Camel - a source of livelihood of farmers in the hot arid regions

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Camel power for farming use is more economical than a pair of bullock and in the sandy terrain the camel energy is not only cost effective but also profitable. The abbreviation of 'Camel' may be expanded as 'C' carrier, 'A' Arid zone, 'M' multipurpose, 'E' Eco-friendly and 'L' Livestock. In India arid zone covers about 12% of country's geographical area and occupies over 0.32 million square Km hot desert located in parts of Rajasthan (61%), Gujarat (20%), Punjab, Haryana (9%), Andhra Pradesh and Karnataka (10%). Animal husbandry under such degraded land can be successful only if the livestock are basically a stable protective resource having long term viability employment absorbing capability and income generating capacity. The livestock should be

compatible with crop cultivation instead of competing with it for land and water resources. Camel rearing enterprise suits well with such conditions. Their ability to survive long period under hot dry climate without water is legendary. The "Ship of the desert" uses various adaptive mechanisms to combat the hostile environment of the desert, to thrive on scanty food, to dissipate body heat and to survive without water for long periods. Modified structure of the four stomachs, ability to digest coarse vegetation, rise in body temperature, passing of concentrated urine and nearly dry faeces are some unique examples of this species.

The total world camel population is estimated to be 19.6 million of which India has third highest camel population of 1.52 (FAO, 1998) after Somalia and Sudan,

Indian camel population is mainly confined to north-western states viz : Rajasthan, Gujarat, Haryana and

Punjab at (93.12%) of total Indian camel population with density of camel in eleven arid district of Rajasthan (70.13%) of total Indian camel population.

Camel management practices

The camel was domesticated more recently than other animals. The most probable period of domestication of camel is prior to 1800BC. The methods of camel keeping are now changing world wide because the grazing land is decreasing as more land is put under cultivation reducing the free grazing land. Camels which are largely maintained under extensive system are now facing problem and their

management needed a better alternate system which is socially acceptable and economically viable.

Camel management by Raikas

The recent camel management by Raikas are extremely diverse, varying from free ranging for most of the year at one extreme to continuous closely supervised herding at the other. The ecological setting and the degree of competition from other land use strategies determine which particular herding system is adhered to. In the extremely arid sparsely populated most western parts of Rajasthan, where hardly any agriculture is practised, camels can be left to themselves for most of the year. Many of them return at regular intervals to the villages for water, but they can also range several hundred km from their owners' home. The Raikas are able to keep track of

their movements because they can identify the footprints of each of their camels.

Camel management by extensive system

In this system camels are allowed to graze freely and reproduces freely. All the camels are collected once every usually in the spring season for hair shearing, treatment against mange, branding etc. The animals are released in the free grazing land again after above operations. It is usually necessary to collect camel herds during the 3 months of the rainy season (July to September) to prevent them from damaging crops. Most, but not all herders also like to supervise their camels during the breeding season which traditionally falls between the two Hindu festivals of Diwali (around November) and Holi (around March) in order to prevent fights between competing males.

Camel Management by semi-extensive system

In this system camels are maintained around cities and in the villages in the marginal area. During severe drought period camels have been fed special feed lots for 2-4 months, during this period daily gain are expected to be satisfactory.

Feeding management

Camel mostly get feed from trees bushes and rarely from grasses. In stall feeding conditions the average feed consumption is maximum in the initial 2 hrs which decreased subsequently. The camel continued to consume feed during night hrs and consume 38.50% of total feed consumption during night alone.

Feeding behaviour of camel

The grazing and feeding behaviour reveal that animals consume fodder for 5-20 min at stretch and then posed for regurgitation for 10-15 min and resume eating. rate of fodder consumption and regurgitation decreased as the day progress. In general camels consume minimum fodder between 6.0 to 8.0 P.M. when they preferred to lie down taking occasional rest by prostrating, squatting or simple standing. The animal should be fed twice in a day if kept at farm. The working animals should be fed thrice a day and animal which go daily for outside browsing may be fed once in a day in the evening.

Grazing behaviour of camel

Grazing is highest in the morning time and become reduced to minimum during evening time. Camel prefers such species of plants that are high in moisture like Khejri (*Prosopis sineraria*), Pala (*Zizyphus nummularia*), Phog (*Callygonurn polygonoides*) during summer and plants high in oxalate contents like ker (*Capparis decidua*) and sewan grass (*Lasiurus indicus*) during rainy season.

Camel can eat off 9-11 ft tall trees. The shorter and younger animals follow the leader who is tall and has a trick to catch the high top branches and bring them down by giving a jerk so that the other animals can apprehend the foliage.

Housing Management

The open type shed is provided with 1.5 meter high barbed wire fencing. Studs and those experimental animals which required individual feeding are kept under

Team studies cotton bollworm impact

A high-level team of agricultural experts and scientists, led by the Haryana Agricultural Commissioner and Secretary, Mr. Naseem Ahmed, visited various cotton fields in this district to study the impact of American Bollworm (*heliiothis Armigera*).

The team, which included the State Agriculture Director, Mr. Rajiv Arora, and scientists from Hisar-based CCS Haryana Agriculture University and the Central Institute of Cotton Research, held detailed discussions with affected cotton growers.

roofed shed. Each animal is provided with 30-35 m² space and a manger of 75cm x 75 cm x 40 cm internal dimension. Pregnant and recently calved animals should be kept in a separate open type shed. Sick animals were housed in a sick box of 6 x 6 meter dimension. The soiled sand of the floor is replaced with new sand.

Camel health management

There is a large body of ethno-veterinary knowledge on the camel derived from generations of interaction and interdependence with this animals. Even, today camel keepers rarely have access to modern veterinary care. They continue to rely on their own system of disease prophylaxis, diagnosis and treatment.

Indigenous knowledge of Camel Health

Camel farmers have long recognised the effectiveness of many range plant substance in treatment of diseases. These includes several herbs, shrubs, roots, seeds etc. which are commonly used in Indian medicine for treatment of human being. They have identified plants which detoxify, the venomous action of biting insects and animals live scorpions, snakes and flying insects. Some plants which have hormone like activities are used as glactogogues for lacto stimulation and anthelmintics. They recognise vegetation and plant products for antibacterial and antifungal characteristics in treatment of infections, cytogenic parasites, fungal skin diseases, oral diseases, antiviral and antiprotozoal activities. Along, the same times

plants extracts active for phagocytosis and hepatic parasites e.g. trypanosomiasis are used. In addition, camel keepers have detailed knowledge of poisonous plants and their antidotes which include drenching of infusions of plant preparations, solution of salts. The ethno-veterinary medicines are low cost, adaptive and accessible to the camel keepers.

In an organised farm (NRRC), the camels are provided both prophylactic and curative measure to control ecto-parasite and internal parasites. The calves and pregnant females are given vitamins-A. A course of antibiotics is given to check diarrhoea. Mange can be brought under control with traditional concoctions, even if these methods are time consuming and labour intensive. However, trypanosomiasis is a disease which defeats indigenous methods. A variety of traditional treatment are in use, but none of them is really efficient.

Conclusion

Camel (*Camelus dromedarius*) constitute an important component of the desert ecosystem because of its adaptation in an anatomical, behavioural and physiological functions. Rapid change in agro-ecological conditions and industrialization in recent past has its impact on camel traditional management practices. It is essential in future to adopt scientific management practices to get efficient utilization of camel work potential round the year for different operation.

Quality crucial for growth of fisheries sector : Paroda

Ensuring quality and infrastructure development are crucial to the growth of the fisheries sector, according to Dr. R.S. Paroda, Director General, Indian Council of Agricultural Research (ICAR).

He said fisheries and animal husbandry were key to achieving the four per cent growth rate envisaged for the agricultural sector. Even in agriculture dominated States as Punjab, Haryana and Gujarat and in Rajasthan, the farmers were diversifying into fisheries.

Inland fisheries had made major strides in India, and its output now matched the production of marine fisheries. The total output was now around 5.8 million tonnes and inland fisheries was growing at nine per cent annually, he said.

Brackish water aquaculture was the major growth area contributing to a major chunk of export foods. The

growth could be sustained only by ensuring International quality standards and developing infrastructure, he said.

Mr. Paroda was addressing the inauguration of a Rs. 5.40 crore administrative-cum-office building for the Central Institute of Brackish Water Aquaculture (CIBA) in Chennai on Thursday.

Later addressing reporters, he said the Central Government would shortly announce a policy for food processing industries. A national fisheries policy was also on the anvil, he said.

The Agriculture Ministry was gearing up to meeting objective of doubling food production in ten years. Agriculture education and research, animal husbandry, fisheries and horticulture were thrust areas. Emphasis was also on augmenting output from rainfed areas through watershed programmes, he said.