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**Innovative process for developing welfare-friendly alternatives to the farrowing crate in pigs**

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Designing farrowing and lactation environment which maximize sows and piglets welfare, while maintaining economic efficiency and sustainability, is a continuous challenge in pig production. Experimental investigations have been done on alternative housing systems combining environmental enrichment and freedom of sows, with performance (piglet survival) and economic evaluation. Another way is to use an innovation approach, based on the creative Concept-Knowledge theory. This approach involves a 'funnel step' to get the novel ideas, elaborate new concepts and identify lacking knowledge, and a 'tunnel step' to develop these concepts and elaborate prototypes. This work presents the first step assuring abundance of ideas around the concepts of 'housing, sow, farrowing/lactation', and promoting a diversity of views within focus groups (breeder, ethologist, ergonomist, doctor, vet, citizen, students, ...). Three methods were used according to the focus group: (1) 'the Advance Systematic Inventive Thinking' for naïve persons; (2) brainstorming for people with limited knowledge on the subject; (3) phone interview with experts from research, livestock, education and medical area. Concepts of farrowing/lactation housing emerged from the two first focus groups and their suitability for animal welfare and livestock issues was then evaluated by experts. A lot of ideas (74) and concepts (15), and housing prototypes have emerged, that meet the principles of maintaining the mother-young bond while protecting the young, and providing enriched living areas for sow and piglets. The following steps will be to assess the feasibility (building, practicality, cost) of the prototypes through advices of experts from livestock sector and research, and to test experimentally their impact on animal welfare and performance.

**Effect of enriched housing on welfare, production and meat quality in lambs: the use of feeder ramps**

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The aim of this study was to analyse the effect of enriched housing in finishing lambs on physiological welfare indicators, production and meat quality traits. Sixty Rasa Aragonesa lambs (male, 65 days old, 17.2±0.2 kg), were divided in 2 treatments, housed indoor for 5 weeks in 6 pens (2.9×3.3 m, density 0.45 m<sup>2</sup>/lamb, 10 lambs/each, 3 replicates). Controls lambs were housed in pens that were similar to cooperative feed lots (CC) with straw or items. Enriched pens had straw as forage and bedding and a platform with ramps leading to the feed hopper. Concentrate consumption was recorded and lambs were weighed at the beginning and at the end of experiment to estimate average daily gain (ADG). Blood samples and IR temperatures were taken before slaughter and carcass and meat quality variables after slaughter. The neutrophil/lymphocyte (N/L) ratio and NEFA were significantly higher (P<0.05) in controls, indicating chronic stress. Enriched lambs had a higher ADG (+18.3%), heavier carcasses, higher fattening scores, lower values of meat pH at 24 h, higher values of meat colour (L\*, b\*, Hue) and lower texture than control lambs (P<0.05). Sensory meat quality was higher in enriched lambs, where lamb odour intensity and overall liking were also higher (P<0.05). A step-wise correlation analysis of sensory variables showed that tenderness was the most powerful parameter related with overall liking (P<0.0001). Results suggest that enriched lambs performed better and adapted better to the CC. Their enhanced performance was related to improved instrumental and sensory meat quality, confirming the importance of housing enrichment as a critical aspect to improve animal welfare. The study could be useful in developing animal welfare standards for sheep in the EU.