mid-term report

for the CORE Organic II funded project

“Promoting good health and welfare in European organic laying hens HealthyHens”

Period covered: 01.10.2011 - 31.03.2013

Project acronym:	HealthyHens			
Title:	Promoting good health and welfare in European organic laying hens			
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Start of Project:	01.10.2011	End of project:	30.09.2014	

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***)** PC: Project coordinator, WPM: Work package manager, WPCM: Work package co-manager, P: Participant

Projects website:
http://www.coreorganic2.org/Menu/Menu_1_4_4.asp

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Project summaries, pre- and post/mid-project

Mid-term project summary suitable for web publication

In the first months of the project we developed data collection protocols for our four main topics:
(1) parasite burden,
(2) use of the outdoor run,
(3) feather- and injurious pecking and
(4) health problems like keel bone deformation and health of the birds' feet.
The data collection protocols are based on experiences from former international (LayWel, Welfare Quality®) and national projects and compatibility with the ongoing projects LowInputBreeds and ICOPP was ensured.

For data collection, we recruited 115 organic layer farms in the eight participating countries. After an assessor training in Sweden and validation of assessor agreement, farm visits started. By the end of the first half of the project, 96 farms have been visited ones at the peak of lay of their hens and 24 farms have been visited the second time when hens are about 60 to 65 weeks old. For 70 out of the 107 farms it is planned to collect gastrointestinal tracts of 15 hens after slaughter for a more thorough parasite examination. This has so far been performed for four herds in three countries.

Pre-project summary

Egg production in line with organic principles includes outdoor access, preferential use of preventative measures and alternative treatment methods, a 100% organic diet from 2012 onwards and consistent use of non beak-trimmed birds. This proposal focuses on the main challenges for organic laying hen farms regarding disease management, adverse animal welfare and negative impacts on the environment. Parasite infestation levels as well as prevalence of major health and welfare problems such as feather pecking, cannibalism, keel bone and foot lesions are affected by a combination of housing and management factors, e.g. with respect to feeding or hygiene, genotype or therapeutic treatments. The design and management of the range influence how well and evenly it is used by the hens and the extent to which nutrients accumulate in the surrounding environment. By adopting an epidemiological approach, major risk factors for diseases, and negative welfare and environmental impacts will be identified. 107 flocks distributed over 8 countries will be included in the observational study with a cross sectional design. Flocks will be visited twice at specified age periods during two seasons. Housing, management and animal based data will be recorded during interviews, direct measurements or from farm documentation. Recommendations will be formulated based on analyses carried out in four specific work packages. These recommendations will help organic egg producers to further develop bird health and welfare according to the organic principles, and to enhance economic competitiveness through improved bird health and performance.

1. Main results, conclusions and fulfilment of objectives

1.1 Summary of main results and conclusions

Developement of data collection sheets
Data collection sheets have been developed including the expected important influencing factors for all work packages and general background information of the farms. The data collection sheets were based on the experiences from former international (LayWel, Welfare Quality®) and national projects and compatibility with the ongoing projects LowInputBreeds and ICOPP was ensured.

Assessor training and inter-assessor agreement
All assessors met in Sweden from 23rd to 25th May 2012 to train and test the scoring schemes. The results are presented in table 1.
For some measurements, acceptable assessor agreement was not reached during the workshop and a second trial was not possible because of the very tight time schedule. In these cases we repeated the tests online using photos if possible. For those measurements where photos would be insufficient to apply our rating (palpation necessary or striking back of the feathers), we reduced the number of scores by merging those scores where differentiation seemed to be most difficult and then calculated the measure of accordance (Prevalence Adjusted Bias Adjusted Kappa, PABAK) again. Additionally, in countries where two assessors are always going on farms together, we advised that the assessor with good agreement with the other raters should take the respective measures.

Table 1: Results of inter-assessor reliability testing of 12 assessors using the PABAK statistics = prevalence adjusted bias adjusted Kappa; ☺ = all assessors have at least acceptable agreement (PABAKs ≥ 0.4), 😐 = up to five assessors have disagreements (PABAK < 0.4), ☹ = more than five assessors with disagreements (PABAK < 0.4)

Measure	Descrip-tion	N classes	Result workshop	Action taken	Result online photo assessment	Action taken
Neck plumage	Plumage score	4	😐	Assessor specific retraining of the respective 4 assessors	Not performed as stroking back of feathers not possible on photo	In countries with 2 assessors: advice which assessor should do the scoring; simplification by reduction of classes by merging the two worst scores post hoc
Back plumage	Plumage score	4	😐	Assessor specific retraining of the respective 2 assessors	Not performed as stroking back of feathers not possible on photo	
Back wounds	Presence and severity	4	☺			
Tail plumage	Plumage score	4	☺			
Wing plumage	Plumage score	4	☹	Dismissed (not relevant for evaluation of feather pecking)		
Vent-cloaca plumage	Plumage score	4	☺			
Vent-cloaca wounds	Presence and severity	4	😐	Retraining of the respective assessor	☺	
Toe wounds	present or not	2	☺			
Foot pad lesions	Presence and severity	4	☺			
Foot pad hyperkeratosis	Present or not	2	☺	After retraining of one assessor at workshop		
Missing claws	Present or not	2	☺			
Keel bone deviation	Presence and severity	3	☹	Refinement of the definitions and instructions	😐	Simplification by reduction of classes (present or not)
Keel bone fracture	Present or not	2	☺			
Keel bone tip deviation	present or not	2	😐	Refinement of definitions and instructions	Not possible with photos: palpation necessary	Exclusion of data of certain assessors?
Breast haematomas	Present or not	2	☺			
Cloaca discharge	Present or not	2	☺	After retraining of one assessor at workshop		
Beak treatment	Treated or not	2	☺			
Comb colour	Pale or red	2	☹	Refinement of definitions and instructions	☺	
Plant score	Plant cover of ground	5	☺			

Inter-laboratory tests have been performed twice to ensure comparable results of faecal analysis with regard to worm egg counts and coccidian oocysts. After taking into account a systematic dilution error in the protocol results from all but two countries were comparable to the Danish reference values. For the two countries with discrepancies, deviation was found to be systematic and can thus be straightened out by applying a correction factor.

Farm recruitment was successful in all countries except Sweden, where 5 farms are still to be recruited. In some countries, more farms than planned have been recruited to have replacements in the case of drop outs, resulting in 115 recruited farms. In Germany and UK, drop outs took place at or after the first visit (Germany: 5, UK 2), which resulted in additional recruitments to keep up with the promised number of herds.

First visits took place on 96 farms and second visits at 24 until end of March 2013 (see Table 2 for details).

Table 2: Numbers of organic laying hen flocks recruited and visited by end of March 2013

Country	Contribution according to proposal	Recruited	Visited at peak of lay	Visited at end of lay
Germany	20	26	19	2
Denmark	15	15	15	4
United Kingdom	10	11	9	2
Netherlands	10	10	10	1
Austria	20	25	25	12
Italy	14	15	12	2
Sweden	10	5	0	0
Belgium	8	8	6	1
TOTAL	**107**	**115**	**96**	**24**

1.2 Fulfilment of objectives

In line with the work plan, data collection is still in progress.

2. Milestones and deliverables status

Milestones:

No	Milestone name	Planned delivery month[1]	Actual delivery month[1]	Means of verification
M1	Project workshop 1	2	2	Guidelines for flock acquisition and detailed work plan including contingency plan agreed
M2	Recording protocols	8	9	Full recording protocols described and agreed between participants
M3	Flocks recruited	9	14	Flocks for cross sectional study recruited (exception: Sweden: 5 farms still to be recruited)
M4	Project workshop 2: Assessor training	9	9	Three days training workshop for all people involved in data recording was held, acceptable assessor agreement reached
M5	Prototype database	11	17	Prototype database developed and circulated
M6	Data recorded	25	in progress	On-farm data collection and autopsies finalised
M7	Databases developed	28	in progress	Databases for analyses in WP1-WP4 developed
M8	Project workshop 3	29	-	Statistical models agreed
M9	Analyses finalised	32	-	Analyses in WP 1- 4 finalised
M10	Project workshop 4 and scientific workshop	33	-	Results from different WPs synthetised, discussed in closed project and open scientific workshop, recommendations agreed
M11	Reporting	36	-	Final report, publications and national leaflets submitted

Additional comments

Milestone 1: Project workshop 1

The first project workshop took place from 23rd to 24th November 2011 in Witzenhausen, Germany. Farm selection criteria were discussed and agreed on, as well as a work and contingency plan. Additionally, we had discussions on all five work packages and our plans for the assessor training and reliability testing.

Milestone 2: Recording protocols

The recording protocols were developed by the responsible WP-leaders. As this task was more time consuming than expected and needed a lot of discussion between participants, we first focused on accomplishing those parts needed for the peak of lay farm visits. The protocols for the end of lay farm visits were finalised with some delay, but before second visits began.

[1] Measured in months from the project start date (month 1).

In the course of data collection, some need for refinement was identified and additions implemented.

Milestone 3: Flocks recruited

115 flocks have been recruited. Flock recruitment is complete in all countries except Sweden (five farms to be recruited), but drop outs might cause need for some re-recruitment.

Milestone 4: Project workshop 2: Assessor training

On-farm training and reliability testing with 14 to 16 assessors (one to two per country) is problematic on commercial farms as hens might be affected by handling and this might negatively influence the future of the whole flock. In Sweden there was the possibility to carry out training and reliability testing in both one organic and one conventional cage system. Assessments including bird handling were carried out in the cage system, as possible negative effects on performance would be restricted to the hen group in one cage, and not affect the complete flock. That is why this workshop was held in Sweden.

The major part of training and testing was successful. For those criteria for which acceptable agreement could not be reached in the very limited time of the workshop, we performed additional training and testing with photos online after the workshop, or will merge those scores which turned out to be difficult to differentiate before analysis.

Milestone 5: Developement of a prototype database

A Microsoft Access 2010 database to enter the data of all five work packages and instructions for data entry have been developed and circulated. Finalizing of the very complex and large data base was delayed due to technical problems with the software. However, progress of the project was not compromised.

Milestone 6: Data recorded

Data recording is in progress. Changes have been made with regard to the timetable: We agreed on allowing one additional month for data collection, as data on laying performance and mortality should be collected from the farms at live week 70, and as replacement of drop outs resulted in a need for a re-recruitment in two countries. Data collection should be completed in November 2013. We do not expect delays in the remaining part of the project due to this change. Table 2 gives an overview of the number of flocks recruited and visited at mid-term.

Milestone 7: Database developed

Test runs concerning the merging of data from different partners to one large data base and extracting data sets suitable for the different work packages have already been performed.

Deliverables:

No	Deliverable name and language	Nature[2]	Dissemination level[3] and link to the document	Planned delivery month[1]	Actual delivery month[1]
D0.1	Assessment protocol	Protocol	INT	8	9
D0.2	Prototype database	Prototype	INT	11	17
D0.3	Annual project update	Report	PU	16*	16
D0.4	Mid-term report	Report	CO	20**	20
D0.5	Annual project update	Report	PU	24	-
D1.1	Database WP 1	Database	INT	28	-
D2.1	Database WP 2	Database	INT	28	-
D3.1	Database WP 3	Database	INT	28	-
D4.1	Database WP 4	Database	INT	28	-
D0.6	Status quo benchmarking article	Paper	PU	32	-
D1.2	Parasite article	Paper	PU	36	-
D2.2	Range use and environment article	Paper	PU	36	-
D3.2	Harmful pecking article	Paper	PU	36	-
D4.2.	Health disorder article	Paper	PU	36	-
D0.7	Prototype national leaflet	Leaflet	INT	35	-
D0.8	National leaflets	Leaflet	PU	36	-
D0.9	Final report	Report	PU	36	-

* The deadline of the annual project update was extended to January 2013 (project month 16) by the CORE Organic II secretary

** The mid-term report should reflect the status of 31st March 2013 (project month 18) and is due at the end of project month 20

[1] Measured in months from the project start date (month 1).

[2] Please indicate the nature of the deliverable. For example Report, Paper, Book, Protocol, Prototype, Website, Database, Demonstrator, Meeting, Workshop…

[3] Please indicate the dissemination level using one of the following codes: PU = Public; INT= Internal (Restricted to other project participants); RE = Restricted to a group specified by the consortium; CO = Confidential, only for members of the consortium.

3. Work package description and results:

WP 0	Coordination of the project and common cross sectional design
Responsible partner: partner no 1, UKA, Christine Brenninkmeyer, Ute Knierim	

Original description of work:

The common cross-sectional design of the whole project comprises the following:
107 flocks distributed over 8 countries are included in the observational study. All the flocks are visited twice at similar age periods (at peak of lay, i.e. at 30-40 weeks and at end of lay, i.e. after 60 weeks of age). Thus, the recordings are conducted in two seasons in each flock, spring/summer and autumn/winter. The following data will be recorded during interviews, direct on-farm measurements and from farm documentation:

- Systems description (housing system, outdoor areas)
- Flock description (flock size, current age and weight, beak status, genotype)
- Management of free range areas
- Feeding management (feed composition, feeding regime, percentage of organic feed, provision of roughage)
- Health management (hygiene measures, disease prevention, veterinary and other treatments)
- Other management factors (litter management, provision of occupational material etc.)
- Pullet rearing (rearing system, health management, access to outdoor areas, age and weight at change to laying unit)
- Production and mortality figures
- Further animal related measures detailed in WP1-WP4

A common recording protocol will be developed based on results and methodological recommendations from the previous two EU-projects LayWel and Welfare Quality®. Within a three-day workshop, technicians from all countries will be trained to use the protocol in a uniform manner. Through this, and if necessary by amendment of methods, satisfactory inter-assessor agreement will be achieved (project workshop 2).

Flocks in the different countries will be selected according to common guidelines with respect to specific farm characteristics and criteria for independent samples will be determined (agreed in project workshop 1).

Data will be processed in a standardised way in all WPs, based on a prototype database. They will be analysed using multivariate statistical analysis (e.g. logistic regression or general linear models) with the factor 'flock' as random variable nested within country. The outcome variables will be based on random samples of birds in samples of flocks or, in WP2, on repeated samples of the same flocks regarding range use and characteristics. Statistical approaches will be aligned between WPs within a two-day workshop on modelling relationships between the independent variables relating to management and housing, and the dependent variables reflecting bird health and welfare, and the impact on the external environment (project workshop 3).

In a last one-day project workshop with all partners, results of the different WPs will be discussed and integrated into joint recommendations (workshop 4). This will be followed by an open scientific workshop involving e.g. partners of the EU-project LowInputBreeds (e.g. FiBL Switzerland) in order to critically discuss project outcomes and to develop recommendations further.

Coordination of the project will be achieved by clear common guidelines on project execution as detailed above, and through the four project workshops that serve coordination, training and scientific discussion between project partners. This coordinated approach will foster the integration of results of the different WPs. During the last workshop also final coordination of the reporting of these results in leaflets, articles, presentations and reports will be carried out.

A- results obtained:

The first project workshop was held on 23rd and 24th November 2011 in Witzenhausen and guidelines for flock acquisition and a detailed work plan including contingency plan agreed on (see Annexes 4 and 5). Instructions for data collection, definitions and recording protocols have been developed in cooperation with the other WP-leaders and trained and refined during and after project workshop 2, 23rd to 25th May 2012 in Sweden (see Annexes 6 and 7).

A prototype database comprising all work packages has been developed and circulated.

B- comments on deviations from the original plan:

There are no deviations.

WP 1	**Parasite infestation in organic layers**

Responsible partner: partner no 1, NCK, Niels Christian Kyvsgaard

Original description of work:

The aim of this work package is to quantify major risk factors for important endo- and ectoparasites in organic layers and their effect on production, health and welfare. Regarding endoparasites (nematodes, cestodes and coccidia), egg counts will be carried out from unpooled faecal samples from 20 individuals per flock, collected at both farm visits. However, egg counts (EPG) are not necessarily closely related to the actual endoparasite burden, due to a great number of further influencing factors on endoparasitic egg excretion (e.g. Maurer et al., 2009). Worm burden may be a more sensitive measure (e.g. Gauly et al. 2001). Therefore, additionally for at least half of the visited flocks, 20 randomly sampled end-of-lay hens or gastrointestinal tracts from the slaughterhouse per flock are qualitatively and quantitatively examined for the presence of endoparasites at different developmental stages. Regarding ectoparasites, the presence of red mites is quantified using corrugated cardboard traps during the spring/summer visits.

We aim to quantify the impact of the following potentially influencing factors: litter quality in the house, existence of a covered veranda, condition of the free range, age of first free range access, amount of free range access and use, protein content of feed, alternative treatments. Factors such as genetic origin of birds and season are additionally considered as possible confounding factors. The effect of the degree of endoparasitic infestation on laying performance, live weights and mortality rates will be estimated.

Practical recommendations for effective preventive measures concerning endoparasites are made based on further analysis of management factors, including results obtained in WPs 2, 3 and 4.

Report on results obtained and changes to the original plan/WP aims:

A- results obtained:

Beginning at the coordination meeting in Witzenhausen we have elaborated three protocols for sampling frames and procedures:

- Procedure for Faecal Egg Counts
- Procedure for examination for red poultry mites
- Procedure for Post Mortem worm counts

The protocols are based on well-established parasitological methods, and we have selected between the available methods with the aim to use methods which are easy to reproduce on several partner institutions and which are likely to give comparable results between laboratories.
We have carried out two rounds of inter-laboratory reliability testing of the method for faecal egg counts. This was done by circulating identical sets of 10 samples to the partner laboratories.
The results were consistent with regard to the identification of the helminth eggs. However, the samples showed some variation between laboratories with regard to the actual counts which were obtained. A difference between partners in dilution (originating from a calculation error in a table in the protocol) of the faecal material with the flotation fluid was identified as a significant factor in the differences. After correction for this dilution factor, compliance was good between the Danish laboratory and all but two laboratories in the partner countries. As the difference for those two laboratories was systematic, a correction factor will be applied to the data for analysis.
The peak-of-lay samples have been collected and examined, whereas we are beginning the examination of the end-of-lay samples. The number of samples per flock per sample point was reduced from 20 to 15 as this number was estimated to give sufficient accuracy in the determination of flock level of infection. The post-mortem worm counts have started in some partner countries and collection is presently on-going.
For the post-mortem procedure it was decided to base the examination on opening of the intestines longitudinally followed by visual inspection.

B- comments on deviations from the original plan:

Two rounds of interlaboratory reliability testing have been necessary to reach agreement between the laboratories on the identification of helminth eggs. Due to persisting differences in counts for two laboratories, we may have to adjust the faecal eggs counts obtained on the different laboratories with a laboratory-specific correction factor based on the results from the interlaboratory reliability testing.
A change in the number of samples per flock was decided. It was estimated the accuracy achieved by examining 15 samples per flock would differ only to a minor degree from the estimate achieved by examination of 20 samples per flock. This assumption was supported by resampling from a Danish dataset obtained by examination of an organic layer flock.

WP 2	Use of free range

Responsible partner: partner no 4, ADAS, Stephen Edge

Original description of work:

The aim of this work package is to detect factors that influence ranging behaviour and to assess their impact on health and welfare and (indirectly) the environment.

Access to and use of the free range varies between and within farms and between seasons. Therefore, the two farm visits for assessing the use of the range and the covered veranda are scheduled in different seasons. During each visit, the number and location of the hens on the range and/or in the covered veranda will be recorded three times per day. In addition, indirect indicators such as the characteristics of vegetation cover, amount of droppings and feathers are recorded at pre-defined locations across the range. Manure deposition will be estimated on this basis.

The impact of the following potentially influencing factors on ranging behaviour as well as distribution and amount of manure deposited are investigated: design and use of covered veranda, area rotation, management initiatives for getting the hens outside, parameters describing the free range (length, width, type of vegetation cover, artificial structures, dust bathing areas), flock size and indoor stocking density. The effects of the degree and distribution of range use on laying performance, body weights and mortality rates are estimated.

The findings will help to optimise range management in order to achieve enhanced health and welfare and a more even manure distribution across the range, with environmental benefits (e.g. lower localised nutrient and pathogen build-up).

Report on results obtained and changes to the original plan/WP aims:

A- results obtained:

A protocol was developed for the assessment of the use of the range and covered veranda, vegetation cover and manure deposition. Recording sheets were also produced to ensure that each partner country recorded information in a uniform way. The protocol was trialled in the UK before being demonstrated at the project workshop in Sweden.

The protocol is being used successfully on flock visits.

B- comments on deviations from the original plan:

Rating the plant cover and counting of hens and droppings resulted in good impressions of the distribution of hens in the outdoor run and the intensity of use. Collection of feathers on the other hand turned out to be less useful: The trial of the protocol indicated that it was very rare to find a feather dropped within the sampling area. It was decided that the data collected on feathers found on the range would not be sufficient to draw a reliable conclusion; this parameter was thus excluded from the protocol.

WP 3	Feather and injurious pecking

Responsible partner: partner no 5, LBI , Monique Bestman

The aim of this work package is to identify factors affecting the occurrence of feather pecking and injurious pecking (cannibalism) with special consideration of feeding management and beak status. Scoring of plumage and skin condition will be carried out on a random sample of 50 birds in each end-of lay flock. In the statistical analysis, the degree of influence of the following factors will be investigated: feeding management (feeding regime, feed appearance, feed composition, quantity and quality of additional feed offered), pullet rearing (feeding regime, use of free range and quantity and quality of additional feed offered), provision of occupational material, use of free range, flock characteristics. The associations between parasite burden,

other health problems and prevalence of feather pecking and cannibalism, as well as effects on performance and mortality are estimated. The analysis carried out in this WP will make it possible to relate the prevalence of feather and injurious pecking to flock management, feeding management, in particular, and to other health parameters in the study flocks.

Report on results obtained and changes to the original plan/WP aims:

A- results obtained: A protocol for collection of animal based parameters in the study flocks has been developed. This protocol was 'exercised' during the project meeting in 23-24 May 2012 in Sweden. After the meeting the protocol was sharpened. It is now being used at the second series of farm visits.

B- comments on deviations from the original plan:
There are no deviations.

WP 4	**Other health problems: Prevalence of foot lesions and keel bone alterations**

Responsible partner: partner no 6, VUV, Knut Niebuhr

Original description of work:
The aim of this work package is to identify factors affecting the occurrence of further important health problems such as fractures/deviations of the keel bone and foot lesions (e.g. ulcers or bumble foot). For this purpose, scoring of keel bone and foot condition is carried out in a random sample of 50 birds in each end of lay flock (the same birds examined in WP3). The degree of influence of the following factors is investigated: pullet rearing, health and feeding management, use of free range, and flock characteristics including the course of laying performance. The association between prevalences of these health problems and outcome variables from WP1 and WP3, as well as the effects on performance and mortality will be estimated. This should lead to a better understanding of possible influencing factors and enhance the possibility to develop strategies to reduce these welfare problems.

Report on results obtained and changes to the original plan/WP aims:

A- results obtained: A protocol for collection of animal based parameters in the study flocks has been developed. This protocol was 'exercised' during the project meeting in 23-24 May 2012 in Sweden. After the meeting the protocol was sharpened. It is now being used at the second series of farm visits.

B- comments on deviations from the original plan:
There are no deviations.

4. Publications and dissemination activities

4.1 List extracted from Organic Eprints

No publications so far.

4.2 Additional dissemination activities

Stakeholder in all participating countries became aware of the project during farm recruitment.

Articles:

Article from Aarhus University about the project (in Danish and English):

- Hansen, J. Forskere forbedrer velfærden og sundheden hos økologiske høns. 1/3-2012. http://dca.au.dk/aktuelt/nyheder/vis/artikel/forskere-forbedrer-velfaerden-og-sundheden-hos-oekologiske-hoens/

- Hansen, J. Scientists improve health and welfare of organic laying hens. 1/3-2012. http://dca.au.dk/en/currently/news/show/artikel/scientists-improve-health-and-welfare-of-organic-laying-hens/

- And thereafter cited here: http://www.thepoultrysite.com/poultrynews/25037/scientists-improve-health-welfare-of-organic-laying-hens https://www.ja.dk/Sider/Nyhed.aspx?nid=3750 (in Danish, 7/3-2012)

Articles in agricultural magazines describing the projects' aims (as part of the recruitment process):

- Hinrichsen L.K. & Sørensen, J.T. Færre døde høner i økologisk ægproduktion. Dansk erhvervsfjerkræ nr. 1 2012, d. 15. January 2012 (In Danish: translated title: Fewer dead hens in organic egg production)

- Hinrichsen, L.K. Hvorfor dør den økologiske høne? Økologi og Erhverv den 24. February 2012. (In Danish, translated title: Why does the organic hen die?)

- Niebuhr, K. (2011): Haben es Bio-Hühner gut? (in German, translated title: Are organic hens fine?) BIO AUSTRIA 6/11, 24.

Presentations:

- Austria: Use of preliminary national project data in two presentations at national meetings (producer organisation, veterinarians)

- Sweden: Project presentation 5 oct 2012 – national seminar for poultry vets, consultants and stakeholder (approx. 40 persons)

- Sweden: Project presentation 17 oct 2012 – Nordic seminar for organic consultants and organic egg farmers (approx. 20 persons)

4.3 Further possible actions for dissemination

Further actions for dissemination are planned in the later course of the project (in accordance with the dissemination plan).

4.4 Specific questions regarding dissemination and publications

The website (http://www.coreorganic2.org/Menu/Menu_1_4_4.asp) has been updated beginning of 2013.

The expected research results will be of interest for farmers, advisors and the scientific community. Farmers, advisors and organic producer associations became aware of the project during farm recruitment. Participating farmers will get feedback in the form of benchmarking after data collection is completed. Farmers, advisors and organic producers will furthermore be addressed by articles in the agricultural press (one English article per WP plus one article with all results per country), electronic leaflets with recommendations in the languages of all participating countries and presentations at meetings or seminars in all countries. The results will reach the scientific community through publications in peer reviewed journals (one per WP). Additionally we plan to present results at the 18th IFOAM organic world congress, October 2014 in Istanbul, Turkey, which will be visited by scientists and stakeholders.

5. Added value of the transnational cooperation in relation to the subject

The transnational cooperation makes a sample size of 107 organic layer farms possible. As common practice and also legislation differ to some extend in the participating countries, variation is promising with regards to finding beneficial and risk factors. On the other hand, comparable barn systems and genetics make common selection criteria for farm selection possible and data comparable across countries.
In Sweden there is an additional application to compare McMaster sampling with PCR technique in collaboration with the Dept of Parasitology at SLU Uppsala. The application is not yet approved.

ANNEX 1: CHANGES IN WORK PLAN AND PROBLEMS ENCOUNTERED

Changes in consortium and work plan

Parasitic analysis proved to be much more time and cost intensive than expected and planned for by most project partners. This resulted in a request to the leader of WP1 to re-evaluate the sample size needed for his analysis. Based on his experience in the area he came to the conclusion that reducing the sample sizes to 15 instead of 20 samples (droppings for parasite egg counts as well as gastrointestinal tracts for worm counts) would be sufficient for scientifically valid analysis. The reduction of the sample sizes was agreed on by all project partners, the CORE Organic II secretary and the national funding sources.

Problems encountered, delays and corrective actions planned or taken, if any:

In agreement with the Core Organic 2 secretary, communication problems with WP1 have been addressed by including the other Danish partner as Work package co-manager.

ANNEX 2: COST OVERVIEW AND DEVIATIONS FROM BUDGET

Project budget and costs in € (if in National currencies, please indicate):

Partner no.	1	2	3	4	5	6	7	8	9
	DE: UKA	DK: NCK	DK: DJF-AU	UK: ADAS	NL: LBI	AU: VUV	IT: FCSR	SE: SLU	BE: ILVO-OC
TOTAL BUDGET	200,378	[4]	122,803	106,308 £	80,100	123,603	[4]	80,000	70,000
Spent at Mid term	77,763[5]	[4]	46,149	66,610 £	33,535	72,689	23,699[6][7]	15,000	44,001
Spent in 2nd period									
TOTAL SPENT									
DEVIATION									

Person months (PM) spent on the project:

Partner no.	1	2	3	4	5	6	7	8	9
	DE: UKA	DK: NCK	DK: DJF-AU	UK: ADAS	NL: LBI	AU: VUV	IT: FCSR	SE: SLU	BE: ILVO-OC
TOTAL PM budgeted	41.5	[4]	15.34	209.49 days	3.9	18.5	[4]	7	18
Spent at Mid term	18.95[5]	[4]	6.06	164.65 days	2.0	11.25	[4]	2	8.77
PM spent in 2nd period									
TOTAL PM SPENT									
DEVIATION									

Reasons for major deviations in spending compared to original budget:

No major deviations reported.

[4] No information available
[5] Status 31.12.2012
[6] Status 30.04.2012
[7] Excluding travel costs

ANNEX 3: Recommendations to the CORE Organic consortium in relation to launching and monitoring of future transnationally funded research projects

As funding takes place on national level and reporting for the funding sources is partly in different frequencies we would recommend to leave Annex 2 (Cost overview and deviation from budget) out of the mid-term report in future projects.

ANNEX 4: PROGRAM OF THE FIRST PROJECT WORKSHOP

Time table first HealthyHens project workshop:

23.11.2011

12:00-13:10	Lunch at the "Gastwerk" restaurant, 5 min walk from the campus and the train station "Witzenhausen Nord"
13:15-13:35	Welcome and introduction (UK), possibility of agenda additions
13:35-13:50	Presentation of Lenas PhD outline (LH)
13:50-15:30	Organic egg production in the participating countries and farm selection criteria (CB, all)
15:30-15:55	Coffee break
15:55-16:40	Presentation and discussion of WP1: What's going to be collected and how (NCK, all)
16:40-17:25	Presentation and discussion of WP2: What's going to be collected and how (SE, all)
17:25	Transit to the hotel, opportunity to walk through down town Witzenhausen reknown for its well preserved centuries old half-timbered houses
19:00	Dinner in the hotel restaurant (which belongs to the Witzenhäuser organic beer brewery :)

24.11.2011

8:15-8:55	Presentation and discussion of WP3: What's going to be collected and how (JPW, all)
8:55-9:35	Presentation and discussion of WP4: What's going to be collected and how (KN, all)
9:35-9:50	Short coffee break
9:50-11:50	Work plan, contingency plan and plans for farm visits and observer training (CB, all)
11:50	Closing words and sandwiches

Locations:

workshop:
University of Kassel
Campus Nordbahnhofstrasse Witzenhausen, building: Altes Schulgebäude, room: H 2
Nordbahnhofstrasse 1a, 37213 Witzenhausen

lunch:
"Gastwerk"
Mündener Str. 17a, 37213 Witzenhausen

hotel:
Burghotel Witzenhausen
Oberburgstr. 10
37213 Witzenhausen

ANNEX 5: SAMPLE SELECTION CRITERIA

Farm sample selection for the HealthyHen project

Aim: To recruit farms that are representative of the main standards under which most organic eggs are produced in each country.

"convenient sample with good representativity" – include most important standards and producer associations, but practicability with regards to travelling time and costs is accepted as additional selection criterion and participation of producers is voluntary

Samples should be "***as independent as possible"*** regarding location, responsible person and company affiliation.

We decided to have a couple of exclusion criteria for production standards which do represent only a very small minority of the total organic egg production, are too rare to have a sufficient proportion of the sample to include them into the statistical model and might have a confounding effect.

Exclusion criteria:

- mobile housing with relocation at least every second week; mobile houses with relocations in longer time intervals (e.g. after each laying period in UK) are considered as systems with alternating free ranges
- ~~farms with own pullet rearing: too rare and possible confounder~~ *(deleted as not feasible for larger farms in Germany)*
- farms with less than 500 hen places (but no upper limit!)
- beak trimmed herds (very strong confounder for injurious and feather pecking)
- mixed herds (e.g. brown and white hybrids)
- first herds in a newly build hen house (added April 2013)

If exclusion criteria can not be fulfilled in a country (due to lack of choice) the other project partners will be informed about that; those factors might be included as random factors if necessary.

Further selection strategies:

- Preference for common hybrids but no strict exclusion of other genetics
- try to balance flocks raised into ascending and descending day length (≈ 50/50); important time span: last 8 weeks in rearing facility
- Feeding: select farms using readily mixed rations, as availability of data on food composition is better and it represents the majority of farms in all countries; additional grain feeding is no exclusion criteria, but amount and type will be asked for during interview (and should preferably be no more than 10 g/day and hen; if it's more and you only know it when already there, write it down…)
- no restriction regarding: % of organic feeding, presence of covered verandas, paved areas, alternating free ranges

Information on farm recruitment is send to me regularly to get an overview over the total sample structure.

Benchmarking will be used as "incentive" for farmers to participate. They will get results on the outcomes of all four WPs.

For the first visit, more than the sample size aimed for will be recruited to have replacements in the case of drop outs.

ANNEX 6: PROGRAM OF THE SECOND PROJECT WORKSHOP

23.5.
Transfer Gothenburgh- Skara with Minibus

- 13:35-13:55 Welcome and presentation of the program
- 13:55-14:45 Presentation and clarification of open questions for the housing data collection sheet
- 14:45-15:35 Presentation and clarification of open questions for WP2 data collection

COFFEE

- 16:00-16:30 WP2 photo-IOR* with beamer
- 16:30-16:45 Introduction of farms and instructions for the two farm visits (hygiene etc.)
- 16:45-18:05 Presentation of WP3 and clarification of open questions concerning the scoring method, if enough time: photo-IOR with beamer
- 18:05-19:25 Presentation of WP 4 and clarification of open questions concerning the scoring method, if enough time: photo-IOR with beamer
- (entering of photo IOR data)

24.5.

- 8-12:30 Organic farm:
  - Going through the whole housing data collection sheet and outdoor-run scoring procedure together
  - Explain how to collect random samples of droppings and hens, if possible short demonstration of hen scoring method and presentation of "typical alterations in aviary systems" by Monique and Knut
  - discussion and additional clarification of methods where necessary

LUNCH BREAK (including transfer to seminar room)

- 14:15-16:15 Presentation of the WP1 protocol and methods

COFFEE

- 16:35-17:35 Results of photo IOR, discussion if discrepancies
- 17:35-18:45 round table on the current state of farm recruitment in the different countries (or another photo IOR session if necessary) ; discussion of open questions

25.5.

- 8-11:30 Conventional enriched cage farm
  - Scoring of a few hens all together
  - WP3 and 4 IOR test (24 hens – 4*6) in groups

  LUNCH on farm (incl. data input from WP3 and 4 IOR and calculation)
- 12:45 -15:00 Clarification in case of discrepancies and second round of at least 20 hens *(only scorer-pairs with very different scores and WPleaders, if only a few pairs with bad results)*

18:30 flights from Gothenburgh

*IOR = inter-observer (assessor) reliability

ANNEX 7: INSTRUCTIONS AND DEFINITIONS FOR DATA COLLECTION

See separate pdf-document. The attached documents are current versions used in the project. They are not meant to be made publically available at this stage of the project.

ANNEX 8: DATA COLLECTION PROTOCOLS

See separate pdf-document. The attached documents are current versions used in the project. They are not meant to be made publically available at this stage of the project.