

## **Animal breeding objectives: balancing productivity and ecological impact**

### **Summary**

On a global level, we are faced with increasing demands on natural resources from a growing population. To meet the growing demand, the food production needs to double in the coming 30 years while halving its environmental impact. Not only more and higher quality food is needed, but also renewable feed stocks for energy and other industrial uses are asked for. These developments also have implications for animal breeding. Animal breeding can help to meet the challenges by placing more emphasis on improvement of the efficiency of production, robustness of animals and quality of animal products while paying more attention to use of resources and emissions to the environment. In this presentation, I will first discuss the consequences of ecological constraints on the breeding objective. A recent study has quantified the contribution of animal breeding to reduction of greenhouse gas emissions. I will discuss three opportunities for further improvement of breeding strategies: (1) including direct or indirect measurement of emissions in selection, (2) application of genomic selection which offers the opportunity to capitalize on recent findings in animal genomics and (3) incorporating social effects in genetic evaluations of animals to improve animal and productivity. These examples show that animal breeding can help to meet future challenges.

**KEY WORDS: animal breeding, breeding objective, environmental protection, gas emissions**