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Facultad de Medicina Veterinaria y Zootecnia, Asociación Científica Mundial de Cunicultura – Rama Americana
Secretaría de Desarrollo Agropecuario del Gobierno del Estado de México, Secretaría de Agricultura, Ganadería, Desarrollo Rural,
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INTELLIGENT CAGE WITH NESTING CHAMBERS FOR DOES

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ABSTRACT

In Brazil, mini rabbit breeding is expanding. It is important to investigate their welfare in cages. The cages available in the market are small, without attraction, which leads the animals to laziness. If loose they can make holes in the ground. Moreover, in Brazil, there are no nests that simulate the natural conditions. This work describes the development of an enriched environment (intelligent cage) for rabbits, identifies behaviors and verifies the possibility of a nesting chamber. The cage was built using materials easily found in the market, with dimensions 1.20 x 0.80m (0.96 m²). For environmental enrichment, a PVC pipe, a platform, a wood swing, a hanging plate, some dangling chains and a place for treats were added. Before the doe's due date, a nesting chamber was included. An infrared light camera was used to monitor the animals for 24 hours during seven days, for during 50 minutes periods, so that all 24 hours were registered. A Mini Lion head female was observed every 30 seconds, with a total of 2400 records. To observe the animal's preference in the cage, eight separate locations were named and sixteen different types of behavior were considered. For statistical analysis, each six-hour shift (00:00-06:00, 06:00-12:00, 12:00-18:00 and 18:00-24:00) was considered as a treatment and each week day consisted of a replicate. The use of the nesting chamber was monitored for four consecutive births. A high frequency of exploratory behavior was observed in addition to interaction with environmental enrichment. The animal remained lying almost half of the time and presented higher incidence of licking/scratching at the 06:00-12:00 period. The animal remained in the sitting position more frequently in the morning (06:00-12:00) and evening (18:00-24:00). Regarding the use of the nesting chamber, in the first parity, although the doe prepared the nest, the parturition occurred in the cage, a normal behavior in young does (first labor). In the second, third and fourth parities, the doe prepared the nest and gave birth inside it. New experiments involving intelligent cages should be performed to improve welfare technology for these animals.

Keyword: rabbit pets, welfare, rabbit breeding

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Introduction

In Brasil, few are the studies in lodging, behavior and rabbit welfare, and there is a lapse of equipments and utensils specific for pet rabbits. The presence of this animal as pets grew a lot recently and if the rabbits are loose around the house, many are the inconveniences related to well being. For example, the existing cages are small and without attractions for the rabbits which leads to laziness, reduction in life's quality and duration. The lack of nesting chambers, which would be placed below the cages' floor, would be a situation more similar to the natural scenery.

Good results were verified by Barros et al. (2012) and Heker (2013) when different techniques to improve welfare and comfort for rabbits were adopted.

Objective

In this paper, the development of a different cage for reproductive does, that provides comfort, entertainment and welfare, that includes a nesting chamber and the identification of behavior of the does in this condition was done.

Material and Methods

The intelligent Cage has internal dimensions of 120 cm x 80 cm x 50 cm. The environment was enriched with, a metal chain, a hanging plate, a wood swing, an elevated platform was added, a basket for hay, a place for treats and a OVC tube with diameter of 150 mm for hiding. The cage was placed on a steel base with 120cm of height, with a tray containing wood chips to collect excrete. The nesting chamber was made with 30 cm of diameter, 48 cm of length and four steps.

The behavior observations were made at a restricted room from IFMG - Campus Bambuí – Brazil, from June to July of 2013, and the windows were opened during the day. The environmental temperature was of 27,0° C (maximum) e 11,6° C (minimum). To monitor the behavior filming equipment with night vision was installed.

A female Mini Lion Head rabbit, with 14 months of age was evaluated daily for three periods of 50 minutes, during eight days, in a total of 24 periods. The visualizations were made at



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every 30 seconds, resulting in 100 visualizations in each period which led to 2400 in total. Various regions in the cage were considered such as: feeder/ drinking area, inside the pipe, cage sides, treat area, on the platform, in the nesting chamber, under the platform and toys. The behaviors considered were: walking, playing with the chain, playing with the swing, running, drinking water, biting the cage/tube; binky (happiness leap), standing, stretching, sniffing, eating treats, pulling out fur, making the nest, cecotrophy, digging the cage, eating, lying, licking/scratching and sitting. The day was divided in four shifts as follows: 00:00-06:00, 06:00-12:00, 12:00-18:00 and 18:00-24:00. To verify the use of the nest by the doe, the four first parities were considered, being the last three observed after the period of the research. To the data descriptive evaluations were made as well as non parametric comparisons using Kruskal Wallis and Mann Whitney's tests.

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Results and discussion

The most frequent behavior were lying and sitting, which shows that during most of the period the doe remained resting, this result was also found by Gunn and Morton (1995) who identified 56% of inactivity. Behaviors such as “binky”, biting the cage/tube, running or digging the cage were not observed. Exploratory behaviors such as sniffing and standing were observed in 3,07% of the time, which suggests high curiosity of the animal in relation to the environment. One can see that 0,62% of the time the doe played with the items added for environmental enrichment. A variety of behaviors was noted (Table 1) in the intelligent cage.

Tabela 01 – Behavior of the Mini Lion Head doe in the intelligent cage.

Behavior	(%)	Behavior	(%)	Behavior	(%)
Walking	3,58	Sniffing the environment	1,97	Stretching	0,57
Playing with chain	0,28	Eating treats	1,57	Standing	1,10
Playing with swing	0,13	Cecotrophy	0,34	“Binky”	0,00
Playing with plate	0,21	Digging the cage	0,00	Licking	12,65
Drinking	0,74	Eating ration	4,51	Siting	20,86
Biting the Cage/tube	0,00	Lying	47,77	Running	0,00
Pulling out fur	0,40	Preparing the nest	3,10	-	-



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The doe remained seated for the longest time ($P < 0,05$) during the periods of 00:00-06:00h and 18:00-24:00h and licked herself with more frequency during the period of 06:00-12:00h.

Regarding the usage of the nesting chamber, the pregnant doe used it 3,10% of the time to prepare the nest. It was observed that during the first labor, it happened out side of the nest, a normal behavior at first labor (Ferreira et al., 2012). During the second, third and fourth labor, the doe prepared the nest and gave birth in it. At 18 days the babies started to leave the nest and showed preference for PVC tube.

The does preference for the platform was verified, since she remained there 45,57% of the time, which shows the importance of a second plan (Hoy, 2008). The doe remained 15,10%, below the platform, 12,87% in the eating/drinking area 11,39% at the sides of the cage, 7,45% in the toy region, 3,85% in the treat region and 0,66% inside the PVC tube. The doe explored all the regions of the intelligent cage, maintaining the preference for the elevated platform.

Conclusion

The way in which the Cage was built, helped the doe to get interested with the structure as well as the environmental enrichment, being observed great variation of exploratory behaviors. The doe visited all the places in the cage, showing higher preference for the platform in the second plane (second floor). The nesting chamber was well prepared and used by the doe. Other studies must be developed for better comprehension of the behavior of the animals in these conditions.

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