INCIDENCE OF INFERTILITY CONDITIONS AMONG CROSSBRED CATTLE OF CALICUT DISTRICT, KERALA

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Abstract

Details of gynaecological examination of animals presented in the infertility camps revealed that out of 516 animals examined through 44 infertility camps a total of 371(72 %) were infertility cases. Infertility cases were categorized into three types *viz.* anoestrum (62%), repeat breeding (36%) and other conditions (2%). Among anoestrus cases 75 per cent were true anoestrum, forming 46 per cent of total infertility problems. Rest of the cases (25%) were false anoestrus. Among repeat breeding cases genital tract infections, ovulatory defects, ovulatory defects with genital tract infections were 63, 15 and 22 per cent, respectively. Present study revealed that anoestrum is the major cause of infertility among crossbred cattle followed by genital tract infections and ovulatory defects.

Key words: *Crossbred cattle, infertility, incidence, anoestrum, repeat breeding*

Infertility is a major problem affecting the reproductive efficiency of crossbred cattle and sound reproductive management is the basis for profitable dairying. Intensive cross breeding programme implemented in Kerala state has converted more than 92 per cent of cattle into exotic crossbreds and subsequently achieved a major hike in milk production. However, improved genotype for milk production is antagonising reproductive performance in dairy herds and optimum fertility is dependent on better reproductive management (Lucy *et al.,* 2004).Timely changes have not occurred in the approach and management of infertility conditions having relevance to the existing field realities and husbandrysituations (Kutty and Ramachandran, 2003). The objective of the present study was to assess the incidence and nature of various infertility problems in crossbred cattle in four panchayaths of Calicut district, Kerala.

Materials and methods

The study was conducted in four panchayaths *viz.* Kuruvattur, Kadalundy, Feroke and Ramanattukara of Calicut district. Infertility camps were conducted in each of the four panchayaths at selected locations. Detailed clinico-gynaecological examination of 516 cattle (238 cows and 278 heifers) which belonged to 328 farmers and presented to 44 infertility camps were carried out.The incidence of various infertility conditions among crossbred heifers and cows were assessed based on breeding history and clinico-

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gynaecological examinations. Categorisation of various infertility conditions was done and suitable treatments were given. Those animals with apparently normal tubular tract with non-functionalovaries characterised by failure of development of follicle of prematuration size and lacking a functional/ regressing corpus luteum (CL) were classified as true anoestrus animals. The animals with functional ovaries having mature follicles or luteal structures, but the owner did not observe oestrous signs were classified under false anoestrum. Reproductive organs were examined per rectally at least twice at an interval of 10 days to diagnose nature and magnitude of anoestrus.

Results and discussion

Details of gynaecological examination of animals presented in the infertility camps of four panchayaths in Calicut district are summarized in Table 1. Among the 516 animals examined through 44 infertility camps, 238 (46%) were cows and 278 (54%) were heifers. A total of 371(72 %) were infertility cases and rest of them were brought for pregnancy diagnosis and assessment of reproductive status. The results obtained in the present study were in agreement with Iyer *et al.* (1992) and Kutty and Ramachandran (2003) who recorded infertility conditions of 72.5 and 75 per cent respectively under field conditions.

Table 1. Details of gynaecological examination of animals presented in the infertility camps of four panchayaths in Calicut district

Location of infertility camps conducted	No. of camps conducted	No. of animals examined	Type of animals		Details of cases	
			Cows (%)	Heifers (%)	Infertility cases (%)	Pregnancy diagnosis and others (%)
Kuruvattur grama panchyath	12	151	68 (45)	83 (55)	106 (70)	45 (30)
Feroke grama panchayath	10	135	61 (45)	74 (55)	96 (71)	39 (29)
Kadalundy grama panchayath	12	108	52 (48)	56 (52)	80 (74)	28 (26)
Ramanattukara grama panchayath	10	122	57 (46)	65 (54)	89 (73)	33 (27)
Total	44	516	238 (46)	278 (54)	371 (72)	145 (28)

Table 2. Infertility conditions diagnosed by clinico-gynaecological examination of cattle

Nature of infertility condition		Number of Cases (%)	Per cent of total infertility cases	Heifers (%)	Cows (%)
Anoestrum	1. True anoestrum	172 (75)	46	90(70)	82(80)
	2. False anoestrum	57 (25)	16	37(30)	20(20)
	Total	*229*	*62*	*127*	*102*
Repeat breeding	1.Genital tract infections	84 (63)	23	37(64)	47(62)
	2. Ovulatory defects	20 (15)	5	8 (14)	12 (16)
	3. Both together	30 (22)	8	13 (22)	17 (22)
	Total	134	36	58	76
Others	Congenital/ acquired abnormalities of the genital tract	8	2	3	5
Grand total	Infertility total	371	100	188	183

Infertility conditions diagnosed by clinico-gynaecological examination of cattle are presented in Table 2 and Fig. 1. Infertility cases were further categorised into mainly three types such as anoestrum (62%), not showed oestrus signs at the expected time period, repeat breeding (36%), repeated oestrus signs even after more than three inseminations and other conditions (2%).

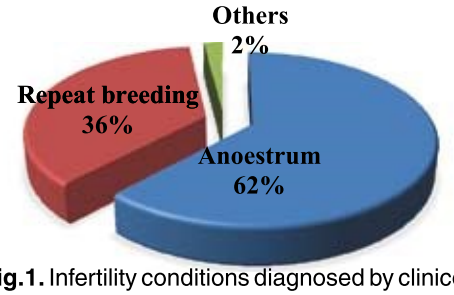

Fig.1. Infertility conditions diagnosed by clinico-gynaecological examination of heifers and cows in four panchayaths of Calicut district

Among anoestrus cases 75 per cent were true anoestrum characterised by non-functional (smooth) ovaries, forming 46 per cent of total infertility problems. Rest of the cases (25%) were false anoestrus, wherein the ovaries were functional with mature follicles or luteal structures, but the owner did not observe oestrus signs. Etiological factors involved in repeat breeding cases were attributed to either genital tract infections (63%) or ovulatory defects (15%) while both the conditions together contributed in 22 per cent of the cases. Congenital/ acquired abnormalities of the reproductive tract were the causative factor for two per cent of infertility problems.

Similar observations were made by Kutty and Ramachandran (2003) and Pandit (2004). Infertility is primarily manifested in the form of anoestrum and repeat breeding syndrome which are the most common and very puzzling problems confronted by the veterinarians and dairy men throughout the world. The anatomical, infectious, nutritional and hormonal insufficiency are the most common causes of anoestrus and repeat breeding, Arthur *et al.* (1996) and Hafez (2000).

Incidence, Nature and Magnitude of Anoestrus in Heifers and Cows

Incidence, nature and magnitude of anoestrus in heifers and cows and sub categories of anoestrus encountered based on the stage of occurrence and causative factors are shown in Table 3 and Fig. 2. Among 229 total anoestrous heifers and cows examined, 75 per cent cases were true anoestrum and the remaining 25 per cent cases were false anoestrum. Under true anoestrum, the incidence of pre service (before doing any service), post service (after doing service, but were found to be non pregnant upon examination) and genital tract infection cases were 58, 9 and 8 per cent respectively. Under false anoestrum, nine per cent were suboestrum cases, where there were palpable evidence of regular cycling, but was not detected by the owner due to the absence of visible external signs. Two per cent animals even though there were regular signs of oestrus, owner failed to identify it and did not

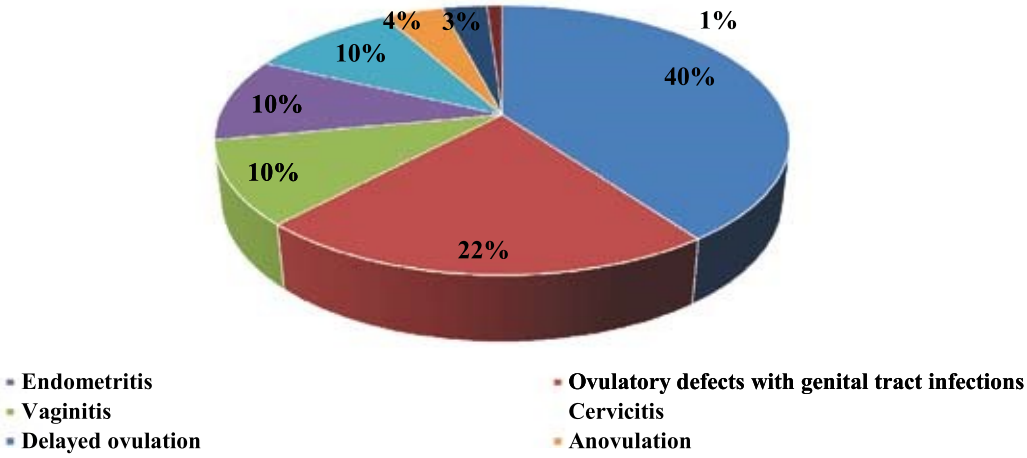

Fig.2. Incidence, nature and magnitude of anoestrus in crossbred cows and heifers

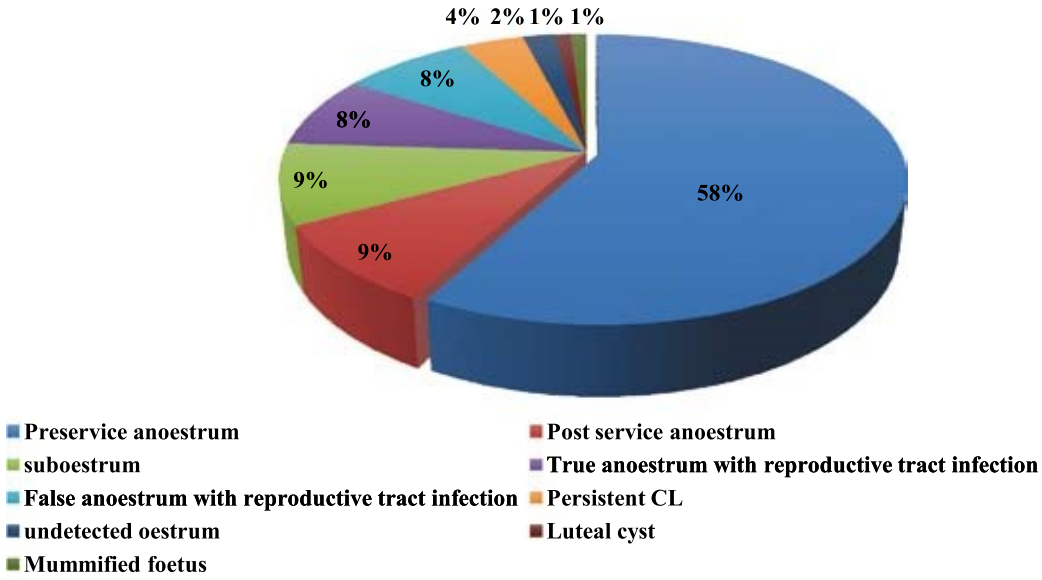

Fig.3. Incidence and nature of repeat breeding in crossbred cows and heifers

take the animals for breeding. Four per cent of the cases anoestrum was accompanied by persistent corpus luteum and one per cent of animals were affected with luteal cyst in the ovary. Genital tract infections were noticed in eight per cent of animals while in two cows mummified foetus could be detected.

The results obtained in the present study (Table 3) is in close agreement with the report of Iyer *et a.l* (1992), Yadav *et al.* (2004) and Kumar *et al*. (2014). High proportion of pre-service anoestrum and suboestrum cases are indicative of overall deficiency of nutrients, while post service and post-partum anoestrum are reflections of energy deficiency and/or poor service and obstetrical management, Rao and Naidu (2000). False anoestrum with persistent CL is mainly caused by reproductive tract infections, which arise often consequent to poor and unscientific service management, Arthur *et al.* (1996).

Incidence, Nature and Magnitude of Repeat Breeding in Heifers and Cows

Sub divisions of repeat breeding conditions encountered based on the manifestation and history are shown in Table

Table 3. Incidence, nature and magnitude of anoestrus in heifers and cows

Nature of anoestrum	Sub division	Heifers (%)	Cows (%)	Number (%) of total anoestrum cases
True anoestrum	Pre service	69 (55)	64 (62)	133 (58)
	Post service	13 (10)	8 (8)	21 (9)
	With genital tract infection	8 (6)	10 (10)	18 (8)
	Total	*90(71)*	*82(80)*	*172 (75)*
False anoestrum	Undetected oestrum	3 (2)	1(1)	4 (2)
	Sub oestrum	19 (15)	2 (2)	21 (9)
	Luteal cyst	0	2 (2)	2 (1)
	Persistent C.L.	4 (3)	5 (5)	9 (4)
	Mummified foetus	0	2 (2)	2 (1)
	With genital tract infection	11(9)	8 (8)	19 (8)
	Total	37(29)	20(20)	57(25)
Anoestrum total		127	102	229

Table 4. Incidence and nature of repeat breeding in crossbred heifers and cows

Nature of repeat breeding	Sub divisions	Heifers (%)	Cows (%)	Number (%) of total repeat breeding cases (%)
Genital tract infection (GTI)	Vaginitis	6 (10)	7 (9)	13 (10)
	Cervicitis	9 (16)	5 (7)	14 (10)
	Endometritis	21 (37)	32 (42)	53 (40)
	Salpingitis	1 (2)	3 (4)	4 (3)
	Total	37(65)	47(62)	84 (63)
Ovulatory defects	Delayed ovulation	6 (10)	7 (9)	13 (10)
	Anovulation	2 (3)	3 (4)	5 (4)
	Follicular cyst	0	2 (3)	2 (1)
	Total	8(13)	12(16)	20 (15)
Both together	Ovulatory defects with genital tract infection	13 (22)	17 (22)	30 (22)
Total		58	76	134

4 and Fig. 3. The number of cases presented with genital tract infections, ovulatory defects and both together were 63, 15 and 22 per cent respectively. Out of 84 cases with genital tract infection, 40 per cent were diagnosed as endometritis, vaginitis and cervicitis were 10 per cent each. In three per cent cases, salpinx were thickened either unilaterally or bilaterally and with or without ovaro-bursal adhesions suggestive of salpingitis. Out of 20 animals diagnosed to have ovulatory defects,10 per cent cases were delayed ovulations where in the heat signs were prolonged beyond 48 hours. Four percent cases were diagnosed as anovulation characterised by absence of functional luteal structures and the remaining one per cent cases were diagnosed as follicular cyst characterised by signs of nymphomania and changes in the genital tract. 22 per cent cases of ovulatory defects were also associated with genital tract infections.

The results obtained in the present study (Table 4) is in close agreement with the report of Iyer *et al.* (1992); Yadav *et al.* (2004) and Kutty and Ramachandran (2003). Bovine repeat breeding was a major cause of reduced reproductive efficiency of dairy herds. Depending upon the management and environmental conditions such as deficiencies in hygiene at calving, dystocia, inadequate feeding of dry cows and infectious diseases, the average incidence of repeat breeding may go up to 37.5 per cent (Drillich *et al.*, 2005). Ovulatory defects contributing to repeat breeding can be attributed to micro-nutrient deficiencies and resultant hormonal imbalances, Singh *et al.* (2004). Present study revealed that anoestrum is the major cause of infertility among crossbred cattle followed by genital tract infections and ovulatory defects.

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