

# Improved concrete outdoor runs in housing systems for growing-finishing pigs roughage in a rack – how to do it?

## Description

The provision of roughage is an important aspect of organic pig production. The organic legislation requires possibilities for rooting in the open-air area, which can be met by providing roughage in the outdoor run.

Provision on the floor is easy to implement and corresponds to the pigs' natural behaviour of rooting the ground. However, it is easily soiled, and therefore requires frequent cleaning. Considerable quantities are wasted. Therefore, there is a trade-off between high animal welfare, appropriate pen hygiene and acceptable workload for the farmer.

A solution can be the provision of roughage in a rack, which remains clean and is also well accepted by pigs. Racks provided daily with fresh roughage in the outdoor run increase exploratory behaviour and motivate pigs to go outdoors.

## Legislation

- EU organic Regulation 2018/848 stipulates that: "Exercise areas shall permit dunging and rooting by porcine animals. For the purposes of rooting, different substrates may be used."
- Possible rooting materials include straw, hay, silage and fresh grass, leaves and soil, as well as wood chips, sawdust and other substrates specified by national authorities or private agreements.

## Applicability box

### Theme

Pigs

### Farm Type

Indoor housing with outdoor run

### Production stage

All stages of pig production

### Welfare Environment Cost



## Relevance for animal welfare

Outdoor runs are more attractive for pigs when roughage is provided there. Moreover, pigs visit the racks more frequently and use more of the roughage, when racks are positioned in the outdoor run, away from the indoor feeding and lying area.

Provided that accessibility is good, roughage reduces aggression and abnormal behaviour such as tail biting. However, if pigs cannot feed at the rack simultaneously, aggression can increase due to competition. Variation of roughage types may increase attractiveness for pigs. However, the freshness of roughage and daily provision are most important.

The cutting length of roughage should be adapted to the space between the bars of the rack so that the pigs can pull out the roughage. Following their natural feeding behaviour, pigs prefer eating and exploring roughage on the floor. Therefore, a trough underneath the rack enables rooting while minimising losses.



Racks provided with high quality grass-silage in the outdoor run motivate pigs to go outdoors and perform exploratory and food-related behaviour. Free-standing racks in the outdoor run provide better access in large groups.

## Relevance for environmental impact

- Roughage can help to structure and enrich the outdoor run by providing an additional resource. As pigs usually eliminate away from their feed, they avoid elimination around the roughage. This can help to limit the surface soiled with faeces and urine and, consequently, lower the risk for ammonia emissions.
- Attention must be paid on excessive wastage of roughage resulting in decreased pen hygiene and considerable nutrient loss.

## Cost and labour

- The costs for racks range between € 20-80 (small, mounted on a wall) and € 100-600 (large, free-standing), depending on size, quality and country.
- The racks should be easily accessible for the farmer, ideally with e.g., a tractor or mini loader. Therefore they are best positioned at the rear end of the outdoor run, but away from the area intended for elimination.
- Daily refilling of the rack is more labour intensive but advisable concerning the attractiveness for pigs.
- To avoid wastage and soiling around the rack, the spacing between the bars should be adjusted to the cutting length of roughage: not too wide to prevent roughage dropping out, but wide enough so that the pigs can pull the roughage out.

## Recommendations/requirements

- **Position of the racks:** Accessibility is crucial (!) to prevent competition amongst the pigs and to minimise the workload for the farmer.
- **Type of racks depends on group size:** Single racks mounted on the wall are practical and suitable for smaller groups. Larger free-standing racks are accessible from all around and offer more space which is important, especially for large groups.
- **Rack-space per pig:** Sufficient rack-space per pig is important to increase exploration and avoid competition: A minimum of 5.5-7.0 cm/pig is recommended to reduce aggressive behaviour at the rack; this is e.g., one rack with 55-70 cm width for 10-12 pigs.
- **Installation height:** Racks should be installed low enough so that pigs can easily reach them (approx. 30 cm above ground, depending on the size of pigs).
- **Waste reduction:** A trough underneath the rack can reduce wastage and soiling of roughage while allowing pigs to root.
- **Space between bars:** Bar spacing should be adjusted to the type/cutting length of roughage: about 40 mm distance between bars for short roughage (<15 cm) and 70 mm for long roughage (>15 cm).
- **Not in elimination area:** The racks should not be positioned in the elimination area as roughage soils quickly when on the floor. Moreover, pigs are very clean animals preferring eating away from their toilet. Thus locating the rack directly in the elimination area, may motivate pigs to eliminate in other areas of the pen.
- **Rain protection:** The rack can be covered or positioned in the roofed part of the outdoor run to protect roughage from rain and moisture.



Troughs underneath the rack reduce wastage and allow the pigs to root in the material, spilled from the racks.





In the un-roofed outdoor run, racks should be covered. Short cutting length of the roughage (<15 cm) requires a small distance between the bars of the rack (e.g., 40 mm).

## Further information

- **Jensen M.B. et al. (2010):** The effect of type of rooting material and space allowance on exploration and abnormal behaviour in growing pigs. *Applied Animal Behaviour Science* 123, pp. 87–92 [Link].
- **Studnitz M. et al. (2007):** Why do pigs root and in what will they root? A review on the exploratory behaviour of pigs in relation to environmental enrichment. *Applied Animal Behaviour Science* 107, pp. 183–197 [Link].
- **Wimmler et al. (2022):** Improved concrete outdoor runs in housing systems for growing-finishing pigs: benefits of roughage as nutritive enrichment. In: Früh et al. (2022): *Welfare and environmental impact of organic pig production*, A collection of factsheets, Research Institute of Organic Agriculture FiBL, Frick. Available at [shop.fibl.org](https://shop.fibl.org), publication No. 1300, Chapter no. 1.2, pp. 13–16 [Link].
- **Zwicker B. et al. (2012):** Influence of the accessibility of straw in racks on exploratory behaviour in finishing pigs. *Livestock Science Livestock Science* 148, pp. 67–73 [Link].

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