Colour Trait and Socio-Cultural Compatibility of Cross Breeding Technology in Piggery: A Case of 'T&D' Pig Breed in Eastern India

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ABSTRACT

Little or no efforts have been made by the researchers to investigate how their technologies are compatible with the farmers' socio-cultural and socio-economic environment. The authors studied the compatibility attributes of improved livestock breed innovation, taking a case of a new pig breed ('T&D') - an innovation. Survey was conducted over 240 pig farmers purposively selected 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 KVKs in these states. As such, 240 pig farmers at the rate of 60 pig farmers from each district were selected randomly across 4 states. Research paper highlights the colour trait and socio-cultural compatibility of black colour 'T&D' pig innovation by different farmers' categories. The respondents' comments with regard to compatibility were organized according to the values identified by pig farmers, previous experience and belief and cultural acceptance of black colour 'T&D' pig (81.07%) by the respondents of across four states under the study. The majority of the respondents from all the four states were culturally compatible with 'T&D' pig farming due to use of pig during festival, ceremony and marriage (100.00%), Gram Devta pooja or Kuldevi pooja (77.00%), offered sacrifice during sowing and harvesting of paddy (64.60%), bride dowry (67.10%), gift to daughters after marriage (65.4%) and exchange of pig among relatives or kinship (61.70%).

Key words: *Innovation; Social; Cultural; Colour; Trait Compatibility; 'T&D' Pig;*

Innovation attributes are most often measured as the perceptions by potential adopters of the characteristics associated with a particular innovation. An innovation is broadly construed as anything perceived to be new by a potential adopter, inclusive of information, ideas, practices or techniques, programs or interventions, technologies, processes, and policies (*James W. Dearing, 2007*). Technological innovation has been linked to economic success and progress, livestock breeding technologies are attributed a critical social, as well as, productive role. The technology generated should be adapted to the requirements of small farmers in resource-poor areas to their specific needs, survival strategies, and agro-ecological and cultural environment. Little or no efforts have been made by the researchers to investigate how their innovations are compatible with the farmers' socio-cultural and socio-economic environment. Social and economic assessment should be built into evaluations of livestock innovations and the results of the assessment should be taken into consideration before livestock innovations are recommended to farmers for acceptance. In order to make pig farming more popular and profitable,

the scientists of Birsa Agricultural University, Ranchi, Jharkhand (India) evolved a new breed of black colour pig named 'T&D' by crossing exotic pig "Tamworth" a British pig and "Local Pig" in 1989, which is more compatibility to pig farmers of eastern region of India and remunerative due to its black colour (auspicious), faster growth, better reproductive performance, disease resistance and better acceptability at farmers' door (*Verma, 2003; Mahto, 2006; Singh, 2009 and Seth, 2012*). This is considered as most suitable breed of pig for rearing in villages of Jharkhand. 'T&D' pig is one of the technologies developed and considered appropriate, thus, promoted in Jharkhand and other part of the country for enhancing sustainable livestock production with both environmental and socio-economic benefits. 'T&D' pigs is widely spread and accept in Jharkhand, Bihar, West Bengal, Madhya Pradesh, Orissa, Chhattisgarh and North Eastern states viz. Assam, Meghalaya, Arunachal Pradesh and Manipur. Especially, in recent past, its acceptance adoption is growing at fastest rate throughout Jharkhand as its benefit is observable over the years (*Singh, 2009; Seth, 2012 and Seth et. al., 2014*). 'T&D' pig, therefore, is genesis of an innovation being diffused for adoption by the farmers through different channels under different schemes towards varying degree of its acceptance by the different categories of farmers.

This paper tries to discus colour trait and socio-cultural compatibility attributes which livestock innovations should possess from the farmers. Perceptions of livestock farmers of new technologies is imperative for consideration, if the innovations generated at research institutes are to be acceptable to the rural piggery farmers in India.

METHODOLOGY

The study employed a combination of multistage random and purposive sampling technique to select the ultimate sampling units T&D' pig was developed at Birsa Agricultural University, Ranchi, Jharkhand in 1989 and gradually spread within the Jharkhand State (23° 23' N and 85° 23' E) and in 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). One district was selected from each State, viz. Ranchi district from Jharkhand, Bankura district from West Bengal, Jashpur district from Chhattisgarh and Gaya district from Bihar. These districts were selected on account of having highest concentration of pig farmers among all the districts in the respective States. The assistance of Krishi Vigyan Kendra (KVKs) in these states was sought to identify the districts and KVKs which had maximum involvement in pig farming. From each district, 60 pig farmers were selected randomly from the list of pig farmers provided by the respective KVK of the identified district. Most of the farmers in these selected districts were tribals and pork consumption was comparably very high among these communities. Surveys for the study were purposely targeted at farmers who own pigs. Only those farmers were considered 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 questionnaire was administered to 60 randomly selected farmers in each State, thus, making a sample size of 240 farmers.

RESULTS AND DISCUSSION

The interview questions dealt with the concept of compatibility focused on the respondents' values, previous farming experience and socio-cultural needs. The respondents in the study described many similar values in relation to the compatibility with colour trait (black colour) of 'T&D' pig innovation. Pig farmers (81.07%) from all the four states stated that black colour pig more important for social function and culture. It is interesting to note that respondents from all the four states referred to the compatibility of 'T&D' pig farming with their value for profitability (100.00%) and high yield (100.00%). Furthermore, Table1 depicts that respondents from Jharkhand (66.70%), West Bengal (70.00%), Chhattisgarh (75.00%) and Bihar (63.30%) identified value for low-input production. Even so, the pig farmers interviewed said that 'T&D' pig farming was compatible with their values for profitability since the production system had minimal requirement of veterinary drugs. Table 1 shows that farmers of Jharkhand (70.00%), West Bengal (63.30%), Chhattisgarh (66.70%) and Bihar (61.70%) mentioned low administration of veterinary drugs in their farm which affected in increasing the gap between their expenses and farm revenue. The respondents from all the four states also described that 'T&D' pig farming had the value for sustainability indicating that 85.80 per cent overall respondents found sustainability with 'T&D' pig farming. The respondents from all the four states mentioned how some of their previous experiences were compatible with 'T&D' pig farming. The respondents from Jharkhand (76.70%), West Bengal (80.00%),

Table 1. Piggery farmers' views on the compatibility of 'T&D' pig innovation

Compatibility	Jharkhand			West Bengal			Chhattisgarh			Bihar			Pooled		
	Y	N	NC	Y	N	NC	Y	N	NC	Y	N	NC	Y	N	NC
Colour Trait															
Importance of	49	0	11	51	0	9	57	0	3	39	21	0	196	0	44
black colour pig	(81.7)	(0.0)	(18.3)	(85)	(0.0)	(15)	(95)	(0.0)	(5)	(65)	(35)	(0.0)	(81.7)	(0.0)	(18.3)
Values identified by pig farmers															
Profitability	60	0	0	60	0	0	60	0	0	60	0	0	240	0	0
	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)
High	60	0	0	60	0	0	60	0	0	60	0	0	240	0	0
yielding	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)
Low input	40	20	0	42	18	0	45	15	0	38	22	0	165	75	0
production	(66.7)	(33.3)	(0.0)	(70)	(30)	(0.0)	(75)	(25)	(0.0)	(63.3)	(36.7)	(0.0)	(68.75)	(31.25)	(0.0)
Minimal	42	18	0	38	22	0	40	20	0	37	23	0	157	83	0
exposure	(70)	(30)	(0.0)	(63.3)	(36.7)	(0.0)	(66.7)	(33.3)	(0.0)	(61.7)	(38.3)	(0.0)	(65.4)	(34.6)	(0.0)
Sustainability	50	0	10	53	0	7	55	0	5	48	0	12	206	0	34
	(83.3)	(0.0)	(16.7)	(88.3)	(0.0)	(11.7)	(91.7)	(0.0)	(8.3)	(80)	(0.0)	(20)	(85.8)	(0.0)	(14.2)
Previous experience															
Raisedtraditional/	46	14	0	48	12	0	47	13	0	42	18	0	183	57	0
conventional piggery	(76.7)	(23.3)	(0.0)	(80)	(20)	(0.0)	(78.3)	(21.7)	(0.0)	(70)	(30)	(0.0)	(76.25)	(23.75)	(0.0)
Taste habit															
Taste of pork	60	0	0	60	0	0	60	0	0	60	0	0	240	0	0
	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)
Beliefs, custom and culture															
Sacrifice in festival,	60	0	0	60	0	0	60	0	0	60	0	0	240	0	0
ceremony, marriage	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(0.0)
Gram devta/	47	13	0	50	10	0	53	7	0	35	25	0	185	55	0
kuldevipooja	(78.3)	(21.7)	(0.0)	(83.3)	(16.7)	(0.0)	(88.3)	(11.7)	(0.0)	(58.3)	(41.7)	(0.0)	(77.1)	(22.9)	(0.0)
Offering sacrifice	38	22	0	42	18	0	46	14	0	29	31	0	155	85	0
during sowing and	(63.3)	(36.7)	(0.0)	(70)	(30)	(0.0)	(76.7)	(23.3)	(0.0)	(48.3)	(51.7)	(0.0)	(64.6)	(35.4)	(0.0)
harvesting of paddy															
Bride dowry	41	19	0	43	17	0	45	15	0	32	28	0	161	79	0
	(68.3)	(31.7)	(0.0)	(71.7)	(28.3)	(0.0)	(75)	(25)	(0.0)	(53.3)	(46.7)	(0.0)	(67.1)	(32.9)	(0.0)
Gift to daughter	40	20	0	42	18	0	44	16	0	31	29	0	157	83	0
after marriage	(66.7)	(33.3)	(0.0)	(70)	(30)	(0.0)	(73.3)	(26.7)	(0.0)	(51.7)	(48.3)	(0.0)	(65.4)	(34.6)	(0.0)
Exchange of pig	36	24	0	39	21	0	43	17	0	30	30	0	148	92	0
among relatives	(60)	(40)	(0.0)	(65)	(35)	(0.0)	(71.7)	(28.3)	(0.0)	(50)	(50)	(0.0)	(61.7)	(38.3)	(0.0)

Y- Yes, N-No, NC- Not Commented, Figures in parenthesis indicate percentage

Chhattisgarh (78.30%) and Bihar (70.00%) stated that their experience in pig farming in conventional grazing and kitchen waste based piggery had helped them understand the basics of pig production and management. A glance at Table 1 shows that piggery farmers had identified the need and use of black pig in their belief, custom and culture. They found 'T&D' pig innovation more compatible with their belief and socio cultural value and led to ease in adoption. Tribes in the study area sacrificed pigs during local festivals like *Sarhul, Baha, Manghe and Karma*. They offered *Bali* of pigs (sacrifice) to the *Sing Bonga* (God of Sun) and *Gram Devta* for strengthening family, clan and inter- village intimacy, and also believed that God and Goddesses will bless the place and fertility to the fields. An innovation incompatible with cultural values can block its adoption. Since the respondents were already involved with pig farming, the adoption of 'T&D' pig had one good reference to compare with and judge the merits against the standards. It is interesting to note that respondents

from all the four states mentioned that they culturally used black colour pig to sacrifice during festival, ceremonial functions, marriage, *Sing Bonga pooja* (God of Sun in the tribal society), *Gram Devta pooja or Kuldevi pooja, farm pooja* during first sowing and transplanting paddy field and harvesting of paddy. Bride dowry and gift to daughters after marriage (bride wealth) and exchange of pig among relatives and kinship also indicated compatibility of 'T&D' pig innovation in the study area. It was noticed that respondents of Jharkhand state in particular had cultural compatibility with 'T&D' pig farming for sacrifice during festival ceremony, marriage (100.00%), *Sing Bonga pooja, Gram Devta pooja and/or Kuldevi pooja* (78.30%), sowing and/or transplanting and harvesting of paddy fields (63.30%), bride dowry (68.30%), gift to daughters after marriage (66.70%) and exchange of pig among relatives and/or kinship (60.00%). Results from same Table 1 also indicate that farmers of West Bengal too had cultural compatibility with 'T&D' pig as they sacrificed pigs during festival, ceremony and marriage (100.00%), *Sing Bonga pooja, Gram Devta pooja or Kuldevi pooja* (83.30%), *field pooja* during sowing and harvesting of paddy (80.00%), bride dowry (71.70%) gift to daughters after marriage (70.00%) and exchange of pigs among relatives and/or kinship (65.00%). The respondents of Chhattisgarh perceived compatibility with belief and culture in use of black colour pig during many occasions viz. sacrifice during festival ceremony and marriage (100.00%), *Gram Devta pooja and/or Kuldevi pooja* (88.30%), offering sacrifice during sowing and harvesting of paddy (76.70%), bride dowry (75.00%), gift to daughters after marriage (73.30%) and exchange of pig among relatives and/or kinship (71.70%). Further, the respondents of Bihar state described that 'T&D' pig was compatible with their belief and culture. They used pigs for sacrifice during festival, ceremony and marriage (100.00%), *Gram Devta pooja or Kuldevi pooja* (58.30%), offered sacrifice during sowing and harvesting of paddy field (48.30%), bride dowry (53.30%), gift to daughters after marriage (51.70%) and exchange of pig among relative and/or kinship (50.00%). Interestingly, Table 1 reveals that some respondents of Bihar state did not comment on the compatibility of innovation with their belief and culture. Respondents did not comment to the compatibility during sacrifice in festival, ceremony and marriage (41.70%), *Gram Devta pooja and Kuldevi pooja* (51.70%) offered sacrifice during sowing and harvesting of paddy (46.70%), bride dowry (48.30%) and exchange of pig (50.00%). This inferred that cultural incompatibility of an innovation also occurs sometimes. Since an idea designed for use in one culture may then spread to a different culture with different cultural values, the 'T&D' pig might be popular among farmers of Bihar due to reasons different than in other states. The pooled value referenced that all the respondents (100.00%) from four selected states interestingly noted that they perceived the taste of pork produced from 'T&D' pig very compatible and found in it traditional taste. This compatibility of 'T&D' pig attracts its high adoption among traditional tribal pig farmers. They were habitual of traditional taste of pork from *desi* pigs, due to low fat content in the pork of black colour *desi* pig. In all the four states, the respondents reported that pork from local pig had low fat while exotic breed (white) pig contained more fat content in pork. Majority of the respondents found incompatibility with more fatty pork. Hence, there was negligible adoption of white pigs. Whereas, 'T&D' pig innovation had compatibility with the respondents' culture, taste and liking for colour of pigs i.e. black. Overall, the stated values of the farmers in the study were consistent with previous literature concerning farmers' values and motives in choosing 'T&D' pig. Farmers' values and motives for 'T&D' pig farming such as profitability and high yield were also identified in many studies (*Kumar, 2003; Kumar et al. 2004; Seth 2012 and Seth et al.2014*). In addition to the farmers' values, the farmers' previous experiences also contributed to the views on compatibility for 'T&D' pig farming. In general, from all the states, the pig growers had some experience in using farming practices that were compatible with 'T&D' pig farming management. The findings of cultural compatibility was also reported by *Jini (2008)* that respondents used to exchange animals with their neighbors for domestic purpose and occasions. *Nidup et al. (2011)* stated that Bhutanese rear pigs for social, cultural and economic reasons. *Penjor (2008)* reported that people uses pigs during marriages, festival *Myoko* and as a gift or in exchange for other commodities. *Barik (2009)* reported that animal (goat, sheep and pig) sacrifice was an integral part of the ritual worship of deities namely Samaleswari, Sureswari and Khambeswari. *Pasayat (2009)* reported that the main attraction of *Kandhan Budhi Jatra* was *Ghusuri Puja*. *Ghusuri* means pig, which is sacrificed once in every three years. He further reported that *Kandhan Budhi* was also worshiped at Lather village

under Mohongiri *Gram Puja* in Kalahandi district of Orissa, India. *Deka et al.(2007), Jini (2008), Seth (2012), Seth et al. (2014)* and *Seth et al. (2015)* who observed that the demand for and price of pork from indigenous pigs (which has less fat) was relatively higher (Rs. 120 to 150 per kg) than that from crossbred pigs (Rs. 80 to 90 per kg). Pork from imported white pigs was less preferred, perhaps because of its higher fat content or because pork was traditionally liked when produced from black (indigenous) pigs.

CONCLUSION

The T&D pig innovation was largely perceived superior over local pigs and other crossbreeds due to its high social and cultural compatibility. The larger litter size, meat quality and its black colour were appealing features for the pig farmers explaining the higher observability of the innovation among the farmers. It could be concluded that respondents from all the four states mentioned that they culturally used black colour pig to sacrifice during festival, ceremonial functions, marriage, *Sing Bonga pooja* (God of Sun in the tribal society), *Gram Devta pooja or Kuldevi pooja*, *farm pooja* during first sowing and transplanting paddy field and harvesting of paddy. Bride dowry and gift to daughters after marriage (bride wealth) and exchange of pig among relatives and kinship also indicated compatibility of 'T&D' pig innovation in the study area. All the pig farmers across the four states under study perceived compatibility with taste of pork and lower fat content in 'T&D' pig, which indicated that 'T&D' pig innovation was compatible with the traditional liking of the local farmers.

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