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RABBIT PRODUCTION AND NETWORK IN BENIN IN 1998.

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ABSTRACT

This study was performed in 1998 to evaluate rabbit production and the organization of rabbit breeders in Benin. One hundred eighty-eight rabbit breeders, mainly fairly young, educated men, were contacted in the four administrative areas in the southern part of the country. Twenty-one percent of breeders were professionally qualified, which is evidence of rapid professionalization of rabbit production compared to the situation in 1988. Seventy-five percent of rabbit breeding units had a maximum of 10 breeding does, 13% between 10 and 20 breeding does and 11% were commercial farms (with 20 – 150 breeding does). Animals were reared in cages by 78% of rabbit breeders. In 97% of cases the foodstuffs provided were in the form of complete balanced diets. Reproduction techniques were well known and applied by two thirds of the breeders. Despite the fall in production following the outbreak of viral hemorrhagic disease which occurred in 1995, the rabbit stock in 1998 was estimated at 40 240 animals. Current market demand is equivalent to this, and represents about 53.3 tonnes of carcasses. A projection based on the changing consumption of rabbit meat puts the future demand at 263 000-1 578 000 rabbits in 2002 and 313 000-1 880 000 rabbits in 2007. Rabbit meat is sold at 500-1 500 FCFA per kilo live weight and 1 250-2 000 FCFA per kilo of prepared meat. (100 FCFA = 0.18 Euro or 0.18 US\$) Rabbits are generally sold at 4 – 6 months of age (76%). In the absence of a rabbit market organization, most rabbits are sold by direct sale or direct collection by middle men. There is a network of technical and financial support which should ensure the professional training of rabbit breeders. The formation in 1993 of an association of rabbit breeders (ABEC) and its current dynamism should provide better opportunities for improved organization of the network and increased production of rabbits in Benin.

INTRODUCTION

As most developing countries, Benin has problems with lack of animal protein, and to deal with this the breeding of rapidly reproducing, prolific animals is receiving greater encouragement. A research and information center (Centre cunicole de recherche et d'information – CECURI) was created in 1988 to resolve this problem (Kpodékon and Coudert, 1993). CECURI's endeavors increased the number of rabbit breeding units from 450 in 1990 to 624 in 1994, representing almost 39% increase in this period (CECURI, 1994). At the same time the number of breeding does increased from 2 250 to 6 865, *i.e.* an increase of 205%, and the number of breeding does per rabbit production unit increased from 5 to 11, an increase of 120%. The astonishing increase in these two zootechnical parameters indicates a promising future for rabbit production. Unfortunately the outbreak of viral hemorrhagic disease (VHD) which occurred in 1995 completely disrupted these optimistic predictions (Kpodékon and Alogninouwa, 1998). The aim of the present study was to undertake a review of rabbit production in Benin following the outbreak of VHD.

MATERIALS AND METHODS

Following the outbreak of viral hemorrhagic a new survey was therefore considered necessary and it was performed by the authors in collaboration with CECURI and the Benin Association of Rabbit Breeders (ABEC). Information was collected by questionnaire, and data processing and statistical analysis were performed using the SPSS program with MSDOS.

Four categories were targeted in the initial survey: rabbit breeders, financial and support agencies, middlemen, and supermarkets and public restaurants. On the basis of the results of the first survey, a further, more detailed study was undertaken with thirty rabbit breeders of different types in the four administrative areas selected from the six which make up the country of Benin.

The second category studied in the survey involved financial and technical support agencies involved in the development of rabbit breeding in Benin. The third comprised the middlemen who obtain rabbits from breeders and prepare them (slaughter, preparation and packaging) before delivery to consumers, and the fourth comprised 76 public restaurants and hotels and supermarkets.

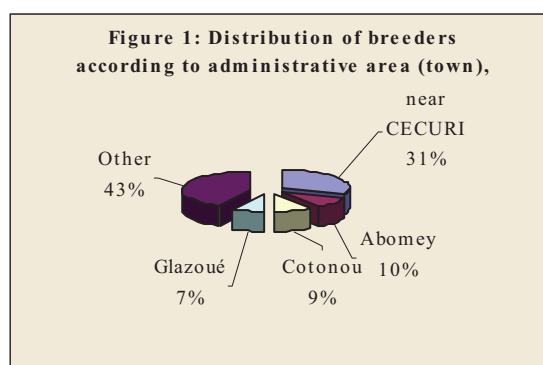
As rabbit meat did not feature in the statistical data available on foodstuffs consumed in Benin, the information used to analyze commercial parameters such as supply and demand was obtained directly from the above groups. Two approaches were used to obtain information, one involving breeders and the other involving their clients (public restaurants and supermarkets). The latter provided information enabling us to evaluate their demand for rabbit meat.

RESULTS AND DISCUSSION

General characteristics of breeders

Geographical distribution

One hundred eighty-eight breeders were surveyed. The Atlantic administrative area had 98 breeders (49%), and the administrative areas of Mono and Ouémé had 19 and 18 breeders, respectively (10%), and were the poor relations in terms of rabbit breeding. Rabbit breeding is concentrated around large towns (*e.g.* suburbs of Cotonou and Abomey-Calavi) and large road networks such as Glazoué (fig. 1).



Socioeconomic characteristics

Ninety-three percent of the 188 breeders surveyed were men. Although women represented only 7%, it must be emphasized that in family rabbit units the women perform a large number of the routine tasks. Mean age of breeders (both sexes) was 33-40 years (range 13 – 84 years). Breeders fell mainly into three age groups: 20 – 29 years (20%), 30 – 39 years (27%) and 40 – 49 years (21%). Eight percent of breeders were less than 20 years of age, and 24% over 50 years.

The distribution of breeders according to level of education indicates that a high proportion (80%) are relatively well educated.

Main occupations of breeders

Rabbit breeding was not the main occupation of the majority of breeders. Nevertheless, 21% were specialized in rabbit breeding. This represents a high degree of professionalization compared to 1988 (Kpodékon, 1988). However, in general rabbit breeding represents a secondary occupation for wage-earning farmers, shopkeepers and craftsmen, and a temporary occupation for the qualified unemployed, pensioners and students. The latter give up rabbit breeding when difficulties occur or if there is a better opportunity to earn money.

The main incentive for rabbit breeders was related to the income from it: 44% bred rabbits entirely for the income and for 47% it was related to both profit and personal consumption. Few people bred rabbits as a leisure activity or for pleasure (2%) and few bred them only for personal consumption (2%).

Breeding units

There were three types of breeding unit: family-based breeding, with 10 breeding does or less, semi-commercial systems with 11 – 20 does and commercial systems with more than 20 does (up to 150).

Study of the geographical distribution of breeding units in the Atlantic area showed that 63% were family concerns, 20% semi-commercial and 17% commercial. In Zou 93% were family units and 7% were semi-commercial, in Ouémé 78% were family units, 11% semi-commercial and 11% commercial, and in Mono 95% were family units and 5% semi-commercial. The Atlantic area is the main rabbit producing area of Benin, with 40% of family units, 72% of semi-commercial and 89% of commercial breeding units (Table I).

Figure 2 shows that 2% of breeding colonies had no breeding does at the time of the survey. Seventy-five percent of these were family units, 13% were semi-commercial and 10% considered themselves to be commercial units.

Rearing methods

Table 1: Geographical distribution of breeding units

Area	small scale	semi-commercial	commercial
Atlantique	40.1	72	88.9
Mono	12.7	4	0
Ouémé	9.9	8	11.1
Zou	37.3	16	0
Total	100	100	100

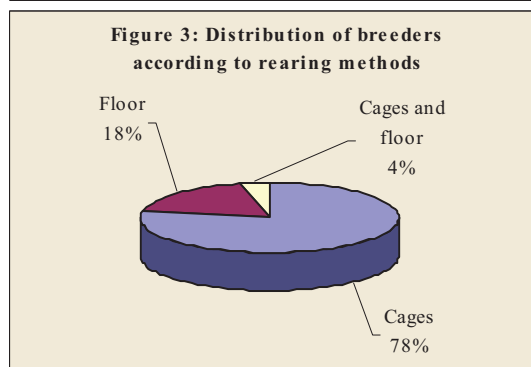
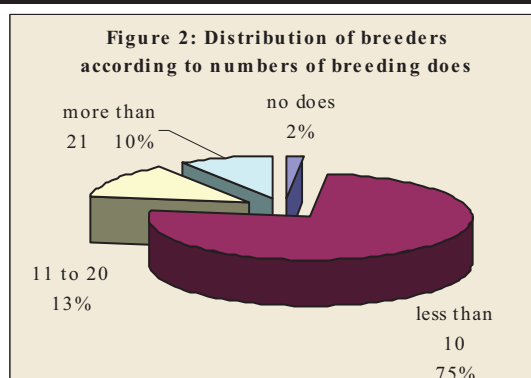


Table 2: Distribution of breeders according to type of cages

Type of cage	No
wire mesh	31
wood	70
bamboo	4
wire mesh & wood	21
other & combination	20
Total	146

Seventy-eight percent of rabbit breeders reared their rabbits in cages (fig. 3), which is a considerable improvement compared to 1988. Future support and technical organizations should encourage this approach in that cage rearing is one of the basis of rational rabbit rearing.

The construction materials used (Table 2) were: wire mesh (21% of breeders), wood (48%), bamboo (3%), combination of wire mesh and wood (14%) and other combinations of materials including banco (~ crude brick) and concrete (14%).

Ninety-seven percent of rabbit breeders used drinking troughs made of a variety of materials (Fig.4) and 75% used nest boxes.

The various types of feeds used and the distribution of breeders according to feed used are summarized in Table 3. This Table shows that 3% provided only green forages whereas 93% use various combinations providing more or less complete feed.

This improved situation in relation to 1988 is explained by the setting up by CECURI in 1994 of a complete feed (not yet pelleted) production unit. There were feeders in all the visited rearing units.

Three quarters of breeders applied controlled mating methods, 22% did not and 1% applied both methods. Approximately 66% of breeders palpated their breeding does to determine the gestation. The high level of these indicators demonstrates an evolution in the application of breeding techniques and clear progress compared to the situation which existed ten years before.

Problems encountered by breeders

The problems encountered are related to lack of finance and technical support, despite the progressive setting up of systems of finance and support for agriculture in general by the State, the private sector and Non-Governmental Organizations. The lack of outlets in certain areas and the difficulties of providing input, particularly feed and drugs, are also problems to be resolved. Despite these difficulties, most breeders contacted wished to continue to expand the activity as soon as possible because they considered it to be sufficiently viable.

Supply of rabbits

There was a sudden fall in production in 1995 (VHD). The 188 breeders studied therefore represented a 232% decrease in the number of rabbit breeders compared with 1994 and a 139% decrease compared to 1990 (CECURI, 1994).

The current annual supply of rabbits (Table 4) was estimated from numbers of breeding does, annual number of litters per doe, number of offspring per litter and death rates before and after weaning.

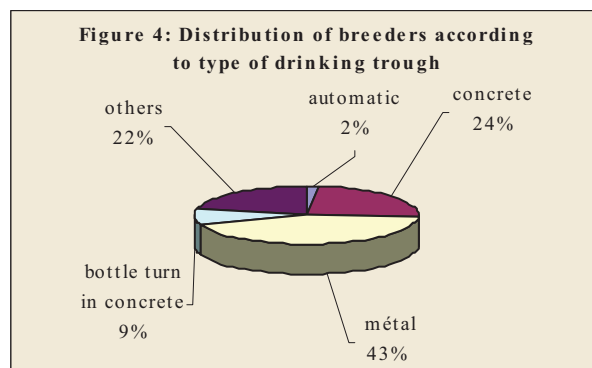


Table 3: Distribution of breeders according to type of feeds

Feeds	No
Green forages	5
Forage + wheat bran	6
Forage + kitchen waste	28
CECURI feed + forage	47
Breeder's feed + forage	49
other feeds + forage	12
other combinations	37
Total	184

Table 4: Supply of rabbits / year / administr. area

Area	total	mean/breeder
Atlantique	31 343	341
Mono	1 527	80
Ouémé	4 640	258
Zou	2 730	46
Total	40 240	214

Demand for rabbit meat

General situation

Of the 36 businesses buying rabbit carcasses, 18 estimated at 3 730 kg for the period between December 1997 and May 1998. The other 18 were unable to tell us how many rabbits or how many kilos of rabbit meat they had bought during this period. Some estimated the number of carcasses bought per month at about 10 - 20 units (approximately 13 – 26 kg). However most said that December was the month when they bought the largest amounts because of the festive season. In view of the above estimates and the statements of other organizations which had no precise figures, the quantity purchased by 36 businesses between December 1997 and May 1998 was estimated at 5 000 kg of carcasses, *i.e.* a total of 3 846 rabbits on the basis of 1.3 kg per carcass. This corresponds to a mean monthly figure of 641 rabbits.

On the basis of the existence of a potential demand, it is possible to envisage an increase in demand by the 36 businesses to 10 tonnes of carcasses per annum, and even higher if breeders and processors could regularly supply the quantities they in fact need.

Consumers emphasized organoleptic quality, dietary and nutritional features as reasons for buying rabbit meat.

Businesses were also satisfied with the products provided by the breeders and the processors. They reported usually receiving well-prepared products which corresponded to their expectations.

Current creditworthy demand

Analysis of the sale of produce as perceived by the breeders showed clearly that the further away the breeders are from urban centers, the more difficult it is to find clients. The main demand for rabbits therefore comes from urban areas, demand in rural areas consisting mainly of their own consumption, purchase of breeding animals and a few consumers prepared to buy rabbit meat (itinerant project workers, civil servants, etc).

The quantity purchased annually by the organizations surveyed was estimated at 7 692 rabbits on the basis of a mean monthly amount of 641 rabbits. In terms of the annual supply of breeding rabbits and consumption, these 7 692 rabbits represent only 19%. Moreover, it is estimated that 90% of breeders market their rabbits before 7 months of age. We hypothesize that the entire production for a year is sold, which means that supply equals demand. The realistic demand for rabbits is therefore estimated at 40 240 rabbits, *i.e.* about 53.3 tones of meat.

Sales are satisfactory throughout the year, with peaks related to religious and traditional ceremonies. However, wholesalers and breeders who supply rabbit meat to itinerant workers report lower sales during the summer holidays (July – September), *i.e.* when they are absent.

Short-term projection

The current demand for rabbit meat, which is estimated at 52.3 tones (*i.e.* 9 g. per inhabitant per year) is derisory. In view of the unsatisfied demand from hotels and public restaurants, and the potential demand from households, the current supply is below needs. A projection for the years 2002 to 2007 on the basis of an evolution of consumption from 9 to 50 g rabbit meat per person per year would place the demand within 263 000 to 1 578 000 carcasses in 2002 and 313 00 to 1 880 000 carcasses in 2007. At the same time, according to the *Institut National de la Statistique et de l'Analyse Economique* (INSAE), the population of Benin is estimated to increase from 6 840 000 in 2002 to 8 145 000 in 2007.

Sales price

Note: the local currency in Benin is the "Franc CFA" (FCFA). 100 FCFA = 0.18 US\$ or 0.18 Euro (1998).

The price per kilo live weight was between 500 FCFA and 1,500 FCFA. Butchered and prepared meat sold at between 1,250 and 2,000 FCFA per kilo. Prices tended to be lower than in 1988 because breeders are now better able to evaluate the real expenditure-income balance and no longer fix prices arbitrarily. The current income of a rabbit breeder with 25-30 does is similar to a teacher in state school. Meat is expensive in Benin but rabbit meat falls in the middle price range of other meats. They are sold simply as carcasses nude or wrapped in plastic, or as smoked whole carcasses or as fried or braised cuts.

Rabbits are usually sold between 4 and 6 months of age (76% of breeders). Very few are sold outside this age range. Live weight at the time of sale (slaughter) varies between 1.5 kg and 2.5 kg, rarely more.

Marketing outlets

As the rabbit has not yet been integrated into the traditional Benin rearing system, it does not have a place in traditional marketing. Local sales (neighbors, clients in the same area as the breeder), direct collection and distribution by middle men after basic preparation (slaughtering and packaging) are the main marketing outlets for rabbits.

Organization of the rabbit production network

It will not be possible to structure a rabbit production network without breeders' organizations. The survey in 1998 indicated that only 60 of the 188 questioned (32%) were members of a producers' organization. The main organization to which they belong is the *Association Béninoise des Cuniculteurs* (ABEC) which was created in 1993 (58 of 60).

This low membership of breeders' organizations should not, however, discourage efforts to strengthen the network. In fact, of the 121 who were not members of any organization, 112 (93%) wished to become members of the ABEC. With the support of CECURI this approach is currently the basis of a successful setting up of the rabbit producers' network in order to revive rabbit breeding in Benin.

CONCLUSION

Despite the outbreak of VHD which occurred in 1995, rabbit production is an activity which provides breeders with substantial income.

Training remains a problem to be resolved because public and private breeding services usually have little knowledge of breeding techniques or rabbit diseases and such knowledge is essential for the development and popularization of rabbit production in a country. The countries which produce large numbers of rabbits typically have good technical support for breeders.

The absence of an organized network remains a handicap to the expansion of rabbit production in Benin. Thus the frequent disruption and inadequate production and lack of organization of producers are problems for which solutions will have to be found. It is obvious that large scale purchasers will not become involved because they fear that there will not be sufficiently large, regular supply. The size of the production base remains the Achilles heel of rabbit production in Benin. The existence of CECURI and ABEC is a hope for the organization of breeders and the setting up of an energetic network. To make this possible CECURI and support and finance structures must help with the training of true professionals in the field of rabbit breeding who, because of their personal involvement, will strive for its development and expansion.

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