

BUCK PERFORMANCE IN A SMALL RABBITRY IN TRINIDAD

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ABSTRACT: Performance data was collected on 48 bucks at a small experimental rabbitry during a ten year period 1983-93. The traits studied were fertility, litter size, age at first and last mating, and the duration of service life. Average fertility was 82.6%. Averages for

number of kits born total and alive were 5.27 and 5.03, respectively. Means of age at first and last mating, and service life were 8.2, 19.4 and 11.5 mo, respectively. The coefficients of variation for these traits were also given. There was limited scope for improving the fertility of bucks and the litter size of their mates.

RESUME : Performances des mâles dans un petit élevage à Trinidad.

Les résultats des performances des mâles dans un petit élevage à Trinidad ont été récoltés pendant 10 ans de 1983 à 1993. Les caractéristiques étudiées ont été la fertilité, la taille de la portée, l'âge à la première et à la dernière saillie et la durée de la période de reproduction. Le taux de fertilité moyen est de 82.6%. Le nombre

moyen de lapereaux nés est de 5,27 et de 5,03 pour les lapereaux nés totaux et vivants, respectivement. L'âge moyen au premier et au dernier accouplement est de 8,2 et 19,4 mois respectivement et la durée moyenne de la période de reproduction est de 11,5 mois. Les coefficients de variation concernant ces paramètres sont fournis. La possibilité d'améliorer la fertilité des mâles et la taille des portées issues de leurs saillies est très limitée.

INTRODUCTION

An exhaustive search of pertinent literature has exposed an almost complete lack of information on buck performance. This is not a very good picture when one considers that in terms of breeding contribution "*the buck is half the herd*". In herds practising artificial insemination, bucks are evaluated for fertility through evaluation of semen quantity and quality. But this tells nothing about their genetic potential for producing large litters. Under natural mating conditions, bucks can be evaluated for fertility, litter size and other traits.

This study was conducted to provide quantitative benchmark information on some buck performance traits under a natural mating system in the humid-tropical climate of Trinidad.

MATERIAL AND METHODS

The data in this study was collected from a small experimental rabbitry established at the University Field Station in March, 1983. Locally adapted rabbits of mixed breeding (predominantly New Zealand White) were purchased as foundation stock. The herd was closed by the end of 1983 with ten does and three bucks. However, the herd continued to expand to reach a peak of 30 breeding does by the end of 1993. The replacement stock was selected from proven does based on the size of their litters at weaning at 28 days over the first three kindlings and the two inter-kindling periods. The male replacements were further selected for postweaning growth. During the period of this study, the herd was opened several times to introduce bucks from outside sources in order to keep the level of inbreeding low. For example, four bucks were brought in during

August, 1985 from sister island of Tobago, two during June, 1987 and one during October, 1988. Since late in 1985, a group rotation breeding scheme has been in operation. In order to reduce the generation interval and enhance the rate of genetic progress, an effort, albeit not always successful, was made to replace bucks by their sons as soon as possible. During the ten-year period of this study, 48 bucks were evaluated for age at first and last mating, service life, fertility and litter size of their mates.

Does and bucks were housed in individual all-wire cages with automatic waterers and feeders. Rabbits were fed a fixed quantity of "Pig Grower" pellets (16% CP) up to mid-1984 and then switched to "Broiler Finisher" pellets (18% CP). Wilted grass was available free-choice. The does were hand-mated before sunrise 17 days postkindling. For further details on management, readers are referred to the report by RASTOGI (1991).

The data was analyzed by least-squares method for unequal subclass numbers. A fixed model including only year-of-buck's-birth effect could be fitted.

RESULTS AND DISCUSSION

Means, standard errors and coefficients of variation for various buck performance traits are presented in Table 1. Fertility or conception rate varied between 70.2 and 91.0% with a mean of 82.6. The mean litter size (total born) was 5.27 with 4% of the kits being born dead. The means for age at the first and the last mating and the length of service life were 8.2, 19.4 and 11.5 mo, respectively. Looking at coefficients of variation for various traits, there was only limited scope for genetic improvement in fertility and litter size. The effect of year-of-buck's-birth was significant ($P < .05$) on fertility

Table 1: Means of various buck performance traits

Buck's year of birth	No. bucks	Av. no. matings	Fertility (%)	Av. kits born per litter			Age (mo) at		Service life (mo)
				alive	dead	total	first mating	last mating	
1982	1	30.0	83.3	5.20	0.60	5.80	9.5	25.2	15.7
1983	2	22.5	78.5	4.93	0.23	5.17	7.0	18.9	11.9
1984	2	31.0	79.8	4.76	0.30	5.06	8.5	16.0	7.5
1985	8	25.6	77.3	4.41	0.43	4.83	7.4	19.9	12.5
1986	5	27.8	87.9	5.18	0.31	5.49	7.3	22.1	14.8
1987	5	26.0	87.2	5.07	0.26	5.32	7.9	19.4	12.0
1988	4	34.5	91.0	4.99	0.19	5.31	8.3	20.7	12.6
1989	4	25.2	84.1	5.71	0.03	5.74	12.3	18.2	8.4
1990	4	31.7	87.2	5.47	0.14	5.61	7.2	18.0	11.0
1991	4	36.7	85.4	5.49	0.06	5.55	8.1	18.2	10.0
1992	5	42.4	79.7	4.93	0.17	5.10	9.0	18.8	11.1
1993	4	31.0	70.2	4.83	0.07	4.91	6.7	16.7	9.6
Total	48								
Overall mean		30.4	82.6	5.03	0.22	5.27	8.2	19.4	11.5
SE		1.4	1.3	0.09	0.03	0.08	0.3	0.5	0.5
CV(%)		32.1	10.8	12.1	94.3	10.7	21.8	18.7	30.0
Effect of buck's year of birth			*	*	*		***		

* P<0.05, *** P < 0.001.

and number of kits born alive and dead, and on age at first mating (P<.001). This indicated that environment played an important role in the expression of these traits and should be optimized to achieve further improvement.

There was very little information available in the literature to compare our results with. The only available report was that of VALENTINI *et al.* (1988) from Italy in which they ranked bucks based on their fertility and litter size of their mates. Each buck was used in a programme of artificial insemination on several farms. They culled any buck with mean fertility below 60% or the mean litter size below 6.0. Their culling level for fertility under field conditions was distinctly inferior to the mean of 82.6% obtained in this study under experimental conditions. However, their culling level for the mean litter size was somewhat superior to the mean of 5.27 in our study. This is partly explained by the humid-tropical climate of Trinidad and the low level of nutritional management of rabbits in this study.

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