Incentives for earlier disclosure by outbreaks of epidemics

Valeeva, N.I.[1], Van Asseldonk, M.A.P.M.[1], Huirne, R.B.M.[2] and Backus, G.B.C.[1], [1]LEI, part of Wageningen UR, Netherlands, [2]Wageningen University, Netherlands; natasha.valeeva@wur.nl

Early disclosure of livestock epidemics is an essential determinant for the epidemic size and its financial consequences for economies at different levels. Depending on indemnity payments and the magnitude of regulatory costs of disclosure, the farmer may have an incentive to withhold the information on possibly infected animals if the farmer expects to be worse off after disclosure. The study examines the impact of incentives on the farmers' disclosure decision, for a Dutch case in the context of Classical Swine Fever (CSF). The disclosure decision is formulated as a stochastic discrete time and discrete state finite horizon dynamic programming model, accounting for farmers perceptions of infection probabilities and a within-herd transmission. The model is run for scenarios with alternative sets of incentive parameters, represented by the proportion of public compensation for categories of animals, testing costs and quarantine costs. Per scenario, 100 replications are done. Results yield the optimal (least-cost for the farmer) strategy on disclosure timing of a CSF suspicion. In the base scenario (no compensation for dead animals; 50% compensation for diseased animals; no compensation for regulatory costs of disclosure), the optimal strategy for the farmer is to report a CSF suspicion in 3.72 weeks (after incubation period), with expected costs of €4,786. A big difference among replications shows that within-herd spread greatly affects the disclosure timing. Extra compensations for testing and quarantine costs, next to the base scenario, do not always result in notably earlier disclosure; 3.48; 3.52; 3.68 weeks in some analyzed scenarios. Penalties for dead animals is not an effective incentive policy, since the number of dead animals is rather small compared to diseased animals with specific clinical signs. Discarding compensation for (specific) clinical cases combined with compensation of regulatory costs of disclosure is the most effective policy, resulting in reporting period of 2.68 weeks.