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Piggery development interventions with reference to Jharsuk pig breed innovation in eastern region of India

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Abstract

Present study an attempt was made to document piggery development interventions especially in context of Jharsuk pigs. Accordingly, the interventions made by the government agencies, NGOs, cooperatives and private sector are presented here under with reference to Jharsuk pig breed innovation in eastern region of India. The authors studied the development interventions of Jharsuk pig breed innovation. Survey was conducted over 240 pig farmers' purposively selected from four states, viz., Jharkhand, Bihar, Chhattisgarh and West Bengal and one district was selected from each state, based on the concentration of pig farmers with the assistance of Krishi Vigyan Kendras (KVKs) in these states. As such, 240 pig farmers @ 60 pig farmers from each district were selected randomly across 4 states. Result of research highlights the developmental interventions from government and non-government agencies like breeding policy on pig, mega seed production, mission mode on pigs, AICRP on pig, FLD, IVLP, RKVY, ATMA programmes, training on piggery, creation of pig growers society, vaccination camps, bank loan for piggery and opening of Bacon factory, pig breeding farm establishment, Women SHGs, KVK pig demonstration farms with Jharsuk pigs in stock and special programmes like TRIOS focused on pig husbandry played crucial role in diffusion and adoption of Jharsuk pigs in the study area.

Keywords: Development interventions, Jharsuk pig, innovation, Eastern India

Introduction

India possesses one of the largest livestock populations in the world which has a crucial role in rural economy and livelihoods of the majority of the Indians residing in rural areas (Singh *et al.*, 2016) [11]. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small farm households as against an average of 14% for all rural households. Livestock provides livelihood to two-third of rural community. It also provides employment to about 8.8% of the population in India. India has vast livestock resources. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP. Among the different livestock species, pigs are believed to be the most prolific and remunerative livestock species. Sakthivel and Narmatha (2019) [5] reported that in India, pig raising and pork industry are run mostly by traditional pig farmers belonging to the lowest social - economic stratum and particularly in the states under the study viz. Jharkhand, Chhattisgarh, West Bengal and Bihar, the majority of pig farmers were tribals and scheduled castes. There were three different genetic groups of pigs available in all the four states under the study. They were Jharsuk Pig, Pure and Cross breeds of Large White Yorkshire, Non-descript pigs and Ghungro pig breed (in West Bengal only). Across eastern region of India, Jharsuk Pig was one of the most preferred and commonly found livelihood option chosen by schedule castes, schedule tribes and other weaker sections of the society (Seth 2012) [6]. This section of the society could be a potential target for making suitable interventions to promote pig farming in the given area. Though piggery was commonly practiced in these states, there was a great demand of basic and scientific management techniques along with proper and sustainable veterinary services in rural areas? These needs could be taken care of if need based intervention are designed and implemented in the given area.

Keeping in view the profitability, premium market price and acceptability of Jharsuk pigs among pig farmers of eastern India, piggery development interventions were initiated by various government and non-governmental agencies with special reference to new pig breed i.e. Jharsuk pig, for the livelihood security and income generation through self-employment. The Government of Jharkhand initiated the interventions to promote pig husbandry as a viable subsidiary source of income of rural population by providing improved facilities of cross

breeding, replacement of local pigs with piglets of Jharsuk pig breed produced in Government farm. Jharkhand livestock breeding policy-2011 initiated the pig development and breeding policy for Jharkhand state. In this policy, local pigs shall be crossed or upgraded with Jharsuk pig breed.

Birsa Agricultural University had also made efforts for diffusion and dissemination of information on Jharsuk pigs through various projects and programmes viz. AICRP, Mega Seed Project, Mission Mode on Pig, IVLP, FLD and training programme on pig husbandry. As per the mandate, KVKs (Birsa Agricultural University) had distributed Jharsuk pigs among farmers of 24 adopted villages every year under Front Line Demonstration (FLD) programme. Jharkhand Sukar Palak Sahyog Samiti has created in order to bring the pig growers at one platform. The society has published four issues of newsletters named "Sukar Palan Samachar". Radio Kisan Club was another feature of Sukar Palak Sahyog Samiti, which had broadcasted sponsored episodes on pig breeding and management through Radio station, Ranchi and all the episodes were sponsored by members of Sukar Palak Sahyog Samiti.

Similarly, West Bengal, Chhattisgarh and Bihar initiated piggery development interventions with specific attention on Jharsuk pig innovation. The Jharsuk pigs were distributed through various programmes viz. RKVY, ATMA and FLD in West Bengal. For instance, KVK, Sonamukhi, Bankura (West Bengal) had distributed Jharsuk piglets among farmers of adopted villages of KVK, Sonamukhi. The Government of Chhattisgarh has distributed 150 Jharsuk pigs under TRIOS programmes during the year 2003-2004. Whereas, 4000 male pigs and 4000 pigs were given to TRIOS during 2010-2011, out of these, 1000 pigs were of Jharsuk breed. Further, viewing the demand and acceptability of Jharsuk pigs among the farmers of Jashpur (Chhattisgarh), Department of Animal Husbandry, Government of Chhattisgarh had established a Jharsuk pig farm with 125 stock size at Kunkuri block of district Jashpur in 2011, which had targeted to produce 1000 Jharsuk piglets in each year to fulfill the demand of pig farmers and livelihood security through the pig enterprise.

The above mentioned development oriented programmes implemented in the states under the study might have helped in the diffusion and adoption of the Jharsuk pig innovation, since, it was observed that the Jharsuk pigs were increasingly being embraced by the pig farmers replacing *desi* stock in all the states selected in this study.

Materials and Methods

The study employed purposive and multistage random sampling technique to select the ultimate sampling units. Jharsuk pig was developed at Birsa Agricultural University, Ranchi, Jharkhand in 1989 and gradually spread within Jharkhand state (23° 23' N and 85° 23' E) and in its adjoining states, viz. West Bengal (23° 14' N and 87° 07' E), Bihar (42° 49' N and 85° 01' E) and Chhattisgarh (22° 53' N and 84° 12' E) were selected for the study. The latitude and longitude depicted districts were selected based on highest concentration of pig farmers. Most of the farmers in the selected regions were tribal and pork consumption was comparably very high among these communities. Surveys for the study purposely targeted farmers who were engaged in pig husbandry for a minimum period of 5 years so as to have proper and reliable response on different variables. A semi-structured interview schedule was administered to 60 randomly selected farmers in each state, thus, making a sample size of 240 farmers.

Result and Discussions

Awareness of piggery development interventions

A perusal of Table 1 indicates the selected piggery development interventions. The table reveals that the majority of farmers (90.0%, 87.10% and 75.40%) had awareness about piggery development interventions like bank loan for piggery, training on piggery by DAH, KVK/Agricultural University, ATMA, NGOs and swine fever vaccination, followed by deworming and mineral mixture supply (66.70%), supply of fodder seeds (50.80%), SHG on piggery (56.25%), FLD on piggery through KVK/Agricultural University (39.2%), SGSY (48.75%), PMRY (28.75%), livestock insurance on piggery (11.25%), RKVY for training (42.90%), 50% subsidy for weaker section (29.60%), integrated pig cum fish farming (7.10%) and KVIC (1.25%) were the interventions on piggery development known by the farmers. Overall, 2.9 per cent farmers of Jharkhand had awareness about Mukhyamantri Kisan Khushali Yojana and 15.4 per cent farmers of Chhattisgarh had awareness about TRIOS scheme for the piggery development interventions in respective states. The results are in conformity with the studies of Muhanguzi *et al.* (2012) [2], Seth (2012) [6], Seth *et al.* (2014, 2018, and 2020) [7-9] and Roy (2016) [4].

Table 1: Distribution of the respondents on the basis of their awareness of piggery development interventions

Selected piggery development interventions	Jharkhand (n=60)		West Bengal (n=60)		Chhattisgarh (n=60)		Bihar (n=80)		Pooled (n=240)	
	F	%	F	%	F	%	F	%	F	%
Training on piggery (By DAN, Awl Univ./KVK ATMA, NGOs*)	60	100.00	53	88.30	47	78.30	49	81.70	209	87.10
Swine Fever Vaccination	58	98.70	48	80.00	38	80.00	39	65.00	181	75.40
Deworming and mineral mixture	51	85.00	43	71.70	32	53.30	34	58.70	180	88.70
Supply of fodder seeds	32	53.30	25	41.70	35	58.30	30	50.00	122	50.80
Bank loan for piggery	57	95.00	51	85.00	52	88.70	56	93.30	218	90.00
SHG on piggery	31	51.70	42	70.00	29	48.30	33	55.00	135	58.25
FLD on piggery (KVK & Aruij Univ.)	39	85.00	38	80.00	07	11.70	12	20.00	94	39.20
SGSY	33	55.00	28	43.30	28	48.70	30	50.00	117	48.75
PMRY	21	35.00	17	28.30	12	20.80	19	31.70	89	28.75
Livestock insurance on piggery	13	21.70	04	06.70	03	05.00	07	11.70	27	11.25
RKVY (Training and piglet distribution)	23	38.30	14	23.30	29	48.30	25	41.70	91	37.90
ATMA (Exposure visit and piglet distribution)	32	53.30	37	81.70	24	40.00	20	33.30	113	47.10
Bacon factory	55	91.70	22	38.70	09	15.00	17	28.30	103	42.90
50% subsidy for weaker section	28	48.70	12	20.00	07	11.70	24	40.00	71	29.60
Integrated pig aim fish farming	05	08.30	07	11.70	03	05.00	02	03.30	17	07.10

Mukhyamantri Kisan Khushali Yojana	07	11.70	00	00.00	OD	00.00	00	00.00	07	02.90
TRIOS	00	00.00	00	00.00	37	81.70	00	00.00	37	15.40
KVIC	01	01.70	00	00.00	OD	00.00	02	03.30	03	01.25

Beneficiaries of piggery development interventions

The data are presented in Table 2. It reveals that the government of all states under study had mobilized different types of piggery interventions and schemes for the upliftment of socio-economic status and livelihood security of the pig farmers in the rural areas across the study area. Pig farmers had benefited by the government piggery development interventions or schemes. The data are presented in Table 2. It reveals that the pig farmers had benefited through the interventions *viz.* training on piggery by DAH, KVK/Agricultural University, ATMA, NGOs (78.30%), swine fever vaccination and deworming (49.60%), RKVY

(34.20%), ATMA (33.75%), NABARD/Bank loan for piggery (27.1%), supply of fodder seeds (26.25%), SHG on piggery (18.75%), distribution of piglets through government scheme 50% subsidy (17.50), FLD by KVK/Agricultural University (16.70%), SGSY (10.40%), livestock insurance on pig (2.50%), TRIOS a unique programme in Chhattisgarh (6.25%), NGOs' schemes (4.20%), PMRY (02.10), JTDS (01.70) and Mukhyamantri Kisan Khushali Yojana in Jharkhand (00.80%) which were noticed in the study area. These results are in accordance with the findings of Nagaraj *et al.* (2011)^[3], Seth (2012)^[6], Seth *et al.* (2014)^[7], Roy (2016)^[4] and Halder *et al.* (2017)^[1].

Table 2: Beneficiaries of piggery development interventions

Piggery development interventions	Jharkhand (n=60)		West Bengal (n=60)		Chhattisgarh (n=60)		B'har (n=60)		Pooled (n=240)	
	F	%	F	%	F	%	F	%	F	%
SGSY	07	11.70	05	08.30	04	06.70	09	15.00	25	10.40
PMRY	03	05.00	01	01.70	00	00.00	01	01.70	05	02.10
NABARD/Bank loan for piggery	15	25.00	20	33.30	12	20.00	18	30.00	65	27.10
SHG on piggery	00	00.00	31	51.70	00	00.00	14	23.30	45	18.75
Training on piggery by DAH, Agric. Univ., KW, ATMA, NGO etc.	55	91.70	47	78.30	41	68.30	45	75.01	188	78.30
Swine fever vaccination and deworming	37	61.70	27	45.00	31	51.70	24	40.00	119	49.60
Distribution of piglets through govt. schemes with 50% subsidy	06	10.00	10	16.70	11	18.30	15	25.00	42	17.50
RKVY	22	36.70	19	31.70	28	46.70	13	21.70	82	34.20
ATMA	26	43.30	16	26.70	18	30.00	21	35.00	81	33.75
Livestock insurance on piggery	03	05.00	00	00.00	02	03.30	01	01.70	06	02.50
Distribution of fodder seeds	14	23.30	09	15.00	23	38.30	17	28.30	63	26.25
JTDS	04	06.70	00	00.00	00	00.00	00	00.00	04	01.70
FLD by KVIC/Agriculture University	17	28.30	11	18.30	05	08.30	07	11.70	40	16.70
Mukhyamantri Kisan Khushali Yojana	02	03.30	00	00.00	00	00.00	00	00.00	02	00.80
TRIOS	00	00.00	00	00.00	15	25.00	00	00.00	15	06.25
NGOs' scheme	03	05.00	01	01.70	04	06.70	02	03.30	10	04.20

Need perception for piggery development

A glance at the results in the Table 3 revealed that pig farmers of Jharkhand had perceived the need of more prices for pork as most important need and ranked it first. This need was perceived as second by the pig farmers of West Bengal, while pig farmers of Chhattisgarh ranked it third. Provision of subsidies on purchase of Jharsuk pig was ranked first by the pig farmers of West Bengal and Chhattisgarh, whereas, it was ranked second by the pig farmers of Bihar and ranked third by the pig farmers of Jharkhand. Drinking water facilities for animals and irrigation facilities for fodder production was identically ranked fourth by the pig farmers of Jharkhand, Chhattisgarh and Bihar, while pig farmers of West Bengal ranked it sixth. Availability of concentrate feed at reasonable cost and supply of fodder seeds was identically ranked second by the pig farmers Jharkhand and Chhattisgarh, while it was identically ranked third by pig farmers of West Bengal and Bihar. Location of veterinary centre within a radius of 4 km from the village was ranked fifth by the pig farmers of Jharkhand and Bihar, whereas, it was ranked fourth and sixth by the pig farmers of West Bengal and Chhattisgarh,

respectively. Supply of swine fever vaccine, mineral mixture and deworming on regular basis was ranked sixth by the pig farmers of Jharkhand and Bihar, whereas, this was ranked fifth by the pig farmers of West Bengal and Chhattisgarh. Supply of concentrate feed at reasonable cost was also perceived as very important need by the respondents from all four states in study. Provision of availability of Jharsuk pigs on subsidies or reasonable cost was another important need perceived by the pig farmers of West Bengal, Chhattisgarh and Bihar state.

The pig farmers of Jharkhand and Bihar states perceived enhancing the price of pork as most important need, whereas, the pig farmers of West Bengal and Chhattisgarh ranked it second and third in their priority. This is probably because the pig farmers of Jharkhand and Bihar were selling pork at the rate of Rs. 100-120 per kg, whereas, the pig farmers of West Bengal and Chhattisgarh were selling pork to the consumer at the rate Rs. 130-140 per kg. The price of pork appeared to be one important factor in motivating the farmers for pig rearing in general and Jharsuk pig in particular.

Table 3: Distribution of the respondents according their need perception in adoption of piggery development interventions

Sl. No.	Statement	Jharkhand		West Bengal		Chhattisgarh		Bihar	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
1.	Location of veterinary centre within the radius of 4 km from the village	08.31	V	08.29	IV	06.72	VI	07.82	V
2.	Supply of swine fever vaccine, mineral mixture and &#x0026; on regular basis	07.39	VI	07.75	V	07.13	V	07.31	VI
3.	Drinking water facilities for animal and irrigation for fodder production	08.94	IV	08.09	VI	07.89	IV	08.11	IV
4.	Availability of concentrate feed at reasonable cost and supply of fodder seeds	09.37	II	08.33	III	08.77	II	08.65	III
5.	Availability of Jharsuk pig on subsidies or reasonable cost	09.25	III	09.01	I	09.82	I	09.10	II
6.	Training on scientific piggery farming	04.85	VIII	06.49	VII	06.13	VII	06.78	VII
7.	Castration of non-descript boar	01.75	XII	02.50	XI	03.77	XI	01.66	XII
8.	Existence of pig grower society in village	05.64	VII	04.91	VIII	05.21	IX	03.45	X
9.	More price for pork	09.62	I	08.86	II	08.17	III	09.50	I
10.	Availability of bank services in the village	02.89	XI	02.75	X	05.66	XIII	04.50	IX
11.	Prompt information about the outbreak of contagious disease and their control measure in the area	04.15	N	01.75	XII	02.20	XII	02.75	
12.	Motivation of farmer to rear pig for more income	03.12	X	03.45	DC	04.20	X	05.65	VIII

Constraints experienced by pig farmers in piggery development

A perusal of Table 4 reveals that constraints like non-remunerative price for pork (100.0%), lack of financial support for purchase of improved pigs and construction of sty (97.50%), high cost of concentrate mixture (95-100%), lack of subsidies on purchase of improved pigs (92-50%), procedural complications in getting support from banks (87.50%), non-availability of veterinary services (77.80%), and cost of vaccine and modern medicines being high (70.00%), were experienced as most serious constraints by the pig farmers of all the four states in study. Same Table (4) also

indicates that lack of irrigation facilities for fodder production (66.70%), lack of transportation of pigs to market places (65.00%), lack of market facilities (57.08%) and lack of guidance about the management of improved pigs (45.00%) were experienced high intensity constraints by pig farmers in all the four states under study. Further, it is clear from same table that charging exorbitant amount by veterinarians to treat/vaccinate pigs (33.00%), distant location of veterinary hospital (30.00%) and inadequate input supply (25.00%) were experienced as low intensity constraints. The findings were in line with the findings of Seth *et al.* (2014) [7] and Shyam *et al.* (2017) [10].

Table 4: Constraints perceived by pig farmers in adoption of piggery development intervention

SL. No.	Constraints	Respondents (n=240)			
		F	%	Rank	Intensity
1.	Non remunerative price for pork	240	100.00	I	
2.	Lack of financial support for construction of sty	234	97.50	II	
3.	Lack of subsidies on purchase of improved pigs	228	95.00	III	
4.	High cost of concentrate mixture	222	92.50	IV	
5.	Procedural complications in getting support from banks	210	87.50	V	
6.	Non-availability of veterinary services	185	77.80	VI	
7.	High Cost of vaccine and modern medicines	168	70.00	VII	
8.	Lack of irrigation-facilities for fodder production	160	66.70	VIII	
9.	Lack of transportation for pigs to other market places 156	65.00	IX		
10.	Lack of market facilities	137	57.08	X	
11.	Lack of guidance about the management of improved pigs	108	45.00	XI	
12.	High fee charged by veterinarian for treatments/ vaccination	80	33.00	X.11	
13.	Distant location of Vety. hospital	72	30.00	XIII	
14.	Inadequate input supply	60	25.00	XV	

Suggestions perceived by the pig farmers for effective piggery development interventions

It is noted from the Table 5 that the pig farmers perceived the important suggestions for the piggery development. The pig farmers suggested that supply of improved piglets on subsidies (95.80%), supply of concentrate feed on subsidies (92.08%), veterinary services should be strengthened at village level (87.50%), regular supply of swine fever vaccine, medicine and treatment of the pigs at subsidized rate

(84.58%), bank loan/credit facility (77.91%), organized market facilities through appropriate agencies (68.75%), organized pig slaughter house/mini bacon factory (65.0%), training on basic treatment and management of pigs (56.25%), creation of pig grower society in village (50.83%) and recognition and reward to pig farmers (34.20%) were perceived by all the respondents across four states in study for proper piggery development.

Table 5: Suggestions as perceived by the pig farmers for piggery development

Sl. No.	Suggestions	Respondents (n=240)		
		F	%	Rank
1.	Supply of 'T&D' piglets on subsidies	230	95.80	I
2.	Supply of concentrate feed on subsidies	221	92.50	II
3.	Veterinary services should be strengthened at village level	210	87.50	III
4.	Regular supply of swine fever vaccine, medicine and treatment of the pig at subsidized rate	203	84.58	IV
5.	Bank loan/credit facility	187	77.91	V
6.	Organised market facilities should be provided	165	68.75	VI
7.	Mini bacon factory/organised pig slaughter house	156	65.0	VII
8.	Training for basic treatment and management of pigs	135	56.25	VIII
9.	Creation of pig grower society in village	122	50.83	IX
10.	Recognition and reward to pig farmers	82	34.20	X

Conclusions

The pig farming was traditionally predominant occupation of socially weaker sections like scheduled tribes and scheduled castes, who were also the major consumer of pork and had high values attached to pigs for the reasons of culture, custom, festivities and rituals. With increasing urbanization, industrialization, commercialization in the society, other sections of the society were finding piggery as an economically rewarding proposition, thus adoption of pig innovation was not restricted to the traditional pig keepers but it was also being opted by the farmers belonging to higher strata of society. The future of pig farming appeared to be bright with advancing time. The developmental interventions from government and non-government agencies like breeding policy on pig, mega seed production, mission mode on pigs, AICRP on pig, FLD, IVLP, RKVY, ATMA programmes, training on piggery, creation of pig growers society, vaccination camps, bank loan for piggery and opening of Bacon factory, pig breeding farm establishment, Women SHGs, KVK pig demonstration farms with Jharsuk pigs in stock and special programmes like TRIOS focused on pig husbandry played crucial role in diffusion and adoption of Jharsuk pigs in the study area. The Agricultural University/KVK pig farm, Department of animal husbandry, progressive pig farmers, NGOs, pig grower society and relatives played crucial role in promoting Jharsuk pigs by ensuring supply of piglets.

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