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Feeding group-held pregnant sows with the „Belados“ electronic feeder

Where pregnant sows are run in groups the aggressiveness of the sows means feeding may lead to problems where there's limited animal/feeding space ratio. With a „Belados“ feeding system, the sows are fed individually with liquid feed at a trough where they are electronically identified. In a facility with eight feed stations the behaviour of a sow group and the functional reliability and practicality of the „Belados“ system was investigated and proved suitable for feeding loose-housed pregnant sows. Young and old sows should be kept separate. High demands are made on management.

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Keywords

Pregnant sows, „Belados“ feeding system, group keeping

Changing from individual confinement to group housing of pregnant sows is currently at the top of the list in building modernisation measures. One reason is the contents of Directive 2001/188/EG of the Council from 23. 10. 2001 on minimum requirements in protection of pigs which requires group housing for sows and gilts from four weeks after serving. In that pregnant sows generally have to have their feed rationed, loose housing can cause difficulties through competition where animal: feeding space ratio is limited. With a gateless „Belados“ feeding system, a single station can supply 30 sows with liquid feed in individual portions. The volume of the feed is aimed at giving the sows a sufficient „full“ sensation and thus having a prolonged effect on reducing competition at the trough.

Working mode of the feeding station

The feeding system comprises mixing container with feed and water supply and frequency controlled mixer, membrane pump for feed rationing and gateless feeding station with individual animal recognition ring antennae which is situated in the bricked side-wall of the trough.

The feed is prepared in the mixing container in small proportions in a ratio of 1 (feed) to 3 (water) giving a feed dry matter (dm) of 15 to 20%. Where a sow is entitled to feed, 330 cm³ feed is conveyed by pipeline to the feeding station (fig. 1) for the pig. The trough

lid is opened. After 35 to 45 seconds the animal, when entitled, receives the next portion. If she is forced away from the trough an alarm sounds, the trough lid closes immediately and remains shut for 25 seconds. When sows without feed entitlement approach, the trough lid closes for 20 secs. before opening again. According to the manufacturer, from 25 to 30 sows can be fed from a single feeding station.

The following investigation was to determine the behaviour of the sows at the trough and the functionality of the feeding system.

Materials and method

The investigation was conducted in pregnant sow housing equipped with eight „Belados“ stations between August 2001 and January 2002. Each group pen held 25 to 28 sows from their 31st to 108th pregnancy day. Figure 2 shows the group pen design. One sow group (23 old sows and four young sows) was observed over the whole period. The sow feed had an energy content of 11.4 MJ and comprised broken pellets.

The following parameters were investigated:

- animal behaviour at the trough (video filming over the first 24 hours than every 14 days) according to factors length and frequency of feeding times, per sow and in total; crowding-out at the trough, occupation time of the trough
- injuries and weight gain of sows
- working reliability of the feeding station including pig identification system
- practicality of the feeding system.

The sows were fed according to a pre-determined feeding curve. On the first day all sows had unlimited access to the station and its feed so that they could get used to the system. Afterwards feed intake was limited according to feeding curve.

Results

Animal behaviour

In total, the sow groups gave the impression of being very quiet. It is only with difficulty that any feeding problems can be recognised



Fig. 1: No-gate transponder feeding station.

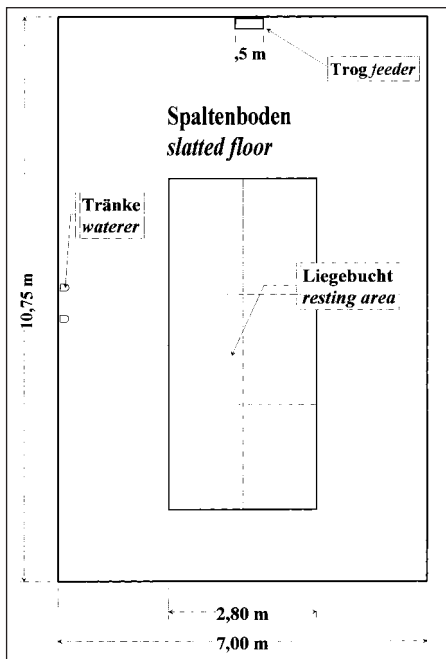


Fig. 2: Ground plan of group pen for pregnant sows.

through control walks through the unit. Careful observation of all sows is required and this applies especially for those loose-housed in large groups.

The sows learned to feed at the stations without problems. Individually, they visited the feeding station seven to 13 times daily. The range of daily visits ran from 0 to 37. On average, only with about 50% of the visits was feed actually consumed, the remainder of the visits were split between crowding-out stopping the feeding action and visits without feed entitlement. Total feeding periods lay between 18 and 25 minutes per sow and day. Dominant sows consumed their feed in one to three visits, young sows were often crowded-out and required over 15 station visits to get the whole of their rations. An overview of station occupancy according to activities over 24 hours is shown in figure 3. Dominant sows started feeding right after feeding begins. Crowding-out took place most often between 3 pm and 10 pm. From 8 am hardly any sows had feed entitlement remaining and the station was unoccupied. The number of crowding-outs lessened towards the end of the pregnancy because the individual rations are increased. The sows were reliably identified at the trough. With very large sows the ear transponder could remain outside of the ring antennae. This meant the sows were not identified, the trough lid remained open and they could then „steal“ feed from small sows. They learned this very quickly. The continuously open trough lid stimulated the sows without feed entitlement

to stay on at the trough thus blocking entry for other sows with feed entitlement. Because of the possibility of being crowded-out the sows consumed their feed rapidly.

Injuries and weight gain

Through competition at the feed station, six sows had bite scars on their shoulders and with another six sows there were injuries to the front legs. Dominant sows bite in the shoulder-throat area, lower rank ones in the front legs or flanks. Individual large sows gained weight over-proportionately through „stealing feed“. Stricter restrictions of the larger sows led to increased aggression.

Reliability of the station

The feed mixer functioned without problem. The feed dry matter lay between 17 and 25%. The closure valve on the mixed feed delivery did not always seal completely and this led to gumming up. Feed mineral components, mainly calcium, remained in the station feed pipeline. The mineral material mix was too rough and through this the pump membrane was also damaged. After a change in feed, these problems no longer occurred. The free flow of feed into the trough must therefore always be kept an eye on.

Practicality

The entry of feed and sow data is simple and logical. Overall control needs to be improved. The identification „reader“ simplified identification of sows which had not fed. Now and again the feed mixer and the trough had to be cleaned because feed stuck to the materials. In this case technical changes are required.

Summary

Pregnant sows housed in groups can be fed with the „Belados“ system. There's no requirement for the sows to be trained to use the station. They should be fed ad lib during the first three days and then rationed. Technically, the feeding station operated reliably and mainly without breakdowns. Only sow feed suitable for liquid feeding can be used. Young sows should be kept in a separate group. The sows had enough time for feeding so that 30 sows can be catered for per feeding station. Play material supply is recommended to attract animals' attention away from the trough. The trough lid must only be openable by sows with feed entitlement. High demands are made on the practicality of the feeding system. Technical further developments should be aimed at improving the trough hygiene and reducing the danger of crowding-out at the trough.

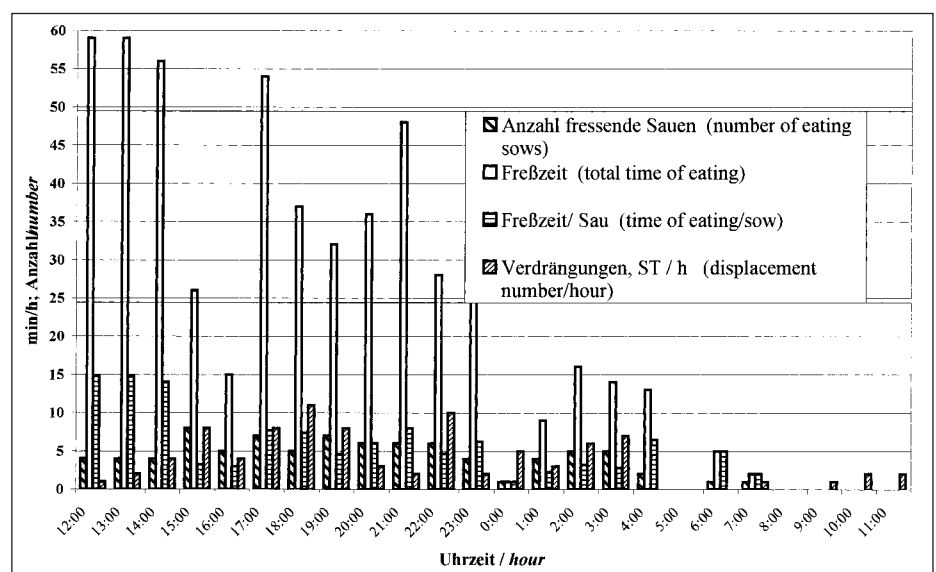


Fig. 3: Feeding behaviour of the sows over 24 hours.