IMPROVED HOUSING CONDITIONS FOR RABBITS

R Ramchurn

School of Agriculture, University of Mauritius, Reduit, Mauritius.

A mortality rate of 80% at the University farm and in the villages has led to a dramatic drop in the rabbit population Mauritius. Poor housing was believed to be a contributory factor. The local wood, wire and thatch building did not offer sufficient shelter from bad weather. Designs based on metal sheet and concrete respectively were tested. Cages were arranged in a three tier system and in the case of the concrete design, accommodated 24 rabbits with a floor area of 12ft2. . The maternity section featured sunken nests. The mortality rate was 89.2% in the original buildings and 14.9% in the concrete buildings.

Key words: Rabbit, housing, mortality, sunken nests.

Rabbits in the Third World are raised in a variety of conditions including backyard hutches made of board and wire screen, cages of bamboo, dirt floors in mud huts and even in their natural habitat in the wild. In Mauritius most rabbits are kept in the backyard in hutches with wooden wall wire mesh flooring and a roof of corrugated iron sheet. The animals thus kept are often left to the mercy of changing weather conditions resulting in high mortality. This has discouraged many rabbit keepers and consequently the rabbit population declined from 17,000 in 1975 to nearly 4,000 in 1978. An investigation of the losses during the past four years revealed that poor housing was one of the major causes, others being poor nutrition, disease and general management. By the end of 1977 amortality rate of over 80% was recorded both at the University and in the villages where most of the rabbits were kept. An attempt was then made to study and improve upon the housing system .

Materials and Methods

At the University farm the animals were kept in hutches similar to those described above and in a thatched rabbit house (Plate I) which provided warm conditions in winter and a cool environment in summer.

The rabbits were kept in cages placed on stands three feet above the ground (Plate II). The faecal pellets alla urine dropped through the wire mesh on a slanting galvanized iron sheet situated underneath the cages. The animals were fairly well protected in the initial life of the building. However, within a year the roof was rotten and the animals were exposed to the rain and the wind which entered from the sides. Frequent cyclones and bad weather made matters worse.

A new building (Plate III) was constructed to overcome this situation The roof was of corrugated iron sheet and the walls were completely covered with sheets of tin with spaces left in between the cubicles for easy removal of droppings. The interior (Plate IV) consisted of a three-tier system of cubicles each being 3' x 2' x1.5' with 0.25 inch wire mesh for the floor.

Plate I: Thatched rabbit housing

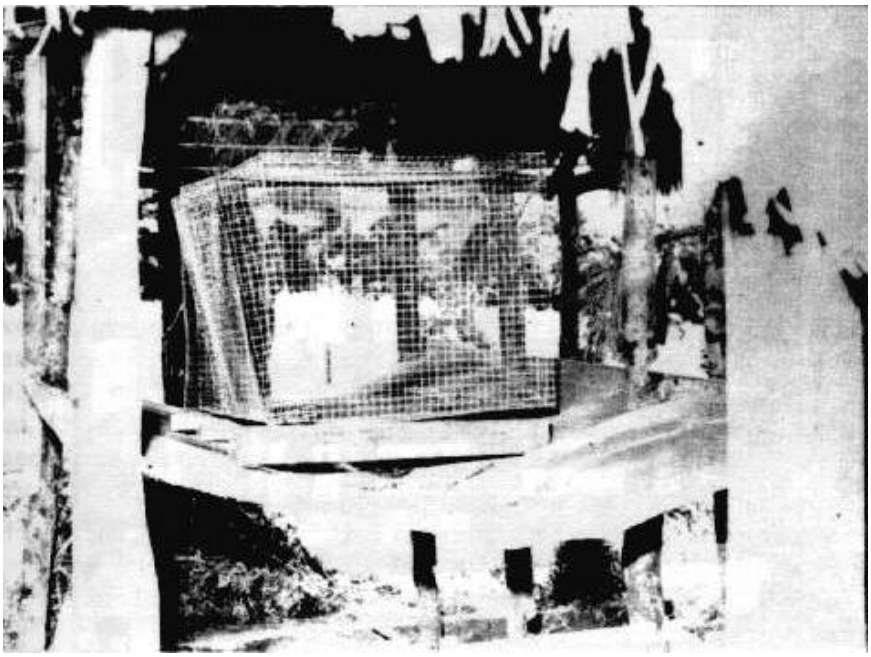

Plate II: Local type rabbit housing

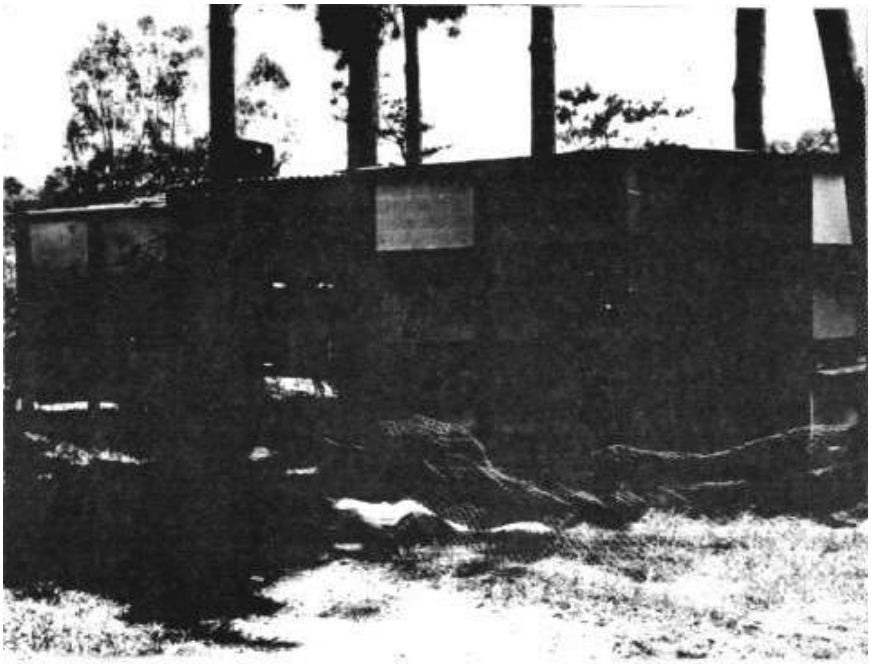

Plate III: Metal sheet building

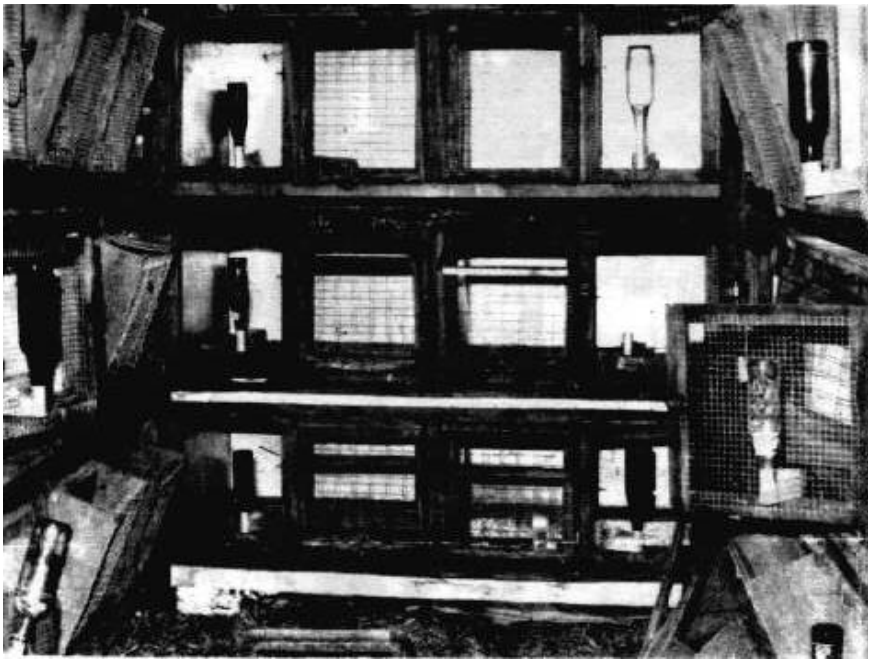

Plate IV: Interior of metal sheet building

Provision for water was made using semiautomatic drinkers and removable feed racks could be fixed to individual cages from the outside. Faecal pellets and urine dropped on a sloping sheet of tin below the cubicles. The droppings were automatically carried outside the building. A high mortality still prevailed even in this building especially during bad weather when the rain and wind entered through the spaces between the cubicles. It was found that the draught coming from underneath the animals caused respiratory distress and pneumonia.

The concrete building (Plate V) - initially a poultry house- was used to provide still better housing conditions. It was provided with large windows with shutters and a proper ventilation system.

Plate V: Concrete house

Air vents existed both at the base of the walls and on the roof. Wire cages 4' x 3' x 1.5' were placed on wooden stands (Plate VI) The droppings and urine which fell on the floor were regularly removed. Although the mortality rate declined significantly, it was still high due to coccydiosis. Also a high density was not possible when using this method. Eventually circumstances necessitated the design and construction of the three-tier metal cages.

The three-tier system (Plate VII) consisted of a metallic frame 8' x 1.5' x 6' within which six metallic compartments were placed, in pairs, one above the other. Each compartment was partitioned into four cages such that each cage measured 1' x 1.5' x 1.5'. Droppings and urine could be collected in metal trays placed underneath the compartments. Each cage had its metallic feed trough and semi-automatic drinker fixed to it. Each compartment, being independent of the others, could be easily removed for cleaning and disinfection. The whole structure could be Basil`: dismantled for transfer to another building. Such a set could house 24 rabbits within a floor space of 1.5' x 8'.

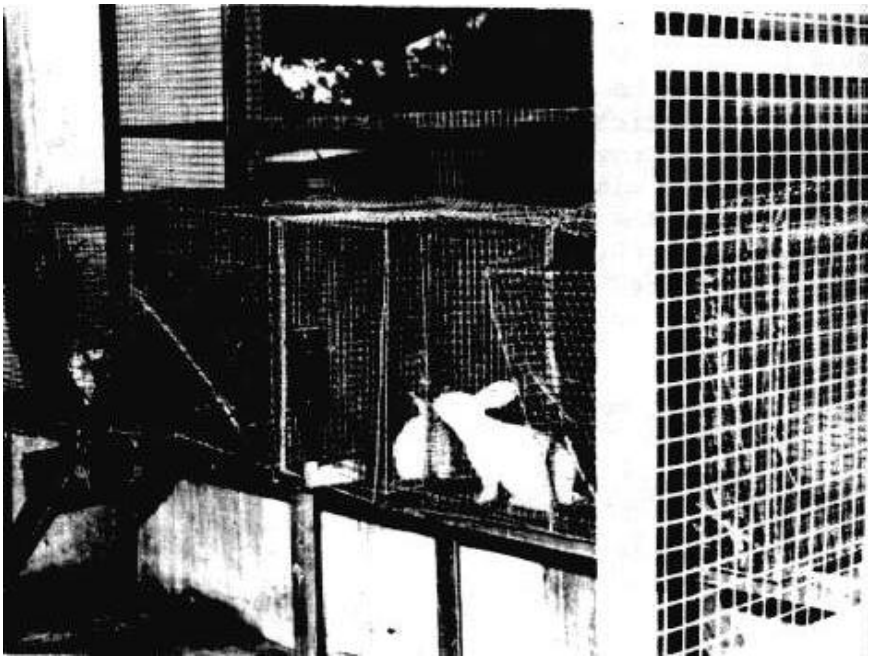

Plate VI: Interior of concrete building

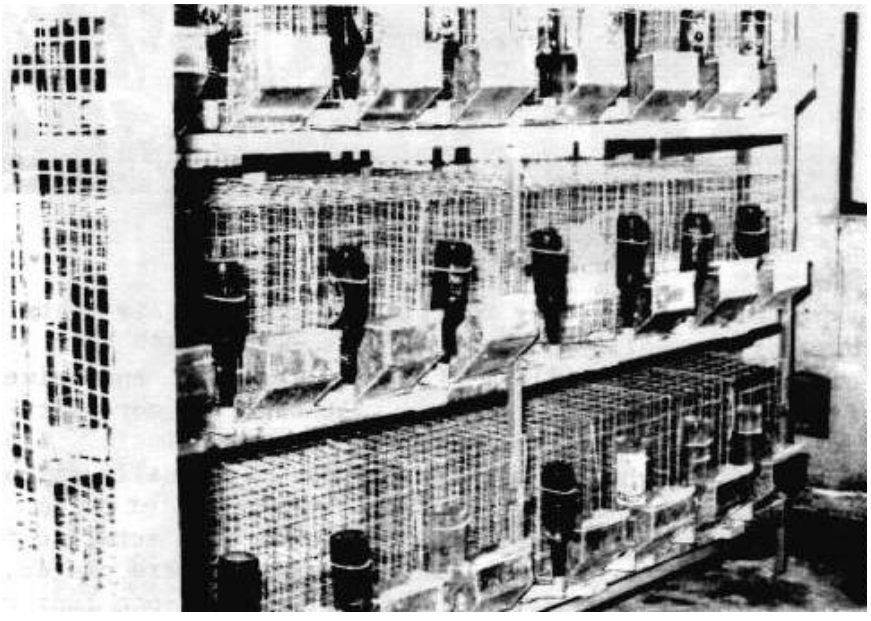

Plate VII: Three tier metallic cage system

The maternity section consisted of a similar set in which, however there were two partitions instead of four, thus making provision for 12 does within a floor space of 2' x 8'. Each cage measured 2' x 2' x 1.5' (Plate V111). A sunken nest system was designed. Each nest 1' x 1.5' x 4"

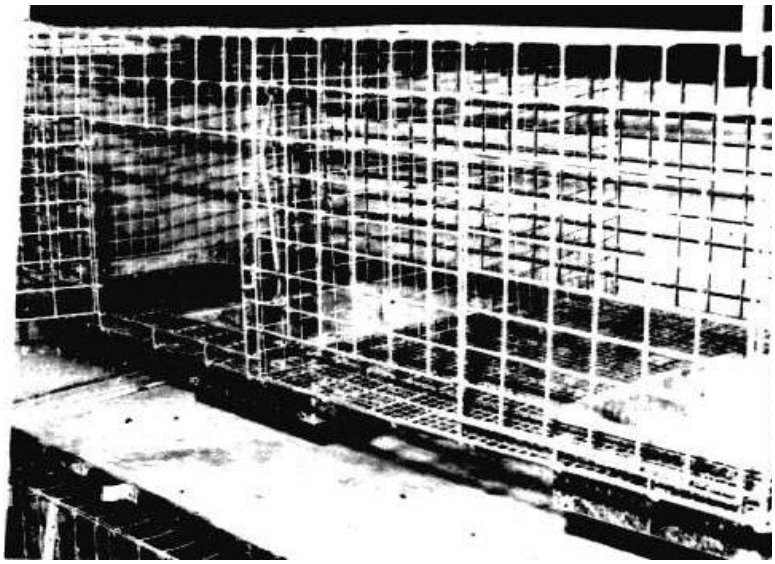

Plate VIII: Cages for breeding does

could be inserted through a space on the floor (which could if necessary be covered by wire mesh so that the cage could be adapted to rear broiler rabbits (Plate 1X).) The sunken nests could be easily lifted from under neath to record the weight of the litter.

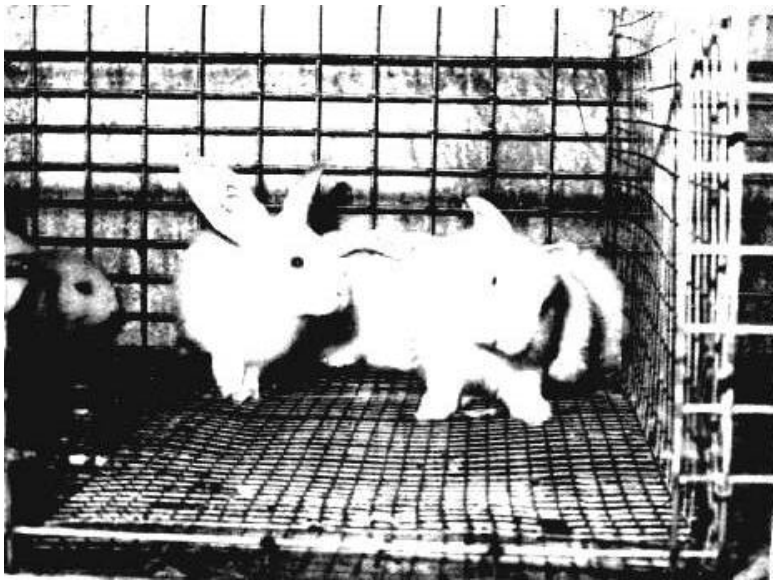

Plate IX: Cages for breeding does adapted for broiler rabbits

Data on growth rate and mortality were recorded for each of the housing systems.

Results and Discussion

The data obtained during different periods of time are displayed in Tables 1-4. Any one period did not necessarily coincide with another. It was difficult to obtain more information from the local type building as it was in a poor state of repair at the beginning of the investigation.

The size of the litter was not affected by the housing conditions. There was no significant difference in the mortality rate at birth between the local-type building and the metal sheet building. However, mortality at birth was dramatically reduced in the concrete building which provided a more conducive environment for the newly born although the type of nest boxes used during periods one and two in the concrete building remained the same. During period three the sunken nest system was tried in the concrete building. The doe in this system did not have to jump over the nest box. She could walk in and out without crushing the young.

There were significant differences in the mortality rate at weaning between different buildings. While the mortality rate in the concrete building was the lowest it still had to be noted that nearly 20% of the animals died in periods 1 and 2. Post mortem reports stated liver and intestinal as the cause of death. This indicated that coccydiosis is difficult to eradicate even under improved housing conditions. This is because the young ones remain with the mother for quite some time. However a minimal disease situation can be reached by better housing and management,

There was an overall average mortality rate of 89.2% in the local type building, 63.8% in the sheet metal building and only 14.9% in the concrete building. This does not go to say that buildings in tropical countries should be of concrete construction, similar environmental conditions may be achieved using simian, cheaper building materials. The main disadvantage is that they may not last as long.

Growth rates can be slightly affected by the housing system. Nutrition and control of diseases play an important role in the growth of rabbits. The animals in the concrete building were better nourished and attended to than those in the other buildings. In the management of rabbits, early weaning proves to be an advantage.

The sunken-nest system, in the knowledge of the investigator, has not been tried elsewhere. Moreover, the three-teir system works well in a tropical climate like that of Mauritius while it has created problems of ventilation in temperate regions.

The three-tier system can be effectively utilised provided it is well designed for the disposal of faecal pellets and urine. The Stockman has little problem in reaching the top of the lowest cages as described by some authorities. The only problem that existed was the filling of water in the semi-automatic drinkers.

Table I :
Effect on litter size of building type for three sample periods.

Building type	Period one		Period two		Period three		Mean litter size (SE)
	Does	Litter	Does	Litter	Does	Litter	
Local	5	4.8	3	-	-	_	4.8(0.66)
Metal	5	3.8	3	4.6	-	_	4.2(0.52)
Concrete	6	4.2	7	5.1	4	4.8	4.7(0.33)
Mean litter size (SE)		4.27 (0.36)		4.85 (0.42)		4.8 (0.63)	

Table 2:
Effect on mortality at birth of building type for three sample periods.

Building type	Period one		Period two		Period three		Mean % mortality
	No.born	Mortality	No.born	Mortality	No.born	Mortality	
Local	24	20.8	-	-	-	-	20.8
Metal	19	15.8	14	28.6	-	-	22.2
Concrete	25	4.0	36	2.8	19	0	2.27
Mean % Mortality		13,53		15.7		0	

Table 3:
Mortality rate at weaning

Building type	Period one		Period two		Period three		Mean % mortality
	No weaned	% Mortality	No .weaned	% Mortality	No weaned	% Mortality	
Local	19	68.4	-	-	-	-	68.4
Metal	16	43.8	10	40.0	-	-	41.9
	24	20.8	35	17.1	19	34.0	23.97
Mean % Mortality	44.33		28.55		34.0		

Table 4:
Growth Rates (Daily liveweight gain, g/d)
No. of L/W No. of L/W No. of L/W rabbits gain rabbits gain rabbits gain

Building type	Period one		Period two		Period three		Mean Liveweight gain (SE)
	No of rabbits	LW gain	No of rabbits	LW gain	No of rabbits	LW gain	
Local	6	17.1	-	-	-	-	17.1 (0.54)
Metal	9	28.0	6	27.3	-	-	27.65(0.47)
Concrete	19	30.6	29	29.1	19	34.2	31.3 (0-39)
Mean litter size	25.2 (0.91)		28.2 (0.42)		34.2 (0.67)		

Acknowledgements

1. Velvindron Products Ltd., Pailles, Mauritius - for the meticulous execution of the designs of the three-tier metallic cage system, both broiler and maternity types.

2. The farm manager of the University of Mauritius for the painful tasks that he undertook during the construction of the metal sheet-type building.

3. The chief technician, School of Agriculture for the understanding and help given in connection with the purchase of materials and equipment.

References

M A F F (1975) Commercial Rabbit Production Bulletin 50 H M S O London

Netheway Me 1974 A Manual of Rabbit Farming Fur and Feather London

Ramchurn B 1978 Proceeds of workshop on rabbit husbandry in Africa International Foundation for Science Stockholm

Rugh J 1978 Proceeds of workshop on rabbit husbandry in Africa International Foundation for Science Stockholm Sweden

UFA W 1971 Handbook on the care and management of fare animals Churchill Livingstone Edinburgh & London

Received 8 September 1979