

Animal perception and learning: Key aspects to ensure welfare

Maria Vilain Rørvang, Biosystems and Technology, SLU, Alnarp

Animal welfare is a broadly used term, mentioned in a wide range of contexts. In recent years, there has been a movement from not just avoiding negative animal welfare, to ensuring positive animal welfare. To safeguard future high animal welfare, knowledge on how animals perceive and interact with their environment is needed. We share the five senses with the majority of mammalian farm animals, but does this mean we can assume animals to perceive and learn from their surroundings the same way we humans do? And if not, how can we design future high welfare animal systems and management protocols that are better adapted to the animals? As research on perceptual and cognitive abilities of farm animals is strikingly sparse, there is a gap between what is known, and what we want to achieve. Hence, if we are to safeguard positive animal welfare of farm animals, we need more research on farm animal perception and learning.

In my lecture, I will guide you through the concepts of perception and learning and why these are central to understand why animals behave the way they do, and to ensure positive welfare.

It all began when I discovered that something, apparently invisible to the human eye, was affecting where cows ended up calving. The cows refrained from calving in our neatly designed calving pens, and instead all wound up calving on the same spot in a group calving pen. It turned out that birth fluids left in the bedding attracted the cows and caused this effect. This was my first encounter with the importance of the sensory apparatus of farm animals. First hand I did not attribute much weight to it, but since then I have repeatedly discovered the central role which the sensory apparatus and especially olfaction plays in the lives of our farm animals. Since then, we have studied horse and cattle olfactory abilities, and developed testing regimes adapted for these large mammals. We have also shown that horses may be able to link taste and smell, which has never been reported before. In an on-going project on olfactory abilities of pigs, we have observed and defined new behaviours not previously described in pigs which I will present during the lecture.

In connection to this, my research has also focussed on the cognitive abilities of farm animals, dating back to my MSc project on social learning (or the lack thereof) in horses. With an almost life-long career in horseback riding, I came into science with a motivation to test the vast range of theories and common sayings that persists in practical animal training. Can horses learn new behaviour from other horses? Can cows? And what happens if the demonstrator is changed from a con-specific to a human? This has led to a series of studies proving some of the leading researchers on this topic wrong, while also providing important context to the topic: should we for instance isolate stereotypic horses to avoid 'contagious' behaviour problems? Are cows less scared when kept with a calm companion? Are horses? I will try to answer these questions during my lecture, and also challenge the audience to critically reflect upon their own beliefs.

It is my goal to contribute the knowledge needed to optimize the way we keep and manage large farm animals. I aim for the knowledge we generate to help avoid misunderstandings that cause inappropriate management, and instead promote future animal housing and management routines to be animal-based and safe. Both from an animal and a human perspective.