

SHORT COMMUNICATION

AN ECONOMIC INTERVENTION OF USE OF INDIAN DROMEDARY CAMEL IN DESERT ECOSYSTEM

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ABSTRACT

A meticulous grass root level survey study was conducted on various aspects of use of camel which involved four different zones (north, south, east, west) of desert ecosystem. The statistically analysed data revealed that average cost of camel cart was higher than those for farm implements. The average total number of working days in a year was more in carting operation than farming use. The average load carrying by camel cart was  $18.47 \pm 3.71$  quintal/trip. The camel carting required higher investment in terms of interest rate, depreciation rate and expenses towards insurance than farming use. The overall total fixed cost was high in camel carting than farming use. The yearly repairing and maintenance cost of camel cart was high as compared to maintenance of implements. The total variable cost was high in farming use than carting. The total expenditure for both cases was almost equal but total earning and profit from camel carting was high as compared to farming use. The pay back period was less and cost benefit ratio was high in both cases of carting and farming use of camel. The study concluded that due to short pay back period and higher cost-benefit ratio, carting and farming use of camel is profitable and advantageous for small dry land farmers in the hot arid desert ecosystem.

**Keywords :** Camel, Carting, Farming, Economics, Management

Camel energy is not only cost effective but also profitable and remunerative because it fits well with the desert ecosystem. Camel population of the world is 19.32 million, and of India is 1.03 million<sup>2</sup>. Evaluation of IRDP in the arid lands has indicated that average increase in the income of beneficiaries was one of the highest amongst people who were given loans for the purchase of camel and camel carts<sup>5</sup>. Camels are able to sustain up to 20 to 22% of body weight loss during severe famine conditions where as other livestock like cattle and buffalo can not sustain beyond 10 to 12% loss in body weight<sup>7</sup>.

A grass root level survey was conducted on various aspects of use of camel (*Camelus dromedarius*). It involves mainly two aspects of use of camel, viz., carting and farming use. The study involved a total of four tehsils of Thar district (Bikaner), viz., Nokha tehsil (south zone) Lunkarensar tehsil (north zone), Khajuwala and kolayat tehsils (west zone) and Bikaner tehsil (east zone). A total of 200 camel cart keepers and 200 farmers using camel in various farming operations were randomly considered for data collection.

A detailed economics of both type of use of camel were analysed by using the linear

programming method<sup>6</sup> and salient characteristic features were analysed by suitable statistical method<sup>9</sup>. To obtain the estimates of maintenance cost of animal (feeding and health cover) and carts, the opportunity cost of owned inputs and actual prices paid by the farmers for purchasing inputs were considered. To work out the total earning and expenditure from different sources of farmers, the present day value and market prices were considered.

The mean value along with S.E of salient characteristic features of use of camel is presented in Table 1. The average working life period of camel was higher in farming use ( $18.32 \pm 0.64$  year) as compared to carting use ( $14.75 \pm 0.31$  year) where as the average life period of animal drawn cart and farm implements was almost same. Similar trend was found by other workers<sup>3</sup>. Maximum farmers (89.29 % and 95.14 %) involved themselves for the carting and farming operations. But few were also keeping hired persons, 10.71 % for carting and 4.86 % for farming, by which they were doing this operation. It was reported that the main objective of camel rearing in Rajasthan is animal power for pulling a cart<sup>8</sup>. The average costs of camel cart and farm

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Table 1. The mean value along with S.E. of salient characteristic features of use of camel

| Parameters                               | Carting Use<br>(n= 200)         | Parameters  | Farming Use<br>(n = 200)               |
|--|---------------------------------|---|--|
| Working life period of camel (Yr.)       | 14.75 ± 0.31                    | Working life period of camel (Yr)                       | 18.32 ± 0.64                           |
| Life period of cart (Yr.)                | 9.84 ± 1.14<br>( 8 - 12 )       | Life period of camel drawn Implements (Yr)              | 10.47 ± 0.42                           |
| Cost of camel ( Rs) Male                 | 9500 ± 179                      | Cost of camel (Rs) Male                                 | 9582 ± 110                             |
| Female                                   | 8860 ± 65                       | Female  | 8619 ± 85                              |
| Cost of cart ( Rs)                       | 10500 ± 300<br>( 8000 - 12000 ) | Cost of camel drawn implements (Rs)                     | 2014 ± 65                              |
| Age Of Cart camel (Yr.)                  | 7.50 ± 0.45                     | Age of camel used under farming system ( Yr ).          | 6.43 ± 0.71                            |
| Working Days in A Year                   | 240.57 ± 1.86<br>( 230 - 240 )  | Working days / Year Agriculture Operation -             | 130.11 ± 1.10<br>(125 - 135)           |
| Working Time Of Cart camel ( Hrs/Day)    | 9.25 ± 1.11                     | Working time of animal in farming operation (Hrs / day) | Rabi 9.12 ± 0.14<br>Kharif 8.42 ± 0.72 |
| Income from carting Per Day ( Rs)        | 255 ± 3.50                      | Income from Agriculture per year (Rs / Ha)              | Kharif 14821 ± 35<br>Rabi 10200 ± 27   |
| Weight carrying by cart ( Quintal/ trip) | 18.47 ± 3.71<br>( 12 - 22 )     | Ploughing of each Ha of land (Days)                     | 1.15 ± 0.12                            |
| Distance Covered/Day (Km)                | 29.13 ± 4.82<br>(18 - 38)       | Family labour employed / ha / day                       | 2.16 ± 0.12                            |
| Carrying Cost Of Each Grain Bag ( Rs)    | 3.87 ± 0.50                     | Hired labour employed / ha / day                        | 1.45 ± 0.11                            |

Figures in parentheses indicate range values.

implements were Rs 10500 ± 300 /- and Rs 2014 ± 65 /-, respectively. Maximum farmers preferred their male camel (96.43% for carting and 92.73 % for farming) rather than female (3.57% for carting and 7.27 % for farming). The present observations are consistent with earlier reports<sup>1</sup>. The average working days in a year was more in carting cases than farming operations. Camels of a wide range of age were used in carting and farming operations. The average age of camel used in carting and farming

were 7.50 ± 0.45 and 6.43 ± 0.71 years, respectively. The camel cart covered 29.13 ± 4.82 km average distance per day. The average number of grain bags transported per round by camel carting was 18.00 ± 3.50. The average number of trips per day was 3.66 ± 1.25 km by camel cart.

The analysis of fixed, variable cost and economic estimate of use of camel is presented in Table 2. The camel cart required Rs 1800 /- and Rs1010/- as interest on investment for carting and

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Table 2. Analysis of fixed, variable cost and economic estimate of use of camel

| Factors                                 | Carting Use<br>(n= 200) | Factors                               | Farming Use<br>(n = 200) |
|---|-------------------------|---------------------------------------|--------------------------|
| Fixed Cost ( Rs)                        |                         |                                       |                          |
| Interest on Investment                  | 1800                    | Interest on Investment                | 1010                     |
| Insurance on Animal                     | 499                     | Insurance on Animal                   | 483                      |
| Depreciation of Cart                    | 885                     | Depreciation Of Implements            | 157                      |
| Insurance on Cart                       | 147                     |                                       |                          |
| Overall                                 | 3331                    | Overall                               | 2088                     |
| Variable Cost /Year (Rs)                |                         |                                       |                          |
| Maintenance of Animal                   | 15330                   | Maintenance of Animal                 | 13900                    |
| Repair & Maintenance<br>of Cart         | 1550                    | Repair & Maintenance of<br>Implements | 1000                     |
| Wages of operator<br>(@ RS. 80 per day) | 19245                   | Hired Labour                          | 11310                    |
|   |                         | Family Labour                         | 11232                    |
| Overall                                 | 36125                   | Overall                               | 37442                    |
| Economic Estimate (Rs)                  |                         |                                       |                          |
| Total Expenditure                       | 39456                   | Total Expenditure                     | 39530                    |
| Income from carting / Yr.               | 61345                   | Income from two ha land / Yr          | 50042                    |
| Profit from carting                     | 21889                   | Profit from per two ha. land          | 10512                    |
| P.B.P (Yr)                              | 0.92                    | P.B.P (Yr)                            | 1.05                     |
| C.B.R                                   | 1.55                    | C.B.R                                 | 1.26                     |

C.B.R : Cost Benefit Ratio, P.B.P : Pay Back Period.

farming use, respectively, the interest rate being 9 %. The depreciation on camel cart was also high as compared to depreciation on implements, when the Junk value was considered 10 % of average initial cost. The expenditures for insurance on camel in carting and farming operations were almost equal, when premium rate was considered 5% of average initial cost along with overall service tax @ 5 %

etc. The insurance charges for cart was Rs 147 /-. Here various subcomponents like basic value ( Rs 30 /-), liabilities (Rs 5 /-), 1 % of average actual value of cart along with 5 % overall service tax etc. were considered, whereas it was not required for implements. The overall total fixed cost in camel carting was more as compared to farming use. The different components of variable cost were

considered on yearly basis. The repair and maintenance cost of camel cart was higher as compared to implements, when various subcomponents like repair of tyre puncture, replacement of tyre and repair/replacement of different body parts etc were considered. The expenses towards yearly maintenance (feeding and health cover) of camel in carting and farming use were almost same. Shoeing of foot was not required at all for camel due to its well adapted anatomical structure of foot pad. It is reported that camels have soft elastic feet with thick skin around which is good for travel in long sandy terrains<sup>4</sup>. The overall variable cost in farming use of camel was somewhat more as compared to carting use because labour (family

and hired) requirement was more in farming use of camel. The total expenditures for both type of use of camel, in carting and farming, were almost equal but total earning from camel carting was higher as compared to farming use. A similar trend was found in case of profit. The pay-back period (PBP) was 0.92 and 1.05 years for carting and farming use, respectively. The cost-benefit ratio (CBR) was 1.55 and 1.26 for carting and farming use of camel, respectively.

Therefore, the study concludes that due to short pay back period and higher cost-benefit ratio, carting as well as farming use of camel is profitable and advantageous for small dry land farmers in the hot arid desert ecosystem.

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