ABSTRACT

Title : Envisage to develop weather based forecasting model for enteric diseases in layer chicken

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This research work was undertaken to develop weather based forecasting model for enteric diseases of layer chicken in Namakkal area.

Enteric diseases viz salmonellosis, colibacillosis, necrotic enteritis, campylobacteriosis, coccidiosis and Newcastle disease were recorded in one, twenty eight, eight, one, seven and twenty one layer farms in and around Namakkal from September, 2011 to September, 2013 by active surveillance. Clinical samples of suspected birds from salmonellosis, colibacillosis, necrotic enteritis, campylobacteriosis, coccidiosis and Newcastle disease suspected birds was confirmed by bacteriological and biochemical examination (isolation and identification), microscopic examination of coccidial oocysts and haemagglutination activity of Newcastle disease virus infected amnio allantoic fluid from specific pathogen free 9 day old embryonated eggs by spot – HA and RT-PCR respectively.

Retrospective analysis of veterinary medical records revealed a total of 9425 colibacillosis outbreaks with highest incidence of 9.77 per cent and lowest incidence of 5.84 per cent was recorded on south-west monsoon season (September) and winter (January) followed by a total of 1921 outbreaks of necrotic enteritis with highest incidence of 15.72 per cent in north-east monsoon (November) and lowest incidence of 2.18 per cent in summer season (April), a total of 2466 outbreaks of
Coccidiosis with a highest incidence of 18.65 per cent in north-east monsoon season (November) and lowest incidence of 4.29 per cent in summer season (April and May) and a total of 10292 outbreaks of Newcastle disease with a highest incidence of 10.54 per cent in summer (March) and lowest incidence of 5.80 percent in winter (January) for the period of 12 years nine months (January, 2001 to September, 2013) respectively. There was no incidence of salmonellosis and campylobacteriosis recorded in layer chicken in and around Namakkal during the study period.

Risk factors associated with enteric diseases of layers were calculated by using relative risk and odds ratio. For colibacillosis there was a strong positive association between occurrence of colibacillosis with other diseases occurrence. There was a positive association between the occurrence of necrotic enteritis with age of chicken and concurrent coccidiosis. Similarly there was a strong positive association between the occurrence of coccidiosis with age of chicken and deep litter system of management. Newcastle disease occurrence was causally associated with the strain of chicken.

Economic losses due to enteric diseases of layers were calculated by mortality and production loss. Overall economic loss due to salmonellosis, colibacillosis, necrotic enteritis, campylobacteriosis, coccidiosis and ND in the present study was ₹ 71.48, ₹ 63.72, ₹ 78.24, ₹ 50.82, ₹ 49.50 and ₹ 62.27 per bird per day respectively.

In the present study, meteorological parameters have been correlated with disease and a multiple linear regression model for colibacillosis, necrotic enteritis, coccidiosis and ND have been developed and validated with existing data. Due to low prevalence of salmonellosis and campylobacteriosis model could not be developed for these two diseases.