

Master Thesis Topics with Qualitas AG and ETHZ

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2020-11-27

If you are interested in any of the following topics or if you have questions, please contact Peter von Rohr (Qualitas AG) Chamerstrasse 56, 6300 Zug; peter.vonrohr@qualitasag.ch, Tel 041 768 92 21.

Genomic Selection in Populations With a High Rate of Natural Insemination - Long-term Development of Accuracy of Genomic Breeding Values If Sires Are Not Re-Genotyped

Routinely, selection candidates are genotyped with a Low-density chip (LD-chip, about 30000 SNPs). The prediction of SNP-effects in a training population is done with sires genotyped with a chip with a higher density. As a consequence of that sires which are selected for artificial insemination are usually re-genotyped. In populations like **Original Braunvieh** and **Simmental** the amount of natural insemination is high. In breeding schemes without artificial insemination, selected sires are not re-genotyped with the denser chip. The influence of this fact on the accuracy of the predicted genomic breeding values in the population of Original Braunvieh is to be investigated with a real-world dataset. The project contains imputation of the LD-Chip genotypes onto the denser chip by predicting the missing genotypes and the prediction of genomic breeding values

Verification of the prediction formula for the standard lactation milk yield

For Swiss dairy cows the milk yield of a standard lactation is predicted starting from day 80 of the respective lactation with a regression formula. Influential factors in this formula are lactation number and birth month of the calf. In this project, the existing regression formula should be verified and adapted if necessary.

New Breeding Programs

Swiss Dairy Cattle breeding organisations have traditionally been collecting the same type of data from a large number of farms. Recently the breeding organisations have diversified their services and now offer different type of memberships. Depending on the type of membership that a farmer is committing to different types of data are collected. Some of these newly collected data offer the possibility to use the information from this data as selection tools. To the best of our knowledge there has not been any scientific investigation about the benefits of collecting the new types of data for the breeding program as a whole.

Predicting Behavior Traits Based On Video Data

SESAM stands for Sensor Assisted Alpine Milk Production and is an Interreg B project in the EU. The project aims at predicting new phenotypes based on sensor-collected activity patterns of cows. In a first project stage, behavior phenotypes must be derived from activity patterns and activity data. The main task in this project is to determine the different behavior traits based on collected video data.

Connectedness Between Herds In Different Populations

In populations with a low rate of artificial insemination, it is often a problem that effects of herds cannot be compared or estimated. There are different measures that indicate such problems. These measures are all contained in the general concept of connectedness.

Resilience Traits Based on Milk Yields From Robotic Milking Systems

More than 100 farms with robotic milking systems are connected to the service of automated data exchange. For those farms, the milk yield per cow is collected on a daily basis. This allows to describe the trajectory of the trait milk yield over time with much more accuracy. This new type of automated data collection is expected to deliver a lot more information about different traits of a cow that are related to health and resilience. This project aims at discovering such new traits which can ultimately be used as new traits for selection in dairy populations.

Evaluation of Fertalys Data

Fertalys is a pregnancy testing service offered by the Swiss Dairy Cattle Breeding Organisations together with Swisslab. Results from Fertalys tests might contain information about different relevant fertility traits. The goals of this project is to find possible connections between test results and other traits.

First steps towards a genetic evaluation for conception rate

An analysis comparable to <https://doi.org/10.3168/jds.2018-15858> is to be developed.

Beef Cattle Production Model

With recent market developments, economic aspects of beef production have become more important. The approach developed by Phocas et al (1998) should be adapted to Swiss circumstances.

Early Maturity in Swiss Beef Cattle

Early maturity is an important trait in beef cattle. But this trait is not easy to integrate into a breeding program. Different solutions to this problem should be proposed and evaluated.

Application of Generalized Linear Mixed Effect Models

Based on the results of a previous master thesis, different comparison studies should be undertaken where conventional linear mixed models are compared with the generalised linear mixed model based on the same data set.

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Latest Changes: 2020-11-27 09:07:29 (pvr)