EFFECTS OF RESPIRATORY DISORDERS ON GROWTH RATE OF NON-WEANED CALVES IN CHAROLAIS COW-CALF FARMS OF PAYS DE LA LOIRE (FRANCE) AND ECONOMIC IMPACT RELATED TO THESE DISORDERS.

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Introduction

In the area of Pays de la Loire, the typical intensive cow-calf farming system relies on the association of a cow-calf rearing unit and a young bull fattening unit. Charolais breed is coming first. Occurrence of respiratory disorders in non-weaned calves in this production system appeared to be quite high [1]. But at the moment, the impact of these disorders is not documented in this production system. Therefore, this study aimed at assessing, the effects of the occurrence of respiratory disorders on growth rates, and the economic results.

Material and Methods

Data originated from a survey carried out in 162 farms of Pays de la Loire. The sample consisted of Charolais cow-calf farms with >30 cows calving per year. The study period was the housing period (from the 15 of September 1999 to the 15 of March 2000). A respiratory disorder was defined as the association of at least one respiratory sign and, in the same calf or another calf of the same pen, at least one general sign the same day or the day before. Farmers were provided with this specific definition. They had to record day to day all treatments for the calves. Data about mortality and growth retardation were also recorded. Finally, after validation, 7496 calves in 156 farms were taken into account for analysis.

Incidence rates of cases (number of cases over the number of calf-days at-risk) were estimated on two different scales: incidence of first cases for the whole study period and herd-level incidence rate. A calf was considered at risk of experiencing a case if (i) alive in the barn, (ii) at least 3 days-old, (iii) non-weaned (or aged <150 days), and (iv) not treated.

Weight-gain data before weaning were available for a sample of 3,516 of these calves located in 111 buildings.

From this sample, a multivariable, GLM, regression model was performed to assess the effects of the occurrence of respiratory disorders on growth rates (proc. GLM, SAS Institute Inc., 1996). Three categories of calves were considered: treated calves, not treated calves in buildings with at least one case and not treated calves in buildings without any cases.

Five groups of farms were identified, based on the Herd-level incidence rate and the incidence of severe repercussions (death and severe growth retardation). For each group, a partial-budgeting simulation was applied to calculate variations in the inputs and outputs of a reference farm without any case. The annual net profit for this farm in the Occurrence zero group was near to 20.000 € in 1999 Within each identified group of farms, average treatment incidence, lethality rate, severe and moderate growth retardation rates were calculated. Numbers of dead animals and of animals with severe or moderate growth retardation were derived considering the 57 viable calves from the 60 calving cows of the reference farm.

Results

Incidence of first cases for respiratory disorder was 1.53 cases for 1,000 calf-days at risk. Compared with non treated calves in buildings without any cases, treated calves had a loss of body weight at 150 day of life of nearly 16, 10 and 8 kg for disorders occurring respectively before 45 days, between 45 and 90 days and between 90 and 150 days of life. Moreover, not treated calves in buildings with cases had a loss of body weight of 5 kg.

Herd-level incidence rate averaged 2.52 treatments for 1000 calf-days at risk. Lethality rate, severe growth retardation rate and moderate growth retardation rate were 6.0%, 7.2 and 2.7 % of the treated calves, respectively. Five groups of farms were identified, based on incidence and severity of repercussions: (1) Zero-Occurrence; (2) Low-Occurrence; (3) Moderate-Occurrence; (4) High-Occurrence; and (5) Severe-Consequences. These groups gathered 21, 22, 17, 28, and 12% of the farms, respectively.

Discussion and conclusion

Our approach allowed to express a global economic impact cumulating extra-costs and estimated losses associated with the occurrence of respiratory disorders in non-weaned calves. Total impact was found quite low, except for 12% of the farms where one fifth of the annual net profit was lost, mainly due to the consequences of mortality. The partial budget approach used only included variation in variable costs from a small number of origins. Not including variation in fixed costs seemed here relevant: *(i)* considering that extra-labour has no opportunity cost in the familial farming system under study; and *(ii)* according to the fact that farm buildings characteristics were not found being frequently risk factors in this survey [2].

Growth retardation on non treated calves in buildings with cases suggest that sub-clinical respiratory disorders may exist to some extend.

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References

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