

## RELATIVE INCIDENCE OF REPRODUCTIVE DISORDERS AMONG VARIOUS GRADES OF CROSSBRED CATTLE AT DIFFERENT LOCATIONS IN NWFP

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### ABSTRACT

Data on clinical records of 3760 crossbred cows at various locations in NWFP revealed 379 (10.08%) cases of reproductive abnormalities. Cervicitis had the highest incidence of 45.12%, followed by abnormalities of uterus (38.26%), vagina (10.29%) and ovary (6.33%). The frequencies of endometritis and vaginitis were 28.69 and 4.76%, respectively. Ovarian cysts were found in 6.33% of the cases. The incidence of pyometra, vaginal tumors, pyometritis and metritis were 6.53, 1.83, 5.56 and 1.58%, respectively. Genetic group, season and locality had significant effect ( $p < 0.01$ ) on incidence of various reproductive abnormalities. Cows possessing 75% Holstein Friesian (HF) inheritance were the most susceptible to reproductive disorders. Summer was the peak (35.88%) season and spring the trough (15.57%) season of incidence. The highest incidence of reproductive disorders was found in Peshawar (34.31%), followed by cows in Bannu (26.13%), Mardan (13.18%), Risalpur (8.97%), Nowshera (6.58%), Kohat (6.33%) and Dera Ismail Khan (4.23%). It was concluded that reproductive disorders were more prevalent under stressful environment, within or around thickly populated areas, during hot summer months and among crossbred cows possessing HF inheritance above 50%. It was recommended that around 50% HF genes should be maintained in crossbred cows.

**Keywords:** Reproductive disorders, incidence, crossbred cattle.

### INTRODUCTION

Reproductive performance of a dairy cow is considered ideal when she produces a healthy calf each year. Late sexual maturity and prolonged calving interval would result in severe economic losses through reduced life time productivity, poor intensity of selection and large number of culls (White and Nichols, 1965). A poorly managed herd of 100 cows with a calving interval of over 13 months would increase expenditures equivalent to Rs.30,000/- to Rs.90,000/- per year (Speicher and Meadows, 1967).

Reproductive disorders include reduced conception rate (Kidder *et al.*, 1952), high frequency of follicular atresia, hormonal disturbances (Cupps *et al.*, 1970), postpartum anestrus (Jainudeen and Sharifuddin; 1987), unobserved estrus (Albrechtsen, 1971), vaginitis and lacerations. Bacterial, viral or protozoal infections introduced at the time of service, abortion, handling of abnormal calving and vaginal treatment could also result in reproductive disorders.

Cross breeding in cattle had been extensively followed over the last few years in NWFP. Presently, a

purebred animal could hardly be noticed and a process of upgrading is under way rather than crossbreeding. This has resulted in various grades of cows with variable exotic inheritance. It has been reported that increased level of exotic inheritance adversely affects the adaptability of crossbred animals in hot climates (Syed *et al.*, 1996). This paper reports the relative incidence of various reproductive disorders among various grades of crossbred cows in NWFP.

### MATERIALS AND METHODS

Clinical records on reproductive abnormalities of 3760 crossbred cows were studied among institutional, public and privately owned herds in districts Peshawar, Nowshera, D.I. Khan, Bannu, Kohat and Mardan of NWFP. Incidence of different disorders of reproductive tract recorded at artificial insemination centers were also included. Level of exotic inheritance in the affected cows was extracted from breeding records. Season of onset of disorder was also recorded. Cows possessing 50, 62.5, 75 and 87.5% Holstein Friesian (HF) inheritance were designated groups 1 through 4.

Distribution of reproductive disorders by genetic group, season and location of incidence was worked out. Months of the year were distributed in to four seasons as spring ( March, April), summer (May to August), fall (September, October) and winter (November to February). The effect of genetic group, season and location on incidence of abnormalities was evaluated, using techniques of "Categorical data analysis" (Fisher, 1970).

## RESULTS AND DISCUSSION

Overall incidence of reproductive disorders was 10.08 % among the crossbred grades irrespective of genetic constitution. Incidence of cervical (4.55%) and uterine abnormalities (3.85%) was significantly ( $p < 0.01$ ) higher than vaginal (1.04%) and ovarian abnormalities (0.64%; Table 1). Frequency of various reproductive abnormalities within the affected group revealed 45.12% cervicitis, 38.26% uterine (28.69% endometritis, 6.53% pyometra, 5.56% pyometritis, and 1.58% metritis), 10.29% vaginal (4.76% vaginitis, and 1.83% vaginal tumors) and 6.33% ovarian cysts. Honnappa and Narayana (1986) reported higher incidence of metritis and ovarian cyst (8.1, and 5.7%, respectively) and lower incidence of cervicitis (2.7%) in Indian cattle. Cervix was found more vulnerable to infections.

**Table 1: Overall frequency of reproductive disorders (%) in various organs of crossbred cows**

Organ	Number of affected	Overall frequency (%)	Frequency among affected (%)
Vagina	39	1.04 <sub>b</sub>	10.29
Cervix	171	4.55 <sub>a</sub>	45.12
Uterus	145	3.85 <sub>a</sub>	38.26
Ovary	24	0.64 <sub>b</sub>	6.33
Total	379	10.08	100

Means with different subscripts across the rows are significantly different at  $P < 0.01$ .

Higher incidence of reproductive disorders (60.1%) was observed in animals possessing 75% HF inheritance. Crossbred grades with 50% HF inheritance were least affected (8.7%; Table 2). An increasing trend was observed in reproductive disorders when exotic inheritance exceeded 50%. Incidence of reproductive abnormalities decreased when exotic gene composition exceeded the limit of 75%. This could however, be due to small number of cows available in this group. The lower incidence of reproductive abnormalities in grades possessing 50% HF inheritance suggests that these cows were better adapted to the prevailing environmental conditions with respect to reproductive health.

Significantly higher ( $p < 0.01$ ) incidence of reproductive abnormalities in crossbred cows was encountered in summer (35.88%) than in fall (25.62%), winter (22.93%) and spring seasons (15.57%; Table 3). Differences in incidence of reproductive abnormalities between fall and winter, winter and spring, and fall and spring were significant. The higher incidence of reproductive abnormalities in summer could be attributed to poor adaptability of the crossbred cows to hot climate of the area and more adverse conditions during summer season than in any other season.

Significantly higher ( $p < 0.01$ ) incidence of reproductive abnormalities in crossbred cows was recorded in Peshawar (34.31%) and lower in Dera Ismail Khan (4.23%; Table 4). Most of the remaining contrasts were also significant ( $p < 0.01$ ). These findings suggest an increasing trend in the incidence of reproductive abnormalities among crossbred grades kept in densely populated areas of NWFP.

**Table 2: Overall frequency of various reproductive abnormalities in various genetic groups of crossbred cows**

Abnormality	HF inheritance(%)				Overall frequency (%)
	50.0	62.5	75.0	87.5	
Cervicitis	3.69	4.75	25.86	10.82	45.12 <sub>a</sub>
Endometritis	1.85	6.27	17.41	3.16	28.69 <sub>b</sub>
Metritis	0.00	0.26	1.32	0.00	1.58 <sub>e</sub>
Pyometra	0.52	0.26	4.69	1.06	6.53 <sub>c</sub>
Pyometritis	0.53	0.27	4.49	0.27	5.56 <sub>c</sub>
Ovarian cyst	0.79	0.79	3.69	1.06	6.33 <sub>c</sub>
Vaginal tumors	0.26	0.52	0.79	0.26	1.83 <sub>e</sub>
Vaginitis	1.06	1.32	1.85	0.53	4.76 <sub>cd</sub>
Group Total	8.70 <sub>d</sub>	14.44 <sub>c</sub>	60.1 <sub>a</sub>	17.16 <sub>b</sub>	100

Means with different subscripts across the columns or rows in each cell are significantly different at  $P < 0.01$ .

**Table 3: Incidence of various reproductive abnormalities (%) in crossbred cows during different seasons of the year**

Abnormality	Winter	Spring	Summer	Fall
Cervicitis	10.82	7.39	16.09	10.82
Endometritis	5.27	4.49	11.34	7.39
Metritis	0.53	0.00	0.26	0.79
Ovarian cyst	1.31	1.05	2.38	1.59
Pyometra	1.84	0.79	2.11	1.59
Pyometritis	0.53	0.53	0.53	0.27
Vaginal tumors	0.52	0.00	2.11	0.26
Vaginitis	2.11	1.32	1.06	2.91
Total	22.93 <sub>c</sub>	15.57 <sub>d</sub>	35.88 <sub>a</sub>	25.62 <sub>b</sub>

Means with different subscripts are significantly different at  $P < 0.01$ .

**Table 4. Incidence of various reproductive abnormalities (%) among crossbred cows at different locations in NWFP**

Abnormality	Bannu	D.I. Khan	Kohat	Mardan	Nowshera	Peshawar	Risalpur
Cervicitis	8.45	1.85	2.90	10.29	1.58	18.47	1.58
Endometritis	10.55	1.06	1.58	1.32	2.64	9.76	1.58
Metritis	1.58	0.00	0.00	0.00	0.00	0.00	0.00
Ovarian cyst	1.06	0.00	0.79	0.52	0.26	2.38	1.32
Pyometra	0.00	0.79	0.00	0.00	0.79	2.11	2.64
Pyometritis	1.06	0.00	0.27	0.53	0.00	0.00	0.00
Vaginal tumor	0.79	0.00	0.26	0.26	0.26	0.53	0.79
vaginitis	2.64	0.53	0.53	0.26	1.32	1.06	1.06
Total	26.13 <sub>b</sub>	4.23 <sub>ed</sub>	6.33 <sub>d</sub>	13.18 <sub>c</sub>	6.85 <sub>d</sub>	34.31 <sub>a</sub>	8.97 <sub>cd</sub>

Means with different subscripts are significantly different at  $P < 0.01$ .

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