

# The Impact of 120-Days Storms on the Development of Mortality in Poultry Houses in Sistan

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**Abstract-** Providing strategic Plan is considered one of the most important tools in poultry houses health management to control the contagious influence of diseases caused by storms in the poultry houses, so that it can be used to develop a strategic plan to control diseases, especially in cases of extreme and unbearable storms in Sistan region. Respiratory diseases are one the viral diseases in birds, which are spread by strong winds. The disease, particularly regarding the prevalence, due to poor situation of this region leads to the bankruptcy of most poultry farmers in the Sistan region. Thus, developing strategic plans to confront the disease seems to be necessary. In this research, meanwhile conducting necessary studies and epidemiological and laboratory studies on the disease and using the opinions of relevant experts and specialists, some strategies and approaches are provided for continuity the condition of being free from the disease or reducing the prevalence of such diseases and prevent the influence of winds through the poultry houses. Thus, the necessary information on diseases and to eradicate the problem was collected and analyzed. SWOT matrix was used for data analysis, and finally, the strategic plan for the disease was provided in form of required guidelines for continuity of being free from the disease.

**Keywords-** *Respiratory Diseases, Sistan, Strategic Plan, Extreme storms*

## I. INTRODUCTION

Avian infectious bronchitis is a highly contagious respiratory tract viral disease in poultry characterized by tracheitis, coughing and sneezing. The disease causes high economic casualties and losses due to heavy casualties, low weight gain and reduced feed efficiency and occurrence of different complex infections. It is also the main reason for the drop in egg production and its quality (Phillips, R.W., 1949). Rapid transmission of the disease and the occurrence of multiple virus serotypes of this disease have created a highly complex situation, in which the mortality in broilers reaches to its probable maximum rate within two weeks, occurring at age 15 to 45 days of their life. Mortality usually occurs due to secondary bacterial infections (Scott, G.R., 1967). Bacterial infections are caused by damages to respiratory tracts by bronchitis disease virus that the incidence of the disease varies

inversely with age. The disease was first reported in 1931 in the United States (Massachusetts native strain), and in the 1960, its epidemic all over the world was transmitted. The Massachusetts strain is also seen in Iran (Porter, M.E., 1997). According to droughts in a recent decade in Sistan region and extreme dust storms with a speed of 100 to 120 kilometers per hour from Afghanistan to Sistan, the transmission of a variety of diseases, especially bronchitis, has caused mortality in broilers and led to the bankruptcy of most poultry farmers. Due to this problem, we decided to detect the strategies to cope with the disease using SWOT model. To do so, we studied and compared the strategies such as development of milk production units' policies in South Asia and East Africa. Mirzai et al (2011) reported the development of management strategies for milk production complexes in Sistan and Baluchestan using SWOT model. The study results showed that given the expressed subjects, in general we can say that if traditional and industrial livestock are to reach stability and play a positive role in the lives of people in the area, they need to do some measures, including identifying and developing specific strategies, developing local partnerships, codification strict and clear rules, sustainable marketing and realistic planning. The strategic plan for milk industry in Pakistan entitled as the White Revolution has been implemented particularly in small production units (Government of Pakistan, 2005a). Also, the comprehensive strategic plan of milk production has been developed and reported by the provincial government of Balochistan, Pakistan, adjacent to the Sistan and Balochistan province, Iran (Government of Balochistan, 2005b).

## II. MATERIALS AND METHODS

### A. The studied area

There are totally 57 poultry houses in Sistan Province that 15 units are working and active and 42 units are inactive. Of these, nine farms are related to the city of Hamon; 23 poultry houses are related to the central part of Zabol, 7 to the city of Nimroz and 11 poultry to the city of Zahak. The hatching of these poultry houses in an active period, and simultaneously, accounts for 1215600 pieces. However, in summer, and sometimes in winter, most of them become

inactive because of 120-day winds due to prevalence of bronchitis diseases.

### B. The statistical population

The processes of model development were as follows: Identification of internal factors (strengths and weaknesses) and external factors (opportunities, threats), prioritizing internal and external factors, determining the SWOT matrix, entering the selected factors to the matrix according to prioritized internal and external factors together. Finally, the strategies (competitive / aggression strategies, revision / adaptive strategies, diversification / contingency strategies, defensive strategies) and the actions needed according to the current situation were predicted. The total of frequencies, relative frequencies, relative frequencies percentages and the ranking of each of the strengths, weaknesses, opportunities and threats from the perspectives of three groups of respondents, including officials (100), poultry owners (100) and skilful experts on broilers (100) were investigated, which were randomly used to complete the questionnaires. The SPSS software was used to determine the sum of their frequencies, relative frequencies, relative frequencies percentage and their rankings. To determine the priority level, the influence and importance of frequency for each of the strengths, weaknesses, opportunities and threats based on the current state were determined with four grades (very important, important, less important and not important).

### C. Results

In the studies area, 8 internal strengths against 9 internal weaknesses and 8 external opportunities against 10 external threats were identified and analyzed (Table 1). Hence, the total of 16 strengths and opportunities as the advantages and 19 weaknesses and threats as limitations in these areas can be identified in fighting the disease. Thus, followed by such studies, several strategies as strategic plans for management the disease on order to continue the process avoiding losses were provided:

1. Forming vaccination squads specific to severe storms periods
2. Free vaccination
3. Supporting the only strategic production (poultry house) in Sistan
4. Planning for active care at the time of storms

5. Using Nano-filtered ventilation
6. Coordination with the Afghan government on mulching the contaminated sites
7. Performing special studies on finding practical solutions
8. Training the workers in poultry houses
9. Organizing training courses for poultry house owners
10. Trying to create a strategic plan
11. The use of appropriate disinfectants
12. Coordination and cooperation with veterinary in neighbor countries on sharing information about the contaminated areas
13. Studies on changing the infrastructure of poultry houses halls
14. The redistribution and reallocation of resources across studied regions according to opportunities and high levels of weaknesses as a vital issue
15. Holding the unit empty and observing the intervals between two hatchings at least for one month – controlling the entry and exit
16. Proper density
17. Interception of smuggled and infected birds
18. Study on bronchitis and practical solution during the storm
19. The vulnerability of most poultry farms are very high in terms of poultry farm development
20. Participation of people, private and public sectors as obstacles to the development of poultry farms of Broilers should be improved and promoted.
21. Establishing the equilibrium temperature in poultry saloons, especially in the first three weeks of the breeding

In a simple analysis and summarizing, we can say the vulnerability threshold is very high and requires review and providing favorable policies in order to overcome the weaknesses and threats by using the strengths and opportunities. The results of this research are consistent with Shahraki et al. study (2011).

TABLE I. RESULTS OF RESEARCH

Points Weakness	Points Strength	SWOT Matrix
W1 = Lack of skilled managers W2 = Lack of skilled workers W3 = High mortality rate W4 = High production costs W5 = High respiratory diseases rate in poultry houses W6 = Poultry owners having more than one job W7 = Not using the skilled experts W8 = Lack efficiency in using energy	S1 = Mechanization of poultry houses S2 = Skilled and special centers for disease diagnosis S3 = Experiences of ranchers and veterinarians in fighting against the disease S4 = Declaring the disease-free situation after 1-14 days following the storm hush and using the prescribed antibiotics S5 = Tendency to continue poultry housing as a profession S6 = Ability to produce vaccine in the country (Iran)	
Strategies WO	Strategies SO	Opportunities
1. Co-ordination with the Afghan government on mulching the contaminated areas 2. Doing special studies on finding practical solutions 3. Training the poultry workers 4. Hold training classes for poultry owners 5. Trying to create a strategic plan 6. Use of proper disinfectants	1. Squads formed for vaccination specific to severe storms periods 2. Free vaccination 3. Supporting the only strategic industry (poultry) in Sistan 4. Planning for active care at the time of storms 5. Using Nano-filtered ventilation systems 6. Observing the same age chickens parameter on a farm 7. Not using the pre-used egg containers	O1 = Demand for meat consumption among households O2 = Adjacency to border areas O3 = Inexpensive labor force O4 = Government support to the poultry industry O5 = Purchasing power of people for chicken meat O6 = Veterinary specialists in the area O7 = Zabol University as place to train specialists O8 = Insurance support system for poultry owners
Strategies WT	Strategies ST	Threats
1. Interception of smuggled and infected birds 2. Study on bronchitis and practical solution during the storm 3. The vulnerability of most poultry farms are very high in terms of poultry farm development 4. Participation of people, private and public sectors as obstacles to the development of poultry farms of Broilers should be improved and promoted. 5. Establishing the equilibrium temperature in poultry saloons, especially in the first three weeks of the breeding	1. Coordination and cooperation with neighboring veterinary regarding sharing information on contaminated sites 2. Study to change the poultry farm hall infrastructure 3. The redistribution and reallocation of resources across studied regions according to opportunities and high levels of weaknesses as a vital issue 4. Holding the unit empty and observing the intervals between two hatchings at least for one month – controlling the entry and exit 5. Proper density	T1 = 120-day dust storms T2 = Lack of infrastructure T3 = Entry of pathogens across the border T4 = Long borders with neighboring countries T5 = Disease quick spread ability and high incidence T6 = Shortage of skilled workers is site T7 = high mortality in poultry T8 = Poultry owners unfamiliar with modern management

### III. DISCUSSION AND CONCLUSION

According theoretical bases of the research and performed field studies, in order to provide strategies and solutions to reduce losses caused by bronchitis in poultry houses, using SWOT technique, the capacities and limitations of the poultry farms in the studied area were identified and practical responses and solutions were provided to reduce the disease in poultry houses. With this description, the obtained results can be provided in two qualitative and quantitative aspects:

- The vulnerability threshold of most poultry houses against this disease is very high.

- The redistribution and reallocation of resources across studied regions according to opportunities and high levels of weaknesses as a vital issue.
- Among the strengths of the study area, environmental factors, such as ranchers and veterinarians experience in fighting against the diseases is considered as the major strength and main advantage of this region to develop the poultry houses. For optimal use of such factors, the development of poultry houses of broilers is emphasized.

- According to the results, among the weaknesses, the lack of skilled managers is in the priority. In this regard, by participation of people, public and private sectors, such barriers to reduce disease in poultry houses should be fixed and improved.
- Among the external opportunities, the consumer demand for meat in the households is considered as the main external opportunity. Regarding presented solutions, this can be greatly used to develop the poultry farms of broilers.
- Among external threats, unfamiliarity of poultry farmers with modern management is the most important external threat that some defensive strategies have been proposed to mitigate its effects.

According to the above, we can say in general that for establishing stability in poultry houses of broilers in order to play a positive role in the lives of people in the area, they require a new approach from the government in the region. Since due to droughts in several previous years, the people in the area became so weak that even are losing their strategic product, meaning, their poultry houses. Thus, a new subsidy may be needed to help the poultry farmers and make them

robust against these natural barriers for development of the region.

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