

SOME OBSERVATIONS ON THE REPRODUCTIVE BEHAVIOUR OF RHINOCEROS UNICORNIS

By

DR. B.N. KAKATI¹ AND DR. C.K. RAJKONWAR²

¹Department of Gynaecology and Obstetrics, College of Veterinary Science, Gauhati-22



¹'Padmani' the female zoo-born Rhinoceros delivered a male calf on 12-9-71 at Assam State Zoo, Gauhati. The photograph was taken on 13th Sept. '71 after 24 hours of delivery.

Rhinoceros is exported from Assam by the State Government to different countries of the world. At present Assam is the important source where the Asiatic Rhinoceros—"Rhinoceros unicornis" is available. This animal is very valuable, as an adult Rhinoceros costs more than 100000 rupees. Assam being the rare tract for breeding of this animal, the authors attempted to study some of the important features of reproductive behaviour of this animal.

Limited information is available regarding the reproductive behaviour of this species. Chaturvedi (1968) reported that the oestrous cycle is about 45 days. In the period of oestrus the female pants and is generally off fed. The gestation period is about 16 months. The authors observed courtship and mating behaviour of Rhinoceros Unicornis at the Assam State Zoo and Kaziranga Game Sanctuary, Assam, which are reported here.

Natural Habit

Rhinoceros prefers to live alone, but it does not appear to mind the company of bovine species. It has been seen grazing along with buffaloes in the sanctuary. The peculiar habit of this wallower is to defaecate in a particular spot where one can see heaps of dung. The same instinct is also observed in captivity.

The natural feed of a Rhinoceros consists of common indigenous grasses known in Assam as Dal, delicate shoots of canes, paddy crop, pulses etc.

Reproductive Behaviour of Male and Female Rhinoceros

The desire of courtship and copulation in the male and female do not synchronise all time. They are termed as reluctant breeders (Chaturvedi). It was observed that they prefer to mate in the months of April, May and June.

During the period of courtship in captivity it was observed that when the male was ready for mating, the female did not exhibit any interest in courtship and mating. The male was stronger and vigorous tried to capture the female and at this stage it was observed that the female ran away when the male approached her. In another instance the female was in oestrus and she was so desirous to be mated by the male that she used to stand in front of the male, spreading her hind legs and lowering her pelvis; but the male was not interested in mating her.

The mounting of the female by the male is similar to that of bovine species. The male while mounting secretes "dribblings" in large amounts and "fixes" his forelegs around the female and grasps her firmly. The ejaculation time is long, about 1 hour to 1½ hour and perhaps discharges a great volume of semen as estimated from the pre-coital ejaculation.

Anatomy of the Penis

Gogoi (1957) recorded the following particulars of Rhinoceros' penis. In non-erect position the tip of the penis remains facing backward and downward and passes urine in this posture.

¹Senior Lecturer and Head of the Dept. of Obstetrics and Gynaecology and Associate Director of Research, Assam Agricultural University, Khanapara.

²Senior Lecturer, Animal Gynaecology, College of Vety. Science, A.A.U., Khanapara.

When the penis is out of the prepuce it looks like 'Z' and when fully exposed it touches ground measuring 2'-3" in length. The glans penis is like a half bloomed bud and the transverse diameter is about 2". The middle third region of the body of the penis presents a PETAL structure and this extra structure peculiar to Rhinoceros penis may be a cause of prolonged coitus.

Age at First Service

The age at first service was recorded in the zoo-born female Rhinoceros at State Zoo, Assam, Gauhati.

The female Rhino 'Padmini' born on 10.7.64 to "Padumi" took first service with Shivala the male Rhinoceros in captivity in the State Zoo, Assam on 31.5.70 at the age of 5 years 11 months 21 days.

Oestrous Cycle

The period of oestrus cycle as reported by Chaturvedi is about 45 days. The authors have recorded only one case in which the cycle was only 16 days (from the date of one service to the date of another service).

Interval between the Last Calving and the First Next Service

This was recorded in the case of one Rhinoceros 'Gita' by name. She delivered one male calf on 4.4.60 and took service on 12.6.62, the period being 28 months approximately.

Gestation Period

The gestation period is reported as 16 months (Chaturvedi), 488 days in Whipsnade Zoo, 474 in Basle Zoo and 474 in Assam State Zoo, Gauhati.

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PROPAGATION OF *BAMBUSA VULGARIS*—ITS SCOPE IN FORESTRY

BY

M.A. WAHEED KHAN
Conservator of Forests, M.P.

SUMMARY

Bamboo plantations are being raised increasingly. In this context, *Bambusa vulgaris* is of importance, as it is thorn-less, capable of high productivity and could be relied on culm-cuttings for raising plantations.

On the basis of experimental evidence, the technique of raising *B. vulgaris* plantations on culm-cuttings is described. Two-noded cuttings are made from middle one-thirds of the culm and three-noded cuttings from the rest of the culm. On the onset of the rains, they are planted at 45 cm x 45 cm spacing in nursery beds with heavy soil and flood irrigated at weekly intervals. By the middle of the following rainy season, they are well-established and grown for planting out. They are planted out at 12 m x 12 m spacing. Choice of climatic and soil regions is indicated and role of irrigation in such plantations is emphasized.

Introduction

Bamboo is a highly useful forest produce from several angles. The unprocessed material is used for house-building, light furniture and decorative materials, walking sticks, umbrella and baskets, mats and a variety of other articles. As an industrial raw material, it is used for high grade paper and rayon pulps, often used in mixing with other types of wood pulps for its wide useability and quality.

From suitable planting material, it is easy to establish new plantations of bamboos. They can be worked even on annual basis three to four years for establishing and, thereafter, can be worked even on annual basis with steadily increasing yields. The life span of most of the bamboo species is 20 to 30 years. Therefore, once the bamboo clumps are established in a plantation, they give annual yield just like an agricultural cash crop, but excel it as the annual recurring expenditure on establishing agricultural cash crop is not required in the case of bamboos. It is generally believed that the financial returns obtainable from any forest land, on the basis of unit area per year, are the highest when such a land is under bamboos, than under any other type of forest plantation.

In Madhya Pradesh, the most commonly occurring bamboo is *Dendrocalamus strictus*. In India and sporadically scattered natural stands of *Bambusa arundinacea* are also met with. A number of species of bamboos, e.g., *Oxytenanthera nigroclita*, *Cephalostachyum pergracile*, etc. are found but due to their extremely limited distribution, they are of botanical interest only.

The extensively occurring *Dendrocalamus strictus* forests are under a severe strain of local industrial use. Local people, residing around such forests are allowed a fixed number of culms annually either free or at a very nominal rate of royalty. Due to laxity in enforcing administrative controls over such extractions, bamboo forests have already been wiped out in many sizable areas, and are in danger of annihilation from many more. Depending on the climatic conditions of a region, this bamboo flowers and dies at a cycle of 20 to 30 years. The new growth arising thereafter is extremely tender. It is susceptible to irreparable damage by such biotic factors as annually recurring forest fires and continued unrestricted pressure. Accordingly, the *D. strictus* area in the State is continually dwindling down