Effect of altitude and season on dry matter intake, THI and growth rate in mithun

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Mithuns (Bos frontalis) are animals of high hills and are quite adaptable in that range. Igono et al. (1992) reported critical values for minimum, mean and maximum THI as 64, 72 and 76, respectively in cattle, and Holter et al. (1997) reported a negative and significant correlation between THI and DMI in cows. The environmental temperature and relative humidity significantly influence the feeding behaviour in cow (Portugal et al. 2000). Prihar et al. (1992) reported that the daily weight gain is significantly higher in crossbred cattle calves in winter. Considering these points the present study was taken to find out the effect of altitude and season on dry matter intake, THI and growth rate in mithun.

Mithuns, feeding and weighing: Mithun calves (6) each were selected irrespective of sex and strains at National Research Centre on Mithun, Jharnapani (300 MSL) and at Porba farm which is situated at 2,100 MSL. The animals were kept in confined condition during pre-monsoon season (Mar.-Jun.) and winter (Nov.-Feb). The animals were conditioned before conducting digestibility trials for 7 days during each season. During the digestibility trial, calculated amount of fresh fodders and concentrate mixtures was provided at 7.00 AM. A representative sample of fodder and concentrate feed was kept in previously labeled polythene bags. The animals were fed with the formulated ration based on their body weight as per NRC (2001).

Analysis of feed and faeces samples: Samples (100 g) of fodder and concentrate of the feed and residue were taken and dried at 100 ± 1°C for estimation by proximate principles (AOAC 2005). Body weight of the animal was taken before feeding.

Calculation of THI and analysis of data: Thermo humidity index data were collected daily for minimum temperature (Min. Temp), maximum temperature (Max. Temp) and relative humidity (RH) using a digital thermohygrometer. All the statistical analyses were performed using the SPSS software package, version 10.0.1 and data are presented as mean ± SE.

The dry matter intake (DMI percent body weight) during pre-monsoon and winter (Table 1) at Medziphema farm differed significantly (P<0.05) however, the values for DMI varied significantly (P<0.05) during winter at both the
farms. SimilarDMI (% body weight) were reported by Baruah et al. (1995), Pal and Bujarbaruah (2002), Das et al. (2010) and (Pal et al. 2002a) in mithuns when fed with different feeding regimes. THI differed significantly (P<0.05) between the altitudes within a season and between seasons within the altitude. However, no significant difference was observed in the growth rate of mithuns during the seasons and between the altitudes. Earlier studies in cattle indicated that the birth weight and growth pattern of mithun calves did not differ significantly during summer and winter (Singh et al. 2003). Higher growth rate of 643 g/day was obtained during winter at Medziphema farm, which is well in agreement to the findings of earlier workers (Prihar et al. 1992). Prakash et al. (2008) reported a weight gain of 353–548 g/day in mithun calves fed different feeding regimes. Das et al. (2007) found that average daily gain of Mithun was 577.2 g and 681.8 g, respectively, when fed with and without brewers yeast (Saccharomyces cerevisiae).

The values of FCE of DM (kg intake/kg weight gain) did not differ significantly irrespective of altitudes and seasons and is well in agreement with the values of FCE for DM obtained by Prakash et al. (2005, 2008, 2008a) in mithuns.

From the present study, it was found that the DMI (% body weight) and THI differed significantly but the parameters such as body weight and feed conversion efficiency of mithuns were not affected. In this context, it is presumed that mithuns can be reared at any altitude between 300 m MSL to 2,100 m MSL without any effect on its feed conversion efficiency of dry matter and body weight gain.

**SUMMARY**

A comparative study on effect of altitude and season on dry matter intake, THI and growth rate on growth performance and nutrient utilization in mithun calves was carried out at Medziphema farm (300 MSL) and Porba farm (2,100 MSL), Nagaland, India. The mithuns of either sex were selected and fed in confined condition. DM intake differed significantly during the seasons and between the altitudes. Growth rate of 521 g/day and 524 g/day were obtained during the experiment during pre-monsoon season which were nonsignificant. Growth rate of 643 g/day and 548 g/day were obtained during winter at Medziphema and Porba farms, which were showing nonsignificant difference between body weights and at both altitudes. Feed conversion efficiency were nonsignificant between the altitudes and seasons. THI values differed significantly between the altitude and seasons. It was concluded that mithuns can be reared at both the altitudes without any significant difference in body weight.

**REFERENCES**


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