



DairyCare COST Action

Scientific Report for Short-term Scientific Mission

Krakow, 2 March 2015

STSM Applicant: Prof Zygmunt Maciej Kowalski, University of Agriculture in Krakow, Krakow 30-059, Poland; rzkowals@cyf-kr.edu.pl

STSM Topic: DairyCare Norway-Poland

Host: Tormod Ådnøy, Norwegian University of Life Sciences, Ås, Norway; tormod.adnoy@nmbu.no

COST STSM Reference Number: COST-STSM-FA1308-21710

Period: 2015-02-16 00:00:00 to 2015-02-20 00:00:00 (5 days)

COST Action: FA1308

STSM type: Regular (from Poland to Norway)

Purpose of the STSM:

The main aims of my STSM to Norway were:

- to analyze statistically the data on risk factors for subclinical ketosis (SCK) in dairy herds in Poland (the data from about 20 000 herds). The data set consists of milk recording data obtained by Polish Federation of Cattle Breeders and Milk Producers (milk yield, milk composition, days open, calving period, area of Poland, size of a herd etc.) as well as data on management system (grouping, system of feeding, education of farmer etc.) of dairy cows in these herds, obtained by interviews;
- to improve our Polish, unique system of monitoring of SCK based on milk chemical composition analysis (ketone bodies: acetone and betahydroxybutyrate acid), by using alternatively the Norwegian way of analyzing the FTIR (MIR) spectras - Norwegian partner has reached very serious competence in this area. Poland is a first country in the world in which the whole population of recorded cows is being monitored for SCK;
- to find out the additional ways of using FTIR spectra in dairy cow management and breeding.

Description of the work carried out during the STSM:

Together with Norwegian partners we discussed the methodology of statistical analysis of the data concerning the risk factors for subclinical ketosis (SCK) in dairy herds in Poland (the data from about 20 000 herds). The discussed options were the calculations of risk factors using multiple logistic regression, with categorical variables (e.g. yes or not) or continuous data (e.g. average milk yield), as well as the calculation of odd ratio for the relationship between independent variables and dependent variable (ill or healthy). The discussed options were related to the cow-level or herd-level factors.

Moreover, we discussed how to improve our Polish, unique system of monitoring of SCK based on test-days and milk chemical composition analysis (ketone bodies: acetone and betahydroxybutyrate acid).

The Norwegian partners presented their unique ways of using FTIR spectra for milk composition as well as pedigree of dairy cows in breeding programmes, that could be also used in the Polish SCK monitoring system.

Additionally, I presented our system of monitoring of SCK as well as the first year monitoring results to the scientists and PhD students of the Animal Science Faculty (a seminar). I also attended the panel discussion on our future common Polish-Norway research activities.

Description of the main results obtained:

The main aims of my STSM to Norway were fully achieved. The methodology of the calculation of the risk factors for SCK in Poland, both on cow-level and herd-level has been established. The data set of Polish cows, needed to improve the system of SCK monitoring, has been polished and sent to Norwegian partners and it is ready for calculations.

Future collaboration with the host institution (if applicable):

As it was stated above, the partners decided to continue the scientific collaboration between Poland and Norway. A new fields of such collaboration were discussed and found (e.g. diagnosis of metabolic disorders and negative energy balance in cows producing in barns equipped with voluntary milking systems (robots)).

Foreseen publications/articles resulting from the STSM (if applicable):

We strongly believe that the results of our cooperation, including the STSM, will be published in internationally recognised scientific journal (e.g. Journal of Dairy Science).

Confirmation by the host institution of the successful execution of the STSM:

See Appendix 1

Zygmunt M. Kowalski

Appendix 1



Til

Noregs miljø- og biovitenskapelige universitet
Fakultet for veterinærmedisin og biovitenskap
Institutt for husdyr- og akvakulturvitenskap

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BESØKSADRESSE ARBØRETVÆIEN 6 1432 ÅS

Vår ref.

Dykkar ref.

Dato

Ås, 04.03.2015

Professor Z M Kowalski stayed with us at NMBU from 16 to 20 February. He gave an open seminar on Tuesday, had a meeting to discuss my PhD's use of Polish ketosis data with myself and coadvisors on Wednesday, and a meeting with scientists focused on Automated Milking Systems on Thursday, in addition to separate meetings with staff.

The visit furthers the collaboration initiated by DairyCare and opens possibilities for expanding the cooperation.

A month of my sabbatical next year is planned in Krakow.

Tormod Ådnøy