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## Assessment of conception rate in postpartum cyclic buffaloes under field conditions

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### Abstract

The present investigation was undertaken to assess conception rate in postpartum cyclic buffaloes under field conditions following artificial insemination. A total of 52 postpartum cyclic graded Murrah buffaloes belonging to 60-120 days postpartum period were screened through leucocyte esterase strip test (LEST) and uterine discharge cytology to evaluate uterine health. Out of the total buffaloes screened, 46 buffaloes (88.46%) were found free from subclinical endometritis, were subjected to postpartum nutritional management with deworming and supplementation of concentrate and mineral mixture. Estrus intensity at subsequent estrus revealed intense estrus in 71.74 per cent buffaloes, while intermediate and weak estrus were observed in 10.87 and 17.39 per cent buffaloes, respectively. Thirty-three buffaloes exhibiting intense estrus were selected for artificial insemination at mid to late heat. Pregnancy diagnosis carried out at Day 60 post-insemination revealed an overall conception rate of 42.42 per cent under field conditions. It was concluded that integrated reproductive management involving uterine screening, nutritional support, proper estrus detection with timely artificial insemination could improve fertility performance in postpartum cyclic buffaloes maintained under field conditions.

**Keywords:** Postpartum buffaloes, conception rate, fertility management, estrus intensity, subclinical endometritis, uterine cytology, artificial insemination

### Introduction

The reproductive efficiency continues to be one of the major constraints limiting profitable buffalo production under field conditions. Delayed resumption of ovarian cyclicity, postpartum anestrus, silent estrus, uterine infections and poor conception rates frequently prolong calving interval and adversely affect the reproductive efficiency. Therefore, improvement of conception rate during the postpartum period is essential for enhancement of reproductive efficiency and economic sustainability of buffalo farming.

Efficient reproductive performance in buffaloes depends upon proper endocrine regulation, ovarian cyclicity and managerial interventions during the postpartum period (Madan and Prakash, 2007) [10]. Proper uterine involution and restoration of reproductive cyclicity are essential prerequisites for successful conception during the postpartum period in bovines (Roberts, 1971; Noakes *et al.*, 2018) [16, 13].

Subclinical uterine infections are recognized as one of the important hidden causes of infertility in bovines. Unlike clinical endometritis, subclinical uterine inflammation frequently remains unnoticed because of absence of obvious clinical signs but significantly compromises uterine environment and conception potential (Kasimanickam *et al.*, 2004) [8]. Therefore, identification and exclusion of buffaloes affected with uterine inflammation prior to insemination may substantially improve fertility outcome.

Apart from uterine health, postpartum nutritional and managerial interventions considerably influence reproductive performance in buffaloes. Parasitic burden and nutritional insufficiency frequently compromise reproductive efficiency through poor metabolic status, delayed ovarian activity and weak estrus expression (Campanile *et al.*, 2010) [3]. Likewise, estrus intensity serves as an important determinant of successful conception, since buffaloes exhibiting intense estrus generally show better follicular maturity and ovulatory response than animals exhibiting weak estrus signs (Roelofs *et al.*, 2005) [17].

Despite several advances in buffalo reproductive management, limited information is available regarding conception-oriented fertility management in postpartum cyclic graded Murrah buffaloes maintained under field conditions. Hence, the present investigation was undertaken to assess conception rate in postpartum cyclic buffaloes following systematic uterine health screening, postpartum management and artificial insemination under field conditions.

## Materials and Methods

### Study area and experimental animals

The present investigation was conducted under field conditions in cyclic graded Murrah buffaloes presented to the Department of Veterinary Gynaecology and Obstetrics, NTR College of Veterinary Science, Gannavaram, and in nearby villages around Vuyyuru, Krishna district of Andhra Pradesh, during the period from August 2025 to March 2026 in different parities 60-120 days postpartum buffaloes. Detailed gynaecological examination was carried out through per-rectal palpation to assess reproductive status, ovarian cyclicity and presence of abnormalities of the genital tract.

### Screening for uterine health

Uterine health status was assessed using leucocyte esterase strip test (LEST) using reagent test strips (Shenhua, URS-11G) and uterine discharge cytology. Uterine discharge samples were collected aseptically by blue sheath (IMV, France) and subjected to cytological examination for determination of PMN infiltration. Buffaloes exhibiting more than 5 per cent PMN cells were considered positive for subclinical endometritis based on established cytological criteria for postpartum bovines (Kasimanickam *et al.*, 2004)<sup>[8]</sup> and were excluded from breeding management.

### Postpartum nutritional management

Buffaloes free from uterine infection were subjected to routine postpartum nutritional management practices under field conditions. Deworming was carried out using Albendazole administered orally at the dose rate of 10 mg/kg body weight as a single dose. Nutritional supplementation was provided through concentrate feeding (2-3 kg/animal/day) and mineral mixture supplementation (50 g/animal/day) from screening to insemination at subsequent estrus.

### Estrus detection and artificial insemination

Estrus detection was carried out based on behavioural manifestations and physical signs including vulval edema, vaginal mucus discharge, mounting behaviour, restlessness and uterine tone. Estrus intensity was categorized as intense, intermediate and weak according to severity of estrus signs based on a standardized score card described by Rao and Rao (1981)<sup>[15]</sup> with slight modifications. Buffaloes exhibiting intense estrus signs at subsequent estrus were bred by artificial insemination during mid to late heat using frozen semen under standard field breeding practices.

### Pregnancy diagnosis and statistical analysis

Pregnancy diagnosis was performed at Day 60 post-insemination through per-rectal examination. Based on pregnancy status, buffaloes were classified into pregnant and non-pregnant groups. Data obtained was analysed using Statistical Package for Social Sciences (SPSS) software and expressed using descriptive statistics such as frequencies and

percentages.

## Ethical approval

The study was conducted in accordance with institutional guidelines for animal handling and welfare during clinical and reproductive examination of buffaloes. All procedures adopted during the present investigation were performed under standard veterinary management practices.

## Results and Discussion

### Screening of postpartum cyclic buffaloes for uterine health

A total of 52 postpartum cyclic graded Murrah buffaloes were screened through detailed gynaecological examination, leucocyte esterase strip test (LEST) and uterine discharge cytology. The leucocyte esterase strip test revealed that 43 out of 52 buffaloes (82.69%) were negative for leucocyte esterase activity, whereas nine buffaloes (17.31%) showed varying degrees of positive reaction suggestive of uterine inflammation. Further, upon uterine discharge cytology, 46 buffaloes (88.46%) were found free from uterine infection and considered suitable for breeding, whereas six buffaloes (11.54%) were diagnosed positive for subclinical endometritis and excluded from the study.

Positive agreement was observed between LEST and uterine discharge cytology, reaffirmed that LEST could be used as a rapid, economical, cow side and field-applicable diagnostic tool for identification of buffaloes suitable for immediate breeding. Early diagnosis and exclusion of animals affected with uterine inflammation likely minimized reproductive failure and contributed to better conception outcome in the present investigation.

Similar observations were reported by Dhali *et al.* (2017)<sup>[4]</sup>, who observed good diagnostic reliability of leucocyte esterase strip test for detection of subclinical endometritis in bovines under field conditions. Nazhat *et al.* (2018)<sup>[11]</sup> also reported satisfactory agreement between LEST and uterine cytology for diagnosis of uterine inflammatory conditions. The exclusion of buffaloes affected with uterine inflammation prior to insemination was considered important for improving the fertility. Further, Sheldon *et al.* (2009)<sup>[18]</sup> reported that postpartum uterine diseases adversely influenced ovarian cyclicity and fertility through inflammatory and endocrine alterations. Likewise, Kasimanickam *et al.* (2004)<sup>[8]</sup> observed significantly reduced conception rates in postpartum dairy animals affected with subclinical endometritis owing to compromised uterine environment.

The occurrence of subclinical endometritis recorded in the present study (11.54%) was comparatively lower than several reports in bovines under field conditions. Gahlot *et al.* (2017)<sup>[6]</sup> documented higher prevalence of uterine inflammation in postpartum buffaloes, whereas Gilbert *et al.* (2005)<sup>[7]</sup> reported that uterine inflammatory conditions during the postpartum period substantially reduced fertility performance. Lower prevalence observed in the present study might be attributed to screening of cyclical buffaloes conducted during 60-120 days postpartum.

The PMN threshold of >5%, employed in the present investigation served as an important criterion for exclusion of buffaloes positive for subclinical endometritis before breeding. The findings of the present study were in close agreement with the observations of Kasimanickam *et al.* (2004)<sup>[8]</sup>, who reported that PMN percentages exceeding 5 per cent were indicative of subclinical endometritis that adversely affected fertility. Therefore, identification and

exclusion of buffaloes exhibiting elevated PMN percentage prior to insemination might have contributed to improvement of reproductive efficiency under field conditions.

### Postpartum nutritional management and estrus response

Comparable improvement in reproductive performance following appropriate postpartum management and nutritional interventions had been reported in buffaloes under field conditions (Campanile *et al.*, 2010; Perera, 2011) [3, 14].

The reproductively sound postpartum buffaloes were subjected to routine postpartum fertility management involving deworming and supplementation of concentrate and mineral mixture prior to breeding. Correction of parasitic burden through deworming might have contributed to improvement in physiological status and reproductive readiness of buffaloes. Improved reproductive performance following deworming has been reported in bovines under field conditions due to better metabolic adaptation and reproductive competence (Campanile *et al.*, 2010) [3].

Similarly, nutritional supplementation through supplementation of concentrate feeding and mineral mixture might have positively influenced reproductive performance as observed in the present investigation. Postpartum buffaloes often experience increased nutritional demands associated with lactation and uterine recovery, which delay estrus and conception. Adequate nutritional supplementation had improved the ovarian activity, follicular growth and reproductive efficiency in buffaloes (Lucy, 2001; Zicarelli, 2020) [9, 21].

Among the 46 buffaloes evaluated for estrus intensity at subsequent estrus, intense estrus was observed in 33 buffaloes (71.74%), whereas intermediate and weak estrus were recorded in 5 (10.87%) and 8 (17.39%) buffaloes, respectively (Table 1). The higher proportion of buffaloes exhibiting intense estrus was suggestive of favourable reproductive and endocrine status following postpartum nutritional management.

Animals exhibiting intense estrus are generally characterized by improved follicular maturity, higher estrogenic activity and better synchronization between ovulation and insemination, thereby increasing probability of successful conception. Comparable observations were reported by Roelofs *et al.* (2005) [17], who documented superior reproductive performance and higher conception rates in animals exhibiting pronounced estrus signs. Likewise, Perera (2011) [14] observed that buffaloes showing intense estrus expression exhibited improved ovulatory response and superior conception outcome compared to weak estrus animals.

### Conception rate in postpartum cyclic buffaloes

Thirty-three buffaloes exhibiting intense estrus signs bred by artificial insemination during the mid to late heat as appropriate timing of insemination relative to onset of estrus remained an important determinant of conception success in bovines (Nebel *et al.*, 2000) [12]. Pregnancy diagnosis was carried out through per-rectal examination at Day 60 post-insemination and the conception rate recorded was 42.42 per cent, with 14 buffaloes (42.42%) being pregnant while 19 buffaloes (57.58%) were non-pregnant.

The conception rate recorded in the present investigation was considered satisfactory under field conditions, particularly during the postpartum period where reproductive inefficiency frequently remained a challenge in buffaloes. Conception in buffaloes was influenced by multiple interacting factors including uterine health, estrus intensity, nutritional status,

insemination timing and environmental conditions. Efficient estrus detection and appropriate timing of insemination had been recognized as important determinant for the success of conception in dairy animals (Stevenson, 2001) [19].

The moderate conception rate observed in the present study might be attributed to systematic reproductive screening and postpartum nutritional management adopted before insemination. Baruselli *et al.*, (2001) [1] emphasized that proper estrus detection and timely insemination substantially enhanced fertility performance in cyclic buffaloes. Similarly, Campanile *et al.*, (2007) [2] further reported that reproductive efficiency and conception outcome in buffaloes were influenced by physiological and managemental factors, particularly during periods of reproductive stress and postpartum recovery. Comparable results for buffaloes under field conditions had been reported by Warriach *et al.*, (2015) [20], who observed conception rates ranging between 35-50 per cent depending upon nutritional management, estrus detection efficiency and reproductive status.

Adequate nutritional support during the postpartum period had shown to improve ovarian cyclicity, follicular development and uterine recovery, thereby increasing fertility probability as also opined by Lucy (2001) [9] reported that reproductive success in dairy animals was strongly influenced by metabolic and nutritional status. Likewise, Campanile *et al.* (2010) [3] emphasized the role of nutrition in restoration of ovarian function and fertility in buffaloes.

Despite stringent measures only 42.42 per cent buffaloes conceived, while a considerable proportion of animals remained non-pregnant (57.58%). Failure of conception in buffaloes could have resulted from unobserved estrus, inadequate follicular maturity, fertilization failure, embryonic mortality and environmental stress. Further, buffaloes were inherently characterized by poor estrus expression and delayed ovulatory response compared to cattle, thereby contributing to comparatively lower conception rates under field conditions (El-Wishy, 2007) [5].

The findings of the present study therefore indicated that conception in postpartum cyclic buffaloes could be improved through an integrated reproductive management approach involving screening for uterine health by LEST and uterine discharge cytology, postpartum nutritional management, proper estrus detection and insemination at mid to late heat.

**Table 1:** Estrus intensity among postpartum cyclic buffaloes (n=46)

| Estrus intensity    | Number | Percentage (%) |
|---------------------|--------|----------------|
| Intense estrus      | 33     | 71.74          |
| Intermediate estrus | 5      | 10.87          |
| Weak estrus         | 8      | 17.39          |

### Conclusion

The present investigation demonstrated that conception rate in postpartum cyclic graded Murrah buffaloes could be improved through systematic reproductive screening, postpartum nutritional management and timely artificial insemination under field conditions. Screening of buffaloes using leucocyte esterase strip test and uterine discharge cytology facilitated identification and exclusion of animals affected with subclinical endometritis, thereby improved the selection of reproductively healthy buffaloes for breeding.

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### Conflict of interest

The authors declare that there is no conflict of interest regarding publication of this manuscript.

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### References

- Baruselli PS, Mucciolo RG, Visintin JA, Viana WG, Arruda RP, Madureira EH, *et al.* Ovarian follicular dynamics during the estrous cycle in buffaloes. *Theriogenology*. 2001;56:1531-1547.
- Campanile G, Neglia G, Vecchio D, Gasparrini B, Prandi A, Zicarelli L. Embryonic mortality in buffaloes synchronized and mated by AI during the seasonal decline in reproductive function. *Theriogenology*. 2007;68:1174-1180.
- Campanile G, Baruselli PS, Neglia G, Vecchio D, Gasparrini B, Gimenes LU, *et al.* Ovarian function in buffalo and implications for embryo development and assisted reproduction. *Animal Reproduction Science*. 2010;121:1-11.
- Dhali A, Mohanty TK, Kumaresan A, Patbandha TK, Banerjee D. Diagnostic utility of leucocyte esterase strip test for detection of subclinical endometritis in bovines under field conditions. *Indian Journal of Animal Reproduction*. 2017;38(2):52-55.
- El-Wishy AB. The postpartum buffalo: II. Acyclicity and anestrus. *Animal Reproduction Science*. 2007;97:216-236.
- Gahlot GC, Dutt R, Singh G, Chandolia RK, Dhaka SS. Cytological evaluation of uterine discharge for diagnosis of subclinical endometritis in buffaloes. *Haryana Veterinarian*. 2017;56(2):147-150.
- Gilbert RO, Shin ST, Guard CL, Erb HN, Frajblat M. Prevalence of endometritis and its effects on reproductive performance in dairy cows. *Theriogenology*. 2005;64:1879-1888.
- Kasimanickam R, Duffield TF, Foster RA, Gartley CJ, Leslie KE, Walton JS, *et al.* Endometrial cytology and ultrasonography for the detection of subclinical endometritis in postpartum dairy cows. *Theriogenology*. 2004;62:9-23.
- Lucy MC. Reproductive loss in high-producing dairy cattle: where will it end? *Journal of Dairy Science*. 2001;84:1277-1293.
- Madan ML, Prakash BS. Reproductive endocrinology and biotechnology applications among buffaloes. *Animal Reproduction Science*. 2007;98:502-513.
- Nazhat S, Purohit GN, Mehta JS, Sharma A. Evaluation of leucocyte esterase reagent strip test for diagnosis of subclinical endometritis in bovines. *Buffalo Bulletin*. 2018;37(3):401-408.
- Nebel RL, Dransfield MG, Jobst SM, Bame JH. Automated electronic systems for the detection of oestrus and timing of AI in cattle. *Animal Reproduction Science*. 2000;60-61:713-723.
- Noakes DE, Parkinson TJ, England GCW. *Veterinary Reproduction and Obstetrics*. 10th ed. London, UK: Elsevier; 2018.
- Perera BMAO. Reproductive cycles of buffalo. *Animal Reproduction Science*. 2011;124:194-199.
- Rao AVN, Rao AR. Studies on estrus behaviour and fertility in buffaloes. *Indian Veterinary Journal*. 1981;58:780-783.
- Roberts SJ. *Veterinary Obstetrics and Genital Diseases*. 2nd ed. New Delhi, India: CBS Publishers and Distributors; 1971.
- Roelofs JB, Van Eerdenburg FJCM, Soede NM, Kemp B. Pedometer readings for estrous detection and prediction of time of ovulation in dairy cattle. *Theriogenology*. 2005;64:1690-1703.
- Sheldon IM, Cronin J, Goetze L, Donofrio G, Schuberth HJ. Defining postpartum uterine disease and the mechanisms of infection and immunity in the female reproductive tract in cattle. *Biology of Reproduction*. 2009;81:1025-1032.
- Stevenson JS. Reproductive management of dairy cows in high milk-producing herds. *Journal of Dairy Science*. 2001;84(E Suppl):E128-E143.
- Warriach HM, McGill DM, Bush RD, Wynn PC, Chohan KR. A review of recent developments in buffalo reproduction. *Asian-Australasian Journal of Animal Sciences*. 2015;28(3):451-455.
- Zicarelli L. Influence of management and nutrition on reproductive efficiency of buffaloes. *Buffalo Bulletin*. 2020;39(2):145-156.

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