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Research Article

Poultry Farming Procedure and Minimization of Poultry Waste through Urban Agriculture: A Case Study of Dey Poultry Farm

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ABSTRACT

Poultry farming is one of the fastest growing segments of the agricultural sector in Garhbeta, Midnapore. It has become a source of revenue for individual farmers. However poultry farming is associated with various environmental pollutants that causes environmental risk like airborne bacteria, pathogenic microorganisms into the environment and food chain. Poultry production is quickly becoming more intensive, geographically concentrated, vertically integrated and link with global supply chain. In Garhbeta, Midnapore area broiler poultry sector has a great potential for providing employment opportunities to the unemployed youth, rural women, small and marginal farmers. Here huge poultry waste managed by land disposal, resulting in environmental problems and odour is very local issue and waste almost attract flies, rotten and other pests that create local nuisances and carry diseases. At improper disposal of poultry carcasses contribute huge water quality problem specially in this areas. This paper present the poultry farming procedure and waste generation from poultry farm which is a significant matter of our environment and management of these waste is also a great challenge for those poultry farm.

Keywords: *Garhbeta, Midnapore, Poultry farming, Urban agriculture, Environment and management, Broiler poultry sector, Land disposals, Pests.*

INTRODUCTION

Poultry farming is defined as raising different types of domestic birds commercially for the purpose of meat, eggs and feather production. Poultry farming along with its poultry production needs to be taken care of improper treatment or avoidance can become risk for human and environment. Local disturbances and landscape degradation are typical local negative amenities in the surroundings of Garhbeta, Midnapore poultry farms and here pollution of soil and water with nutrients, pathogens and heavy metals are generally cause by poor manure managements of some farms and occurs where manure is stored. In my project area huge poultry farms are established which are totally broiler poultry farms but poultry owners are not aware about poultry waste management property.

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Huge meat sellers regular comes to collect the broiler chicken from those poultry farms which increased their strong economic base but sometimes dead birds issues are a big problem among the poultry owner and meat sellers. Basically my project paper has focused on poultry production procedure (Broiler) and its impacts on the environment. Huge amount of waste water and solid waste are generated from the poultry industry. The solid waste comprises mostly excreta, bedding materials, feed material, hatchery waste, abattoir waste, sludge, etc, and there are diverse methods of getting rid of poultry waste ranging from burial, incinerations, source of energy, rendering, livestock feed, and composting. But my project related farms consider to dispose most of their wastes in ponds or bare lands which harms the environment a lot. These wastes must get dispose in a proper way. Poultry sectors in the mean time is playing a significant role in the reduction of poverty, malnutrition and unemployment problems.

Aims and Objectives of the Study

- The motive of this project is to provide an understanding of poultry production in a broad context from farm to fork.
- To identify the characteristics of poultry birds.
- To know the features of feeding procedures of poultry birds.
- Vaccination system of the poultry birds.
- Caging system.
- Lighting system facilities in poultry.
- Waste generation procedure.
- To know the dead birds management and disposal procedure of the poultry farm.
- To get the knowledge about the features of local pollution from poultry system.
- To identify the place of manure storage.
- To know the features of that kind of poultry bird which are been attacked by pathogens that is Salmonella and Campylobacter.
- To know the modern poultry production including breeding, nutrition, health, behaviour and welfare as well as the quality of meat and eggs.

Brief Description of the Study Area

- **Garbeta** is a census town in the Garhbeta I CD block in the Medinipur Sadar subdivision of the Paschim Medinipur district in the state of West Bengal, India. It is on the bank of the Shilabati. *Gar* in Bengali means a nullah. The boundary of the earlier town was surrounded by a small nullah.
- The locality is considered one of the major development hubs in the district. As like most of the Indo –Gangetic plain, the predominant soil and water type is alluvial. This area has got hot and humid summer. The monsoon mainly occurs during the months of July, august and September. During this period almost two third of the normal annual rainfall occurs which leads to sultry weather, flood and water logging in low areas. Garhbeta, Midnapore has abundance of fertile lands supported by handful rainfall had made the locality an agricultural paradise. Transport system of this area is well connected. Local passenger trains are available every now and then to go to Kolkata, Budge-budge, Katwa, Burdwan etc. The Matri Express passes from Garhbeta, Midnapore, not only two cities Kolkata and Dhaka but also two countries. Dum Dum airport known as Netaji Subhash Chandra Bose International Airport is less than 160 km from here i.e connected by road. Thus Garhbeta, Midnapore is very much well connected with all type of transport system. Thus the community present here is well benefited economically. This place is very much socially, economically connected with the city.

Review of literature

The poultry sub-sector is crucially important in the context of agricultural growth and improvement of diets of people. In recent decades, the demand for broiler meat is increasing in developing countries. At present there are mainly three systems of broiler rearing being practiced throughout the world. The bedding materials play a vital role for successful poultry production in floor

management systems. The bedding materials are used in the poultry houses for maintaining comfortable condition for birds. Now a day's environmental pollution is a great probem for our nation. Poultry litter is another factor for environmental pollution. But if we could manage it properly, it would be an asset to us. It is, therefore, appropriate that important information on poultry litter and its management systems need to make available to the general poultry men so that it may benefit them (Heller, 2006) .

- Broiler farming plays an important role in improving livelihood, food security and poverty alleviation in rural and semi-urban communities in developing countries. Broiler production has become a specialized and speedy business at present time for the people of the country. Short life cycle of the broiler and requirement of relatively less amount of capital attributed to its popularity to the farmers.
- Broiler meat contains high quality protein and micro-nutrients which has had a tremendous impact on health and nutrition for the poor people in rural areas. Again, another study reported that it can be the main source of family earning or can provide sufficient income and gainful employment opportunity to rural farmers throughout the year. Studies revealed that most of the broiler farm owners suffered from adequate amount of credit to run their farms and provision of credit for poultry farming is not yet very regular and well established practice among all the financial institutions. The overall objective of the present study is, however, to estimate and assess the extent of improving livelihood of small scale commercial broiler farmers (Abdou et al., 1990).
- Small and large-scale poultry farm are expanding rapidly, which are providing meat, eggs and employment. In the same time it is also produces large quantities of waste materials. The waste products of these farms are polluting the environment, although a small portion of poultry waste come to the use of fish and crop production by farmers.
- In general, for each kg of feed consumed, a chicken approximately produces 1 kg of fresh manure with variable water content, while a commercial layer produces about 20 kg waste per year. So, it is estimated that about 1560000 metric tons poultry manure is produced every year. Waste of a poultry farm includes litters from broiler and layers, hatchery debris, dead birds and much other debris. Broiler litter is a mixture of manure, bedding material, wasted feed, feathers and in some cases soil. These waste can be used successfully for crop production, but require soil testing, crop nutrient requirement, nutrient value of manures and proper storage and application. Moreover poultry litter can also be used as feed ingredient for cattle and as fuel in powerhouse (Adene, 1990)
- Huge amount of waste water and solid waste are generated from the poultry industry. The solid waste comprises mostly of excreta, bedding materials, feathers, feed material, hatchery waste, abattoir waste, sludge and bedding materials. (Adedayo, 2012). The high phosphorus content of poultry waste can increase crop production hence adopted as a sol nutrition augment (Mokwunye, 2000). There are diverse methods of getting rid of poultry waste ranging from burial, incinerations, source of energy, rendering, livestock feed, and composting. Other techniques that can be used in disposing poultry waste include its use in the treatment of heavy metal contaminated water and as a source of energy.
- A springing middle-class sector with massive income and greater buying power has elevated the demand for more poultry products hence, leading to increase in demand among the urban and pre-urban cities (Ahmad & Akhter , 2003)
- The poultry sector of modern India has transformed from backyard rearing to become commercial organized, scientific and vibrant industry in last four decades

ago. Poultry sector plays a significant role in improving the socio-economic condition of rural masses, by generating gainful employment and augmenting family income. particularly among the landless labourers, small and marginal farmers and women in rural areas. Now day by day, consumers are becoming more aware of safety and quality of food products consumed by them. They are interested to consume safer product without bothering to pay more. So, the production of safer poultry products without any chemical and microbial residues is the order of the day. Therefore, laying greater emphasis on organic poultry farming can help us to produce safer poultry products without compromising the poultry welfare (Allan & Gough 1974).

- Family poultry is defined as small-scale poultry keeping by households using family labour and, wherever possible, locally available feed resources.
- Family poultry is rarely the sole means of livelihood for the family but is one of a number of integrated and complementary farming activities contributing to the overall well-being of the household. . Occasional consumption provides a valuable source of protein in the diet.
- Poultry are the smallest livestock investment a village household can make. Yet the poverty stricken farmer needs credit assistance even to manage this first investment step on the ladder out of poverty. Poultry keeping is traditionally the role of women in many developing countries. Female-headed households represent 20 to 30 percent of all rural households in Bangladesh (Saleque, 1999), and women are more disadvantaged in terms of options for income generation (Agarwal et al., 1981).
- Newly hatched chicks are vulnerable to many pathogens because they lack a fully developed immune system. Vertical transmission of maternal antibodies from hens to chicks against certain pathogens provides a crucial means of protection up to a certain age. Also, the level of these inherited antibodies is of a major importance when serology for disease diagnosis is considered (Sharma, 2003). Maternal transfer of antibodies against certain pathogens plays a significant role in protection of chicks against these pathogens before the development of active immunity (Mondal & Naqi, 2001; & Ahmad & Akhter, 2003). Chicks vaccinated while having high levels of maternal antibodies resulted in vaccine failure, due to neutralization of the live vaccine and level of maternal antibodies plays a role in determining the level of response in chicks to early vaccination (Mondal & Naqi, 2001; & Al-Natour et al., 2004) (Bhattu et al., 1999).
- Poultry sector is playing a very significant role in the reduction of poverty, malnutrition and unemployment problems. At the same time, poultry farms produce a lot of different types of waste products. It also includes waste from poultry carrying materials, conveyer belt and cleaning systems. Poultry feather constitutes up to 10% of the total chicken body weight and produce huge amounts in the poultry slaughterhouses as well as in the household during poultry processing. These billions of kilograms of feather have been creating a serious solid waste problem all over the world.
- The poultry industry in India has emerged as the most dynamic and rapidly expanding segment of livestock economy as evident from the production level touching about 70 billion eggs and 3.8 billion. The poultry industry has evolved from a backyard venture to a full fledged commercial agro-business.
- Poultry enterprise offers both incentives for investors and at the same time pose a risk of losses to the farmers. It may be taken up both as main enterprise as well as a subsidiary occupation (Chikara et al., 1989).
- Poultry meat is an important source of high quality proteins, minerals and

vitamins to balance the human diet. Specially developed varieties of chicken (broilers) are now available with the traits of quick growth and high feed conversion efficiency. Depending on the farm size, broiler farming can be a main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure is of high fertilizer value which can be used for increasing yield of all crops.

- Broilers have high feed conversion efficiency i.e. the amount of feed required for unit body weight gain is lower in comparison to other livestock, Faster return from the investment (Das et al., 2008).
- Poultry farming is one of the fast growing sectors of agriculture transformed from a traditional backyard activity to agri-based industry globally. Poultry meat and eggs are the cheapest animal-protein available and eaten globally across diverse cultures, traditions and religions. Traditional small scale/ rural poultry system continue to play a crucial role in sustaining livelihoods in developing countries, supplying poultry products in rural areas, and providing important support to women farmers. India is one of the leading countries in poultry production ranking 3rd position in egg production with 88 billion eggs annually and 5th in meat production with 3.8 million tons. Commercial poultry occupies major share with 80 percent production and rest is by rural/backyard poultry (Jansen et al., 2009).
- 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;
- The Government of India formulated policies to support and augment rural poultry which contributes nearly 30% of revenues in the poultry sector.
- Rural Poultry is a good occupation for the rural masses for economic sustainability and nutritional security.
- 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 (Rajendran, 1998).
- Village chickens play an integral role in smallholder farming systems. The small holder chicken sector is traditionally based on extensive free range systems where the birds find most of their feed through scavenging.
- Out of 457 million chickens in India in the year 2006, 52% was of an indigenous (deshi) type, and for Kerala state, 70% of the chicken population was deshi.
- Improvement of village chicken production requires a good understanding of regional and traditional practices of village chicken husbandry and trade and the identification of the major constraints to production (Roy et al., 1990).

Methods of Study

Traditionally, the need of field work in dissertation is to collect the primary data. This field report is prepared with the help of both primary and secondary data. The total work of the survey can be divided into three steps, such as – pre-field survey, field survey, post field survey.

Pre- field survey:-

This phase consist of mainly collection of secondary data. The secondary data are those which have already been collected by someone else and which have been passed through statistical data. To complete the field report I have collected some secondary data from google pdf related to broiler poultry farming, broiler poultry farming and waste management throughout India and abroad. Even my guide and co-guide also have also have helped by providing me with some knowledgeable data.

Field survey:-

In this stage of field survey, I have collected both primary and secondary data. To obtain primary data I have surveyed two contract broiler poultry farms in Garhbeta, Midnapore. To obtain the field survey I took a questionnaire which was been prepared to me by my guide. While doing survey I collected some secondary data by asking questions about the farm work done to those farms respective owners and also have collected the slip books of the companies with whom the farms are in contract with. I have also taken some pictures of those farms.

Post- field survey:-

After completion of the field work, I have analyzed the primary data, secondary data and those pdf data I have collected before going to the field work thoroughly and with those collected data I have prepared some tables with column diagrams and pie diagrams to gather up those data in a project form.

FARM 2 – DEY POULTRY FARM CONTRACT BROILER FARMING

TABLE 01

NAME OF THE POULTRY	TIME OF ARRIVAL IN THE POULTRY	TYPE OF BIRD	NUMBER OF BREED
Dey Poultry Farm	10.45 am	Broiler	one

TABLE 02

CHICKEN BREAD	PICTURE	BEHAVIOUR	BROODING/BEST COOP RECOMMENDATION
Buff Sablepoot/ Botted Bantam.		Adaptable to confinement or free range, mostly gentle, more easily handled.	Good or frequent brooder. **Best Coop:** 144″ Large Backyard Hen House Chicken Coop w/ Long Run.

TABLE 03

NAME OF BREED	TOTAL BIRDS	IDENTIFICATION OF POULTRY BIRD	NUMBER OF BROILER HOUSE
Buff Sablepoot/ Botted Bantam	600	White feathers, Easy to handle , Adaptable to confinement	2

TABLE 04

TOTAL NUMBER OF EMPLOYE	NUMBER OF CLOSE CHICKEN HOUSE	TOTAL AREA OF POULTRY FARM	NUMBER OF BROILER STAGE
2	0	750 sqft	2

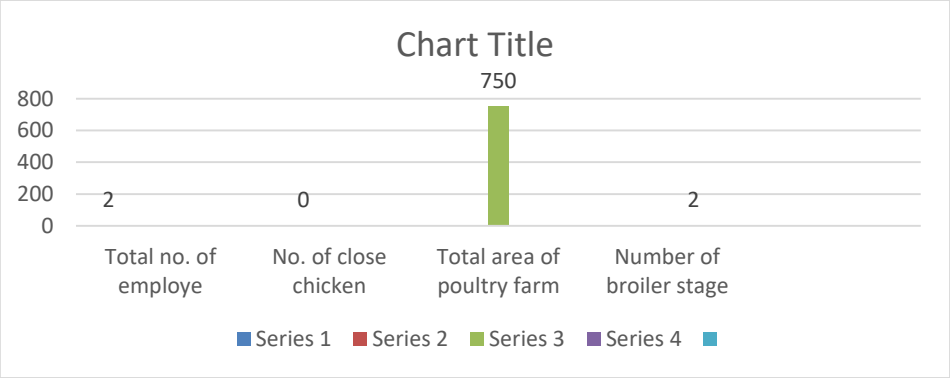

TABLE 05 (One time cost)

SL no	Particulars	Specification	Unit Cost (per square ft)	Total Cost (Rs)
1	Broiler shed	750 sqft	41 (acc. to 9 yrs ago)	31,500
2	Store room	72 sqft	36 (acc. to 9 yrs ago)	2592
3	Feeder Equipments	Changed when its get broken		3000

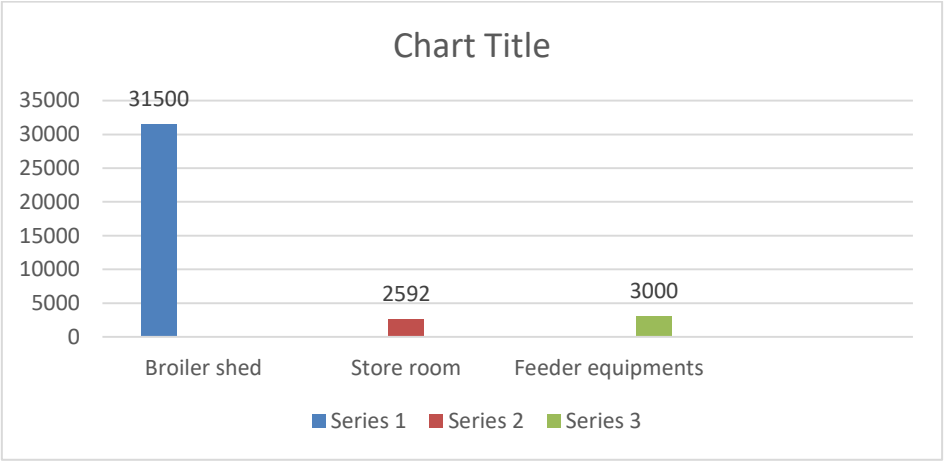

TABLE 06 (Investment/lot)

SL. No.	Particular	Specification	Unit cost (Rs/unit)	Total cost (Rs)
1	Chick	600 chicks Keeps in farm for 35 days, so approx 10 slots are been done in 1 year	22	13,200
2	Medicine			450
3	Vaccine			2500
4	Electric cost			800
5	Feeding cost	600 chick and Per chick needs 3.2 kg food to gain 2 kg weight. Each bag is of 50 kg	35 per bag	1344
6	Water supply system	Waters are been taken out from the under groundreserviour manually		0

TABLE 07 (ECONOMICS OF BROILER FARMING)

1	Number of broiler bird present	600
2	Mortality rate (%)	12%
3	Rearing period (Week)	5 week
4	Feed requirement (kg/bird)	3.2 kg
5	Labour cost/ month	Nothing
7	Weight of each feed bags (kg)	50 kg
6	Average weight of birds (kg)	2 kg
8	Store room present	1

TABLE 08 (SPACE REQUIREMENT DATA)

Age	Floor space /bird	Feeder space / bird	Waterer space /bird	Height of feeders and water
Upto 18 days	450 cm2	3 cm	1.5 cm	0 cm (on ground)
From 19-35th day	1000 cm2	6-7 cm	3 cm	3 cm

LITTER DEPTH

Before the chicks arrives the farm is been covered with 1.2 inches of wooden power all over the ground. Wherever the wooden powder get patchy new dry wooden Powder are been spread only over those places. If the litters get cleaned before 35 days it releases ammonia gas which is harmful for chick′s health. Thus the litters are been cleaned after 35 days, the chicks get taken off by the contract farm.

TABLE 09 (BIO WASTE)

Poultry Farm Waste	Amount (%)
Litter waste: shed clean out with poultry manure and bedding material.	30%
Dead Birds.	12%
Biomass wastes like fallen tree leaves, twigs.	10%
Bio medical waste like syringe, needle, empty vials and other used chemical.	2%

TABLE 10 (NAME AND DURATION OF RATION CONSUMPTION)

Name of the ration	No of days it consumption
Pre starter	1-10 days
Starter	11- 20days
Finisher	21-35 days

TABLE 11 (RATION CONSUME)

Total weeks	Per chick consume feeds (gm/kg)	Per chick weight gain (gm/kilo)
1 week	150 gm	190 gm
2 week	500 gm	490 gm
3 week	1130 gm	900 gm
4 week	1 kg 900 gm	1600 gm
5 week	3 kg 200 gm	2 .kiloapprox

TABLE 12 (VACCINATION)

AGE	VACCINE	ROUTE OF ADMINISTRATION
7 th day	F1 vaccine	Mix with water
14-18 th day	Gumboro vaccine	Mix with water

TABLE 13 (DISEASE OF POULTRY)

BACTERIAL DISEASES	VIRAL DISEASES	PARASITIC DISEASES	MYCOSES AND MYCOTOXICOSIS
15%	20%	5%	2%

TABLE 14 (POULTRY MANURE PERCENTAGE)

Drying	Heaping	Poultry manure as organic fertilizer	Composting	Biogas Generation	Pond Disposal
35%					65%

TABLE 31 (HATCHERY WASTE DISPOSAL PERCENTAGE)

Power Generation	Rendering	Autoclaved and Extruded	Boiling	Ensiling	Composting	Anaerobic Digestion System
			5%		30%	

TABLE 32 (DEAD BIRD DISPOSAL PERCENTAGE)

Burying	Pit Disposal	Incineration	Septic Tank Disposal	Composting	Heating	Rendering
10%	2%					

FARM 2 – DEY POULTRY FARM CONTRACT BROILER FARMING

TABLE 01

The name of the poultry I have surveyed here is Dey Poultry farm. I have arrived in this farm around 10.45 am. The full farm was loaded with only one type of bread, and this farm was a contract broiler poultry farm. They only does contract farming of broiler chicken.

TABLE 02

The chicken bread that this farm has is Buff Sablepoot / BottedBantam. This bread has its

specific behavior that is its adaptable to confinement or free range, mostly its gentle and are more easily handled. The best coop recommendation for this particular bread is that its good or frequent brooder and best coop for it is 144′ large backward hen house chicken coop w/long run.

TABLE 03

Dey poultry farm has 2 houses for the broiler chicks. That particular batch had 600 chicks. The larger house had 550 birds in it and the smaller house had 50 birds in it. I could identify that all the chicks were Buff Sablepoot/ Botted Bantam due to some particular features. All the chicks had white feathers, were easy to handle, and adaptable to confinement.

TABLE 04

This farm was 750 sqft, the larger house is about 680 sqft and the smaller house is about 70 sqft which according to me is quite good for the birds to move inside the cage. Total number of employes work in this farm are two. The house of this farm is not close bt open at an extinct so that air can pass through easily.

TABLE 05

This farm was constructed during 2001 and thus for the construction cost purpose it's an one time cost mainly rather any thing is needed to repair. The construction cost of this broiler farm house was Rs 41 per square feet according to 2001 and thus the total 750 square feet area cost rupees 31500. This farm has a store roomto keep the medicines, mash and foods for the birds. This store room is quite smaller with 72 square feet area and its per square feet cost rupees 36 according to 2001. Thus total 72 sqft cost rupees 2592 for the store room. The feeder equipments needed to buy for feeding the birds was rupees 3000 according to2001. Bt feeder equipments are needed to buy when it gets broken. Thus for constructing the farm and for buying the equipments it cost of total 37092 according to 2001.

TABLE 06

For each batch of birds the investment cost is given below –

In this farm each batch of birds are been kept for 35 days. The batch I have surveyed it had 600 birds and each bird costs Rs 22 which total gets to Rs 13200. Total cost of the medicines that are given to this batch of birds was Rs450. Each birds were given two types of vaccine one during its 7^{th} day and the other within 14^{th} – 18^{th}day which total cost Rs 2500. The electric cost during this 35 days for each batch approximately cost Rs 800. Its been said that to gain 2 kg weight per birds need 3.2 kg of foods in 35 days. Each sack has 50 kg of foods in it which cost Rs35. Thus food for total 600 birds in 35 days cost Rs 1344. For water supply system , the water is been pumped out from under the ground reservoir through electric motor pump set 0.25 hp and for each batch it cost Rs 200 .

TABLE 07

Total number of birds present in the farm during survey period was 600. The mortality rate of that particular batch was 12% and it was due to fever and *E.coli*. The rearing period of that particular batch was 5 week. After 35 days that batch was sold to the contractor. For 35 days to gain at an average weight of 2 kg each birds requirement was approx 3.2 kg of food. The weight of each feed bag was 50kg which cost Rs 35 per bag. This bags full of mash stored in the store room of the farm. There are two labours working in the farm and their per month salary is nothing as both the labours are the owner of the farm and his wife.

TABLE 08

Each broiler requires one square foot of floor space for rearing. So the size of the house depends on the number of birds to be reared The surveyed batch required 450 cm2 floor space for each bird upto 18 days. After 18 days that is from 19^{th} day to 35^{th} day each bird required 1000 cm2 floor space for rearing. Each feeders placed at a 3 cm distance upto 18 days but from 19^{th}day the feeder equipments were placed at a distance of 6-7 cm, as the birds grew in size they need space to move. Equipments use for water are placed at a distance of 1.5 cm gap upto 18 days and after 18 days they increase the gaps at about 3 cm. Till 18 days the feeder equipments are been placed on the ground . But from 19^{th} day onwards the feeder equipments are been placed at a height of 2 cm from the ground.

TABLE 09

A huge amount of waste are been excreted from poultry farm but most of the waste are bio waste. Litter waste cause from the shed cleaning, poultry manure and bedding material are total 30%. The approx amount of dead birds from the poultry is 12% which cause due to fever and *E.coli*. When the labours clean the surrounding of the farm they collect atleast 10% of the biomass waste like fallen tree leaves, twigs etc. As vaccination is a compulsory task in poultry farming thus a quite number of syringe, needles, empty vials and other used chemicals are been collected as bio waste of that particular farm which is about 2%.

TABLE 10

The growth of the birds depends on proper nutrition given to the birds.

The pre starter is given to the chicks for first 10 days, it provides the young chicks with all essential nutrients for immune system and cell development .From 11^{th} day to 20^{th} day the birds are provided with starter feed which is dense in protein and it meets the dietary requirements of the birds. Lastly from 21^{st} day till the last day that is 35^{th} day the birds are provided with finisher. The finisher feed provides the nutrients that sum up the basic requirements of the birds. It contains 21% crude protein with high energy to sustain life.

TABLE 11

Ration consumption of the birds are different at different stages and as per ration consumption of the birds they gain weight. For the first week per chicks are given at about 150 gm of pre-starter and thus it gain approx. 190 gm of weight. During second week the amount of consumption of starter increases about 500gm per chick for which per chick gain upto 490 gm of weight. On its 3^{rd} week the consumption rate again increases upto 1130 gm of starter per chick which helps per chick to gain at about 900 gm of weight. During the 4^{th} week per chick consume about 1 kg 900 gm of finisher and gain 1600 gm of weight.

On the last and 5^{th} week a chick consume its highest amount of finisher that is about 3kg 200 gm and gain an average weight of 2kg/kilo.

TABLE 12

Vaccination is an effective means to prevent and/or reduce the adverse effects of specific diseases that can cause problems in a poultry flock. Dey poultry farm use two types of vaccines for each batch. On 7^{th} day of the batch they use F1 vaccine, on 14^{th}- 18^{th} day Gumboro vaccine. This farm mix the vaccine dose with water. The aim of drinking water vaccine is for the water containing vaccine to be consumed by the flock over a period of 1 ½ - 2 hours.

TABLE 13

Many factors can contribute to diseases in the flocks. By being aware of their causes and how they spread we can put practices into place to reduce the risk of disease occurring. Although there are many possible causes of disease, it is often a combination of factors that make birds sick. In this farm mainly four types of diseases can be seen in more or less every batch of flocks. Bacterial diseases can be seen more or less in 15% of the chicks while growing for 35- 40 days in the farm. Viral diseases like fever is quite common in this farm, 20% of the chicks get infected due to fever. Parasitic disease like E. coli can be seen in 5% of the chicks in this farm. *E coli* is a harmless parasitic disease. Mycotoxicosis is often facilitated through many organs, particularly kidney, liver and lungs and endocrine and immune system. Whereas mycoses are general infections caused by different environmental and physiological conditions. This type of disease can be seen in more or less 2% of the chicks in this farm.

TABLE 14

Poultry manure is the feces of chickens used as an organic fertilizer, mainly for soil low in nitrogen. Among all the animal manures poultry manure has the highest amount of nitrogen, phosphorus and potassium. This sometime use as fertilizer. The 35% manure of

this farm are been processed through poultry manure drying poultry farm. This unique guide system combined with a direct chain driver assures a trouble free motion. The 65% of the rest manure in this farm are disposed in the pond. It causes the destruction of that particular pond life. This also causes bad smell around the pond.

TABLE 31

The poultry industry produces large amount of hatchery waste which includes solid waste and waste water. The solid hatchery waste comprises empty shells, infertile eggs, dead embroys, late hatching etc, and decaying tissues. The waste water comes from water used to wash incubators, hatchers, and chick handling areas. In this farm 5% of the hatchery waste are been taken out for boiling. The wastes are been boiled at 100˚c and then are been soaked in cold water to remove shells, sun dried and then are been used in poultry feed. 30% of the hatchery waste are treated by composting technique. This composting process kills pathogens, converts ammonia nitrogen to organic nitrogen and reduce the waste volume.

TABLE 32

Dead birds on poultry farms should not be carelessly thrown out in the open. Dead birds on farms can cause nuisance, odor, and aesthetic problems, surface and ground water pollution, disease and insects, rodent and predator problems if the birds are not disposed of daily. This farm bury 10% of the carcass by digging two feet deep near the farm but not within its 5 meter. 2% of the dead birds are disposed through pit disposal method. This method is done atleast 150 feet from the poultry house and water supply.

Overall, after surveying both the contract poultry farm I came to a conclusion that the company retains ownership of the birds and the grower is paid a return for labour and facilities. A typical contract is one in which the grower provides the housing and grow out equipments, feeders, water brooders and other inputs such as water electricity, fuel, litter and labour. The contractor (the broiler company) provides the chicks, feed, necessary medications and supervision. The broiler company also provides labours and equipments for catching and hauling the birds to market. Its been told to me in both the farms that the houses are been cleaned out only after every single brood. They remove all the litter and manure, wash the cobwebs and dust of walls and ceiling after giving out every single batch of the grown birds to the contractor. They clean the houses with phenyl, dryout the space very well, cleans the surrounding of the farm spray medicines to kill bacteria before taking another batch of birds from the contractor to grow. After removing the litters, it's the responsibility of the companies to take out the litters with them and to dispose it properly but as I have surveyed these farms they told me that the companies does not take all the litters. They take some percentage of litters with them to dispose and the rest are been thrown to some distant ponds or in bare lands .Adequate water quality is an essential component for broiler performance. Poor water quality can adversely affect bird performance. Several minerals are considered to affect water quality. The goal is to provide birds with drinking water that has bacterial content approaching zero. But every time its not possible thus birds fall sick and reason these farms uses medicines to cure the birds. The labours need to keep accurate record of feed consumed, delivered, mortality percentage, vaccination dates and medication given. Complete records are necessary for computing taxes, for checking flock performance, for determining profit or loss, for determining returns on investment, for locating excessive costs and for establishing a manure management plan. The owner of each farm told that if anything goes wrong in this process the only way to get over it is by contacting the companies, the y will take the responsibilities.

PROBLEMS AND SUGGESTIONS

This present study was carried out on contract broiler farm of Garhbeta, Midnapore, West

Bengal. Name of the Poultry Farm is DEY POULTRY FARM. The poultry farm have one single type of breed that is Buff Sablepoot / Botted Bantam.

PROBLEMS

- Litters of both the farms are cleaned once after a batch is taken out. Though it's responsibility of the companies to take out the litters with them and to dispose it properly but most of the litters are been disposed in near by ponds and a less amount of litters are been taken by the companies. Thus the litters thrown in the pond causes destruction of the pond life, also is secrets bad odor.
- The under ground reservoir of Dey poultry have not been cleaned once in a month as those tanks are very dirty. The clean water is very much essential for the birds to drink to avoid any bacterial diseases.
- It have seen that a lot of flies were there during the visit to survey DEY POULTRY FARM, which clearly shows that the farm is not very clean.
- Its very much necessary to keep the surroundings of the farms well cleaned so that the birds stay safe from bacterial/ parasitic diseases. Bt the surrounding of the farms were not at all that clean which is very upsetting.
- DEY POULTRY FARM poultry farm uses clay pot and utensils made of steel for the birds as pot of water. Those utensils are very unclean which may cause bacterial disease to the birds.
- The surrounding of the farm always must keep clean .Every day the labours must clean the surrounding so that no bacterial and parasitic disease must spread and harm the birds.
- Its been already said that clean water is very much essential for a broiler progress thus the drinker or the utensils in which water is been given to the birds should always be clean.

- **Concluding Remarks**
- This study says that contract broiler production has become a specialized and speedy business at present time for the people of the country. Short life cycle of the broiler and requirement of relatively less amount of capital attributed to its popularity to the farmers. The main parameter studied from both the poultry farms are growth, feed conversion efficiency, mortality rate, carcass traits, bio wastes, economic cost in a contract broiler poultry farm, vaccination process, hatchery waste disposal etc. Poultry waste is one of the major pollutants if not properly disposed. Poultry litter contains carbon, nitrogen, phosphorous, chlorine, calcium, magnesium, and sodium, manganese, ferrous, copper and arsenic. Most of these poultry litters of these two farms are been thrown into the ponds which is causing a huge amount of water pollution and also it hampers aquatic life, a bad odor surrounds the pond. Its literally unhealthy for the environment. Thus I think the company must take all the poultry waste and dispose it properly with some particular methods. While surveying I have noticed that the underground reservoir of both the farms were not well cleaned. Both the farms must wash the underground reservoir, the auto drinker, utensils, feeder properly as water is one of the essential component for broiler performance.
- Both the farms bury the dead birds 5 meter away from their poultry. The companies should carry these dead birds and dispose them properly rather than burying them within a short distance from the poultry.
- Though these farms are doing well economically but both the farms are not environmental conscious which is very much essential while doing poultry farming. Thus according to me the farmers must get more cautious about being environmental friendly.

FARM 2 – DEY POULTRY FARM

1. THE LARGER HOUSE OF DEY POULTRY FARM

2. THE SMALLER HOUSE OF DEY POULTRY FARM

3. THE TYPE OF BREED PRESENT IN BUFF SABLEPOOT

4. THE INSIDE PICTURE OF THE DEY FARM, SMALL BIRD HOUSE

5. WATER RESERVOIR FOR BIRDS OF POULTRY FARM

6. MASH FEED GIVEN TO BIRDS IN DEY DEY POULTRY FARM

7. BEDDING MATERIAL IN DEY FARM, THESE ARE CLEANED BATCH LEAVE

8. ONE OF THE MARKED BIRD, THE POULTRY LABOUR WEIGHTS EVERYTIME TO GET ONCE AFTER A OVERALL WEIGHT OF ALL BIRDS.

11. THE CEILING OF DEY POULTRY, MADE OF POYTHENE, BAMBOO TO KEEP

12. SUPPLEMENT USE DURING CLAY TILE, CLIMATE CHANGE TEMPERATURE COOL

13. CHICKEN POULTRY FEEDER USE POULTRY

14. CLAY POT AND UTENSIL USE AS IN DEY DRINKER IN DEY POULTRY

REFERENCES

Abdou, F. H., Katule, A. M. & Sukuzi, O. S. (1990). Effect of the pre-incubation storage period of hatching eggs on the hatchability and post-hatching growth of local chickens under tropical conditions.

Beitragezur Tropischen Landwirtscahft und Veterinarmedizin 28: 337- 342. Acharya, R. M., & Kumar, A. (1984). Performance of local birds in South Asia. *Indian poultry industry yearbook*. 7th Edition.

Adene, D. F. (1990). An appraisal of the health management problems of rural poultry stock in Nigeria. In E.B. Sonaiya ed. Rural Poultry in Africa-Proceedings International Workshop held at Ile-Ife, Nigeria:

Ahmad, Z., & Akhter, S. (2003). Role of maternal antibodies in protection against infectious bursal disease in commercial broilers. *International Journal of Poultry Science 2*, 251–255.

Allan, W. H., & Gough, R. E. (1974). A standard haemagglutination inhibition test for Newcastle disease.A comparison of macro and micro methods. *Veterinary Record 95*, 120-123.

Aggarwal, C. K., Gupta, S. C., Singh, R. A., & Pal, R. N. (1981). Components of expenditure and total cost involved in producing duck and chicken for meat, *Indian Veterinary Journal, 58*, 219-222.

Bhattu, B. S., Sharma, R. K., & Gupta, S. C. (1999). A study on region wise constraints encountered by broiler farmers in Haryana. *Indian J. Animal Res., 33*(2), 131-133.

Chikara, O. P., & Singh, S. S. (1989). Cost structure of poultry farming in Haryana. *Poultry Guide, 24*(6), 45-51.

Das, S. C., Chowdhury, S. D., Khatun, M. A., Nishibori, M., Isobe, N., & Yoshimura, Y. (2008). Poultry production profile and expected future projection in Bangladesh. *World's Poultry Science Journal 64*, 99-118.

Heller, L. (2006). Organic meat market rockets, but supply lags behind. Food Navigator, USA, May 26.

Jansen, T., Glatz, P. C., & Miao, Z. H. (2009). A survey of village poultry production in the Solomon Islands. *Tropical Animal Health and Production 41*, 1363-1370.

Rajendran, K. (1998). A study on economics of broiler production in and around Palladam area of Coimbatore district, Unpublished M.V. Sc. Thesis, Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Science University, Namakkal.