

Housing with an Exercise Area for Sows with Piglets

Particularly animal-friendly alternatives to the housing of sows with piglets in farrowing crates where the animals are fixed in a crate stall, which is common in Europe, now exist. These alternative housing techniques, which fully meet the requirements of the EU eco-directive 1804/99, provide the sows with the possibility of free motion as well as an additional exercise area. In order to be able to compare the different approaches, they are characterized and evaluated systematically based on a benefit analysis.

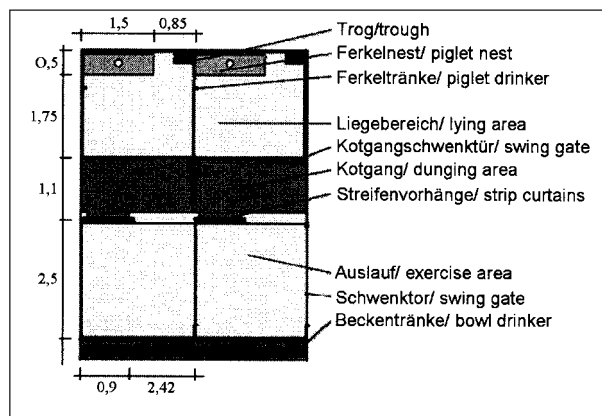


Fig. 1: Ground plan of the modified FAT 2 - pen with exercise area ([10], modified)

In Europe, sows with piglets are mainly kept in litterless housing systems, where they are permanently fixed [1]. Due to production-technological and economic advantages as well as better labour management, these systems have established themselves. However, several experts believe that these housing systems will neither be necessary nor permitted by the legislator in the medium run [2] because, first, newly developed housing systems can quite well compete with the crate stall [3; 4] with regard to losses and, second, the lack of exercise in crate stalls causes problems which have a negative impact on animal performance. Thus, sows which give birth in crate stalls need more time for birth [5] and have lower weaning weights [6] as well as a higher MMA risk. In

addition, they are more susceptible to damage to the foundation and constipation than animals from motion pens [7]. The growing number of farms which produce according to the EU eco-directives or within some brand meat programmes also need housing systems which provide the possibility of free motion.

Often, additional require-

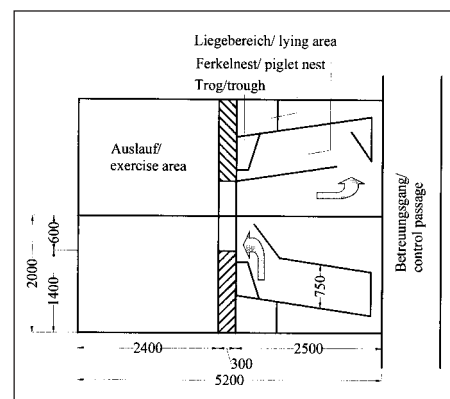


Fig. 2: Ground plan of the Liebhardt - pen

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Keywords

Sow housing, farrowing crate, exercise area, motion pen, benefit analysis

Literature

Literature references can be called up under LT05404 via internet <http://www.landwirtschaftsverlag.com/landtech/local/literatur.htm>.

Table 1: Characteristics of the farrowing systems for loose kept sows with exercise area

Criterion	FAT 2 with exercise area	Heku-Pen	Liebhardt-Pen	Schweitzer-Pen
Required area(m ²)	14,4	14,4	10,7	13,2
Exercise area (m ²)	6	6	5,2	5
Stall shell	temp.-insulated/ non-insulated	temp.-insulated/ non-insulated	temp.-insulated	non-insulated
Fixing-possible	No	Yes	Yes	No
Litter	Yes	Yes	Yes	Yes
Demanuring	mobil	mobil	mobil	mobil
Lying area sow	paved	paved	paved	paved
Heating	infrared lamp	infrared lamp	infrared lamp	infrared lamp
Piglet nest				
Crushing protection	No	No	Yes	Yes
Arrangement piglet nest	near passage	near passage	on the wall	near passage

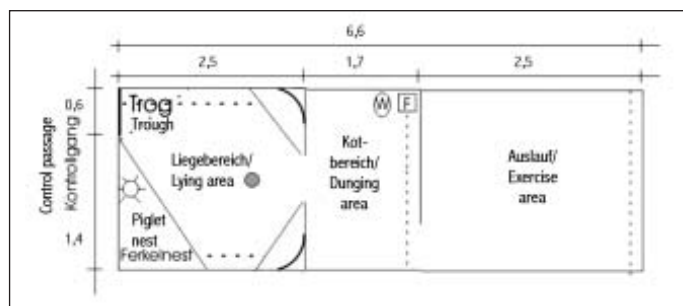


Fig. 3: Ground plan of the Schweitzer-pen ([11], modified)

ments, such as litter and an exercise area, must be fulfilled. The EU eco-directive 1804/99, for example, requires that every sow must have at least 7.5 m² of stall- and 2.5 m² of exercise area. In addition, dry litter must be available in the lying area, and the floor may not be perforated there. Of the total floor area, no more than 50% may be perforated. For this reason, an overview of housing techniques with an exercise area for sows with pigs will be given below, and the techniques will be assessed and evaluated in a benefit analysis.

Housing Systems with the Possibility of Free Motion and an Exercise Area

The fundamental characteristic of a farrowing pen without fixing is the structuring of the pen into different functional areas [3]. Therefore, the area requirements of these systems are generally greater [6]. In systems with an exercise area, the heated piglet area and the sow's pen with the dunging- and lying area are generally situated in a closed, often temperature-insulated stall shell, whereas the exercise area is located in the adjacent outdoor area. The exercise areas can be paved or unpaved. They are separated from the interior of the stall by strip curtains. For the piglet nests, mainly radiation heating and in some cases floor heating are used as heat sources. Another significant criterion for a

particularly animal-friendly farrowing pen is the use of straw [3], which has a positive effect on the behaviour of the sow [8]. In addition, the sow and the piglets need straw for thermoregulation particularly in cold stalls and at low temperatures [7].

Farrowing Pen FAT 2 with an Exercise Area

The pen is divided into four parts: piglet nest, lying area, dunging area, and exercise area. The individual areas are arranged one behind the other with the piglet nest facing the care passage. The lying area of the piglets is 0.9 m² and covered. An infrared heating lamp is generally used as a heat source. The walls in the lying area are closed in order to entice the sow to farrow in this area. The walls in the dung area consist of grating doors through which the animal caretaker reaches the next pen for demanuring. The lying area is large enough for the sow to be able to turn around [4]. Through an opening in the outer wall, the sow can get to the exercise area. Species-specific behaviour is intended to largely prevent piglet losses [9] and thus render technical protection against crushing unnecessary. The lying area is littered, and the dung area can be perforated or paved. Due to the litter, the pen is suitable for both temperature-insulated and non-insulated stalls [3]. The sow cannot be fixed. The pen (Fig. 1) is a variant where pen width and the design of the exercise area have been slightly modified [10].

The Heku Pen

is an improved version of a Danish farrowing pen. It is similar to the FAT 2 pen with an exercise area. It features identical measurements and functional areas. In contrast to the FAT 2 pen, however, it has a square piglet nest and a swivelling bar which allows the sow to be temporarily fixed in front of the trough.

The Liebhardt Pen

is based on a crate stall (0.75 m wide) which the sow can leave on its own. For this purpose, a flap is installed in the rear area through which the sow reaches the lying area (Fig. 2). When the sow wants to leave the stall, it opens the front flap and thus gets to the exercise area. The flaps can be locked in order to fix the sow in the stall. The dung area is situated in the exercise area. The floors in the stall and the exercise area are paved. The outdoor area is demanured with the aid of a farmyard tractor. For this purpose, the pen partitions are folded down. The trough with the drinker and the piglet nest are mounted to the wall. The piglet nest is heated by an infrared lamp. However, other heat sources can be used as well.

Schweitzer Pen

Here, the piglet nest, the sow's lying area, and the dung area are located in the stall building (Fig. 3). The exercise area is roof-covered and paved. For demanuring, the partitions in the outdoor area are folded down. The piglet nest as well as the dung- and lying area in the interior are also paved. The dung area is separated from the lying area by a boarded partition with an opening. A vertical metal pipe, which is approximately 1.2 m tall and stands in the middle of the lying area, is intended to prevent crushing losses. In addition, the corners of the lying areas are boarded up so that the sow cannot lie down there. These constructions are attached about 20 cm above the floor and serve as a shelter for the piglets when the sow lies down. Additional guards are mounted to the side walls. The trough is located in the sow's lying area and is visible from the control passage. The piglet nest consists of a partitioned-off corner near the care passage and is heated by an infrared lamp. The sow cannot be fixed. The piglet nest and the sow's lying area are littered.

Benefit Analysis

In order to allow the described techniques to be compared, they were examined and evaluated in a benefit analysis (Table 2) using the individual parameters. For evaluation, the techniques were classified + (good), 0 (average), and - (less good).

Conclusions

According to the benefit analysis, each housing system has individual advantages and disadvantages. Since the advantages and drawbacks of the individual systems do not vary substantially, no general recommendations can be given. Thus, every farmer must find his system.

Table 2: Farrowing systems for loose kept sows with exercise area

Criterion	FAT 2 with exercise area	Heku-Pen	Liebhardt-Pen	Schweitzer-Pen
Required area	-	-	+	-
Fixing possible	-	+	+	-
Demanuring	+	+	+	+
Separation of functional areas	0	0	+	0
Costs of stall shell	+	+	-	+
Litter	+	+	+	+
Overview of pen	-	-	0	-
Arrangement piglet nests	+	+	-	+
Overview of piglet nest	0	0	+	-
Meets EU criteria	possible ¹	Yes	possible ¹	possible ¹

¹ under the condition that part of the exercise area is roof-covered