

Farm economic analysis of improving biosecurity status and management in farrowing-to-finishing pig farms

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Improvement of the biosecurity status and decreasing the disease incidence have been associated with improvement of key technical parameters which may produce economic benefits to the farmer. However, a link between the costs of biosecurity implementation and the benefits acquired is lacking. The aim of this study is to estimate the benefits of implementing biosecurity measures after assessment in farrowing-to-finishing pig farms of the biosecurity status and advice about improving was provided.

42 Flemish farrowing-to-finishing pig farms were surveyed using the questionnaire Biocheck.UGent (www.biocheck.ugent.be), which uses a scientifically risk based scoring system to quantify biosecurity status from 0 to 100. The status is subdivided into two categories: 1) internal and 2) external biosecurity. Both are disaggregated in 6 subcategories comprising several questions per subcategory. Farms were visited three times, with 6/9 months intervals, between 2011 and 2014. Data on the biosecurity status, herd management and production parameters were assessed and collected. After the first visit advice was provided to improve biosecurity. Costs for implementing biosecurity were calculated per question of subcategory in the scoring system. The costs incurred implementing biosecurity measures were gathered by Animal Health Care Flanders for prices on veterinary costs and Agrologic (Agrologic, 2013) for prices of commodities. The estimation of the benefits was conducted with the previously described farm-specific production economic model Pigs2Win (www.remiweb.be). The difference in the technical parameters and estimated costs was inserted in the model. The gross margin (revenues-variable costs) was estimated for farms adopting the biosecurity and management advice and for farms not implementing it. We calculated it for 13 Flemish farrowing-to-finishing pig farm types which represent the Flemish scenario. The data from the 13 farms was obtained based on the farm economies and production data and was validated by experts of the pig sector.

The 42 farms visited showed an average improvement on the production parameters (feed conversion ratio: -10,33%, average daily weight gain: 0,34%, mortality piglets: -0,65%, mortality finishers: -0,67%) and on the biosecurity score (external biosecurity: 4,11% and internal biosecurity: 9,33%). The estimated costs on improvement of external biosecurity (€1.459,95/year) was lower than the expenditure in internal biosecurity (€6.815,32/year). The main constituent of the costs of internal biosecurity was management of diseases (€4.680,78). This includes the costs of development of vaccination and medicines protocol, health status check by diagnostic evaluation, isolation of diseased pigs, euthanasia of severely diseased animals and change of working routines when manipulating diseased animals. The results of the production economic model show that in the 13 typical representative farms implementing the advised biosecurity measures presented a statistically significant higher average gross margin of 12,15% than farms without implementing biosecurity. These results indicate that interventions in biosecurity measures and management are beneficial for the farmers. These results may be helpful to motivate farmers to implement biosecurity measures.