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Competition Between Low Pathogenic and High Pathogenic Avian Influenza in a Two Patch System. Preliminary report.

Over the last decade, epidemiology of avian influenza has undergone a significant transformation. Not only have we seen an increase in the number of outbreaks of the deadly strain known as high pathogenic avian influenza (HPAI), but the number of birds infected, and the cost of control has risen drastically. Live poultry farms play a huge role in the bird to bird transmission of avian influenza. We develop a two patch model to determine the competition between LPAI and HPAI strains. We define the two patches as live bird markets in which the patches are connected through migration. We use a system of differential equations to analyze the existence-stability of the equilibriums, and established results for the critical threshold R_0 . We observed that migration plays a key role in determining whether LPAI and HPAI can invade. (Received February 02, 2015)