

THE INFLUENCE OF PARTURITION FREQUENCY ON THE PRODUCTIVE EFFICIENCY OF THE DOES

Zs. Szendrő - L.Szabó - Irene Csonka

Research Centre for Animal Breeding and Nutrition
Gödöllő, Hungary

The maximum utilization of the rabbits is needed for improving the breeding stocks and their economical productive efficiency. Increasing the parturition frequency may contribute partly to this improvement.

During the last 10-15 years a lot of papers were presented about the increasing of parturition frequency. In that papers comparison was made between the productive efficiency of does mated immediately after parturition and that of those mated after 10-12 days. In order to make real comparison of productive efficiency the does mated after parturition by 20 or 30 days were examined as well as the intensive /immediately after parturition/ and semiintensive /10 days after parturition/ groups.

Materials and Methods

Our experiments were carried out at the rabbit farm of Research Centre of Animal Breeding and Nutrition in Gödöllő on one line of the New Zealand White does. Experimental groups were housed under the same keeping and feeding conditions.

Every 10 days the mating of does was made for 3 days. Does weren't tested for pregnancy. Our experiments included groups of does mated after parturition by 0, 10, 20 and 30 days. Within every experimental group, does failed to mate in one mating period were mated in the following one. It must be mentioned that our observations were recorded for does had at least three valuable parturitions.

Results and Discussion

The experimental results of the influence of parturition frequency on some parameters are shown in Table 1. It seems to be an original idea that beside the average production results of groups /B/ data were estimated on the basis of real date of mating and parturition. Does having become pregnant on the first trying /A/ went into that theoretical population where it was the same period between two parturitions as we established it by forming of experimental groups.

Several workers stated that the does of rabbits show high sexual activity and then high mating ability immediately after parturition. On the contrary, our results showed that 56,64 % only of the does were mated at the said time. This low mating ability might be occurred by deficiency or error in the mating system. During the 3-days mating period, the does kindled at the first and the second day had two and one day of the mating period, respectively. However, those kindled at the third day had poor chance to mate after parturition and then remated in the following mating period. Better results of the mating ability of the does can be obtained if the mating was continuous.

As regards the conception rate, our results agreed with that reported by several workers.

The interval between parturition had slight effect on litter size at birth. Similar result was found by Holdas et al./1976/ and Martin and Donal /1976/. Litter size at 21 days of age was significantly increased with prolonging the interval between parturitions.

Mortality rate at suckling period for various experimental groups ranged between 12,4 and 21,6 %. Differences between the experimental groups in this respect were not significant. Parturition frequency didn't show any effect on the mortality rate during this period.

Meanwhile the differences between groups of does in

respect of litter weight gain and individual weight gain from birth to 21 days of age were significant, the parturition frequency had no effect on them. This result agreed with that reported by Lebas /1971/ and Broeck and Lampo /1975/.

The interval between parturitions and hence the annual number of parturitions /Table 1./ are greatly affected by the mating ability and conception rate of the doe /Table 2./. The does mated immediately after parturition had the shortest interval between parturitions /55,27 days/, whilst the longest one /71,67 days/ was recorded for does mated after parturition by 30-32 days. The interval between parturitions was approximately the same for does mated 10-12 days or 20-22 days after parturition. This similarity may be caused by the lower mating ability for does mated after parturition by 10-12 days and the better conception rate for the other one.

Our results indicated that throughout one year the does mated immediately after parturition /intensive group/ had 6,61 litters, 53,34 offsprings were borned alive and 43,36 youngs at 21 days of age. Results obtained for the intensive group were worse than that reported by Martin and Donal /1976/. The group of does mated after parturition by 10-12 days /semiintensive/ had approximately the same results of the intensive one. From all results, it can be considered our mating system and the productive system as a semiintensive one. We could not completely utilize the intensive system.

Conclusions

- Our experimental results can be concluded as follows:
- The sexual activity and mating ability were high for a great part of the experimental does after parturition
 - Does mated immediately after parturition had lower conception rate /57,45 %/ than that of the other groups

- The annual number of parturitions per doe was higher /6,61/ for those in the intensive group than that of the other groups
- The intensive system had slightly decreasing effect on litter size at birth, but a bit greatly decreased it at 21 days of age
- There was no sure correlation between the interval between parturitions and the mortality at suckling period
- The parturition frequency had slight effect on milk production of the does. The best results were recorded for does mated after parturition by 20-22 days, meanwhile those mated after 30-32 days had the last order between experimental groups in that respect.
- The annual young production was increased with shortening the intervals between parturitions.

From the biological view of the production of rabbit, it can be obtained the maximum production by using the intensive mating system /remating immediately after parturition/. The different conditions needed for the completely practice of the intensive system are not entirely suitable now. In order to determine the efficiency of this system it must be tested in suitable number of does /e.g. 400-500 does/ to obtain real results about this concern.

The suitable conditions of the genetic, feeding, keeping and hygienic views of consideration must be investigated by the researchers in order to applicate this method under large scale condition.

References

1. Broeck, L. - Lampo, Ph.: Arch. Gefl. u. Tierzucht, Stuttgart, 1975. 6. 232-235.p.
2. Holdas, S. - Suschka, A. - Szendrő, Zs.: 1^{er} Congrès Intern. Cunicole, Dijon, 1976. 76.
3. Lebas, F.: I.T.A.V.I., Paris, 1971. No. 153.

4. Martin, S.-Dónal, R.: 1^{er} Congrès Intern. Cunicole, Dijon, 1976. 75.
5. Prud'hon, M.: I.T.A.V.I., Paris, 1973.
6. Surdeau, P. - Matheron, G.-Perrier, G.: II. Cong. Mundial Cunic., Barcelona, 1980. 313-321.p.
7. Szendrő, Zs. - Nguyen Thi Kim Thuy - Eőry, A. - Suschka, A.: Allattenyésztés, Budapest, 1983.

Summary

There were examined different groups of New Zealand White does mated after parturition by 0, 10, 20 and 30 days. Results of the experimental groups were estimated on the basis of real production of does and on the basis of average production of groups. The conception rate was between 57,5 and 92,6 per cent. Litter size at birth was slightly affected by the interval between parturitions. It was between 7,91 and 8,36 sucklings/doe. Mortality rate at suckling period for experimental groups ranged between 12,4 and 21,6 per cent. Our results show that does mated immediately after parturition during one year had 6,61 litters, 53,34 offsprings borned alive and 43,36 youngs at 21 days of age.

Resume

Nous avons examiné de différents troupeaux de lapines Néozélandaises blanches, qui ont été saillies 0, 10, 20 et 30 jours après la mise bas. Nous avons apprécié les résultats des troupeaux expérimentaux sur la base de la productivité effective des mères, ainsi que de la performance moyennes des troupeaux. Le taux de gestation était entre 57,5 % et 92,6 %. La taille de portées à la naissance n'était influencée que dans une faible mesure par l'intervalle entre les mises bas. Cette valeur est de 7,91 et 8,36 lapereaux par mère. Dans les groupes expérimentaux la mortalité de portées était entre 12,4 % et 21,6 % pendant la durée de l'allaitement. Selon nos résultats les lapines saillies post-partum ont atteint pendant un an 6,61 mises bas, 53,34 lapereaux nés vivants et 43,36 lapereaux de 21 jours.

Table 1.

Productive qualities of rabbit does as affected by frequency of parturition

Features	Does mated after parturition by							
	0-2 days		10-12 days		20-22 days		30-32 days	
	A	B	A	B	A	B	A	B
Number of does		36		21		13		13
Number of matings		227		102		63		56
Number of parturitions		169		85		56		54
Ability for pairing		56,6		47,0		57,1		50,0
Conception rate	57,5	74,5	69,2	83,3	84,4	89,9	92,6	96,4
Litter size at birth	7,91	8,07	8,19	8,32	8,07	8,36	8,04	8,04
Litter size at 21 days	6,29	6,56	6,89	7,22	5,89	6,78	6,92	7,04
Mortality at suckling,%	23,4	21,6	15,8	14,0	27,0	20,3	14,0	12,4
Litter weight gain between 0-21 days /kg/	1,76	1,78	1,81	1,90	1,90	1,97	1,66	1,73
Individual weight gain between 0-21 days /kg/	0,28	0,27	0,26	0,26	0,32	0,29	0,24	0,25
Number of parturitions/year		6,61		5,88		5,82		5,09
Number of offsprings/doe/year		53,3		48,9		48,7		40,3
21 days youngs/doe/year		43,7		42,5		39,5		35,8
Total weight gain of youngs/doe/year		12,2		11,6		11,9		9,2

The "A" column shows the production of does which were successively mated at the date given by the experimental programme.

The "B" column shows the average production of experimental groups without regarding to the result of the mating

Table 2.

Intervals between parturitions for the experimental groups

Interval between parturitions	Experimental groups							
	0 - 2		10 - 12		20 - 22		30 - 32	
	distribution of parturitions / % /							
	aver. ¹	acc. ²	aver. ¹	acc. ²	aver. ¹	acc. ²	aver. ¹	acc. ²
30	31,95	31,95						
40	11,83	43,78	31,76	31,76				
50	5,33	49,11	12,94	44,70	48,21	48,21		
60	17,16	66,27	14,12	58,82	14,29	62,50	46,30	46,30
70	17,16	83,43	12,94	71,76	12,50	75,00	16,67	62,97
80	6,51	89,94	16,47	88,23	14,29	89,29	15,52	81,49
90	2,37	92,31	3,53	91,76	8,93	98,22	12,96	94,45
100	2,96	95,27	4,71	96,47	1,78	100,00	3,70	98,15
110	1,78	97,05	1,18	97,65	-	100,00	1,85	100,00
120	1,18	98,23	2,35	100,00	-	100,00	-	100,00
130	1,77	100,00	-	100,00	-	100,00	-	100,00
Average /days/	55,27		62,12		62,68		71,67	

1 = average

2 = accumulated

