the population of farmers interviewed. The observation in the study was that New Zealand white (73%), Californian (60%) and crosses (51%) were the most represented of the rabbit breeds, which was similar to that of Oseni et al (2008) in South western Nigeria and Lukefahr et al (1995) and the United States Department of Agriculture in 2002. It is notable that New Zealand White and Californian are suitable for meat production. This was the most frequently cited reason by majority of farmers for keeping and selecting these rabbits (Table 3). It further supports the observation that rabbit meat production was the primary objective of the Kenyan rabbit farmers.

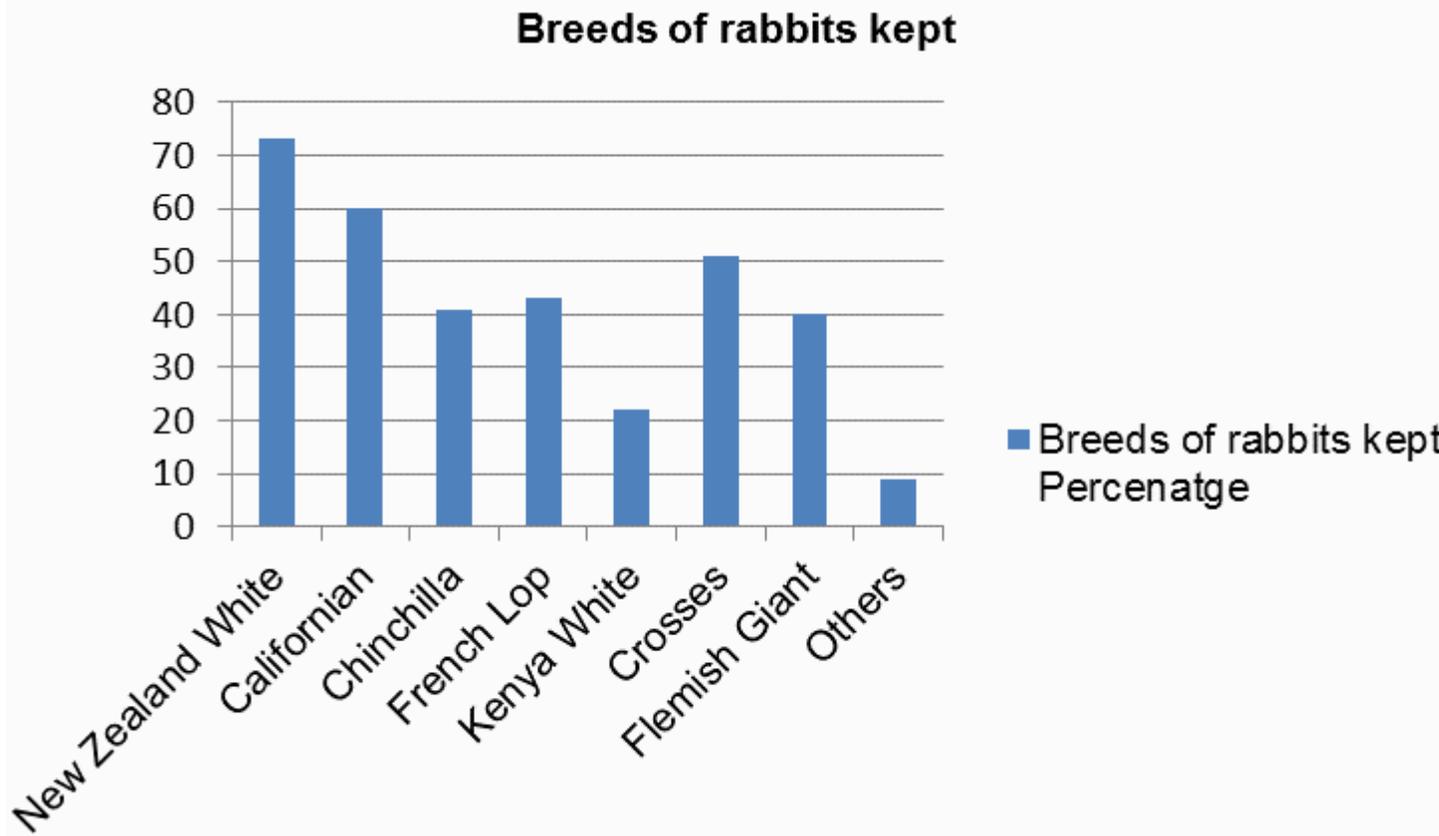


Figure 4. Breeds of rabbits kept by the farmers

Sixty four per cent (64%) of farmers bought their replacement stock from other farmers and 17% from breeding centres. This practice was also observed by Oseni et al (2008) to have disadvantages because there was no reliable and steady supply of rabbit stock anywhere, farmers acquired them from friends and other small holder farmers. This practice denied the rabbit farmers access to a wide range of genetic material including imported ones. The selection of stock was based mainly on breed (24%) and performance (17%) which was consistent with other published reports that underscore that farmers need to consider these performance traits in selecting the breeding stock to ensure that good traits are passed on to the offspring (Huish 2005). Most farmers used various types of feeds, shown in Table 3, namely pellets (11%), vegetables (19%) and pellets and vegetable mixtures. According to literature (Irlbeck 2001; Samkol and Lukefahr 2008), a balanced diet containing adequate fibre (20-25%), minimal starch and optimum protein concentration is important to prevent gastrointestinal distress and improve rabbit production (Irlbeck 2001). It was observed in the group discussions that some farmers did not trust feed companies because they did not indicate the feed composition on the packages, other farmers complained of high feed cost that caused them to seek alternatives to feeding and consequently substituting rabbit pellets with chicken mash.

Table 3. Production characteristics of rabbit breeders in Central, Nairobi and Rift Valley, Kenya

	Frequency of responses	Percentage
Replacement stock		
Farmers	46	64
Breeding centres	12	17
No response	14	19
Selection of breeding stock		
Breed	17	24
Performance	12	17
Advice from farmers	10	14
Size and beauty	7	10
Breed and performance	9	13
Breed, Performance, Advice and Size and beauty	4	5
Mixed responses	9	12
No response	4	5
Type of feed		
Pellets	8	11
Vegetables	14	19
Hay and grasses	5	7
Pellets and vegetables	45	63

Poor construction of rabbit hutches (Photos 1-5) was observed in the survey and this could be a reflection of low capital investment in rabbit farming and inadequate technical support in cage design; similar observations were made by Oseni et al (2008) in South western Nigeria;.



Figure 5. Example of poor design and structure of hutches in a farm in the study



Figure 6. Closer view of the photo 1, rabbit is exposed to weather extreme



Figure 7. Example of poor design, no proper drainage of waste is provided



Figure 8. Fecal pellet found in food, increasing risk of spread of disease



Figure 9. Example of multiple tiered hutches that prevent waste contamination into other hutches when adequately designed and constructed

The findings of this study show that 61% of farmers housed their rabbits in hutches, of these, 36% constructed a 2ft by 2ft (floor area) cage and 29% a 3ft by 3ft (floor area) cage. These findings confirm previous reports that the FAO guidelines on the construction of rabbit hutches can be modified and adopted by local farmers (Lebas et al 1997). Identification of rabbits was done mainly by cage numbers (57%), a method that is only practical in small scale enterprises as was the case in majority of farmers in the study. As rabbit production expands more reliable identification methods such as tags and tattooing are required in order to improve management practices such as selection for breeding. The average litter size of 7 kits observed in this study was comparable with litter sizes recorded by other researchers (Kpodekon et al 2004, Schiere 2004, Lukefahr 1998). An important finding in this study was the high

proportion of litters that reached market (68%) and this implied that in spite of the constraints observed, the enterprise contributed somehow to the family revenue.

Table 4 Rabbit production in Central, Nairobi and Rift Valley in Kenya

	Frequency of responses n=72	Percentage
Rabbit housing		
Hutch	44	61
Indoor rabbitry	18	25
Both of the above	10	14
Size of rabbit hutches		
2 ft by 2 ft	26	36
3 ft by 3 ft	21	29
2ft by 2ft and 3ft by3ft hutches	5	7
Unsure about size	14	19
Various responses	5	7
No response	1	1
Identification of rabbits		
Tags	3	4
Tattoo	4	6
Cages	41	57
Breeds	24	33
Average litter numbers		
4-6 kits	21	29
>7 kits	49	68
No response	2	3
Rabbits that reach market age (2 months)		
Few (less than half)	5	7
Most (more than half)	47	66
All	9	13
No response	11	14

Production constraints and diseases

Table 5 describes the major constraints and challenges the farmers in the study faced. Diseases were a major constraint in most farms (83%) and 69% of farmers reported that deaths frequently occurred in sick rabbits; predators were a menace in 29% of farms and this was complicated by poor quality of feeds as reported by 22% of farmers. The production and health constraints have a negative effect on the rabbit industry in the country; farmers may get easily discouraged and abandon the enterprise. In a study in India by Kumar et al 2010, constraints in rabbit farming have been categorized into: production, financial, marketing and institutional problems, while in Nigeria, Oseni et al (2008) identified some of the constraints in rabbit production as: lack of foundation stocks and capital, space, feed, vermin, and theft among others. This study mainly identified production constraints that should be addressed to expand rabbit production in Kenya. The constraints identified in this study were comparable to those observed in other developing countries and they cannot be ignored for expansion of rabbit production in Kenya.

Table 5 Constraints of rabbit keeping in Central, Nairobi and Rift Valley in Kenya.

Constraints	Frequency of respondents (n=72)	Percentage (%)
Disease	57	83
Predators	20	29
Death	50	69
Unavailability of feed	15	22
Other responses	13	19
Advice on rabbit production		
Yes	63	88
No	7	9
No response	2	3
Advice from whom		
Veterinary officer	23	32
Farmers	14	19
Both Vet. and Farmers	25	35
No response	10	14
Identify symptoms of disease in rabbits		
Yes	51	71
No	18	25
No response	3	4
Treatment of diseased rabbits		
Yes	50	69
No	20	28
No response	2	3

Although 88% of the farmers indicated that they obtained advice on rabbit production, only 32% accessed advice from Veterinary Officers and a significant proportion of farmers (35%) received advice from mixed sources including other farmers. Disease and death were reported to be a problem on many of the farms. Majority of the farmers (83%) had reported disease of rabbits on their farms, despite the fact that most farmers could recognise the symptoms of illness and disease in rabbits, only 69% of them sought treatment for their rabbits. It was apparent in this study that access to technical information to support management and control of the rabbit diseases is a major problem in Kenya.

It is important to develop intervention measures aimed to support rabbit farming in Kenya to address the many constraints identified in rabbit production in Kenya. For example, poor housing can be addressed through the design of appropriate low-cost and durable prototype housing using materials that are readily available in the market. Rabbit multiplication centres should be supported to serve as breeding centres that can also serve as bases for training rabbit farmer groups on best practices in the industry.

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Received 4 October 2012; Accepted 8 December 2012; Published 4 January 2013