

Curriculum Vitae – Sanna Steinfeldt

Date of birth: 24th February 1959

Academic qualification, name of institution issuing the degree, year of graduation:

1995 *Ph.D. (Poultry science), The Royal Veterinary and Agricultural University, Denmark*

1988 *M.Sc. (Biology) (cand.scient.), Aarhus University, Denmark*

Current employment and academic rank/title:

Aarhus University, Department for Animal Science, Senior Scientist, PhD

Academic qualification, year of graduation:

Ph.D. (Poultry science), The Royal Veterinary and Agricultural University, Denmark, 1995

Title of dissertation:

The effect of exogenous enzymes in the digestive tract of poultry fed diets based on wheat or wheat fractions

Teaching experience:

- ❖ 2010-2023 Animal Nutrition BSc, Aarhus University
- ❖ 2008-2023 Quantitative animal nutrition and physiology, MSc course, Aarhus University
- ❖ 2009-2018 Animal production, BSc course, Aarhus University
- ❖ 2007-2008 Animal science (lectures in poultry nutrition and reproduction), BSc course, The Royal Veterinary and Agricultural University, Copenhagen
- ❖ 2000-2003 Courses in Poultry nutrition and feeding in: MSc. Program in agricultural and veterinary science - with special emphasis on "rural poultry production and health". In the framework of Danida and in collaboration with the Network for smallholder poultry development, the Royal Veterinary and Agricultural University, Copenhagen.
- ❖ 1992-1999 Poultry genetics and nutrition courses, MSc, The Royal Veterinary and Agricultural University, Copenhagen
- ❖ 1992-2011 Lectures and presentations at different courses and meetings for advisors, veterinarians and farmers on nutrition, feeding strategies and management in broilers and layers in conventional and organic systems, nutritive value of feed ingredients and effect on performance, excretion of nutrients and intestinal health. Challenges in organic egg-production by introduction of 100% organic feeding and sufficient supply of essential amino acids

Professional experience, (scientific and education activity) and achievements:

- ❖ Senior scientist, Ph. D. in the research group "Animal nutrition and physiology", Department of Animals Science, Aarhus University
- ❖ Teaching: teaching at several BSc and MSc courses. Experience as supervisor for BSc., MSc (Danida Master program) and PhD students. Participate as member of scientific/examination committees in relation to Ph.D. defenses at the Agricultural University in Wageningen, the Netherlands, the Agricultural University in Uppsala, Sweden and Helsinki University, Finland.
- ❖ Scientific: Project manager and participant in many research projects dealing with different topics related to Poultry nutrition, physiology and production in both conventional and organic production:
- ❖ Feedings strategies for broilers and allometric measures. Nutritive value of feed ingredients for broilers and effect of fibres on intestinal viscosity, passage rate and nutrient digestibility. Phosphorus and calcium levels in broiler and layers diets and effect on performance, retention and leg health. Feedings strategies related to 100% organic feeding for layers, nutritive values of alternative feed ingredients as silages, and alternative protein sources as mussels, starfish and grass protein concentrates. Feeding strategies in organic broilers and effect on foraging behavior. Danish Governmental counselling related to production and welfare issues in organic laying hens in multi-tier systems with varying bird density, quality of outdoor area and other topics in organic production.
- ❖ Scientific committee activities: in relation to European poultry conferences and European Poultry Symposia participated in the planning of the scientific program, review of papers and chairperson obligations. Invited speaker in several Conferences. Chairperson for working group 2 (Poultry Nutrition) under WPSA (World's Poultry Science Association) since 2009.

- ❖ Section Editor for British Poultry Science 2016-2020.
- ❖ Member of the National Poultry Levy Foundations since 2015. Member of the French Scientific Committee of the Carnot Institute *France Livestock Industry for the Future* (France Futur ElevageF2E) since 2016.

Selected scientific papers:

- Bonnefous, C., Collin, A., Guesdon, V., Filliat, C., Réhault-Godbert, S., Roinsard, A., Rodenburg, B., Tuytens, F., Warin, L., Steinfeldt, S., Baldinger, L., Re, M., Ponzio, R., Zuliani, A., Venezia, P., Väre, M., Parrott, P., Allan, S., Walley, K., Niemi, J. and Leterrier, C., 2022. Welfare issues for laying hens in free range and organic production systems: A review based on literature and interviews. *Frontiers in Veterinary Science*. <https://doi:10.3389/fvets.2022.952922>.
- Hammershøj, M., Kristiansen, G. H. Steinfeldt, S. 2021. Dual-Purpose Poultry in Organic Egg Production and Effects on Egg Quality Parameters. *Foods* 2021, 10, 897. <https://doi.org/10.3390/foods10040897>
- Nilsen, B.L. 2018. Effects of choice feeding and lower ambient temperature on feed intake, growth, foot health, and panting of fast- and slow-growing broiler strains. *Poultry Science* 0: 1-11. <http://dx.doi.org/10.3382/ps/pey323>.
- Santamaría-Fernández, M., Molinuevo-Salces, B., Kiel, P., Steinfeldt, S., Uellendahl, H. and Lübeck, M. 2017. Lactic acid fermentation for refining proteins from green crops and obtaining a high quality feed product for monogastric animals. *Journal of Cleaner Production* **162**: 875–881.
- Riber, A. B., van de Weerd, H. A., de Jong, I. C., Steinfeldt, S. 2017. Review of environmental enrichment for broiler chickens. *Poultry Science* 97:378–396. <http://dx.doi.org/10.3382/ps/pex344>.
- Riber, A. B., van de Weerd, H. A., de Jong, I. C., Steinfeldt, S. 2017. Environmental Enrichment for Broiler Breeders: An Undeveloped Field. *Front. Vet. Sci.*, 09 June 2017 <https://doi.org/10.3389/fvets.2017.00086>
- Afrose, S., Hammershøj, M., Nørgaard, J. V., Engberg, R.M. and Steinfeldt, S. 2016. Influence of blue mussel (*Mytilus edulis*) and starfish (*Asterias rubens*) meals on production performance, egg quality and apparent total tract digestibility of nutrients of laying hens. *Animal Feed Science and Technology* 213: 108-117.
- Steenfeldt, S. and Hammershøj, M. 2015. Organic egg production. I: Effects of different dietary protein contents and forage material on organic egg production, nitrogen and mineral retention and total tract digestibility of nutrients of two hen genotypes. *Animal Feed Science and Technology* 209: 186-201.
- Hammershøj, M., Steinfeldt, S., 2015. Organic egg production. II: The quality of organic eggs is influenced by hen genotype, diet and forage material analyzed by physical parameters, functional properties and sensory evaluation. *Animal Feed Science and Technology* 208: 182-197.
- Steenfeldt, S. and Nielsen, B. L. 2015. Welfare of organic laying hens kept at different indoor stocking densities in a multi-tier aviary system. I: egg laying, and use of veranda and outdoor area. *Animal* 9: 1509-1517.
- Steenfeldt, S. and Nielsen, B. L. 2015. Welfare of organic laying hens kept at different indoor stocking densities in a multi-tier aviary system. II: Live weight, health measures and perching. *Animal* 9: 1518-1528.
- Vaarst, M., Steinfeldt, S. and Horsted, K. 2015. Sustainable development perspective of poultry production. *World's Poultry Science Journal* 71: 609-620.
- Hammershøj, M. and Steinfeldt, S. 2012. The effects of kale (*Brassica oleracea* ssp. *acephala*), basil (*Ocimum basilicum*) and thyme (*Thymus vulgaris*) as forage material in organic egg production on egg quality. *British Poultry Science*, vol. 53: 245-256.
- Nielsen, B.L., Thodberg, K., Malmkvist, J. and Steinfeldt, S: 2011. Proportion of insoluble fibre in the diet affects behaviour and hunger in broiler breeders growing at similar rates. *Animal*, vol. 5: 1247-1258.
- Hammershøj, M., Kidmose, U. and Steinfeldt, S. 2010. Deposition of carotenoids in egg yolk by short-term supplement of colored carrot (*Daucus carota*) varieties as forage material in organic egg production. *Journal of the science of Food and Agriculture*, 90: 1163-1171.
- Steenfeldt, S., Kjaer, J.B. and Engberg, R. M. 2007. The effect of feeding silages or carrots as supplements to laying hens on production performance, nutrient digestibilities, gut structure, gut microflora and feather pecking behaviour. *British Poultry Science*, 48, 4, 454-468.