CENTRAL POULTRY DEVELOPMENT ORGANISATION AND TRAINING INSTITUTE

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MANAGEMENT GUIDE FOR RURAL POULTRY

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INTRODUCTION

Poultry farming in India has transformed into a techno-commercial industry from the status of backyard farming since three decades. India stands as third largest egg producer and fifth chicken meat producer in the world with about 60 billion eggs and 2.2 million metric tons of chicken meat. This production is achieved generally by commercial poultry operations; however a significant contribution comes from rural poultry also.

Keeping this in background, the Government of India formulated policies to support and augment rural poultry which contributes nearly 30% of revenues in the poultry sector. This was planned and being implemented through central sector schemes with 3-tier structure. The first tier involves Central government institutions, ICAR organizations, State Agriculture Universities, Veterinary Universities and private rural bird breeders for supplying the requisite parent stock of rural birds. The second tier involves State Institutions, State Poultry Farms, and District rearing centers etc., which were duly assisted by a scheme called “Assistant to State Poultry Farms” for strengthening infrastructure and to meet operational expenditure. The third tier involves grass root institutions, NGOs and farmers to operationalize the scheme.

The present status of agriculture, and food crop production makes it inevitable to design a policy which is complimentary and suitable for landless labourers and rural masses. Animal Husbandry Sector plays a major role in alleviating protein deficiency and sustainability of rural economy. Rural Poultry is a good occupation for the rural masses for economic sustainability and nutritional security. Many countries have adopted Poultry as a micro enterprise with women empowerment as a model for rural economic sustainability.

Rural Poultry involves Chicken Farming, Duck Rearing, Turkey, Quail and Guinea Fowl Farming with minimum available infrastructure and open range farming. It is suggested that these formats are made better sustainable with usage of locally available materials such as food grain waste, floor mill waste, vegetable waste etc., to keep the cost of production at a minimum. There are two benefits one can derive by way of rural backyard Poultry Farming namely Income generation by selling eggs or Poultry for meat and the major benefit would be supplementing the household nutritional requirement by way of self consumption to the needy.

Ministry of Agriculture, Department of Animal Husbandry has four Central Poultry Development Organisations and a Central Poultry Performance Testing Centre catering to the mandate of Rural Poultry Development, production, multiplication and supply of these products across the country.

Basic concept of rural poultry revolves around production of coloured variety of chicken similar to desi or local variety with a higher performance outputs namely more body weight gain and more egg production under low input technology conditions.

The Central Poultry Develoment Organisation & Training Institute, Hessarghatta, Bangalore was the pioneer regional poultry farm established during 60s for scientific breeding and development of commercial poultry. As a significant achievement of the scientific breeding, an egg variety named HH260 was developed and introduced in the country way back in 70s. Present mandate being production and development of rural poultry, this Organisation is developing and multiplying rural meat and egg varieties for the benefit of rural masses.

The popular meat variety of this organization is CHABRO, egg variety is KAVERI and dual variety being Aseel Crosses. Apart from this Kalinga Brown, CARI NIRBHEEK and HITCARI are also available for farmers. Recently, Vanaraja, a rural meat variety and Grama Priya, a rural egg variety from Project Directorate on Poultry Hyderabad is being introduced for multiplication and supply for the farmers.

Following guide is an illustration of requirements of farming practices for all the rural chicken in case of semi intensive or intensive farming.

ESTABLISHMENT OF FARM

The main objective of farm is to ensure maximum security, from diseases, environmental pollution and other stress factors. The farm should be located far from any other commercial poultry operation to prevent contamination of environment and diseases, otherwise it will cause economic loss to the farm. Farm should be located in an elevated area with good air current and the location should be well connected by road for easy accessibility.

RURAL POULTRY FARMING

All our rural birds like, Cauvery, Kalinga Brown, Nirbheek, Hitcari, Gramapriya and Vanaraj due to its moderate body weight and high egg yielding capacity are more prefered under Semi-intensive farm conditions in rural/tribal areas. The feather colour of all the rural type birds are multiple coloured and mostly brown eggers. They have the better immune capacity and thereby strength of survivability is maximum. Because of moderate body weight the birds can escape from predators. Initial brooding up to 6 weeks in brooding unit/nursery is required and are let out for semi free range or free range management system.

PROMISING FEATURES/CHARACTERS:

- Better egg production compared to other rural/nati chicken
- Better adaptability to backyard/ free range system.
- Tinted eggs/light brownish eggs.
- Better survivability.
- Low or negligible input cost.

MANAGEMENT AND HEALTH COVER

Rural chicks need brooding care during the initial 6 weeks of age. After 6 weeks, they can be let free for scavenging in the backyard. The excess males can be reared separately and marketed for meat purpose.

The birds need to be initially habituated/trained to return to the nest in the evening for night shelter/security/safety. The night shelter should have good ventilation and protection from predators and plenty of clean water should be made available. The birds must be vaccinated against Marek's and Ranikhet diseases. There should be periodic de worming at 3-4 months intervals.

FEEDING

The rural type chicks need balanced feed during the initial 6 weeks of age under nursery rearing/brooding. In the nurseries, the chicks are reared on standard chick starter ration. For the Grower birds in the second phase, besides the feed material available in the free range, natural food/greens like waste grains germinated seeds, mulberry leaves, azolla, drumstick leaves and subabul leaves (high protein sources). The need for extra feed depends on the free range available, intensity of vegetation, availability of waste grains, insects, grass seeds. The average body weight of 1.3 to 2.4 kgs will be attained by 120 days and if required should be provided with supplemental calcium sources like lime stone powder, stone grit, shell grit at 4 to 5 gms/bird/day.

This approach yields successful results with high rate of survivability and good egg production. The eggs laid are tinted and will have fairly good size.

CHICK MANAGEMENT

Brooding:

Brooding of chicks is very important operation in the early age of the chicks. Chicks are provided with required temperature by artificial means. The details of various brooding methods are presented below.

Preparation of poultry shed/house:

After liquidation of old flock the following operations are required to be created for clean and healthy environment in the poultry house.

- Remove all the movable equipment from the shed. Soak in water and clean thoroughly in tap water and finally dip in disinfectant solutions. Finally wash in clean water, sun dry and store.
- Litter should be removed from the shed and transported away from the farm inclosed containers or in gunny bags and disposed off properly.
- Lightings and feed and water pans should also be taken out of the shed and cleaned properly.
- Accumulated dust and cob web formed on the wall, ceiling, mesh etc., should be removed.
- Insecticide is to be sprayed over the litter, walls, mesh, roof etc.,
- Shed should be washed using a pressure washer.
- All the repair works of the shed including cages, equipment and mesh shoul be carried out.

- Water tank, pipeline and water channel in the shed be cleaned thoroughly. First drain the water, fill the water lines with de-scaling and disinfectant agent overnight. Flush with water for 2-3 times to remove all dirt and debris.
- Shed sould be pressure washed again with a suitable disinfectant solution
- Flame guns should be used inside and outside of the houses.
- Walls should be white washed and metal surfaces should be painted if needed.
- The equipment and fitting should be re-assembled and the curtains be tied.
- Spray an insecticide to kill the insects.
- Shedshould be kept under lock (shed rest) for a minimum of 2 to weeks.

One day before arrival of chicks:

- Set heating system (switch on brooders) at 29-32 (85-90)for cage brooing or at 32-35 (90-95) at chick level for floor brooding.
- Cover the floor (litter) of brooder with news paper and arrange feeders, waters etc.,
- Check water system and adjust to proper height of chicks, Disinfect and flush water lines.

On arrival of chicks:

While placing chicks in the brooders, count the number of chicks placed in each portion cell to ensure proper stocking density.

- Fill waterers with clean water or operate water system. during the first six weeks, operate feeders to provde feed more than twice daily.
- Check brooder temperatures.
- On placing chicks, trigger water cups to encourage drinking.'
- Provide the feed in mash or crumble form. Crumble/pellet feed will ensure more uniform growth.
- Provide adequate light continuously during the first two days.
- Electrolytes/antibiotics supplementation in drinking water will reduce transportation and environmental stress and also reduce initial chick mortality.

Floor Brooding:

Spot brooding:

This conventional method of brooding depends overhang on spot heating either by using electrical bulbs or gas brooders. In this system one (over hanging or standing) is provided for every 300-600 chicks.

Hovers are reflectors which provide warmth to chicks using electrical bulbs or gas brooders. The air temperature under the hover is kept at a required level. Hovers are made up of metal, wood or bamboo baskets fitted with electrical bulbs, infra red bulbs or heating elements and gas heaters.

Brooder guard:

2 to 2½ foot away from the hover, brooder guard is provided to prevent chicks straying away from heat source, feed and water. Brooder guards are generally made up of G.I sheet with foot height. For first 2 days, feed is sprinkled on the paper and after that chick feeders are provided. Chick waterers should be provided first day onwards. Feeders and waterers are arranged in cart wheel manner, so that chick need not have to walk long distance to access feed and water.

Temperature:

The temperature is regulated by adjusting the height of hover have with the number of bulbs/flame. During the first week, brooding temperature under hover (2 inches above litter at the top of the hover) should be 32°-34° (90F-95F)with a weekly reduction of 5 till it reaches 27° (80F).

Brooder temperature for chicks at different ages:

Age of chicks	BROODER TEMPERATURE	
	°F	°C
1st Week	90	32.2
2nd Week	85	29.4
3rd Week	80	26.7
4th Week	75	23.9
5th Week	70	21.1
6th Week	70	21.1

The correct temperature of brooder is known by the behavior of the chicks. When the chicks are comfortable, they will spread out evenly with in chick guard area. If the hover temperature is too low the chicks will huddle together under hover, where as when the brooder temperature is high they tend to move away from hover. The brooder should be started 8-10 hours before arrival of the chicks.

Floor Space:

The chick should be provided sufficient hover and floor space. Growth and feed conversion ratio (FCR) are proportionate to floor space available for chicks, apart from the genetic potential of the bird. Overcrowding results in stress and mortality chick requires 8 square inches of hover space. In deep litter brooding 0.3 sq. ft. floor space per chick is to be provided during the first week. During the 6th week, 1 sq. ft. floor space per chick is essential.

Relative humidity:

During the first week of brooding, the relative humidity should be 65.70% when the relative humidity drops below 50% it results in dehydration of chicks, which may affect growth, uniformity and livability of chicks. In houses where gas brooders and nipple drinkers are used, relative humidity can drop down to as low as 25%. To maintain the required humidity frequent spray of sanitized water is advised.

Ventilation:

Supply of fresh air to the chicks is highly essential. Brooding will cause depletion of oxygen and buildup of carbondioxide, ammonia etc., the airtight curtains should be avoided. It is recommended to keep a gap of 3.5 inches between the ceiling and side curtains to facilitate gas exchange between the house and environment. In extreme weather conditions curtains, windows, doors and fans need to be effectively used to maintain optimum ventilation.

Feeders:

During the first day, feed may be sprinkled or provided in the trays for encouraging the new born chicks to pick up feed. From day two onwards feed is provided in trough type of feeders. As the chick grow bigger suitable feeders are used. The feeders should be at proper height for the birds to eat properly. As chicks grow the feeder should be lifted up by adjusting their height to the back level of the bird. The level of feed in feeder has a direct correlation with feed wastage. As a thumb rule, 10 percent feed is wasted if the feeders are two thirds full compared to 3 percent wastage if they are half full and only 1 percent if they are one third full. Therefore, feed should be offered more frequently with small quantity at each time and helps to gain weight more uniformly.

Feeder space allowance: Trough feeders 2.5cm – up to 2 weeks and 5cm –up to 6 weeks.

Waterer space: Clean and fresh water should be provided to the chicks waterers from day old chicks should be conveniently placed close to the hover and alternatively to feeders. Water may be provided using troughs, bell shaped drinkers and caps. With these drinkers 0.75 inches (2 cm) of water space per bird is recommended.

Water should be provided before the chicks are released under the brooders. Bell type chick drinkers are essential during first three days of brooding irrespective of type of brooding. In deep litter brooding drinkers should be evenly distributed. Height of the drinkers needs to be adjusted according to the chick height. One chick drinker is enough for 100 chicks up to 2 weeks of age and regular bell drinker is sufficient for 50 birds from third week onwards chick feed/grounded maize should be provided 2 hours after chicks are placed under the brooder. During first week, frequent feeding of small quantity should be practiced to stimulate feed consumption.

Beak trimming:

Trimming of beak is an important managemental practice. This is done to prevent cannibalism and wastage of feed. Beak trimming is a sensitive operation and it should be done by trained people. The beak trimming is done at 3rd week One third of the beak should be trimmed. There are different, methods, cutting and cauterization with hot iron method is popular. Cauterization helps in arresting and destroys the tissue responsible for generating beak growth. Proper care should be taken not to burn the tongue of the chick.

Use electrolytes and vitamin (K and C) in the water two days before and after beak trimming. Deeper feed should be provided for several days.

Litter Management:

Litter management place a vital role in controlling the disease in the flock. When birds are housed on deep litter, placing of waterers and their maintenance should receive due attention to keep the litter dry. The litter should be stirred at regular intervals depending on the environmental temperature, humidity, ventilation fecal moisture content, quality of water system. In case of humid coastal areas, add about 0.5 kg of superphosphate / hydrated lime may be thoroughly mixed up with litter spreading in 15 sq.ft. floor area.

Birds are allowed to feed ad libitum during the first few weeks of age. To ensure proper development of feathers skeletal growth and immune system birds should be provided feed all through the initial 4 and 5 weeks.

Grower Management:

The importance of growing systems are to provide growers an ideal environment to obtain optimum body weight at sexual maturity so as to perform better during laying phases and production phase. The main objective of the grower management is to achieve target body weight and flock uniformity.

Housing:

Generally the stock remains in the same building during brooding and growing. A floor space of 2.75 and 2.80 sq. ft. per bird is required. During growing period as feed restriction is followed. The level of feed restriction is as low as 40% of ad libitum feeding.

Water restrictions:

Where wet litter and wet droppings is more common, water restriction to be followed and birds tend to consume more water during feed restriction. To prevent wet litter, water is turned on one hour prior to feeding and kept available at least up to two hours after all the feed is consumed. Water restriction is not advisable when the ambient temperature goes above 30°c.

Beak trimming:

The second beak trimming is done between 12-14 weeks of age.

Prelay management:

Objective of this period is to ensure optimum skeletal development body conformation and leg strength to sustain reproductive ability and fitness throughout the laying period. Growth during this period greatly influences uniform sexual maturity.

Uniform flock will ensure to get all the birds into lay at the same time. The rate of body weight gain increases every week. This is achieved by giving weekly feed increments from 17 to 20 weeks.

Lighting:

Light affects the physical activity, metabolic rate and other physiological functions. Total lighting required during lay is upto 16 hours. Birds growing during the period of increasing day length (January to June) mature earlier and perform better than those grown during decreased day length (July to December).

Health care and Bio-security:

Bio- Security:

Bio-security is the system used to prevent and control of infections diseases in poultry. Consider that people, vehicles, equipments, birds etc., entering the farm may carry infections agents, hence measures to be taken for restriction of their movement. Disinfection of sheds, equipments and internal shed surfaces should be done following flock depletion.

Suggested vaccination schedule for the rural layer birds:

Age	Vaccine	Route	
1st day	Marck's disease	Subcutaneous	
7nd day	ND, Lasota (live)	Eye drop	
14rd day	IBD	Eye drop	
6th Week	Fowl pox (live)	Subcutaneous	
8thWeek	R_2B	Subcutaneous	
Medication			
~~**Prevention**~~	~~**Age**~~	~~**Drug**~~	~~**Route**~~
~~Anti stress~~	~~1st day~~	~~Electrolytes~~	~~Water~~
~~Early chick Mortality~~	~~1-5 days~~	~~Antibiotic~~	~~Water~~

Performance of Rural Layers

Day old chicks (gms)	42 - 45 gms
Age at sexual maturity	150 days
Age at peak egg production (weeks)	34 – 37 weeks
Egg production up to 72 weeks	180-200 eggs
Average egg weight	45-55 gms.
Mortality:	
Chicks (0 - 8 weeks)	3%
Grower (9 - 20 weeks)	4%
Adult (21 - 72 weeks)	1%

Feed Formulation:

For rural type birds from day one to 42 days of age in percentage.

Sl. No.	Ingredients	Options 1	2	3	4
01	Maize	17.6	0.0	0.0	0.0
02	Bajra	10.0	0.0	0.0	45.3
03	Ragi	20.0	18.6	0.0	0.0
04	Soya bean meal	5.0	0.0	0.0	0.0
05	Sunflower cake	8.9	12.3	40.9	0.0
06	Mustard cake	15.0	15.0	0.0	0.0
07	De oiled Rice bran	200	20.0	0.0	25.2
08	Salt	0.50	0.50	0.50	0.50
09	Declaim phosphate	1.4%	1.64	1.68	2.0
10	Shell	0.80	0.77	1.21	1.21
11	Methaonine	0.09	0.06	0.02	0.03
12	Lycine HCL	0.05	0.05	0.34	0.22
13	Vitamin mixture	0.04	0.04	0.04	0.04
14	Choline chloride 50%	0.10	0.10	0.10	0.10
15	Trace Minerals	0.12	0.12	0.12	0.12
16	Antibiotic	0.05	0.05	0.05	0.05
17	Coccidiostat	0.05	0.05	0.05	0.05