

What makes outdoor runs clean and attractive for pigs?

Outdoor access for organic pigs shall be enriching for animals and harmless to the environment. But how to design concrete outdoor runs that ensure natural behaviour, animal health and reduce pen soiling leading to ammonia emissions?

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Pigs in a rooting area filled with wood chips and bordered by high partitions. Photo by: Thomsen/Center for Frilandsdyr

Ingredients for an attractive pen

How pigs use their housing environment including outdoor areas depends on manifold pen characteristics including floor type, degree of protection from weather and allocation of resources such as feeders, drinkers and exploratory material. A soft straw bed for resting in a dim indoor area, a rooting area filled with soil-like substrate, a rack with tasty roughage to explore and eat, access to different microclimates including shade and sun, cooling facilities (e.g. showers) and a toilet area away from the resting area — these are some of the ingredients for an attractive pen. Pigs following their natural behaviour choose “functional areas” for resting, activity and elimination, thereby minimising the surface soiled with excreta. This is not only advantageous with regard to hygiene and animal welfare but also necessary to reduce ammonia emissions which increase, when faeces and urine mix and cover large areas of the outdoor run.



A rack with grass silage in the outdoor run allows exploration of edibles throughout the day. Photo by: Wimmmler/BOKU

Three innovations — three countries — one approach

Aiming for animal and environmentally friendly outdoor runs for organic growing-finishing pigs, we identified, based on scientific research and practitioners’ experiences, three innovations to improve the design of concrete outdoor runs. These were experimentally tested on commercial organic farms in Denmark, Austria and Switzerland (2019—2021) using the same welfare and soiling outcome parameters.

1) Rooting areas — Colleagues from Denmark investigated the suitability of different rooting materials by comparing wood chips with soil-like material (ongoing analysis). In Switzerland, mixing feed pellets into the compost-filled rooting area showed no effect on rooting behaviour and soiling of outdoor runs. Overall, there were more pigs in the rooting areas with feed mixed in, but interestingly, they were mainly lying there.

2) Location and novelty of roughage in racks — Experiments on four farms in Denmark and Austria explored the effect of rack position (indoor or in the outdoor run) on pig behaviour, use of the roughage (hay or silage) and soiling of the pen. Additionally, the novelty value of alternating roughage types was studied in Denmark by changing between clover-grass and whole-seed barley-pea silage (ongoing analysis).



Showers in the outdoor run are easy to implement and effective to reduce heat stress. Photo by: Holinger/FiBL

3) Showers to mitigate heat stress — Showers provided in outdoor runs of four organic farms in Austria and Switzerland were tested for their effectiveness to reduce heat stress. Moreover, we compared different shower durations (10 minutes and 30 minutes per hour) to determine appropriate schedules for shower operation (ongoing analysis). The showers proved to reduce skin surface temperature and lateral lying, which is an indicator of heat stress. In addition, soiling of pigs and pen tended to be lower in pens with showers in the outdoor run.

With this multi-centre approach, we want to provide valid and relevant results for practice and conduct applied research responding to and working with farmers.

Relevant links

Project website: <https://projects.au.dk/coreorganiccofund/core-organic-cofund-projects/power/>

Transdisciplinary approach to improve concrete outdoor runs for organic pigs: Identification of innovations: <https://orgprints.org/id/eprint/38459/>

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