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Original Research Article

Impact of Technological Intervention on Body Weight Gain in Goat

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A B S T R A C T

The objectives of this study were to analyze the impact of technological intervention on body weight gain in non-descript breed of goats. The study was conducted in five adopted villages of Jabalpur district. Technological interventions (deworming, vaccination and feeding of mineral mixture) were done in two adopted village namely: Ghana and Deori (i.e. control and treatment group) to compare the increase in body weight gain of goats at 15 days interval with control group (i.e. without technological interventions). Un-paired't' test was used, which revealed significant difference in body weight gain after technological interventions. All the goats of treatment groups attained better body weight gain (i.e. 36.88 g/day) than the control groups goats (i.e. 21.87 g/day) after technological interventions. Thus, it can be concluded that proper technological interventions on goat farming are profitable and can improve the socio-economic status of goat owners.

Keywords

Body weight, dewormer, mineral mixture, technological interventions and vaccination

Introduction

Goat is the economic backbone of small and landless farmers of rural India. India is a home to 18 per cent of world goat population (FAO, 2015). Goats and their products accounted for about 8.5 per cent of value of livestock output (at current prices) in 2010-11. Goats mainly depend on grazing in common lands, village waste lands, irrigation canals and channels. The majority of the goats kept in villages are seldom given any grain or good fodder; as a result their average meat and milk production is very low. Meat type goats respond readily to good care and proper feeding, and to ensure best results. Goats have an ability to thrive in the harshest environments. However, the goat is an intelligent animal and usually manages on free range to eat herbs, weeds and other deep rooted plant material. Their high digestive ability enables them to deal with high cellulose/high fiber diets of a very coarse nature. Anatomically goats are similar to other ruminants but require mineral and vitamin because many areas deficient in certain minerals. A goat needs more minerals and vitamins for maintenance too: with its relatively large digestive system in relation to its body size, the work of digestion involves the use, and loss, of large quantities of minerals. Straw used during lean period is especially a poor feed for animals. It is estimated that up to 70-80 per cent of the reproductive problems are mainly due to minerals deficiencies in animals. Hence, use of mineral mixture becomes imperative (Sharma, 2015). Correcting an imbalance in mineral levels can improve reproductive and health with little additional

cost (Kumar *et al.*, 2011). Minerals should be given as an essential part of the ration as they contribute to the building of the skeleton, physiological functions and production of milk. The more important of these salts are calcium and phosphorus. The requirements of calcium and phosphorus for maintenance are 6·5 and 3·5 g / day, respectively, per 50 kg body weight. The mineral mixture may be included in the concentrate ration at the rate of 0·20 per cent. In order to make the goat rearing a profitable enterprise, technologies have been developed by the research institutions. Improved management practices have been recommended by various research and development organizations to improve the goat production, but for adopting of these technologies, the farmers faced many constraints (Sharma and Riyaazuddin, 1989) however, goat farmers have poor linkage with extension agencies. The proper adoption of these improved practices by the goat farmers will be the only means to hasten further development in this sector. Understanding these facts, suitable strategies will be implemented to improve the goat farming practices. Keeping in view the above facts proposed research work was designed.

Materials and Methods

Initially, an exhaustive list of goat owners was prepared from the all adopted villages. From adopted villages two villages were randomly selected i.e. Ghana (treatment group) and Deori (control group). Goat owners were observed in village Ghana and found to be 07 numbers where as in village Deori it was 19 goat owners. Thus, the final sample sizes of 26 goat owners were selected. From each village total 15 goats about 4-7 kg body weight were selected. Thus, the total numbers of goats were 30. Then 15 goats were selected for the interventions of technology (treatment group) and 15 goats were selected for a control group on the basis of random sampling method. The kids of Ghana village were provided with vaccination, deworming and mineral mixtures (15 g/day) feeding in addition to free range grazing upto the 180 days. But the kids of Deori village were not treated with vaccine, dewormer and mineral mixture rather than free range grazing.

Results and Discussion

Impact of technological intervention on body weight of goat

To measure the body weight in goat, two villages namely Ghana and Deori were selected as control and treatment group. Initially, from both the villages 30 goats (15 goats from each village) were selected and divided into two groups i.e. treatment and control.

Effect of technological interventions on fortnightly body weight change in goats

The unpaired ‘t’-test (two sample assuming equal variance) was applied to measure the statistical significance in body weight gain among the control and treatment group goats and the results are presented in Table 01. A cursory look shows that, the entire treatment group’s goats had high significant difference in average body weight gain at 4^{th}, 5^{th}, 6^{th}, 7^{th}, 8^{th}, 9^{th}, 10^{th}, 11^{th}, and 12^{th} as compared to control group’s goats respectively and non-significant at 0, 1^{st}, 2^{ed}, and 3^{ed} days respectively. The impact of technological interventions was measured by recording the growth performance of kids at fortnight interval for control and treatment groups. The group wise difference between the average live weight gains between the two groups at fortnight interval is recorded Table 02.

Table.1 Effect of technological interventions on fortnightly body weight change in goats

Fortnight	Control (Mean(Kg) ±SE)	Treatment (Mean(Kg) ±SE)	t value
0	5.29±0.24	5.44±0.30	0.14^{ns}
1	5.61± 0.24	5.89±0. 30	0.48^{ns}
2	5.97±0.24	6.43±0. 30	1.16^{ns}
3	6.31±0.25	7.01±0.29	1.51^{ns}
4	6.64±0.25	7.58±0.29	2.15**
5	6.96±0.25	8.16±0.29	2.82**
6	7.29±0.25	8.74±0.29	3.44**
7	7.60±0.25	9.34±0.28	4.14**
8	7.93±0.26	9.90±0.29	4.66**
9	8.27±0.26	10.45±0.29	5.18**
10	8.59±0.26	11.02±0.29	5.71**
11	8.91±0.26	11.54±0.28	6.28**
12	9.22±0.26	12.09±0.28	6.92**

*Significant (P<0.05), **Significant (P<0.01), NS= Non Significant

Table.2 Effect of technological interventions on fortnightly body weight gain in goats

Fortnight	Control (kg)	Treatment (kg)	Difference in body weight gain (kg)
1	4.81	6.71	1.90
2	5.31	8.08	2.77
3	5.16	8.64	3.48
4	4.88	8.65	3.77
5	4.84	8.68	3.84
6	4.94	8.69	3.75
7	4.70	8.97	4.27
8	4.86	8.39	3.53
9	5.21	8.24	3.03
10	4.83	8.57	3.74
11	4.72	7.79	3.07
12	4.79	8.19	3.40

Table.3 Effect of technological interventions on daily body weight gain in every fortnight in goats

Fortnight	Control (gram)	Treatment (gram)
1	21.27	29.82
2	23.60	35.91
3	22.93	38.40
4	21.68	38.44
5	21.51	38.57
6	21.95	38.62
7	20.88	39.86
8	21.60	37.28
9	23.15	36.62
10	21.46	38.08
11	20.97	34.62
12	21.28	36.40
Average	21.87	36.88

The entire Table 03 shows that, all the goats of treatment groups attained better body weight gain (i.e. 36.88 g/day) than the control groups goats (i.e. 21.87 g/day) after technological interventions. Thus, technological interventions show positive results on goat farming. Goats mainly depend on grazing in common lands, village waste lands, irrigation canals and channels. The majority of the goats kept in villages are seldom given any grain or good fodder; as a result their average production performance is very low. So that good care and proper feeding, and to ensure best results. For getting optimum body weight proper feeding is essential with supplementation on concentrate and mineral mixture. Minerals (macro and micro) play important role in growth performance. The result of Tiwari *et al.,* (2014) indicates growth rate of goat 41.00 g/day had significant effect. Aganga and Kgwatalala (2005) also showed that mineral supplementation had influenced the production of Tswana bucks as there was an improved weight gains on goats fed mineral supplements. Mude *et al.,* (2010) concluded that the supplementation of mineral mixture @ 15 gm per day orally for 60 days during advance stage of pregnancy in does increased survival per cent of kids and reduced post parturient complications during kidding then non supplemented group.

The rural goat owners had poor knowledge about housing, feeding, management, healthcare and marketing practices, which led to poor performance of the goats. Therefore, the study showed that proper extension programmes can improve goat farming. It is clearly evident that deficient mineral if supplemented apart from grazing had beneficial effect on growth performance of goat. Proper extension cum technological interventions (mineral mixture feeding, vaccination and deworming) revealed better body weight gain in treatment group. Thus, it can be concluded that proper extension cum technological interventions on goat farming are profitable and can improve the body weight gain with free range feeding.

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