

## FR 06. DOE RABBIT PERFORMANCES IN MARTINIQUE

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### Resumen

#### Desempeño de hembras cunícolas en Martinique

Con el propósito de estudiar el comportamiento reproductivo de la hembra cunícola, se recolectaron los registros de 1 471 partos ocurridos en Martinica entre Febrero 1994 a Septiembre 1995. Los resultados promedios fueron  $7.64 \pm 2.62$ ,  $6.98 \pm 2.79$  y  $7.09 \pm 2.65$  para el tamaño de la camada total al nacer (TN); nacidos vivos (TNV) y total obtenidos al nacer (TON = TNV+ adoptados-descartados), respectivamente, mientras que al destete (TCD =  $4.84 \pm 2.79$ ). La mortalidad al nacer (MN) fue  $MN = 0.66 \pm 1.53$  mientras que entre el nacimiento y destete (MND =  $2.24 \pm 2.54$ ). El número de montas por partos fue  $1.31 \pm 0.68$ . Se encontró un significativo ( $P < .05$ ) efecto del mes de destete sobre TN, TNV y TON, por otro lado el número de montas afectó significativamente ( $P < .05$ ) a MN y TCD. Para TN de 6 a 9 (TN69) se encontró menor nivel de MN respecto a TN de 1 a 5 (TN15) y mayor de 10 (TN10) con estimados de 6.95 %; 25.96 % y 10.69 % para TN69; TN15 y TN10, respectivamente. Por otro lado la MND fue mayor para TN10 (39.53 %) respecto a TN15 (25.96 %) y TN69 (28.29 %). En general el nivel de mortalidad fue muy alto con cerca del 40 % de TN se mueren antes del destete.

**Palabras claves:** Conejos, hembras, desempeño.

**Key words:** Rabbit, doe, performance.

### Introduction

In the Caribbean islands, rabbit breeding is developing rapidly. Several attempts have been made recently in different countries to develop and intensify this production. They were faced with limiting factors such as farmer's training, need for equipment, need for breeding does and broilers, production of animal feeds and isolation of some raising units. Generally, most of results obtained in this area show that performances remain relatively lower than results obtained in temperate environment (Rastogi, 1991; Depres *et al.*, 1991). The level of intensification is extremely variable among islands and the results obtained can't be always applied to other country. Besides, Matheron *et al.* (1985) and Depres *et al.* (1994) have shown the unfavourable effect of hot and wet season on the reproductive performances of doe rabbits reared in the Caribbeans.

The purpose of this study was to analyse the litter size performance and to estimate the effect of farms, month of weaning and litter size on the reproductive performances of doe rabbits reared under semi-intensive conditions in Martinique.

### Material and methods

Data were collected from 5 farms units in Martinique between February 1994 and September 1995. Rabbitries were populated with locally adapted stock of mixed breeding, including contributions from several breeds - New Zealand White, Californian and local breed. All the does were kept in semi-open buildings including commercial hutches. All the does were fed with commercial pellets based on cereals and cakes (16.5 % crude protein, 2.3 fat and 15 % crude cellulose). All the does were assigned to an semi-intensive system of reproduction in which they were presented to the male for the first time at 9-11 days postkindling. The management of the rabbit breeding in the farms can be considered to be of a reasonably good standard. There was a rather low level of parasitism and no incidence of mites or score hocks was observed during this period.

Collecting breeding data was executed with an individual recordkeeping system: "C.P.L." which is a system developed by I.N.R.A and I.T.A.V.I. The main variables measured were: the litter size at birth, born total (NT), born alive (NV) and at weaning (NSEV), the mortinatality (NM: No of stillborn) and the postpartum mortality (MNS: No of kits dead between kindling and weaning) and the No of matings by kindling (NUMSAI). Litter sizes were studied using an analysis of variance (GLM procedure of SAS software; SAS, 1987) integrating the

breeding (3 modalities), the month of weaning (12 modalities) and interactions between breeding and weaning month. Mortality were analysed using contingency tables (Freq procedure of SAS) integrating the total number of kits born (3 modalities: 1-5; 6-9 et > 10). Afterwards either were analysed a Chi-square or a Fischer's test were used.

### Results and discussion

The general and by farms means were comparable with those reported in tropical environment (Damodar and Jatkar, 1985), but were inferior to those reported by Depres *et al.* (1994). The average value for litter size at birth (NT and NV) and at weaning were 7.64, 6.98 and 4.84 respectively. The average number of stillborn and kits dead between kindling and weaning were 0.66 and 2.24 respectively (table 1).

**Table 1. Litter size performance of doe rabbits, means and standard errors.**

	N	NT	NV	NSEV	NM	MNS	NUMSAI
General	1471	7.64 ± 2.62	6.98 ± 2.79	4.84 ± 2.79	0.66 ± 1.53	2.24 ± 2.54	1.31 ± 0.68
By farm							
1	187	7.69 ± 2.39	7.06 ± 2.71	5.27 ± 2.63	0.62 ± 1.32	3.82 ± 2.20	1.12 ± 0.36
2	316	8.06 ± 2.77	7.27 ± 2.85	4.76 ± 2.85	0.79 ± 1.50	2.68 ± 2.71	1.20 ± 0.52
3	484	7.66 ± 2.52	7.15 ± 2.68	5.29 ± 2.64	0.51 ± 1.29	1.93 ± 2.27	1.41 ± 0.79
4	370	7.39 ± 2.73	6.62 ± 2.95	4.00 ± 2.91	0.76 ± 1.89	2.76 ± 2.89	1.36 ± 0.74
5	114	7.10 ± 2.40	6.44 ± 2.56	5.26 ± 2.51	0.65 ± 1.54	1.34 ± 1.75	1.35 ± 0.64

No litters; NT: born total,- NV: Born alive; NSEV: kits at weaning; NM: stillborn; NMS: kits dead between kindling and weaning,- NUMSAI: No mating by kindling.

The litter size at birth varied significantly with the month of weaning (table 2). This is in accordance with the previous results of Matheron *et al.* (1985). It has been shown previously that in tropical climate, heat and moisture had a bad influence on reproductive performances of rabbit does reared in semi-intensives conditions.

**Table 2. Effect of breeding and month of weaning on litter size (N=987).**

	Weaning's month	Breeding	Breeding x month of weaning	RSD
NT	*	NS	NS	2.56
NM	NS	*	NS	1.36
NV	*	NS	NS	2.73
NSEV	T	*	NS	2.69

NS: no significant, P < .05; T: P < .1. NT: born total,- NMstillborn; NV: born alive; NSEV: No kits at weaning.

The number of stillborn and the litter size at weaning were affected by farms. This means that the perinatal and preweaning mortality were influenced by the breeding management ability. Two hypotheses, which are not exclusive, can explain this impairment of survival rate: the management of young rabbit does was not appropriated (age at the first mating, replacement rate), and nutrient requirements were not always satisfied for nursing does (breaking of feed concentrated). The interaction of farms x month of weaning was not significant for all of variables analysed.

The mortality and the preweaning mortality between different litter sizes at birth are examined in table 3 and the conclusions are comparable with those reported by Roustan (1980) in European farms. The percentage of stillborn and the percentage of kits dead between kindling and weaning were significantly different between litter sizes at birth. The percentage of mortality was significantly smaller in litter size including between 6-9 (6.95 %) than the other groups: respectively 10.75 % and 10.69 %. Preweaning mortality was higher in litter sizes > 10 than other groups (39.53 % vs 28.29 % and 25.96 %). This result showed that the optimum litter size was included between 6-9 kits total born by litter. However, fully more 40 % of the total kits born died before weaning.

Fully 20 % of the breeding does produced only between 1 and 5 kits born total. The frequency of "small"

litter size (< 6 born total) was quite high and the hypothesis of a inadequate breeds or bad management of youngs is plausible to explain this phenomenon.

**Table 3. Effect of litter size on mortality (N=1471).**

	Litter size (born total)			X <sup>2</sup>
	1-5	6-9	>10	
No of litters	301	819	351	
Stillborn (%)	10.75b	6.95a	10.69b	***
Dead between Kindling and weaning (%)	25.96a	28.29a	39.53b	***

a, b: Means without a common superscript are different at  $P < .05$ . \*\*\*:  $P < .001$ .

### Conclusion

The doe performance traits reported in this study were comparable with those reviewed and reported by different authors in Caribbean island, but were inferior to those observed in temperate climate. Beyond the unfavorable effect of the month of weaning, some of these differences in performances were connected with high frequency of “small” litter size and quit high general mortality. The improvement in management of mating and reproductive replacement and the satisfaction of nutrient requirements for nursing does certainly increase the doe performances in Martinique. Besides, the generalization of cross-fostering to equilibize the litter size between 6-9 kits, could to enable to control the mortality between kindling and weaning.

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