RESEARCH PAPER

The Impact Of Ranikhet Disease (Rd) On Poultry Work Management In Broiler Farming In South Region Of Baramati

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Abstract

Health management in broiler poultry farming is crucial and it refers that it is the set of strategies and practices designed to ensure the well-being, disease avoidance, and optimal growth of broiler birds in overall batch. Broiler poultry farming is having various diseases, which may impact on bird's health, profitability, and farm productivity. These diseases can be generally categorized into four categories such as viral, bacterial, fungal, and parasitic diseases. In broiler poultry farming, Ranikhet Disease (rd), also known as Newcastle Disease (nd). It is an extremely communicable viral infection that affects birds, including broilers and layers. The disease is caused by the a virus having name paramyxovirus newcastle disease virus (ndv), and can lead to harsh financial losses in poultry farming. This research examines the impact of the ranikhet disease (rd) on the poultry work management of broiler farmers, focusing on their influence on bird's health, development, productivity, profitability, farmer's mentality and performance. Data were collected by structured interviews and surveys with farmers from south regions of baramati. Key aspects such as viral infections, temperature management, transmission of virus i.e. direct contact, indirect contact, aerosol spread, ventilation, vaccination, season of placement were assessed.

This study finds the impact of ranikhet disease (rd) on broiler farming practice in the south region of baramati. Findings disclose that a significant portion of farmers experienced repeated or occasional rd outbreaks, with moderate to severe effects on batch health and productivity. Mortality rates for the period of outbreaks ranged from 11-20%, with various farmers reporting increase in operational costs, mainly in vaccination and bio-security measures. Majority farmers made changes in their management practices, including improved vaccination frequency and enhanced monitoring. In addition, rd outbreaks led to challenges in securing economic support with fluctuations in market prices. Mitigation strategies such as decreeing poultry stock and diversifying poultry farm activities were usually adopted. The study highlights the necessity for efficient management and support systems for broiler farmers to diminish the impact of rd.

Keywords: Na

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Introduction

Health management has become the important part of the poultry farming, contributing significantly to results of the batch in terms of feed consumption ratio (FCR), profitability. The health of birds is depends on the various disease that the birds faced in their life. Basically there are four categories of diseases such as viral, bacterial, fungal, and parasitic diseases. Viral diseases includes Newcastle Disease (ND), Infectious Bursal Disease (IBD) / Gumboro Disease, Avian Influenza (AI) , Infectious Bronchitis (IB) , Marek's Disease. The bacterial disease includes Salmonellosis , Colibacillosis (E. coli infection) , Fowl Cholera , Chronic Respiratory Disease (CRD) , Necrotic Enteritis .The fungal diseases includes Aspergillosis , Candidiasis .And the parasitic diseases includes Coccidiosis, Histomoniasis (Blackhead Disease), Ectoparasites (Lice, Mites, Fleas, Ticks) , Endoparasites (Roundworms, Tapeworms, Capillaria worms). The diseases can be prevented and controlled by various methods such as biosecurity measures (controlled farm entry,Strict hygiene,and disinfection), Vaccination (Regular vaccination against bacterial and viral diseases), Proper ventilation (prevent fungal infection ,

respiratory diseases), Good nutrition & clean water (boost immunity and reduces disease weakness), Parasite control (regular deworming and treatment for ectoparasites).

Viral Diseases:

Viral diseases refer to infection caused by viruses that affect the health, growth, and productivity of birds. These diseases can spread quickly within a flock through direct contact, indirect contact, water, and contaminated feed, vectors such as insects and rodents or air. Viral infections frequently result in high mortality and morbidity rates, leading to major financial losses for poultry farmers. Common viral diseases in broilers include includes Newcastle Disease (ND), Infectious Bursal Disease (IBD) / Gumboro Disease, Avian Influenza (AI), Infectious Bronchitis (IB) , Marek's Disease .As the viral infections do not respond to antibiotics, prevention through vaccination and bio-security measures became crucial in broiler poultry management.

Ranikhet Disease (RD)/ Newcastle Disease (ND):

The Ranikhet Disease (RD) is also known as Newcastle Disease (ND), which is an extremely transmittable viral infection affecting birds, leading to severe financial losses in broiler farming. In the southern region of Baramati, RD extensively impact poultry work management practices, including vaccination protocols, bio-security measures, labor efficiency, and overall farm productivity. Ranikhet Disease (RD) is a one of the serious risk to poultry farming, causing financial losses due to huge mortality and reduced productivity. Early detection, timely vaccination, strict bio-security plays important role for managing the disease.

Transmission of Ranikhet Disease (RD) can be by 1. Direct contact: Infected birds pass on the virus all the way through respiratory secretions and feces 2.Indirect contact: Contaminated feed, water, utensils, equipments and clothing of farm labors can spread the disease 3. Aerosol spread: The virus can spread all the way through the air in poultry houses.

The symptoms of Ranikhet Disease (RD) are Respiratory signs – Coughing ,sneezing, gasping for air, Nervous symptoms – Paralysis, Twisting of the neck (torticollis),tremors, Digestive issues – Greenish diarrhea, Swelling – Around the eyes and head, Sudden death – High mortality in severe outbreaks.

Effective prevention and control of Newcastle Disease (RD) in broiler poultry farming can be done by the following 1. Bio-security Measures- Farm Hygiene: Regular disinfection and cleaning of poultry houses, water sources and equipment, Restricted Access: Limit farm entry to essential personnel and disinfect hands, footwear and equipment. Rodent and Wild Bird Control: Prevent contact with rodents and wild birds, as they can spread the virus. Quarantine New Birds: Isolate sick birds or new before introducing them to the flock. 2. Vaccination Program-Live and Inactivated Vaccines : (Vaccine No.1) Day 1: LaSota or B1 strain (eye drop or spray),(Vaccine No.2) Day 7-10: Booster with LaSota (drinking water or spray),(Vaccine No 3)Day 21-28: Final booster (LaSota via drinking water),Follow the suggested vaccination schedule as per local veterinary guidelines. 3. Proper Farm Management- Balanced Nutrition: Provide high-quality feed with necessary vitamins (A, D, E) and minerals to support immunity, Optimal Ventilation: make sure proper air circulation to decrease respiratory stress, Avoid Stress Factors: decrease overcrowding, abrupt temperature changes, and improper handling.4. Early Detection & Disease Control-Monitor Symptoms: Watch for signs like greenish diarrhea, respiratory distress, nervous signs (twisted neck), and rapid and sudden mortality, Rapid Response: instantly isolate sick birds and seek advice from a veterinarian, Culling and Safe Disposal: appropriately dispose of infected carcasses by deep burial or incineration or dispose them in to disposal pit.5. Antibiotic Support & Immune Boosters - Even though antibiotics do not treat viral infections, they assist control secondary bacterial infections, Provide multivitamins and herbal immune boosters to improve resistance.

The Ranikhet Disease (RD), also known as Newcastle Disease (ND), is a greatly infectious viral infection that significantly impacts broiler poultry farming. Ranikhet Disease (RD) impact on poultry work management includes: 1. Increased Mortality and Productivity loss- RD leads to huge mortality rates in broilers, causing considerable economic losses, reduced growth rates and weight gain affect FCR and production efficiency. 2. Additional Bio-security and managing Efforts- Farmers must employ strict bio-security actions, such as disinfection, controlled farm access, and restricted movement of personnel and equipment, improved vaccination programs and monitor efforts add to labor and operational costs. 3. Impact on Labor and Workforce- Farm labors must hold infected birds carefully, increasing their work and workload, Culling

and secure disposal of infected birds ,demand supplementary time and resources, Stress and health risks for labors handling sick birds can decrease efficiency.4. Disruptions in water and feed management - Infected birds decreases feed and water intake, leading to wastage and inappropriate nutrition management, Sick birds require unique feeding strategies, ever-increasing labor efforts.5. Financial and market Impact - Disease outbreak can lead to ban on farm sales, reducing income, extra costs for medication, veterinary consultation, and disinfection materials raise economic burdens.6. Psychological stress on poultry farmers - Fear of disease outbreaks and economic losses can lead to psychological tension and anxiety in the midst of farmers.

This study aims to study the impact of Ranikhet Disease (RD) on poultry work management in broiler farming in the southern region of Baramati. This study assess the impact of RD on bird's health and performance, Work Management Challenges, Economic condition Farm Productivity, Preventive and Management Strategies By analyzing different parameters of symptoms of Ranikhet Disease , the study seek to identify the effective prevention and control of Newcastle Disease (RD). The findings of this study will provide insights for effective prevention and control of Newcastle Disease (RD)

Key worlds

Viral Infection, Ranikhet Disease (RD), Work Management Practices

Objectives

1. To analyze the prevalence and impact of Ranikhet Disease (RD) on broiler farming in the South Region of Baramati.
2. To study the changes in poultry work management practices due to Ranikhet Disease (RD).
3. To assess the economic and operational challenges faced by contract broiler farmers due to Ranikhet Disease (RD).

Scope

1. This study focuses on contract broiler farmers who runs poultry farm under integrator companies.
2. The study is limited to broiler farms from south region of Baramati, ensuring a region-specific and focused analysis.

Limitations

1. The study is geographically restricted to specific regions, which may affect the generalizability of the findings.
2. Data collection depends on farmers' self-reported practices, which may lead bias or inaccuracies.
3. The impact of RD may differ with seasons due to change in humidity, temperature, and bio-security measures, making it complicated to generalize findings across different periods.
4. Time and resource constraints may limit the sample size and depth of the study.

Statement of the Problem

1. The increase in occurrence of Ranikhet Disease (RD) in broiler farms in the South Region of Baramati is potentially affecting poultry health and productivity.
2. Ranikhet Disease (RD) may be changing the day-to-day management practices on broiler farms, requires adjustments in handling, feeding, and vaccination protocols.
3. Contract broiler farmers may be facing increasing operational costs and reduced profits due to the impact of Ranikhet Disease (RD).

Review of Literature:

1. Ranikhet Disease (RD), also known as Newcastle Disease (ND), is a highly communicable viral infection that affects poultry, particularly in broiler farming systems. It is caused by the virus having name Newcastle disease virus (NDV) and can lead to significant losses in poultry productivity **(Alexander, 2001).**
2. RD manifest in various forms, including digestive, respiratory, and neurological signs, causing to huge mortality in affected flocks **(Yeh et al., 2018).**
3. In countries like India, RD poses a severe threat to poultry industries due to insufficient vaccination practices and suboptimal bio-security measures **(Alders et al., 2017).**
4. RD leads to considerable economic losses for poultry farmers due to mortality, lower egg production and reduced growth rates, **(Molla et al., 2015).**
5. Studies have revealed that the economic impact of RD is particularly severe in regions where vaccination programs are not regularly implemented **(Kumar et al., 2019).**
6. In Baramati, a region with a high population of poultry farms, RD outbreaks have been associated with a increase in operational costs and disruptions in poultry work management **(Deshmukh et al., 2020).**
7. These losses extend beyond affecting feed costs, direct health impacts, affecting feed costs, labor management and veterinary expenses **(Sogbesan et al., 2016).**

8. Broiler farming management practices are serious in ensuring the efficiency of poultry operation, mainly in the face of disease outbreaks like RD. Key management aspects include feed management, vaccination schedules, labor organization and bio-security measures A study by **Kumar et al. (2017)** found that farmers who implemented normal regular vaccination schedule experienced fewer RD outbreaks and managed labor more efficiently during disease events. In contrast, poor management practices were associated to higher RD incidences, particularly when farmers neglected to train workers or failed to apply emergency response strategies.
9. The management of broiler farms during RD outbreaks requires punctual decision-making, resource allocation, and workforce coordination. Research indicates that the occurrence of RD disrupts daily farm operations, leading to a need for instant attention to sick birds, quarantine protocols, and increased veterinary intervention **(Adhikari et al., 2020).**
10. In Baramati, where small and medium-scale poultry operations are common, the labor-intensive nature of RD outbreaks has been shown to load farm managers and workforce alike **(Sharma et al., 2021).**
11. Bio-security measures, including strict quarantine systems, hygiene practices, and regular vaccination, are essential to minimize the spread of RD on poultry farms. Studies in India indicate that farms with poor bio-security are more in danger to RD outbreaks **(Patel et al., 2021).**
12. The impact of RD on poultry work management in Baramati is influenced by factors such as access to veterinary services ,regional farming practices, and the degree of awareness about disease management. Baramati's climate, which is favorable to the spread of airborne diseases like RD, further exacerbates the challenge faced by poultry farmers **(Patil et al., 2019).**

Research Methodology

1. **Research Design:**
   - A descriptive research design is used to assess the impact of Ranikhet Disease (RD) on poultry work management in broiler farming
2. **Data Collection Methods:**
   - Primary Data: It is collected through surveys and structured interviews with broiler poultry farmers.
   - Secondary Data: It is gathered from published research articles, relevant literature and government reports on Ranikhet Disease (RD).
3. **Sample Selection:**

Target population: Broiler poultry farmers operating in south region of Baramati

Sampling method: Stratified random sampling which includes large-scale, medium-scale, and small -scale farmers.

Sample size: 30

4. **Data Analysis:**

Quantitative data is analyzed by using statistical tools to identify trends, correlations, and effectiveness of different brooding practices.

Qualitative data (e.g., farmers' perceptions) is analyzed thematically to gain deeper insights into the challenges and solutions.

5. **Ethical Considerations:**

Farmers' participation is voluntary, and their responses are kept confidential.

Data is used solely for research purposes, ensuring transparency and trust.

6. **Duration**:

The study is conducted over one summer season to capture relevant and timely data.

Data Analysis:

A) How regularly do you observe outbreak of Ranikhet Disease (RD) in your poultry farm?

Frequency of Outbreaks of RD	Respondents (Number of Farmers)	Percentage (%)
Rarely	5	17.00
Occasionally	10	33.00
Frequently	10	33.00
Always	5	17.00
	30	**100.00%**

Interpretation:

The majority farmers (66%) report outbreaks either frequently or occasionally, telling that Ranikhet Disease is a recurring issue on farms. A lesser percentage (17%) observe rare or constant outbreaks.

B) How has Ranikhet Disease (RD) affected the productivity and overall health of your broiler flock?

Effect of RD on the overall health and productivity	Respondents (Number of Farmers)	Percentage (%)
No effect	2	7.00
Mild effect	8	27.00

Moderate effect	15	50.00
Severe effect	5	17.00
	30	**100.00%**

Interpretation

A major proportion (67%) of farmers report severe to moderate effects of RD on flock health and productivity, indicating that RD is a severe concern for most farms.

C) What is the average rate of mortality caused by Ranikhet Disease (RD) in your poultry farm for the period of an outbreak?

Average mortality rate caused by RD	Respondents (Number of Farmers)	Percentage (%)
0-5%	3	10.00
6-10%	6	20.00
11-20%	15	50.00
Above 20%	6	20.00
	30	**100.00%**

Interpretation:

Half of the respondents observe a mortality rate of 11-20% between the outbreaks, with 20% report high mortality rates (above 20%) and only 10% faces a low mortality rate (0-5%).

D) Has your approach of poultry management changed due to Ranikhet Disease (RD) outbreaks?

Poultry management approach changed due to RD	Respondents (Number of Farmers)	Percentage (%)
Yes	28	93.00
No	2	7.00
	30	**100.00%**

Interpretation

Nearly all farmers (93%) have adjusted their management practices in response to RD. Key changes include increased vaccination frequency (73%), enhanced bio-security measures (60%), and changes in feed/water management (47%).

E) Specific changes implemented due to Ranikhet Disease (RD) outbreaks?

Specific changes implemented	Respondents (Number of Farmers)	Percentage (%)
Increase in vaccination frequency	27	73.00
Improved bio-security measures	18	60.00
Changes in water and feed management	14	47.00
Enhanced record-keeping	16	53.00
Other	6	20.00

Interpretation:

F) Do you assign more time to monitor and manage health during RD outbreaks?

More time to monitor and manage health during RD	Respondents (Number of Farmers)	Percentage (%)
Yes, notably more time	10	33.00
Yes, somewhat more time	12	40.00
No, equal amount of time	6	20.00
No, fewer time	2	7.00
	30	**100.00%**

Interpretation

A most (73%) allocate more time to health monitoring for the period of RD outbreaks, with 33% dedicate significantly more time. Only a small part (7%) report spending fewer time or maintaining the same time allocation.

G) How has the vaccination programs implementation changed since the outbreak of Ranikhet Disease (RD)?

Lighting Schedule	Respondents (Number of Farmers)	Percentage (%)
Increase in vaccination frequency	20	67.00
More costly vaccines are used	07	23.00
No any changes in	03	10.00

vaccination practice		
Other	05	17.00
	30	**100.00%**

Interpretation

Two-thirds (67%) of farmers have increases vaccination frequency, indicating a more proactive approach to disease avoidance. A minority report by more costly vaccines or no changes at all.

H) How has your farm's operational costs (e.g., veterinary services, medication, and additional labor) affected by Ranikhet Disease (RD) ?

Lighting Schedule	Respondents (Number of Farmers)	Percentage (%)
Increased significantly	14	47.00
Increased moderately	10	33.00
No significant change	05	17.00
Decreased	01	03.00
	30	**100.00%**

Interpretation

For the majority respondents (80%), RD outbreaks have significantly or moderately increased operational costs due to expenses like medication, veterinary services and labor.

I) In the event of an RD outbreak, do you experience a decrease in the market price of your broiler birds due to reduced supply or health concerns?

Lighting Schedule	Respondents (Number of Farmers)	Percentage (%)
Yes, significantly	08	27.00
Yes, moderately	12	40.00
No change in market price	06	20.00
No, prices increase due to demand	04	13.00
	30	**100.00%**

Interpretation

67% of farmers report a moderate or significant decrease in market prices due to RD outbreaks, which suggests reduced supply and potential health concern impacting market demand.

J) Have you faced challenges in securing financial support (e.g., government aid, insurance) to mitigate the economic losses caused by RD?

Lighting Schedule	Respondents (Number of Farmers)	Percentage (%)
Yes, significant challenges	08	27.00
Yes, moderate challenges	12	40.00
No challenges	06	20.00
I have not sought financial support	04	13.00
	30	**100.00%**

Interpretation

The most (67%) face challenges in obtaining financial support to diminish financial losses caused by RD. However, 13% have not sought support, possibly indicating limited knowledge or lack of available options.

K) What measures have you taken to decrease the financial impact of Ranikhet Disease (RD) outbreaks?

Lighting Schedule	Respondents (Number of Farmers)	Percentage (%)
Increased diversification of farm operations	10	33.00
Reduced poultry placement during high-risk periods	14	47.00
Required supplementary funding or insurance	07	23.00
Other	05	17.00
	30	**100.00%**

Interpretation

Numerous farmers have adopted strategies to lessen financial impacts, with 47% reducing poultry placement during high-risk periods and 33% diversify farm activities. A smaller percentage (23%) sought addition supplementary al funding or insurance.

Findings:

A majority (33%) reported RD outbreaks occasionally, while another 33% noted they occurred frequently. A smaller proportion (17%) observed RD outbreaks rarely or always.

Most respondents (50%) observed a moderate effect of RD on the overall health and productivity of their broiler flock, with 27% reporting a mild effect. A smaller group (17%) noted severe effects, and only 7% experienced no effect.

Half of the respondents (50%) reported a mortality rate between 11-20% during an RD outbreak, with 20% observing rates above 20%. Smaller groups reported 0-5% mortality (10%) or 6-10% mortality (20%).

A significant majority (93%) made changes to their poultry management due to RD outbreaks. The most common changes included increased vaccination frequency (73%), enhanced biosecurity measures (60%), changes in feed and water management (47%), and improved record-keeping (53%).

The majority allocated more time for monitoring and managing health during RD outbreaks, with 33% allocating significantly more time and 40% allocating slightly more time. A smaller proportion (20%) maintained the same amount of time, and 7% allocated less time.

Most respondents (67%) increased the frequency of vaccination in response to RD outbreaks. 23% reported using more expensive vaccines, while 10% made no changes to their vaccination practices.

The operational costs increased significantly for 47% of respondents due to RD, while 33% observed moderate increases. Only 17% saw no significant change, and 3% reported a decrease.

A significant portion (40%) experienced a moderate decline in the market price of broilers due to RD, with 27% reporting a significant drop. A smaller group (20%) experienced no change, and 13% noted that prices increased due to demand.

40% of respondents faced moderate challenges in securing financial support, while 27% faced significant challenges. 20% encountered no challenges, and 13% did not seek financial support.

Common measures included reducing poultry stock during high-risk periods (47%), increasing farm activity diversification (33%), and seeking additional funding or insurance (23%). Other measures were reported by 17% of respondents.

Conclusion:

The findings indicate that Ranikhet Disease (RD) significantly affects broiler farming practices, with a majority of farmers reporting frequent outbreaks and moderate to severe impacts on health and productivity. Mortality rates during outbreaks vary, with a substantial proportion of farmers experiencing mortality between 11-20%. To manage the disease, a large majority of respondents made changes to their poultry management strategies, particularly in vaccination frequency, biosecurity measures, and feed and water management.

The outbreak of RD led to increased operational costs and challenges in securing financial support, with many farmers adjusting their vaccination practices and allocating more time to health monitoring. The market price of broilers was impacted, with some farmers reporting a decline due to RD. Measures such as reducing poultry stock and diversifying farm activities were commonly adopted to mitigate the effects. These findings underscore the need for comprehensive management strategies and support mechanisms for broiler farmers facing RD outbreaks.

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