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Incidence of Repeat Breeding in Cattle and Buffaloes of Pakistan

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Abstract
Repeat breeding (RB), is one of the costly problems for the dairy producers, which could be defined as a failure of cow to conceive from three or more than 3 consecutively spaced services in absence of any detectable abnormality. To determine the incidence of RB in cattle and buffaloes, data about totally 32338 dairy animals of which 12149 cows and 20189 buffaloes in 82 villages were collected. The overall incidence of repeat breeding in 82 villages of Pakistan was 8.29% which are in 8.9% (1799/21189) in buffalo and 7.27% (883/12149) in cattle. The incidence was higher in buffaloes that are mostly because of their silent heat and docile nature which makes it difficult to detect it at the right time. The incidence of RB varies with breed, age, agro-climatic and managemental conditions. Incidence of RB had found higher in older and higher milk producing dairy animals. In conclusion the results of our study show that the RBS was higher in buffaloes than in cattle and reduce reproductive performance of buffaloes and cattle.
Keywords: Incidence, Repeat breeding, Agro-climate, Silent heat, Cattle & Buffaloes.

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Introduction

Repeat breeding is an important reproductive disorder which causes great economic losses in farm animals. Repeat breeding is one of the major problems affecting reproductive efficiency. The repeat breeder syndrome is a major source of economic waste and poor reproductive performance in dairy herds [1, 2]. Fertility over the past few decades is of serious concern in the dairy industry [3, 4]. The buffalo (*Bubalus bubalis*) is given the name of "black gold of South Asia" where more than 95% of the buffalo milk is produced [5]. It is also recognized the second most significant milk producing specie of the world [6]. Anestrus due to ovarian dysfunction, silent ovulation and repeat breeding are three major reproductive disorders in buffaloes, causes of repeat breeding are usually not clear, but most likely include management, environmental and animal factors [7]. Repeat breeding syndrome is a condition in which animal have a regular estrus cycle and appear normal on superficial clinical examination but fail to become pregnant following three or more breeding [8]. Repeat breeding syndrome will increase the calving interval in a herd. The value of pregnancy can depend on many factors such as future expected production, age of the cow, current days in milk (DIM), stage of pregnancy and price of milk etc. Losses are in form of less lactation per animal and less number of new born obtained from an animal in her life. About 10 – 30 % lactations may be affected by infertility and reproductive disorder [2]. And 3-6% of the herd is annually culled due to repeat breeding in Pakistan [1, 2]. It will become more profitable for a farmer to cull the repeat breeder animal and replace with a heifer. The aim of the current study was to scrutinize the incidence of RB syndrome both in cattle and buffaloes, based on data collected through active surveillance from the farmers in different areas of Pakistan.

Materials and methods

Animals and locations

A data of total 32338 animals including 20189 buffaloes and 12149 cattle was collected randomly from 82 villages of 31 districts of three provinces (Punjab, Baluchistan and KPK) of Pakistan and two villages of AJK, in which 70 villages from 24 districts of province Punjab.

Characteristic of repeat breeders

A cow was considered as a repeat breeder if she have at least three AI and having no successive calving or have more than three AI irrespective of the following calving or not. Moreover, in buffaloes a repeat breeding animal has normal or nearly normal oestrus cycles as well as reproductive tract and though has been bred three or more times by fertile bull semen or natural bull mating but had failed to conceive otherwise, animal conceived within 3 inseminations were considered as normal fertility [9]. The animals were kept under field conditions no data was collected from any farm.

Table I: Total animals suffering from repeat breeding syndrome in Pakistan.

		Buffalo			Cattle				
Province/area	**T. Villages**	**Heifer**	**Adult**	**Total**	**Heifer**	**Adult**	**Total**	**G. Total**	**%**
Punjab	70	35	1654	1689/18800	45	718	763/10140	2452/28940	8.5
KPK*	8	8	70	78/989	10	66	76/1296	154/2285	6.74
Baluchistan	2	-	-	160	-	26	465	26/625	4.16
AJK**	2	2	30	32/240		18	18/248	50/488	10.24
Pakistan	**82**	**45**	**1754**	**1799/20189**	**55**	**828**	**883/12149**	**2682/32338**	**8.29**

* Khyber Pakhtunkhwa, **Azad Jammu and Kashmir

Data collection and study duration

The study was conducted in June – August 2012. Data was collected from farmers of 82 villages randomly selected in 31 districts of three provinces in Pakistan and AJK through a predesigned questionnaire designed by the Department of Epidemiology and Public Health, University of Veterinary and Animal Sciences Lahore.

Statistical analysis

Data analysis was performed on Microsoft Excel (2010) to find the descriptive statistic of the collected data and the data was presented in bar charts and tables.

Results

The overall incidence of repeat breeding in 82 villages of Pakistan was 8.29% which are 8.9% (1799/21189) in buffalo and 7.27% (883/12149) in cattle. The prevalence of repeat breeding in 70 villages of 24 districts of Punjab was 8.5% (8.94% in buffalo and 7.53% in cattle) (table-1). The incidence was higher in district Pakpatan (23.28%). And the lowest incidence was recorded in district Okara (1.57%). The prevelance in 8 villages of 6 districts of KPK was 6.47% (7.89% in buffalo and 5.87% in cattle), the incidence was higher in district Sadobi (17.09%) and lowest was in district Kalat (0.92%). The prevelence recorded in 2 village of district Musakhel province Balochistan was 4.61% (0% in buffalo and 5.59% in cattle) and the prevalence was recorded in two villages of 2 different districts of AJK was 10.24% (13.34% in buffalo and 7.26% in cattle), the incidence was higher in Muzaffarabad i.e. 12.77% and lower in Azad Kashmir i.e. 8.04%.

Discussion

In the present study, the reproductive disorders were the major problem associated in the field conditions. Among all the reproductive disorders repeat breeding showed the highest prevalence. Based on clinical data, Khan et al. [10] reported only 6.36% prevalence of reproductive disorders in buffaloes. This difference may be due to different methods of data collection because their findings were based on clinical data, while the results of the present study were computed on the basis of field surveillance. The maximum occurrence of repeat breeding at second lactation may be due to the fact that chances of dystocia are usually high in heifers (although this was not confirmed in this study) and mostly the first delivery of animal is manipulated by the farmers or veterinarians. In this way, chances of induction of infections in uterus are high at that time, which can lead to sub-clinical infection of uterus. Similarly, malpractices adopted by the farmers like inserting the tail of animal in the vagina for milk let down may be one of the factors which lead to uterine infections and ultimately repeat breeding. After reaching the maximum value in 2nd lactation, the prevalence of repeat breeding decreased with increase in the parity. Causes of repeat breeding have been attributed to factors which are genetic, nutritional, hormonal, infection or managemental causes [11]. Repeat breeding can also be due to mineral deficiency, as discussed by Ceylan et al. [12] that a repeat breeder dairy cow had lower levels of serum Zn, Cu, P and inorganic I as compared to normal animals. High incidence rate of RB in Pakistan may be the hot climatic conditions as in previous studies it has reported that cows under heat stress have reduced duration and intensity of estrus, altered follicular development and impaired embryonic development [13]. While other than environmental stress reproductive tract infections also play a vital role as it was reported that an increased incidence of repeat breeding may be due to subclinical endometritis which decreases reproductive performance by it negative impact on service conception and pregnancy rates in cows [14]. Repeat breeding can also be resulting in errors in timing of insemination in relation to the onset of standing estrus, or insemination of cows not in estrus. While other potential factors mentioned includes quality of semen and insemination technique as there is lack of expertise among farmers in detecting the animal in heat at right time as also reported by Hallap et al. [15] and Morrell J.M. [16]. Our findings were also in agreement with the studies of [17, 18], they reported the incidence of repeat breeding ≥ 10 % in Swedish dairy cow population. Consequently, in the future, prevention of the reproductive disorders i.e. as repeat breeding

will be required for the reproductive efficiency and also for animal safety [19].

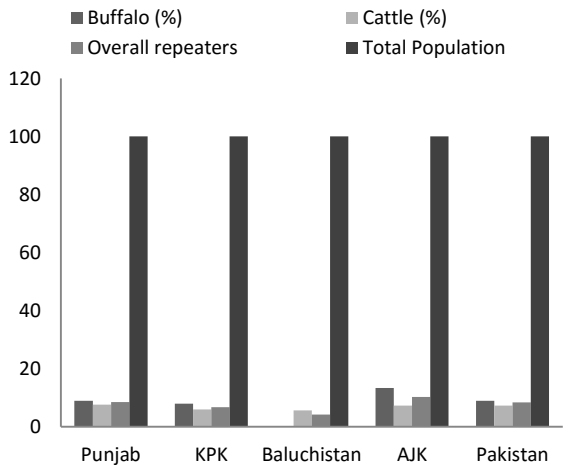

Figure 1: The incidence (%) of repeat breeding in Pakistan.

Conclusions

In conclusion the present study shows that RB in buffaloes and cows is a multi-factorial problem involving reproductive disorders and its incidence is high in buffaloes that is needed to be controlled in future to enhance milk and beef production in Pakistan

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