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STUDIES ON SOME FACTORS AFFECTING DOE, BUCK AND LITTER PERFORMANCE IN WHITE NEW ZEALAND RABBIT UNDER EGYPTIAN CONDITION

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A B S T R A C T

This study was carried out on 50 adult doe rabbits and 8 adult bucks of White New Zealand breed with their progeny and extended for about 3 years to study some factors affecting doe, buck and litter performance. Obtained results showed that the birth weight was inversely related to the litter size. Litter size was not significantly affected by the doe weight while the birth weight was significantly affected by the doe's weight being higher in doe's body weight ranged from 2.5-3 kg compared to the other two groups (3-3.5 & 3.5-4kg); in all cases males were higher in body weight than females.
Litter size increased gradually as parity increased reaching its peak at the 3rd parity then decreased thereafter. Gestation period was not significantly affected by the litter size. Litter size was higher in autumn followed by winter, spring then summer. The highest conception rate was achieved in autumn followed by winter and spring, while the lowest ratio was at the summer time. Birth weight was higher in winter than summer. Does with a body weight ranged from 2.5-3 kg were increased significantly after birth while does with a body weight 3-3.5 kg were increased insignificantly, while does' body weight 3.5-4kg were decreased insignificantly after parturition. No courtship behaviour was observed during first mating as all sexually active males 92.5% from tested males were directed immediately toward the female and tried to mount. Different items of courtship behaviours were observed during the subsequent mating, these items included chin rubbing (chinning) 70.27%, enuresis 32.43%, genital sniffing 40.54%, and ear sniffing 27.2%. After mating the males showed the post-mating behaviours which included backward falling 75.68%, sideway falling 24.32%, hind leg striking 75.68%, and cry 56.76%, when males were permitted to mate freely with receptive females, 92.5% of males performed 1st and 2nd mating but only 62.5% of males performed 3rd mating while 56% exhibited 4th mating, 22.5% showed 5th mating, 17.5% exhibited 6th mating,12.5% was observed to mate till 7th mating, 7.5% were sexually active till 8th mating, while only one male (2.5%) exhibited 9th and 10th mating. No male from the tested group mate the same female more than 10 mating. High litter size and conception rate were obtained when mating occurred at morning or evening by using first ejaculates from two males.

Key Words: New Zealand white rabbit, litter performance, Egyptian conditions

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1. INTRODUCTION

Nowadays rabbit farming is becoming more and more attractive to many animal breeders due to its high fecundity, high mothering ability, adaptability to a wide range of conditions, high genetic variability, high roughage utilization and low cost of production [1&2].
The economic efficiency of a rabbitry depends mainly upon the reproductive performance of the doe, which in turn is

affected by their fertility and prolificacy. [3].

Female reproduction is more interesting and attractive subject to study and preferred by many researchers and this is essential and more important and beneficial for successful rabbit breeding.

Litter size, birth weight and conception rate are so important economic traits in any productive animal. For great profit a special attention must be focused on these traits, so studying factors directly affect them are so important and must be taken into consideration during breeding of any productive species.

Few number of researches concerned with the reproduction in males although males are responsible for the half of hereditary characters inside the farm and many problems concerning fertility may arise from males so that the object of this work was to study the interaction between some doe and buck traits and their reflection on the litter performance under Egyptian conditions to increase the productivity inside the rabbit farms and offer some advices to rabbit breeders to encourage the breeding and spreading of this species into different localities inside our country to offer safe and healthy meat for consumer to decrease the dependence on red meat which is regarded as the main cause of gout.

2. MATERIALS AND METHODS

This work was carried out at rabbit research unit, faculty of veterinary medicine at Moshtohor, Benha University to study some factors affecting litter, doe and buck performance in New Zealand white breed of rabbit.

A total of fifty does and eight bucks with their progeny were used for this study which lasting for about three years; All experimental animals were apparently healthy and were kept under the same managerial, hygienic and environmental conditions throughout the experimental work

Does and bucks were individually housed in galvanized wire batteries.

All batteries were located in an open rabbitry exposed to natural environmental temperature and photoperiod and naturally ventilated by windows and exhausted fans. Ceiling electric fans were also used when needed. The does' batteries were provided with nest box measuring 40X30X30cm for parturition and rearing of the bunnies. A commercial balanced pelleted ration was used ad-libitum according to the reproductive state of animals. Fresh tap water was also supplied automatically through a stainless steel nipples all the time in each cage. Each doe showing the signs of receptivity was taken to the buck's cage for mating and then returned back to its cage after being bred. Pregnancy was diagnosed by abdominal palpation at the 14^{th} day post mating. Does failed to conceive were examined carefully for the signs of receptivity to be returned back to the buck for another mating.

On the 27^{th} day of pregnancy the nest box were supplied to the does' cage with rice straw litter to provide a comfortable and warm place for kindling and rearing of bunnies. To drain off the urine away from the bunnies and nesting materials, the nest box floor was made of grid.

Once bunnies were observed for the first time inside the nest box they were examined, sexed and weighed and after 28 days of kindling they were weaned.

The traits recorded for each doe were

1-Body weight at mating
2-Body weight at parturition
3-Gestation period
4-Conception rate and litter size as affected by the number of mating and this occurred by trying single, double or three matings per pregnancy
5-Conception rate and litter size as affected by the time of mating and this occurred by adjusting mating time to occur at 8.00-10.00am, 12.00-2.00pm and 6.00-8.00pm
6-Conception rate and litter size as affected by mating order and this

occurred by adjusting females into three groups, the first group was served by males given three days of sexual rest before mating with this females, the second group was mated by males served one female before mating with this group, while the third group was mated by males served two females before allowed to mate with this females.

7-Birth Weight

8-Sex ratio of pups.

9-Weekly food consumption during the whole period of gestation.

10-For studying the effect of seasonal variations on the reproduction of rabbits both minimum and maximum temperature and relative humidity were recorded throughout the experimental period and classified into the four seasons (Table 1).

11-In males, sexual behaviour was studied by using of 40 males, each buck was allowed to mate freely with one receptive female till loss of its sexual interest and crouch beside the female for 30 minutes without paying any attention toward this receptive female [4].

The following items were recorded for each male:-

1-The first reaction time after introduction of the receptive female

2-Number of successful mating per male before loss of its sexual interest

3-Refractory period between each two successive ejaculations

4-Frequencies of occurrence of some courtship elements such as chinning or chin rubbing, enuresis, genital sniffing, ear sniffing, leg striking, backward falling, sideway falling and cry.

3. RESULTS

Table 1. Means of temperature and relative humidity throughout the experimental period

Season	Spring	Summer	Autumn	Winter
Minimum temperature °C	15.6± 1.65	21.89± 0.36	16.0± 1.39	9.45± 0.59
Maximum temperature °C	29.08± 1.92	35.9 ± 0.555	27.88± 1.84	20.58± 0.47
Relative humidity %	49.37± 0.69	52.5± 1.17	59.0± 0.73	57.56± 1.30

Data presented in this table demonstrated seasonal variations in minimum and maximum environmental temperature and relative humidity.

Table 2. Frequencies of litter size and sex ratio and occurrence of cannibalism in different litter sizes

Litter size	1	2	3	4	5	6	7	8	9	10	11	12	Averages
Frequency	6	8	10	22	20	27	23	16	12	4	3	2	5.84± 0.19
%	3.92	5.23	6.54	14.38	13.07	17.65	15.03	10.46	7.84	2.61	1.96	1.31	
Males%	33.33	75	40	45.45	52	45.68	42.86	45.31	44.44	52.5	57.58	54.17	46.88
Females%	66.67	25	60	54.55	48	53.32	57.14	54.69	55.56	47.5	42.42	45.83	53.12
Cannibalism	0	0	0	0	0	3.7	17.39	43.75	41.67	25	0	0	

Results recorded in this table showed frequencies of different litter sizes (high frequencies occurred in litter sizes 4-8), male and female ratios (nearly equal with a slight increase in female ratio)and occurrence of cannibalism (high incidence in litter sizes 8&9).

Table 3. Effect of litter size on the birth weight

Litter size	3	6	9	12
Male birth weight/g	$117.12^{a***} \pm 3.14$	$68.85^{b***} \pm 2.10$	$55.47^{c} \pm 1.18$	$55.75^{cd} \pm 3.07$
Female birth weight /g	$108.48^{e***} \pm 3.83$	$56.99^{f***} \pm 1.80$	$50.74^{g} \pm 1.71$	$44.65^{h} \pm 2.04$

Means in the same raw or column not sharing similar superscripts are significantly different $p \leq 0.05$
In males ** significant at $p \leq 0.01$ *** significant at $p \leq 0.001$
In females ** significant at $p \leq 0.05$ *** significant at $p \leq 0.0001$

This table showed both male and female birth weight as affected by their litter size, obtained data showed a reverse relationship between the litter size and birth weight.

Table 4. Effect of the dam body weight on the litter size and birth weight

Body weight	2.5 -3 kg	3-3.5 kg	3.5-4 kg
Litter size	$6.94^{a} \pm 0.35$	$6.54^{ab} \pm 0.26$	$6.67^{ac} \pm 0.24$
Male birth weight/g	$81.24^{a} \pm 3.32$	$68.96^{b} \pm 1.09$	$58.16^{c} \pm 4.14$
Female birth weight/g	$70.98^{d} \pm 3.35$	$60.16^{e} \pm 1.15$	$53.50^{ef} \pm 3.01$

Means in the same raw not sharing similar superscripts are significantly different $p \leq 0.05$
Means of male and female birth weight in the same column not sharing similar superscripts are significantly different $p \leq 0.05$

Data presented in this table showed the effect of dam body weight on the litter size and young weight at birth. Good results were obtained from dams with body weight ranged from 2.5-3 kg.

Table 5. Effect of parity order on the litter size

Parity order	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Litter size	5.83^{a} ±0.30	6.44^{abd} ±0.33	7.6^{c} ±0.25	6.93^{cd} ±0.36	5.96^{abe} ±0.37	5.56^{abfi} ±0.48	5.83^{abgi} ±0.41	5.63^{abdhi} ±0.60	4.71^{i} ±0.47

Means in the same raw not sharing similar superscripts are significantly different $p \leq 0.05$

This table showed the number of litter born in different parities beginning from the first till the 9th parity. The highest litter size was that born in the third parity.

Table 6. Effect of litter size on gestation period

Litter size	Less than 6	More than 6
Gestation period /day	$31.71^{a} \pm 0.29$	$31.86^{ab} \pm 0.33$

Means in the same raw not sharing similar superscripts are significantly different $p \leq 0.05$

Data presented in this table showed absence of a significant relationship between litter size and the length of gestation period.

Table 7. Does body weight change due to pregnancy as affected by the given litter size

Does' Body weight range/kg	2.5-3		3-3.5		3.5-4	
Litter size	1-6	7-12	1-6	7-12	1-6	7-12
Does' body weight at mating/g	$2881.6^{a}\pm$ 57.35	$2712.5^{a}\pm$ 38.02	$3160^{a}\pm$ 43.71	$3301.8^{a}\pm$ 29.44	$3660^{a}\pm$ 36.74	$3645.6^{a}\pm$ 52.15
Does' body weight after parturition /g	$3256.7^{b}\pm$ 98.27	$2996.7^{b}\pm$ 88.42	$3160.9^{ab}\pm$ 68.02	$3422.7^{ab}\pm$ 71.19	$3595^{ab}\pm$ 177.04	$3602.5^{ab}\pm$ 72.87

Means in the same column not sharing similar superscripts are significantly different $p \leq 0.01$

this table showed does body weight change due to pregnancy as affected by the given litter size, the significant increase in the dam body weight was observed only in the first group, the second group was increased insignificantly while the third group was decreased non-significantly.

Table 8. Food consumption during pregnancy

Weeks of pregnancy	1st week	2nd week	3rd week	4th week
Food consumption g/100 g body weight	$3.16^{a*}\pm$ 0.13	$3.22^{ab**}\pm$ 0.13	$3.02^{abc***}\pm$ 0.07	$3.59^{d}\pm$0.16

Means in the same raw not sharing similar superscripts are significantly different
*significant at $p \leq 0.05$ ** significant at $p \leq 0.08$ *** significant at $p \leq 0.002$

Data recorded in this table showed a gradual increase in food consumed by pregnant females during different weeks of pregnancy, the highest amount of food were that eaten during the fourth week of pregnancy.

Table 9. Seasonal effect of on the litter size, birth weight and conception rate

Season	Litter size	Conception rate	Birth weight (g)	
			Male	Female
Autumn	$6.54^{a} \pm 0.32$	90%		
Winter	$6.79^{ab} \pm 0.32$	88%	$76.25^{a} \pm 3.25$	$64.85^{b} \pm 4.19$
Spring	$6.63^{ac} \pm 0.24$	79.31%		
Summer	$4.28^{d} \pm 0.28$	74%	$63.37^{c} \pm 2.66$	$52.80^{d} \pm 2.65$

Means of litter size in the same column not sharing similar superscripts are significantly different $p \leq 0.01$

This table showed seasonal effect on litter size , conception rate and both male and female birth weight, the highest conception rate were obtained during autumn while the highest litter size was obtained during winter, regarding birth weight of both sexes, the highest values were recorded during winter season.

Table10. Effect of the number, order and time of mating on the litter size and conception rate

	Litter size	Conception rate
Number of mating		
One mating	$7.72^{a} \pm 0.28$	86.67%
Double mating	$8.22^{ab**} \pm 0.22$	93.10%
Three mating	$6.64^{c} \pm 0.45$	91.67%
Means in the same raw not sharing similar superscripts are significantly different		
*significant at p ≤0.05 ** significant at p ≤0.005		
Mating order		
First mating	$7.72^{a} \pm 0.28$	86.67%
Second mating	$4.79^{b} \pm 0.60$	58.33%
Third mating	$4.45^{bc} \pm 0.58$	52.63%
Means in the same raw not sharing similar superscripts are significantly different at p ≤ 0.005		
Time of mating		
8.00-10.00am	$7.24^{a} \pm 0.40$	92.31%
12.00-2.00pm	$5.60^{b} \pm 0.28$	86%
6.00-8.00pm	$7.08^{ac} \pm 0.34$	93.10%
Means in the same raw not sharing similar superscripts are significantly different at p ≤ 0.001		

This table showed the Effect of the number, order and time of mating on the litter size and conception rate. The best results were obtained by using double mating by two different males at morning or evening.

Table 11. Sexual behaviour in buck

	Immediate response	Chin rubbing	enuresis	Genital sniffing	Ear sniffing	Backward falling	Sideway falling	Hind leg striking	cry
Male number	37	26	12	15	10	28	9	28	21
Male%	92.5	70.27	32.43	40.54	27.2	75.68	24.32	75.68	56.76

This table demonstrated different items of male courtship and post mating behaviours and their percentage during second mating and upward

Table 12. Mating frequency and latent period in buck

Mating order	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th
Male number	37	37	25	14	9	7	5	3	1	1	0
Male%	92.5	92.5	62.5	56	22.5	17.5	12.5	7.5	2.5	2.5	0
Latent period/second	-	99.73^{a} ±14.04	156.48^{b} ±15.50	210.64^{c} ±24.81	171.33^{ad} ±31.55	343.00^{e} ±69.21	287.17^{f} ±58.12	241.00^{ag} ±50.51	130	106	0

This table showed number of mating performed by each male till reaching to sexual exhaustion and latent period between each two successive matings.

4. DISCUSSION

It is evident from data present in table (2) that the litter size in white New Zealand breed of rabbit was ranged from 1 to 12, the most frequent litter size was litter size 6 with a high incidence of litter sizes ranged from 4-8 and this represent a suitable number of young to the number of nipples in the female rabbit which is ranged from 8-10 nipples and this ensure a good care of the young after birth. Male to female ratio was varied in different litter size but totally they were nearly equal. The

present study also showed that the kid birth weight was inversely affected by its litter size being higher in the litter size 3 and low in litter size 12. and this may be due to the of maternal nutrients distributed to small number of young is sufficient for each young to achieve optimum intrauterine growth rate than when distributed on a large number of litter which mean decrease nutrient supplied to each kid which negatively affect its intrauterine growth rate leading eventually to small birth weight, also may be due to crowdiness of large litter inside the uterus, which negatively affect their growth rate In all groups , males were higher in their birth weight than females as shown in (Table 3) similar results were also reported by [5],[6],[7], [8]and [9].

Regarding the effect of dam body weight on the litter size and the average bunny weight at birth, data recorded in (Table 4) revealed a significant effect of the dam body weight on the litter size and the birth weight of both sexes, being higher in the does weighing from 2.5 -3 kg than the other two groups and this may be due to the young age of the dam as does having this body weight were in the beginning of her breeding life. Similar results were also obtained by [10],[11] and [12] while [4] reported no consistent relation between mother's weight and the total weight of the pups at birth and [13] who found no significant relationship between doe weight and litter size. In a similar experiment but only in the first parity [14] found that litter size was in a direct relation ship with the body weight of the dam being higher in the heavy body weight and low in the lighter one.

The results obtained from the effect of parity on the litter size are presented in table (5), Recorded data showed that the litter size at birth was increased as parity increased reaching the peak at the 3rd parity then decreased gradually thereafter. Obtained results denoted indirectly that the age of the dam is the main factor in this point as the increasing in litter size was occurred during the first four parity i.e. in young dams at the beginning of her breeding life reaching its peak litter size at the third parity which corresponding about the age of 9 months old. These results agreed with the previous results recorded in table (4) which may be attributed to the differences in the age and body weight of the dams, similar results were also obtained previous researchers [1], [15], [16] and [17]. [1] expected that the cause might be due to the maturity of the doe more ova were released from ovary and so there was more chance of increasing litter size at birth in 3rd parity than first and second parity. Regarding the effect of litter size on the gestation period, data present in the table (6) did not show any significant effect of the litter size on gestation period. Gestation period in the two groups studied was nearly similar. Similar result was also recorded by [7], but a significant correlation was reported by [18] and [19]

Studying the change in does' body weight due to pregnancy as affected by litter size, data obtained (Table 7) showed that the body weight of the first group (2.5-3 kg) was increased significantly after birth in both litter sizes 1-6 and 7-12. The body weight of the second group was also increased after parturition in both litter sizes but the increase was non-significant, while the body weight of the 3rd group was negatively affected, being decreased after birth in both litter sizes but the decrease was non-significant.

Obtained results was partially agreed with those obtained by [20] who reported a non significant change in the does body weight at mating and at parturition and [18] who found that the body weight of pregnant doe rabbits was increased by 277 g after parturition. Available literatures not take the litter size or the range of the doe body weight in consideration as factors during determination of the doe body weight change due to pregnancy.

When food consumption was measured weekly during the whole period of pregnancy as shown in table (8), it was

found that food consumption was increased non significantly from the first to the second week then a slight non significant decrease was occurred during the third week then a significant increase was occurred during the 4th week compared to the other three weeks, the significant increase in the amount of food consumed during the last week of pregnancy is logic as the growth rate of the feti are higher during the last third of pregnancy as known in other species so, the dam increase its food consumption during this period to satisfy the growth requirements by the developing feti. No available data concerning weekly determination of food consumption during gestation period was found in doe rabbits but [21] determined food consumption in doe rabbits during pregnancy as a general and found that doe rabbits consumed 173±5.97 g daily.

Regarding the effect of season on the litter size, birth weight and conception rate, it could be seen from results given in table (9) that the litter size was significantly affected by the season of the birth at $p \leq 0.01$ being higher during winter season and lowest during summer season. Obtained results might be attributed to the seasonal variation in the ambient temperature and relative humidity as shown in table (1) and the availability of green fodders during winter season which supply a fresh source of vitamins and minerals to the productive animals. These results were partially agreed with the finding reported by[22] who reported that higher litter size was obtained in spring and winter and [23]who mentioned that litter size and birth weight were higher in kits born during mild period than kits born during hot period. But disagreed with (24) who reported that litter size at birth was significantly higher in dry season than the rainy one, while litter weight at birth was non significantly higher in dry season than rainy one. The differences between present results and results cited in other reviews may be due to climatic variation between countries.

Also from the previous table, it is noticeable that conception rate was higher during autumn followed by winter, spring and the lowest values were recorded during summer season, these results were partially agreed with the finding reported by [22] who reported that conception rate was higher in autumn and spring and the lowest conception rate was recorded in summer. The lowest conception rate during summer may be due to the low sperm cell concentration per ejaculate and high percentage of dead sperms obtained during summer time.

Regarding seasonal effect on the birth weight when studied on litter size 7 during summer and winter seasons . Data obtained revealed presence of a significant seasonal effect ($p \leq 0.05$) between the same sexes in the different seasons and between both sexes in the same season being higher in winter than summer months in both sexes and in both seasons males were significantly higher than females. Obtained results are agreed with those recorded by [25], [26] and [27].

Data reported in table (10) showed that performing of double mating during rabbit breeding is beneficial for the rabbit breeders compared with single or three matings as double mating resulted in a highly significant litter size ($p \leq 0.005$) and a high conception rate, significant increase of litter size and conception rate in double mating compared with single mating may be due to more mechanical stimulation in double matings which increase ovulation rate, hence the increase in litter size and conception rate, but the decrease in the conception rate and litter size in the three mating may be due to over stress from transportation of the doe to three males for mating. Present data agreed with those reported by [28] who found that conception rate was higher in double mating compared to single one, on the other hand (1) found that mating system (single or double mating) had non significant ($p \geq 0.05$) effect on litter size at

birth or service per conception although litter size in double mating was 6.31± 0.17 while it was 5.84 ± 0.19 in single mating, also [29] reported that the number of matings are not affecting on conception rate, litter size or litter weight at birth. No one from the available literature tried three mating to be compared with the present data, so when double mating is practiced in rabbit breeding, farmers will be more benefited from the increasing of litter size and conception rate.

Results concerning the effect of mating order on both litter size and conception rate are shown in table (10), obtained data revealed that the first mating was the best as it is resulted in a high conception rate and a highly significant litter size ($p \leq 0.005$), while a low values were obtained from the second and third mating. Bad results obtained from mating by second or third ejaculates may be due to presence of a low number of mature sperms and a high number of immature one with a low fertilizing capacity.

Regarding the effect of mating time, it was found as shown in table (10) that the highest conception rate was obtained when mating occurred between 6.00-8.00 pm followed by mating between 8.00-10.00 am while the lowest values were recorded when mating occurred between 12.00-2.00 pm. Data concerning the effect of mating time on litter size revealed that good results were obtained when mating occurred between 8.00-10.00am followed by mating between 6.00-8.00pm without a significant differences in between. Good results obtained by mating does at these times may be due to the suitability of environmental temperature and low level of noise during these periods, while the lowest values ($p \leq 0.001$) were obtained when mating occurred between 12.00-2.00pm and this may be due to elevated temperature and presence of a high level of noise at this time of the day made by farm crew.

The male sexual behaviour which observed during the first mating after three days of sexual rest were recorded in tables (12&13). Recorded data and observed behaviour showed that three males (7.5%) out of the tested group (40 males) were sexually inactive and not showing any sexual interest toward the receptive doe when taken to their cages, other males (37=92.5%) were sexually active and respond immediately toward the receptive doe by mounting without any pre-mating courtship , following successful mating 75.68 % of males fallen backward while 24.32% fallen sideway on the right side and 56.76 % produced a load characteristic cry then stood up and 75.68 % struck by hind legs on the floor of the cage from 2-74 times (21.89±3.33).

Courtship behaviour was observed after first mating during the latent period which were taken between each two successive mating, it included enuresis 32.43 % which was performed by active leap, ear nuzzling 27.02 %, genitalia sniffing 40.54 % and chin rubbing 70.27 %. Present results are partially agreed with those reported by [30] who studied sexual behaviour in wild male rabbits naturally and with [28],[31], [32], [33] and [34] who studied buck sexual behaviour under laboratory condition, but non of the available literatures mentioned the frequencies of sexual items studied to compare them with the present results.

As shown in table (12) all sexually active males (37males out of 40 tested males, 92.5%) performed 1st and 2nd matings but only 62.5% of males performed 3rd mating while 56% exhibited 4th mating, 22.5% showed 5th mating, 17.5% exhibited 6th mating,12.5% was observed to mate till 7th mating, 7.5% were sexually active till 8th mating, %, while only one male (2.5%) exhibited 9th and 10th mating. No male from the tested group mate the same female more than 10 mating.

Regarding the refractory period or time elapsed between each two successive matings were found variable, the shortest significant period was that reported between the first and second mating, it was

significantly shorter ($p \leq 0.05$) than other refractory periods except that following 4th and 7th mating. Present results disagreed with those reported by [4] who found that the intervals between copulation became longer as the number of successive matings increased and are partially agreed with those reported by [31] who mentioned that young males ejaculated 9-10 times before sexual exhaustion.

CONCLUSION:

1- For good fertility it is preferable to use males twice daily every three days. 2- For high conception rate and litter size it is preferable to perform double mating for each receptive doe either during morning or evening time. 3- It is advisable for rabbit breeders to avoid breeding of rabbit during summer time due to the lowering of litter size and conception rate during this time of the year. 4- In females, light body weight is preferred as females having such weight gave the highest conception rate and birth weight.

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دراسة على بعض العوامل المؤثرة فى أداء الذكور والإناث والخلفة فى الأرانب النيوزيلاندي البيضاء تحت الظروف المصرية

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الملخص العربى

أجريت هذه الدراسة فى مزرعة الأرانب التابعة لكلية الطب البيطري بمشتهر جامعة بنها بهدف دراسة بعض العوامل المؤثرة فى أداء الأمهات والآباء والخلفة فى أرانب النيوزيلاندي الأبيض تحت الظروف المصرية وقد تم استخدام عدد 50 أم وثمانية ذكور ونتاجها وقد استمرت هذه الدراسة قرابة الثلاثة أعوام ومن خلال هذه الدراسة تبين ما يلي:

1. أن وزن الخلفه يتناسب تناسبا عكسيا مع عددها
2. لم يتأثر حجم الخلفة بوزن الأم بينما تأثر وزنها تأثيرا معنويا بوزن الأم
3. زاد حجم الخلفه من البطن الأولى حتى وصل اعلى معدل له فى الخامسة ثم انخفض بعد ذلك
4. لم تتأثر فتره الحمل بحجم الخلفة
5. سجل حجم الخلفة ومعدل الحمل أعلى معدل له فى فصل الخريف ثم الشتاء بينما سجل اقل معدل له فى فصل الصيف
6. سجل وزن الخلفة أعلى معدل له فى فصل الشتاء بينما كان اقل معدل له فى فصل الصيف
7. زاد وزن الأمهات التي تراوحت أوزانها من3 -2.5 كجم زيادة معنوية بعد الولادة بينما زادت أوزان الأمهات التى تراوحت أوزانها من 3.5 – 3 كجم زيادة غير معنوية بينما انخفضت أوزان الأمهات التى تراوحت من4 -3.5 كجم انخفاضا غير معنوى
8. زاد معدل استهلاك العليقة زيادة طفيفة خلال الأسبوع الثانى ثم انخفضت أيضا انخفاضا طفيفا خلال الأسبوع الثالث ثم زادت خلال الأسبوع الرابع زيادة معنوية بالمقارنة بالثلاث أسابيع الأولى
9. سجلت أعلى معدلات فى عدد الخلفة ونسبة الحمل فى التلقيحات التى أجريت صباحا ومساءا وكذلك فى حالة مضاعفه التلقيح واستخدام التلقيحة الأولى فى تلقيح الإناث
10. عند دراسة السلوك الجنسي فى ذكور الأرانب أظهرت النتائج ما يلى- :استطاع 92.5 % من الذكورالمستخدمه من أداء تلقيحتين لنفس الأنثى بينما استطاع62.5 % من أداء ثلاث تلقيحات، بينما أدى 56 %عدد أربعه تلقيحات و 22.5 % خمس تلقيحات و 17.5 % ستة تلقيحات، 12.5 % سبعه تلقيحات ، 7.5 % ثمانية تلقيحات، 2.5 % تسعة و عشرة تلقيحات بينما لم يقوم اى من الذكور المستخدمة بأداء التلقيحة الحادية عشرة.
11. استجابت الذكور مباشرة لإدخال الاناث لها وسارعت بأتمام اول تلقيحة ثم تبعها فترة راحة وقد اختلفت فترة الراحة بين كل تلقيحتين ولكنها سجلت اقل معدل لها بين التلقيحتين الأولى والثانية مما يدل على قوة النشاط الجنسى خلال التلقيحه الاولى والثانية
12. اختلفت نسبه إظهار سلوك الغزل بين الذكور فسجل سلوك حك الذقن أعلى المعدلات بنسبة 70.27 % بينما سجل سلوك قذف البول نسبة 32.43 % كما سجل سلوك شم الأجزاء التناسلية نسبة 40.54 % وشم الأذن نسبة 27.2 %.
13. أظهرت الذكور عدد من السلوكيات بعد إتمام عملية التلقيح مثل الوقوع للخلف 75.67 % الوقوع على الجانب الأيمن من الجسم 24.32 % أحداث صرخة مميزة 56.76 % الوقوف مرة أخرى ثم الضرب على أرضية البوكس بالأرجل الخلفية75.68 % عدد من 2 إلى 74 مرة بمتوسط 33.3 ± 21.89 خبطة فى المرة الواحدة.

(مجلة بنها للعلوم الطبية البيطرية: عدد 25(2):1–12, ديسمبر 2013)