

## PRODUCTIVE PERFORMANCE OF CATTLE ON PASTURE LANDS OF INDIAN DESERT

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### Introduction

The natural force constituting the soil climate complex which conspire to reduce productivity and cause instability in agriculture production have much less impact on livestock farming than crop farming. Since most parts of the desert region of India are generally unsuitable for crop farming, the continuation of keeping areas for crop production violated the natural principles of land use and brought about faster deterioration in the soil vegetation and water resources in the region. This trend of resource depletion can be reversed by converting all the sub-marginal lands to the plant cover of grasses, bushes and fodder trees. The obvious implication of this proposal is greater preference for livestock farming which may be mainly sustained by natural vegetation. Keeping all these points in view, a study was undertaken to record the productive performance of cattle on *Lasiurus indicus* pasture of Bikaner region, which represents extreme desert condition.

### Material and Methods

A combined herd of Tharparkar and Rathii breeds was purchased from Suratgarh areas of Sri-Ganganagar district. The average age of heifers (14 of each breed) at the time of purchase was one year. They were kept on traditional type of management at the Central Research Farm of Central Arid Zone Research Institute at Bikaner. They were maintained on natural protected pasture of *Lasiurus indicus* of typical desert soil. Water was provided to them *ad libitum*, daily. From the month of July to January, all the experimental heifers were exclusively maintained on grazing and no supplemental feed was provided to them. The stocking rate was 1.5 hectares per heifer. From January onwards, Cattle Feed of Rajasthan Co-operative Dairy Federation (RCDF) was provided to them at the rate of two kg per day per

head. Chaffed *Lasiurus* hay at the rate of 1.5 kg per heifer per day was also provided in addition to cattle feed. To overcome certain deficiency diseases, mineral mixture with vitamin additives was also provided alongwith cattle feed. Fresh leaves of *Prosopis cineraria* tree were also fed to all the experimental heifers to meet our vitamin A requirements during scarcity period. During nights, they were kept in well ventilated semi-open type of enclosures to simulate traditional animal housing system in vogue in rural sector of arid Rajasthan.

In addition to recording their fortnightly body weights, allometric measurements and physiological responses were also recorded regularly at fortnightly intervals. A close watch was kept to observe the general physical conditions and status of health during entire period of study.

### Results

Between August and November, the growth rate of all the experimental heifers was satisfactory and from December onwards the rate of growth showed a declining trend which continued up to the month of January. During this period the rate of growth was higher in Rathii heifers in comparison to Tharparkar heifers. The growth rate measured as, Pin-shoulder length, height at withers and heart girth, showed similar trend as observed in body weights. Physiological-parameters (respiration rate, pulse rate and rectal temperature) were not affected by the season and breed of the animal.

From mid of December, all the animals started exhibiting signs of debility and malnutrition, which were very pronounced up to the first week of January. In general, their body coats were roughened leading to skin eruptions on various parts. Muscular growth was inadequate which was reflected in body prominences. Eye lesions were clearly visible in all the animals leading to exces-

sive lacrimal discharge. The general disease resistance was lowered leading to septisaemic conditions in most of the animals. The general condition of the experimental animals deteriorated to such an extent that no way-out was left except starting their treatment with injectable vitamins and minerals on which they were kept for five consecutive days. Supplementary feed along with mineral and vitamin additives was also started along with injectables.

All the heifers responded very well to this treatment and feed supplementation. The roughness of their body coat started disappearing within one week and all the eye lesions were cured within fifteen days treatment. The rate of weight gain per animal showed a very sharp rise, and the growth rate was again satisfactory from March onwards.

#### Discussion

The results pertaining to growth rate of cattle obtained in this study are in accordance with those reported by Ahuja et al. (1971) and Ahuja et al. (1974). Bawa (1985) obtained an annual weight gain between 53.4 to 64.4 kg per heifer at the stocking rate of 1.5 hectares per heifer while Kacker and Bawa (1983) could obtain similar results at the stocking rate of 3.0 hectares per heifer. Similar values in respect of physiological-parameters are already on record in these two breeds (Prasad and Mittal 1987, a). The symptoms of vitamin-A deficiency have also been observed by Prasad and Mittal (1987, b) Mittal et al. (1987) and Prasad et al. (1987).

It can be concluded from this study that sandy soils of desert region of India offer a good scope

for cattle farming through establishment and the use of *Lasiurus indicus* pasture. It is also clear from these observations that there is a need to provide supplemental feed alongwith mineral and vitamin additives from November onwards every year for protecting cattle from-malnutrition and vitamin-A deficiency.

(Key Words: Pasture, Indian Desert)

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