

Rabbit Husbandry in the Sudan

By

F. M. Klamn

Head, Department of Animal Husbandry,
Faculty of Veterinary Science, Khartoum.

1. Introduction

Rabbits can contribute very significantly to world food supply. It has a relatively high efficiency of food utilization compared to large farm livestock and it can utilize foods that are not suitable for human consumption. Therefore, it increases the resources of man in obtaining large quantities of high quality protein.

The development and expansion of such an industry depends upon consumer demand for rabbit meat. A demand might develop due to shortage of alternatives, competitive prices or elasticity. These factors might have led to the present situation, where large scale operations have already started around the world (Tudge, 1972)

The problem of raising any livestock under a specific system is essentially one of obtaining maximum turn over with minimum costs.

In other words, the sale of products should at least match the costs in the short term and make a profit in the long one. To achieve that, we require an animal of high biological merit, fed and managed economically, to be capable of maximum production under intensive systems of husbandry.

In spite of the early extensive studies of the biology and reproduction of the rabbit (Hammond, 1925), limited use was made of those studies in genetic and husbandry improvements. The achievements which were obtained currently were due to efforts of individual breeders and those were mainly in the methods of production. Therefore, there is a paucity of scientific information under the present husbandry systems. Since management of the rabbit has changed completely, new problems have emerged which require new solutions. At a time when rabbit keeping and utilization are expanding, such studies seems to be timely.

2. The efficiency of the rabbit as a potential meat producer:

The theoretical potential of a species is essential in defining the expectation and thereby help in formulating targets.

Usually some hypothetical levels are assumed. In case of a breeding

doe; effective production starts when the doe reaches sexual maturity. A doe can be remated postpartum while it is suckling a litter. In other words, the production cycle is continuous. Allowing 31 days for the gestation period and remating 4 days after kindling; about 10 litters can be expected. Hafez (1964), studying implantation in the rabbit, showed that it was biologically possible to produce 15 young in a litter. Let us simply assume that these young can be raised to marketing weight of 2.5 kg and yield 55% carcass on slaughter. Thus, the potential of meat production in this hypothetical example is:

$$10 \times 15 \times 2.5 \times 55\% = 206 \text{ kg/doe.}$$

The following table compares the theoretical limits with the results realized in practice (Walsingham, 1972).

Table 1. Theoretical and realised production potentials:

Reference	No. of litters: : per year	Total No. of: : progeny : reared/year:	Carcass produc- : tion (kg)
Theoretical limit:	10	150	206
Blount (1968)	6	54	63
Moss (1970)	7	54	73
Commercial rabbit			
Association (1970)	6	36	42
British oil and Cake Mills			
(1972)	8	54	55

It is obvious that there is a large difference between the biological potential of the doe and what is obtained in practice. The causes of the discrepancies are numerous and some of these are biologically unavoidable. It is unlikely that substantial advances will be achieved until techniques of management and disease control are well known under these conditions before establishing the biological ceiling.

In Sudan, less than about 15 - 20 kg are obtained per doe annually.

3. Rabbit meat consumption:

Sabatier (1971) considered France as the chief producer and consumer of rabbit meat. About 200 ($\times 10^3$) tons are consumed annually. Italy ranks second to France in rabbit meat consumption (Table 2). However, rabbit meat consumption is relatively low in Sudan. This is because of the availability of cheaper sources of meats (mutton and beef). Rabbit meat is a luxury food taken at week ends and on special occasions. The per capita consumption is less than 0.2 kg.

Table 2. Rabbit meat consumption in some European countries:

Country	Carcass production (tons x 10 ³)	Per capita consumptions (kg)
France	200	6.0
Italy	100	1.5
West Germany	25	1.1
Britain	15	0.3
Belgium	1	1.1
Holland	3	0.8
Sudan	1	0.2

4. Breeds:

Rabbit keeping is an old practise in Sudan. There are plenty of varieties and/or strains in the country. All these strains belong to a dominant breed which can be designated as the Baladi (or local type). It ranges in colour from white to various mixtures of black and red. They are all characterised by a small bodysize. Another wild type of a similar variety exists in the various parts of the country. However, it is rather smaller in bodysize.

There are also limited importations of foreign breeds especially the New Zealand white.

5. Rabbit keeping and husbandry:

In Sudan, rabbits are kept mainly at the backyards of house.

Rabbit farming has not yet developed along the recent intensive systems of the European or other African countries like Ghana. However, it contributes substantially to the household budget (of those who keep them) through the sale of surplus rabbits to the market

6. Housing:

Breeding animals are kept in rather small houses situated at the backyards of houses. These houses are not in the majority of cases designed or built specifically for rabbits. They are mainly disused poultry or other-purpose houses. There are plenty of rabbits which are just kept in the house without any special enclosure. They run about in the house.

Where houses are available in the backyards, they are mainly made up of wire netting on the sides. The roof is made up of local materials (thatch) and in some cases corrugated metal sheets.

Floors are mostly made up of sand.

The utilization of local materials for housing should be encouraged, but due consideration should be given to proper hygiene to avoid losses from disease. This requires proper research followed up by proper extension service to transmit useful information to rabbit keepers. This is hitherto lacking in the Ministry of Agriculture.

7. Food:

Food is a major portion of the total cost of running an animal unit. But, information in the nutrition of rabbits is rather scarce in comparison with other meat animals.

The large development of the digestive system, particularly the caecum, initiated some comparative studies on the digestion of fibrous feeds between rabbits and ruminants (herbivore). Digestibility trials (Besedira, 1971) on different foods showed that rabbits can utilize a fair quantity of fibre in their diets (10 - 15%), but not to the same extent as ruminants. It has also indicated, like ruminants, that the rabbit, increases its food intake with the rise in the fibre content of the diet. This high utilization of fibrous diets is facilitated by the habit of coprophagy (pseudoruminantion) as was shown by Kulwick, Struglie and Pearson, 1953.

In Sudan, rabbits feed mainly on Barseem (*Medicago sativa*) and kitchen remains which are made up of left-over pieces of bread and unutilizable vegetable parts. Chemical analysis showed that green Barseem has the following composition: crude protein (C.P) 4.1, crude fibre (C.F) 7.2%, calcium (Ca) 0.4% and phosphorus 0.6% and carotene 80 mg/kg.

Since the daily requirements of an adult rabbit is in the region of 272 calories and 10 grammes of digestible proteins, we require a ration which contain about 10% fibre and 15% crude protein.

It can generally be seen that green Barsoem, when given alone will not be sufficient to sustain high levels of production. This also applies to kitchen remains which might even have lower nutritive value. Therefore, it will be a necessary step to collect the various traditional feeds on which rabbits are fed in Sudan, analyse them and assess their digestibilities and try to complement the deficiencies where necessary. It is quite evident that there is a lot to be desired in this area.

8. Breeding:

As has been mentioned earlier, the major breed used for rabbits production is the Baladi (or local) type. Its production potential is rather low. This is depicted by a small mature bodysize, small littersize (average is 5.5 young/litter) and low levels of nutrition.

Food efficiency (food/gain) is rather large indicating that large quantities of food are required to be converted into meat.

Since the relationship between bodysize and littersize is well known, it will be essential that we have to increase both littersize and bodysize if we desire to increase production. This can be effected through the importation of one or two breeds for purposes of crossbreeding. For example, the New Zealand White breed or the Californian breed.

A three-way crossbreeding system is to be preferred to a two-way or a pure-breeding system. This is because we can incorporate various traits from the contributing breeds and complement the deficiencies in others. For example, the Baladi (local) breed (B) can give us characters that relate to adaptations to local conditions like disease resistance and utilization of low quality diets. When this is crossed with the Californian (C) breed; known for its large bodysize but slow growth; we can obtain a doe with a relatively reasonable bodysize that can contribute good maternal abilities mediated through a large bodysize. The third strain, for example, a New Zealand White breed (N), will be introduced to contribute its high growth potential to the progeny (broiler rabbit).

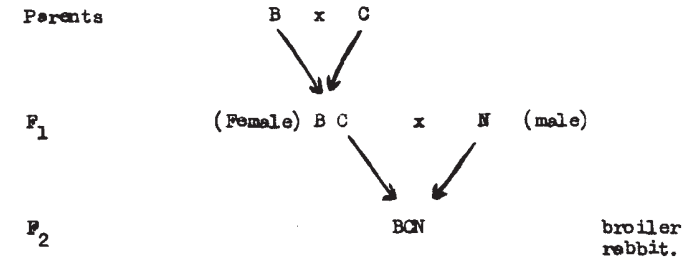


Table 3 depicts clearly litter traits, body size and growth rate data of the three different breeds of rabbits.

Table 3: Litter and body weight traits of three breeds of rabbits (gram)

Trait	Breed			Baladi			Californian			New Zealand		
	M	Av.	F	M	Av.	F	M	Av.	F	M	Av.	F
Number born		4.7			7.10			7.49				
Number born alive		3.5			6.67			6.94				
Number weaned		4.0			5.33			5.53				
Average birth weight (g)		(40)			(63)			58				
Average weaning weight (g)					697	668		583		616		
" "		(310)			(683)			(600)				
Average mature weight	1	272	1	344	3	766	3	815	3	191	3	433
" "		(1 308)			(3 791)			(3 312)				

M = Male

F = Female

9. Marketing:

Rabbits are sold live in the Sudan through two channels

(a) personal transactions whereby rabbits are sold in the neighbourhood or

(b) in the market where they are sold along with other classes of birds

like chickens, pigeons, ducks, geese and turkeys. They are

mainly sold in pairs. Grading and selection are done by consumer's

inspection and the price is subject to negotiation. There is no sale

according to weight and there is no sale of dressed rabbits.

Marketing is done at a very late age when rabbits are more or

less mature, when they reach a reasonable size.

10. The future:

There are two areas in which rabbits can contribute immensely in bridging the protein gap in the Sudan: (a) In large towns in the country, it could help in increasing the meat varieties available to the consumer at a reasonable price. Thus, the problems here require solutions to production problems. (b) There is a large zone in the Southern Sudan which is infested by Tsetse fly (Tsetse fly belt) where large animals were not able to survive in the area and consequently there is a very real shortage of animal protein. Therefore, rabbits have a great potential if introduced in that area. Therefore, it will be useful if a small trial is started there.

To improve these objectives, a rabbit research unit; which will be attached to one of the research centres is very important. This can collect information on rabbit breeding, utilization of local feeding materials, housing, etc. It can also contribute towards rabbit marketing which requires substantial improvements.

As a conclusion, there is a great deal which rabbits can contribute to meet supply of consumers in Sudan.

References

- Besedire, G. G. (1971).
Nutr. Abstr. Rev., 40: No. 1875.
- Blount, W. P. (1968).
Intensive Livestock Farming. Heineman, London.
- British Oil and Cake Mills (1970).
Personal communication. Rabbit demonstration Unit.
- Commercial Rabbit Association (1970).
Personal communication.
- Hafex, E. S. E. (1964).
J. Exp. Zool., 156: 268 - 287.
- Hammond, J. (1925).
Reproduction in the Rabbit. Oliver and Boyd.
Biological Monographs and Manuals, No. 4.
- Kulwick, R., Struglia, L. and Pearson, P. B. (1953).
J. Nutr., 49: 629 - 645.
- Moss, A. E. (1970).
Fur and Feather Publ.
- Sabetier, H. (1971).
Problemes Enterprise Agric., No. 7, Paris.
Luod. xiii, p. 272.

- Tudge, C. (1972).
New Scientist, Jan. pp.5.
- Walsingham, J. M. (1972).
Grassland Res. Inst. Tech. Report No. 12.