FACTORS AFFECTING HERD LIFE AND TOTAL CALF PRODUCTION IN FRIESWAL COWS

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ABSTRACT

The present study was undertaken on calving records of 1024 Frieswal cows (a new strain of Holestein Friesian X Sahiwal) maintained at Military Dairy Farm, Meerut, born during 1987 to 2000 and maintained over a period of 21 years i.e. up to 2007. The average total herd life and total productive herd life were observed 6.43± 0.09 and 3.81± 0.12 years for this herd. It was observed that only 2.3 per cent cows have attained the highest longevity of more than 12 years and about 80 per cent cows left the herd before completion of 6 years of their herd life either due to culling or death. Most of the female calves attained their age at first calving before 3 years of age with average age at first calving was 2.67± 0.07 years. Average number of total alive calves produced and total female calves produced by each cow during her stay in the herd were 2.71± 0.07 and 1.32± 0.05 calves, respectively. About one fourth (24.7%) cows left the herd after giving one calf and about 7% cows produced 8 or more calves during their herd life. There was an increasing trend for the total calves born with the increase in the first lactation milk yield (FLMY), higher milk producing cows produced significantly more number of calves as compared to low milk producers.

Key words: Age at first calving, Cattle, Longevity, Total calf production.

INTRODUCTION

Dairy producers around the world want cows that are long-lasting, productive and trouble-free, ultimately creating more profit for the farm business. Productive Herd Life (PHL), a health trait that evaluates a cow’s genetic ability to stay in the herd, takes into account various characteristics that make a cow more sustainable, thus more profitable. Genetic contribution in the form of living progeny to the next generation from a cow is associated with herd life, calf production and their survival for better replacement. Longer herd life increases the total lifetime calf and milk production, which in turn leads to higher selection intensity. Therefore, it is essential to know the number of years an adult female surviving in the herd and producing calves during its lifetime. Keeping in view the importance of herd life and calf production, the present study was undertaken.

MATERIALS AND METHODS

The present study was undertaken on calving records of 1024 Frieswal cows maintained at Military Dairy Farm, Meerut, born during 1987 to 2000 and maintained over a period of 21 years i.e. up to 2007. The data regarding year of birth were divided into 5 periods. The data were also divided into 6 groups of first lactation milk yield (FLMY) and 7 groups of age at first calving (AFC). All the animals were maintained under similar management conditions. Productive herd life (PHL) was calculated as the number of days from date of first calving to the date of disposal, whereas longevity or total herd life was calculated as number of days from the date of birth to the date of disposal of cows from the herd either due to death or culling. The least square analysis of variance was conducted to study the effect of period of birth, first lactation milk yield and age at first calving on these traits.

RESULTS AND DISCUSSION

Longevity and productive herd life

The average total herd life (longevity) and total productive herd life were observed 6.43± 0.09 and 3.81± 0.12 years for this herd. Present findings are in close agreement with the findings of Mukherjee...
et al (1999) and Singh and Tomar (2004) for crossbred cattle, whereas higher estimates were reported by Ram and Gosawami (2005) for Tharparkar, Arun (2007) and Jakhar et al (2010) for Hariana cattle. The cows born in the first period had the longest life span of 7.48± 0.19 years out of which 4.81± 0.20 years was the productive herd life after which a decreasing trend was observed, both longevity and PHL were the shortest (5.17± 0.24 and 2.73± 0.26 years) in the last period. Significant effect of period has been reported by Mukherjee et al (1999), Ram and Gosawami (2005), and Jakhar et al (2010).

Results revealed that the cows with very low age at first calving (< 800 days) had lower longevity and productive life (4.38 & 2.11 years). It might be due to the reason that the cows at a very early age could not attain full body growth and thus might have been culled out due to poor health condition. It was observed that with the increase in AFC, the longevity increased but PHL decreased. AFC group had significant effect (P< 0.05) on PHL and significant effect on longevity. Ram and Gosawami (2005) reported no effect of AFC on PHL in Tharparkar cattle, whereas, significant effect was reported by Mukherjee et al (1999), Arun (2007) and Jakhar et al (2010). The present finding suggested that the too low (< 800 days) or too high (> 1301 days) AFC is highly undesirable for longevity and PHL and an optimum AFC was observed between 800 to 1000 days. The cows with maximum age at first calving beyond 1300 days had the shortest productive life of 2.98± 0.31 years. The highest AFC caused the PHL to be low and highest longevity, because animal took more time to start production.

Longevity significantly (P< 0.01) varied from 4.32± 0.19 to 7.22± 0.11 years, whereas PHL ranged from 1.87± 0.23 to 4.77± 0.08 years in different FLMY groups. The cows which had FLMY of 2901-3600 kg had longest longevity (7.22 yrs) and PHL (4.77 yrs). The shortest PHL (1.87 yrs) was observed for the group of cows which had less than 1500 kg FLMY. Lower milk production in the first lactation was the main cause to cull the cows from the herd, so higher milk production in the first lactation was associated with longevity and productive herd life. Mukherjee et al (1999), Singh and Tomar (2004) and Arun (2007) observed similar effect and reported that higher milk production in the first lactation was associated with longer herd life and PHL. It was also observed that the sire had highly significant (P< 0.01) effect on the PHL and longevity of their daughters. This showed that the progeny of certain sires had longer herd life than the others or vice versa and hence selection can be effective for genetic improvement in production herd life. This corroborated with the findings of Singh and Tomar (2004) and Arun (2007).

Life Time Calf Production: The average number of total normal (alive) calves produced per cow during its life time in the herd was found as 2.71 ± 0.15 and out of which, each cow produced 1.32 ± 0.18 female calves in the herd. The total number of normal calves produced similar to the present study have been reported by Mukherjee et al (1999), Singh and Tomar (2004) for crossbred cattle, whereas higher estimates were reported by Ram and Gosawami (2005) for Tharparkar, Arun et al (2009) and Jakhar et al (2010) for Hariana cattle. Period had highly significant effect on calf production by each cow and it was highest (3.48± 0.16) during first period thereafter there was decreasing trend and observed lowest in last period (1.48± 0.18).

It was observed that milk production in first lactation had significant role in calf production and cows producing more milk produced more number of normal calves as compared to low milk producer. The cows which had milk production in between 2901-3600 kg during first lactation contributed the maximum female calves (1.91± 0.19) and the cows which had less than 1500 kg FLMY produced lesser female calves (0.57) in the herd. Effect of FLMY on total calves born has also been reported by Mukherjee and Tomar (1996), Singh and Tomar (2004) and Arun et al (2009). Per cent distribution of cows indicated that 9.6 percent cows in the herd could not produce any female calf, 21.3 percent cows left the herd after producing only one female calf, only 6 percent cows produced more than 5 female calves.

Average total number of calf produced in II AFC group were highest (3.27) and decreased with increase of AFC of cows due to their shorter PHL Further, it was evident that the highest number of total calves produced was 12 which was only for 0.09 percent of the total cows and about 52 percent cows left the herd after producing 2 or less calves in


REFERENCES


