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Group formation in pregnant sows

Dependence upon herd size, production cycle and nursing period

The problem of transition from single- to group housing of pregnant sows can only be solved in connection with the choice of feeding technique. In addition, herd size, production cycle, and nursing period influence group formation. From the viewpoint of animal behaviour, the formation of large, stable sow groups provides the greatest advantages. In smaller herds, the rotating large group offers itself. A stable small group can also be assessed positively. In principle, a small, changing sow group is unacceptable because constant fights occur in such groups. The advantages and disadvantages of the individual solutions are discussed.

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Keywords

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Current legislation requires group housing after four weeks of pregnancy until one week before farrowing. This results in group housing lasting at least 84 days. The advantage of this schedule resides in the fact that pregnancy can be reliably proven. In principle, earlier group formation is possible, of course. However, this leads to a larger number of sows in the waiting area.

Determination of Group Size

The number of pregnant sows per pregnancy group is dependent upon the herd size, the production cycle and the nursing period. For reasons of work organization, a seven-day production cycle or one which can be divided by 7 with an integer as a result, i.e. a production cycle of 14, 21, 28, or 35 days, has proven itself.

A production cycle of 21 and 28 to 35 days is suitable for smaller sow herds because larger piglet litters per age group are farrowed. At a nursing period of 28 and a production cycle of 35 days, there is only one farrowing unit. However, it must be guaranteed that the labour peaks – farrowing, insemination – can be dealt with. The larger the herd, the shorter the chosen production cycle may be. The interval between the litters (non-pregnant time + gestation period + nursing period) must also be able to be divided by the production cycle with an integer as a result. Therefore, nursing periods of 21 or 28 days are not suitable for every production cycle. *Table 1* contains the total number of pregnant sows and the number per group for a herd size of 120, 450, and 700 productive sows. However, this is not yet sufficient for sow grouping. Primiparous sows and some of the sows after having their first litter cannot assert themselves in the group. They should be kept in a separate group. This causes the number of sows per group to diminish again (*table 2*).

Group Formation and Group Size

In principle, both large and small groups can be formed. Large groups (more than 20 sows/group) have the advantage that the group pens can easily be divided into resting-, eating- and activity areas, which conforms to the pigs' behaviour. In small groups, this is only possible to a very limited extent.

In principle, small groups should be kept as a stable group. Large groups must be handled as

- stable (or fixed) groups – sows of only one pregnancy group – or
- changing groups – rotating groups – sows at different stages of pregnancy in one group or
- dynamic groups – all pregnant sows in one group.

In changing groups, late-pregnant sows are taken out of the group according to the pro-

Table 1: Group size for pregnant sows, as a function of herd size, production cycles and nursing period

Herd size		120		450		700	
	Number of	Pregnant sows					
PC* days	groups	total**	per group	total**	per group	total**	per group
Nursing period: 21 days							
7	12	69	6	260	23	405	35
14	6	69	12	260	46	405	70
28	3	69	24	260	90	405	140
35		69	30	260	113	405	175
Nursing period: 28 days							
7	12	66	6	248	21	386	33
21	4	66	18	248	64	386	100

*Production cycle, ** Average number of pregnant sows

Table 2: Number of pregnant adult and primiparous sows as a function of herd size, production cycle and nursing period

Herd size		120		450		700	
PC* days	Groups	Adult sows	Prim. sows	Adult sows	Prim. sows	Adult sows	Prim. sows
Nursing period: 21 days							
7	12	5	1	17	6	26	9
14	6	9	3	34	12	53	18
28	3	18	6	68	23	105	36
35	3	23	7	87	26	135	41
Nursing period: 28 days							
7	12	4	2	16	6	25	9
21	4	13	5	48	17	75	26

*Production cycle

Feeding system	Animal-feeding place ratio : 1	Grouping of pregnant sows: Small Group Stable	Large Group Stable	Large Group Rotating	Large Group Dynamic
Dribble feeding	1	x			
Longitud.trough - liquid feeding	1	x	(x)		
Eating-resting pen	1	x	x		
Rationed automatic feeding	1	x	x		
Automatic dry feed dispenser	8	x	x	x	
Suckling mash dispenser	20		x	x	x
Doorless feeding station	30		x	x	x
Feeding station	50		x	x	x

Table 3: Relationship between feeding system and the grouping of pregnant sows

duction cycle and replaced by early-pregnant sows. If the groups consist of more than 40 sows, this is rather unproblematic.

Group Formation and Feeding System

Ultimately, the decision about group formation must be made in connection with the feeding system. *Table 3* provides an overview of the animal-feeding place ratio (AFR) of the different feeding systems. As can be seen, only small, stable groups can be considered for group-rationed feeding systems with an AFR of 1:1. It must be taken into account that, if possible, the sows must be divided into three groups according to their physical condition. 3 times 6 feeding places per group, for example, lead to pregnancy groups with a total of 18 sows. Ad-libitum feeding systems are most flexible. In these systems, the number of automatic dry feed dispensers per group is adapted to the number of sows. Feeding systems which dispense feed to each individual animal require large groups per feeding place and, hence, in most cases, changing groups.

Conclusions

Group housing allows the sows to move freely within the pen and improves their physical condition. With regard to the behaviour of the sows, it is known that they want to keep the feeding, resting and defecation areas separate within the group pen. This requirement is met in particular by large groups in furnished group pens, which also give weaker sows the possibility to retreat. Thus, new sows can also be integrated easily. However, the management must meet great demands. For small groups (< 12 sows), it is virtually impossible to fulfill this requirement. However, they provide a very good overview of the herd and are easier to handle. In all forms of group housing, sows which are unfit for group husbandry – aggressive or injured animals – must be taken out of the group. Which grouping is ultimately selected is decided by the farmer according to his preferences. What is important is the proper, consistent management of the chosen system.