قسم : التوليد والانتاج الحيواني .
كلية الطب البيطرى ، والزراعة ـ جامعة أسيوط.
رؤساء الاقسام : أ.د محمود عبد المحسن النجار ، حاتم الحمادى .

العلاقة بين ادرار اللبن ونشاط المبيض في ابقار الفريزان

باهي سرور ، احمد عبد الرحيم ، فاروق علام

اشتملت هذه الدراسة عدد ٩٣ من أبقار الفريزيان الموجوده بمزرعة كلية الزراعة ومزرعة الفريزيان في بني مر بأسيوط ، وقسمت الحيوانات الى ثلاثة مجموعات (حيوانات حوامل) ، (حيوانات تعاني من خمول المبايض)،(حيوانات تعاني من وجود الجسم الاصفر بصفة مستمرة) .

وأوضحت الدراسة أن الحيوانات التي تعاني وجود الجسم الاصفر اعطت اعلى ادرار في كمية اللبن واقلها الحيوانات التي تعاني من خمول المبايض،وكذلك اتضح أن هناك علاقة عكسية من كمية ادرار اللبن وحدوث الحمل .

Dept. of Obst. Gyn. & A.I.,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. M.A. El-Naggar.

LACTATION AND REPRODUCTIVE PERFORMANCE INCATTLE

(With 4 Tables)

By
B.H. SERUR; A.A. FARRAG and F. ALLAM

(Received at 25/5/1982)

SUMMARY

This study included a total of (93) Freizian cows. Animals were classified into three groups (pregnant animals, animals sufferring from ovarian inactivity and animals sufferring from persistent corpus luteum. The results showed that the highest milk geild was given by animals with persistent corpus luteum, while the lowest yeild was given by the group sufferred from ovarian inactivity.

The results showed also that there was a negative correlation between milk yeild and conception rate.

INTRODUCTION

The maintenance of a good fertility level and good milk yeild are directly related to the nutritional needs of the human population and to the economy of the country. Therefore, the study of the milk production in relation to the ovarian activity needs great attention.

As the physiological mechanisms involved in reproduction and lactation are closely associated, interrelationships between the two will be expected (SALISBURY et al. 1978).

Although the interrelationship between milk yeild and ovarian activity is considered of great importance, yet few literatures could be found. ROTTENSTEIN and ANDERSON (1955) and DOWSON (1963) mentioned that an increase in milk yeild was accompained with decreased fertility and conception rate EL-HARIRI et al. (1976) found the same correlations in buffaloes. This statement was not confirmed by SCHMIDT and KORIATH (1958).

ZAKI et al. (1964) stated that milk yeild of cows and buffaloes was good in healthy animals with normal active ovaries.

There are many other factors controlling milk yeild including hormonal changes, age, number of previous parturitions, heriditary potential for milk production, weight, breed, nutritional status and other causes (COLE and CUPPS, 1956). ROBERTIS (1971) cited that maximum milk production is usually reached between 1-2 months after parturition in cattle.

The aim of this work is to study the relation between milk yeild and the ovarian status after parturition in Freisian cattle in Assiut province.

MATERIAL and METHODS

A total number of 93 Friesian cows included in this study. These animals were among those reared in the experimental farm station, Faculty of Agriculture and Bani-Morr Friesian station. The age of these animals ranged between 2.5 to 8 years. Animals were kept more or less under the same nutritional, hygeinic and managmental condition.

The age, number of previous calving, average daily and monthly milk yeild for each animal as well as the conception rate were obtained.

For each animal, gynaecological examination was performed two times within 10 days interval to determine its reproductive status. The included animals were classified into:

1- Group I : With normal active ovaries. These animals showed normal postpartum heat within three months after calving and were mated normaly and became pregnant.
2- Group II: With completely inactive ovaries and not show heat for a period more than three months after calving.
3- Group III: With persistent corpus luteum (corpus luteum considered persistent if elapsed for a period more than 3 months after calving in cattle after DESSOUKY and RAKHA, 1961).

The udder was moderatly or good developed in healthy animals with normal active ovaries and those with persistent C.L. while it was less developed in animals with completely inactive ovaries specially in primiparous animals.

Statistical analysis of the data were done according to SNEDECOR and COCHRAN (1967).

RESULTS

From table 1,2 and 3, it is seen that the lowest average milk yeild was observed in the first group primiparus, while the highest level was found in the second group gave 2 to 4 calvings. After the 4th calvings, a slight decrease in the milk yeild was observed.

The average milk yeild produced by animals with persistent corpus luteium (Group III) was higher than the average milk yeild in animals with complete inactive ovaries (Group II) and those pregnant animals (Group I), (Table 3).

In all studied material, a highly ($P < 0.01$) significant difference in the average milk yeild between the three groups was obtained.

In primiparous animals, the difference in the average milk yeild between the three groups was significant at $P < 0.05$ level. However, in pluriparous animals groups (II & III), the difference was found to be non significant.

From table (4) it can be noticed that higher conception rate was associated with low milk yeild.

DISCUSSION

The average daily milk yeild in primiparous animals (8.54 $\pm$ 2.67 kg) was lower than in animals that gave 2-4 births (12.36 $\pm$ 2.71 kg) and those gave more than 4 births (10.04 $\pm$ 3.26 kg). This agrees to a large extent with that reported by TURNER (1932) and CLARK and TOUCHBERRY (1962) in cattle and EL-SAWAF et al. (1964) in buffaloes. They attributed this progressive increase in milk yeild to the stimulus of recurring pregnancy and to the increase in the body weight as well as the resultant growth and development of the udder.

High milk yeild is accompained with the high prolactin level in the blood, ROBERTS, (1971) and HAFEZ, (1980) cited that prolactin is essential for maintaning milk secretion. This may explain the correlation between the high milk production and persistent corpus luteum as prolactin is responsible for maintenence of the corpus luteum (ROBERTS, 1971).

BLAXTER, (1945) stated that high level of thyroxin hormone is related to higher milk production, while high level of thyroxin causes higher and earlier activity of the ovaries after parturition and vis versa. This might explain the relation between low milk yeild and inactive ovaries of the present study. AFFIEFY (1966) noticed that thyroxin level is markedly decreased in animals affected with inactive ovaries. DOWSON (1963) found that high milk production causes stress on the metabolism of the animals specially that of the pitutary and ovaries. On the contrary, to these findings ECKLES, (1929) reported that milk yeild has no effect on reproduction in cattle.

In primiparous animals, the results showed a significant ($P/ 0.05$) difference in the milk yeild between the three groups. This may be attributed to age and size variations. SALISBURY (1978) mentioned that early calving heifers would not be expected to produce as much in their first lactation as heifers calve at a later age and thus at a larger size.

Statstical analysis showed a negative correlation between milk production and conception rate. This may due to the extra stress caused by heavy laction on the metabolism of the animal and both lactation and reproductive activity. SPALDING et al. (1975) reported that the interval from calving to the first postpartum estrus was longer in high milk producing animal. Therefore, there is a possibility of competition for limited hormone supplies between the udder and genital organs.

REFERENCES

Afiefy, M.M. (1966): Seasonal variations in thyroxin and iodine contents in relation to fertility in buffaloes and cattle. Vet. Med. J. Giza 13, 73-100.

Blaxter, K.L. (1945): The preparation and biological effects of iodinated proteins. III, The effect of iodinated protein feeding on the lactating cow. I. The effects of prepartions of low activity and of iodinated ardein. J. Endocrinol. 4, 327-365.

Clark, R.D. and Touchberry, R.W. (1962): Effect of body weight and age at calving on milk production in Holstein cattle. J. Dairy Sci., 45, 1500-1510.

Cole, H.H. and Cupps, P.T. (1956): Reproduction in Domestic animals 2nd Ed. Vol. II, Academic Press, New York and London.

Dessouky, F.I. and Rakha, A.H. (1961): Studies on the gestation period and the postpartum heat of frisian cattle in Egypt. J. Agric. Sci., 57, 325-327.

Dowson, F.L.M. (1963): Uterine pathology in bovine infertility J. Reprod. Fert., 5, 397.

Eckles, C.H. (1929): A study of breeding records of dairy herds. Minnesota Agr. Exp. Sta. Tech. Bull. 258. pp. 1-15.

El-Hariri, M.N.E.; Zaki, K. and Deep, S. (1976): Studies on repeat breeding in cattle and buffaloes factors associated with reduced fertility, Vet. Med. J. Giza, 26, 314-329.

El-Sawaf, S.A.; Goher, M.E. and Schmidt, K. (1964): The interrelationship of milk yeild, dry period, calving interval and nutrient requirement in the buffaloe. Vet. Med. J. Giza, 10, 101-111.

Hafez, F.S.E. (1980): Reproduction in farm animals, Lea and Febiger, philadelphia.

Turner, C.W. (1932): The influence of age at first calving on milk secretion. Missouri Agr. Expt. Sta. Bull. 164.

Roberts, S.J. (1971): Veterinary Obstetric and Genital Diseases. 2nd Ed. published by the author, Ithaca, N.Y.

Rottenstein, K. and Anderson, H. (1955): 28 Beretning forsogslab cobenhaven (cited by El-Sawaf, S.A., Goher, M.E. and Schmidt, K. (1964).

Salisbury, G.W.; VanDemark, N.L. and Lodge J.R. (1978): Physiology of Reproduction and Artificial Insemination of cattle. 2nd Ed. W.H. Freeman and Company San Francisco.

Schmidt, K.G. (1958): Arch. Tierztcht 1, Fac. 1,7 (Cited by El-Sawaf, S.A.; Goher, M.E. and Schmidt, K.: Vet. Med. J. Giza 10, 101-111 (1964).

Snedecor, G.W. and Cochran, W.G. (1967): Statistical methods. 8th Ed. Iowa state Univ. Press.

Spalding, R.W.; Everett, R.W. and Foote, R.H. (1975): Fertility in New York artificially inseminated Holstein herds in dairy herd improvement J. Dairy Sci., 58, 718-723.

Zaki, K., Soliman, F.A. and Ramsees, G. (1964): The reproductive pattern of the Egyptian buffalo J. Arab. Vet. Med. Ass. 23, 361-374.

Table (1)

Milk yeild (kg) in Friesian cows during pregnancy (Group I)

No. of Prev. calvings	No. of animals	Daily milk yeild			Milk yeild during the 1st 4 months after calving		
		$\bar{X}$	±	Range	$\bar{X}$	±	Range
1	12	8.54	2.67	4.9-13.07	256.78	89.32	148.4-392.4
2-4	14	12.36	2.71	7.2-14.7	371.54	80.48	219.4-441.5
4	12	10.04	3.26	4.9-14.4	302.58	98.02	157.2-444.8

Total = 38

$\bar{X}$ = Mean

± = Standard deviation

Table (2)

Milk yeild (kg) in Friesian cows affected with Inactive ovaries (Group II)

No. of prev.	No. of animals	Daily milk yeild			Monthy milk yeild during the 1st 4 month after calving		
		$\bar{X}$	±	Range	$\bar{X}$	±	Range
1	11	6.34	2.55	42- 9.9	190.23	76.38	125.6-298.6
2-4	7	10.86	4.03	4.7-15.6	326.10	120.76	140.7-467.1
4	9	8.67	1.43	5.8- 9.13	260.68	37.71	211.0-301.0

Total = 27

$\bar{X}$ = Mean

± = Standard deviation

Table (3)
Milk yeild (kg) in Friesian cows affected with persistent CL (Group III)

No. of prev. calvings	No. of animals	Daily milk yeild $\bar{X}$	±	Range	Monthly milk yeild in the first 4 months after calving $\bar{X}$	±	Range
1	8	11.42	2.69	6.1 -14.37	342.65	80.79	183. -431.1
2-4	12	13.19	2.98	4.83-16.00	395.99	89.28	183.8-480
4	8	12.01	3.97	7.7 -17.7	361.75	121.15	233 -531

Total = 28
$\bar{X}$ = Mean
± = Standard deviation

Table (4)
The relation between milk e yeild and conception rate

Daily milk yeild (kg)	No. of inseminated animals	No. non return animals	conception rate
Up 7 kg (low milk yeild)	8	5	62.5
7 - 10 kg (Moderate yeild)	10	5	50.0
More than 10 k. (high yeild)	22	8	36.36