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Full Length Research Paper

Rabbit technologies: Adoption studies in the Ashanti Region of Ghana

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The study focused on identifying the main factors affecting the adoption of technologies in the rabbit industry. Data was collected through the use of the snowball sampling technique. The stocking technology was the highest adopted technology by the rabbit farmers. There is a clear evidence to prove that overall adoption of rabbit technologies among rabbit farmers was low. Adoption of rabbit technologies was dependent on age, marital status, type of farming and main purpose of entering the rabbit business. Majority of the respondents were faced with time constraints in rabbit technology adoption. Technology oriented programmes must still be organised and intensified among rabbit farmers since overall adoption among rabbit farmers was low.

Key words: Adoption, breeding, feeding, Ghana, housing, rabbit, technology.

INTRODUCTION

Animal protein supply in the Ghanaian diet remains woefully inadequate. Throughout the years, local meat production has not keep pace with population growth, thus forcing the country to depend on meat imports to the neglect of the development and sustenance of the local livestock industry (Frimpong, 2009). Rabbit production which was introduced into the country in 1978 as an alternative for solving the protein shortage has not been given adequate attention despite its potential to meet the animal protein supply (Owen et al., 1986). Rabbit scientists have advocated for years that a tremendous potential exists for rabbits in the lesser-developed countries (LDC's), based on the virtues of the rabbit, documented decades ago in the classic paper by Owen (1976). This potential has been realized in certain LDC's, such as Cameroon, China, Egypt, Ghana and Mexico (Lukefahr, 2008).

The rabbit when raised with appropriate technologies can contribute virtually to improve the diet of large numbers of both rural and urban families, particularly landless and low-income ones, eventually providing such families with employment and a source of regular income (Onuekwus and Okezie, 2007). The adoption of available technologies has been a problem although they have been introduced to farmers (Onuekwus and Okezie, 2007; Madubuike, 2004). They are faced with lots of problems hindering their desire to adopt these technologies. According to Frimpong (2009), it is still known that many farmers are still exposed to the traditional ways of raising rabbits resulting in low performance and profitability.

A farmer is a rational decision maker who normally strives for a better standard of living and seeks ways of adopting new technologies to accomplish this goal (Nell et al., 1998). The focus of this study was to assess the adoption of rabbit technologies and to identify the main factors affecting the adoption of these technologies in the rabbit industry.

Research questions

(i) What technologies have rabbit farmers adopted?
(ii) To what extent have rabbit technologies been adopted?
(iii) What sources inform their use of technologies?
(iv) What are the factors accounting for the farmers' adoption of these technologies?
(v) What are the constraints of rabbit farmers in technology

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Table 1. Types of technologies adopted by rabbit farmers.

Types of technologies	Low adopters	Partial adopters	High adopters
Record keeping	52.0	18.0	30.0
Feeding	24.0	36.0	40.0
Housing	28.0	38.0	34.0
Stocking	18.0	26.0	56.0
Disease management	24.0	50.0	26.0
Breeding stock selection	36.0	54.0	10.0
Breeding and care for pregnant doe	24.0	60.0	16.0
Weaning and sex determination	26.0	22.0	52.0

adoption?

RESEARCH METHODOLOGY

The study area for this research was the Ashanti Region of Ghana. The population for the study was made up of all rabbit farmers (70) in the region. Questionnaires were developed and pre-tested with 10 of the rabbit farmers in the region. Fifty (50) rabbit farmers were then selected using the snowball sampling technique. This was because, the farmers were not easy to come by and also there was no association where they could easily be found. Farmers were visited individually in their farms for the collection of data by the team of researchers. In order to ensure reliability and validity of the questionnaires obtained after the data collection, they were edited into an appropriate form and subjected to analysis. The data collected from the respondents was entered into the Statistical Package for the Social Scientist - SPSS (Version 16.0). Descriptive statistics such as frequency distributions and percentages and inferential statistics that is chi-square test of independence were employed to analyse the data.

RESULTS

Types of technologies adopted by rabbit farmers

Rabbit farmers were graded according to the number of technologies they had adopted (Table 1). It shows that farmers who had adopted between one (1) and two (2) technologies were classified as low adopters. Farmers who had adopted between three (3) and five (5) technologies were classified as partial adopters whiles farmers who had adopted between five (5) and six (6) technologies were classified as high adopters. Based on this classification system, farmers were assessed based on the types of technologies that they had adopted. Results show that majority (52%) of the rabbit farmers were low adopters. In terms of housing, disease management, breeding stock selection and breeding and care for pregnant doe technologies, majority (50, 54, 60% respectively) of the rabbit farmers were partial adopters. Majority of the rabbit farmers who were high adopters were represented in feeding (40%), stocking (56%) and weaning and sex determination (52%).

Record keeping technology was the least adopted technology by rabbit farmers. Similarly, Hansen et al. (1991) noted that farmers often do not pay attention to this aspect of their farm business and so farm management decisions are guided by vague estimates and guesses based on their past experience of farming (Johl and Kapur, 2001). Adoption of feeding technology for rabbit farming is encouraging since over 70% of the respondents are above the low adopters' status. However, Onuekwus and Okezie (2007) noted that feeding technology was the least adopted technology by rabbit farmers in Nigeria.

According to Onuekwus and Okezie (2007) housing technology was the highest adopted technology by rabbit farmers in Nigeria. However, this study found majority of the farmers to be partial adopters. Good housing systems for rabbits are important to protect them from adverse weather conditions, predators and maintain good and sanitised environment (Onuekwusi, 2001). The result on disease management agrees with Onuekwus and Okezie (2007) who noted that disease management was partially adopted by rabbit farmers. However, Becerril-Pérez and Pro-Martínez (2007) revealed that this technology was highly adopted by farmers in India. Although rabbits are often observed to be healthy and productive, there are exceptions: in LDC countries, rabbits are particularly vulnerable (Lukefahr, 2008). The result on breeding and care for pregnant doe is in variance with Becerril-Pérez and Pro-Martínez (2007) who revealed that breeding technology was highly adopted by farmers in India. However, although the adoption of the breeding and care for pregnant doe is partial, there is a drift toward high adoption level.

Extent of technology adoption among rabbit farmers

Based on the earlier classification, it can be realised from (Table 2) that majority of the respondents (54%) are low adopters (1 to 2), 38% are partial adopters (3- to 5) and 8% are high adopters (6 to 8). There is a clear evidence to prove that adoption of rabbit technologies among rabbit farmers is rather low. Similarly, Onuekwus and Okezie (2007) also found out that the overall extent of adoption of rabbit technologies was low among rabbit farmers in Nigeria. The implication for low adoption is

Table 2. Overall technology adopted by rabbit farmers.

Overall number of technologies adopted	Frequency	Percentage
Low adopter (1-2)	27	54.0
Partial adopter (3-5)	19	38.0
High adopter (6-8)	4	8.0
Total	50	100.0

Table 3. Main source of information on rabbit technologies.

Main source of information on rabbit technologies	Frequency	Percentage
Extension agents	17	34.0
Radio/television	5	10.0
Other farmers	25	50.0
Others	3	6.0
Total	50	100.0

Table 4. Factors affecting technology adoption among rabbit farmers.

Variables	X^2 calc.	X^2crit.	Df	Sig. Level (%)	Results
Sex	6.48	9.21	2	1	Accepted
Age	33.60	20.09	8	1	Rejected
Marital status	28.84	13.3	4	1	Rejected
Educational level	0.63	5.99	2	5	Accepted
Household size	3.04	9.49	4	5	Accepted
Type of farming	49.12	13.3	4	1	Rejected
Main purpose for rabbit business	20.48	9.21	2	1	Rejected
Years of experience	3.47	9.49	4	5	Accepted
Number of rabbits	1.75	5.99	2	5	Accepted

that rabbitory will hardly make any meaningful income and productivity for the rabbit farmers.

Sources of information on rabbit technologies

When farmers were asked the main source of their information on rabbit technologies, 50% claimed their source of information was from other farmers, 34% claimed their main source of information was extension agents. Another 10.0% responded that their main source of information was either the radio or the television. The remaining 6% responded that their main source of information was “Others” which implied internet and the print media (Table 3).

Factors affecting technology adoption among rabbit farmers

A chi-square test of independence was employed to analyse the data on the factors that affected the adoption of technologies among rabbit farmers. According to the data obtained from the study, it showed that adoption of rabbit technologies was dependent of age, marital status, type of farming and main purpose of entering the rabbit business. Married respondents are likely to adopt rabbit technologies than their counterparts (Table 4).

Constraints in technology adoption

Data was collected on the constraints that were being faced by rabbit farmers in adoption of technologies. According to most of the respondents (60%), they were faced with time constraints in technology adoption. According to them, they were busy people who hardly had time for their rabbit and even the learning of technologies that could help improve their businesses. About 24% complained of availability of feed, 10% complained of social awareness which comes with the consumption of the rabbit meat whiles 6% spoke of financial problems as their constraints in technology adoption (Table 5).

Table 5. Constraints in technology adoption.

Responses	Frequency	Percentage
Financial problems	3	6.0
Time constraints	30	60.0
Social awareness	5	10.0
Availability of feed	12	24.0
Total	50	100.0

DISCUSSION

Types of technologies adopted by rabbit farmers

Results on the types of technologies adopted by rabbit farmers showed that record keeping technology was the least adopted technology by rabbit farmers. Similarly, Hansen et al., (1991) noted that farmers often do not pay attention to this aspect of their farm business and so farm management decisions are guided by vague estimates and guesses based on their past experience of farming (Johl and Kapur, 2001). Adoption of feeding technology for rabbit farming is encouraging since over 70% of the respondents are above the low adopters' status. However, Onuekwus and Okezie (2007) noted that feeding technology was the least adopted technology by rabbit farmers in Nigeria.

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Extent of technology adoption among rabbit farmers

There is a clear evidence to prove that adoption of rabbit technologies among rabbit farmers was rather low. Similarly, Onuekwus and Okezie (2007) also found out that the overall extent of adoption of rabbit technologies was low among rabbit farmers in Nigeria. The implication for low adoption is that, rabbitory will hardly make any meaningful income and productivity for the rabbit farmers.

Sources of information on rabbit technologies

Other farmers seemed to be the main source of information on rabbit technologies for rabbit farmers. Similarly, Son (2007) found that farmers rely on fellow farmers mostly than any other source of information despite the increasing technology which farmers can adopt to acquire current information. He observed further that farmers who are already in production have more experience and as such share these experiences with new farmers who are now in production.

Factors affecting technology adoption among rabbit farmers

Adoption of rabbit technologies is dependent of age, marital status, type of farming and main purpose of entering the rabbit business. Age as a dependent factor implies that the younger the respondent, the higher the likelihood to adopt rabbit technologies. Okwoche et al. (1998) observed that young people are often more prepared to take risk of adopting innovation than the older ones. Older people are most of the time adherents to old techniques of farming, hence lower adoption. Similarly, Onuekwus and Okezie (2007) found out that the age of respondents had a positive influence on their adoption of rabbit technologies.

Married respondents are likely to adopt rabbit technologies than their counterparts. This is because since married people have a lot of responsibilities especially at home, they are likely to adopt technologies that will help lessen the burden on their resources. However, Onuekwus and Okezie (2007) found out that the marital status of respondents does not have a positive influence on their adoption of rabbit technologies. Type of farming as a dependent factor implies that full time rabbit farmers are more likely to adopt rabbit technologies than part time farmers. This could be because since full time farmers only have their farms to depend on, they will adopt any technology that promises to improve their incomes and productivity. Technology adoption by rabbit farmers is dependent on their main

purpose for entering the business. Since this is a dependent factor, it implies that respondents who enter the rabbit business for income generation are likely to adopt rabbit technologies than respondents with other objectives since their target is to maximise output to increase income. However, Onuekwus and Okezie (2007) found out that the main objective of respondents who pursue rabbit farming does not have any positive influence on their adoption of rabbit technologies.

Constraints in technology adoption

Most of the respondents were faced with time constraints in technology adoption. Most of the farmers are very busy people who did not spend most of their time on the farm. They felt doing the old things they had been used to do not take much of their time unlike the new technologies. Availability of feed was their second most felt constraint (24%) in technology adoption. Social awareness ranked third with 10% whiles financial problems ranked last with 6%. Ozor and Madukwe (2005) confirms that time factor is a major barrier towards technology adoption. Livestock Echo (1997) pointed out inadequate nutrition (feed availability) to be among the major constraints to successful commercial rabbit keeping in the tropics.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, the following conclusions and recommendations are drawn:

1. Rabbit farmers are convinced about the relevance of stocking technology for their rabbit farms as it was the highest adopted technology by the farmers.
2. Rabbit farmers overlook the importance of record keeping technology for their rabbit business as it was the least adopted technology by the farmers.
3. There is a clear evidence to prove that adoption of rabbit technologies among rabbit farmers is rather low.
4. Adoption of rabbit technologies is dependent of the following variables: Age, marital status, type of farming and main purpose of entering the rabbit business.
5. The most felt constraint of rabbit farmers in technology adoption was time constraints.

Technology oriented programmes must still be organised and intensified among rabbit farmers since overall adoption among rabbit farmers is low. The focus can be on the technologies that have low adoption levels. Measures should be put in place to mitigate the constraints of rabbit farmers in the adoption of available technologies.

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