Role of Artificial Insemination in Enhancing the Share of Improved Breed Livestock Population in West Bengal: Problems and Mitigation

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ABSTRACT *To enhance the share of improved breed livestock population artificial insemination (AI) is very important. The process involves taking semen collection from an improved bull and depositing it in a cow. Frozen Semen Technology (FST) is the only technology that can be used uniformly down to the grass root level particularly in the rural areas of West Bengal which can augment the share of cross-bred cattle and buffaloes. During the last decades the government of West Bengal has taken so many initiatives but still the state never reached the goal due to lack of adequate infrastructure, deficiency of skilled manpower etc. The basic objective of the study is to find out the role of artificial insemination to enhance the share of improved breed livestock population in West Bengal and explore the possibilities to minimize the constraints in this respect. To fulfill the objective of the study necessary information and data have been collected from various authentic sources and the primary data have been generated by using selective questionnaire schedules by purposive random sampling.*

Keywords: *Livestock, Insemination, Breed, Veterinary, Questionnaire*

Introduction

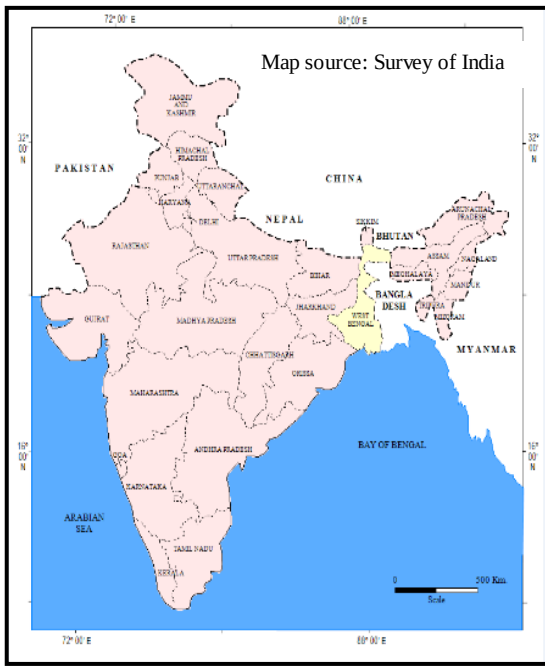
In West Bengal most of the households in the remote rural areas already have some livestocks i.e. one or two cows, buffalos, goats, sheeps, pigs, poultry birds, etc which are indegenious in nature. Production and reproduction capacities of livestock animals are very much related to each other. Artificial Insemination is very useful and important in West Bengal because about 80-90% livestock populatio are indigenous in nature which are comparatively low productive. To enhance the share of improved livestock population artificial insemination (AI) is very important. The process involves taking semen collection from an improved bull and depositing it in a cow. Artificial insemination (AI) makes cross-breeding easier than natural breeding and enhances the rate of conception. By natural breeding, bulls typically breed about 50 to 60 cows per breeding season. Where artificial insemination (AI) makes the number of cows exposed to top bulls virtually in limitless. The biggest advantage of AI is that, superior sires are made available by a few selective breeding operations because semen can be stored and shipped over great distances and semen can be collected of old, heavy, injured elite bull. The main aim of artificial insemination is the genetic upgradation of the livestock population and the successes of pregnancy are higher than the natural breeding. A wider variety of genes are available to breeders through artificial insemination. However, specialized knowledge is very important for artificial insemination (AI). Hessarghatta, Karnataka, is a premier institute of India producing frozen semen of indigenous, exotic cross-bred cattle and Murrah buffalo bull for use in artificial insemination (AI). The institute also provides training in frozen semen technology (FST) to technical officers of the state governments and acts as a centre for testing the indigenously manufactured frozen semen and A.I. equipments. During the year 2010-11 this institute produced 12.43 lakh doses of frozen semen for artificial insemination. Singh and Kherde (1997) identified different constraints of artificial insemination like long-distance location of artificial insemination centre, poor knowledge etc. Most of the respondents had their own arrangements through which they got their bulls for breeding as remarked by Bhat and Taneja (1998). Patel and Halyal (1968) viewed that, in many cases farmers are less interested to adopt artificial insemination (AI) due to lack of proper guidance, misbelieves, backwardness etc.

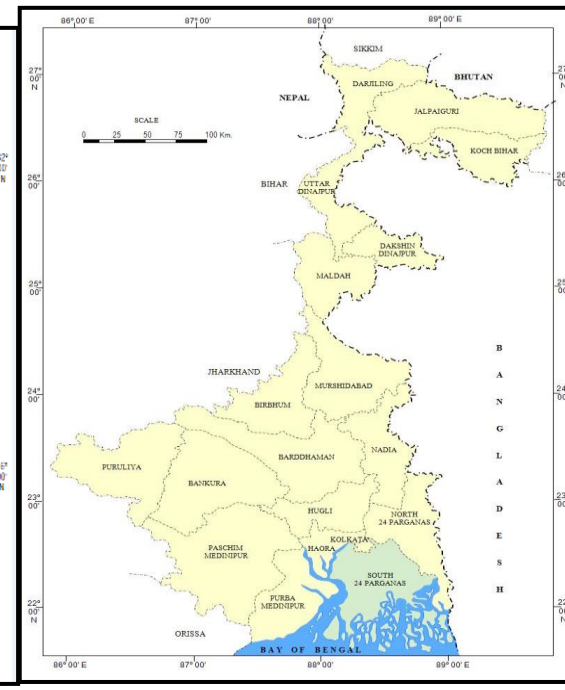
Data Source and Methodologies

After an in-depth review of the existing literatures related to the study, necessary information and data have been collected from various authentic sources like Livestock Census, District Veterinary Hospital, Block Level Animal Health Centre, District Gazetteers, Gram Panchayat, Panchayat Samati, and Block Development Offices etc. to fulfill the objectives of the study. The primary data have been generated by using selective questionnaire schedules by purposive random sampling. The data has been analyzed using suitable statistical/quantitative methods.

Background of the study area

The state of West Bengal is located in an important and unique position in the eastern region of India with varying climatic conditions like cold-wet in the north and hot-humid in the west and south mainly due to physiographic influences of the hill and plateaus, and maritime influence of the Bay of Bengal. The state of West Bengal lies between 85 ^{0} 50'E to 89^{0} 50' E longitudes of and 21^{0} 38' N to 27 ^{0} 10'N of latitudes. Along with physical constraints the state has several other socio-economic constraints to enhance the artificial insemination (AI) facilities for the development of the livestock sector.





Result and Discussion

The state of West Bengal has huge number of livestock population but most of the livestock are indigenous in nature which is very important constraints to boost up the productivity. Frozen Semen Technology (FST) is the only technology that can be used uniformly down to the grass root level in the different regions of West Bengal which can augment the share of cross-bred cattle and buffalo. Private volunteers, knownas'Pranibandhu' usually provide door-step artificial insemination (AI) services which are insufficient as per requirement particularly in the backward rural areas of West Bengal. Most of the government artificial insemination (AI) centers are still stationary and located at distant places from the villages. In the year 2003-04, most of the artificial insemination (AI) has done by state government (52.66%) followed by private (29.20%) and co-operative societies (17.45%). But during 2007-08 most of the artificial insemination (A.I) has been done by private agencies (57.39%) followed by state government (28.84%) and co-operatives (13.77%) which were not good enough to boost the share of improved breed livestock as well as productivity.

Table 1: Artificial Insemination (A.I.) Performances in West Bengal

Year	Total A. I. done	Artificial Insemination Done by the Authority (in %)		
		Govt.	Private	Co-operative
2003-04	1,182,539	52.66	29.90	17.45
2007-08	1,937,012	28.84	57.39	13.77

Data Source: The 18th All India Livestock Census, West Bengal State Report, 2007

Due to physical and socio-economic constraints the intensity of artificial insemination varies from one region to another (table-2). The intensity of artificial insemination is very high (T Score Value >52.6) in Jalpaiguri, Nadia, Murshiidabad, North 24 Parganas, Howrah and Hooghly district. Intensity of artificial insemination (AI) is comparatively low (T Score Value <41.3) in Purulia, Bankura, South Dinajpur and Darjeeling district. In rest of the districts of the different agro-climatic regions intensity of A.I. is

comperatively moderative type in nature (T Score Value 41.3 to 52.6). Improper infrastructure, inadequate knowledge, unhygienic conditions may lead to the decline of the rate of conception.

Table 2: District-wise Distribution of Artificial Inseminated Livestock in West Bengal (Based on T Score)

Sl. No.	District	T. Score (A.I.)
1	Cooch Bihar	43.18
2	Uttar Dinajpur	46.42
3	Dakshin Dinajpur	41.29
4	Maldah	46.82
5	Nadia	65.62
6	24 Pgs (N)	63.21
7	Howrah	60.72
8	Purba Medinipur	46.25
9	Paschim Medinipur	45.56
10	Bankura	40.35
11	Bardhaman	45.073
12	Birbhum	41.02
13	Kolkata	52.61
14	Darjeeling	36.24
15	Jalpaiguri	53.46
16	Murshidabad	62.26
17	Purulia	39.44
18	Hooghly	70.48
19	South 24 Pgs.	NA

Data Source: Livestock Census, 2003 and 2007

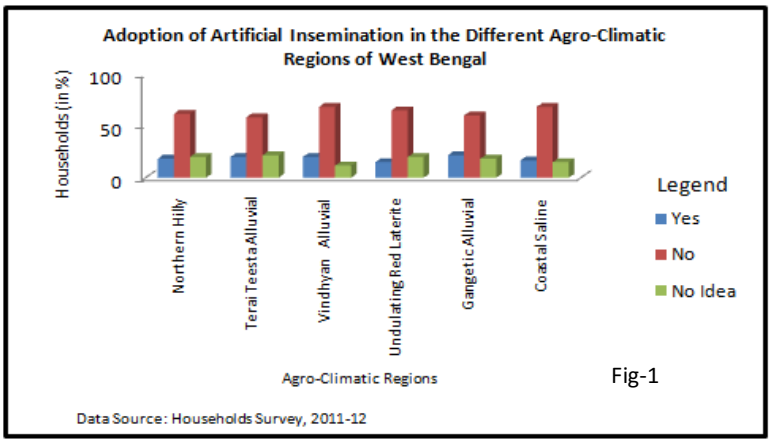


Fig-1

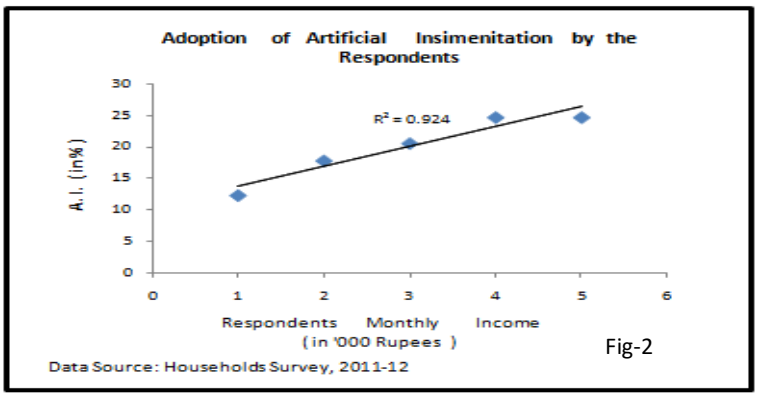


Fig-2

It was observed from the household survey that, in the different regions of West Bengal about 15 to 22 percent respondents partially adopted artificial insemination (AI) facilities which were not good enough to boost up the share of improved breed livestock as well as productivity. About 58 to 68 percent respondents still depend on traditional breeding and 15 to 20 percent respondents have no idea about artificial insemination (AI). It is also observed from household survey that, respondent's monthly income and adoption of artificial insemination are positively related to each other where the calculated regression value (r) is 0.924. Unfortunately still there are inadequate artificial insemination centres as per requirement particularly in remote areas. Private volunteers, known as 'Pranibandhu' usually provide door-step artificial insemination (AI) services which are insufficient as per requirement, particularly in the backward rural areas of West Bengal. A comprehensive centrally sponsored National Project for Cattle and Buffalo Breeding (NPCBB) has been launched in the State of West Bengal since 2001-02 and the 'Paschim Banga Gon-sampad Bikash Sanstha' (PBGSBS) has been made the state implementing agency of this project to enhance the percentage of improved breed livestock population.

Conclussion

On the basis of national livestock policy 2013 department of animal husbandry dairying and fisheries (DADF) govt. of West Bengal has taken several initiatives to enhance artificial insemination (AI) coverage, and is trying hard to improve infrastructure for supporting livestock production. During the last decade Paschim Banga Go-sampad Bikash Sanstha' (PBGSBS) has tried hard to enhance the share of improved cattle and buffalo population. Private volunteers, known as 'Pranibandhu' usually provide door-step artificial insemination (AI) services are not good enough as per requirment. In spite of so many inetiatives the state never reached the goal due to lack of infrastructure facilities, deficiency of manpower etc. Due to poverty, illiteracy and some misbeliefs the farmers are still not ready to accept artificial insemination facilities particularly in remote rural areas of West Bengal. Considering all the socio economic constraints the state of West Bengal has huge prospect to enhance the share of improved breed livestock by devoloping adeaquate infrastructure.

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