Poster 15

Fertility Responses of High Producing Iranian Holstein Dairy Cows

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Introduction

Level of milk production affects fertility negatively; however, this relationship is not always the same. High milk production may lead to negative energy balance which can delay estrus and extend days open (DO) (Butler & Smith, 1989). Guo *et al.* (2004) indicated high producing cows had more days open. On the other hand, Oltenacu *et al.* (1981) pointed out that yearly milk yield increased when the number of DO diminished. Moreover, high number of insemination for conception also lengthens DO (Chang *et al.*, 2006). The aim of this study was to evaluate the relationships between milk production and days open, days in milk and number of insemination per conception

Materials and Methods

Seven hundred and fifty-seven Holstein cows were selected from a herd with 800 milking cows. The cows were parturated from September 2006 to February 2008. After calving (parity and body condition scores ranged from 2 - 8 and 3.2 - 4.3, respectively), animals were moved to a fresh cow barn and fed a total mixed ration (as DM) based on 25% alfalfa hay, 17% corn silage and 58% concentrate for 90 days (CP: 182 g/kg; ME: 12.3 MJ ME/kg DM). Then, the cows were located in four barns based on their milk production (ranged from 18 to 50 kg/day) and body condition scores (ranged from 1.9 to 3.4). All cows had been subjected to a presynch-ovsynch protocol around 28-35 days post-partum. During the lactation, weekly milk production was recorded. After the lactating period, the animals were assigned in six groups based on their 305 d adjusted milk production (tons/head) as >11 (T11), 10-11 (T1011), 9-10 (T910), 8-9 (T89), 7-8 (T 78) and <7 (T7). Data on days in milk (DIM), open days (OD) and insemination per pregnancy (I/P) of the cows were collected. All data were analyzed in a complete randomized design using the GLM procedure of SAS (1999), including the treatment effect of 305 d adjusted milk production.

Results and Discussion

Data on DIM, OD and I/C are presented in Table 1. There was no significant effect of milk production on I/P. Days in milk of cows located in T7 was significantly lower compared with the T11, T1011, T910 and T78. However, there was no significant difference between T7 and T89. There was no significant effect of milk production on DP. It was previously indicated that an antagonist relationship exist between genetic merit for milk yield and reproduction (Pryce *et al.*, 2004). Failure to establish a successful pregnancy may arise from failure of the cows to exhibit estrus and failure to conceive, especially at first service. Result of the present experiment indicated that milk yield was not associated with any of the fertility variables (OD and I/P) investigated. However, increased 305 d adjusted milk yield was associated with an increased in DIM. Therefore, in general, it was concluded that level of milk production was not associated with fertility rate of high producing Holstein dairy cows. In addition, the most

important finding of the current study was the absence of the effect of milk production on reproductive functions, as observed in OD and I/P, of the cows evaluated.

Table 1. Days in milk (DIM), open days (OD) and insemination per pregnancy (I/P) of Holstein dairy cows

Items	305 Adjusted Milk Production (tones/head)							
	<7	7-8	8-9	9-10	10-11	>11	SEM	*P*
DIM	301±10.7	352±7.73	339±6.5	355±5.4	364±6.1	363±6.8	3.91	0.05
OD	112±11.4	139±8.2	126±6.9	139±5.8	143±6.5	142±7.3	4.17	0.16
I/P	2.5±0.31	3.1±0.2	3.1±0.2	3.3±0.2	3.5±0.18	3.3±0.2	0.111	0.20

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