

## A God (Buffalo) of Coastal Andhra Pradesh Farmers

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### SUMMARY

Buffaloes form an essential part of backbone of the farmer's economy of India. Andhra Pradesh is inhabited by buffalo populations on par with white cow population. Graded Murrah buffalo is one of the major buffalo varieties reared mostly by the farmers of coastal areas of Andhra Pradesh. They provide income by means of milk, meat, dung and skin. Buffalo rearing is a livelihood occupation of majority of the farmers. The present review discusses in detail about the reproductive pattern of buffalo and its management in Andhra Pradesh climatic conditions.

### INTRODUCTION

Buffalo is considered as the popular dairy animal in coastal Andhra Pradesh for 21st century due to its higher adaptability and productivity in the changing climatic conditions of this state. The buffalo genetic resources in Andhra Pradesh are usually less diverse and South India harbours a variety of high milk yielding buffalo breeds in the likes of Murrah, Jaffrabadi and their graded versions (popularly called as Graded Murrah buffalo). Among them, Murrah buffaloes find a place in University farms and large scale commercial farm, whereas Graded Murrah buffaloes (graded version from Murrah buffalo by genetic programme called grading up) are found all over the coastal areas of Andhra Pradesh. The coastal state of Andhra Pradesh experiences a tropical climate. The average temperature during the cooler months of December and January is 28°C, and in the summer months of May and June the temperature reaches 40°C. Most parts of the state in summer are hot and humid. The annual average temperature is 31.5°C. The state is principally fed by the southwest monsoon while the northeast monsoon contributes about one-third of rainfall. Andhra Pradesh is popular referred to as the Rice Bowl of India because of its extensive rice cultivation.

Andhra Pradesh is inhabited by 6.2 million buffalo populations out of 109.85 million of country populations. Total Buffalo Population in the country was 109.85 million during 2019 with an increase of 1.1% over the previous data recorded in 2012. Female Buffalo Population increased by 8.61% whereas Male Buffalo is declined by 42.35% over previous census. About 20.5% of the total livestock is contributed by buffaloes (Vikaspedia, 20th livestock census). Andhra Pradesh, Rajasthan (28 per cent), Kerala (24.8 per cent), Karnataka (24 per cent) and Gujarat (23.7 per cent) are the top five states in terms of clocking high growth in milk production in the country. The demand for milk has been increasing due to economic solvency, rapid pace of urbanization and recently, with COVID-19. Although most of the buffaloes are non-descript indigenous types and their production potential is not satisfactory. Moreover, selective breeding for buffalo with the same breed under low input-medium output production system and grading up of non-descript buffaloes using improver breeds. Hence, buffaloes described as "God of coastal Andhra Pradesh".

### Reproduction in Buffaloes:

Buffaloes are difficult breeders because of its inherent susceptibility to environmental stress along with hormonal imbalance which causes anestrus and sub-estrus especially, during postpartum period. The above said gynaecological conditions are responsible for an increased inter-calving period that culminates into economic losses for the buffalo dairy industry. The common correlation between productivity and reproductive efficiency holds good in case of buffaloes as well. Buffaloes reared in village setting have low reproductive efficiency even in breeding season (September to February), whereas organized farm buffaloes experience low reproductive efficiency during low breeding seasons (March to August). The main objective of the animal breeder is to accomplish more young ones in a lifetime with reduced mortality. To accomplish this target, we have to know about normal reproductive capability of buffaloes reared in different region (climatic variation) to augment reproductive efficiency. The present review discusses about reproduction in buffaloes and different approaches to improve the reproduction in Andhra Pradesh climatic condition.

### Normal Reproductive Parameters in Buffaloes:

The reproductive capability changes according to the climate as well as pattern of rearing (Ingawale and Dhoble, 2004). The climatic condition of Andhra Pradesh tends to affect the reproductive pattern of Graded Murrah buffaloes.

Reproductive parameters	India (other states)	India (Andhra Pradesh)
Age at puberty	36-42 months	42-48 months (Lack of knowledge on plane of nutrition and feeding pattern )
Length of estrous cycle	20-21 days	Highly variable, from 18-25 days (Poor follicular development along with climatic dependency)
Duration of estrus	12-24 hrs	24-48 hrs (slow boost up of follicular growth tendency)
Time of ovulation	10-14 hrs after end of estrus	Majority of buffaloes have ovulation after 16-18 hrs or more (USG study)
Period of involution of uterus	25-35 days	Some buffaloes (well fed) had 20-22 days, whereas, others (poor fed) had 40 days and above.
Breeding season	September-February	Up to march can expect breeding season from September last week

### Breeding Management of Buffalo in Andhra Pradesh:

Most commonly followed breeding system in buffaloes is artificial insemination and natural mating depends upon the availability and certain gynaecological conditions of female buffaloes (Ramesh et al. 2002).

#### 1. Artificial Insemination:

Among the two breeding system AI is most commonly performed in village reared buffaloes and certain organized farms. This service is provided on nominal payment by State Department of Veterinary Medicine and Animal Husbandry (APLDA-Andhra Pradesh Livestock Development Agency). Recently, door step AI practice was introduced by State Ministry of Andhra Pradesh through AP Grama Sachivalayam under the guidelines nomination of Hon'ble CM. Jagan Mohan Reddy. The network project on buffalo development of ICAR facilitates breeding with the use of frozen semen of known pedigree and breeds such as Murrah, Nili-Ravi, Surti, Bhadwari, and Pandharpuri are included in this programme at present in other states of India (Agarwal, 2003). However, AP livestock agency are yet to actively participate in this network project programme.

#### 2. Natural Mating:

Generally in dairy buffaloes, natural mating is followed. In certain states, proven or progeny tested bulls are used in breeding (Ingawale and Dhoble, 2004). Pertaining to AP climatic condition buffalo bulls are no longer used in the field by the farmers. As per our knowledge, only about 10 to 12 percent of farmers are utilizing the buffalo bull for breeding purpose. Moreover 40 to 50 percent of organized dairy farms effectively use buffalo bulls with optimum conception rate. Cases with different reproductive abnormalities (Kinked cervix, narrow/less patent cervix, and fibrosis of cervix) are referred to the teaching institute for seeking expert opinion.

### Major Gynaecological Problems Encountered in Graded Murrah Buffaloes:

#### 1. Delayed Sexual Maturity:

Delayed sexual maturity in female buffaloes is common throughout India especially in Andhra Pradesh next only to Assam state (Ingawale and Dhoble, 2004). Interestingly, few of the Graded Murrah buffalo calf attains puberty (first cycle) at 3-3.5 years of age and majority of dairy buffaloes calving occurs at 5-6 years of age. This is due to an inadequate supply of feed and nutrients during the growing phase. Ultimately, most of the buffalo

heifers that were presented to the Veterinary hospital were diagnosed as UDG (under developed genitalia) and advised to improve the feeding standards.

## 2. Poor Exhibition of Heat Signs (Silent estrus):

This is a more serious problem during the hot and humid-hot months in Andhra Pradesh climatic condition. Due to these reasons, heat is often missed and therefore remains unbred. This is an important factors lead for prolonged inter-calving period.

## 3. Postpartum Anestrous and Sub-estrus:

Postpartum anestrous and sub-estrus are the two common gynaecological conditions encountered in all breeds buffaloes everywhere in India especially, in Andhra Pradesh climatic condition. As per our knowledge, most of the buffaloes reared in Andhra Pradesh state, calving occurs during the month of July to November (calving season). Even though, the buffaloes have 4 months of breeding season (December, January, February, March) after postpartum, ovarian activities fail to resume. This might be due to poor feeding standards followed for postpartum buffaloes.

## 4. Reproductive Disease and Infertility:

In recent years these problems in buffaloes have shown an increasing trend in Andhra Pradesh because of increased use of artificial insemination in remote villages with the help of improperly trained inseminators. Quackery practices are common in India and Andhra Pradesh is no exception. These persons may cause severe damage to livestock health and ultimately lead to reproductive diseases and infertility.

### Approaches for improving reproductive efficiency in farmer field:

#### Veterinarian's role:

- Educate the farmers regarding reproductive patterns of buffaloes especially, heat signs etc.
- Educate to improve the feeding standard of buffaloes through guidelines mentioned by nutritionists (Village hospitals, University officers).
- Conduct regular health camps for rural buffalo farmers.
- Educate about breeding systems suitable for the particular region.
- Hormonal intervention to augment the fertility buffaloes by Andhra Pradesh state Veterinary ministry schemes
- Regular supply of area specific Mineral mixtures and deworming to the rural buffalo farmers.
- Acquire the technical knowledge that can be employed at field level through online portal systems and University training programmes conducted by eminent staffs.
- Weekly or monthly interaction with farmers to monitor management strategies.
- Thorough gynaecological examination of presented cases and appropriate treatment and client education.
- Check the status of Liquid nitrogen container and liquid nitrogen level. Evaluate the status and viability of spermatozoa at regular intervals. Inseminate the buffaloes at standing heat (mid-late heat).

#### Farmer's role:

- First and foremost thing is to follow the veterinarian's advice and lectures offered during health camps and visit hours.
- Feed the buffaloes with recommended feeding standard (carbohydrate (energy), protein, vitamins and mineral mixtures).
- Regularly monitor and record the heat periods during early morning and late evening hours.
- Contact the veterinary doctors whenever buffaloes have reproductive illness.
- Strictly adhering to the treatment regimen prescribed by a qualified practitioner.
- Regularly attend the health camps.
- Try to avoid self-treatment to the buffaloes by neighbor advice or local person advice
- Wait for the appropriate age for sexual maturity.

- Culling of unproductive animals under the approval of veterinarian

#### **Agency for Buffalo Breeding, Management and Treatment:**

Andhra Pradesh Government actively participated in the breeding, management and treatment of buffaloes through various organized government and private sectors by employing Veterinary graduates (B.V.Sc and M.V.Sc).

#### **Organized government sectors:**

- Sri Venkateswara Veterinary University (SVVU) governing one of the famous buffalo research station at Venkataramangudem (Tadepalligudem, West Godavari District) in Andhra Pradesh with an objectives of establish an elite herd of Murrah Buffaloes, develop a database on various aspects of buffalo production and supply the elite Murrah male calves to the needy farmers.
- Vijaya dairy milk union actively participated in the treatment of buffaloes through registered veterinary graduates. They regularly conducting health camps and offering treatment for different clinical conditions of buffaloes.

#### **Organized private sectors:**

Visakha Dairy Co-operative participated in the treatment of buffaloes through registered veterinary graduates.

#### **CONCLUSION**

There is an urgent need to understand basic mechanisms of reproductive pattern in buffaloes that belonging to Andhra Pradesh and the interaction of these mechanisms in relation to season, nutrition, management and breeding technique, economics and social factors. This will certainly help to evolve packages of practices that will help to improve reproductive efficiency and in turn milk production in buffaloes. The demand for milk has been increasing due to economic solvency, rapid pace of urbanization and recently, with COVID-19. This milk demand situation can be uplifted during subsequent economic years.

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