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Constraints perceived by dairy farmers in biosecurity practices

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Abstract
The present was conducted in purposively selected Jaipur district of Rajasthan to find out the constraints perceived by dairy farmers in biosecurity practices. A total of 120 dairy farmers were selected as respondents from randomly selected four tehsils of the districts. The data were collected through structured interview schedule and analysed through different statistical tools. Major constraints recorded were lack of training on biosecurity practices (45.83%), lack of or inadequacy of public policy on biosecurity (44.16%), biosecurity measures are costly (44.16%), inadequate knowledge of diseases and their control (36.66%), questionable or unproven efficacy of biosecurity (34.16%), expensive laboratory charges (34.16%) and lack of veterinary influence or interest in promotion of biosecurity (34.16%).

Keywords: Biosecurity, constraints, dairy, laboratory

1. Introduction
Dairying is one of the most promising allied sectors of the agriculture in India with annual growth rate of 6.50 per cent. It is the single largest contributor of agricultural sector to India's GDP, contributing about 24.8 per cent to GDP from agriculture. India is blessed with mega livestock diversity with largest livestock population (535.78 million) consisting of about 192.49 million cattle and 109.85 million buffaloes (Anonymous, 2019) [1]. Since, the growth rate of the dairy industry in India is 6.5%, which is nearly double the growth rate of the agriculture sector (2.7%), it is very important to prevent disease outbreaks on dairy farms as these can cause substantial losses to any farm in terms of farm profitability as well as long term effects on the health of an animal. There are many kinds of bacterial, viral and fungal diseases that can be spread in a farm through contaminated environment, water and feed as well as through infected visitors, stray animals or birds (Singh *et al.*, 2020) [9]. The critical importance of animal health-related biosecurity is being increasingly recognised at the farm, regional, national and international levels. Indeed, governments, veterinarians, the farming industry, the media and the general public are becoming more involved in issues of food security and safety and the associated areas of zoonotic diseases and animal welfare (Gunn *et al.*, 2008) [3].

In modern veterinary medicine, disease prevention at herd level has become increasingly important in replacing individual animal medicine (Lin *et al.*, 2003 and Derks *et al.*, 2013) [6, 2]. This shift from treating individuals towards prevention involves the implementation of biosecurity, which includes all measures preventing pathogens from entering a herd and reducing the spread of pathogens within a herd (Villarroel *et al.*, 2007 and Laanen *et al.*, 2013) [11, 4]. The implementation of biosecurity measures reduces disease spread and is therefore part of the measures frequently proposed in the control of several infectious diseases.

The primary tools of biosecurity are exclusion, eradication and control, supported by expert system management, practical protocols, and the rapid and efficient securing and sharing of vital information. Biosecurity is therefore the sum of risk management practices in defence against biological threats (Gunn *et al.*, 2008) [3].

Biosecurity practices for producers include: improving animal health and welfare, keeping out new diseases, cutting the cost of disease prevention and treatment, reducing the use of medication, such as antibiotics, with an associated reduction in the risk of emergence of resistant pathogens, producing safe, wholesome, and high-quality products, increasing consumer and buyer confidence, protecting human health, minimizing the potential for farm income losses, enhancing the value of the herd and maintaining and accessing new markets for

genetics and all these targets can be achieved by introducing simple core control measures, such as control of infectious diseases, control of inputs, use of a suitable vaccination/medication programme, efficient hygiene and sanitation procedures, control of rodents, insects and wild birds, control of vehicular and human traffic, control of equipment movement, use of a suitable sampling and testing program and good practices in the value chain (Sedai, 2014) [8].

2. Material and Methods

The present study was conducted purposively in Jaipur district of Rajasthan. Out of 16 tehsils, four tehsils *viz*. Amber, Chomu, Kotputli and Phulera were selected purposively on the basis of highest livestock population. In the next stage of sampling, five villages were selected randomly from each selected tehsils. Thus, total twenty villages were selected for the study. From each village, 6 dairy farmers having at least 15 milch animals were selected randomly. Thus a total of 120 respondents were selected for the study. The data were collected through structured interview schedule from the respondents. The identified constraints were measured on a four point continuum *viz*. most serious constraint, serious constraint, less serious constraint and not a constraint respectively. The Statistical measures such as percentage and frequency were used.

3. Results and Discussion

3.1 Constraints perceived by dairy farmer in biosecurity practices

Table 1 indicates that Lack of training on biosecurity practices (45.83%), lack of or inadequacy of public policy on biosecurity (44.16%), biosecurity measures are costly (44.16%), inadequate knowledge of diseases and their control (36.66%), questionable or unproven efficacy of biosecurity (34.16%), expensive laboratory charges (34.16%) and lack of veterinary influence or interest in promotion of biosecurity (34.16%) were perceived as 'most serious constraint' by the dairy farmers.

Among the 'serious constraint' were geographical and climatic situations (36.66%), inadequate monitoring by veterinary extension workers (35.83%), lack of knowledge on prophylactic treatment of diseases (34.16%), biosecurity measures are time consuming (34.16%) and non-availability of adequately trained staff (31.66%). The above finding is in corroboration with the earlier findings of Gunn *et al*. (2008), Malik *et al*. (2017), Lestrai *et al*. (2018) and Singh *et al*. (2018b) [3, 7, 5, 10].

Lack of proper knowledge of sanitation, hygiene and housing of dairy animals was perceived as 'less serious constraint' by 33.33 per cent respondents, whereas, lack of adequate space for separation of units/facilities and lack of capital were perceived as 'not a constraint' by 47.50 and 40.00 per cent dairy farmers, respectively.

Table 1: Constraints perceived by dairy farmers in biosecurity practices (n=120)

S. No.	Constraints	MSC		SC		LSC		NC	
		f	%	*f*	%	*f*	%	*f*	%
1.	Questionable or unproven efficacy of biosecurity	41	34.16	32	26.66	19	15.83	28	23.33
2.	Lack of or inadequacy of public policy on biosecurity	53	44.16	24	20.00	21	17.50	22	18.33
3.	Lack of veterinary influence or interest in promotion of biosecurity	41	34.16	38	31.66	27	22.56	14	11.66
4.	Lack of proper knowledge of sanitation, hygiene and housing of dairy animals	22	18.33	30	25.00	40	33.33	28	23.33
5.	Inadequate knowledge of diseases and their control	44	36.66	34	28.33	23	19.16	19	15.83
6.	Lack of knowledge on prophylactic treatment of diseases	37	30.83	41	34.16	34	28.33	18	15.00
7.	Lack of adequate space for separation of units/facilities	10	8.33	22	18.33	31	25.83	57	47.50
8.	Lack of training on biosecurity practices	55	45.83	29	24.16	13	10.83	23	19.16
9.	Inadequate monitoring by veterinary extension workers	34	28.33	43	35.83	27	22.50	16	13.33
10.	Lack of capital	15	12.50	38	31.66	19	15.83	48	40.00
11.	Expensive laboratory charges	41	34.16	32	26.66	19	15.84	28	23.33
12.	Biosecurity measures are costly	53	44.16	24	20.00	21	17.50	22	18.34
13.	Biosecurity measures are time consuming	38	31.66	41	34.16	14	11.66	27	22.50
14.	Non-availability of adequately trained staff	31	25.83	38	31.66	28	23.33	23	19.16
15.	Geographical and climatic situations	34	28.33	44	36.66	23	19.16	19	15.84

f - Frequency, % - Per cent, **MSC**- Most Serious Constraint, **SC**- Serious Constraint, **LSC**- Less Serious Constraint, **NC**- Not a Constraint

4. Conclusion

The present study revealed that major constraints perceived by the dairy farmers in biosecurity practices were lack of training on biosecurity practices, inadequate public policies on biosecurity, high cost of biosecurity measures and expensive laboratory charges, questionable efficacy of biosecurity and lack of veterinary influence in promotion of biosecurity. Appropriate actions should be taken by the concerned authorities to mitigate these constraints.

5. Acknowledgements

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