



GUIDELINES ON BACKYARD DUCK REARING UNDER DAY- NRLM

[Document subtitle]



JUNE 1, 2021
FARM LIVELIHOODS TEAM
NMMU

Duck farming; an effective tool for socio economic development in rural India

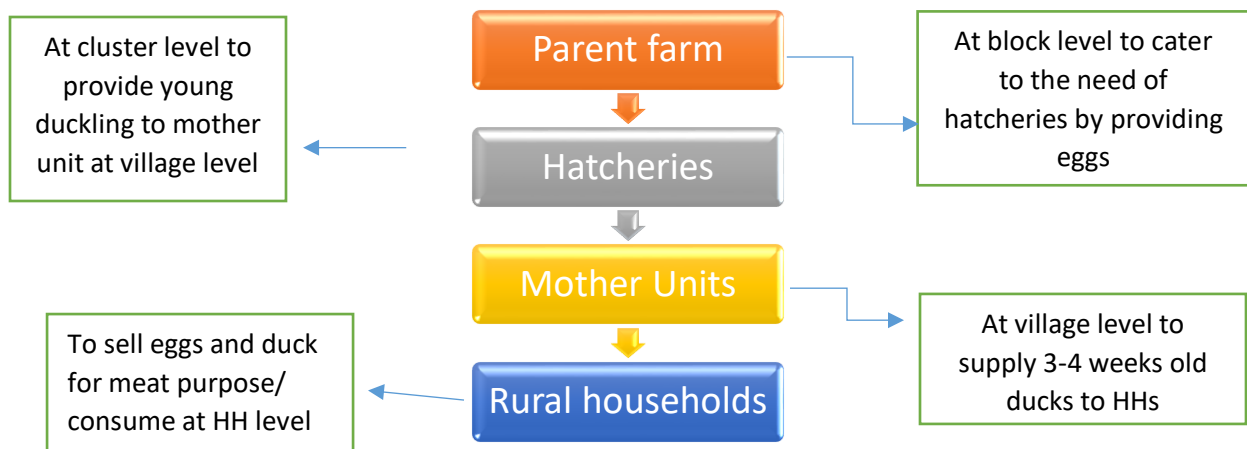
- 1. Introduction:** Duck raising is a lucrative livestock industry in the globe at the same time is an income generating occupation for the small, marginal and even for landless for its egg and meat. Duck eggs are relatively larger than chicken, weighing about 4.5% of duck's body weight. Duck has higher red muscle fiber in breast compared to chicken and is considered as red meat. It grows faster than chicken, is costly and is easy to rear. Duck farming is an important component for integrated farming system, such as:
 - **Duck keeping and paddy cultivation:** Duck feeds on insects, snails, stir soil surface benefits paddy at the same time duck gets nutritious feed from paddy field.
 - **Duck keeping combined with fish ponds:** Duck get nutritious feed from pond, it oxygenate pond water by swimming, duck drops also act as feed for the fishes.
- 2. Breeds of Ducks:** In addition to non-descriptive breeds, generally ducks available in India are of three types namely egg type (Khaki Campbell and Indian Runner); meat type (White Pekin, Muscovy and Aylesbury) and ornamental (Crested white). Among the egg laying breeds, Khaki Campbell is found to be the best (240 to 280 egg/bird/year with egg size of 65g to 75g) whereas White Pekin' is the most popular duck in the world known for table purpose (attains about 2.2 to 2.5 Kg of body weight in 42 days, with FCR of 2.3 to 2.7).
- 3. Feeding:** Duck feeds are mostly farm wastes like broken rice, rice bran, coconuts stem powder or similar products between hatching and 4 weeks of age. After that insects, snails, kitchen waste, paddy grains and weeds are the food sources for ducks in addition to foraging. Thus the cost of production is low.
- 4. Water for Ducks:** Water for swimming is not essential at any stage of duck rearing. However, water in drinkers or water channels should be sufficiently deep enough so that a duck can immerse up-to its eyes otherwise the eyes will get scaly and crusty and in some cases, blindness may follow.
- 5. Space for Rearing:** Under intensive system, a floor space of 4 ft² to 5 ft² per duck is essential, whereas in semi-intensive system, a floor space of 3 ft² in the night shelter and 10 ft² to 15 ft² as outside run bird would be adequate.
- 6. Housing:** Ducks do not require elaborate houses. The house should be well ventilated, dry and rat proof. The roof may be of shed type, gable or half round. It may have solid or wire floors. The wire floors are not popular with breeders.
- 7. Brooding of Ducklings:** Ducklings may be brooded on wire floor, litter or batteries. The brooding period of layer ducklings is 2-3 weeks. In general, in colder season, brooding period may extend up to 1-2 weeks longer than the regular period. Provide hover space of 90-100 sq.cm per duckling under the brooder. A 100 watt bulb can brood 30-40 ducklings. The temperature of 32°C is maintained during the first week. It is reduced by about 3°C per week till it reaches 24°C during the fourth week. In wire floor, space of 0.5 sq. ft per bird and in litter 1 sq. ft per bird is sufficient up to three weeks of age. Water in the drinkers should be 5.0-7.5 cm deep, just sufficient to drink and not to dip themselves. In deep litter brooding, the thickness of the litter will be 3 cm and above to absorb the excess moisture in the ducks' droppings. In extensive system, no artificial warmth is provided, but the heat of brooding shed is conserved by making "Closed tents" (Tent brooding) to provide the required warmth. The ducks are allowed to swim in water after the brooding period is over.

Grower Management Ducks may be reared in intensive and semi intensive system. Under intensive system, floor space of 3 sq. ft per bird up to 16 weeks of age is sufficient. Under semi intensive system of rearing, a floor space of 2-2.5 sq. ft per bird for night shelter and 10-12 sq. ft

per bird for outside run is necessary for free flow of birds up to 16 weeks. Water in the drinkers should be 10 -12 cm deep to allow the immersion of their heads. Partitions up to the height of 60-90 cm separating the pen and run are adequate for control of ducks. In rural duck farming, straight run ducklings (male and female) will be reared up to 10 to 15 weeks of age. For Layer Management Under intensive system, a floor space of 4 sq. ft per bird is essential. In Semi Intensive System, a floor space of 3 sq. ft per bird for night shelter and 10-12 sq. ft per bird of outside run space is required. For wet mash feeding, 10 cm of feeding space and for dry mash or pellet feeding 7.5 cm of feeding space per bird is required. For the collection of clean hatching eggs, a nest box with 30x30x45 cm dimension shall be provided at the rate of one per three ducks. A light of 14-16 hours is necessary for optimum egg production. The age at first egg and 50 percent egg production are 120, 140 days and the annual egg number is 320 eggs for Khaki Campbell ducks in intensive farming. The daily feed intake during laying period will be 120-140 g. depending on the rate of egg production and body weight. The body and egg weights at 40 weeks of age are 1.8 kg and 68 grams, respectively.

8. Breeding Management: The desirable sex ratio for good fertility and hatchability for ducks is 1:6 for intensive rearing and 1:15 to 1:-20 for extensive rearing system. In extensive system of rearing of rural ducks, farmers keep a wide sex ratio of 1:20 to 1:25, however they get a reasonable good fertility of 70-80 percent.

9. A typical supply chain under backyard duck rearing system:



The model can be explained as stated below:

LH services	Service area	Particulars	Ownership
Parent farm	Block	At parent farm Drake and Duck are kept for supplying eggs to hatcheries.	Individual entrepreneur at block level
Hatcheries	Cluster	At cluster level hatcheries are units for supplying young ducklings to the mother unit	Producers Group at cluster level attached with LCC
Mother unit	Village	The existence of small scale “mother unit” spread at village level serves as brooding unit where young ducklings are kept for 3-4 weeks under good heat and light conditions, and are appropriately fed and vaccinated. This is critical because after three weeks the ducklings weigh around 250 gms and are able to live and thrive in the open range, scavenging rearing system	Individual entrepreneur / PashuSakhi

10. Economics of raising backyard duck (Comparative statement of Khaki Campbell and desi variety):

- **Parent farm:** For a 960 birds’ capacity parent farm unit for backyard duck rearing, an initial investment of about Rs 7.3 lac will be required. In addition to this for a 55 weeks’ cycle a recurring cost of about Rs 14 lac will be required. This will generate a net income of about Rs 3.3 lac after depreciation and interest payment. The details are in annexure-IV.
- **Economics of Mini hatchery (2080 eggs):** The economics of a hatchery of 2080 eggs capacity under backyard duck rearing system found that an estimated Rs 6 lac initial investment will be required. In addition to this an operational cost Rs 6 lac per year will be required and this will generate a net income of about Rs 50 thousand per annum. The details of the economics is shown in annexure-III.
- **Economics of a Mother unit/ Hardening centre of Chicks (Unit: 2000 birds):** The economics of a mother unit of 2000 birds capacity under backyard duck rearing system require an estimated Rs 2 lac initial investment. In addition to this an operational cost of Rs 0.94 lac per cycle (1 month) will be required. In a year 9 cycles are possible that will generate a net income of Rs 40,900 after deduction of depreciation. The details of the economics is shown in annexure-II
- **Income at HH level:** At the household level per year six cycles can be completed. The economics of a backyard duck rearing household post mother unit intervention of 20 birds capacity under backyard duck rearing system found that with a nominal initial investment, the net income can be obtained up-to Rs. 8,500 (Detail in annexure-1).

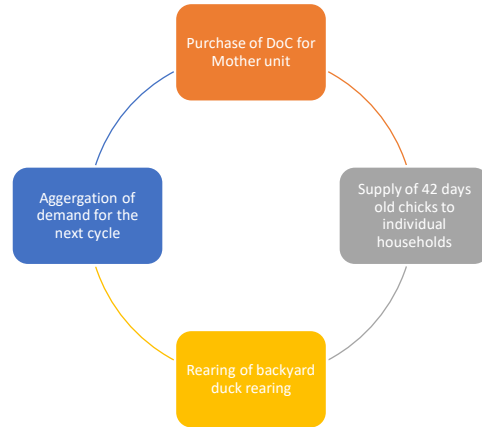
It is pertinent to emphasize here that the cost of investment can be minimised with local customization (without compromising the science behind it) and the use of locally available materials, own contribution (labour and material).

11. Source of Funds: The source of funding for the setting up of Parent farm, Hatchery and mother unit can be (a) own contribution, (b) CIF loan {the Household poultry unit mentioned in the Annexure - 4 can be financed from Community Based Organizations (CIF/SHG Bank loan/Own funds)}. For mother unit, the SHG may provide a partial loan (a very small loan amount depending on availability of funds) from CIF/Own fund/Bank loan. (c) Bank linkages and (d) Convergence with DAHD schemes (State government and central government). Possible convergence opportunities have been shown below:

Purpose	Extend support through the Program / Scheme	Benefits and targeted segment
Promotion of mother unit, hatchery and parent farm for poultry	Sub-Mission on rural poultry entrepreneurship program	Support the identified PGs/SHGs/Mahila Kisan /CRPs identified by SRLM for the program. Under this scheme, the beneficiary is entitled to a 50% subsidy of the project cost
Meat Processing	Animal Husbandry Infrastructure Development Fund	<p>Under this activity, private companies, individual private entrepreneurs, FPOs, Section 8 companies, can take 90% loan from the scheduled Bank for the establishment of small, medium, large integrated mechanized meat processing plant for sheep, goat, pig and poultry for hygienic handling, establishment of value addition chain for the manufacturing of meat products, transportation of meat through cold chain establishment.</p> <p>The Central Government will provide interest subvention up to 3% (including 0.6% of the corpus handling and risk management charge by the market borrower). The beneficiary will get a two-year moratorium during which the beneficiary not to re-pay any loan amount. The entire loan amount needs to be paid within five years after the moratorium period.</p>

Besides, under the National Livestock Program of Animal Husbandry Department there is provision of providing loan for the setting up of Parent farm, Hatchery and Mother Unit which is further subsidized by the government

12. Intervention strategy: Initially, the intervention can be initiated with setting up of mother unit in the village through Pashusakhi / Entrepreneur with day old chicks out sourced from different agencies. The supply of other inputs like medicines vaccine can also be ensured through various agencies if purchased in bulk.

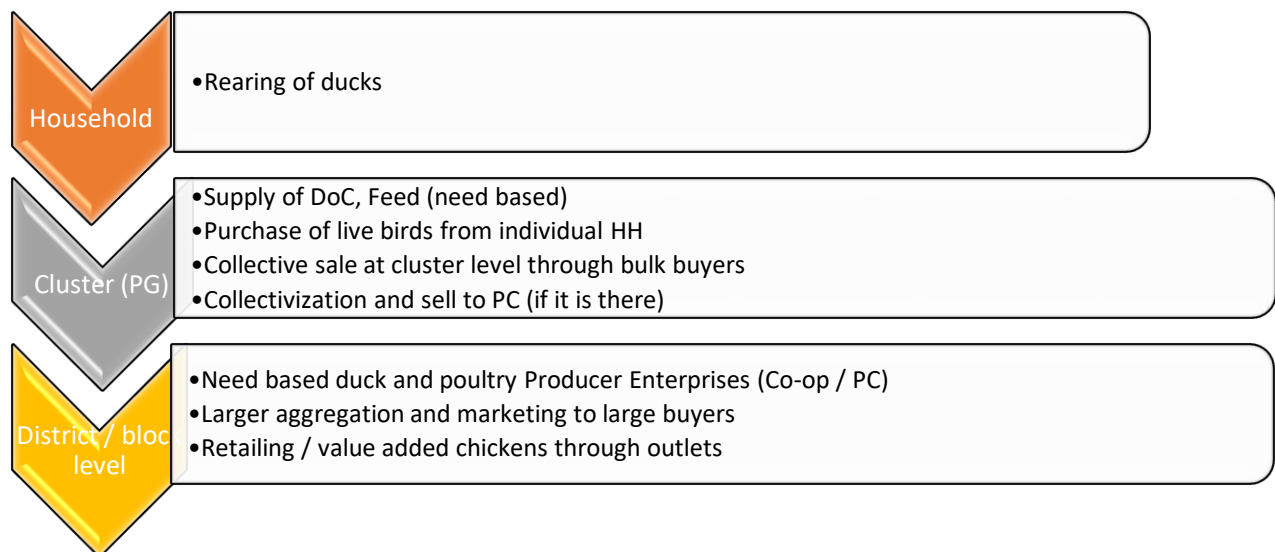


13. Role of PashuSakhi: The role of Pashusakhi is of significant importance as they have multi-fold jobs of (a) training the farmers, (b) vaccinating and deworming the poultry and also of (c) setting up of poultry/duckery mother unit which will enable them to have sustainable means of livelihoods.

14. Training and Capacity Building: The training and capacity building of the mother unit owner can be done through:

- National Resource Persons
- Supplier of Day Old Ducklings
- Hand holding can be done through CRP rounds by the experienced CRPs/PRPs of some pioneer States like Jharkhand where they have been practicing it for quite some time.

15. Marketing: Marketing is not an issue for duck rearing producers. They have a ready market available locally, and both live birds and eggs receive a higher price than poultry.



16. Risks mitigation (diseases and their control): Duck plague, Aflatoxicosis, Botulism, Aspergillosis, Colibacillosis, Ornithosis, Duck viral hepatitis, Duck cholera etc. Besides there are a number of Parasites, such as internal parasites (flukes, tape worm, and round worm) and the external parasites (lice, mite ticks etc.) which can be controlled through proper vaccination and deworming.

17. Conclusion:Duck farming in India is in an emerging sector and can serve as an important livelihood intervention if supply of quality ducklings is ensured, farmers are properly trained, and disease prevention services become accessible. Duck farming can be promoted as a rural enterprise. The need of the hour is to industrialize the production system of Duck in the same way as chicken industry has revolutionized.

Annexure A

Performance of Khaki Campbell and Desi duck under backyard system of rearing					
s no	Traits	Performance			
		Khaki Campbell		Desi	
		Male	female	Male	Female
1	Body wt in gm of				
1a	Day old chick	36	31	28	25
1b	8 weeks	380	288	330	242
1c	20 weeks	1209	1176	1122	989
2	Age at first egg (days)		172		196
3	Mortality upto 10 weeks	6%	6%	4%	4%
4	Mortality after 20 weeks	12%	12%	7%	7%
5	Mortality after 21 weeks (Laying stage)	15%	15%	9%	9%
6	Average annual egg production		193		79
7	Egg colour		Light brown		Light brown

Annexure I Business plan for household post mother unit at Household level

Economics of Duck rearing Egg Purpose (20 Duck Unit)					
S No.	Particulars	Unit description	Unit cost	No of units	Cost
A.	Fixed cost				
A1.	Poultry Shed (Night Shelter)	Sq Ft	100	20	2000
A2.	Drinker, Feeder, Nest and other accessories	Lumpsum	1000	1	1000
	Total A				3000
B.	Recurring cost				
B1.	Cost of Ducklings	21 day old, 300 gm weight	105	20	2100
B2.	Cost of supplementary Feed	40 gm feed/ day for 5 week	30	28	840
B3.	Cost of supplementary Feed (Female)	40 gm feed/ day for 70 week	30	196	5880
B4.	Deworming & other medicines etc	Rs. 30/ duck/ year	30	10	300
	Total B				9120
C.	Other costs				
C1.	Interest on fixed & recurring cost	12% yearly for 16 month			1939
	Total C				1939
D.	Receipts				
D1.	Income from sale of eggs	Sale of eggs start after 20 week and 1 duck gives 225 eggs in year	7	2250	15750
D2.	Income from sale male duck	Male ducks will be sold after 2 month of age	150	15	2250
D3.	Income from sale culled female duck	Culled ducks will be sold after 72 week of age	120	15	1800
	Gross Receipts				19800
	Net Income				8741
	Return on Investment				79.04%

Source : JSLPS

Annexure II

Business plan of Mother unit/ Hardening center of Ducklings

Unit Size		2000		Birds	
Sr. No.	Particulars	Unit description	Unit Cost	No. of Units	Total Cost
A.	Fixed cost				
1	New building construction	Sq Ft	300	667	200000
2	Drinker, Feeder and other accessories	Lumpsum	180	40	7200
	Total A				207200
B.	Recurring cost				
1	Cost of day old ducklings	No.	35	2000	70000
2	Feed Cost	Kg	32	600	19200
3	Medicine etc	Lumpsum	0.75	2000	1500
4	Cost of Incharge- Mother Unit	Per cycle/ Month	1	7000	7000
5	Incentive to APS	per bird	5	1800	9000
	Total B				106700
C.	Other costs				
1	Depreciation on fixed cost	25% per annum			51800
	Total C				51800
D	Receipts				
1	Sale of 15 days old birds	Kg	65	1800	117000
	Gross Receipts				117000
	Gross profit per cycle (D-B)				10300
	Gross profit for 1 year	9 cycle in year			92700
	Net profit after deduction of depreciation				40900

Initial Investment required per unit	Per Unit	313900
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Source : JSLPS

Annexure III

Business plan for Hatchery unit of Ducklings

Particulars	Unit	Year 1			
		No. of Units	Unit Cost	Value	
			(INR)	(INR)	
Capital Expenditure					
Hatchery unit with other machinery & accessories (2080 eggs)	Number	1	200000	200000	
2 KVA inverter with solar support	Number	1	150000	150000	
Platform & other establishment	Number	1	50000	50000	
Construction of Building for Hatchery (20X10 Sqft)	Number	200	1000	200000	
Total capital expenditure				600000	
Output (Revenue)					

	Sale of ducklings	Number	17,472	35.0	6,11,520
Total Revenue					6,11,520
Expenditure					
1. HR Costs					
	Hatchery Operator	Person months	12	7,000	84,000
	Hatchery assistant	Person months	12	4,000	48,000
2. Recurring Costs					
	Rent/ Maintenance	months	12	2,000	24,000
	Electricity	months	12	1,000	12,000
	Purchase of eggs	Number	24,960	12.0	2,99,520
	Transportation	Number	17,472	1.5	26,208
	Cartoon for packaging	Number	349	20.0	6,989
Total Expenditure Costs					5,00,717
Gross Profit					1,10,803
Depreciation (machinery/equipment/tools)					60,000
Net Profit					50,803

Source : JSLPS

Annexure IV

Estimated Economics of Parent Unit for Duck (Indian Runner)				
Particulars	Unit description	Unit cost	No of units	Cost
Fixed cost				
Poultry Shed	Sq Ft	300	2400	720000
Drinker, Feeder, Nest and other accessories	Lumpsum	510	19.2	9792
Total A				729792
Recurring cost				
Cost of 16 week old ducklings	No.	350	960	336000
Feed cost (for 16 to 19 week)	Kg	30	2419	72576
Feed cost (for 20 week to 72 week age)	Kg	25	42739	1068480
Vaccination, Deworming & other Medicine	Lumpsum	50	960	48000
Packaging & transportation	No.	0.5	148400	74200
Labour cost	Month	13	10000	130000
Total B				1393256
Other costs				
Depreciation on fixed cost	10% per annum			72979
Interest on Capital cost	10% per annum			114317
Total C				187296
Receipts				

Sale of eggs	No.	12	148400	1780800
Sale of culled birds	Kg	130	960	124800
Gross Receipts				1905600
Gross profit per cycle (D-B)				512344
Net profit after deduction of depreciation				325048
Return on Investment				15.31%

Source : JSLPS

Reference:

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