

RABBIT PRODUCTION SYSTEMS IN SELECTED AREAS OF FIVE PROVINCES IN SOUTH AFRICA

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Abstract - Rabbit enterprises have been developed in three Transvaal provinces (Gauteng, North West and Mpumalanga) some 30 years ago. In the former Ciskei homeland of the Eastern Cape and at Botshabelo in the Orange Free State, small scale rabbitries were established in 1986 and 1992 respectively. The objective of the present study was a) to assess production practices used by rabbit keepers b) to identify the factors which limit or have limited rabbit production by the rabbit keepers; and c) to identify possible ways in which some of these limitations could be addressed in future. In the Eastern Cape a total of 30 rabbit-keepers, five extension officers, 10 butchery personnel and 30 potential consumers of rabbit meat were interviewed on various issues related to rabbits. Further information on rabbits in the Transvaal and Orange Free State was obtained by telephonic interviews from 14 rabbit keepers, one abattoir owner, and two agricultural institutions. The investigation showed that the three Transvaal provinces have the highest management and production levels, followed by Orange Free State and the Eastern Cape. The number of litters achieved per year was found to be 7, 6 and 3 respectively. The number of pups per litter was 8 and 9, 7 and 6, respectively. Pup mortalities before slaughter were recorded at 10, 15 and 47% for the respective provinces. One of the biggest rabbit abattoirs in the Transvaal slaughter between 60 000 and 80 000 rabbits per month. Although rabbit keeping has been a success in the Orange Free State and the Transvaal, a great deal of success has been and is still limited by poor quality feed from the local feed manufacturers, illegal rabbit abattoirs, lack of market for rabbit skins and non-existence of a control board for the rabbit industry. In the Eastern Cape rabbit keeping has not been the success it intended to be, due to amongst other factors, lack of market in rural areas. However, investigations indicated that a market for rabbit meat does exist in urban centres, but retail agents require a reliable supply. It appears that by exposing people to rabbit-keeping, including demonstrations of the preparation of the meat and tasting occasions, a market for rabbit meat could be created in the rural areas.

INTRODUCTION

Rabbits were domesticated several hundred years ago and on all continents they are being raised for meat, fur, show, as a laboratory animal and for breeding purposes (SANDFORD, 1969). Rabbits are considered suitable for production in developing areas because they are prolific (EUGENE, 1994); their meat has good nutritional qualities (KELLER, 1982 and LUKEFAHR, 1992); they use forage efficiently (LEBAS, 1981); they can easily be integrated in existing farming systems (NUWANYAKPA, 1993); input costs tend to be low (EUGENE, 1994); they allow for a wide range of management systems, from highly sophisticated systems employed by large commercial producers to very simple systems adhered to by small scale farmers (EUGENE, 1994) and taking care of their health is relatively easy (LUKEFAHR, 1992). With this in mind rabbit enterprises have been developed in South Africa for various purposes. For example, in three provinces in the Transvaal (Gauteng, North West and Mpumalanga) 78 rabbitries have been established for commercial purpose, while at Botshabelo in the Orange Free State province small scale rabbit breeding projects have been developed in 1992 to promote food security and combating poverty and joblessness in more than 80 needy families (MARTIN, 1995). A sense of ownership and responsibility was cultivated amongst the families by not giving them breeding rabbits free of charge, but by encouraging them to buy rabbit packages at lower prices subsidized by Economical Development Corporation. Each package cost R50 and comprised of four does, a buck and a 50 kg bag of rabbit pellets.

In the Eastern Cape province the Department of Agriculture of the former Ciskei homeland initiated a project aimed at developing and promoting rabbit-keeping amongst rural and suburban households. The initiators of the project postulated that rabbit-keeping was a particularly suitable way of producing animal protein by the target group, because starting costs were low and the basic food requirements of rabbits were considered to be available at little or no cost to the keeper, in the form of kitchen and garden refuse and weeds and leaves of several of the local bushes and trees (ZEISING, 1987). In support of the initiative the Department of Agriculture of Ciskei established the Ciskei Rabbit Breeding Centre (CRBC) at Horse Shoe near King

William's Town in 1986. The Department also developed advisory services accessible to people free of charge. The advisory team consisted of five extension officers who were trained at Fort Cox College of Agriculture by Claudia ZEISING, the initiator of the rabbit production idea.

The present study was conducted in five provinces in South Africa, namely; Gauteng, North West, Mpumalanga, Orange Free State and Eastern Cape. Its objective was a) to assess production practices used by subsistence and commercial rabbit keepers b) to identify the factors which limit or have limited rabbit production by the rabbit keepers and the target groups; and c) to identify possible ways in which some of these limitations could be addressed in future.

MATERIALS AND METHODS

In the Eastern Cape a detailed study was conducted in districts situated within the former Ciskei homeland, namely; Keiskammahoeck, Middledrift, Victoria East, PEDDIE and ZWELITSHA. Information was gathered from three groups of people which have an influence on an enterprise such as rabbit keeping, namely, the producers, the marketers and the consumers. Information on where to find existing rabbit keepers was provided by CRBC. Data were obtained from 30 rabbit keepers by means of farmer friendly techniques, which form part of the Rapid Rural Appraisal methodology (MCCRACKEN, PRETTY and CONWAY, 1988). Each rabbit keeper was interviewed individually. Information on the history of their rabbit enterprise was obtained by means of the time-line technique and the current status of the enterprise by means of the transect-walk technique (CHAMBERS, 1992). Production practices, access to information, marketing opportunities and economic returns were assessed by means of semi-structured interviews. A formal questionnaire survey was used to test the acceptability of rabbit meat for consumption by humans administered to 30 randomly selected potential consumers residing in the region. Perceptions of rabbit meat as a saleable commodity were elicited by administering a questionnaire to 10 local butchery owners or butchery personnel.

Information on the current status of rabbit keeping in other provinces (Gauteng, North West, Mpumalanga and Orange Free State) was gathered by means of telephonic interviews from 14 rabbit keepers, one owner of rabbit abattoir, and from two agricultural institutions, namely; Glen Agricultural Development Institute in Orange Free State and Irene Animal Production Institute in Gauteng.

RESULTS AND DISCUSSION

Production practices

Housing - Of the total of 30 rabbit keepers in the Eastern Cape, five operated in an urban environment and the others were rurally based. In most of the breeding units (82%) rabbits are kept in a small wire-netting run covered with corrugated iron and placed directly onto the ground. A small group of breeders (15%) purchased wooden cages manufactured by the CRBC, which sell at a price of R75 each. These cages consists of three compartments and can accommodate 9 rabbits. The remaining 3% of the keepers raise rabbits in wire cages that are suspended 90 cm above the ground.

In the Orange Free State the majority of rabbit keepers at Botshabelo keep their rabbits on wire cages that are either individually or communally owned. In the three Transvaal provinces all the 14 interviewed rabbit keepers use wire cages equipped with feed hoppers and automatic drinking nipples. Breeding rabbits are caged individually, while fattening rabbits are housed in groups of between four to six rabbits per cage.

Breeds and reproductive performance - All the 14 rabbit enterprises in the Transvaal provinces run on a commercial basis, and vary in size from 19 to 250 breeding does. Rabbit breeds that are kept include Rex, New Zealand White and Californian. The average ratio of breeding bucks to does that is adhered to is 9:1. On average each breeding doe achieves seven litters per year, each litter carrying between eight and nine pups (Table 1). Does are remated from ten to fifteen days after they have kindled. Pups are reared until they reach a slaughter live weight of 2 kg at eight to eleven weeks of age. Average feed conversion ratio of fattening rabbits is 3:1. However, two rabbit keepers reported a better ratio of 2.7:1 in their enterprises.

Table 1 : Comparative rabbit production levels of subsistence rabbit keepers in the Eastern Cape and with their commercial counterparts in the Orange Free State and three Transvaal provinces

Production parameters	Province		
	Eastern Cape	Orange Free State	Transvaal
Buck:doe ratio	1:3	1:4	1:9
No. of litters per doe per year	3	6	7
No. of pups per doe per litter	6	7	8-9
No. of pups per doe per year	18	42	56-63
Pup mortalities before slaughter age	47%	15%	10%
Rabbit feed	Greens and kitchen refuse	Pellets and greens	Pellets

At Botshabelo the Belgian Giant breed is used and it was bought from CRBC in the Eastern Cape (MARTIN, 1995). However, this rabbit breed is not the best meat producing rabbit available, but it is ideal for the needs of the people in terms of better immunity against certain diseases, dark eyes and good skin. Rabbits are kept at a scale of no fewer than four breeding does per person, and the level of production is slightly lower than that of Transvaal rabbit keepers (Table 1).

By contrast, in the Eastern Cape most of the enterprises are very small, subsistence and are characterized by low level of management and production. For example, the number of breeding does per unit ranged between 1 and 15, the average being four. The main breed kept is Bouscat. Other types of breeds include Flemish, Bouscat x Flemish and New Zealand White. The mean ratio of buck to does was 1:3, which is lower than the 1:10 recommended for small scale units (ZEISING, 1987). However, 57% of breeders do not keep a buck at all. They rely on bucks belonging to neighbours or bring their does to CRBC to mate. The majority of the keepers (60%) separate does from bucks, which is recommended practice aimed at avoiding double pregnancies. During the breeding period, however, 90% of the keepers allowed mating to occur for several hours, as opposed to the recommended two to three minute period (ASCOUGH, 1995). On average a doe was found to produce 3 litters per year with a mean of 6 pups per litter, which is about half the number of offspring that could be produced by a doe. When raised under optimum conditions exceptions of high prolificacy do occur and in one instance a doe kindled 16 pups. Pup mortalities are generally high, only 47% reach the average slaughter age of 2.5 months, the others dying pre-maturely.

Feeding - The 14 commercial rabbitries in the Transvaal provinces feed rabbits solely on compound rabbit pellets that contain 16% crude protein, while at Botshabelo both rabbit pellets and greens from the community vegetable gardens are used for rabbit feeding. In the Eastern Cape rabbit keepers initially fed their animals on rabbit pellets or broiler feed (16 or 22% crude protein), a practice recommended to them by the extension workers. Soon keepers discovered that rabbits survived quite well when fed on maize, green grass, garden weeds and kitchen refuse such as maize porridge, bread and water melon. Production of rabbits is mainly for home consumption of meat and as a hobby. A minority of keepers (16%) occasionally sell live animal or carcasses. All rabbit keepers burn the skins, because they say there is no market for this product.

Market - At Botshabelo rabbits are no longer kept for home consumption as it was originally intended, but for commercial purpose. The demand for rabbits is very high so much so that rabbits are sold for a price of R30 each, not R6.50 as it was originally anticipated (MARTIN, 1995). In the Transvaal provinces market for rabbit meat is also good, and tends to peak up in summer. Slaughter rabbits are sold to abattoirs for an average price of R6.10/kg. One of the big abattoirs in Gauteng slaughter between 60 000 and 80 000 rabbits per month, and sell rabbit portions to major chain stores, butcheries and restaurants. The retail outlets sell fresh rabbit meat for a price of between R18 and R21/kg. Major consumers of rabbit meat are foreign visitors from Europe, particularly the Spanish, Italians, Portuguese, French and the Germans.

Factors limiting production

Rabbit production in South Africa is adversely affected by a wide range of factors, and the intensity of these factors varies depending on the location of the rabbit enterprise and on whether the enterprise is of subsistence or commercial nature. For example, the 14 interviewed commercial rabbit enterprises in the Transvaal operate in urban and suburban areas, and encounter the following problems.

(a) **Poor quality feed** : The local feed manufacturers produce a standard feed for rabbits irrespective of their production purpose. The disadvantage of this feeding system is that rabbits are not fed according to their nutrient requirements; thus are either underfed or overfed. Both levels of feeding are unnecessarily costly. Mention was also made by 64% of the commercial enterprises that local rabbit feed contains large amounts of powdery materials which tend to stick to the inner walls of the feed hopper.

(b) **Illegal rabbit abattoirs** : The existing illegal rabbit abattoirs circumvent the normal public health checks required prior to selling of the commodity to the public.

(c) **Lack of a market for skins** : Skins from slaughtered rabbits can't be tanned because small machinery that is designed to process skins of the size of the rabbit are not available in the country yet. Such machinery is presently under construction, and rabbit keepers are expected to fetch an average price of 30 cents for each skin sold to the processing plant.

(d) **Non-existence of a control board** : The purpose of the control board would be to ensure that only proven or registered breeding rabbits are sold to commercial farmers. Trading of breeding stock with inferior genes by quasi-breeders adversely affects sustainability of many rabbit enterprises.

At Botshabelo there are no clear limitations to rabbit keeping. Previous problems such as religious ban on keeping of black rabbits and superstitions against keeping of rabbits with pink eyes were overcome by introducing a right breed (Belgian Giant) and strong advertisement programme by Glen Agricultural Development Institute and Technikon Orange Free State (MARTIN, 1995).

In the Eastern Cape rabbit production by the target group was found to be limited by environmental, human and socio-economic factors.

Cold temperatures of lower than 9°C were found to cause mortality of 50% of the offspring before weaning, mainly as a result of the poor quality of the housing used. By keeping rabbits in CRBC cages, breeders reduce mortalities due to cold to 20%. At the government stud farm, where housing conforms to accepted norms, pre-weaning mortalities due to cold stress are 3% only, but hot temperatures (above 34°C) are more of a problem causing mortalities of 20% of the mature breeding stock.

Human factors affecting small-scale rabbit keeping include a lack of consumer appeal, religious and cultural constraints and theft problems.

The majority of potential consumers of rabbit meat (79%) found rabbits lacking in appeal when presented in whole carcass form, because it resembles a cat or a human infant. Some of the religious denominations forbid the consumption of rabbit meat by their followers, equating its status to that of pork, i.e. the meat of an unclean animal.

Culturally, Xhosa people consider rabbit meat suitable for consumption by boys only (Xhosa boys hunt and eat wild rabbits), and advise women to refrain from consuming rabbit meat, because it is said to cause sterility and abortion. Cultural resistance to the consumption of rabbit meat was confirmed by 7 out of the 10 butcheries interviewed, who had no interest in marketing rabbit meat, because they feared turning away existing and potential customers from their shops. The remaining three butcheries were prepared to sell rabbit meat in their shops, but indicated that the product would need to be packaged in a cut-up form to increase consumer appeal. There is evidence that cultural constraints (taboos) are weakening. Most potential consumers of rabbit meat (83.4%) referred to these taboos as being primitive and meaningless. Regional differences in the degree of cultural resistance to the consumption of rabbit also occur. For example in the Keiskammahoek district, where many people are familiar with the existence of rabbit-keeping projects, the level of resistance was slightly lower (14.3%) than in Victoria East (15.4%) and Middledrift (20%).

Generally, rabbit keepers complained about the absence of markets for rabbit products, i.e. meat and skins. They stated that rabbit meat was too lean to be attractive to Xhosa people and that nobody was interested in rabbit skins (Xhosa people like fatty meat). Yet local markets are available for both products. CRBC sells about 90 rabbits per month to three restaurants in East London, which cater for the tastes of foreigners mainly. A major chain store in East London indicated a market for 500 carcasses a week, but insists on a regular supply. A trader in King William's Town has a market for 5 000 carcasses a week, which he is able to export to Tunisia.

Information flow was found to be very poorly developed. The level of knowledge amongst extension staff assigned to the rabbit extension project was poor, mainly because training programmes in rabbit production are not offered at any of the tertiary agricultural institutions in the country. As a result four of the five extension officers assigned to the project have asked to be transferred to other projects, stating a lack of interest and commitment to rabbit-keeping as the main reason for their request. The only remaining extension officer is assigned full time to activities at the CRBC. This means that there is no longer a local extension service that deals specifically with rabbit keeping. It does not come as a surprise that small scale rabbit breeders identified the lack of information to be a major constraint, preventing them from expanding operations.

CONCLUSION

Rabbit production in South Africa is visibly a success only in the provinces such as Gauteng, North West, Mpumalanga and Orange Free State. Key factors that have yielded success in these provinces include availability of market for rabbit meat, availability of information on rabbit production from institutions such as Glen Agricultural Development Institute and Technikon Orange Free State, availability of production resources and easy access to effective extension services. However, a more advanced level of success has been and is still limited by poor quality feed from the local feed manufacturers, illegal rabbit abattoirs, lack of market for rabbit skins and non-existence of a control board for the rabbit industry .

Whereas rabbit production in the Eastern Cape, particularly in the former Ciskei homeland may not have been the success it intended to be, a small nucleus of about 30 keepers continue to produce rabbits on a very small scale. Before new attempts at promoting rabbit-keeping amongst rural and suburban people in the Ciskei region are made, appropriate information on production technologies and marketing opportunities need to be developed. Investigations indicated that a market for rabbit meat does exist in the urban centres, but retail agents require a reliable supply. It appears that by exposing people to rabbit-keeping, including demonstrations of the preparation of the meat and tasting occasions, a market for rabbit meat could be created in the rural areas of the central Eastern Cape.

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