

Short Communication

‘OESTRUS MONITORING CHART’: A TOOL TO IMPROVE POST BREEDING OESTRUS OBSERVATION IN A DAIRY FARM

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ABSTRACT

Oestrus detection plays an important role in the reproductive management of a dairy farm. To improve the post-breeding oestrus observation practice among the farmers, a reproductive management tool called ‘Oestrus Monitoring Chart’ (OMC) was designed and developed. The effectiveness of this technology on oestrus detection, timed artificial insemination and pregnancy diagnosis was studied in a small scale crossbred cattle dairy farm. Breeding parameters viz., number of inseminations carried out per animal, duration between two successive inseminations for each animal, duration between artificial insemination and pregnancy check-up and conception rate was studied for a period of one year before (G1) and one year after installation of OMC (G2). Perusal of the data revealed that the duration between successive artificial insemination (AI) and the duration between AI and pregnancy diagnosis was significantly ($P < 0.01$) decreased in G2 group when compared with G1 group. The conception rate was also significantly improved after the installation of the OMC and introduction of OMC as a reproductive management tool improved the oestrus detection attitude among the farm personnel.

Key Words: Dairy farm, ‘Oestrus monitoring Chart’, Oestrus detection, Pregnancy diagnosis

INTRODUCTION

Detection of behavioural oestrus continues to play an important role in the

overall reproductive management program in a dairy farm. Variations in the duration and intensity of oestrus warrant the need for accurate and continuous monitoring

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to determine the optimal breeding time. The low accuracy and efficiency of oestrus detection not only increases time from calving to first AI but also increases the average interval between services (Stevenson and Call, 1983), thereby limiting the pregnancy rate. Automated technologies which provide continuous surveillance of physical activity of the cattle have been developed and utilised by large scale dairy units (Fricke *et al.*, 2014; Mayo *et al.*, 2019) to enhance detection of oestrus. However these technologies are not user friendly for small scale dairy farmers in both technical and economical means.

Visual observation of behavioural oestrus signs is the cheapest and effective method of detecting oestrus in cattle but farmers are generally lacking the practice of maintaining breeding records and also fail to follow-up the return or non-return to oestrus post breeding, which leads to delay in pregnancy diagnosis and ultimate failure of reproductive management in any dairy farm. In order to improve the post-breeding oestrus observation practice among the farmers, a reproductive management tool called ‘Oestrus Monitoring Chart’ was designed and developed jointly by the Department of Veterinary Gynaecology and Obstetrics and Department of Veterinary and Animal Husbandry Extension Education of Veterinary College and Research Institute, Tirunelveli, Tamil Nadu, India. This paper will focus on the effectiveness of this OMC as a tool for oestrus detection post breeding,

timed AI and pregnancy diagnosis in a small scale dairy farm.

MATERIALS AND METHODS

A small scale organized dairy farm of crossbred cattle located at Tirunelveli with proper breeding registers was selected for the study.

Development of ‘Oestrus Monitoring Chart’

The design of the ‘Oestrus Monitoring Chart (OMC)’ is given in Fig.1. The base of the wall mount unit is a white marker acrylic board (24” x 48”). On the right half of the board, a pair of circular plastic plates is fixed one over the other. The lower larger diameter plate is engraved with dates for two months around the periphery (1 – 31 and 31 – 1) and is freely rotatable using a small knob. The smaller diameter plate was fixed over the larger plate and is static with two rectangular slits (one small and one larger). Single date (*i.e.*, date of AI) can be viewed through the small slit while the larger slit was distanced from small slit in such a way that four dates *i.e.*, days 18, 19, 20, 21 after the date of AI could be visualised. The left half of the board consists of a tabular column with the provision for manual entry of the details of animal number, date of AI and the dates during which period the animal should be observed for oestrus post AI (Fig. 2). Seven rows are available, thus details of 7 animals can be recorded at a time.

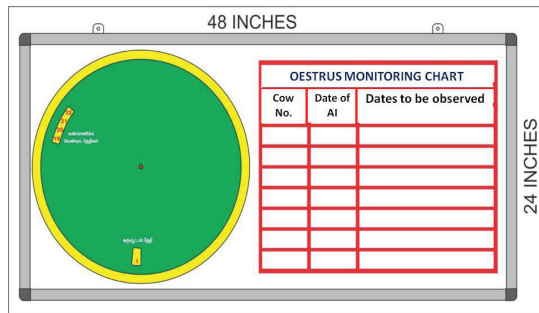


Fig 1: Basic structure of wall mount ‘Oestrus Monitoring Chart’

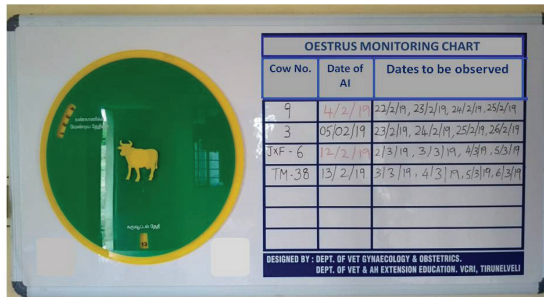


Fig 2: Recording of day-to-day data in Oestrus Monitoring Chart

Operating procedure of the Chart

The OMC was installed in the cattle shed with easy accessibility and visibility of the farm in-charge / labourers. Initially the date of AI along with the animal identity number should be recorded on the chart at the specified columns. By placing the date of AI underneath the small slit of static wheel, the four dates viewed in the larger slit should be recorded in the specific row adjacent to the pertaining animal. Every day the farm in-charge/ labourer have to peruse the details in the OMC and check the particular animal mentioned in the concerned dates for the behavioural changes and external symptoms (discharge, vaginal etc.) correlating with oestrus. If the animal exhibited oestrus signs during the period of observation it should be subjected

for gynaeco-clinical examination and insemination be performed. If no oestrus was exhibited it should be checked for pregnancy within 45 – 60 days post AI.

Experimental design to study the efficacy of the chart

As a control study, breeding parameters of 12 breedable adult crossbred cattle (cows: 8 and heifers: 4) were studied for a period of one year (January 2018 to December 2018). Based on the breeding register, the following parameters were recorded (i) number of inseminations carried out per animal ii) duration between two successive inseminations for each animal iii) duration between AI and pregnancy check-up and iv) number of animals conceived. The mean values were arrived for the first three

parameters and conception rate (%) was arrived for the fourth parameter. After the control study, the OMC was installed in the farm and the above parameters were studied for the next one year (January 2019 to December 2019) with the breedable adult stock of 14 animals (cows:8 and heifers: 6). The operation of OMC was managed by a single operator during the entire experimental period and two sets of data viz., pre-installation (G1) and post-installation (G2) of OMC were obtained.

Statistical analysis

The pre-installation and post-installation data were statistically analysed for significance using simple Student’s t-test as described by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The pre-installation and post-installation data of the parameters were represented in Table 1. Perusal of the data revealed that the duration between successive AI was significantly decreased in G2 group when compared with G1 group. The finding indicated the improvement

in the post-breeding oestrus monitoring pattern among the farm personnel after the installation of the OMC, which would have motivated them to inseminate the animal in the subsequent oestrus. It is mandatory that the dairy farmers need to recognize non-pregnancy at the earliest so as to rebreed the animal at the very next cycle. Baruselli *et al.*, (2017) stated the importance of reducing the interval between two consecutive AI and attributed the same to the reduction in the interval between two subsequent calvings.

It was found that the pregnancy of the animals was checked significantly earlier in G2 group (46.7 ± 2.7 days) than G1 group (123.0 ± 18.7 days) which indicated that observance of non-return to cycle improved the alertness among the farm personnel for diagnosing pregnancy at an earlier date. It was reported that the farmers would incur a loss of around INR 300 – 400 per day due to one day increase in open period due to delay in pregnancy diagnosis (Abdullah *et al.*, 2014). Even though economic calculations were not carried out in the study, based on the previous reports it could be concluded that introduction of the OMC as a tool definitely improved the basic economic turnover of the farm.

Table 1: Breeding parameters of crossbred cattle pre- and post- installation of ‘Oestrus Monitoring Chart’

S.No	Treatment group	No. of animals (breedable stock)	Mean no. of AI/ animal	Mean duration between two successive AI (days)	Mean duration between last AI and pregnancy check-up (days)	Conception rate (%)
1	G1	12	2.0 ± 0.2	37.9 ± 11.0^b	123.0 ± 18.7^b	41.7 (5/12)
2	G2	14	2.1 ± 0.3	27.3 ± 3.2^a	46.7 ± 2.7^a	85.7 (12 /14)

^{a, b} - Values with different superscripts within a column vary significantly (P < 0.01)

It was quite interesting to observe that the conception rate was also significantly improved in the G2 group which could be attributed to the better observance on return/non-return rate that aided in early attention to the non-pregnant animals in terms of adapting a timely therapy.

By perusing the data, it could be concluded that the OMC as a management tool could contribute to i) improve the oestrus detection attitude among the farm personnel ii) ease out the recording of breeding data iii) improve the conception rate iv) reduce the inter-calving period and v) consequently improve the profitability of the farm.

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