Veterinærinstituttet
Norwegian Veterinary Institute

DTU

University of Liverpool

Universiteit Utrecht

Dianova
Food Safety & Animal Insight

Central Veterinary Institute
Wageningen UR

Universidade do Minho

Newcastle University

CReSA
Centre de Recerca en Sanitat Animal

PIWet


# Annual Meeting 2014

# Barcelona 7-8 April

# Agenda

Monday 7 April

- 10.00 - 12.15 **WP Committee Meetings**
  - (WP3 and WP6: 5 minutes each, the rest: approx. 25 minutes each)
- 12.15 - 12.30 Break
- 12:30 - 14:15 **Workshop WP4**
- 14:15 - 14:45 Lunch
- 14:45 - 17:00 **Workshop Biosecurity**
- 17.00 - 18.00 **Meetings within WPs / Guided tour Cresa**
- 18.00 - 18.30 Meeting of the **Executive Board** (break for the rest)
- 18.30 - 18.50 **General Assembly**
- 20.30 Dinner

Tuesday 8 April

- Visit to poultry farms

# Participants

| Partner | Name |
|---|---|
| **1 - NVI** | Merete Hofshagen, Mona Torp |
| **2 - DTU** | Hanne Rosenquist, Birgitte Borck Høg, Birthe Hald, Helle Mølgaard Sommer, Maarten Nauta, Mathilde Josefsen, Steen Nordentoft |
| **3 - ULIV** | Nicola Williams |
| **4 - UU** | Jaap Wagenaar, Birgitta Duim |
| **5 - Dianova** | Mogens Madsen, Heidi Dahl |
| **6 – CVI/LEI** | Peter Willemsen, Peter van Horne |
| **8 - UMinho** | Joana Azeredo |
| **9 – UNEW** | Andrew Close |
| **10 - CReSA** | Marta Cerdà-Cuéllar, Roser Dolz |
| **12 - NVRI** | Jacek Osek, Kinga Wieczorek |
| **Advisory Board/ Commission** | Apologies |

# WP1 Committee Meeting

- Nicola Williams, ULIV
- Other participants
  - All except DIA, CVI-LEI, UMinho

# Task 1.1
# Risk factors for Camp. colonization in broilers

- Task leader: Birgitte Borck Høg, DTU
- Participants: NVI, ULIV, UU, CSA, NVRI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 1.1.1 | Questionnaire and protocol for data collection agreed with all participants | √ | |
| 1.1.2 | Report on broiler production across Europe (based on questionnaire) | √ | |
| 1.1.3 | Research publication of risk factors for flock colonization including climatic conditions | ▶ | Apr13 (exp. May14/ autumn14) |

√ = delivered, ▶ = started, ▬ = not started

# Task 1.1
# Risk factors for Camp. colonization in broilers

## Activities so far

- Questionnaire data collected
- Retrospective Campylobacter status data collected from DK and NO
- Data from Denmark and Norway analysed - risk factors identified
- Results presented in paper
- Campylobacter data collected from 20 farms study in ES, NL, PL, UK
- Climate data collected (temperature, sunshine hours, precipitation)
- Datasets validated an merged (questionnaire, campylobacter status and climate data) and made ready for analyses
- Preliminary analyses made with a full DK dataset (questionnaire, campylobacter status and climate data)

# Task 1.1
# Risk factors for Camp. colonization in broilers

## Activities next project year

- Performing risk factor analyses on the full dataset including climate
- Drafting and finalizing 2 papers
- Some data analysis by individual countries to produce country level prevalence data publications

## Problems

- Data issues

## Points for discussion

- None

# Task 1.2
# A longit. study of broiler flocks in UK and Spain

- Task leader: Nicola Williams, ULIV
- Participants: UNEW, CS

| No | Deliverable | Status | Due |
|---|---|---|---|
| 1.2.1 | Study protocol finalised | √ | |
| 1.2.2 | Data analysis of first-year intensive flock sampling in Spain and the UK | ▶ | Jun12 (exp. Apr14) |
| 1.2.3 | Paper on two-year study in UK and Spain | ▶ | Feb14 (exp. Jun14) |
| 1.2.4 | Identification of management intervention to minimize risk of colonization of broiler flocks | ▶ | Feb14 (exp. Jun14) |
| √ = delivered, ▶ = started, ▬ = not started | | | |

# Task 1.2
# A longit. study of broiler flocks in UK and Spain

Activities and results so far

- SP: Sampling finished on October 2013. Data analysis ongoing but delayed.
- UK: Sampling finished July 2013, data passed to UNEW and being analysed

Activities next project year

SP & UK: manuscript preparation

Problems/discussion

- None

# Task 1.3
# Importance of flies in transmission of *Campylobacter* to broiler flocks

- Task leader: Birthe Hald, DTU
- Participants: UNEW, ULIV, CSA

| No | Deliverable | Status | Due |
|---|---|---|---|
| 1.3.1 | First-year report on flies | √ | |
| 1.3.2 | Paper on the role of insects in colonization of broilers with Campylobacter in UK and Spain | ▶ | Apr14 |
| √= delivered, ▶= started, ▬= not started | | | |

# Task 1.3
# Importance of flies in transmission of *Campylobacter* to broiler flocks

Activities and results so far

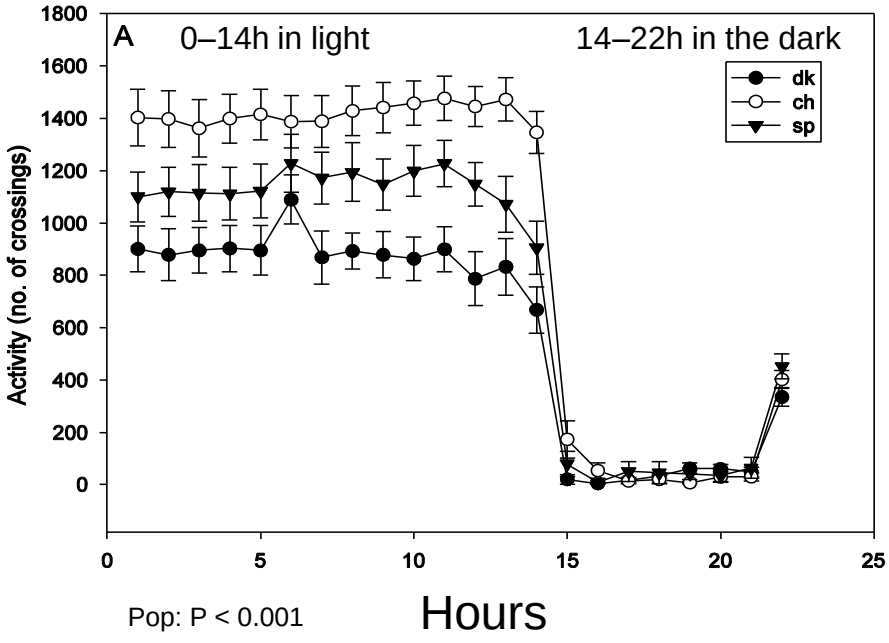
- 1.3.1:
  - UK: Nothing new to report.
  - SP: data analysis, paper in preparation.
  - DK: Study of geographical differences in fly flight distances and heat tolerance

- 1.3.2:
  - SP: Overall 7003 insects trapped, 5215 of them Diptera (74,5%), the remaining 1788 not belonging to this Order. Few Muscidae, Fannidae, Calliphoridae (0,14%) among Diptera.

- Activities and results so far
- 1.3.1:

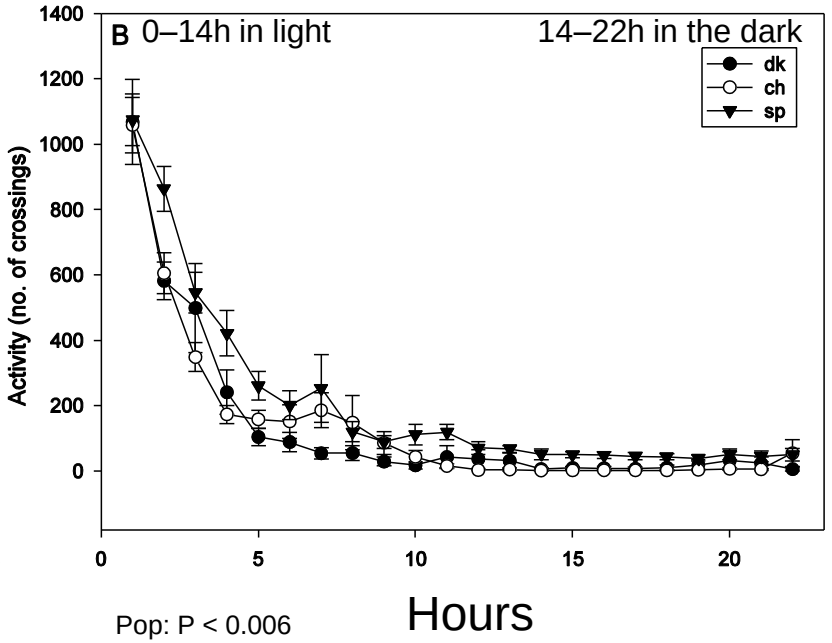
# Locomotor activity (walk) of a Danish, a Swiss and a Spanish fly population during 22h at 24 and 43 °C

At 24 °C




Pop: P < 0.001

At 43 °C

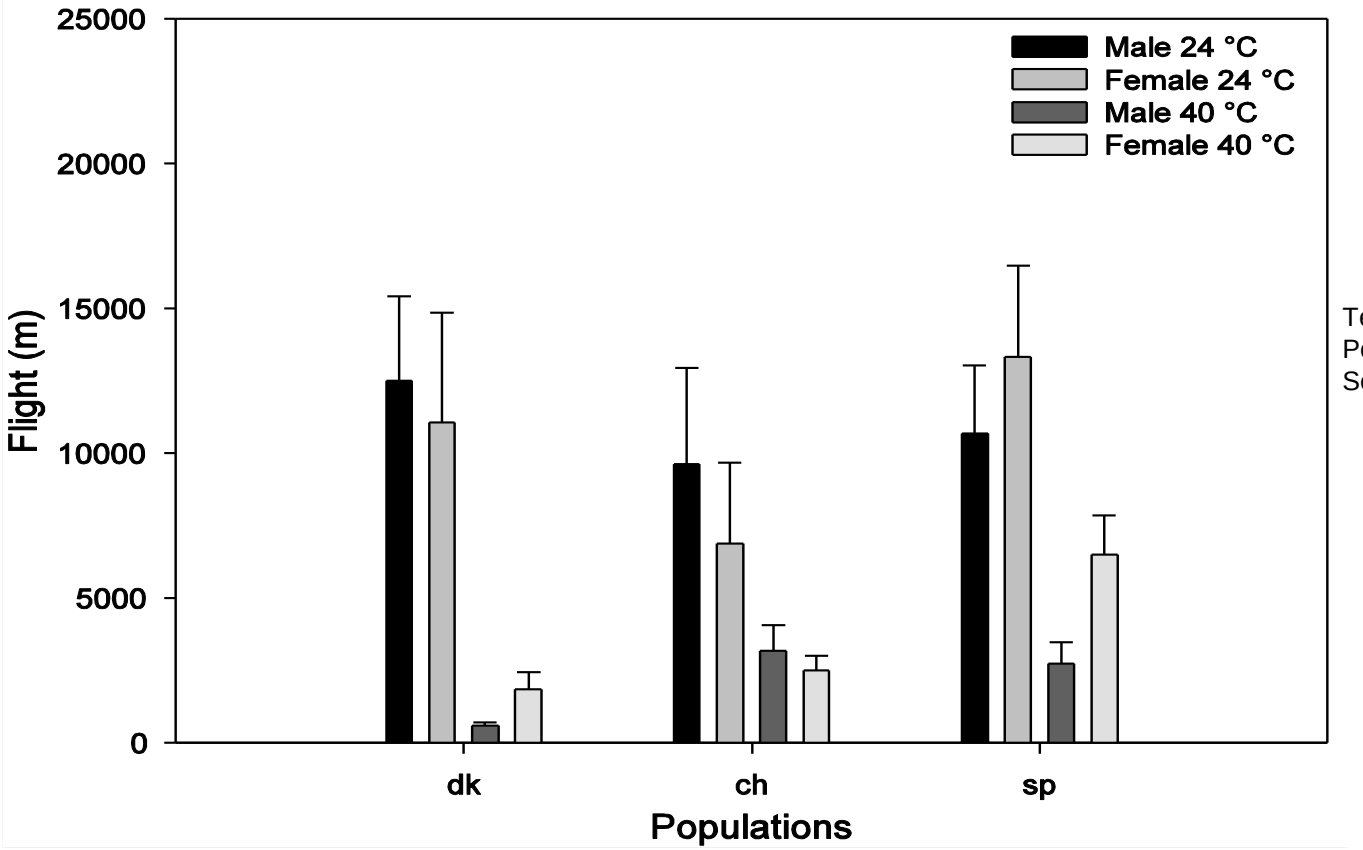



Pop: P < 0.006

Data: Anders Kjærsgaard, Wolf U. Blanckenhorn, Cino Pertoldi, Volker Loeschcke, Christian Kaufmann, **Birthe Hald, Nonito Pagès, Simon Bahrndorff**

- Activities and results so far
- 1.3.1:

# Locomotor activity (flight distance) of a Danish, a Swiss and a Spanish fly population during 22h at 24 and 40 °C.




Temp: P < 0.001
Pop: P < 0.001
Sex: P < 0.001

Data: Anders Kjærsgaard, Wolf U. Blanckenhorn, Cino Pertoldi, Volker Loeschcke, Christian Kaufmann, **Birthe Hald, Nonito Pagès, Simon Bahrndorff**

# Task 1.3
# Importance of flies in transmission of *Campylobacter* to broiler flocks

Activities next project year

- 1.3.1.
  - UK: Paper to be submitted to Applied and Environmental Microbiology, April 2014 for results from both task 1.3.1 &1.3.2
  - SP: a manuscript to be sent for publication.
  - DK: A publication titled: Geographic variation in behavioral responses and resistance to temperature stress in *Musca domestica* *(submitted Dec_13)*
- 1.3.2:
  - SP: raw data ready to be sent to UNEW for modelling analysis

# Task 1.3
# Importance of flies in transmission of *Campylobacter* to broiler flocks

Problems

- UK:Fly community work not sufficient to warrant a formal data analysis. Fly work community work on-going for CamChain.
- SP: huge work of fly community characterization, leading to delay in acomplishing Task 1.3.2.
- DK: none

Points for discussion

- None

# Task 1.4
# Distribution of *Campylobacter* subtypes in EU broiler production

- Task leader: Frieda Jorgensen, Nicola Williams, ULIV
- Participants: NVI, DTU, UU, CSA, NVRI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 1.4.1 | Paper on Campylobacter sub-types in EU broiler production | ▶ | Dec13 (exp. Jun14) |
| √= delivered, ▶= started, ▬= not started | | | |

# Task 1.4
# Distribution of *Campylobacter* subtypes in EU broiler production

## Activities and results so far

- All typing completed and sequence data edited and prepared for analysis
- Analysis currently underway
- Results so far – total of 779 isolates to be included in analysis
- Many more were sequenced, but complete allelic profiles were not obtained, so these cannot be used).
- These comprise
  - **Norway-133**
  - **Spain- 54**
  - **Poland- 38**
  - UK- 211
  - Denmark- 185
  - Netherland- 158
- Dataset contains 222 STs in 35 clonal complexes.
- CC-21 main founder

# Task 1.4 Distribution of *Campylobacter* subtypes in EU broiler production

Activities next project year

- Continue analysis of data, expect to be completed by July 2014
- YM and NJW to meet in May to discuss analysis

Problems

- Quite a few sequence failures, including repeats therefore full 500 not successfully typed
- No PDRA help on project to repeat any sequencing and analysis slower due to PDRA employed on different project.

Points for discussion

- Authorship for paper?

# Task 1.5
# Modelling in-house colon. of birds in relation to environment and bird welfare

- Task leader: Steven Rushton, UNEW
- Participants: ULIV

| No | Deliverable | Status | Due |
|---|---|---|---|
| 1.5.1 | Quantitative assessment of the relative significance of risk factors in the study countries | ▶ | Aug13 (exp. Jun14) |
| 1.5.2 | A pathway model which defines the interactions between risk factors leading to colonization | ▶ | Oct13 (exp. Aug14) |

√= delivered, ▶= started, —= not started

# Task 1.5
# Modelling in-house colonization of birds in relation to environment and bird welfare

Activities and results so far

- Analysis of the prevalence of Campylobacter in UK farms
- longitudinal data relating to Campylobacter status of flocks over a 30 month period using:
- Generalised Linear Mixed-effects Models (GLMM)
- Structural Equation Models

# Task 1.5:
# Modelling in-house colonization of birds in relation to environment and bird welfare

- GLMM were used to describe colonization of each farm and flock
- Data collected from eight farms and a maximum 15 flocks produced sequentially for each farm
- Analysis used to identify the key drivers of longitudinal changes in colonization process.

# Task 1.5
# Modelling in-house colonization of birds in relation to environment and bird welfare

- Prevalence within study flock area affected significantly by all predictor variables
- Prevalence within access rooms (P = 0.001) and adjacent flock production areas (P < 0.000) significantly increase risk of colonization within study flock area.
- Significant increases in risk of colonization also associated with Time, increases in temperature and humidity (P < 0.000).
- There is decrease in risk associated with higher degree of sunshine (P = 0.006)
- A reduction in risk of colonization between geographical areas (P < 0.000)

- Findings suggest increases in prevalence relate to combination of factors:
  - Biosecurity
  - Interaction between geographical area and environmental drivers

# Task 1.5
# Modelling in-house colonization of birds in relation to environment and bird welfare

## Activities next project year

- Incorporate questionnaire data relating to farm and production environment as a means of assessing overall risk

## Problems

- Delays in provision of data

## Points for discussion

- None

# WP2 Committee Meeting

- Jaap Wagenaar, UU
- Other participants: all except NVI, DIA, UNEW, NVRI

# Task 2.1
# Fly screens add-on to biosecurity

- Task leader: Birthe Hald, DTU
- Participants: ULIV, CSA

| No | Deliverable | Status | Due |
|---|---|---|---|
| 2.1.1 | List of study farms and control farms to be visited selected from list of Task 1.1 | √ | |
| 2.1.2 | List of farms consenting to participate | √ | |
| 2.1.3 | Report for each study farm to approve biosecurity level and plan for mounting of fly screens | √ | |
| 2.1.4 | Fly screens delivered on farms | √ | |
| 2.1.5 | Logbooks filled in and collected – 18 farm study | ▶ | Dec14 |
| 2.1.6 | Database with Campylobacter results of farms in T2.1 | ▶ | Dec14 |
| 2.1.7 | Paper on the effect of fly control in UK and Spain | ▬ | Feb15 |

√ = delivered, ▶ = started, ▬ = not started

# Task 2.1
# Fly screens add-on to biosecurity

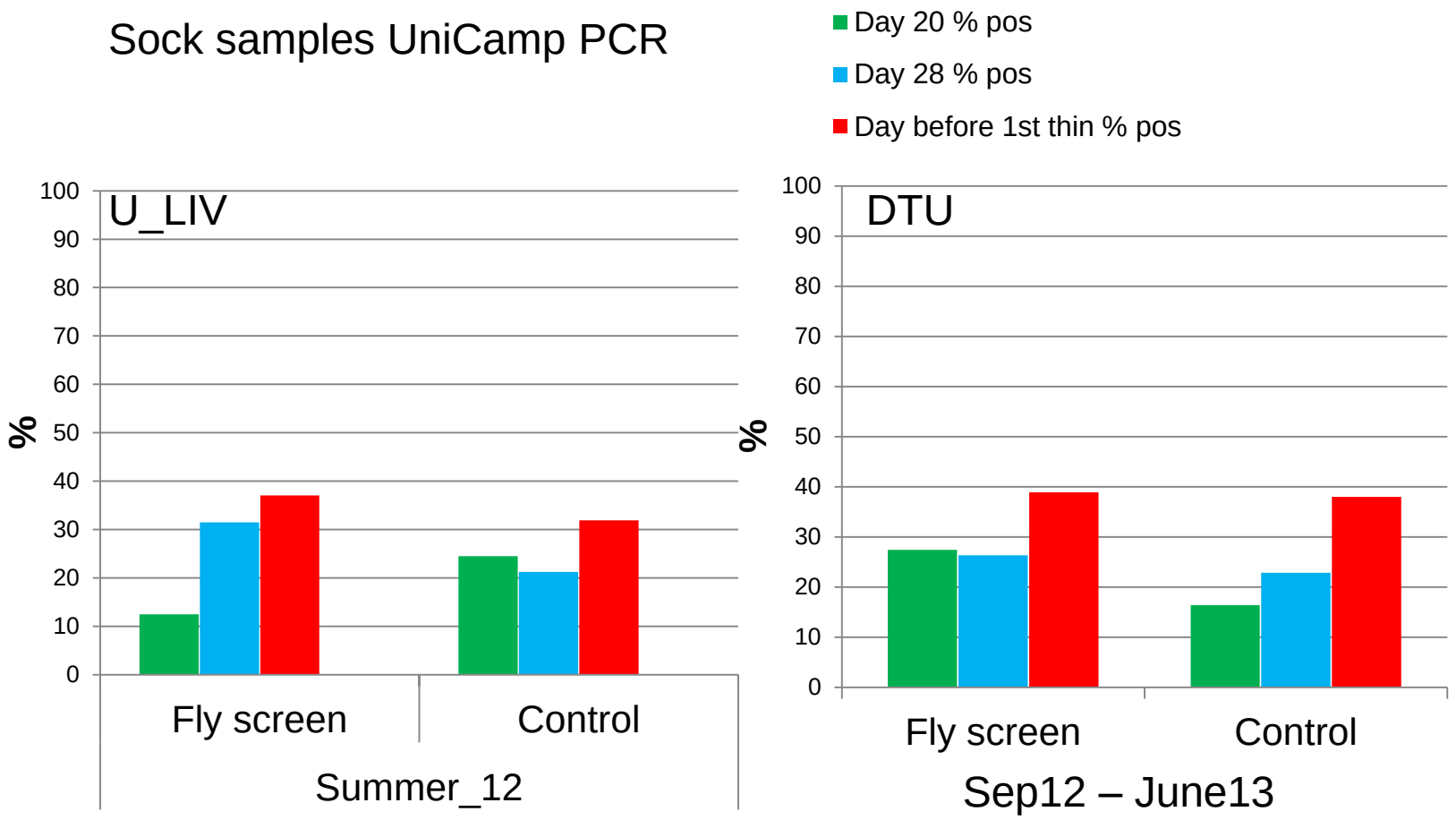
Activities and results so far - UK

- CamCon DEFRA cooperation. 24 farms sampled in Northern Ireland between June 2012 and June 2013.

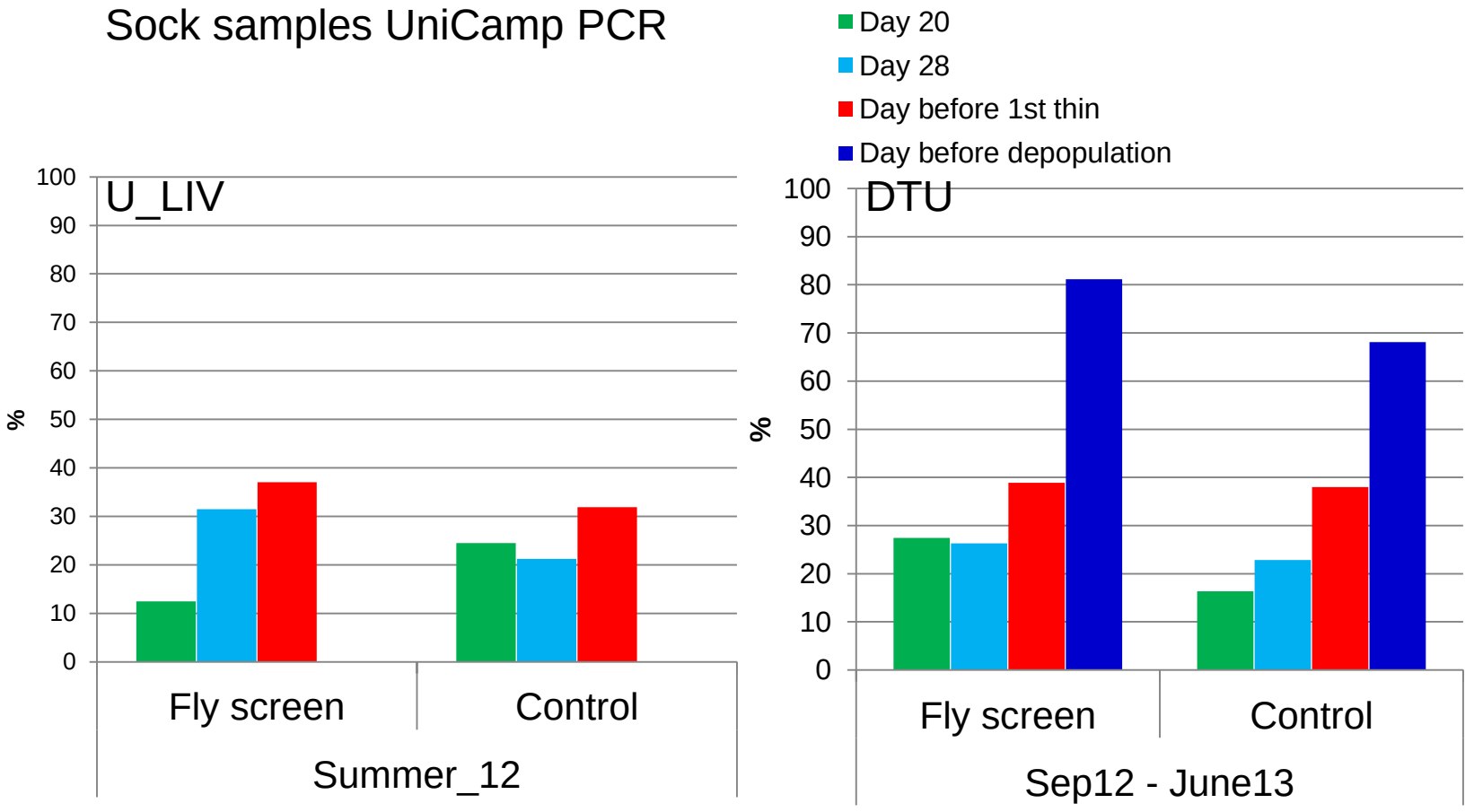
- RESULTS
  - Flock prevalence
  - *Campylobacter* species distribution
  - *Arcobacter* in the NI samples

# DEFRA/CAMCON cooperation
# FLOCK prevalence % –house level
# June to August 2012 & Sep 2012 to June 2013

Sock samples UniCamp PCR



# DEFRA/CAMCON cooperation
# FLOCK prevalence % –house level
# June to August 2012 & Sep 2012 to June 2013



# Assessment of the efficacy of on-farm biosecurity measures for controlling *Campylobacter*

Nick Sparks
SRUC

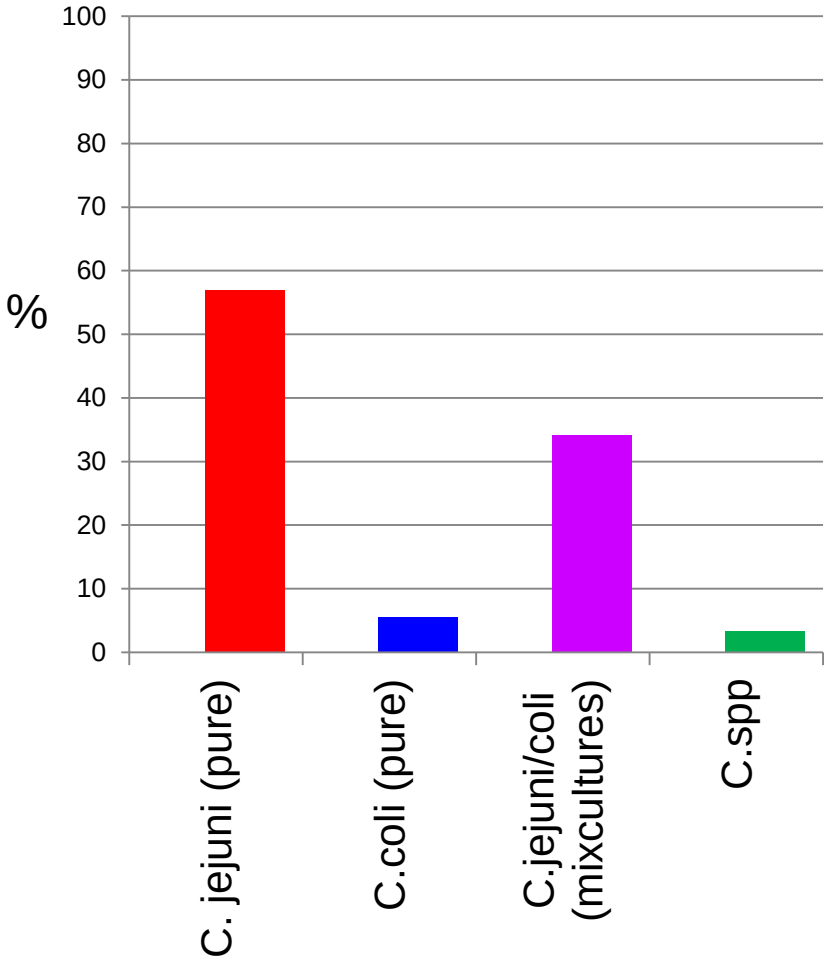
*Leading the way in Agriculture and Rural Research, Education and Consulting*

# Conclusions

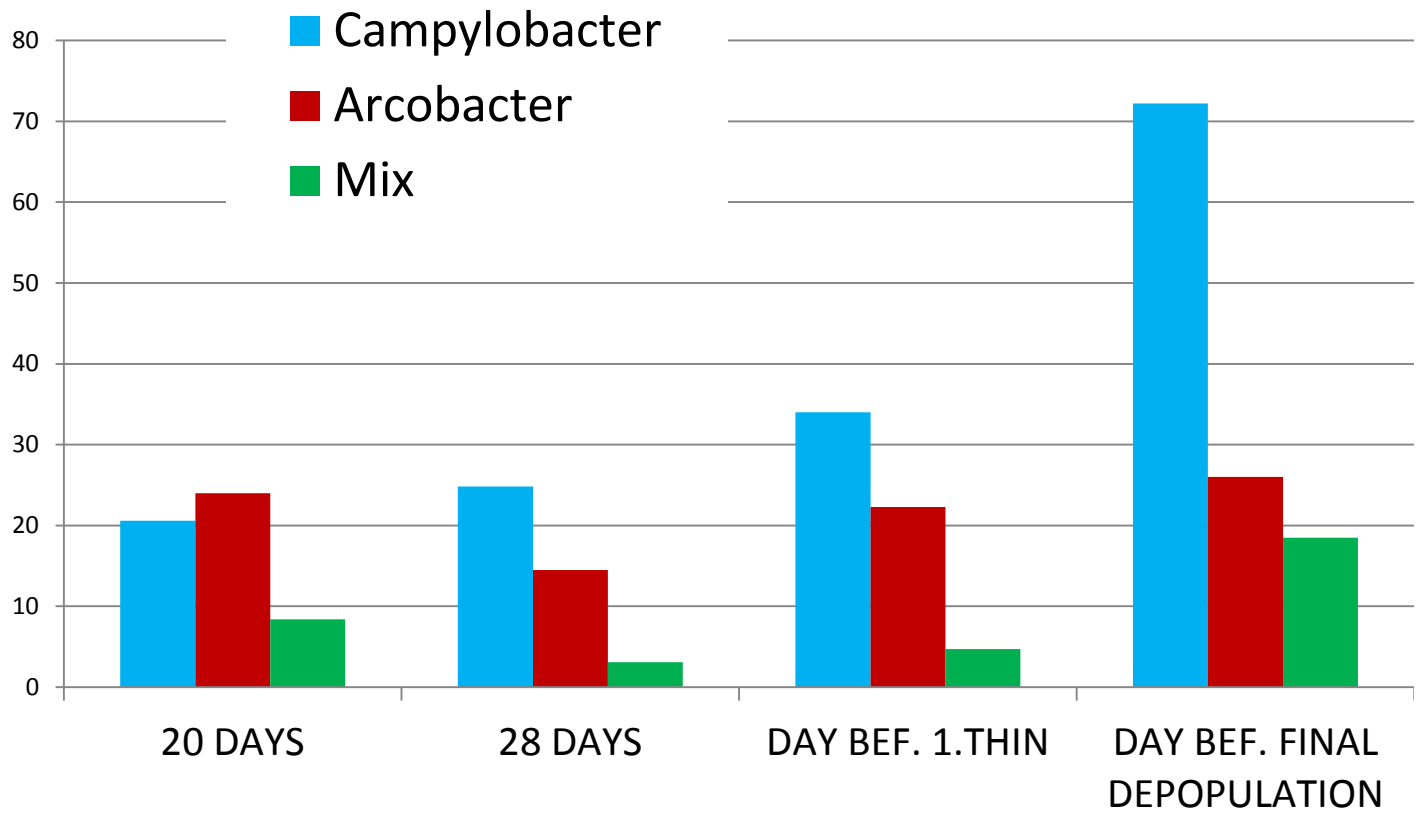
- One interpretation is that biosecurity does not control Campylobacter
- Based on evidence from other countries adherence to personnel biosecurity procedures can deliver Campylobacter-negative birds in the winter months
- Compliance was an issue and some farms in both groups were frequently kept Campylobacter-free
  - With the exception possibly of organic acids none of the interventions tested will work in the absence of adherence to personnel biosecurity procedures

# Campylobacter species in the UK (NI) broilers 1012 sock samples (Sep 2012 – June 2013)

- All samples tested using UniCamp PCR
- 91 out of 370 positive were further tested using species specific PCR

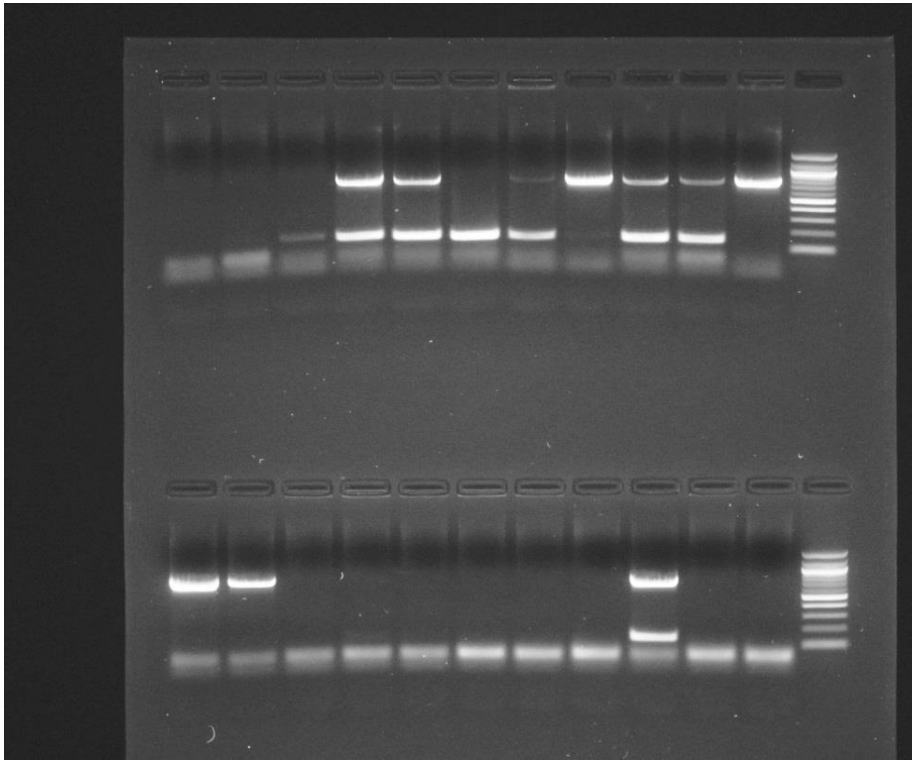


# Colonisation dynamics of *Campylobacter* and *Arcobacter* in UK broilers (1012 samples)



# Problems with cross reaction by Arcobacter when using UniCamp primers ?

- PCR positive sample from UK, negative by culture
- Positive by Arcobacter PCR
- Strain sequenced, 100% match with UniCamp, but veryfied as Arcobacter
- 19/20 samples both positive for camp and arco, were also verified as camp pos by qPCR
- Mix-infections were observed in 8.3% of the 1012 tested samples



# Task 2.1
# Fly screens add-on to biosecurity

Activities and results so far - Spain

- Preparations for the biosecurity upgrade (with WP5)
- Implementation of new on-farm biosecurity practice (with WP5 and the broiler company)
- Currently conducting the 18-farm study

RESULTS:

All the topics above will be covered under the Biosecurity workshop

# Task 2.1
# Fly screens add-on to biosecurity

- Activities next project year
- UK: Preparation of publications of results in UK in cooperation with the DEFRA project. Nick Sparks SAC/Defra is compiling the data.

- SPAIN:
  - Midway evaluation of the effect on Campylobacter prevalence of the new biosecurity procedures
  - Finalizing the 18-farm study

# Task 2.1
# Fly screens add-on to biosecurity

Problems

- UK. The missing effect of the biosecurity intervention ahead of fly screen on the Defra project

- SPAIN. 2 - 3 months delay of the midway evaluation of the 18-farm study, which means that we will only be able to evaluate the effect of basic biosecurity over a very short period (Jan-Feb 2014).

- Points for discussion
  - Biosecurity Workshop

# Task 2.2
# Phage therapy

- Task leader: Peter Willemsen, CVI-LEI
- Participants: UMinho, DTU

| No | Deliverable | Status | Due |
|---|---|---|---|
| 2.2.1 | Collection of phages to be used for therapy to control Campylobacter | √ | Apr12 |
| 2.2.2 | Paper on the efficacy and effectiveness of the use of phages to combat Campylobacter in field trials | ▬ | Apr14 (exp. Aug14) |
| 2.2.3 | Paper on the effectiveness of phage therapy | ▬ | Apr14 (exp. Aug14) |

√ = delivered, ► = started, ▬ = not started

# Task 2.2
# Phage therapy

Activities and results so far

- 2 *in vivo* trials in large scale animal production facilities were conducted. Phages were administered orally at a titre of $10^7$ pfu/ml
- No statistical reduction in Campylobacter loads was observed after phage administration
- Phage resistant genotypes were collected

Activities next project year

- 1 more in vivo trial with a cocktail of 10 phages of different types will be performed
- Resistant Campylobacter-phage genotypes will be characterized
- In vitro experiments of phage-Campylobacter co-evolution will be performed in order to understand the mechanisms of host resistance

Problems

- Although we have increased significantly the number of samples, standard deviations of the results remain high.

# Task 2.3
# Vaccination

- Task leader: Jaap Wagenaar, UU
- Participants: CVI-LEI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 2.3.1 | Identification of immune response against *C. jejuni* subunit vaccines | √ | |
| 2.3.2 | Identification of immune response against *C. jejuni* whole cell vaccines | √ | |
| 2.3.3 | Protection against *C. jejuni* challenge after vaccination with *C. jejuni* subunit vaccines | √ | |
| 2.3.4 | Protection against *C. jejuni* challenge after vaccination with *C. jejuni* killed whole cell vaccines | √ | |

√ = delivered, ► = started, ▬ = not started

# Task 2.3
# Vaccination

## Activities and results so far

- *In ovo* vaccination with protein-based vaccines induces antibody responses
- Antibody response is dose-dependent
- No protection upon *C. jejuni* challenge

## Activities next project year

- Task is finished, but vaccine still may be improved

## Problems

- Epitopes not surface-exposed?
- Glycosylated flagellin needed?
- Antibody titer not sufficient?
- Dose still too low?

# WP3 Committee Meeting

- Mathilde Josefsen, DTU
- Other participants: NVRI

# Task 3.1
# Development of methods of quantification of *Campylobacter* in air - FINISHED

- Task leader: Mathilde Josefsen, DTU
- Participants: DTU

| No | Deliverable | Status | Due |
|---|---|---|---|
| 3.1.1 | Establishment of methods of quantification of airborne Campylobacter | √ | |
| 3.1.2 | Definition of level of sensitivity | √ | |
| 3.1.3 | Publication on quantities of airborne Campylobacter | √ | |
| 3.1.4 | Identification of a suitable semi-automated technology allowing semi-continuous monitoring of airborne Campylobacter | √ | |

√ = delivered, ►= started, ▬= not started

# Task 3.2
# Feasibility of real-time monitoring of *Campylobacter* in broiler flocks

- Task leader: Mathilde Josefsen, DTU
- Participants: NVRI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 3.2.1 | Knowledge of the airborne particle size distribution under various farming conditions | √ | |
| 3.2.2 | Knowledge of the ratio of airborne particles and Campylobacter under various farming conditions | √ | |

√ = delivered, ► = started, ▬ = not started

# Task 3.2
# Feasibility of real-time monitoring of *Campylobacter* in broiler flocks

Published in:
Journal of Food Protection Jan. 2014

Deliverable:
Uploaded to CamCon

*Journal of Food Protection*, Vol. 77, No. 2, 2014, Pages 325–330
doi:10.4315/0362-028X.JFP-13-268


Research Note

## Low-Cost Monitoring of *Campylobacter* in Poultry Houses by Air Sampling and Quantitative PCR

M. S. R. SØNDERGAARD,[1] M. H. JOSEFSEN,[1] C. LÖFSTRÖM,[1] L. S. CHRISTENSEN,[1] K. WIECZOREK,[2] J. OSEK,[2] AND J. HOORFAR[1]*

[1]*National Food Institute, Technical University of Denmark, Mørkhøj Bygade 19, 2860 Søborg, Denmark; and* [2]*National Veterinary Research Institute, Partyzantów 57, 24-100 Puławy, Poland*

MS 13-268: Received 20 June 2013/Accepted 3 October 2013

### ABSTRACT

The present study describes the evaluation of a method for the quantification of *Campylobacter* by air sampling in poultry houses. Sampling was carried out in conventional chicken houses in Poland, in addition to a preliminary sampling in Denmark. Each measurement consisted of three air samples, two standard boot swab fecal samples, and one airborne particle count. Sampling was conducted over an 8-week period in three flocks, assessing the presence and levels of *Campylobacter* in boot swabs and air samples using quantitative real-time PCR. The detection limit for air sampling was approximately 100 *Campylobacter* cell equivalents (CCE)/$m^3$. Airborne particle counts were used to analyze the size distribution of airborne particles (0.3 to 10 μm) in the chicken houses in relation to the level of airborne *Campylobacter*. No correlation was found. Using air sampling, *Campylobacter* was detected in the flocks right away, while boot swab samples were positive after 2 weeks. All samples collected were positive for *Campylobacter* from week 2 through the rest of the rearing period for both sampling techniques, although levels 1- to 2-log CCE higher were found with air sampling. At week 8, the levels were approximately $10^4$ and $10^5$ CCE per sample for boot swabs and air, respectively. In conclusion, using air samples combined with quantitative real-time PCR, *Campylobacter* contamination could be detected earlier than by boot swabs and was found to be a more convenient technique for monitoring and/or to obtain enumeration data useful for quantitative risk assessment of *Campylobacter*.

*Campylobacter* is one of the leading causes of human acute gastroenteritis worldwide, and in 2010, it was the most commonly reported zoonosis in the European Union, often associated with chicken meat *(9, 12, 25)*. The number of confirmed human cases has been increasing from 2006 to 2010, and there is a continuing high occurrence of *Campylobacter* in chicken meat in the European Union, making it relevant to monitor the prevalence in primary poultry production *(9)*.

There are several different methods for sampling and detection of *Campylobacter* in poultry production, using either culture-based methods *(15)* or molecular methods like quantitative real-time PCR (qPCR) *(18)*. Culturing is time consuming and only determines the number of culturable bacteria. This will presumably underestimate the total number of viable campylobacters *(10, 27)*. Viable but nonculturable (VBNC) cells can be detected with PCR, but so can DNA from dead cells, unless appropriate pretreatment steps are introduced *(14, 18)*.

Sampling can be done early in the production chain by collecting fecal samples, e.g., on boot swabs, or later by analyzing raw poultry products *(8, 18, 26)*. However, the current methods based on collection of fecal material suffer from poor sensitivity *(8, 26, 28)*. Cecal content or droppings provide more accurate results but require the animals to be sacrificed or the droppings to be manually collected, which is labor intensive *(8, 28)*. Sampling of air is a noninvasive method with little hands-on time *(23, 24)* and is a cost-effective alternative to produce data for quantitative microbiological risk assessment.

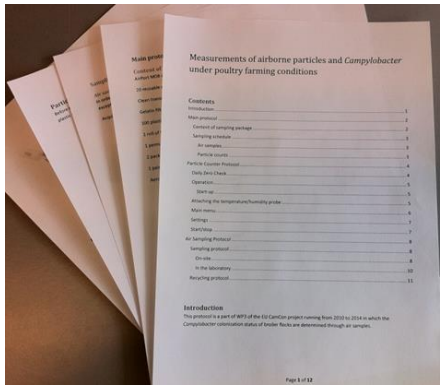
Air sampling is being widely used, e.g., in animal production facilities *(1, 29*; for a review, see reference *27)*. Air sampling has usually been followed by culture enrichment to detect the collected bacteria, but recently, qPCR has also been used *(20, 23, 24)*. For *Campylobacter*, air sampling has been used to monitor cross-contamination at slaughterhouses *(3, 23)* and the prevalence in poultry houses *(2, 23, 30)*. It has been shown that *Campylobacter* could be detected in chicken houses by air sampling before it could be detected by boot swab sampling followed by qPCR *(23)*. However, to our knowledge, the reproducibility has not been assessed, and this is needed to provide documentation for implementation of this approach in pan-European settings.

The objective of this study was to assess the use of filter-based air sampling coupled with qPCR, using nonproprietary, open-formula methods and devices *(1, 6, 20)*, for quantitative monitoring of *Campylobacter* in poultry houses as an alternative to collecting and analyzing

* Author for correspondence. Tel: +4535887379; Fax: +45 3588 7001; E-mail: jhoo@food.dtu.dk.

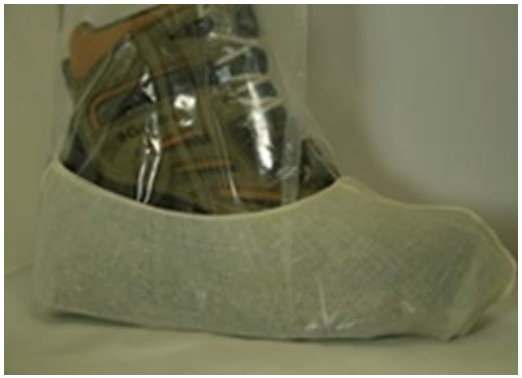
# Task 3.2

## Feasibility of real-time monitoring of *Campylobacter* in broiler flocks




Operating procedure

Air sampler



Boot swab sample

Particle counter

Available for all project partners

DTU can assist with sample analysis

# Task 3.3
# Report on future research needs

- Task leader: Mathilde Josefsen, DTU
- Participants: DTU

| No | Deliverable | Status | Due |
|---|---|---|---|
| 3.3.1 | Report on future research needs regarding diagnostic tools to detect Campylobacter in primary poultry production | ►(√) | Apr14 |

√ = delivered, ► = started, ▬ = not started

# Task 3.3
# Report on future research needs

Submitted to:
Future Microbiology Dec. 2013

Status:
Rejected – Currently under revision
Will be resubmitted to ?

Deliverable:
Uploaded in report form to CamCon

Monitoring *Campylobacter* in the poultry production chain – From culture to genes and beyond

A Review


Mathilde H. Josefsen*
National Food Institute, Technical University of Denmark
Mørkhøj Bygade 19, DK-2860 Søborg, Denmark
Phone: +45 35 88 70 00, Fax: +45 35 88 70 01
E-mail: mhjo@food.dtu.dk

Arun K. Bhunia
Department of Food Science, Purdue University
745 Agriculture Mall Drive, West Lafayette, IN 47907, USA
Phone: 765 494 5443, Fax: 765 494 7953
E-mail: bhunia@purdue.edu

Eva Olsson Engvall
National Veterinary Institute
SE- 751 89 Uppsala, Sweden
Phone: +46 18 – 67 40 00, Fax: +46 18 – 30 91 62
Email: eva.olsson@sva.se

Mette Sofie Rousing Søndergaard
National Food Institute, Technical University of Denmark
Mørkhøj Bygade 19, DK-2860 Søborg, Denmark
Phone: +45 23 67 30 45, Fax: +45 35 88 70 01
E-mail: msrso@food.dtu.dk

Jeffrey Hoorfar
National Food Institute, Technical University of Denmark
Mørkhøj Bygade 19, DK-2860 Søborg, Denmark
Phone: +45 35 88 70 00, Fax: +45 35 88 70 01
E-mail: jhoo@food.dtu.dk

# WP4 Committee Meeting

- Maarten Nauta, DTU
- Other participants: all except DIA, UMinho, UNEW

# Task 4.1
# Risk assessment

- Task leader: Maarten Nauta, DTU
- Participants: DTU

| No | Deliverable | Status | Due |
|---|---|---|---|
| 4.1.1 | Research paper on the QRA model | ▶ | Feb15 |

√ = delivered, ▶ = started, ▬ = not started

# Task 4.1
# Risk assessment

Activities and results so far

- Model development started: Risk assessment models to use
  - regression (Spain, others?)
  - RA models NL, DK
- Translation of task 1.1 (Risk factor study) output to WP4 input
  - Effect of farm management on human risk
  - Control affects the prevalence
- Results WP2 to be used
  - fly screens not effective in UK
  - fly screen results Spain pending
  - no usable results vaccination
  - no usable results phage therapy

# Task 4.1
# Risk assessment

Activities next project year

- Continue model development:
  - impact of farm management (WP1)
  - impact of specific control measures (WP2)
- Run models
  - Use concentration data of some countries
  - Compare results
- Agree on the specific needs of LEI

~~Problems~~ Challenges

- Missing data
- Deliver output on time to LEI partner limited data availability

Points for discussion and decision

- Workshop!

# Task 4.2
# Data collection and compilation

- Task leader: Hanne Rosenquist, DTU
- Participants: CVI-LEI, NVI, ULIV, UU, CSA, NVRI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 4.2.1 | Report on data collected for risk assessment and economics | ▶ | Feb15 |

√ = delivered, ▶= started, ▬= not started

# Task 4.2
# Data collection and compilation

## Activities and results so far

- Data workshop 2011
- Data request on economics and RA
- Questionnaire WP 1
- Additional regional data (DK, NO)
- Data request: what is available with partners?

- NVI: observational study on Campylobacter concentrations: caeca, skins and carcass rinses
- NVI: literature study, update

## Activities next project year

- Compile obtained data in a report

## Problems/discussion

- Workshop

# Task 4.3
# Economics

- Task leader: Peter van Horne, CVI-LEI
- Participants: CVI-LEI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 4.3.1 | Research paper on the cost-effectiveness of interventions in different regions in Europe | ▶ | Apr15 |

√ = delivered, ▶ = started, ▬ = not started

# Task 4.3
# Economics

## Activities and results so far

- Collection on general economic data in countries and verification is finished
- Definitions of most intervention measures have been made
- Collection of specific economic data for most interventions is completed
- Collection of human health data related to campylobacter has started
- Collection import/export data of broilers and their meat mostly finished
- Model for cost effectiveness mostly realised
- First draft of the research paper

## Activities next project year

- Finish data collection (impact intervention measures on prevalence, intervention measure costs, human health)
- Further writing on research paper

## Problems

- Task 4.1 should provide impact of control measures on prevalence on time

## Points for discussion and decision

- Workshop!

# Task 4.4
# Cost-effectiveness on interventions at farm and comparison with interventions post farm

- Task leader: Maarten Nauta, DTU
- Participants: CVI-LEI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 4.4.1 | Research paper on integration of risk assessment and economy (cost effectiveness) | ► | Feb15 |

√ = delivered, ► = started, ▬ = not started

# Task 4.4
# Cost-effectiveness on interventions at farm and comparison with interventions post farm

Activities and results so far

- contacts DTU - LEI

Activities next project year

- Await results from other tasks
- Guarantee that 4.1 + 4.2 + 4.3 = 4.4

- Problems/discussion
  - Workshop

# Task 4.5
# Future data needs

- Task leader: Maarten Nauta, DTU
- Participants: CVI-LEI

| No | Deliverable | Status | Due |
|---|---|---|---|
| 4.4.1 | Report on major outcome of WP4 | — | Apr15 |
| 4.5.1 | Report on future data needs | — | Apr15 |

√ = delivered, ► = started, — = not started

# Task 4.5
# Future data needs

- Activities and results so far
  - To be done

# WP5 Committee Meeting

- Mogens Madsen, DIA
- Other participants: all except CVI-LEI, UMinho, UNEW

# Task 5.1
# Best Practice Manual for production of Camp-free chickens

- Task leader: Mogens Madsen, DIA
- Participants: all other participants in WP5

| No | Deliverable | Status | Due |
|---|---|---|---|
| 5.1.1 | Best Practice Manual | ▶ | Dec14 |

√ = delivered, ▶ = started, ▬ = not started

# Task 5.1
# Best Practice Manual for production of Camp-free chickens

Activities and results so far

Activities: Work on a basic Best Practice Manual carried out in Spain with CReSA as preparation for fly-screen studies in WP2.
Results: Illustrated biosecurity posters, Power Point presentations and check list produced. Material tested on broiler producers in practice.

Activities next project year

Work on Best Practice Manual will continue. Will be based on the GHP Community Guide.
1st draft should be available for comments by partners end 2014.

Problems

The final version of the Best Practice Manual must incorporate any new knowledge generated in CamCon. This will probably only be available at the very end of the project.

Points for discussion

None

# Task 5.2
# Specific targeted learning programmes for proficiency in implementing the “BPM for production of Camp-free chickens”

- Task leader: Mogens Madsen, DIA
- Participants: DTU, all other participants in WP5

| No | Deliverable | Status | Due |
|---|---|---|---|
| 5.2.1 | Plan for distribution of the final E-learning product | ▶ | Oct14 |
| 5.2.2 | E-learning programme | ▶ | Apr15 |

√ = delivered, ▶ = started, ▬ = not started

# Task 5.2

Specific targeted learning programmes for proficiency in implementing the "BPM for production of Camp-free chickens"

Activities and results so far

A production plan for a series of E-learning modules has been agreed with the Subcontractor Conzentrate. Story board and graphics have been produced for the first module on biosecurity.

Activities next project year

A road map for distribution will be developed in cooperation with AVEC and COPA-COGECA (industry associations).

A series (6-10) of E-learning modules supporting the BPM topics will be produced and tested on end-users during 2014.

Problems

We are not content with the graphics of the first E-learning module. This will be solved – probably with another illustrator - during this month.

Points for discussion

None

# Task 5.3
# Voluntary Certification Programme

- Task leader: Mogens Madsen, DIA
- Participants: all other participants in WP5

| No | Deliverable | Status | Due |
|---|---|---|---|
| 5.3.1 | Voluntary Certification Programme | — | Apr15 |
| √ = delivered, ► = started, — = not started | | | |

# Task 5.3
# Voluntary Certification Programme

Activities and results so far

None. Activity not started yet.

Activities next project year

Activity follows on to the development of the Best Practice Manual that will be the backbone of a certification programme.

Activity planned to take off in the 2nd half of 2014.

Problems/discussion

None

# WP6 Committee Meeting

- Merete Hofshagen, NVI
- Other participants: all

# Task 6.1 – 6.3
# CA, Management team, Web site

- Task leader: Merete Hofshagen, NVI
- Participants: all

| No | Deliverable | Status | Due |
|---|---|---|---|
| 6.1.1 | The Consortium Agreement signed by all participants | √ | |
| 6.2.1 | Management support team appointed | √ | |
| 6.3.1 | The Project web site established | √ | |
| √ = delivered, ►= started, ▬= not started | | | |

# Task 6.1 – 6.3
# CA, Management team, Web site

## Activities and results so far

- According to plan

## Activities next project year

- Regular updates on Web

## Problems/discussion

- None

# Task 6.4
# Establish and maintain the Communication and Dissemination Plan

- Task leader: Merete Hofshagen, NVI
- Participants: all

| No | Deliverable | Status | Due |
|---|---|---|---|
| 6.4.1 | Plan for the use and dissemination of foreground presented | ▶ | Jun14 |

√ = delivered, ▶ = started, ▬ = not started

# Task 6.4
# Establish and maintain the Communication and Dissemination Plan

## Activities and results so far

- Draft Comm-plan discussed and decided – to be delivered
- Established list of publications
- Several presentations of CamCon
  - CHRO 2013 (Hanne ++), NFU UK - Campy WS (Mogens 28.03.2014),

## Activities next project year

- Active dissemination (nationally and internationally) – all
  - Commission – Campy WS (Merete 07.05.2014)
- Maintain / update list of publications

## Problems/Discussions

- Make ay paper and lay PP-pres. summing up the whole project (to use – translated - in national meetings)

# Task 6.5 – 6.6
# Meetings and reports

- Task leader: Merete Hofshagen, NVI
- Participants: all

| No | Deliverable | Status | Due |
|---|---|---|---|
| 6.5.1 | Reports of project's meetings | √, √, √, √, √ ► | Apr15 |
| 6.6.1 | Regular reports to the European Commission | √, √ — | Apr15 |
| 6.6.2 | Report on awareness and wider societal implications | — | Apr15 |

√ = delivered, ► = started, — = not started

# Task 6.5 – 6.6
# Meetings and reports

## Activities and results so far

- Annual and Quarterly Meetings + 2 Periodic Reports to COM
- Economical reporting to Coordinator every 6/9 months

## Activities next project year

- Meetings and Minutes
- Economical reporting to Coordinator every 9 months
- Send Deliverables to Coordinator for uploading to COM

## Problems

- None

## Points for discussion

- Where to have final meeting? In Brussels? Together with other meetings (CamChain?)

# Workshop WP4

Maarten, Helle and Peter presented the progress in WP4 and some data gaps and modelling dilemmas were discussed.

Some conclusions:

- The Risk Factor study based on the 20 farm studies is ongoing.
  - Based on the (alternative) data from DK and NO some risk factors were identified that were not foreseen. LEI will include drinkers and building of new houses (those > 15 years old) in their cost analysis
  - If a priori identified risk factors are not significant, we will use hypothetical effect scenarios (with the same effect for all).
  - The specific translation of risk factors into control measures (with a specific cost and a specific measurable effect on the prevalence) was discussed.
- If specific country data are missing, surrogate data from another country will be used
  - Which ones to use was agreed at the workshop

# Workshop WP4 (2)

- Only fresh broiler meat will be included in the analyses
- Import and export will not be considered: estimates are on national production
  - The indicence estimates from the risk assessment cannot be anchored in epidemiological data
  - DALYs will be estimated based on an every estimate of the mean DALY per Campylobacter case
- Financial costs per case are not included in the analyses
- Hypothetical scenarios will be run for the effects of vaccination and phage therapy.

# Workshop Biosecurity

- The term Biosecurity within the frame of CamCon
- Towards house level biosecurity in Spanish farms
- Implementation and Training in biosecurity procedures
- Midway results
- Conclusions (so far possible) on the effect of the biosecurity upgrade
- Discussion and decision on how to proceed with the 18-farm study

# Workshop Biosecurity

- The term Biosecurity within the frame of CamCon
  - See next slide
- Marta presented
  - Towards house level biosecurity in Spanish farms
  - Implementation and Training in biosecurity procedures
  - Midway results
- Conclusions (so far possible) on the effect of the biosecurity upgrade
  - Midway results seem promising, will soon know more. Farmers have done a lot regarding the upgrade of the farms.
- Discussion and decision on how to proceed with the 18-farm study
  - Wait for more results, but hopefully fly screening will be done this summer. At least, planning and organisation of the installations must begin immediately.

# Workshop Biosecurity

- The term Biosecurity within the frame of CamCon
  - *The sum of comprehensive preventive measures instituted at farm, environment and house level with the purpose to prevent unintended entry of Campylobacter into poultry flocks reared in containment houses and to prevent dissemination of Campylobacter from already infected flocks to the farm environment (air, soil, or water) or to other poultry houses.*

# Executive Board Meeting

- Discussions
  - The Executive Board (WP-leaders) was in general pleased with the progress, but emphasized the need for speedy work in the months to come!

- Decisions
  - None

# General Assembly

- Remember to add in all publications:
  - This research was part of the CamCon project; Campylobacter control - novel approaches in primary poultry production, funded by the European Community's Seventh Framework Programme (FP7/2007-2013) under Grant Agreement no. 244547.
- Next and final meeting: Invite industry.
  - In Brussels? – Together with other project?
    - WP-leaders to discuss more.
- Decisions
  - None