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Agriculture Skill Council of India

# Participant Handbook

Sector  
**Agriculture and Allied**

Sub-Sector  
**Poultry**

Occupation  
**Poultry Farming**

Reference ID: **AGR/Q4302, Version 1.0**  
**NSQF Level 3**



**Broiler Farm Worker**





**Shri Narendra Modi**  
Prime Minister of India

“ Skilling is building a better India.  
If we have to move India towards  
development then Skill Development  
should be our mission. ”



**Certificate**  
**COMPLIANCE TO**  
**QUALIFICATION PACK- NATIONAL OCCUPATIONAL**  
**STANDARDS**

is hereby issued by the

**AGRICULTURE SKILL COUNCIL OF INDIA**

for

**SKILLING CONTENT: PARTICIPANT HANDBOOK**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: **'Broiler Farm Worker'** QP No. **'AGR/Q4302 NSQF Level 3'**

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Authorised Signatory  
(Agriculture Skill Council of India)

## Acknowledgements

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It is expected that this publication would meet the complete requirements of QP/NOS based training delivery, we welcome the suggestions from users, Industry experts and other stakeholders for any improvement in future.

## About this book

Broiler Farm Worker, also known as Poultry Farm Assistant is responsible for handling various activities involved in broiler chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and healthmanagement to raise broiler chicks according to market's standards. As per these standards the Broiler Farm Worker should not work independently, should be laborious and must have the ability to make operational decisions pertaining to his area of work. The trainee will enhance his/her knowledge under the guidance of the trainer in the following skills:

- **Knowledge and Understanding:** Adequate operational knowledge and understanding to perform the required task
- **Performance Criteria:** Gain the required skills through hands on training and perform the required operations within the specified standards
- **Professional Skills:** Ability to make operational decisions pertaining to the area of work.

The job requires the individual to have good eyesight and observation ability, attention to details, ability to work in a team, goal orientation, health safety and hazards orientation, willingness to wear protective gears and the stamina for long hours of work. This job-role requires the participant to work independently and be comfortable in making decisions pertaining to his/her area of work. Further it requires clarity, skill to basic arithmetic and algebraic principles too. The participant should be result oriented and responsible for his/her own working and learning. The participant should also be able to demonstrate skills of using various tools and decision making for instant problem solving.

## Symbols Used



Key Learning  
Outcomes



Steps



Time



Tips



Notes



Unit  
Objectives



Exercise











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# 1. Introduction

Unit 1.1 - Introductions to broiler farming in India



## Key Learning Outcomes

**At the end of this module, you will be able to:**

- Describe the broiler farming in India

## UNIT 1.1: Introductions to Broiler Farming in India

### Unit Objectives

**At the end of this unit, you will be able to:**

- Discuss basic concepts of Broiler farming and its operations

### 1.1.1 Introduction

Broiler chickens *gallus domesticus*, or broilers, are a gallinaceous domesticated fowl, bred and raised specifically for meat production.

Broiler poultry farming is a lucrative business. Generally highly meat productive birds or poultry breeds are called broiler poultry. But broiler chicken is a special species of poultry, which is a great secret. Only four countries of the world know about this secret and they supply and maintain all the demand of broiler chickens. Broilers are like other common poultry birds. But this broiler is made in a scientific way for producing more meat in a short time. Basically, broilers are only for meat production.

#### Selecting Broiler for Business

There are many breeds of broiler. Before selecting broilers for business the farmer has to maintain some process. Those important steps are described below.

- The broiler chick of one day should weigh between 36 to 40 grams.
- It is found that if the baby chick of one day old becomes good weight then it will give great return when you will sell them.
- To get more and affordable benefits from broiler poultry farming the farmer should select the good and high productive breeds for business.
- As broiler convert food to meat so provide them high quality food.
- The farmer has to ensure high ratio of protein and calorie in broiler chicken food.
- For the chicken of 0-6 weeks the food should contain 22.24% protein and 2900-3000 metabolic heat.
- Among the amino acid, lysine and methionine is very essential and important in broiler poultry food. Because these acids help to enhance chicken health, and help to convert food to meat.
- In broiler food the ratio of fiber should not more than 6 percent.
- Vitamin A, B2, D3, B12 and K is an extensive requirements to broiler food.
- Potassium, Iodine, Manganese sulphate and Zinc carbonate should be mixed well separately and feed the chicken.
- A little amount of disinfectant should be mixed in broiler food and this will keep the chick free from diseases.



## 2. Understanding Work Requirements



Unit 2.1 - Understanding work requirements

Unit 2.2 - Criteria for site selection

Unit 2.3 - Potential of commercial broiler farming



## Key Learning Outcomes

**At the end of this module, you will be able to:**

- Outline on broiler industry growth in India
- Describe nutritional importance of chicken meat
- Identify private players in broiler industry
- Gain scientific knowledge on various important factors for site selection
- Describe basic information on land selection
- Assess the environmental needs
- Identify and planning manpower needs
- Explain different commercial broiler hybrids

## UNIT 2.1: Understanding Work Requirements

### Unit Objectives

**At the end of this unit, you will be able to:**

- Explain broiler industry growth in India

### 2.1.1 History of Broiler Industry in India

#### History of Broiler Industry in India

- 60 days old broiler birds with tender meat started coming as separate entity after 1975. Initially parents and grandparents of the hybrid broilers were imported
- Breeding operations started in Delhi and later shifted to South India
- Tremendous technical work has gone in to broiler production in the fields of genetics, nutrition, breeder management, hatchery management, housing and disease management
- The broiler growing period has gradually come down to less than 40 days from 60 days

#### Importance of Chicken Meat

- Annual per capita consumption in India is only 42 eggs and 1.6 kg of poultry meat, which is below the levels recommended by the Nutritional Advisory Committee– 180 eggs and 11 kg of poultry meat
- High mutton prices, religious restrictions on beef and pork, and the limited availability of fish outside coastal regions have all helped to make poultry meat the most preferred and most consumed meat in India.
- Expanding domestic production and increasing integration have pushed poultry meat prices downward and stimulated its consumption

#### Indian Broiler Industry

- Indian poultry industry is one of the fastest growing sector in India
- Broiler production in India has been rising at the rate of 8 -10 per cent per annum
- India ranks eighteenth largest producer of broiler
- This industry has grown mainly due to initiative of private enterprises, minimal government intervention, considerable indigenous poultry genetic capabilities, support from complimentary veterinary health, poultry feed, equipment and poultry processing sectors.
- All-in-all-out rearing system is excellent one and 2 kg broilers produced on 36 days with 1.5 kg feed per kg chicken with less than 3% mortality are being achieved on low-cost open houses reared by rural farmers
- Contract farming or integration plays a major role commercial broiler industry



### Integration in Broiler Industry

- The economies of scale that have led to integrated poultry production in other countries have also begun to take hold in India. In southern and western parts of India, large-scale vertical integration is catching up especially in broiler production.

Under this system, the integrator invests in the entire value chain, including:

- grandparent farms;
- parent stock farms;
- hatcheries; and
- feed mills.

Poultry farmers invest in poultry sheds and equipment on their existing land.

Integrators should provide:

- day-old chicks;
- feed;
- medicines/vaccines;
- training to farmers in process
- cost management; and
- technical supervision

Integrators take the broilers at around 42 days of age, and farmers are paid growing charges according to agreed rates. The farmers are given an incentive bonus if the FCR and/or mortality rate is better than the contracted level. Thus, the farmers get considerable price insurance

#### Key players in integration include:

- Venkateshwara Hatcheries
- Suguna
- Godrej
- Shanti
- Taffa
- Arumbagh
- Skylark

#### Type of vertical integration or contract farming common in the broiler industry

Broiler farmer	Integrator
Owns the broiler shed and equipment. Buys deep litter/cage material. Attends to rearing activities, such as brooding, feeding, watering (own labour or hired labour). Bears cost of electricity/fuel for brooding. Takes the manure (litter) and empty gunny (food) bags.	Supplies the following inputs: <ul style="list-style-type: none"> <li>• day-old broiler chicks (owns a breeder farm and hatchery for this purpose);</li> <li>• broiler food required by the birds (owns a feed-mixing unit);</li> <li>• medicines and vaccines (buys quality medicines and supplies them to the farmers as required); and</li> <li>• emergency and routine veterinary services (engages qualified veterinarians for the purpose).</li> </ul> Pays the rearing cost to the farmer to meet the cost of litter, labour, electricity, rent for buildings and equipment, and also a part of the profit.  Takes back the grown broilers and arranges for their sale mostly through traders.

Source: The poultry industry in India Rajesh Mehta and R.G. Nambiar



## UNIT 2.2: Criteria For Site Selection

### Unit Objectives

**At the end of this unit, you will be able to:**

- Explain various critical factors for site selection including environmental needs, human resources and general facilities

### 2.2.1 Introduction

Farmers greatly consider for suitable site selection for broiler farm house. Nowadays, farmers should be aware of poultry house related to location of the farms such as nearby neighbors and public areas, environmental issues like water quality, odors litter disposal, electrical supply, etc. and rules and regulations that affect farming operations. Four factors need to be considered for site selection such as Land requirements, basic facilities, environmental factors and other management related issues.

#### Criteria For Selection of Poultry House Sites

##### I. Land requirements

- Should select elevated terrain to construct poultry sheds and also hard sandy soil is more suitable. Elevated land helps to avoid water logging and flooding near the sheds.
- Avoid locating poultry farm in a swampy area or bottom of the valley as it may limit proper management of poultry houses.
- Construct sheds in such a way that the end walls face East-West direction and the side walls face North-South direction, so that direct sunlight will not enter the sheds.
- Prevailing wind direction must be considered when wind currents flow from the chicken house toward any residence. Irritating odors from poultry houses have to be given adequate time and distance to dissipate before reaching a nearby residence. The distance from the poultry house location to any residence would need to be sufficiently greater if prevailing winds were toward the residence.
- Ensure sufficient land available on the farm to properly utilize the litter as fertilizer, or have proper facilities to remove and dispose the litter outside.
- Wind shed is a term which describes wind flow pattern on the downside of an existing building. To help minimize complaints by neighbors, strong consideration must be given to keep nearby homes out of the windshield area.



*Fig 2.2.1 Criteria for selection of poultry house sites*

## II. Facilities

- Ensure adequate facility for water, electricity, approach road, supply of chicks, feed, veterinary services and nearness to market for sale of culled birds and eggs.
- Proper roads must be adequate to allow feed trucks, chick-delivery vehicles and live-haul trucks access to the buildings during all times of the year.
- Provide adequate floor spaces per bird. as per BIS specifications for construction of poultry sheds are available.

## III. Environmental factors

- Construct sheds in such a way that predators (cats/dogs/snakes) will not enter the shed. Avoid entry of rats by constructing rat proof civil structures.
- Keep the shed clean and free from flies/mosquitoes nuisance etc.
- Provide adequate light and ventilation and comfortable housing conditions during all seasons (cool in summer and warm in winter).

## IV. Managemental issues

- After every batch, the dirty litter material and manure should be removed, walls and floors should be cleaned, white washed with lime and disinfected with 0.5% malathion or DDT insecticide spray or formaldehyde solution.
- If deep litter system is followed, always use dry and clean litter material (sawdust, paddy husk, etc.). Spread 4" layer of litter on the floor, keep clean/disinfect brooding, feeding and watering equipment and then introduce chicks in the house. The litter material should be always kept loose and dry. Stir the litter twice a week. Any wet litter/droppings etc. should be removed and replaced with fresh/clean dry litter.

- If cage system is followed, ensure that droppings are spread with lime powder or 10% malathion spray twice a month to prevent menace of flies. The droppings under the cage can be removed after 6 months.
- Provide strong roof and hard flooring. Raise plinth of the shed at least one feet above the outside ground level.

### Conclusion

Proper selection of site for construction of new poultry house or farm is extremely important. The best time to handle potential problems is BEFORE they occur. Proper planning will help prevent environmental problems from occurring, and will save time and money in the long run.

### Tips

Points to remember:

- Important Environmental factors
- Basic infrastructural facilities
- Correlate land selection with disease prevention

### Exercise

1. Minimum distance between two farms

Ans: \_\_\_\_\_  
\_\_\_\_\_

2. Minimum distance norms between one farm house to other farm house

Ans: \_\_\_\_\_  
\_\_\_\_\_

3. Land need to be elevated

Ans: \_\_\_\_\_  
\_\_\_\_\_

4. List out common facilities

Ans: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Indicate important environmental factors

Ans: \_\_\_\_\_  
\_\_\_\_\_

6. Optimum norms of water

Ans: \_\_\_\_\_  
\_\_\_\_\_

7. Outlines marketing outlet

Ans: \_\_\_\_\_  
\_\_\_\_\_

8. How predators can to be avoided

Ans: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Reasons for the fly nuisance

Ans: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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**Notes**



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## UNIT 2.3: Potential of Commercial Broiler Farming

### Unit Objectives

**At the end of this unit, you will be able to:**

- Explain starting broiler farming activity in India

### 2.3.1 Potential of Commercial Broiler Farming

#### Introduction

- Chicken meat considered as good quality proteins, minerals and vitamins in human diet.
- Broiler farming can be improve economic status of the farmer and also can offer subsidiary income and gainful employment to farmers.

#### Broiler

- Broiler is a tender meat from young chicken of either sex that grows from a hatch weight of 38-40 gms to a weight over around 1 Kg 700 gm in about 6 weeks time only

#### Broiler meat production

- India rank – fifth largest broiler meat production
- Annual production – 6 million MT
- Per capita availability of poultry meat in India – 2.96 kg; but ICMR recommendation of 11 kg meat per annum

#### Merits of broiler farming

- Need low initial investment compared to other farms
- Income generation within short period (probably 6 weeks after commencement)
- Can maintain more number of batches at a time
- Amount of feed required for unit body weight gain is lower while compare to other livestock
- High demand of poultry meat in society

#### Potential of commercial broiler

- Interventions of the corporate sector with an enabling policy environment provided by the government of India or State Government in poultry sector provides huge employment opportunities for the rural poor society under backyard or small scale broiler farming units
- Our Indian governments and poultry corporations are being given to create infrastructure facilities so that new entrepreneurs are attracted to take up this business.
- Broiler farming has been given considerable importance in the national policy and has a good scope for further development in the years to come.

#### Commercial broiler strain

- Specially developed varieties of chicken (broilers) are now available with the traits of quick growth and high feed conversion efficiency

### Commercial broiler strain – breeding groups

- Cobb- vantress ( with the cobb, Avian,Sasso and Hybro brands )
- Aviagen ( Ross,Arbor Acres, Lohman, Indian River and Peterson brands)
- GroupeGrimand ( with the Hubbard and Grimand,Fere bands).Cobb

### Cobb-Vantress

- Cobb-Vantress is a global company using innovative research and technology to make protein available, healthy and affordable worldwide
- Cobb's most recognized broiler is the Cobb 500



Fig 2.2.2 Cobb-vantress

### Cobb 500 - Feed, Yield, and Economics

- Cobb data have shown that protein and amino acids can be elevated by approximately 8 percent for the purpose of increasing breast meat yield, although higher feed costs per unit of live weight may be a secondary result.
- For the most economical feed per unit of live weight, lower amino acids may be more applicable, although slower growth rate and higher FCR may be a secondary result.
- The exact overall levels of amino acids should be determined by ingredient prices and finished product values (from the processing plant).
- The Cobb 500 is a flexible broiler that can bring good costs from low amino acid density feeds, or will respond with accelerated growth and breast yield using high amino acid levels.
- Cobb Technical Service will gladly assist customers to match specific economic priorities with formulation; however, the recommendations in this supplement represent very sound overall baseline levels.

### Cobb500 Broiler performance

Sex	Age	Weight (g)	Average daily gain (g)	Cumulative feed consumption (g)
Female	1 <sup>st</sup> week	184	26.3	167
	2 <sup>nd</sup> week	460	32.9	537
	3 <sup>rd</sup> week	914	43.5	1155
	4 <sup>th</sup> week	1463	52.2	2052
	5 <sup>th</sup> week	2083	59.5	3183
	6 <sup>th</sup> week	2671	63.6	4499
Male	1 <sup>st</sup> week	186	26.6	167
	2 <sup>nd</sup> week	470	33.6	546
	3 <sup>rd</sup> week	971	46.2	1228
	4 <sup>th</sup> week	1585	56.6	2222
	5 <sup>th</sup> week	2299	65.7	3520
	6 <sup>th</sup> week	3044	72.5	5073



## Cobb500 Broiler Nutrition

Recommended minimum specifications					
		Starter	Grower	Finisher 1	Finisher 2*
FEEDING AMOUNT/bird		250 g 0.55 lb	1000 g 2.20 lb		
FEEDING PERIOD days		0 - 10	11 - 22	23 - 42	43 +
FEED STRUCTURE		Crum b	Pellet	Pellet	Pellet
Crude Protein	%	21-22	19-20	18-19	17-18
<b>Metabolizable energy</b> (AMEn <sup>1</sup> )	MJ/kg	12.59	12.92	13.26	13.36
	Kcal/kg	3008	3086	3167	3191
	Kcal/lb	1365	1400	1438	1448
Lysine	%	1.32	1.19	1.05	1.00
Digestible Lysine	%	1.18	1.05	0.95	0.90
Methionine	%	0.50	0.48	0.43	0.41
Digestible Methionine	%	0.45	0.42	0.39	0.37
Met + Cys	%	0.98	0.89	0.82	0.78
Digestible Met + Cys	%	0.88	0.80	0.74	0.70
Tryptophan	%	0.20	0.19	0.19	0.18
Digestible Tryptophan	%	0.18	0.17	0.17	0.16
Threonine	%	0.86	0.78	0.71	0.68
Digestible Threonine	%	0.77	0.69	0.65	0.61
Arginine	%	1.38	1.25	1.13	1.08
Digestible Arginine	%	1.24	1.10	1.03	0.97
Valine	%	1.00	0.91	0.81	0.77
Digestible Valine	%	0.89	0.80	0.73	0.69
Isoleucine	%	0.88	0.80	0.71	0.68
Digestible Isoleucine	%	0.79	0.70	0.65	0.61
Calcium	%	0.90	0.84	0.76	0.76
Available Phosphorus	%	0.45	0.42	0.38	0.38
Sodium	%	0.16-0.23	0.16-0.23	0.15-0.23	0.15-0.23
Chloride	%	0.17-0.35	0.16-0.35	0.15-0.35	0.15-0.35
Potassium	%	0.60-0.95	0.60-0.85	0.60-0.80	0.60-0.80
Linoleic Acid	%	1.00	1.00	1.00	1.00

(Source: Cobb Broiler Performance and Nutrition Supplement) Ross

- **Ross Poultry** (now Aviagen) produce the Ross Broiler which comes in different strains: Ross 308 (most commonly used), Ross 708 and Ross Pm3

### Ross performance

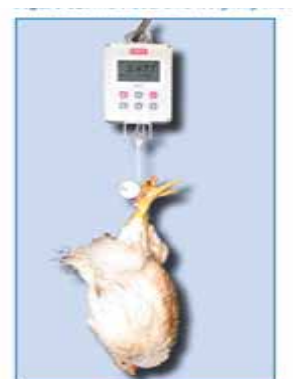
- Ross provide below table to assess the flock performance
- This table shows the minimum number of birds required to be sampled to give a live-weight estimate of defined reliability and accuracy within flocks of differing variability

Uniformity of flock	Number of birds to be weighed
Uniform (CV%= 8)	61
Moderate Uniform (CV%= 10)	96
Poorly Uniform (CV%= 12)	138

### Flock uniformity calculation

$$\frac{\text{Standard Deviation}}{\text{Average Body Weight}} \times 100$$

### Bird sample points for weighting and individual bird weighing



Source: **Ross Broiler Management Handbook: Preface Hubbard**

- The **Hubbard FLEX** package offers a competitive chick price, a low-cost live broiler, as well as good carcass conformation
- It indisputably offers the best FCR of all breeders currently on the market.
- Its total meat yield and conformation make it an ideal product for slaughter weights of between 1.8 and 3.0 kg
- **Hubbard F15** female enables production of a chicken offering the flexibility required by the modern poultry industry in terms of live cost and overall meat yield, across all ranges with a live weight of 1.5 to 2.8 kg. like its parents, this type broiler has one of the very best FCR's. Finally, its strengths also include carcass quality and livability

### Conclusion

- At present, broiler industry field is a emerged as the fastest growing livestock sector with greater acceptance of meat.
- During the last few decades, broiler farming has taken a quantum leap from a backyard venture into a fastest growing sector
- In order to get maximum benefit from this industry, a proper acquaintance on its technicality viz: breed, housing, feeding, management etc is essential.

