RESEARCH ON IMPACTING FACTORS ON LOW PROLIFICACY IN SOWS IN ROMANIA

Ioan Hutu
Banat' University of Agricultural Science and Veterinary Medicine, Faculty of Veterinary Medicine, Timisoara, Romania

Introduction

Undoubtedly the level of prolificacy is influenced by many types of factor among which: genetical, managerial, diseases and environmental factors are the most involved. The purpose of this article is to summarize and rank the influence of a number of factors on decreasing level of prolificacy and to show the impact of their combination.

Material and Methods

The research was carried out on Landrace and Large White sows. The sample consisted of 21,509 farrowings of sows that were born in six years and raised in breeding farms in Romania, a country with temperate climate. The prolificacy variable (total number of piglets born) was divided into three classes; the criterion for dividing was the mean and one unit of standard deviation (X±S) of each breed. The same criterion was used for all continuous variables of study.

Using MINITAB a 2-step analysis was performed, with the odds ratio as the relationship estimator between studied variables and the level of prolificacy: 1) A univariate analysis was performed to screen the relationship between potential risk factors with influence on the classes of prolificacy. 2) The multivariate analysis of the factors that passed the previous screening test was performed using multiple logistic regressions. Regression models were run for small prolificacy (P_S) vs. normal prolificacy (P_M) and high prolificacy (P_H) vs. normal prolificacy (P_M), with normal cases (P_M) as comparative basis. In the present study logistic regression models and results in odds ratio (OR) in terms of only medium prolificacy vs. low prolificacy (LP) comparison level are shown. For each impacting factor the comparison was made between middle class of variables vs. both boundary classes. At other times comparison was made between classes that were most appropriate by average of prolificacy (9.93 piglets) vs. rest of classes. Post statistical analysis factors were ranked by OR.

Results

When the univariate study had been completed, 29 variables were found associated with the prolificacy level. Multivariate analysis suggested that 21 studied variables (or classes of variable) were associated with prolificacy. Practically, the multivariate study emphasized that the sows with previous failure lactation were 13.29 (with Confidence Interval 95% between 11.34÷15.57) more times risk to LP than sows with normal lactation length. The sows with previous short service period experience were 5.58 folds (CI 95% between 4.10÷7.60) more risky to LP than sows with medium service period. The conceptions after mating between boars 3 and 2 years younger than sows were 3.89 and 2.80 times respectively, times more at risk to LP than conceptions between partners of the same age. Short and long interval between farrowings were 3.82 and 1.48 times respectively more risky to LP than medium interval. Primiparous were 1.95 times more risky to LP than second parity sows. Prolonged and short gestation vs. normal duration of gestation were 1,69, and 1,33 times respectively, more risky to LP than NP.

Comparing medium levels of environmental factors with high duration of sunshine, high temperature-humidity index, high relative humidity, and high level of air temperature we noticed a higher risk of LP. For the above factors: OR=1.24; 1.18; 1.16; and, 1.15, respectively. *(2)*

The combination of the first three risk factors, compared to the sample average, leads to the following observations:

- prolificacy of sows with farrowing coming after a previous lactation failure was 14.5% less;
- prolificacy of sows becoming pregnant after a previous lactation failure and a short service period was 22.9% less;
- prolificacy of sows with farrowing after failure lactation, short service period and high age difference (sow-boar) at mating was 54.7% less.

Discussion

The results of the study suggested essential implications of these factors on the level of prolificacy. Moreover, the factors where also involved in decreasing the number of piglets weaned per sow per year (NPWY). The combination of risk factors decreases the NPWY. The sample of sows with this low level of prolificacy can be considered as belonging to *reproduction herd-disease category. (1)*

At the end of the study we observed that intensification of Pig farming requires carefulness at each stage of the breeding process. Each step needs to be optimized

Conclusions

- Factors having an impact on prolificacy where drawn out: they can be considered as risk factors in Romania.
- Combinations of risk factors, decrease prolificacy to the point where the number of piglets weaned per sow per year is dramatically impacted.

Acknowledgements

Present research was possible owing to a CNCSIS grant from the Ministry of Education and Research from Romania. Special gratitude goes towards Prof. Horia Cernescu and Prof. Emil Sas for their kind professional guidance.

References

1. Hutu I., Research in the peculiarities of reproductive sows in intensive reproduction management *Reproduction PhD Thesis, Timisoara, Banat University of Agricultural Science and Veterinary Medicine,* 2003, 423 p.
2. Huțu I., Sas E. 2003, Research on the reproductive traits of sows: 2. The influence of environmental factors on decreasing prolificacy *Lucr. st. Med. Vet. Timisoara,* 36:578-581.