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Study on productivity improvement of backyard duckery through cross breeding in South Dinajpur district of West Bengal

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ABSTRACT

Backyard Duckery plays a significant role for subsidiary income and supplement nutrition for the rural farmer's particularly women in the community in eastern region of India. Realizing the importance, Dakshin Dinajpur KVK under UBKV introduces BDIP programme through FLD, training, supervision, and monitoring to improve the productivity of indigenous backyard Duckery. The study depicted the dominance of backyard Duck farming by the rural women and this is gaining momentum in spite of few constraints regarding implementation of the BDIP programme. The study finally shows the avenues to resolve the constraints and achieve the ultimate success of this developmental intervention.

***Keywords*:** Backyard, crossbreeding, duckery, improvement, indigenous, productivity

Rural backyard Duckery is an ancient traditional practice of eastern region of rural India as well as in the state of West Bengal. Pond based backyard Duckery in small flocks (5-10 nos.) helps in subsidiary income and supplementary nutrition for rural farming community particularly women in this region of country and state. In rural free range condition, deshi duck becomes productive by exploiting natural feed resources of water logged household pond area. Though the backyard ducks are poor producers of egg and meat in comparison with those of exotic breed, they are more resistant to disease under adverse environmental condition (Rashid et. al. 1995). But, backyard ducks acts as an important and cheap source of protein to satisfy the immediate protein demands of rural grass root level stakeholders. So, improvements of these huge number of backyard variety is the chief concern for rural poultry development in the district of West Bengal.

Problems and prospects of backyard duckery in the functional area

The Dakshin Dinajpur district constitutes 6.18 lakh duck population in which 6.12 lakh (99.03%) belongs to backyard variety and only 6.21 thousand (0.97%) possess improved /exotic breed (18th All India Livestock Census, Govt. of W.B., 2009). So, almost total duck breed of the district belongs to local poor productive variety having a range of live wt of 1.5-1.8 Kg and laying 60-70 nos of small size eggs (40-45gm) annually in pond based free range farming practice. Simultaneously, it is quite improbable for rural stakeholders to develop input intensive improved duckery farming practice in their existing infrastructure. Low productivity of backyard Duckery has been analyzed (Fig.-1) through Problem-cause diagramme and one of the Primary Bio-Physical cause identified was rearing of low yielding local Duck breed. ***'Crossbreeding'*** of these backyard Duck with Khaki Campbell Drake along with scientific farming practice may be the only sustainable *vis-a-vis* profitable intervention of this condition. Crossbreed variety of Duck gains a live wt of 2.0-2.5 Kg and lays 130-140 no's of eggs annually free range farming. Crossbreed Duck is more compatible than pure exotic breeds in rural scenario due to following factors-

- The Viability of the flock under harsh rural environment is at par with the backyard variety.
- They do not require any advance practice which is beyond reach of the rural stakeholders.
- The productive performance in terms of egg and meat production is better than backyard variety.

Despite, lower productivity of deshi duck it satisfying the growing demand of rural farm women without regular source of earning (Jalil, 1990). So, improvement of backyard duck through crossbreeding with Khaki Campbell Drake is the only sustainable technology for productivity improvement of this breed.

Intervention by the KVK: To improve the productive performance of the Backyard Duck, Dakshin Dinajpur Krishi Vigyan Kendra (DDKVK) under Uttar Banga Krishi Viswavidyalaya introduced the Backyard Duckery improvement Programme (BDIP) through Front line Demonstration, onsite supervision, monitoring, skill development training on improved poultry farming from July, 2007. The prime objective of the BDIP programme of DDKVK was to improving the egg and meat production potentiality of indigenous Duck using Khaki Campbell (KC) Drake. After crossing, the KC Drake and deshi Duck was put on exclusive trials in the rural area to test its potentiality. In last 5 years of demonstration in various KVK adopted villages, the

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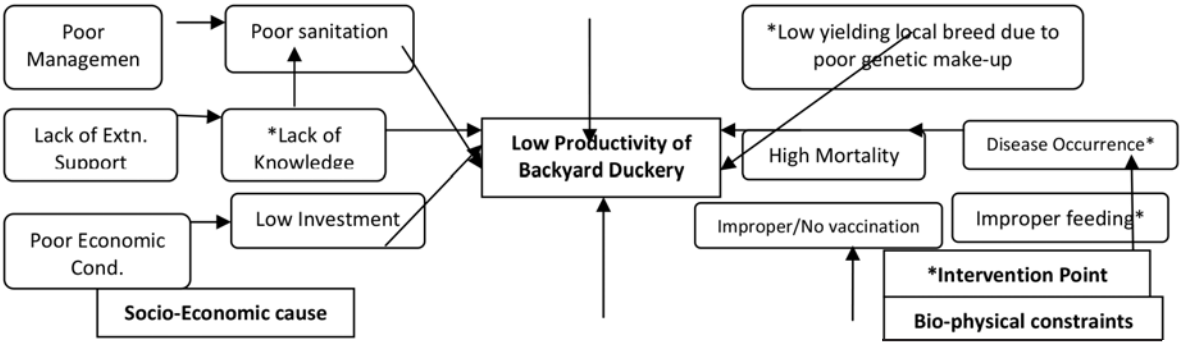

Fig. I : Problem–Cause Diagramme for low Productivity in Rural Backyard Duckery

developed crossbreds have proved its worth in various aspects. In order to maintain the quality of parent stock, every year pure breed of KC Drake has been supplied from the State Duck breeding farm, Govt. of W.B. To avoid inbreeding, crossbred birds were culled out after one year of egg production *i.e.* at the age of one and half year. Simultaneously, few farmers were selected for productivity improvement of their cross bred through generation wise breed upgradation practice. The BDIP Programme on Backyard Duckery was started in 5 years back in two selected blocks of the district, mainly Balurghat, and Tapan block from where four villages from balurghat and eight village from Tapan block were selected randomly. Total 445 no's of KC Drake was distributed in 5 years in 12 villages of the concerned blocks of the district in 5:1 ratio as a small unit(5 Ducks and 01 Hen). Method of implementation of the programme is presented in the following flow diagramme.

RESULTS AND DISCUSSION

Table 1: Productive performance of Deshi, Cross Bred and KC Drake in adopted village of district.

Sl. No.	Parameters	Performance under rural backyard condition (Mean)		
		Deshi Duck	Deshi Duck KC Drake	Pure X KC Duck
1.	Age of 1st egg laying(Days)	168	160	148
	wt. at sexual maturity(g)	1570	1685	1620
2.	Eggs prod. up to 72 wks	54	135	126
3.	Egg wt(gm)	52	58.5	56.5
4.	Mortality% up to 72 wks. age)	3.45	6.80	15.60
5.	B:C Ratio			

Productive performance of Deshi, Cross Bred & KC Drake in adopted area is given in table-1. The study revealed that the average age of 1st egg laying (Days) was earlier in pure KC Duck than Deshi (168 days), but slightly better (160 days) in crossbreed (Deshi X KC Drake) under extensive farming system. The findings again expressed that wt. at sexual maturity of cross bred duck (1.68 Kg) is better than deshi(1.57 Kg) and KC duck (1.62 kg) in backyard production system. It was further depicted that average egg production up to 72 weeks in KC duck was 146 nos., but in crossbred and deshi duck there was 135 and 55 nos. in 1st generation in rural extensive scenario. The egg production of crossbred was slightly lower than pure KC drake in 1st generation, but it was gradually becomes more in next subsequent generation due to bred up gradation programme., if systematically followed by the rural stakeholders. Ukil *et. al.* (1991) finds similar results in his study. The cost of feeding and management was also more in pure KC drake than crossbred as well as deshi breeds in spite of backyard system rearing practice due to higher genetic makeup. The wt. of egg (g) is almost at par in all the three varieties but it was slightly better in Deshi (60g) and crossbred (58.5 g) due to less no of egg production as well as natural vegetative feeding practice. Considering, mortality rate, this was comparatively high in pure KC Duck (15.6%) than deshi (3.45%) and cross bred duck (6.80%) due to their less environmental stress compatibility than others in rural extensive condition. Hossain (1989) and jalil *et. al.* (1997) revealed similar findings in his study and expressed that the overall productive performance of crossbreed duck was better than KC and Deshi duck under village condition.

Economic performances of Deshi, CB and KC Duck with & without supplementary feeding are recorded in table-2.The study explored that the performance of crossbred(KCX Deshi) duck is significantly better than deshi ducks considering the parameters like egg production up to 72 weeks, wt. at sexual maturity as well as mortality rate under without and with

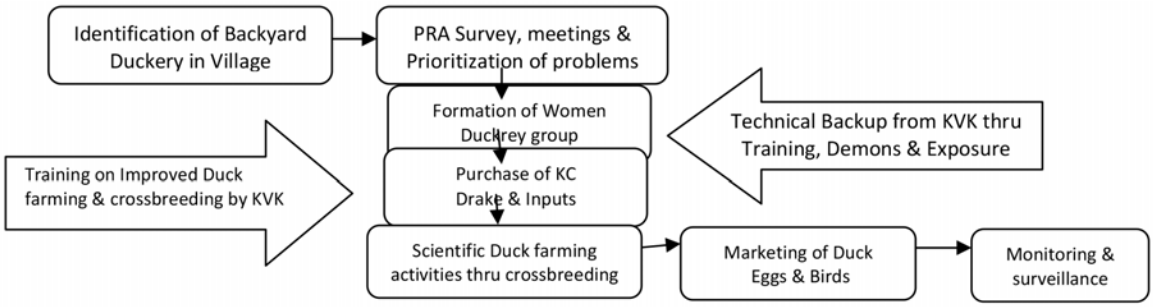

Fig.-2: Flow Diagramme of activities taken–up in Productivity improvement of Duckery

supplementary feeding practice under rural extensive farming condition. It was found that regular low cost homemade supplementary feeding along with rural extensive rearing practice increases the overall economic performance and B: C ratio of the rural small crossbreed duckery unit than deshi duckery remarkably. This practice increases wt. gain, reduces age of sexual maturity and decreases mortality rate along with profitable livelihood generation of rural women folk. The depicted fact supported with the findings of Rashid *et. al.*(1995) and Nanda *et al.* (1987).

Table 2 : Economic performances of Deshi, Crossbred & KC Duck with & without supplementary feeding under rural extensive condition.

Sl. No.	Parameters	Performance under rural backyard condition (Mean)		
		Deshi Duck	Deshi Duck KC Drake	Pure X KC Duck
1.	**Eggs production up to 72 wks**			
	Without feeding	54	128	121
	With Feeding	68	154	147
2.	**Weight at sexual maturity(g)**			
	Without feeding	1360	1425	1450
	With Feeding	1480	1620	1560
3.	**Age at sexual maturity**			
	Without feeding	190	186	167
	With Feeding	178	176	182
4.	**Mortality% up to 72 wks age)**			
	Without feeding	08	12	17
	With Feeding	03	06	10

Year wise training, demonstration and horizontal dissemination of crossbreeding programme by KVK in the district are presented in table 3.The KVK started to disseminate the low cost sustainable farming practice through various awareness- motivation campaigns, skill development training along with systematic demonstration programme in various adopted village in the district of the state West Bengal. In last 6 years KVK have trained total 673 no.s of rural practicing farmers and farm women , SHG members and farmers club members on these backyard duckery improvement programme with 473 no's of practical method and result demonstration programme in the command area. From this small scale duckery unit additional 179 no.s of small unit also developed as horizontal spread of this low cost profitable livelihood generation practice in rural area. There have also huge awareness cum motivation created among rural SHG women entrepreneurs to upgrade their backyard duckery unit through accumulation of readily available monthly cash for sustainable fund development. But, there have few constraints/hindrance for propagation of this practice as there was no trustworthy regularly supplied KC duck farm in the district either in Govt. or non Govt. level as this is very much resource poor district. So, KVK initiated to develop few such rural intensive duck breeding unit for propagation and sustenance of this promising farming practice.

Table 3: Year wise training, demonstration & horizontal dissemination of crossbreeding programme by KVK in the district

Year	No. of training & participant's	No. of demonstration conducted	Horizontal dissemination of technology
2010-11	03-54	32	09
2011-12	03-60	40	15
2012-13	04-107	65	22
2013-14	05-124	80	32
2014-15	07-156	118	45
2015-16	07-172	138	56
Total	**29-673**	**473**	**179**

Backyard Duckery is an ancient extensive poultry farming practice of rural women folk in eastern region of rural India. So, it is required that any developmental interventions through farm women would target this species. The BDIP programme has been started only 5 years ago and its impact on rural stakeholders are gaining momentum in spite of few constraints regarding effective implementation of the programme. The result presented in the study reflected the overall superiority of crossbred

duck than deshi and KC duck under rural extensive farming condition in several productive features like egg production, wt. gain. Age at sexual maturity and mortality *etc*. So, better performance of crossbred in terms of egg & meat production through backyard farming made direct impact on livelihood of rural women folk through improvement of diet composition and socio-economic status. The Krishi Vigyan Kendra as an knowledge driven technology dissemination institute suggest to extensive promotion of this low cost sustainable rural farming practice and bears the responsibility to achieve the ultimate success of this developmental intervention quite remarkably.

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