NUTRITIONAL STATUS OF PREGNANT COWS IN DISTRICT KUPWARA OF KASHMIR VALLEY

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ABSTRACT
A survey was conducted in nine villages, three each from tehsil Kupwara, Handwara and Karnah of district Kupwara to find out the nutritional value of feeds and fodders, existing feeding practices and nutritional status of pregnant cows. For this purpose, fifteen farm families from each of the villages were randomly selected for the study. Data were collected from the selected farmers through a common questionnaire. The average dairy herd strength/family was 3.6±0.22, 4.1±0.23, 3.9±0.31 in Kupwara, Handwara and Karnah tehsils respectively. The average body weight (kg) of pregnant cows was 165.57±0.10, 175.15±3.75 and 161.98±3.35 in the respective tehsils. The daily DM intake was 41.40 and 37.21 per cent excess in tehsils Kupwara and Handwara, respectively than that of the nutrient requirement given in the feeding standard (Ranjhan, 1998) while for Karnah tehsil daily DM intake for pregnant cows was deficit by 6.80 per cent. The DCP intake was 19.81 and 19.94 per cent excess for pregnant cows in Kupwara and Handwara tehsils while for Karnah tehsil it was deficit by 1.0 per cent. The daily intake of TDN was 51.10, 48.49 and 11.65 per cent excess to the standard nutrient requirements for the respective tehsils.

Key words: Nutritional status, Pregnant cows.

INTRODUCTION
Energy and protein are of paramount importance in dairy cattle nutrition. To get the best productivity dairy animals must be fed to satisfy their nutrient requirements, otherwise their productive as well as reproductive performance gets impaired. Balanced and adequate feeding results in better utilization of nutrients and optimum milk production. Therefore, unless the nutritional status of the animals in a particular zone is known, one cannot offer the desired plane of nutrition to the animals and proper feeding practices suitable to a particular region cannot be developed. Earlier survey from two hundred households of Srinagar and Budgam districts covering a total livestock population of 5373 sheep and 2343 cattle indicated that despite highest fodder production potential of Kashmir valley. The general nutritional status of livestock is far from satisfactory (Tomar and Sharma, 2002).

During pregnancy nutrients are required for the development of foetus and membranes. During the last 60 days, live weight increases by about 20-35kg in pregnant animals depending upon the breed and their condition. Besides, the requirement for the foetal growth and uterus, nutrients are also deposited in body which may be utilized for milk production in early lactation.

MATERIALS AND METHODS
The present study was conducted in the district Kupwara, the northern most district of the Kashmir valley situated at an altitude of 5,300 feet above sea level. The district has three tehsils namely Kupwara, Handwara and Karnah having distinct climatic niche. Climatologically the winters are very cold (-2 to 10°C) with heavy snow fall and the summers are pleasant (33°C). Although the district is considered deficient in natural irrigation, about 90 per cent of the population depends in one way or other way on agriculture for their livelihood. Rearing livestock is the main source of income. For the present study an investigation was conducted in 9
villages, 3 each from Kupwara, Handwara and Karnah tehsils of the district to find out the macronutrient status of feeds and fodders, existing feeding practices and nutritional status of dairy cattle. Fifteen farmers from each village were randomly selected for the study. Animals in last trimester of pregnancy were selected for the present study. Sample of feeds and fodders offered to animals collected from each village were oven dried at $80\pm 5^\circ C$ for 24 hours till a constant weight was obtained and were subsequently ground (1 mm) and analyzed for proximate principles (AOAC, 1995) and fibre fraction (Van Soest et al., 1991).

DCP value of the available feeds and fodders was calculated by digestibility coefficient value given by Ranjhan (2001) and TDN value of the samples was calculated using the following equations reported by Martin (1985) and Chandler (1990).

TDN (%) in straw = $96.4 - 1.15 \times ADF (%)$
TDN (%) in native grass = $105 - 0.68 \times NDF (%)$
TDN (%) in concentrates = $81.4 - 0.48 \times NDF (%)$

Body weight was calculated using Shaffer’s formula (Sastry et al., 1982) as given below-

Body weight (lb) = $(G^2 \times L)/300$, where
lb = Body weight in Pound, G = Chest Girth (inch) and L = Length (inch)

The data were analysed using conventional statistical procedure (Snedecor and Cochran, 1994).

RESULTS AND DISCUSSION

The average dairy herd strength of the farmers was $4.1\pm 0.23$, $3.6\pm 0.22$ and $3.9\pm 0.31$ in Kupwara, Handwara and Karnah tehsils of district Kupwara, respectively. Average dairy herd strength was significantly ($P \leq 0.05$) higher in Kupwara tehsil than that of other two tehsils. The composition of dairy cattle in the district was recorded to be 20, 15 and 10 per cent crossbreed in Kupwara, Handwara and Karnah tehsil, respectively and rest of the cattle population was mostly small hill cattle. The average body weight of the pregnant cows was $165.0.57\pm 0.10$, $175.15\pm 3.75$ and $161.98\pm 3.35$ kg for the respective tehsils. The body weight ($300-350$ kg irrespective of different cattle breed) was significantly ($P \leq 0.05$) higher for Handwara tehsil than Kupwara and Karnah tehsil. Contrary, to the present observation Tiwary et al. (2007) reported that the body weight of the adult cattle and buffaloes ranged between $300$ to $400$ kg in the surveyed area namely Kupwara, Handwara and Karnah tehsils of Kashmir valley. The lower body weight of the animals in the current study was obliviously due to more number of indigenous cattle. Further imbalanced feeding also restricts growth thereby affecting overall body weight of the animals.

The most commonly available feeds and fodders for feeding pregnant cows in all the three tehsils include wheat bran, rice bran, pelleted feed, mustard oil cakes, linseed cake, paddy straw, maize stover, oat hay and grass hay in all the three tehsils while in tehsil Handwara and Karnah wheat straw is also fed to the animals. Paddy straw, rice bran and wheat bran were the most common feed ingredients fed to the animals. The rice bran was used by all the farmers for feeding animals in Kupwara and Handwara tehsils while in Karnah tehsil only 25 per cent of the farmers used rice bran. The daily intake of roughage and concentrate for dry pregnant cows were $3.64\pm 0.09$, $4.09\pm 0.56$, $2.80\pm 0.10$ and $3.61\pm 0.37$, $4.07\pm 0.28$, $2.70\pm 0.24$ kg for the respective tehsils which was significantly ($Pd"0.05$) higher for Handwara tehsil followed by Kupwara and Karnah tehsil. In the whole district, overall daily intake of roughage and concentrate of pregnant cows were $3.56\pm 0.21$ and $3.48\pm 0.21$kg, respectively. These observations were in agreement with the findings of Meena et al. (2008).

The chemical composition (%) of various feed resources of overall district is presented in Table 1. The DM content of feed resources ranged from $85.0\pm 0.6$ to $90.6\pm 0.3$, highest being for wheat bran and lowest for paddy straw. The OM ranged from $84.8\pm 0.7$ to $93.7\pm 0.6$, the highest being in the MOC and lowest in maize straw. The CP content was highest in MOC $(35.7\pm 1.5)$ and lowest in wheat straw $(3.3\pm 0.1)$. The EE content ranged between $1.7\pm 0.2$ to $10.2\pm 2.3$ highest being in MOC and lowest in maize and paddy straw. The CF content
was highest in maize straw (39.0±1.3) and lowest in MOC (7.70±1.3). The NFE content of feed resources ranged from 39.8±1.2 to 64.8±0.8, indicating highest for wheat bran and lowest for maize straw. The ADF and NDF content ranged from 10.6±1.2 to 53.0±1.1 and 24.5±0.5 to 78.0±0.5, respectively. The ADF content was found lowest in wheat bran and highest in paddy straw and NDF content was found lowest in MOC and highest in maize straw. The total ash content was highest in maize straw (15.2±0.6) and lowest in MOC (6.3±0.5). Results of proximate analysis indicated a normal chemical composition of various feed resources as reported by Ganai et al. (2006) and Misra et al. (2009).

The daily DM intake of pregnant cows was 6.25±0.29, 6.60±0.32 and 3.82±0.17 kg (Table 2) for the respective three tehsils. The DM intake was significantly (P≤0.05) higher in Handwara and Kupwara tehsils than Karnah. The daily DM intake was 41.40 and 37.21 per cent in excess of the nutrient requirement (Ranjhan, 1998) for Handwara and Kupwara tehsils while for Karnah tehsil daily DM intake was deficit by 6.8 per cent. Overall the daily DM intake was 5.59±0.29 kg and was 25.90 per cent in excess than their standard requirements (Ranjhan, 1998). The excess of DM intake was because of higher intake of straws. Similar to the present observation, Fadel Elseed et al. (2008), Bishoni and Singh (2009) also reported higher daily DM intake than their standard requirements. Contrary but, Tiwary et al. (2007) reported that 13.8 per cent lower DM intake per day for different categories of dairy cattle and Mudghal et al. (2003) also observed lower daily intake of DM compared to the standard requirements and the excess values of DM intake was because of higher intake of paddy straws.

The daily intake of DCP for pregnant cows was 325.62±11.80, 331.74±13.94 and 267.05±2.92 g (Table 2) for the respective three tehsils. The DCP intake similar for Kupwara and Handwara tehsils but was significantly (P<0.05) higher than for Karnah tehsil. The DCP intake was 19.81 and 19.94 per cent excess in Kupwara and Handwara tehsils while for Karnah tehsil daily DCP intake was deficit by 1.0 per cent. In the whole district the daily DCP intake was 308.93±12.23g excess to the tune of 13.44 per cent. Similar to the present observation Fedel Elseed et al. (2008), Bakshi et al. (2009) and Bishoni and Singh (2009) observed that DCP intake was in excess as found in the present

### TABLE 1: Chemical composition (%) of feeds and fodders of District Kupwara

<table>
<thead>
<tr>
<th>Feed/Fodder (N)</th>
<th>DM</th>
<th>OM</th>
<th>CP</th>
<th>EE</th>
<th>CF</th>
<th>NFE</th>
<th>ADF</th>
<th>NDF</th>
<th>Total ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat bran (12)</td>
<td>90.6±0.3</td>
<td>92.7±1.1</td>
<td>13.1±0.2</td>
<td>3.1±0.3</td>
<td>11.5±1.1</td>
<td>64.8±0.8</td>
<td>10.6±1.2</td>
<td>41.3±1.4</td>
<td>7.2±0.6</td>
</tr>
<tr>
<td>Rice bran (12)</td>
<td>88.6±0.6</td>
<td>86.0±1.2</td>
<td>11.2±0.1</td>
<td>2.1±0.3</td>
<td>20.5±1.3</td>
<td>52.3±0.6</td>
<td>36.9±5.0</td>
<td>62.6±1.2</td>
<td>13.9±0.9</td>
</tr>
<tr>
<td>MOC (08)</td>
<td>90.5±0.5</td>
<td>93.7±0.6</td>
<td>35.7±1.5</td>
<td>10.2±2.3</td>
<td>7.1±1.3</td>
<td>40.1±0.4</td>
<td>13.5±1.5</td>
<td>24.5±0.5</td>
<td>6.3±0.5</td>
</tr>
<tr>
<td>Linseed (12)</td>
<td>89.0±0.5</td>
<td>91.7±0.4</td>
<td>31.3±0.4</td>
<td>8.8±1.2</td>
<td>9.5±0.9</td>
<td>42.0±0.9</td>
<td>12.6±0.3</td>
<td>26.3±0.3</td>
<td>8.3±0.3</td>
</tr>
<tr>
<td>Pelleted feed (12)</td>
<td>89.5±0.5</td>
<td>86.3±0.4</td>
<td>11.6±0.2</td>
<td>2.5±0.5</td>
<td>19.9±1.4</td>
<td>52.9±0.8</td>
<td>27.3±1.8</td>
<td>41.6±0.8</td>
<td>13.6±0.3</td>
</tr>
<tr>
<td>Local grasses, mixed (10)</td>
<td>85.6±0.6</td>
<td>90.5±1.1</td>
<td>8.6±0.1</td>
<td>2.5±0.2</td>
<td>28.8±1.7</td>
<td>50.6±1.1</td>
<td>38.0±2.6</td>
<td>58.6±1.7</td>
<td>9.4±0.5</td>
</tr>
<tr>
<td>Oat hay (12)</td>
<td>85.5±0.6</td>
<td>91.4±0.4</td>
<td>10.2±0.3</td>
<td>2.3±0.1</td>
<td>26.5±0.7</td>
<td>52.4±0.9</td>
<td>44.0±5.0</td>
<td>53.0±5.0</td>
<td>8.5±0.4</td>
</tr>
<tr>
<td>Paddy straw (12)</td>
<td>85.2±0.5</td>
<td>86.2±0.2</td>
<td>3.5±0.1</td>
<td>1.8±0.3</td>
<td>38.8±1.8</td>
<td>42.0±0.5</td>
<td>53.0±1.1</td>
<td>75.0±1.5</td>
<td>13.7±0.6</td>
</tr>
<tr>
<td>Maize stover (10)</td>
<td>85.6±0.3</td>
<td>84.8±0.7</td>
<td>4.4±0.1</td>
<td>1.7±0.3</td>
<td>39.0±1.3</td>
<td>39.8±1.2</td>
<td>49.3±0.8</td>
<td>78.0±0.5</td>
<td>15.2±0.6</td>
</tr>
<tr>
<td>Wheat straw (12)</td>
<td>85.5±0.5</td>
<td>88.0±0.5</td>
<td>3.3±0.1</td>
<td>1.7±0.2</td>
<td>36.4±0.8</td>
<td>46.5±0.3</td>
<td>37.0±1.0</td>
<td>73.0±1.0</td>
<td>12.0±0.5</td>
</tr>
</tbody>
</table>

N-Nos. of observations

abc = Means with different superscripts within the same row differ significantly (P<0.05)

### TABLE 2: Nutritional status and plan of nutrition of pregnant cows

<table>
<thead>
<tr>
<th>Parameters</th>
<th>DM intake (kg/day)</th>
<th>DCP intake (g/day)</th>
<th>TDN intake (kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ku</td>
<td>H</td>
<td>Ka</td>
</tr>
<tr>
<td>Total Nutrient Intake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Requirement</td>
<td>±0.29</td>
<td>±0.32</td>
<td>±0.17</td>
</tr>
<tr>
<td>Difference</td>
<td>±0.12</td>
<td>±0.12</td>
<td>±0.23</td>
</tr>
</tbody>
</table>

Surplus/Deficit (%) + 41.40 37.21  -6.80  +25.90  +19.81  +19.94  -1.0  +13.44  +51.10  +48.49  +11.65  +38.32

abc = Means with different superscripts within the same row differ significantly (P<0.05)

Ku= Kupwara, H= Handwara, Ka= Karnah
The higher intake of DCP in case of pregnant cows was due to higher intake of concentrates.

For pregnant cows the daily intake of TDN (Table 2) was similar for Kupwara (3.43±0.14 kg) and Handwara tehsils (3.46±0.18 kg) but significantly (P<0.05) higher compared to Karnah tehsil (2.49±0.12 kg). The daily TDN intake was 51.10, 48.49 and 11.6 per cent surplus than their requirements in the respective tehsils. Although the micro and macro geo-climate in the region influence the availability, utilization of fodder and diversified resource based feeding practices (Tomar and Lall, 1992).

Whole district daily intake of TDN was (3.14±0.12kg) surplus by 38.32 percent. The present observations were comparable to the findings of Bishoni and Singh (2009). However, the observations were contrary from that of Tiwary et al. (2007) who reported that the average TDN intake in adult cattle and buffalo was 3.62 kg/animal/day which were short to the extent of 14.62 per cent. Similarly, Mudgal et al. (2003), Singh et al. (2003) and Chaturvedi et al. (2009) reported that the TDN intake was less than their requirements. The excess of TDN in the study area may be due to their low requirements because of low body weight and sufficient supply of straws.

**CONCLUSION**

It was observed that in the district Kupwara of Kashmir valley, the pregnant cows got excess nutrients in terms of DM, DCP and TDN than the standard nutrient requirements. However, there is no practice of feeding mineral mixture and feed additives to the animals.

**REFERENCES**


