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Study on dairy cattle breeding management practices in Puducherry, India

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Abstract
The study was carried out to assess the breeding management practices in Puducherry region of the Union Territory of Pondicherry by randomly selecting 220 dairy farmers as respondents. With respect to breeding management, all the respondents had awareness about heat signs and artificial insemination. Average number of inseminations per conception was 2.87. Length estrous cycle was 21.93 days with duration of estrus, 17.80 hours. Service period, dry period and calving interval were 3.58, 3.78 and 15.18 months respectively.

Keywords: Dry period, Puducherry, method of breeding, management, pregnancy diagnosis, service period

Introduction
Livestock production is an important source of income for the rural poor in India, About 70 per cent of the livestock is in the hands of small and marginal farmers and landless labourers who own less than 30 per cent of the land area and in this, a sizeable percentage of livestock owners are below the poverty line. Livestock rearing is particularly engaged with milk production and lends itself to small scale enterprises more effectively than other agricultural enterprises. Animal husbandry sector has a huge potential for providing gainful employment to rural women in their own households as 70 per cent of the workforce in dairying consists of women (NDDB, 2016).

Materials and Method
The Union Territory of Pondicherry has a total area of 480 sq.km comprising four geographically discontiguous regions viz. Puducherry, Karaikal, Mahe and Yanam. The region of Puducherry is administratively divided into two urban municipalities (Puducherry and Ozhukarai) and five rural communes (Ariyankuppam, Bahour, Mannadipet, Nettapakkam and Villianur). The sampling procedure followed for this study was stratified proportionate random sampling. Here, a sample size of n=220 has been determined using the formula n=Z2pqN/e2 (N-1) +z2pq (Kothari, 2009). The sample size of 220 was randomly distributed based on the population of dairy farmers in each of the communes and municipalities. The socio economic profile of the respondents was educated by means of survey using pre-tested questionnaire

Results and Discussion
Awareness about heat signs
All the dairy farmers had awareness about heat signs in communes and municipalities. This finding is line with the findings of Reddy (2013) [6] who found that all the farmers were aware of heat detection in cows and artificial insemination in Chittoor district of Andhra Pradesh.

Method of breeding
All the dairy farmers were using artificial insemination service to their cows as method of breeding in communes and municipalities. Also there was non-availability of breeding bulls and absence of natural breeding**.** These findings are in contradiction with Sandip Kumar *et al*., (2014) [7] who found that bulls were mainly used for breeding and Shweta (2017) [9] who found 57.50 per cent of dairy farmers following natural service and remaining 42.50 per cent following artificial insemination.

Average number of inseminations /conceptions
The overall average number of inseminations /conception in dairy cows ranged from 1 to 4 numbers with a mean of 2.49 without much variation in communes and municipalities. These findings are line with the findings of Sandip Kumar *et al*., (2014) [7] who found more than 60 per cent farmers provided more than two services for pregnancy and about 12 per cent farmers got their animals pregnant by one service and Reddy (2013) [6] who found on an average, 2.43 inseminations were required for each conception in dairy cattle in Andhra Pradesh.

Length of oestrous cycle (days)
The overall length of oestrous cycle in dairy cows ranged from 18 to 28 days with a mean of 21.93 days without much variation in communes and municipalities. This finding is in line with the findings of oestrus cycle length in indigenous cow as 17-24 days and cross bred 21±3 days (Sastry and Thomas, 2015) [8].

Duration of oestrus (hours)
The overall duration of oestrus in dairy cows ranged from 12 to 24 hours with a mean of 17.80 hours without much variation in communes and municipalities. This finding is in line with the findings of duration of oestrus in indigenous cow as 12-18 hours and cross bred 12-18 hours (Sastry and Thomas, 2015) [8].

Service period (in months)
The overall service period in dairy cows ranged from 3.5 to 5.0 months with a mean of 3.58 months. In rural area it ranged from 3.0 to 5.0 months and mean was 3.66 months. In urban area it ranged from 3.0 to 5.5 months and mean was 3.95 months. These findings are line with the findings of Sreedhar (2017) [10] who found that the service period in cross bred cattle of ranged from 3 to 4 months.

Dry period (in months)
The overall dry period in dairy cows ranged from 3.0 to 5.0 months with a mean of 3.78 months. This finding is in line with the findings of Ramkumar and Rao (2001) [4] and Sreedhar (2017) [10] who found that the dry period in cross bred cattle of Puducherry ranged from 3 to 4 months.

Pregnancy diagnosis
Out of 220 dairy farmers, 60.5 per cent of dairy farmers were adopting pregnancy diagnosis. In this 61.1 and 57.5 per cent was in rural and urban areas respectively. Pregnancy diagnosis in dairy cows ranged from 3.0 to 5.0 months with a mean of 3.62 months. In rural area ranged from 3.0 to 5.0 and mean was 3.6 months. In urban area ranged from 3.0 to 4.5 and mean were 3.65 months. These findings are line with the findings of Divekar (2016) [1], Shweta (2017) [9], who found that dairy farmers were practicing pregnancy diagnosis. But these findings are in contradiction with the finding of Rathore (2010) [5] who found that only 4.25 per cent cattle keepers followed pregnancy diagnosis in Rajasthan.

Calving interval (in months)
The overall calving interval in dairy cows ranged from 13.5 to 20.0 months with a mean of 15.18 months. In rural area it ranged from 13.5 to 20.0 months and mean was 15.4 months. In urban area it ranged from 13.5 to 18.0 months and mean was 14.9 months. These findings are line with the findings of Sastry *et al.*, (1993) [11] and Natchimuthu (2002) [3] who found that calving interval was less than 470 days in 67 per cent of the animals in Pondicherry.

Reproductive problems and diseases encountered
From the table (1) it could be seen that majority (54.1 per cent) of dairy farmers reported repeat breeding as a major problem. Similar problem was recorded in communes and municipalities also. The other reproductive problems encountered were metritis (13.7 per cent) and abortions (9.1 per cent).

Table 1: Reproductive problems encountered and diseases encountered

Reproductive problem and diseases encountered	Communes (180)		Municipalities (40)		Total (220)	
	n	%	n	%	n	%
Metritis	21	11.7	8	20.0	29	13.7
Repeat breeding	101	56.1	18	45.0	119	54.1
Abortions	16	8.3	4	10.0	20	9.1
No problem	42	23.3	10	25.0	52	23.1

These findings are in line with the findings of Reddy (2013) [6] who found that repeat breeding in crossbred cows was reported as a common problem for all the categories of farmers (72.63 per cent) and anoestrus to some extent in Chittoor District of Andhra Pradesh.

Conclusion
All the dairy farmers had awareness about heat signs and were practicing artificial insemination. Average number of inseminations per conception was 2.42. Length of oestrus cycle was 21.93 days and duration of oestrus was 17.80 hours. Service period, dry period and calving interval were 3.58, 3.78 and 15.18 months respectively and 60.5 per cent of dairy farmers following pregnancy diagnosis. Majority (54.1 per cent) of dairy farmers expressed repeat breeding as a major problem.

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