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Feeding behaviour in Ongole cattle under restricted fedding

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Abstract
A study was conducted on feeding behaviour in Ongole cows. A total of 18 lactating cows, divided into three equal groups, were selected using Randomized block design (RBD) at Livestock Research Station, Guntur, Andhra Pradesh. The dietary treatments were formulated. as Hybrid napier (10 kg) + Paddy straw (6 kg) + Concentrate (2kg) (T_1), Hybrid napier (15 kg) + Paddy straw (6 kg) + Concentrate (1 kg) (T_2), Hybrid Napier (15 kg) + Paddy straw (6kg) + Cowpea green fodder (5 kg) (T_3). The mean eating time per animal was 259.40 ± 0.99, 312.40 ± 1.11 and 374.84 ± 1.03 min/day in T_1, T_2 and T_3 respectively. The overall mean of the resting time per animal was 396.47 ± 16.26, 448.84 ± 21.50 and 469.42 ± 6.09 min/day in T_1, T_2 and T_3 respectively. The overall mean of the resting time per animal was 396.47 ± 16.26, 448.84 ± 21.50 and 469.42 ± 6.09 min/day in T_1, T_2 and T_3 respectively. The overall mean of drinking water time was 5.64 ± 1.33, 7.44 ± 1.18 and 8.47 ± 1.96 min/day in T_1, T_2 and T_3 respectively.

Keywords: Feeding behaviour, Hybrid Napier, Cowpea green fodder, Ongole cows.

Introduction
The Ongole breed of Indian cattle renowned all over the world and most widely distributed in many countries of different continents by sheer virtue of its extraordinary performance that has significantly influenced the course of cattle production and brought affluence to wherever it has been imported, and they are considered as India's mute ambassadors to several countries.

Cattle feeding behavior is a complicated biological process that is impacted by managerial, nutritional, environmental and physiological factors. It has a significant impact on rumen function, feed intake, nutrient use and ultimately animal productivity. Understanding feeding behavior is crucial for maximizing feed efficiency and enhancing milk yield, growth performance, and general animal health in dairy and cattle production systems. Cattle have natural feeding habits under typical ad libitum feeding conditions, which include several small meals throughout the day and peak feeding activity soon after feed delivery. Meal frequency, duration, feeding rate, rumination time, sorting behavior and total dry matter intake are all considered aspects of feeding behavior. These behavioral characteristics are directly related to the animal's metabolic state and the dynamics of rumen fermentation.

In contrast to voluntary intake levels, restricted feeding refers to the controlled limiting of feed quantity, feeding period or feeding frequency. It is frequently used in drought management, experimental research, transition feeding and some production techniques meant to increase feed efficiency or lower metabolic abnormalities. However, cattle's normal feeding habits can be drastically changed by feed availability restrictions.

Therefore, studying feeding behaviour under restricted feeding conditions is important not only for improving production efficiency but also for ensuring animal welfare and sustainable livestock management. A better understanding of behavioural and physiological adaptations will help in designing balanced feeding strategies that maximize productivity while minimizing stress and metabolic disturbances.

Materials and Methods

The experiment was conducted December to March 2025 - 2026 at the Livestock Research Station, Guntur, Andhra Pradesh to assess the behavioural pattern of Ongole Cows. Eighteen lactating Ongole cows were selected for the experiment. They were randomly divided into three groups of each consisting of six cows using Randomized block design (RBD). The dietary treatments were formulated. As T_1 - 10 kg Hybrid napier grass, 6 kg paddy straw and 2 kg concentrate mixture for T_2 - 15 kg Hybrid napier grass, 6 kg paddy straw and 1 kg concentrate mixture for T_3 - 15 kg Hybrid napier grass, 6 kg paddy straw and 5 kg cowpea green fodder. Animals are under semi-intensive housing system fresh drinking water is provided and the studied for their behavioural pattern.

Animal Behaviour

The actual feeding and resting behaviour of cows were recorded for day and night (24 hour) during the experiment. The observations were recorded.

1. Eating time
2. Resting time
3. Rumination time
4. Drinking water time

The experiment planned with subjected to analysis of variance (ANOVA) for a (2X2) factorial randomized block design (FRBD) and the means were tested by least significance difference.

Results and Discussion

The data collected during the experiment were subjected to standard methods of statistical analysis and presented here.

Table 1: Results of behaviour studies of eighteen cows

Behaviour ↓ / Treatment →	T_1 (Mean ± SE)	T_2 (Mean ± SE)	T_3 (Mean ± SE)
Eating time (min/day)	259.40±0.99^a	312.40±1.11^b	374.84±1.03^c
Resting time (min/day)	396.47±16.26^a	448.84±21.50^b	469.42±0.69^c
Rumination time (min/day)	388.41±13.24^a	433.77±12.06^b	472.37±26.38^c
Drinking water time (min/day)	5.64±1.33^a	7.44±1.18^b	8.47±1.96^c

Feeding behaviour

In essence, behaviour is influenced by the environment and inherited through genes. Even if members of a certain species share some distinctive behavioral pattern, but a number of variables could affect how the same varies. In actuality, animals adapt their behavior to any changes in their microenvironment. Therefore, the feeding and resting schedules of Ongole cows have been examined in the current study.

Eating time

The mean eating time per animal was 259.40 ± 0.99, 312.40 ± 1.11 and 374.84 ± 1.03 min/day in T_1, T_2 and T_3 respectively. The result indicated that the eating time highest ($P<0.05$) in T_3 followed by T_2 and lowest in T_1. This indicates that animals in T_3 exhibited higher eating activity compared to other treatment groups.

Resting time

The overall mean of the resting time per animal was 396.47 ± 16.26, 448.84 ± 21.50 and 469.42 ± 6.09 min/day in T_1, T_2 and T_3 respectively. The result indicated that the eating time highest ($p<0.05$) in T_3 followed by T_2 and lowest in T_1. This indicates that animals in T_3 exhibited higher eating activity compared to other treatment groups.

Rumination time

The overall mean of rumination time per animal was recorded as 388.41 ± 13.24, 433.77 ± 12.06 and 472.37 ± 26.38 min/day in T_1, T_2 and T_3 respectively. The result indicated that the eating time highest ($P<0.05$) in T_3 followed by T_2 and lowest in T_1. This indicates that animals in T_3 exhibited higher eating activity compared to other treatment groups.

Drinking water time

The overall mean of drinking water time was 5.64 ± 1.33, 7.44 ± 1.18 and 8.47 ± 1.96 min/day in T_1, T_2 and T_3 respectively. The result indicated that the eating time highest ($P<0.05$) in T_3 followed by T_2 and lowest in T_1. This indicates that animals in T_3 exhibited higher eating activity compared to other treatment groups.

Conclusion

The present study showed that feeding behaviour of Ongole cows was clearly influenced by the type and quantity of feed provided under restricted feeding conditions. Cows in T_3 (Hybrid Napier + paddy straw + cowpea green fodder) spent more time eating, ruminating, resting and drinking water compared to T_2 and T_1. This indicates that inclusion of green fodder like cowpea increased feeding activity and overall behavioural expression.

The lower values observed in T_1 suggest that limited and less diverse feed reduced the time spent on feeding and related activities. The gradual increase from T_1 to T_3 shows that better quality and quantity of roughage promotes natural feeding behaviour and improves rumen activity.

Overall, the study concludes that balanced feeding with adequate green fodder helps in maintaining normal behavioural patterns in Ongole cattle even under restricted feeding conditions. This can be useful for improving animal productivity, feed utilization and welfare in practical farming conditions.

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