

## Path Coefficient Analysis of Buffalo Production in Buldana District of Maharashtra

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### Abstract

A study entitled "Decomposition analysis of buffalo production in Buldana District was undertaken to ascertain the technological changes in term of breeding, feeding, housing, milking and calf management practices of buffalo. The path coefficient analysis of this study clearly demonstrated that daily milk production in buffaloes was influenced substantially by a single factor i.e management index. A combination of all the management practices in the form of overall management status on the rearing were responsible to influence the daily milk yield. However, rearing of good potential animals, feeding of sufficient amounts of dry and green fodder with required amount of concentrates to fulfill the nutritional requirements could favour the milk production in buffaloes. All these factors exhibited positive direct effect on milk production. The indirect effects were also found in positive direction, resulting a positive significant correlation for these factors.

**Keywords:** Analysis, Buffalo, Breeding, Feeding, Housing, Milking, Calf Management

### Introduction

Path coefficient analysis provides an effective mean for finding out direct and indirect causes of association and permits a critical examination of the specific forces acting to produce a given correlation. Majority of these practices have qualitative nature and it was difficult to quantify them. In view of this each qualitative practice was assigned the score in the context of scientific recommendations so as to estimate the management index for each practice. By such estimation one can know the management status of the guidelines for future management improvement programme as the management would lie within the control of dairy farmers.

### Materials and Methods

The study entitled "Decomposition analysis of Buffalo Production in Buldana District (Maharashtra)" was undertaken to study technological changes in term of breeding, feeding, housing, milking and calf management practices followed by buffalo owners from 4 tahsils of the district. Ten villages in each tahsil were selected randomly and 75 farmers were studied from each tahsil. Thus a data on total of 300 dairy farmers (75 x 4) was prepared. The information collected classified according to herd size in three categories i.e. herd size group I (1 buffalo), II (2 to 3 buffalo) and (4 & above) respectively.

The data was obtained on various aspects of management by interviewing the farmers. After

tabulation the data was subjected to statistical analysis.

### Results and Discussion

The results obtained on path analysis are presented in table 1.

It was observed that housing management had positive direct effect on daily milk yield of buffaloes, but the degree of contribution appeared low (0.101). Amongst the indirect effects maximum positive influence was due to rate of green fodder feeding (0.103) followed by breeding management and feeding management. But dry fodder and concentrate feeding influenced indirectly in negative direction. However more positive contribution through the different practices resulted into significant positive correlation with milk yield.

Breeding management exhibited positive direct effect (0.122) on daily milk yield. Its indirect effects through housing management, feeding management, dry fodder, green fodder and concentrates feeding were in positive direction. The magnitude of direct effects was more which resulted to a positive significant correlation with milk yield. In contrast, feeding management had shown very low degree direct effects on daily milk yield. Its indirect effects via breeding management, green fodder feeding and fat content of milk were moderate and in positive direction. As a result of this the correlation with daily milk yield was significant and was at moderate order ( $r = 0.432$ ).

With regards to dry fodder feeding, it had medium positive direct effect on daily milk yield (0.183). Its indirect effects through other practices were positive but of low magnitude. This result to a positive significant correlation with daily milk yield ( $r = 0.396$ ). Similarly green fodder feeding had shown moderately good direct effect on daily milk yield (0.334). Its indirect via other management practices were positive but of low degree. Therefore the contribution of direct and indirect positive effects resulted in higher magnitude association between green fodder feeding and milk yield ( $r = 0.585$ ). The rate of concentrate feeding contributed in positive direction for its direct effects on milk yield. Except housing management its indirect effect through different management practices were positive. Housing management indirect effect was negative but was of a very low order. As a result of this the association between the rate of feeding concentrates and daily milk yield was found positive and significant (0.513).

Thus the path coefficient analysis clearly demonstrated that daily milk production in buffaloes was not influenced substantially by a single factor of management practices. A combination of all the management practices was responsible to affect the daily milk yield. However, it can be said that rearing of good genetic potential animals, feeding of sufficient quantity of dry and green fodder with required amount of concentrates to fulfill the nutritional requirements would favour the milk production in buffaloes.

The results of Mattigatti and Jayaram (1993) are supportive to present trend where they reported that the direct contribution of herd size was 68.7 % via indirectly, contributed by dry fodder (26.95 %) and concentrates (19.13 %). Hence suggested that milk production in buffaloes could respond more favourably to green fodder, dry fodder and concentrates as compared to labour and management. In the present study the magnitude of association between green fodder and milk yield was to the level of 34.22 % followed by concentrate feeding (26.31 %) and feeding management (18.66 %). Thus the buffaloes could produce more milk with these inputs with lesser care and management.

Table-1. Path analysis of selected management practices and their mode of effect on daily milk yield in buffaloes.

Sr.No	Variables	Housing	Breeding	Feeding	Dry	Green	Concentrate	Fat	Total Effect
1	Housing	0.1013	0.0131	0.0195	-0.0163	0.103	-0.0257	0.0472	0.2430
2	Breeding	0.0107	0.1220	0.0135	0.0288	0.1300	0.0266	0.0318	0.3636
3	Feeding	0.0353	0.294	0.0559	0.0364	0.1953	0.0155	0.647	0.4325
4	Dry	0.0090	0.0192	0.0111	0.1832	0.0870	0.0704	0.0346	0.3964
5	Green	0.0315	0.0474	0.0326	0.0476	0.3346	0.0049	0.0868	0.5855
6	Concentrate	-0.0116	0.0144	0.0038	0.0574	0.0073	0.2244	0.0127	0.5132
7	Fat	0.0360	0.0292	0.0272	0.0477	0.2187	0.0214	0.1328	1.000

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