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TITLE

MACHINE LEARNING CAN PREDICT WEANING TO ESTRUS INTERVAL BASED IN LACTATION INTAKE OF SOWS

Diocleciano Gayubo[1], Carlos Pineiro[1], Celia Santiago[1], M Angel de Andres[1], Inmaculada Diaz[1], Maria Aparicio[1]

[1] *Pig Champ Pro Europa SL*

CONTENT

Background and Objectives
New technologies and innovative farm's equipment allow massive data collection that properly used can help to optimise production. In particular, electronic sow feeding is helping to understand better sows' needs and performance. This study aimed to predict the weaning to first service interval (WFSI) based on lactation feed intake in sows
Material & Methods
A total of 62 sows of the Swine Research Farm in Aguilafuente, Segovia, Spain were included in the study. Data collection for lactation intake were performed using the farm equipment Gestal Solo (Jyga Technologies, Saint-Lambert-de-Lauzon, QC , Canada) Reproductive data were collected from PigCHAMP software to determine weaning to first service interval (WFSI). Several predictive models were used, including MM-type Estimators for Linear Regression model, Support Vector Machines and eXtreme Gradient Boosting (machine learning).
Results
MM-type resulted in a high error rate, due to the anestrus (estrus 10 d or late after weaning) showed by sows. Therefore, this model was accompanied by other which also allowed the prediction of the anestrus periods, using the Support Vector Machines which had a success rate of 100% on predicting just the anestrus. Finally, (eXtreme Gradient Boosting) was tested as well and improved the rest of the models with a success rate of 91.7% overall on predicting the day the sow is going to show the estrus.
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Discussion & Conclusion
In conclusion, the models used in this preliminary study confirm that WFSI can be predicted by knowing feed intake of the sow during the lactation period.