MANAGEMENT PRACTICES
POULTRY PRODUCTION

MOHALE'S HOEK DISTRICT IN LESOTHO

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LESOTHO NATIONAL FARMERS UNION

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1.1 INTRODUCTION

Agricultural Best Management Practices are an industry driven effort to maintain agricultural production in a profitable, environmentally sensitive and sustainable manner. Best Management Practices (BMP) are site specific, economically feasible practices that are applied by farmers while accounting for environmental and public health impacts. BMPs are not meant to be regulatory as every farm operation and site is different and may require special practices. But BMPs are meant to provide guidance as to practices that farmers can strive towards implementing on their farms. BMPs can be classified as source, structural, cultural, or managerial controls:

- Source controls include restriction or removal of a particular pesticide or nutrient source.
- Structural controls are physical measures designed to prevent water and sediment movement or to prevent the exposure of birds to disease causing organisms by reducing introduction and spread of pathogens into and between the farms.
- Cultural controls are cropping and tillage practices that minimize pest problems and maximize nutrient use efficiency by soil conservation and crop rotations.
- Managerial controls are strategies and tools adopted by growers that consider both environmental and economic impacts.

2.0 METHODOLOGY

Poultry farms were visited and farmers were interviewed using face to face with open ended and closed ended questions. Observations were also recorded on implementation of BMPs. The Best Management Practices in poultry were assessed using criteria below which were scored as follows;

2.1 Scoring

1 Poor or Unacceptable Implementation of Best Practice

2 Average Implementation of Best Practices

3 Good Implementation of Best Practices

2.2 Criteria

Poultry Best Management Practices were evaluated based on the following standard criteria.

- Biosecurity & Fencing
- Housing
- Breeds
- Watering
- Feeding
- Lighting Programme
- Production & Productivity
- Diseases and Metabolic disorders
- Record keeping
- In-house environmental regulation
- Litter material Management & Disposal
- Disposal of Dead birds

2.3 Visited farms

2.3.1 Maphohloane Poultry Association

It is a group of women and one man with the aim of producing broiler but ended up with layer production. They started producing layers in 2015 with the help of a funder who provided them with 100 layer under deep litter system. Members reiterated that production was very poor due to unhygienic conditions. There after the funder provided them with 800 birds still under deep litter and did not perform well.

Having realized that their problem was poor housing conditions and laying on the floor, they decided to improve the conditions. Their funder provided them with housing and cages and 500 birds and that when they realise a big change in production of eggs. The association manage to with the help of a funder again to increase their stocking density to 1800 birds. With high stocking density the rewards were enormous because the association was able to install water tank for

drinking, install electricity and they are also self-sufficient in terms of feeds and replacement stock procurement.

Figure 1: Members of Maphohloane Poultry Association

2.3.2 Mateboho Thulo Layer & Pullet Producer

Me Mateboho Thulo started poultry production at the age of 28 with 300 layers under deep litter system. She is now specializing with egg production and supply of replacement stock for laying hens. She is sourcing day-old chicks and grow them up to point of lay. Her major goal with pullet replacement stock is to meet her replacement stock requirements first and the excess pullets are sold.

Figure 2: Mrs Mateboho Thulo

2.3.3 Rehauhele Morena Association

The group started in 2017 as soil conservation initiative and currently had 120 members. The group constructed conservation structures to conserve the soil and they moved on to field crop production where they produced maize and beans. Soil conservation efforts rewarded them with food packages, fruit trees and tools for soil conservation. In 2020 they constructed their own poultry structure and started with 104 Potchefstroom koekoeck chickens.

Figure 3: Members of Rehauhele Morena Association

2.3.4 Mathato Damane

Mathato Damane is producing both indigenous and broiler chickens. She started broiler with 50 birds because she lacked knowledge and skill in broiler production. After receiving training on broiler production she increased her stocking density to 100 birds per rearing cycle. The farmer reported that her rearing house is also a challenge because it is not able to protect birds against extremes of temperatures

2.3.5 Mareekelitsoe Kobeli

Started with 50 broilers under Stokvel/ group production of four members whereby each member was expected to buy ten birds from group members. The marketing was not a challenge because each farmer was supposed to market and sell only ten birds while forty was bought by stokvel members. The farmer applauded the stokvel as the best marketing outlet for broilers. She however, decided to produce and market on her own which proved to be difficult because people were buying on credit and failed to pay and took a long time to settle their debts.

Figure 4: Mathabo Damane and Mareekelitsoe Kobeli broiler producers Mpharane Mohalehoek

3.0 FINDINGS

3.1 Poultry Management

3.1.1 Biosecurity & Fencing

The majority of farms were fenced to protect movement of stray animals and humans as means to combat disease transmission into the farm.

To improve biosecurity measures for poultry the use of footbaths at the entrance to the production houses is highly recommended as standard for BMP in poultry production. In this regard Maphohloane Poultry Association was the only farm implementing the standard. Footbaths are made up of disinfectants which minimize the rate of infection by people entering the house.

Figure 5: Fenced Poultry Farm

Figure 6: Footbath at the entrance of layers

3.1.2 Housing of Layers

The majority of farms are using well ventilated house for production of eggs. The layer houses are equipped with cages that are subsequently equipped with waters and feeders. The majority of houses have electricity installation to facilitate lighting programme for layers. Maphohloane Poultry Association poultry house has air vents, birds and rodent's excluders.

Figure 7: Layer houses with ventilation vents, birds and rodents excluders

The houses are connected to water supply to ensure automatic and adlibitum supply of water to birds. Rehauhele Morena Association is using manual water supply to the birds.

Figure 8: Layer cages with provision for feeders and automatic water supply

3.1.3 Production System and Breed

The common production systems in used by poultry producers in Mohaleshoek are Cage System and Deep Litter System. The majority of layer producers use cage system while dual purpose and layer replacement are produced under deep litter system. Broiler producers use deep litter system. Each production system has its own advantages and disadvantages but deep litter

system allows for more natural behavior by birds and hence contribute more to poultry welfare and BMPs. Layer producers are using high producing improved breeds such as Hyline brown (460 eggs), Lohmann brown (320 eggs) and Potchefstroom koekoeck renowned for persistence in lay and good quality shells

Figure 9: Re Hauhele Morena dual purpose chickens

3.1.4 Feeding

Farmers use compound feeds to feed their flock. Feed allocation is based production phase and stocking density. Depending on flock size Maphohloane association is spending three bags on 1200 layers, Mrs Thulo is spending fourteen bags on 9800 birds per day feeds while Rehauhele Morena spent ten kilograms feeds per day. Farmers are feeding their laying hens between 116 and 125 grams per bird day which is consistent with layer requirements and breed. However, the pullets feed allocation is slightly lower than the requirement for the age group.

Figure 10: Floor feeding system for pullets at Mrs Thulo farm

Feed costs is biggest challenge for farmers and dual purpose producers are using diet dilution technique to reduce feed costs. Birds are offered water on adlibitum basis for farmers. However, all farmers indicated that they don't change layer diets throughout the laying period.

Figure 11: Dual Purpose chicken floor feeding at Re Hauhele Morena farm

3.1.5 Egg Production and marketing

The production of eggs for majority of farmers is at commercial level because they are harvesting between 21 and 70 egg trays. Pullet rearing is also impressive

because the farm is rearing about 6800 birds. Production of dual purpose chicken is however problematic because it was reported that they use to produce two trays per but had declined to less than a tray.

Figure 12: Impressive egg yields at Mrs Thulo

The eggs are cleaned and packed into eggs trays. However, farmers are not sorting eggs into different size due to lack of Egg Sorter. The graded eggs can be priced according to their size. Farmers reported that egg market is huge and they are not able to satisfy it.

Figure 13: Cleaning of eggs for improved hygiene and acceptability Maphohloane Poultry

Farmers reported that they sell their eggs locally, to schools, Chinese shops in Mafeteng, Quthing, Thaba Tseka and Mohaleshoek. Eggs are packaged in standard 30 egg trays without plastic wrap for moisture preservation. Point of lay pullets are sold at M110.00 per pullet. Pullets are safely transported to buyer in transport crates. The crates adhere to animal welfare and safety. Re Ha Hauhele Morena indicated that they are selling their fertile eggs tray at the same price for table egg.

3.1.6 Record Keeping

Farmers are doing very well with regard to keeping records for their business. They are keeping production, sales and purchases records. Re Hauhele Morena added that they keep records of all their projects activities, assets, visitors, production and sales records.

3.1.7 Diseases & Metabolic Disorders

Layer farmers are challenge by a number of metabolic disease such as feather pecking, egg prolapse, lameness and shell less eggs and they are also

challenged by the following environmental diseases; Fowl Pox and Blindness. and these diseases affect bird's movement and feeding. Farmers are doing the best they could to control the diseases. Sick birds are also isolated from the healthy flock in order to minimize spread of disease.

Figure 14: Re Hauhele Morena means of disease control by isolation & medication

3.2 Environmental Management

3.2.1 In-house environmental control

All the laying and pullets rearing houses are not equipped with gadgets for detection of ammonia, moisture and temperature levels. However, Mrs Thulo is planning to source out funds to build pullet house with all environmental control. Re Hauhele Morena because they use litter material to cover the floor the chicken environment is compromised to the extent that there are signs of high levels of ammonia in the house.

3.2.2 Poultry Litter Disposal

All farmers stated that they recycle poultry manure and litter when they are used as organic manure and ruminant animal non-protein nitrogen source. Maphohloane poultry reported that they dry off the manure and later sell to dairy farmers for feeding.

3.2.3 Disposal of Dead Birds

Re Hauhele Morena and Maphohloane Poultry Association bury their dead birds while Mrs Thulo use incineration method of disposal, the two methods are equally good and recommended.

3.3 Other Support Services

3.3.1 Extension Services

Farmers confirmed that extension services are there because they even accompanied the team of assessor to the farming areas. Mrs Thulo however indicated that extension service used to be good but it is currently declining. She indicated that extension agents used to help her with vaccination of birds. She highlighted that they need

veterinary service in the area. With regard to training she indicated that it has been long time since they receive training.

3.3.2 Financial Services

Majority of farmers reported that they received some form of assistance from donors in the form of assets and chickens examples are Maphohloane Poultry Association and Re Hauhele Morena. Mrs Thulo highlighted that financial assistance for the farm came through personal loan at bank used towards installation of water system, cages, electricity and construction of poultry houses. She is currently pursuing other funder to install new environment controlled pullets rearing facility. The Department of Trade is also willing to offer financial support to increase production.

4.0 DISCUSSIONS

4.1 Layers

4.1.1 Biosecurity & fencing

Biosecurity refers to procedures used to prevent the introduction and spread of disease causing organisms in poultry flocks. Elimination of sick birds as early as possible. Use of all-in-all-out method of management for flock health, Limitation of visitors as much as possible, and provision of disinfectant foot pans at the entrance of bird houses. The standard was partly adhered to in respect of fencing but use of foot bath is not well implemented by majority of farmers because only Maphohloane Poultry Association use footbaths

4.1.2 Housing

Layer producers partially meet the standard because they are using well ventilated houses with adequate space allocation for birds. Houses have water and electricity installations. However, houses lack vital equipment for detecting excess moisture, ammonia and temperature. Some houses are not facing the ideally direction of Northeast and hence become too hot and cold in summer and winter respectively. Ideally poultry house should be well ventilated, face Northeast direction. The poultry house should have enough space per chicken at rate of 0.18 and 0.46square metres. The house should have provision for nesting box, roosts, lighting, thermometers, concrete floor or covered with litter material. The house should be strong enough to sustain inclement weather.

4.1.3 Use of improved breeds and production

The hybrid laying hens such as Hyline, Amberlink and Lohmann are characterised by high levels of performance, durability, adaptability,

shell quality and a size that is right for the market. The common breeds used in broiler production are Ross 308, Cobb 500 and Abor Acres and they famous for their superior performance on lower cost feed rations, feed efficiency, excellent growth rate and best uniformity for processing. Poultry farmers are using the hybrid for high performance and yields and this was evident by the number of eggs produced per day.

Poultry production for improved layers is provided by breeding company which is estimated at 320 to 420 eggs per cycle per hybrid. Dual purpose however has low productivity of about 100 eggs per cycle. With broilers they can achieve slaughter weight at six weeks with good feeding program. Production of eggs by farmers in the district is high to the extent that some farmers had attained commercial production status where more than 70 trays were produced per day.

4.1.4 Feeding and water

Farmers are feeding their birds compound feeds certified by feed millers. They are offering the right allocation per day per bird. However, all farmers indicated that they don't change layer diets throughout the laying period. Poultry being monogastric requires a well-balanced diet with low fibre content. Feed forms such as meal, crumbs and pellets have a profound effect on broiler growth performance with low performance for meal form. Phase feeding have a profound effect on prolapse syndrome especially if feeds are not changed after 33 weeks in lay. Deficiency for one nutrient will lead to poor production and diseases. Home mixing of feeds can lead to deficiency if not done under the supervision of nutritionist. The extremes of temperature also affect feed intake leading to poor performance.

4.1.5 Disease control

The most common diseases of broiler are coccidiosis, ascites, sudden death syndrome and they are caused by poor feeding and environmental management. Layers suffered prolapse, Cage layer fatigue and shell less eggs, feather pecking this are caused by poor nutrition especially failure to change feeds during laying period, poor calcium and lack of exercise.

Disease control effort by farmers was impressive and included important BMP such as footbaths at the entrance of layer house to minimize disease transfer by visitors and workers. Farmers are also aware of different control measure for different diseases such as vaccination programme. With regard to metabolism disorders farmers are challenged by numerous disorders such feather pecking, prolapse, shell less eggs and coccidiosis.

4.1.6 Environmental management

Poultry litter management was well managed by all farms who recycled the

litter and used it as organic manure for vegetable production and ruminant source of non-protein nitrogen. All farms handled their dead bird's disposal through burial and incineration which are recommended disposal methods for dead animals.

In-house environmental conditions are one criterion that farmers did not do very well because layer houses did not have installations to detect moisture, temperature and ammonia emissions which contributes towards occurrence of disorders.

The most important environmental management to ensure healthy environment for poultry is to; monitor ammonia levels in the house. maintain the in-house litter moisture level between 20 and 30 percent. maintain the pH of the litter below 7.0 and consider using other chemical additives to reduce ammonia volatilization. maintain a minimum litter depth of 10 centimeters. Poultry litter is very rich in nitrogen and phosphorus and ideally it can be recycled as animal feed or used as organic manure.

Proper disposal of dead chickens is especially important due to the potential for disease transfer to humans and other animals, and the pollution of soil, air and ground water. Promptly dispose of carcasses after death, or refrigerate or freeze. Disposal can be done by burial, composting, incineration,

4.1.7 Management and lighting programme

Lighting programme for laying hens was a bit of a challenge for the farms because farmers appeared to lack knowledge about the lighting requirements for laying hens. The impact of this was evident by poor laying performance during winter characterized by short day length leading to reduced feed intake.

4.1.8 Records keeping

Record keeping was well attained by all farmers who highlighted that they keep production, sales and purchase records. Record keeping is extremely important to successful poultry production. Before creating a budget or making important and costly financial decisions, records need to be analyzed. Records should be kept on the productivity of birds. Production records for layer should include feed consumption, water consumption, and egg production. For broiler the following records are important feed consumption, water consumption, weight, average daily gain, days on feed, and harvesting date. Sales and purchases records are also very important.

4.2 Broilers

Broiler farmers are producing between 50 and 100 birds per rearing cycle. These farmers are however, challenged by a number of factors such as poor housing

structures, high mortality and disease outbreaks, unavailability of broiler feeds and medication. Farmers also reported that there is no slaughter facility for broilers and marketing outlets.

However, farmers acknowledged that broiler production is source of livelihood for their families enabling them to pay school fees and meet day to day household needs.

4.3 Support services

4.3.1 Extension services

Refresher courses on broiler production need to be done regularly because a number of farmers lack appropriate skills.

4.3.2. Financial Services

Layer farmers stated that they have received some form of assistance in the form layer inputs such as laying hens, poultry structure. One farmer reported that she had to use her personal loan to improve her layer farm. Broiler farmers stated that there are no financial services to help them develop their business.

4.3.3 Market services

There is no formal market outlet for poultry products and sometimes their produce takes a long time to be procured.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Successes

Layer producers supported that their businesses profits contributed towards development and growth whereby profits were used to erect new poultry houses, installation of ground water, electricity installation and increasing stocking density. Farmers also reiterated that layer business is a source of income and livelihood for their families.

5.2 Challenges

- Lack of egg grading machine led to loss of income because different egg sizes are sold for one price.
- Poor laying performance during winter time caused poor lighting programme
- Metabolic disorders of layers such as prolapse, feather pecking, shell less eggs and coccidiosis and high chick mortality in winter time.

- Poor service delivery in Mpharane Mohhaleshoek terms of broiler inputs such as feeders, drinkers, medication and feeds
- Lack of slaughter facility for birds and formal market for broilers
- Buying of products on credit and failure to pay affect business cash flow negatively

5.3 Conclusion

Poultry farmers did very well with respect to implementation of Best Management Practice of poultry especially on use of improved breeds, feeding, disease control, production and general management, record keeping where they obtained 83% overall. However, farmers were challenged with respects to phase feeding during laying, lighting programme for birds, houses without gadgets that detects levels of ammonia, temperature and moisture

5.4 Recommendations

1. Farmers and Farmers associations are recommending poultry to the youth and women because of its low initial costs in order to reduce unemployment.
2. Need to develop poultry value chain in the district in order to improve poultry inputs availability and other service like marketing outlets and financial support services.
3. Ministry of agriculture to increase training coverage especially area such as poultry house environmental management, lighting program for layers, feed mixing for broiler and layers and animal health aspects such as administering of vaccines.
4. Farmers to improve their corrugated broiler houses by insulating the inner part with poor heat conductor such as cardboards and Masonite board to reduce temperature extremes within the house.

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