

Improved concrete outdoor runs in housing systems for growing-finishing pigs: general information and legislation

Description

Access to an open-air area is an important part of organic pig production in Europe. It provides an area devoted to satisfying the pigs' need to explore their environment and strengthen their immune system. In many parts of Europe, this requirement is fulfilled by indoor housing systems with access to a concrete outdoor run, especially for growing-finishing pigs but also for sows.

The advantages of this housing system, as compared to free range, are the prevention of nutrient leaching to the soil, higher mechanisation/automation of feeding and manure removal and improved feed conversion in growing-finishing pigs. However, depending on the design, these runs can be very barren, making them unattractive to the pigs resulting in limited use. In addition, large areas soiled with faeces and urine in the outdoor run can result in high ammonia emissions.

Following their natural behaviour, pigs use different, so-called functional areas for resting, exploring, eating, and elimination. Therefore, an outdoor run's design that accounts for and supports this behaviour is important for a well-functioning housing system in terms of animal welfare, workload and the environment.

Applicability box

Theme

Pigs

Farm type

Indoor housing with outdoor run

Production stage

All stages of pig production

Every measure and tool introduced will be scored according to its impact on animal welfare, CO₂ + NH₃ emissions and finances.



welfare: **no or little** impact



welfare: **positive** impact



welfare: **high positive** impact



environment: **no or little** impact



environment: **positive** impact



environment: **high positive** impact



low costs



medium costs



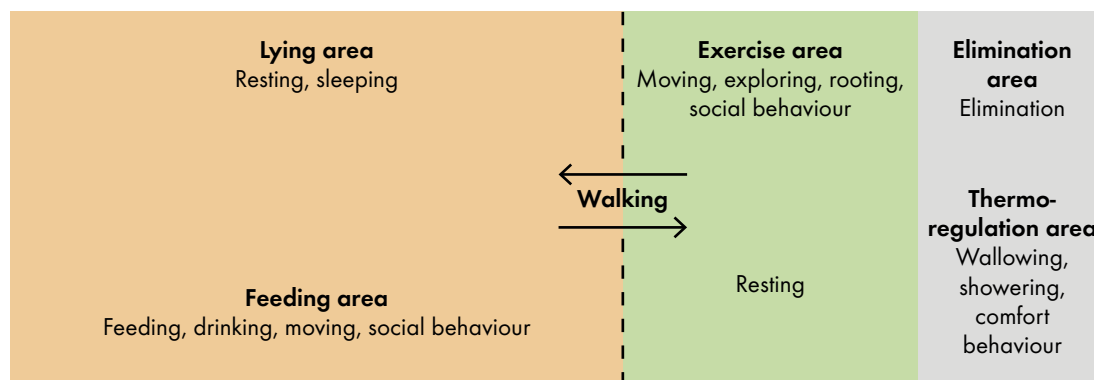
high costs

Table 1: Functional areas and corresponding behaviours in indoor and outdoor areas

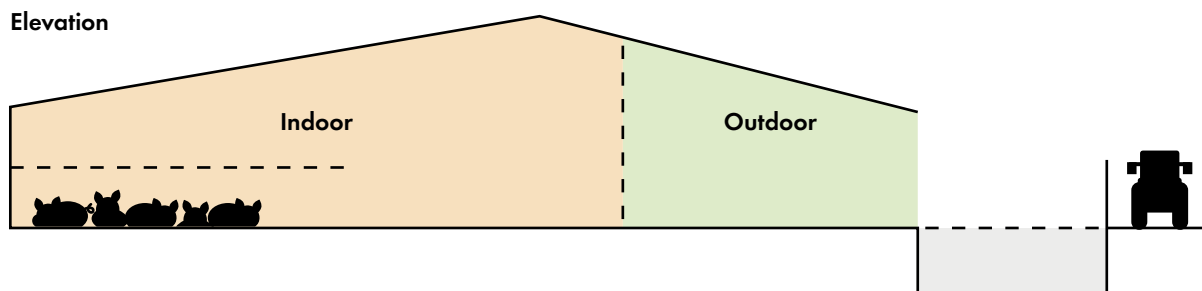
| | Indoor | Indoor or outdoor | Outdoor | | |
|-----------------|--|---|---|--|---|
| Functional area | Lying area | Feeding /drinking area | Exercise /rooting area | Thermoregulation /comfort area | Elimination area |
| Behaviour | <ul style="list-style-type: none"> Resting Sleeping Farrowing Suckling | <ul style="list-style-type: none"> Feeding Drinking Moving Affiliative and agonistic social behaviour | <ul style="list-style-type: none"> Moving Exploring Rooting Resting Affiliative and agonistic social behaviour | <ul style="list-style-type: none"> Thermoregulation (wallowing, showers) Comfort behaviour | <ul style="list-style-type: none"> Elimination |

Illustration 1: Schematic layout of a housing system with an outdoor run for growing-finishing pigs

Floorplan



Elevation



A well-designed outdoor run enables pigs to separate functional areas. Resting and feeding is located indoors. The roofed part of the outdoor run provides space for resting, social behaviour, exploration and rooting. The elimination area, drinkers and cooling facilities are located in the non-roofed, slatted floor area. Source: adapted from an illustration by Herman Vermeer (WUR, NL) in Wimmeler et al. 2022.

Legislation

- EU organic Regulations 2018/848 and EU 2020/464 stipulate that all livestock shall have “permanent access to open-air areas that allow the animals to exercise” to “enhance the immune system and strengthen the natural defence against diseases”. For pigs, it is additionally specified that “exercise areas shall permit dunging and rooting”.
- Minimum surface requirements (m²/pig) for the indoor and outdoor area depend on the age and sex of pigs, as well as on the breeding cycle. (Regulation EU 2020/464; Swiss Ordinance on organic farming SR 910.181).
- The outdoor run may be partially covered. Depending on the national regulations, a maximum of 50-75 % cover of the required outdoor surface area is allowed.
- At least half of the minimum surface of the outdoor run must be solid floor.
- The outdoor run shall provide means for the regulation of body temperature.

- National regulations and private organic standards specify these (e.g. rooting materials to be used, means for thermal regulation) or specify additional requirements (e.g. access to pasture, prohibition of a slatted floor, characteristics of pen partitions).
- Further information can be found in table 2, page 3 and in Wimmeler et al. (2022).

Relevance for animal welfare

- To allow species-specific rooting behaviour, it is crucial to provide sufficient and suitable material like straw, roughage, or compost in the outdoor run. These materials can be supplied in a defined rooting area, easily accessible racks or simply on the floor. Providing possibilities for exploration and rooting allows pigs to satisfy their natural behaviour and prevents abnormal behaviour such as tail biting.

Table 2: EU organic regulations, national regulations and private standards concerning concrete outdoor runs for organic growing-finishing pigs

| |
|---|
| Outdoor access |
| <p>EU: Permanent access to open-air areas, preferably pasture, whenever weather, seasonal and soil conditions allow. These areas shall be attractive for pigs and provide an outdoor climate.</p> <p>NL: Floor condition cannot be a reason to limit outdoor access.</p> <p>CH: Daily access for several hours.</p> <p>Bio Suisse (CH): Outdoor access must be permanent.</p> <p>Soil Association (UK): Permanent access to pasture or vegetated range.</p> <p>KRAV Association (SE): Possibility for grazing during the appropriate part of the year (i.e. not always required for each individual, if lifespan is shorter than a year).</p> <p>Demeter International: Free contact with natural surroundings (sun, rain, natural soil).</p> |
| Space requirements for outdoor runs |
| <p>EU: Minimal surface/pig: ≤ 50 kg = 0.6 m², ≤ 85 kg = 0.8 m², ≤ 110 kg = 1.0 m², > 110 kg = 1.2 m², (equals 43 % of minimum pen area).</p> <p>CH: Minimal surface/pig: 25–60 kg = 0.45 m², 60–110 kg = 0.65 m².</p> <p>Industry agreement (DK): Minimal total outdoor surface/pen: 10 m² (≤ 40 kg) & 20 m² (finishing pigs).</p> <p>Bio Suisse (CH): Minimal surface/pen: 25–60 kg = 7 m², 60–110 kg = 10 m²</p> <p>FederBio (IT): The outdoor run must have the same surface as the minimum indoor area.</p> |
| Roof |
| <p>EU: Open-air areas may be partially covered. Maximum of covered surface (% of minimal outdoor area).</p> <p>NL, SE: 75%. AT: 50–90% (depending on year of construction, animal category and precipitation). DE: 50–90 % (varying between Federal States). CH, DK: 50%</p> <p>Bio Suisse (CH): Minimal open (not covered) surface: 0.23 m²/pig (25–60 kg), 0.33 m²/pig (60–110 kg).</p> |
| Floor |
| <p>EU: At least half of the minimal surface of both the indoor area and the outdoor run shall be solid floor.</p> <p>DE: Slatted floors are not permitted in the outdoor run.</p> <p>FederBio (IT), Bio Cohérence (FR): Slatted floor is not permitted indoors and outdoors.</p> |
| Enrichment |
| <p>EU: The exercise area shall permit rooting. Roughage, fresh or dried fodder, or silage shall be added to the daily ration. Possible substrates:</p> <p>AT: Loose organic material on the floor (e.g. straw, hay, leaves, sawdust, spelt husks) or roughage on the floor or in a rack. DK: Straw, soil, silage, green fodder and others. FR: Straw, earth or others. Silage may be used as rooting material, but its provision only in a trough is not sufficient. SE: Straw, peat, bark, sand/earth or silage. Soil Association (UK): Natural materials e.g. bean haulm, bracken or rushes, sawdust and wood shavings, sand and non-organic straw. You must not use peat. Prüf Nach! / Zurück-zum-Ursprung (AT): At least two different types of rooting material must be provided regularly.</p> |
| Thermoregulation |
| <p>EU: Access to shelters and means allowing regulation of body temperature.</p> <p>CH: Access to cooling (e.g. air cooling, floor cooling, showers or wallows) for pigs ≥ 25 kg when temperatures exceed 25 °C. For cooling, all pigs (except lactating sows with piglets) must have a shower or wallow available</p> <p>SE: During the warm season, pigs kept outdoors should have access to a wallow.</p> <p>Dyrenes Beskyttelse (DK): Access to a mud bath (wallow) or sprinkler for pigs > 20 kg when average daily temperatures exceed 15 °C. Soil Association (UK): Wallows and/or shade during summer.</p> |
| Pen partitions |
| <p>EU: No specifications. NL: At least 4 m unobstructed view from the rear end of the outdoor run. The lower 50 cm of the partition may be solid. FR: Pen partitions of the outdoor run limited to the height strictly necessary to restrain animals in the pen. A fully covered area with three solid walls cannot be considered as an outdoor run. Industry agreement (DK): Ensured view; the front fence should be open from a height of 60 cm. Minimum 10 m between buildings.</p> |

Austria (AT), Denmark (DK), France (FR), Germany (DE), Italy (IT), Netherlands (NL), Sweden (SE), Switzerland (CH) United Kingdom (UK)
Source: (Wimmler et al., 2022).

- The outdoor run offers the pigs different climatic stimuli around the year and allows the animals to choose between different micro-climatic zones.
- Increasing summer temperatures require possibilities for cooling in the outdoor run. Therefore shade should be provided, and showers or sprinklers should be installed. An opportunity to scrub, e.g. on brushes, makes the outdoor run even more attractive.

Relevance for environmental impact

- Since pigs separate their elimination area from other activities, the design of the outdoor run can influence their elimination behaviour to a certain extent. By adding resources, such as rooting areas or roughage, to the outdoor run, elimination behaviour is directed to a designated, limited area. This reduces the total area soiled with manure and associated ammonia emissions in the outdoor run.
- Regular and frequent cleaning of the elimination area is crucial to reduce ammonia emissions.
- Outdoor runs that allow pigs to regulate their body temperature, e.g., with showers or sprinklers, improve thermal comfort. This increases efficiency through improved pen cleanliness, higher weight gain in growing-finishing pigs, and improved reproductive performance in sows.

Further information

- **Bio Suisse (2021):** Standards for the production, processing and trade of “Bud” products. At: www.bioaktuell.ch [Link].
- **EAER (1997):** EAER Ordinance on organic farming SR 910.181 of 22 September 1997 of the Federal de-partement of economic affairs, education and research (EAER). At: www.fedlex.admin.ch [Link].
- **EU (2018):** Regulation (EU) 2018/848 on organic production and labelling of organic products. At: eur-lex.europa.eu [Link].
- **EU (2020):** Commission Implementing Regulation (EU) 2020/464 of 26 March 2020 laying down certain rules for the application of Regulation (EU) 2018/848. At: eur-lex.europa.eu [Link].



Straw bedding can be provided in the roofed part of the outdoor run. The elimination area is located in the non-roofed part.

- **Früh B. et al. (2021):** Stable measurements 2021 livestock housing in organic farming in Switzerland. Research Institute of Organic Agriculture FiBL, Frick. Available in German at: www.fibl.org, publication No. 1153 [Link].
- **Wimmler C. et al. (2022):** Review: Concrete outdoor runs for organic growing-finishing pigs – A legislative, ethological and environmental perspective. Animal 16, 100435 [Link].

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