BC BROILER HATCHING EGG COMMISSION

MARCH 2021 NEWSLETTER

INDUSTRY STATISTICS

YTD Hatchability

83.5 %

Average Lay Cycle End

55 weeks

Average Breeder Price

Female: $11.44

Male: $16.24

2021 Audit Stats

Total Premises to Audit: 58

Premises Completed: 6 / 58

Hatching Egg Tip

Click the link below to find an article on Troubleshooting hen performance.

https://www.cobb-vantress.com/en_US/articles/beyond-the-breed-troubleshooting-hen-performance/

BIOSECURITY STATUS REMAINS AT YELLOW

25 members of the EU are affected by the highly contagious H5N8 strain. Please be extra vigilant regarding biosecurity. For more information, click this link.

CHANGES TO THE FEED, SAFE WATER AND REST REGULATIONS

These changes impact fowl shipping, please review all paperwork provided to you by your processor in advance of your shipment date and familiarize yourself with the linked documents: http://www.gazette.gc.ca/rp-pr/p2/2019/2019-02-20/html/sor-dors38-eng.html

CHEP AMMONIA PROJECT

Please find attached the Ammonia Project information provided by CHEP.

APPEALS & SUPERVISORY REVIEWS

Current and most recent appeals and supervisory reviews are now posted on our website under *About Us* > *Governance* > *Appeals & Reviews*. Click to view.

AUDIT RECERTIFICATIONS

Beginning in 2021, audit recertification letters will be sent out via email from the On-Farm team. If you would like a printed copy, please contact Kaitlyn.

COVID-19 UPDATE

Due to COVID-19, office staff are on rotation, working from home and at the office. We are not accepting visitors at the office without an appointment. It is best to email the staff member you are trying to reach so they may follow up. We appreciate your patience during this time.

On-Farm staff require a minimum of 24 hours notice if you would like to reschedule your appointment.

Please see attached information on how to update your farm's COVID-19 safety plan provided by the BCPA.

Pricing Orders

Period	Live Chicken	Hatching Eggs	Saleable Chicks	Day-Old Broiler Chicks
A-163	1.697 $/kg	605.64 ¢/doz	63.03 ¢/chick	81.97 ¢/chick
A-164	1.707 $/kg	610.09 ¢/doz	63.49 ¢/chick	82.43 ¢/chick
A-165	1.684 $/kg	608.26 ¢/doz	63.30 ¢/chick	82.24 ¢/chick
A-166	1.690 $/kg	617.98 ¢/doz	64.31 ¢/chick	83.25 ¢/chick
A-167	1.757 $/kg	637.62 ¢/doz	66.33 ¢/chick	85.27 ¢/chick
A-168	1.812 $/kg	658.11 ¢/doz	68.45 ¢/chick	87.39 ¢/chick

Production Cycles

Period	Start Date	End Date
A-163	Mar 10, 2020	Jul 04, 2020
A-164	Jul 05, 2020	Aug 29, 2020
A-165	Aug 30, 2020	Oct 24, 2020
A-166	Oct 25, 2020	Dec 19, 2020
A-167	Dec 20, 2020	Feb 13, 2021
A-168	Feb 14, 2021	Apr 10, 2021

CHEP project proposal

Project title:

Impact of ammonia and dust concentrations on worker and animal health and well-being in Canadian hatching egg productions

Project total budget:

70,000$

Project leader contact information:

Caroline Duchaine, PhD
Researcher at the IUCPQ-UL and professor at Université Laval
Institut universitaire de cardiologie et de pneumologie de Québec – Université Laval (IUCPQ-UL)
Local A2128
2725 chemin Sainte-Foy, Québec (Québec) Canada G1V 4G5
(418) 656-8711 #5837
caroline.duchaine@bcm.ulaval.ca

Project leader relevant experience:

Caroline Duchaine's work comprises the characterization and quantification of bioaerosols (e.g., airborne viruses, bacteria) and the evaluation of the overall air quality of different working environments and occupational settings. Internationally, Pr Duchaine is among the rare scientists having the expertise and equipment to carry out a project on air quality inside poultry operations and the consequent impact of bioaerosol exposure on respiratory health of workers. Over twenty years, Pr Duchaine's lab evaluated the presence of different air quality indicators (e.g., dust particles, molds) in industrial (e.g., wastewater treatment plants, composting facilities, peat moss factories) and agricultural workplaces (e.g., pig buildings, dairy farms, poultry operations) using sensitive and specific analyzing tools such as high throughput sequencing and quantitative PCR. She completed research and acquired equipment with the help of several funding agencies (Agriculture and Agrifood Canada, Quebec Ministry of Agriculture (MAPAQ), FRSQ, IRSST, FRQNT, Canadian National Defence, NSERC, INSPQ, Canada Foundation for Innovation).

Pr Duchaine detains a unique expertise in bioaerosols and is the Canadian leader in airborne biological agents sampling and analysis. She developed collaborations nationally and internationally (e.g., researchers from Australia, USA, Finland, France and Spain). To evaluate air quality in poultry operations (for meat and egg production with conventional cages), she collaborated with Shelley Kirychuk from Saskatoon (SK, Canada). Air samples were taken in

Saskatoon and analyzed in Pr Duchaine's lab (Quebec city, QC, Canada). The publication of the new Code of Practice for the Care and Handling of Pullets and Laying Hens and the consequent emergence of alternative housing systems prompted Pr Duchaine to further evaluate air quality in poultry operations and to team up with Marie-Lou Gaucher, a veterinarian, and Geneviève Dion, a lung specialist, for investigating animal and worker health.

Project collaborators contact information:

Marie-Lou Gaucher, DMV, MSc, PhD
Researcher and professor
Faculté de médecine vétérinaire - Département de pathologie et microbiologie
Université de Montréal (U. Montreal)
3200, rue Sicotte - Aile A local 1101-6
(514) 343-6111 #0097
marie-lou.gaucher@umontreal.ca

Geneviève Dion, MD
Lung specialist
IUCPQ-UL
2725 chemin Sainte-Foy, Québec (Québec) Canada G1V 4G5
(418) 656-8711

Background:

About 245 hatching egg producers are operating across Canada, from British Columbia Quebec, with an average flock size of 10,000 – 15,000 birds. Ontario and Quebec are the largest producing provinces. Inside buildings, animals and workers are daily exposed to gases (e.g., ammonia) and large amounts of airborne dust and consequently could develop respiratory symptoms and diseases.

Egg farmers (conventional cages, laying hens for egg production) and workers from floor-housed operations (broilers) are known in the scientific literature to complain of chronic cough, eye irritation, dyspnea, fatigue, headaches, nasal congestion, fever, throat irritation, chest tightness and wheezing. The observed symptom frequency and severity were directly associated with the number of working hours (Leistikow et al. 1989). Donham et al. revealed that, following a day of work, reductions of forced expiratory volume in one second (FEV1), an indicator of lung function reduction, are more important for workers of floor-housed operations than cage-based (Donham et al .1990). However, FEV1 average values were reported to be lower and acute and chronic respiratory symptoms more frequent for cage-housed operators in Kirychuk et al. (Kirychuk et al., 2003 and 2006). Lung function reductions were related to elevated concentration of ammonia (ppm) and dust (mg/m^3) (Donham et al., 2000; Kirychuk et al., 2006; Senthilselvan et al., 2011). Exposure limit values for ammonia (12 ppm) and dust (2.4 mg/m^3) were therefore suggested by Donham et al. (Donham et al., 2000). Clinical diseases are as well observed in poultry workers such as allergic and non-allergic rhinitis, organic dust toxic syndrome (ODTS), chronic bronchitis,

hypersensitivity pneumonitis (Farmer's Lung), and occupational asthma. Finally, air transmission to a chicken catcher of *Campylobacter jejuni*, a zoonotic pathogenic agent (animal-human transmission), was reported by Wilson (Wilson 2004). A literature review revealed the absence of study describing the respiratory health of hatching egg producers, and insufficient and inadequate data on air quality in hatching egg farms, both in Canada and internationally.

While a day-to-day exposure to ammonia should not exceed 25 ppm (TLV-TWA), exposure of hatching egg producers to ammonia is still to be determined in Canada (TLV-TWA = Threshold Limit Value – Time-Weighted Average, Canadian Centre for Occupational Health and Safety, the Government of Canada). In layer and broiler operations, workers are daily exposed to important concentrations of ammonia (up to 40 ppm) which were reported higher during the winter season (confined building) and mornings since more elevated relative humidity was observed at the beginning of the day (Kirychuk et al., 2006; Larsson et al. 1999; Radon et al. 2001; Senthilselvan et al. 2011).

Regarding total dust, Canadian workers should not be daily exposed to values higher than 10 milligrams per cubic meter of air (mg/m^3). The United States Environmental Protection Agency (US EPA) established annual standards of $50\mu g/m^3$ of air for PM10 (particulate matter with a diameter smaller than 10µm) and $12.5\mu g/m^3$ for PM2.5 (smaller than 2.5µm). Total dust concentrations from 0.4 to 21 mg/m^3 have already been reported in layer and broiler operations (Kirychuk et al., 2006; Radon et al. 2001; Senthilselvan et al. 2011).

Gas and airborne dust particles inside buildings are aerosolized from litter, feed, feces and animals and concentrations vary according to the temperature, the relative humidity, the ventilation rates, and the animal activities and density (Ellen et al., 2000). Dust and ammonia concentrations were higher in floor-housed operations (broilers or aviaries for laying hens), up to 10 times for ammonia (Pelletier et al., 2016), than cage-housed (laying hens for egg production) (Arteaga et al., 2015; Just et al. 2011; Le Bouquin et al., 2013; Nimmermark et al. 2009).

The present project aims to get a picture of the situation related to:

a) Ammonia and dust concentrations in the Canadian hatching egg industry;
b) The respiratory health of workers;
c) The well-being and health of the birds.

Methods:

Online questionnaire *for a nationwide survey on worker and animal health*

Farmers will be recruited with the help of the Canadian Hatching Egg Producers organization. A **worker health survey** (French and English) will be built from American Thoracic Society (ATS) standardized questionnaires and published scientific literature (Pralong et al. 2013; Vandenplas et al. 2005) with the help of Geneviève Dion, a lung specialist (IUCPQ-UL). Survey will include questions on occupational respiratory symptoms and diseases such as wheezing, fever, cough, ocular irritation, rhinitis, and asthma. Surveys will be accessible on a secure web platform, REDCap. Statistical analysis will then be performed on the exported data. Marie-

Lou Gaucher, a veterinarian (U. Montreal) will develop an **animal health survey** (French and English). The survey will also be accessible to hatching egg producers on the secure web platform, REDCap, from which data will be extracted. Survey will include questions on global and specific poultry health, as well as on production performances of the surveyed flocks.

On-site *ammonia and dust monitoring as well as animal health evaluation*

In the province of Quebec, 10 sites will be evaluated during the cold season, during maximal confinement (the expected worst air quality). **Three visits per site from November through March (cold season)**. Each building will be characterized with the help of the hatching egg producers, and information will be collected on age and dimensions of the building, number and age of the birds, feed distribution system, feed texture, ventilation system, manure management system, and so forth. Each producer will also have to fill the worker health survey.

Animal health will be evaluated on-site by a veterinarian conducting the farm visits. Visited flocks will score according to the global health status. Individual birds will also be clinically evaluated according to various health aspects including respiratory and ocular health. During each farm visit, necropsies will be performed on dead birds of the day.

Air sampling (ammonia, dust) will be done over a 4-hour period (multiple readings). Ammonia will be monitored with a gas monitor GM460 (TSI Incorporated), a hand-held instrument, and total dust, PM10, and PM2.5 with a DustTrak DRX Aerosol Monitor (model 8534, TSI Incorporated). Both instruments will measure in real-time ammonia and dust concentrations. Worker and animal activities will be noted during the sampling period.

Budget:

Salaries	
IUCPQ-UL research associate	30,000$
U. Montreal veterinarian	21,000$
Laboratory consumables	
IUCPQ-UL calibration gas, accessories for gas and aerosol monitors	10,000$
Equipment maintenance	
IUCPQ-UL gas and aerosol monitors	3,000$
Travel expenses	
IUCPQ-UL (100$ per visit, 30 on-site visits)	3,000$
U. Montreal (100$ per visit, 30 on-site visits)	3,000$
TOTAL	**70,000$**

References:

Arteaga, V., Mitchell, D., Armitage, T., Tancredi, D., Schenker, M. and Mitloehner, F. (2015). Cage Versus Noncage Laying-Hen Housings: Respiratory Exposures. J Agromedicine, 20(3), 245-255.

Donham, K. J., Leistikow, B., Merchant, J. and Leonard, S. (1990). Assessment of U.S. poultry worker respiratory risks. Am J Ind Med, 17(1), 73-74.

Donham, K. J., Cumro, D., Reynolds, S. J. and Merchant, J. A. (2000). Dose-response relationships between occupational aerosol exposures and cross-shift declines of lung function in poultry workers: recommendations for exposure limits. J Occup Environ Med, 42(3), 260-269.

Ellen, H. H., Bottcher, R. W., von Wachenfelt, E. and Takai, H. (2000). Dust levels and control methods in poultry houses. J Agric Saf Health, 6(4), 275-282.

Just, N., Kirychuk, S., Gilbert, Y., Letourneau, V., Veillette, M., Singh, B. and Duchaine, C. (2011). Bacterial diversity characterization of bioaerosols from cage-housed and floor-housed poultry operations. Environ Res, 111(4), 492-498.

Kirychuk, S. P., Senthilselvan, A., Dosman, J. A., Juorio, V., Feddes, J. J., Willson, P. and Hurst, T. S. (2003). Respiratory symptoms and lung function in poultry confinement workers in Western Canada. Can Respir J, 10(7), 375-380.

Kirychuk, S. P., Dosman, J. A., Reynolds, S. J., Willson, P., Senthilselvan, A., Feddes, J. J. and Guenter, W. (2006). Total dust and endotoxin in poultry operations: comparison between cage and floor housing and respiratory effects in workers. J Occup Environ Med, 48(7), 741-748.

Le Bouquin, S., Huneau-Salaun, A., Huonnic, D., Balaine, L., Martin, S. and Michel, V. (2013). Aerial dust concentration in cage-housed, floor-housed, and aviary facilities for laying hens. Poult Sci, 92(11), 2827-2833.

Leistikow, B., Petitt, W., Donham, K., Merchant, J. and Popendorf, W. (1989). Respiratory risks in poultry farmers. Dans J. A. Dosman and D. W. Cockcroft (Édit.), Principles of Health and Safety in Agriculture. (p. 62–65). Boca Raton, FL, USA: CRC Press.

Nimmermark, S., Lund, V., Gustafsson, G. and Eduard, W. (2009). Ammonia, dust and bacteria in welfare-oriented systems for laying hens. Ann Agric Environ Med, 16(1), 103-113.

Pelletier, F. and Godbout, S. (2016). Étude de l'efficacité environnementale de différents systèmes de production dans les élevages de poules pondeuses. Québec, QC, Canada: Institut de recherche et de développement en agroenvironnement (IRDA).

Pralong, J.A., Moullec, G., Suarthana, E., Gérin, M., Gautrin, D., Archevêque, J.L., Labrecque, M. (2013). Screening for occupational asthma by using a self-administered questionnaire in a clinical setting. J Occup Environ Med, 55(5), 527-31.

Radon, K., Weber, C., Iversen, M., Danuser, B., Pedersen, S. and Nowak, D. (2001). Exposure assessment and lung function in pig and poultry farmers. Occup Environ Med, 58(6), 405-410.

Senthilselvan, A., Beach, J., Feddes, J., Cherry, N. and Wenger, I. (2011). A prospective evaluation of air quality and workers' health in broiler and layer operations. Occup Environ Med, 68(2), 102-107.

Vandenplas, O., Ghezzo, H., Munoz, X., Moscato, G., Perfetti, L., Lemière, C., Labrecque, M., L'Archevêque, J., Malo, J.L. (2005). What are the questionnaire items most useful in identifying subjects with occupational asthma? Eur Respir J, 26(6), 1056-63.

Wilson, I. G. (2004). Airborne *Campylobacter* infection in a poultry worker: case report and review of the literature. Commun Dis Public Health, 7(4), 349-353.

Reminder Have you updated your farm's COVID19 safety plan?

AgSafe encourages dairy farmers revisit their safety plan for controlling COVID-19 exposure on your farm. As you review your current COVID-19 exposure control plan, consider the following questions to identify areas that need to be updated:

1. Have you provided workers with education about COVID-19, infection control measures, and have documented that these conversations have taken place?

2. Have workers participated in a risk assessment to identify areas of the dairy farm where workers could be exposed? (e.g. shared work spaces, tools and other workers who may be within 2 metres)

3. Do you have a worker COVID-19 self assessment and report policy in place?

4. Do you have suitable personal protective equipment available for workers? This includes respirators and masks if needed.

5. Do you have suitable hand washing and sanitization facilities available to workers at your farm?

6. Have you posted signage to remind workers to maintain a 2 metre distance and use PPE when required?

7. Have you kept records detailing worker education and exposure events on your farm?

AgSafe resources to assist you in updating your plan:

Guide to Updating your Farm Safety Plan

Sample Exposure Control Plan

Sample Risk Assessment Protocol

Sample Site Inspection

Need assistance with your COVID-19 safety plan?

Further COVID-19 information is available by clicking here. If you have questions or need help with your COVID-19 safety plan, AgSafe's Safety Advisers are here to help. You can reach them by emailing contact@agsafebc.ca or calling 1-877-533-1789.