

# Recommended Practice for Broiler Farming



Sesta Development Services (SDS)  
Guwahati, India



Mizoram State Rural Livelihoods Mission  
Rural Development Department  
Government of Mizoram

## Contents

Introduction.....	2
Broiler Industry .....	3
Growth and responsible driver of broiler industry .....	4
Breed .....	5
Commercial Broiler (Cobb/ Hubbard/ Ross) .....	5
Housing .....	6
Brooding/Care of Chicks.....	6
Sanitation & Hygiene.....	7
Vaccination.....	7
Feeding .....	8
Record Keeping .....	9
Cost benefit Analysis.....	9
Some Common Diseases of Poultry.....	10
New Castle Disease (NCD) / Ranikhet Disease.....	10
Infectious Bursal Disease (IBD).....	10
Nutritional Deficiency diseases.....	11
Pullorum Disease (Bacillary white diarrhoea).....	11
Coccidiosis.....	12

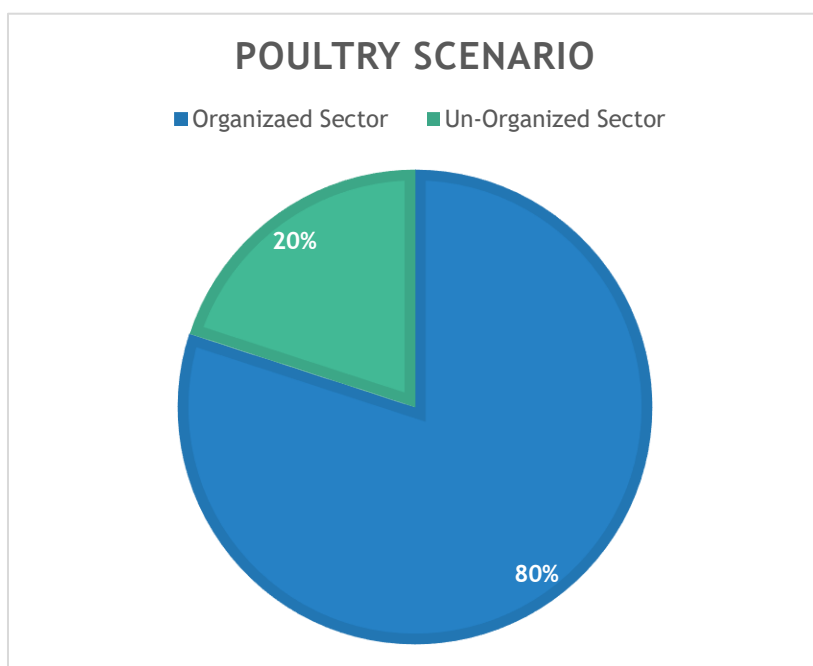
## Introduction

India is the third-largest egg producer after China and USA and the fourth-largest chicken producer after China, Brazil and USA. The per capita eggs consumption has gone up from 30 to 68 and the chicken from 400 gm to 2.5 kg. Human nutritionists recommend 180 eggs & 10 kg chicken per year. Most of the countries consume over 240 eggs and 20 kg of chicken. There is scope for enhancing the production. Production is getting more organised and move ahead of consumption resulting in optimum prices and with minimum profits.

India has 1.23 billion people and the number is growing every year. The focus is on “Development” meaning Good Food, Better Health & Living conditions to everyone. People spend more money on food when they earn more. Healthy food at attractive price will be the issue in focus. Eggs and chicken are accepted by all communities and are available at the most reasonable prices. Within a span of 25 years, the egg production has gone up to 70 billion from few millions and the broiler production has gone to 3.8 million tonnes from nowhere. Poultry is the most organised sector in animal agriculture, worth rupees one lakh crores. The growth is 6-8% in layers and 10-12% in broilers per year against the growth of agriculture as a whole which is around 2.5%.

Poultry sector in India is valued at about Rs. 80,000 crores (2015-16) broadly divided into two sub-sectors – one with a highly organized commercial sector with about 80% of the total market share (say, Rs. 64,000 crore) and the other being unorganized with about 20% of the total market share of Rs. 16,000 Crore. The unorganized sector also referred to as backyard poultry plays a key role in supplementary income generation and family nutrition to the poorest of the poor. It is estimated that with a poultry population of 729 million [30% layers at around 215 million and 40% broilers at around 480 million]

small and medium farmers are mostly engaged in contract farming system under larger integrators and there are around 30 million farmers engaged in backyard poultry as per 19th Livestock Census. The needs of organized and unorganized sectors are very different. Discussions with various stakeholders reveal that poultry sector- especially commercial poultry sector- is flourishing in certain pockets, where amenable environment exists, along with backward and forward linkages while the unorganized sector is very dispersed and micro-fragmented.



## Broiler Industry



Broiler bird was not known in India till 1975. Chicken was “spent hens” or male birds. The commercial broiler chicks ready in 60 days, more efficient with tender meat started coming as separate entity after 1975. The hatcheries imported the parents and the grandparents of the hybrid broilers. The breeding operations started in Delhi and later shifted to South India. Movement of parent stock, hatching eggs, day-old chicks initiated the broiler growing everywhere. The hatcheries sold day-old chicks to farmers who raised them and sold to traders. Live broilers became a separate food entity in 10 years. Live broilers are not transported for long distances.

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.

More broiler growers and improved efficiencies have changed the shape of the industry. Feed (65%) and chicks (25%) account for 90% of the broiler inputs and the consolidation started in the production. There is a wide gap between the economics of the smaller units purchasing feed & chicks and the ones using their own feed & chicks. Big companies with larger investments came in and the smaller units compromised on growing the broilers for the company, restricting themselves to the 10% of the production cost. This synergy in the form of “Contract Farming” is an excellent development that took place in India. Farmers with small land-holding find growing broilers on “All-in-All-out” basis for a company, in a poultry house built on the land is giving better and assured returns compared to agriculture which is more nature-dependent and uncertain.

## Growth and responsible driver of broiler industry

Parameters	1990	2015
Broiler parents housed (cr)	0.7	3.5
Broilers/month (crore)	5	25
Broiler feed price (Rs/kg)	20	30
Chicken per head (kg)	0.4	2.5
Broiler price/kg live (Rs)	25	65
Broiler integration	0%	60%
Broiler FCR	2.2	1.65
Days to slaughter (2 kg)	48	38
Multi-age group farms	90%	10%
Chicken processing	1%	7%
Antibiotics issue	Nil	50%

The feed & chicken price go up. The chicken prices move very slowly. The gap is being met with efficiency in production.

Various drivers are listed below which are responsible for the higher growth of poultry farming in India;

1. In India, poultry sector growth may be attributed to many factors like rising incomes and a rapidly expanding middle class, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and marketing costs.
2. Integrated production, market transition from live birds to chilled and frozen products, and policies that ensure supplies of competitively priced corn and soyabean are keys to future poultry industry growth in India. Further, disease surveillance, monitoring and control will also decide the fate of this sector.
3. Concurrently, India's unorganized and backyard poultry sector is also one of the potent tools for subsidiary income generation for many landless/ marginal farmers and also provides nutritional security to the rural poor.
4. These achievements and growth rates are still being sustained despite the ingress of avian influenza which was a severe setback for the industry, showing the resilience of the subsector, perseverance of the private sector and timely intervention by the Government.

## Breed

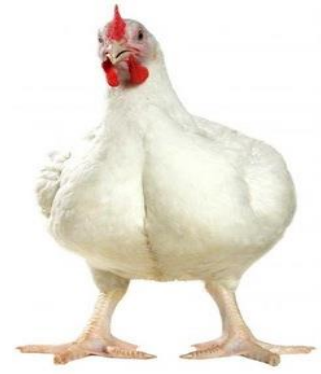
### Commercial Broiler (Cobb/ Hubbard/ Ross)



Cobb Broiler



Hubbard Broiler



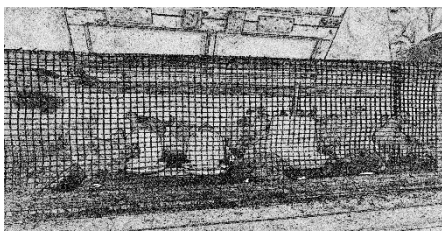
Ross Broiler

Commercial broiler has many advantages over the native birds, the most significant one is accelerated growth rate (1kg in 21 days from Day old chick compare to 5-7 months in case of native birds in free range condition).

The most significant difference in the management of commercial broiler is:

1. Needs specific Housing (temp must be maintained between 20-35° Celsius & should be preferably made up of Inorganic material)
2. All in all out system is recommended (where all the sheds of a household should be stocked in one go & vacated in one go) Vis-à-vis Continuous system (stocking multiple age group birds in single shed or from one side of the shed, mature birds are getting vacated & from other side, new chicks are coming at a periodical/ Non-Periodical interval)
3. Strict Sanitation, Hygiene & Bio-Security measures
4. Specified Feed (formulated feed)
5. Sanitized & pH balanced Drinking Water
6. Proper & timely vaccination
7. Supportive therapy (at various stages of life)

The important management practices are as follow:



Housing



Brooding/Care of chicks



Sanitation & Hygiene



Vaccination



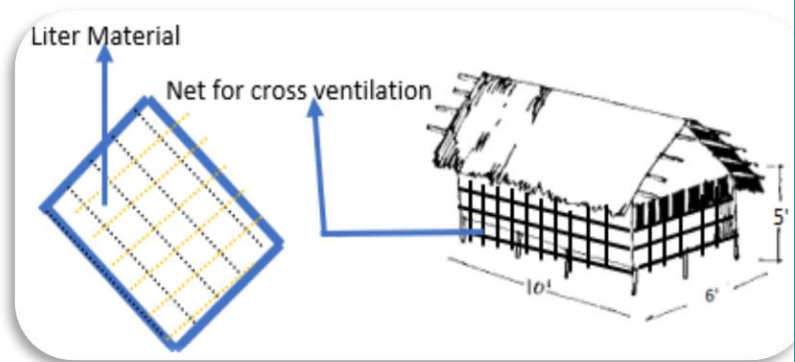
Feeding



Record keeping

## Housing

- The shed must be well ventilated & well-lit with provision of electricity for illumination in the night
- 1.5-2 sq. ft. area per bird (for 3.5 kg bird size) should be provided
- Litter Material should be 2-3 inch deep
- Wood powder or rice husk could be used as litter
- Roof height should be min. 5 Feet
- Roof must be made up of some insulating material (wood) or should be covered with thick grass or other insulating material in Summer (in case of metallic roof) to regulate the temp inside the shed
- The inside temp of the shed should be regulated to 25-30 degree Celsius. This could be done by spraying water in summer & by providing some heat source in winter.
- During rains, provisions should be made to prevent entry of water & wetting of litter. Wet litter should be changed immediately
- The retaining wall around the shed must not be greater than 1.25 feet high to allow cross ventilation
- 80-90% of the walls should consist of Wire Mesh (Jaali) to allow ample cross ventilation
- Shed direction must be east-west with the Wire-Mesh (Jaali) facing North-South direction. This alignment does not allow sunlight to get into the shed thereby saving from unnecessary heating of the shed
- The shed preferably made up of material which is inorganic in nature, as organic matter tends to harbour disease causing micro-organisms (Virus, Bacteria, Protozoa, Prions etc.)
- The floor must be non-slippery & preferably made up of RCC for easy cleaning
- During strong winds, the shed must be covered on both sides, as it may frighten the birds & the large birds may die of it



## Brooding/Care of Chicks

- The chicks should weigh min. 40 gm, must be alert & active, must be standing on both its legs & must be feeling hot when placed on the flip side of the palm
- Chicks requires 100degree Fahrenheit/ 37.7° Celsius temp during the first week of their life followed by 95degree Fahrenheit/ 35° Celsius temp during the second week. The temp allows the chick to
- Temp lower then recommended leads to huddling (chicks gathered in one corner & stomping some chicks during the process) while higher temp leads to Dehydration of the body leading to Pasty Vent condition
- The chick's movement should be restricted by using a chick guard & allowing them space 0.10 Sq ft per chicks during the first 4 days
- Regularly visit the chicks (4 times in a day minimum) particularly in Dawn, Dusk & mid night
- The chick guard should be arranged in a manner so that the enclosed space is a circle. IF there are corners, the chicks shall huddle in the corner leading to stomping of chicks
- Chick guard height must be between 1-2 feet only. It can made up of Metal sheet or Synthetic fibre material. The chicks guard must be secured on ground by placing appropriate hooks.

- The chicks are must be bedded with 3-5 inch deep litter & the litter should be covered by newspaper for the first 4 days. The newspaper should be replaced daily
- The newspaper makes the cleaning easy & does not allow the chick to peck upon the litter material
- The chicks should be provided with Lukewarm water mixed with Electrolyte (2%) solution (one can use Jaggery & Black Salt mixture), Vit. A, D<sub>3</sub>, E & Vit. B Complex solution. Immunomodulators (Like Selenium-Vit. E) could also be used. If using electrolyte solution, Kidney Stimulator should be used. In case of Jaggery & Black Salt use, it could be avoided
- The chicks must be provided with some light source. An incandescent bulb could serve both purpose of lighting & heating source in the shed.
- The area inside the chick guard should be increased on 4<sup>th</sup> day with the removal of newspaper & keep increasing the area every 4<sup>th</sup> day & allowing full area (1.5/2 sq. ft.) by 12-14 days age

## Sanitation & Hygiene

- The chicks guard must be cleaned & sanitized thoroughly before storing
- The litter should be maintained dry
- Fortnightly (Summer & Winter Season)/ Weekly (Rainy Season) Unslaked Lime should be added to the litter @20-50 gm per kg of litter
- Spray (B-904 @8ml/ltr water) should be done fortnightly in the shed & Over the birds also
- NO other bird must be allowed to visit/ set up nest inside the shed
- The dead birds should be properly disposed (either buried with Salt/Lime or shall be burned or should be properly boiled before feeding to pig)
- The feeder & drinkers should be cleaned weekly. The drinker should be washed thoroughly (to remove the bio-film). Any sort of greasing inside the drinker should not be allowed to settle
- The drinking water pH must be maintained 6.5 & water sanitizer must be used
- After marketing the birds, the shed must be thoroughly cleaned using chemical disinfectant. With proper precaution, fumigation is the best alternative
- Dump the waste litter at least around 100 meters from Shed or burn the litter
- Thoroughly remove the dust & cobweb
- All-in All-Out system of flock management must be followed
- For ectoparasites control, tobacco leave concoction (tobacco leave soaked overnight in a jug of water) or wood ash (left over after burning wood for preparing food) could be smeared on the body of the bird

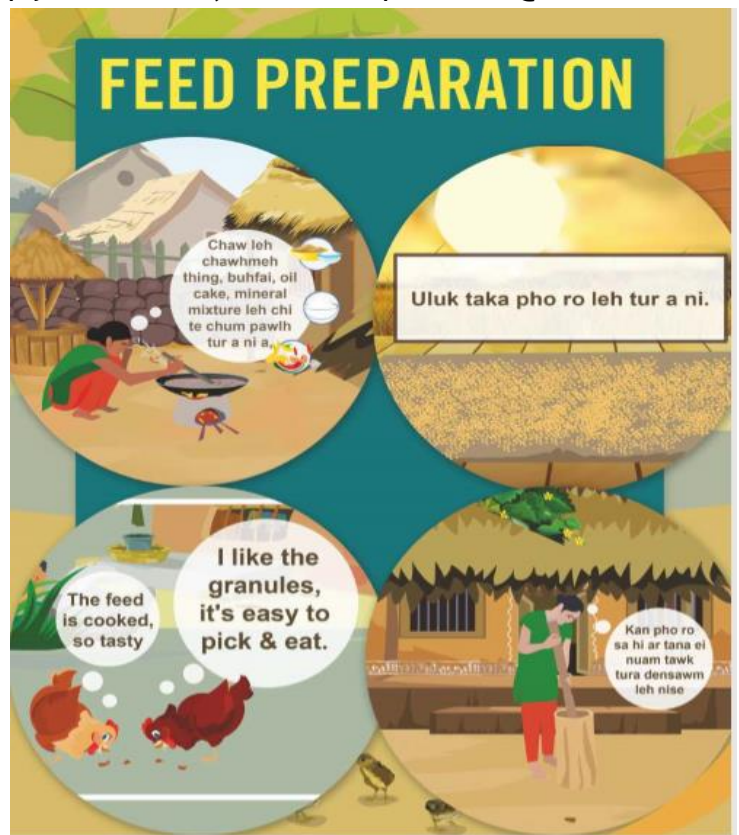
## Vaccination

Sr. No.	Age	Vaccine	Route	Dose
1	1 day	ND Killed	S/C	0.2 ml
2	5 day	B1	Eye drop	1 drop
3	12 day	IBD	Eye drop	1 drop
4	40 day	LaSota	Drinking water	Add vaccine in 3 litre/100 birds
5	55 day	LaSota	Drinking water	Add vaccine in 3 litre/100 birds



## Feeding

- Put 2 ft diameter plate for Drinking & feeding. Grower feeder (8 kg. feed capacity, hanging type) & drinker (5 lt. water capacity or line supply bell drinker) should be provided @ 3 drinker & 3 feeders/ 100 adult birds while 1 drinker (1.5-2 lt) & 1 feed plate (2 feed diameters with 1.25-inch height) should be provided for every 100 chicks
- The drinker & feeder's feeding area must be of red colour, as red colour attracts the birds & results in enhanced consumption of Feed & Water.
- The feed should be available ad-libitum (as per the bird's wish) i.e. 24\*7, the feeders must be filled
- Pre starter should be provided for the first 10 days followed by Starter for the next 10 days followed by Finisher feed till marketing
- The change from one feed type to another should be gradual i.e. From Pre Starter to Starter & Starter to Finisher i.e., don't change the feed abruptly. Start adding 20% feed 3-4 days before changing the feed & increase it to 40%, 60%, 80%, 100% by day 5.
- Supportive therapy (liver Tonic) shall be provided with the feed change
- 2 days Pre & post vaccine, immunomodulator must be given (Selenium- Vit. E complex)
- In case of unavailability of formulated feed, first few days the chicks must be fed with Pre Starter mixed with Rice/Wheat or other grain (broken with size less than 2mm).



Sr. No.	Feed Type	Particle Size (mm)	Energy (Kcal/ kg)	Protein (%CP)
1	Pre Starter	1.5 mm	2900	22
2	Starter	2.5 mm	3000	20
3	Finisher	3.5 mm	3200	18

- For homemade feed: one can mix the broken gains with some Oil Seed Cake, Common Salt & mineral mixture. While giving broken grain, 5gm grits (small sized stones) must be added to the feed to allow better digestion.
- Water temp. plays a very imp. Role in overall feed uptake of the birds. If the water is too cold or too hot, the bird's feed consumption will go down. So, in winter lukewarm water & in extreme summer cold water should be provided
- Feeder must be hanged & the height must be maintained at the level of back of the birds
- The rearer must visit the shed at least 5-7 times in a day. In every visit, the rearer must mix the feed in the feeder with his hands. The feeder must be refilled at least twice daily.

## Standard Weight Gain & Feed consumption details

**Standard day-old chick weight:** 40+gm (any chick less than 40 gm should be rejected, as the chances of survivability drops down below 40 gm day old body wt.)

Sr. No.	Age	Wt.	Feed Consumed (Daily)	FCR
1	7 Days/ 1 Week	190 gm	35 gm	0.9
2	14 Days/ 2 Weeks	465 gm	68 gm	1.16
3	21 Days/ 3 Weeks	943 gm	111 gm	1.26
4	28 Days/ 4 Weeks	1.53 kg	152 gm	1.4
5	35 Days/ 5 Weeks	2.2 kg	189 gm	1.53
6	42 Days/ 6 Weeks	2.9 kg	216 gm	1.67
7	49 Days/ 7 Weeks	3.5 kg	235 gm	1.81
8	56 Days/ 8 Weekd	4.1 kg	245 gm	1.96

\*Cobb 500 broiler performance guidelines supplied by Cobb-Ventress

## Record Keeping

- Proper record maintenance is most important to compute the economics of the enterprise
- 2 types of records are maintained:
  - Production Records: Dealing with the production side i.e. Wt. of the chick, Growth monitoring, Mortality, Disease profile, Vaccination record,
  - Financial Records: Deals with the money matters like: Price of Chicks, Supplier of chicks, Date of Sale, Price, wt. at sale, price of feed stuff, expenses on feed, chicks & other inputs
- In case of any disease outbreak/ loss, the records only help to pin point the cause & rectify the same



## Cost benefit Analysis

CBA (cost Benefit Analysis) of a Small Broiler Rearing unit			
Parameter	Unit	Value	Remarks
<b>Unit Size</b>	<b>No</b>	<b>50</b>	
Market Wt.	Kg	3.5	
Duration	Days	70	
Mortality	%	7	
No. of Cycles in an year	No	4	
Price of Chick	Rs./Chick	50	
Price of Vaccine & Medicine	Rs./Chick	5	
Price of Sanitation & Hygiene	Rs./Bird	5	
Total Packed Feed	Kg./Bird	4	250gm Pre-Starter, 750gm Starter, 3kg finisher

Price of Packed Feed	Rs./kg.	40	
Other Feeding Expenses	Rs./Bird	25	Home cooked feed (Fortified with Mineral Mixture & Salt) mixed with packed feed after 20 days of age
Feeding Expenses	Rs./Bird	185	
Misc. Expenses	Rs./Bird	5	
<b>Expenses</b>			
Shed Cost	Rs.	1500	
Chick Cost	Rs.	2500	
Vaccine & Medication Cost	Rs.	250	
Sanitation Cost	Rs.	250	
Feed Cost	Rs.	9250	
Misc. Expenses	Rs.	250	
<b>Total Expenses</b>	<b>Rs.</b>	<b>14000</b>	
<b>Revenue</b>			
Total Meat wt. for Sale	Kg	163	5% mortality included
Price of Meat	Rs./kg.	150	
<b>Total Revenue</b>		<b>24413</b>	
<b>Profit Per Cycle</b>		<b>10413</b>	
Total Cycles in a year		4	
<b>Total Profit in an year</b>		<b>41650</b>	

## Some Common Diseases of Poultry

### New Castle Disease (NCD) / Ranikhet Disease

It is a viral disease characterised by respiratory signs and nervous signs.

#### Symptoms

- Respiratory signs include Respiratory distress, coughing, sneezing. Nervous signs include wing paralysis, incoordination, torticollis, swelling of head and chalky white diarrhoea.
- The disease causes considerable loss to poultry industry by way of morbidity, mortality and drop in egg production. It is very essential to vaccinate the birds with a strict protocol of biosecurity system to prevent the birds from this disease.

#### Treatment

No specific treatment is available but broad-spectrum antibiotic is to be used to prevent secondary infection.

### Infectious Bursal Disease (IBD)

It is a widely prevalent viral disease occurring in brooding and growing stage of chicken causing significant morbidity and low mortality rate.

## Symptoms

- Birds show severe depression, incoordination, watery diarrhoea, soiled vent feather and ruffled feathers and vent picking.
- The virus distorts and destroys the immune system. The birds remain immuno-suppressed and they have very poor response to vaccine. It is very important to vaccinate the birds against this disease.

## Treatment

No specific treatment is available but broad-spectrum antibiotic is to be used to prevent secondary infection and other complications.

## Nutritional Deficiency diseases

**Vitamin A:** There is a decrease in rate of growth, droopiness, staggering gait and ruffled appearance of feathers. The eye become inflamed and there is discharge from the nostril.

**Vitamin B1:** A diet containing little or no vitamin B1 causes a prompt decrease in appetite followed by decline in live weight. In the late case there is paralysis of wings and neck and finally to other body parts. In the early stage of paralysis birds swallow feed or water with great difficulty, in the later stages the head is raised and drawn back; death follows.

**Vitamin B6:** The symptoms consists of slow growth, depressed appetite and inefficient utilization of feed followed in some cases by spasmodic convulsion and death.

**Vitamin D:** Deficiency of Vitamin D leads to abnormal development of bones of growing birds. There is retardation of growth, enlargement of hock joint and marked softening of the beak.

**Vitamin E (Encephalomalacia, Crazy chick disease):** The symptoms of nutritional encephalomalacia are described very well by its popular name 'Crazy chick disease'. When the chicks attempt to walk, they often fall forward, backward or to one side and then wheel in circle.

## Pullorum Disease (Bacillary white diarrhoea)

The disease is mostly seen in chicks where mortality is high, adult birds do not show the sign of disease but act as a carrier.

### Symptoms:

- In acute case, chicks are found dead without showing any symptoms. In subacute form chick show malaise, drowsiness, anorexia and disinclination to move. Profuse diarrhoea is present with white colour faeces.
- Strict sanitation and biosecurity measures should be taken and affected birds should be separated.

### Treatment:

Antibiotic should be given as prescribed by a veterinarian.

## Coccidiosis

This is a protozoan disease of poultry with high mortality and morbidity rate.

### **Symptoms:**

- Affected birds become dull depressed with ruffled feathers. Loss of appetite and remain as gathering in the corner of the shed. Diarrhoea and with blood containing stool.
- Mouldy and decomposed feed should not be given.

### **Treatment:**

Anticoccidial should be given as prescribed by veterinarian.