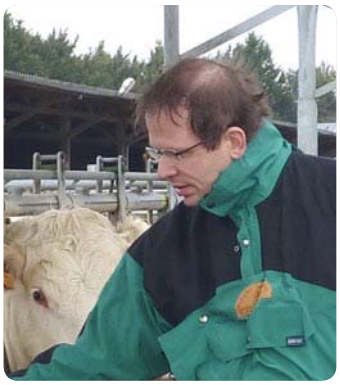
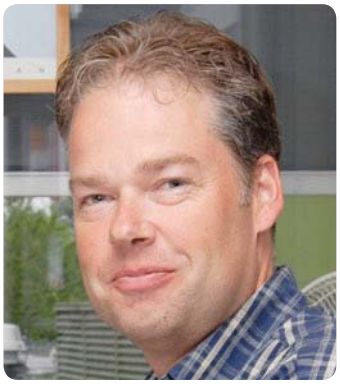


Xavier Boivin

Xavier Boivin is currently acting as an applied ethologist at the French National Institute of Agronomical Research (INRA). He performed his PhD on beef cattle docility and for the past 20 years he has been studying factors influencing farm herbivores' perceptions of humans.
He gives lectures in several agricultural schools and produced more than 40 papers on cattle, sheep, horses and goats in internationally recognised scientific journals.
Within the European Welfare Quality® Project, he coordinated the work package related to stress associated with animal handling and contributed to the production of a multi-media training package "Quality Handling" for improving the human-animal relationship.



Marko Ruis

Dr Marko A.W. Ruis is a biologist and got his M.Sc. degree at Wageningen University. He is involved in animal welfare research since 1994. He is specialized in both fundamental and applied animal welfare research. He has a broad expertise in measuring and monitoring of animal welfare, including aspects of behaviour, health, physiology and immunology. As a projectleader and scientist he has been involved in research dealing with improvements and innovations in housing systems and management methods for pigs, laying hens, broilers, ducks, turkeys, mink and rabbits. In 2001 Marko obtained a PhD in pig welfare. He is the author or co-author of almost 20 refereed publications and book chapters on animal welfare.
Marko is increasingly involved in translation and transfer of knowledge to different groups of users, including farmers and students of lower and higher education. Within the large EU-project Welfare Quality® he is involved in development of multimedia training packages for pig and poultry farmers, being available in the English and Dutch languages. With regard to education, he maintains a close working relationship with the Van Hall Larenstein Institute for higher education. He is currently responsible for the website www.dierenwelzijnsweb.nl (www.animalwelfareweb.nl) which bridges welfare science, lower and higher agricultural education, and societal and agricultural issues.

“Quality Handling” a training program to reduce fear and stress in farm animals

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Introduction

Animal welfare is a critical challenge, not only for ethical reasons but also from an technical point of view (work conditions, safety, animal health and production). Animal welfare can be defined as the response of the animal to its living conditions in terms of stress and well-being. Improving animal welfare can be achieved by a) selecting the animals not only for production traits but lower susceptibility to diseases and stress and preferred behavioural traits, b) improving the husbandry conditions to match animals’ physical, physiological and psychological needs, and c) improving handling of the animals. Improving the animal-human relationship, i.e., how animals perceive humans - ranging from fearful of humans on the one side to confident in the presence of humans on the other side, is a key factor for animal welfare particularly where the number of animals on farms is increasing rapidly. Because of the increases in animal numbers, farmers have or may choose to have less and less time to spent in contact with their animals. As a consequence, research programs in genetics attempt to identify less reactive or animals that are less aggressive towards humans (e.g. the French program COSADD, Benhajali et al, 2010). In addition, environmental factors (e.g design of handling facilities) that induce fear and injuries in animals during animal handling on farm or at the abattoirs need to be identified and removed. Finally, research programs such as the European Welfare Quality® program, have attempted to improve animal welfare by developing training programs for improving stockperson behaviour towards the animals. We will illustrate these different approches in this paper, with a special focus on the Quality Handling program, a multi-media training for improving animal handling in pigs, laying hens and cattle farming.

Factors influencing the human-farm animal relationship

Genetics and maternal experiences

Research in many countries (France, Australia, United-state, Ireland, Germany...) have shown that animals’ responses to handling have a

significant genetic component (h^2>0.2) allowing them to be selected on this basis (e.g. in beef cattle, Le Neindre et al, 1995, Burrow, 1997, Gauly et al, 2001,...). Collaborations between geneticists and ethologists have investigated situations relevant to evaluation in large scale operations such as during weighing (Benhajali et al, 2010). Apart from the elimination of genetic lines that are at risk, correlations between docility and husbandry parameters (growing rate, ease of calving, precocity and fertility) suggest that genetic selection on this basis would be, at the very least, not detrimental but even favourable for many economic parameters (Burrow, 1997, Phocas et al, 2006). In addition, the influence of the parents on their offsprings is not only genetically inheritated. Recent research confirm farmers' opinions that calves, foals and quail chicks learn from their mother how to react to humans (Bertin and Richard-Yris, 2004, Henry et al, 2005, Boivin et al, 2009).

Physical and human environment

The physical and human environment is a critical factor for the development of good human-animal relationships. In addition to the genetic factors mentioned above, differences between farms can be induced by the design of housing systems or handling facilities (Grandin et al, 2007). Farm animals' sensory capacities and perception of their world is quite different from those of humans. For example, cattle are strongly sensitive to light constrast, sudden noises, novelty or social isolation. The wrong design of the handling facilities can frighten animals and even make them panic, leading to flee or remain motionless when they should be moved calmly by the handler. Handlers then can become nervous, impatient or sometimes even violent, increasing risks of injuries for both human and animals. Well-designed, good facilities help human-animal contact and quick and calm handling.

Stockperson handling behaviour

Farmers generally have high levels of expertise, experience and competency. Nevertheless, there is widespread recognition that animals' agitation and fear responses during handling vary markedly between farms. The perception of the human by the animal is the result of regular interactions between them (animals and humans) building their relationship from an early age. Both animals and humans remember their previous encounters and predict their confidence or fear in their future interactions (Estep and Hetts, 1992). This relationship is the result of a daily learning process. Differences between farms in animals' reactions to human are prob-


ably mainly induced by people present on the farm and in visual, audible or physical contact with the animals. Sensitive periods of contact (early age, weaning time or calving) seem to exist allowing good human-animal relationship to develop through positive interactions at this stage (e.g. Boivin et al, 1992, 2000, Krohn et al, 2001, Hemsworth et al, 1987, 1989). However these contacts vary among farmers and the daily contact outside of these periods is probably also crucial as the influence of the dam or other animals of the group.

Several studies, particularly in Australia on pigs and dairy have clearly supported variation in animal fear is a consequence of the behavioural habits of the stockpersons (e.g. Hemsworth and Coleman, 2010, Lensink et al, 2001, Waiblinger et al, 2003, Boivin et al, 2007). They also supported the links between animals' fear of human contact and stress, production, growth rate, health, and welfare. Fear was reduced if the animals had received regular, gentle human contact. Improving farmers' habits and handling behaviours in order to improve the human-animal relationship and also animal welfare is not easy and needs a careful training methodology.

Quality Handling®: a multi-media training program

Targeting attitudes

In collaboration with Australian researchers, the European research project Welfare Quality® developed the multimedia training package Quality Handling®, designed to help farmers improve their human-animal relationships. It uses a cognitive behavioural approach to target farmer attitudes and habits that were previously thought difficult to change. In Australia and United States, cognitive-behavioural intervention programmes have been designed to specifically target key attitudes and behaviours of stockpeople. These training programmes have produced substantial improvements in the attitude and behaviour of stockpeople and a marked reduction in the level of fear of humans by pigs and cattle (e.g. Coleman et al., 2000).

Based on the Australian experiences, Quality Handling® was developed specifically for the European context. The training program emphasises the important relationships between stockperson attitude, stockperson and animal behaviour, animal stress, productivity and welfare. Information on research results from controlled experiments as well as on-farm studies is given. As also shown in the training programmes, in pigs, cattle and laying hen production, the human-farm animal relationship varies strongly between farms, offering considerable opportunities for improvement.

Field tests

Following development of the training packages, their effectiveness in achieving changes in attitudes and behaviour of stockpeople was evaluated in field tests (Ruis et al., 2010). The field tests were carried out in The Netherlands (laying hens and pigs), and Austria (dairy cattle). Stockpeople were randomly allocated to training

groups (dairy cattle: 10 farms, 14 people; pigs: 8 farms, 12 people; laying hens: 7 farms, 10 people) or control groups (dairy cattle: 9 farms, 9 people; pigs: 9 farms, 12 people; laying hens: 8 farms, 11 people). All farms were visited twice. Only stockpeople in the training group were trained before the second visit. The period between the training and the second farm visit of the training farms was between 4-6 weeks for pigs and laying hens, and on average 9 weeks for cattle. Human attitudes towards animals were determined by means of a questionnaire filled in during the visits. Average scores were obtained for beliefs about animal characteristics (general attitude) and handling situations (behavioural attitude). Stockpeoples' behaviour was assessed by means of behavioural observations during handling, and expressed in % of positive behaviours per unit or animal. Finally, the animal's avoidance behaviour to the approach of an unfamiliar person was measured to assess fear for humans.

To analyze the results of the field tests, a combined analysis was performed for the three species with stockperson as the replicate. Sixty four stockpeople participated although some missing data resulted in varying sample sizes for the analyses. Data were first standardized within each species to remove the effects of the species-specific units of measurement of each variable. Data were analyzed by a 3 (species) by 2 (treatment group) analysis of covariance with the post training score as the dependent variable and the pre training score as the covariate. There was a significant increase in positive general attitude ($F_{1,57}=4.77$, $p<0.05$) and in positive behavioural attitude towards animals under care ($F_{1,57}=7.03$, $p<0.01$) for the trained group compared to the control group. Moreover, the percentage of positive behaviours towards animals under care increased significantly in the trained group compared to the controls ($F_{1,49}=9.48$, $p<.01$). The training tend to affect avoidance behaviour upon human approach ($F_{1,43}=3.52$, $p=.07$).

The results demonstrate that Quality Handling is a promising tool to improve the attitudes and handling behaviours of stockpeople in European livestock farming. In the field tests, the period between the training and second visit may have been too short to result in a significant effect on animal fear and behaviour.

Training packages

The training packages were finalized in 2009 and are now available for training sessions in English (pig and laying hen programmes also in Dutch; cattle program also in French and German).
The basis of each package is a computerized multi-media training program (with voice-overs, videos, animations) describing:

- How animals' fear responses to people vary between farms
- How fear of humans can affect productivity and ease of handling
- How animals perceive their environment,
- How to build a positive human-animal relationship
- How to improve and maintain handlers' attitudes and behaviour when they return to the farm.

The packages also include videos, group discussions, manuals, newsletters, and posters later sent to the trainees to put on their working place. This will allow to reactivate attitudes and behavioural changes obtained through the training process.

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Notes