

EU-PLF E-Newsletter

EU-PLF is an EU supported project for bringing
Precision Livestock Farming from the lab to the farm

February 2014

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Save the date: EU-PLF conference in Copenhagen

The next EU-PLF conference will take place in Copenhagen, Denmark on 25th August 2014, within the 65th annual meeting of the EAAP. Deadline for submitting abstracts to the session on Precision Livestock Farming (PLF) is 9th March 2014.

The EU-PLF conference will include a joint session – co-organised by EU-PLF and the EAAP scientific committee – and an internal EU-PLF workshop (on invitation only). The joint session is identified as Session 21 in the scientific programme of the 65th annual meeting of the EAAP and is entitled ‘Precision Livestock Farming; making sense of sensors to support farm management’. It will be chaired by Ilan Halachmi (A.R.O., The Volcani Center, Israel) and Hans Spoolder (Wageningen UR, The Netherlands) and will take place on the morning of Monday, the 25th from 8.30 to 12.30 in the Tivoli Congress Centre in Copenhagen (Denmark).

SAVE THE DATE!

25 August 2014
EU-PLF conference
will take place in
Copenhagen, Denmark

A call for abstracts was announced with a deadline of March 1st. Abstracts for submissions should be for *Session 21 Precision Livestock Farming; making sense of sensors to support farm management*.

The EU-PLF sponsored session includes two invited speakers, Daniel Berckmans (KU Leuven, Belgium) and Jeffrey Bewley (University of Kentucky, USA) who will present on the PLF landscape in Europe and in the USA, respectively. Ilan Halachmi will end the session with a discussion on “closing the loop”: the combination of cow individual body condition scoring, automatic disease detection and precision feeding in robotic milking.

The proposed content of the session is as follows:

- Collection and real time interpretation; Animal sensing technology – startup companies, matured industry, and university sensor development.
- Applications of the data to improve management in cattle, pigs and poultry farming.
- Added value to the farmer, food consumer (human), environment and the nearby rural community.

The scientific programme and instructions on how to submit abstracts can be found on the conference website: <http://www.eaap2014.org/>

EAAP fellowships are also available for early career scientists.

More information

www.eu-plf.eu

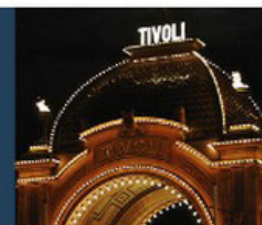
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EAAP 2014
Copenhagen, Denmark
25 - 29 August 2014

65th annual meeting of the European Federation of Animal Science



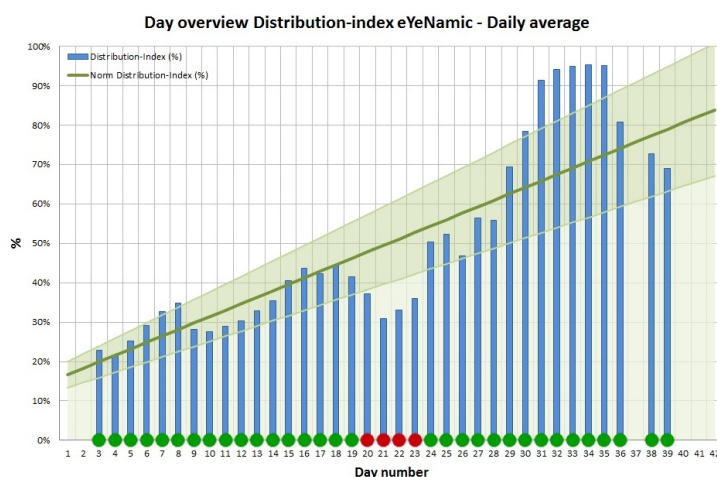
PLF equipment installed and operational on commercial farms

EU-PLF partners Fancom and SoundTalks successfully installed vision and sound recording equipment in a total of 15 pig and poultry commercial farms and a cough monitor in an experimental calf farm. These activities fall within Work Package (WP) 2 of the project.

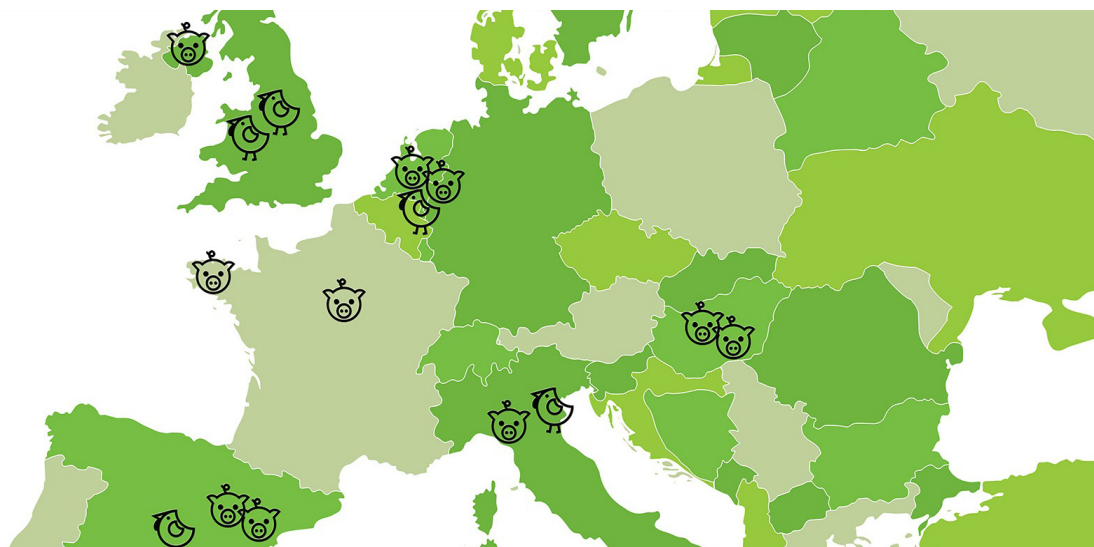
A lot of data is being currently generated by the systems and being gathered by the equipments (Tasks 2.2 and 2.3 within WP 2). The obtained data are being analysed to determine the best way they can be translated into indicators or management tools to better assist farmers in the care of their animals (Tasks 3.2).

There have been a few technical and logistical problems encountered during the installation of the equipment and during the time of data collection. The problems range from lack of proper internet connection to mice eating the cables to unstable electric power and abrupt power-off. For each problem, a possible solution including a checklist of things to watch out for have been provided. The list of problems encountered as well as solutions used is a very important part of the “blue-print” which will be the final result of the EU-PLF project; and thus have been and are still being carefully recorded. It is the aim of EU-PLF that the creation of the blue-print will assist others in their development of PLF devices.

The analysis of data is part of WP 3. This includes labelling of the raw data received from the vision and sound monitors and creating models and algorithms to “translate” these data into key indicators of the health, welfare and productivity of the animals; dust and ammonia emissions assessment; and/or management tools for the farmer. An example of how this “translation” works is given in the figure on the right. Data is collected every day on the distribution of chickens in a building. When the distribution deviates significantly from “normal” - red dotted days in the figure, an SMS could be sent to the farmer warning him/her through another integrated software application.



Equipment in dairy farms is currently under progress and will be reported on later.



SME Over drive: Full throttle ahead

EU-PLF project's Work Package (WP) 5, Innovation through High-Tech SMEs, short-named The SME Drive, is proud to report that we have outperformed ourselves. Our target of 10 groups to coach and train in the blueprint with the aim to start a Precision Livestock Farming (PLF) business, has long been reached. Currently the SME Drive is dealing with 20 different initiatives in Spain, Italy, Denmark, United Kingdom, Netherlands and Belgium.

There are groups dealing with very different aspects of smart farming: from animal health and welfare to behaviour. There is a bit of everything.

Given that some groups are much more advanced than others, the SME Drive is now putting together a fund management board that will have a decisive role in deciding which groups will be given part of the total fund of 100,000€ allotted to WP5 for demonstrating promising new technologies on farm. The board will have to manage its investments well because there is a limited amount and there are a lot of fascinating candidates.

Hopes are high: the SME Drive expects the first two spin-offs – out of a total of 4 promised by the project – already this year. Let's cross our fingers!

The effect of gradual weaning on haematological profiles in artificially reared Holstein-Friesian and Jersey calves fed different planes of nutrition

Dr. Bernadette Earley and Dayle Johnston, Animal and Bioscience Research Department, Animal & Grassland Research and Innovation Centre, Teagasc, Grange, Dunsany, Co. Meath, Ireland.

Introduction

The two predominantly used dairy sire breeds in Ireland are Holstein-Friesian and Jersey. Recently, calves of Holstein-Friesian breed compared with the Jersey breed and calves fed a high plane of nutrition compared with calves fed a low plane of nutrition have shown increased immune responsiveness (Ballou, 2012). Our group has previously reported that weaning exerts an acute stress response in single-suckled beef calves, characterised by changes in the distribution of haematological cells (O'Loughlin et al., 2011). The objectives of this study were (i), to examine the effect of breed and (ii), the effect of plane of nutrition, on the haematological profiles of Holstein-Friesian and Jersey calves in response to gradual weaning.

Materials and Methods

The study was structured as a factorial design with two breeds (Holstein-Friesian (H-F) and Jersey (J)), and three levels of nutrition (high, medium and low) within breed. Forty-four H-F and twenty-nine J bulls were group housed indoors on sawdust floored pens from day (d) -56 to d 28 of the study. Calves were blocked, within breed, to nutrition treatment on the basis of live-weight, age and sire. H-F and J calves were allocated to either a high (H), medium (M) or low (L) plane of nutrition (H-F (H): n=14, (mean age±s.d.) 21 ± 5 d, (mean weight ± s.d.) 49 ± 6 kg; J(H): n=11, 35 ± 8 d, 33 ± 5 kg; H-F(M): n=16, 22 ± 7 d, 46 ± 5 kg; J(M): n=9, 35 ± 9 d, 34 ± 4 kg; H-F(L): n=20, 20 ± 4 d, 45 ± 5 kg; J(L): n=9, 35 ± 8 d, 33 ± 5 kg). Calves were fed using an electronic feeding system (Foster-Technik SA 2000, Engen, Germany). H-F calves on H, M and L nutrition levels were offered 8 Litres (l), 6l, 4l, milk replacer (MR) daily, and ad libitum, a maximum of 1.5kg and 1kg, concentrate (C) daily, respectively, pre-weaning. J calves on H, M and L nutrition levels were offered 6l, 4l, 3.5l, milk replacer (MR) daily, and ad libitum, a maximum of 1.5kg and 1kg, C daily, respectively, pre-weaning. All calves were offered approximately 400g straw/day throughout the study period.



Weaning was initiated when calves were consuming 1kg of C per day for three consecutive days. During the weaning phase MR was gradually reduced from its previous allocation to 0l over 14 days (d -13 to d 0). After weaning, the maximum C allowance was maintained at ad libitum for H and increased to 2kg and 1.7kg, for H-F calves for M and L groups,

respectively, and 1.7kg and 1.4kg, for J calves on the M and L planes of nutrition, respectively. On d -14, -6, -3, 0, 1, 3, 8, and 14 relative to weaning (d 0), calves were blood sampled for haematological analysis using an ADVIA 2120 analyser. Clinical health of the calves was recorded throughout the study.

Daily health checks of the calves were conducted five days a week (Monday to Friday) from the 19/03/2013 to the 05/04/2013, over a three day period (e.g. Monday, Wednesday and Friday of each week) from the 08/03/2013 to the 12/04/2013, and at least twice a week from the 15/04/2013 up to, and to include the weaning period. The assessments included the monitoring of rectal temperature, respiratory sounds (Trachea and lungs), presence of diarrhoea (normal, semi-formed, loose but stays on top of the bedding, watery and sifts through the bedding), presence of a cough (none, induced, spontaneous cough or repeated induced coughs, repeated spontaneous coughs), ear scores (normal, ear flick or head shake, unilateral droop, head tilt or bilateral droop), presence of nasal (none, small amount of unilateral discharge, bilateral or excessive discharge, copious bilateral discharge) and ocular discharges (none, small amount, moderate amount of bilateral discharge, heavy discharge).



Calve cough monitor

The respiratory status of the calves is monitored in a continuous, automated way by means of a cough monitor. Microphones in the shed first record the sound, and a smart algorithm then looks for the occurrence of calve coughs in these recordings. In the EU-PLF project, the algorithm for calve cough detection is developed, and the goal of the project is to prove the added value of early warning based on these automated monitoring tools. An update of the results will be shown later during the project.



References

Ballou, M.A. (2012). J. Dairy Sci. 95: 7319.
O'Loughlin, A., McGee, M. Waters, S.M., Doyle, S., & Earley, B. (2011). BMC., Vet. Res. 7: 45.

EU-PLF partipates in EC-PLF 2013

The 6th European Conference on Precision Livestock Farming (EC-PLF 2013) took place in Leuven, Belgium on 10-12 September 2013.

The conference brought together more than 220 researchers from 31 countries with different backgrounds, disciplines and a different career stage to jointly discuss the latest developments in Precision Livestock Farming. 110 papers on different species like pigs, chickens, cows, horses, sheep were presented. There was also an interesting session on aquaculture.

Members of the EU-PLF consortium presented their first results and discussed the progress of the project during the 2nd General Assembly.

The results of the conference are available in the book of proceedings: *Precision Livestock Farming 2013*

For pictures from the EC-PLF 2013, visit <http://www.ecplf2013-leuven.eu/public/photogallery.aspx>.