INTRODUCTION

Among all species of farm animals, goats have the widest ecological range and have been poor people’s most reliable livelihood resource since their domestication during Neolithic Revolution about 10 millennia ago. Goats possess distinct social, economical and biological advantages. They can be maintained on a limited area and can sustain on wide variety of vegetation in varied agro-climatic conditions. Goats are easy to manage and their small size makes them suitable for home slaughter. Goat meat (chevon) is one of most preferred meat type by the consumers in several countries including India. The goat milk is easily digestible due to smaller size of fat globules and serves as a ready source of family nutrition.

The poor man’s cow-goat has tremendous potential to be projected as the ‘Future Animal’ for rural prosperity under the changing agro-geo-climatic conditions and depleting resources. There are over 880 million goats around the world, out of which India has over 154 million goats (16.90%) of 23 defined and non-descript breeds that are adapted efficiently in different agro-climatic conditions all over the country, FAOSTAT (2010). Goat husbandry in India is essentially an endeavor of millions of small holders who rear animals on “Crop Residues” and “Common Property Resources”. The small holders produce milk, meat, fiber, skin etc for the community with virtually no capital, resource and formal training. More often goats are reared for production of meat, but they also serve as ready source for milk to meet the family requirement. In India, considerable growth has been recorded in production of goat meat and milk during the last decade. The goat meat production has doubled (9.3% to 18.3%) and goat milk production has shown a growth rate of 31.53% during the last decade. The country stands first in goat milk production and is the second largest meat producer in the world sharing 26.31% goat milk and 10.41% goat meat production. Besides meat and milk, goats also produce good quality skin, valuable Pashmina fiber and manure. The goat sector contributes 14,453 crores to the agricultural economy of the country through meat (6851 crores), milk (~4588 crores), skin (648 crores), etc. which accounts for around 8 per cent of the Gross Domestic Product (GDP) from livestock sector. In addition, the goat sector generates about 4% rural employment and about 20 million small and marginal farmers’ and landless laborers’ families depend on goats for their livelihood partially or completely.
In India goat husbandry is an important occupation of livelihood in rural country side. As far as Jharkhand state is concerned the poor marginal farmers and landless labourers are mainly associated with goat farming. Goat is a major source of their family income and occupies an important position in the upliftment of the economic standard of tribal people of Chotanagpur and Santhal Pargana. The Black Bengal goat is the heritage and pride of eastern India and Bangladesh. It is a prolific and major meat producing animal in West Bengal along with the adjoining part of the Jharkhand, Orissa, Bihar, Tripura states of India (Zeshmarani et al., 2007). The low cost of maintenance and comparatively high return compared with low risk capital investment has made goat rearing a popular avocation. Goat provides a dependable source of income to 40% of the rural population below the poverty line in India. In India goat is an important and favorable source of meat. The vast majority of the poorer section of the rural population depends on the goat rearing for subsistence and to meet the household occasional need for meat and milk.

Due to lack of proper knowledge, Indian farmers rear their goats under unhygienic managerial and on poor nutritional regimens, resulting in slow growth rate and mortality. This leads to economic losses to the farmers. High productivity and greater resistance to disease compared to sheep, ability to thrive on low quality fodder, bushes and browsing materials and its adaptability to diverse agro-climatic conditions of the tropics are some of the important favourable factors for its promotion. Goat is ideally suited for marginal and landless labourers and rightly quoted as “poor man’s cow” by our father of nation Late Mahatma Gandhi. Various studies have indicated that goat is more economical than sheep (Abidi, 1970) and cattle (Abidi, 1970; Acharya and Patnayak, 1974). This can help in solving protein hunger of the ever increasing human population to a great extent.

Goat milk contains lower fat percentage as compared to buffalo milk, with smaller fat globules, higher protein and lactose content and rich minerals. Goat prefers proteinous feeds and fodders. The requirement of DCP and TDN is 9-10% and 62-65% respectively, with 20-25% dry matter. Acute shortage of protein and energy feeds and economic considerations have attracted the attention of animal nutritionists to tap unconventional feed sources.

In our country there exists a great shortage of protein and energy feeds by about 40 and 70%, dry fodder10%, concentrate 35% and green fodder by 33% respectively, (Sharma, 2010). This is mainly responsible for the poor productivity of our animals. The fodder beet will be able to make a considerable contribution to augment the supply of feed. The contribution of nutrient through the fodder beet is considered to be sufficiently high and
valuable to reduce the pressure on human food side by side to run the livestock farming profitably.

Fodder beet is an important winter forage crop. It's total yield, above and under the ground, can directly be used in animal feeding or may be processed as silage. The roots can also be stored in the soil for a period of time without being greatly damaged, thus used when needed. Therefore, cultivation may help in overcoming the problem of animal feeding shortage in summer season (El-Sarag, 2004; El-Kassas, 2008). Fodder beet when grown under suitable conditions, can produce almost 21 ton dry matter h\(^{-1}\) (DAF, 1998) compared with 13-15 ton DM h\(^{-1}\) from four harvests of grass. Approximately 75% of fodder beet DM is present in the roots (DAF, 1998).

Fodder beet roots could be successfully used a good source of energy for animal feeding (Gabra and Gad, 1999; Eriksson et al., 2004), Sheep (Gabra et al., 1993; Hartnell et al., 2005; Nkosi and Ratsaka, 2010), lactating dairy cows (Gabra et al., 1992; Fisher et al., 1994; Muller et al., 1994; De Brabander et al., 1995, 1999; Birkenmaier et al., 1996; Ferris et al., 2003; Mogensen and Kristensen, 2003), beef cattle (Maloney and Kiely, 1999; Errikson et al., 2004) and biogas production (Klocke et al., 2007; Scherer et al., 2009).
JUSTIFICATION:

Goats play an important role in generating employment, income, capital and improving household nutrition. Technologies available to goat farmers with respect to production practices help in enhancing goat production. Report from International livestock Research Institute, (2010) highlights importance of livestock sector in state of Jharkhand because of availability of sufficiency of natural vegetation conducive for small ruminants like goats.

Increasing shortage of food grains, particularly in developing countries of the world have initiated a growing realization for the need for restricting the use of grains for feeding of animals. Therefore, new form of animal feeds based on tuber crops are being developed, which contains about 13% crude protein, 8.97% Ash, 19.81 % crude fiber, 1.50 ether extract, and 62.21 % nitrogen free extract, on dry matter basis. With this view the present study specific to the area of Jharkhand has been planned with the following objectives:

1. To determine intake of ration with different levels of fodder beet in Black Bengal goats.
2. To determine the effect of fodder beet on nutrient utilization.
3. To assess the effect of feeding different levels of fodder beet in ration on body weight of Black Bengal kids.
4. To assess the effect of feeding fodder beet on feed conversion efficiency.
5. To determine haemoglobin, TLC, DLC, PCV, ALT and AST in the blood of Black Bengal goats on test rations.
6. To recommend the optimum level of feeding fodder beet for better growth performance of kids.