

## EFFECT OF AREA SPECIFIC MINERAL MIXTURE SUPPLEMENTATION ON REPRODUCTIVE PERFORMANCE IN DAIRY ANIMALS OF PUNJAB

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### SUMMARY

The study was conducted to assess the role of area specific mineral mixture supplementation as a therapy for anestrus dairy animals of sub-mountainous zone of Punjab. Fifty dairy animals (25 cattle and 25 buffaloes) suffering from anestrus were randomly selected and plasma progesterone level was estimated on 0, 7<sup>th</sup> and 14<sup>th</sup> day by RIA (Radio-Immune-Assay) technique. Animals with plasma progesterone level <0.5 ng/ml were diagnosed as being non-cyclic and were divided into two groups. Animals in the treatment group were fed area specific mineral mixture for 2 months and blood samples were collected at 3 weeks' interval before and after feeding and plasma progesterone levels were estimated by RIA. It was concluded from the present study that feeding of area specific mineral mixture had a non-significant effect on the reproductive performance of dairy animals.

**Keywords:** Anestrus, Area specific mineral mixture, Dairy animals, Progesterone

Minerals are essential for growth, health, reproduction and normal physiological functions of animal's body (Chew, 2000). The supplementation of Area Specific Mineral Mixture (ASMM) increased reproductive efficiency in buffaloes and 70 percent buffaloes showed normal cyclicity (Annual Reports, DARE, 2008–2009). Dietary deficiencies result in failure of the mineral homeostasis mechanism, which affects the productive and reproductive potential of the animal. Reproduction is an important productive parameter affecting the profitability of dairy industry. Higher conception rates are achieved with the help of adequate concentration of trace minerals (Rabiee *et al.*, 2010). Trace minerals help in improving the reproductive performance of cattle (Kumar *et al.*, 2011; Grace and Knowles, 2012). Keeping in view of these facts and findings, the present study was designed to determine the effect of area specific mineral mixture supplementation on the reproductive performance of dairy animals.

Fifty anestrus dairy animals (25 cattle and 25 buffaloes) were selected from four villages of two districts (Hoshiarpur and Nawanshahar) of Sub-mountainous zone of Punjab. Selection was based on owner's history and estimation of plasma progesterone on days 0, 7 and 14. Animals with plasma progesterone levels <0.5 ng/ml were diagnosed as being non-cyclic animals. These animals were divided into two groups with 13 cattle and 20 buffaloes kept as treatment group and 12 cattle and 5 buffaloes kept as control group. Animals in the treatment group were fed with area specific mineral mixture for 2 months and blood samples were collected from these animals at 3 weeks' interval before and after feeding and plasma progesterone levels were estimated by RIA.

Animals having plasma progesterone levels >0.5 ng/ml were considered to be cyclic. Data was analyzed statistically using SPSS for Windows (version 16.0; Microsoft).

In treatment group of cattle, 76.92% animals regained cyclicity i.e. had plasma progesterone level >0.5 ng/ml, whereas, 23% animals remained non-cyclic. In control group, out of 12 cows selected, 8 animals regained cyclicity, whereas, 4 remained non-cyclic. On statistical comparison, non-significant difference was observed between the treatment and control groups. Contrary to these findings, Singh (2013) recorded that after mineral supplementation, out of 10 cattle, 8 animals regained cyclicity, whereas, 2 animals remained non-cyclic and in control group, 1 out of 6 animals became cyclic during the period of trial and the results were found to be significant.

In treatment group of buffaloes, 60% animals regained cyclicity i.e. had plasma progesterone level >0.5 ng/ml, whereas, 40% remained acyclic. In control group, 40% animals regained cyclicity, whereas, 60% animals remained acyclic. The results were found to be non-significant on statistical comparison. However, Singh (2013) recorded that out of 10 buffaloes that were fed area specific mineral mixture, 9 animals regained cyclicity and in control group, 2 out of 6 buffaloes regained cyclicity without feeding of area specific mineral mixture and the results were statistically significant.

Average time taken by the animals to return to normal cyclicity was 55.00±2.68 and 51.00±3.64 days in buffaloes and cattle, respectively. These findings were comparable to those of Singh (2013) who recorded the average values to be 53.40±2.7 and 48.9±2.1 days in buffaloes and cattle, respectively.

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## CONCLUSION

No significant improvement was recorded in the cyclicity of the anestrus animals upon supplementation of area specific mineral mixture in the treatment group as compared to the control group both in cattle and buffaloes.

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