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## Boar Rearing: The Influence of Group vs Individual Penning from Weaning to 27 Weeks of age

S.T. Tonn, J.V. Craig and D.L. Davis

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### Summary

We compared mating performance and soundness of feet and legs of boars which were reared in group vs individual pens. Individually penned boars consumed more feed from 6 to 12 weeks of age and were heavier at 12 weeks of age. However, individually penned boars also were more unsound and tended to score lower in mating tests.

### Introduction

Problems with breeding performance of young boars are common. Evidence is accumulating that social interactions during rearing can influence reproductive performance after puberty. As a part of our studies of boar reproductive development, we conducted two experiments to evaluate the effects of group as opposed to individual penning from weaning to breeding age.

### Procedures

Experiment I. Yorkshire boars were grouped at weaning (about 6 weeks) and penned in two adjacent pens until they averaged 12 weeks of age when they were moved to an open fronted facility with solid concrete floors in the pens. Littermates were assigned to the following penning treatments from 12 to 25 weeks of age: penned individually, penned in a group of 5 boars, or penned in a group of 5 boars from 12 to 19 weeks of age and individually from 19 to 25 weeks. After 25 weeks all boars were penned individually until completion of 4 mating tests at 2 week intervals. Mating tests began when boars averaged 29 weeks old.

Experiment II. Yorkshire boars were allotted at weaning (6 weeks) to be either penned in a group of 8 boars until 27 weeks of age, penned individually until 27 weeks, penned individually from 6 to 12 weeks and grouped from 12 to 27 weeks, or grouped from 6 to 12 weeks and penned individually from 12 to 27 weeks. After 27 weeks all boars were penned individually and five mating tests were conducted at 2 week intervals.

Rearing behavior. During both experiments, group penned boars were observed  $\frac{1}{2}$  hour, 4 days per week and presumed sexual behaviors directed toward other boars were recorded.

Soundness. Foot and leg soundness of Exp. II boars was scored by three evaluators at 21, 27 and 37 weeks of age. Boars were scored from 1 to 5 using the scale in Table 1. One evaluator scored soundness in Exp. I.

Mating tests. Tests were conducted in a pen with minimal distractions. Each boar was allowed 5 minutes to become familiar with the pen and then a gilt, in estrus, was introduced and all sexual behaviors recorded. The mating test lasted 15 minutes in Exp. I and 10 minutes in Exp. II. At the end of the test, boars were scored according to the scale in Table 1.

### Results

No treatment differences for growth rate were observed in Exp. I but in Exp. II individually penned boars had superior average daily gains and consumed more feed from 6 to 12 weeks of age. No differences in growth rate or feed consumption were observed from 12 to 27 weeks of age.

Mating tests. Only boars scoring 3 or above for soundness were tested for mating performance. No statistically significant differences in mating test scores were found in either experiment (Table 2). Behaviors observed during rearing were related to mating test performance (Table 3) and boars scored very consistently from the first mating test to the last. Boars which failed to mate during the first mating test rarely improved their performance.

Soundness. Penning treatment had a marked effect on soundness (Table 3). Individually penned boars had more foot and leg problems.

### Discussion

Our results indicate that individual penning beginning at 6 weeks of age is detrimental to the development of sound feet and legs. The reason for this effect is not known but must be due in some way to lack of interaction with pen mates. Therefore, individual penning of boars, particularly if it begins at weaning, is unwise. Individual penning did not significantly affect mating test performance, but group penned boars tended to have superior mating tests scores. Severe lameness problems in Exp. II prevented us from testing seven boars and three additional boars were unable to complete all mating tests due to soundness problems. This reduction in number of observations may have reduced our ability to detect differences. Others have reported that individual penning reduces mating test performance.

Our results indicate that behavior during rearing, particularly beginning at about 12 weeks of age, is related to mating behavior after puberty. Boars that mounted their penmates more frequently from 12 to 27 weeks of age were also more likely to mate in mating tests. This may be a useful way to select aggressive breeders from strains or lines of pigs which have mating behavior problems.

Also, our observation that a boar's performance in his first mating test at about 7½ months of age is indicative of his performance in future mating tests indicates that problem boars are not likely to improve with age. A mating test similar to ours could be used to screen young boars before they were used to breed gilts and could prevent low fertility due to boars that fail to mate.

Table 1. Soundness and Mating Test Scores

| <u>Soundness</u>                                  |              |
|---------------------------------------------------|--------------|
| <u>Description</u>                                | <u>Score</u> |
| Lame, unable to walk                              | 1            |
| Lame but mobile                                   | 2            |
| Not lame but stiff, over at knees or crooked legs | 3            |
| Sound and free moving                             | 4            |
| Sound, free moving and exceptionally correct      | 5            |

  

| <u>Mating test</u>                |               |
|-----------------------------------|---------------|
| <u>Performance</u>                | <u>Scores</u> |
| No interest in gilts              | 1             |
| Some interest, no mounts          | 2             |
| Mounts gilt (correct orientation) | 3             |
| Mounts, extends penis and thrusts | 4             |
| Mates                             | 5             |

Table 2. Soundness and Mating Test Scores for Boars in Experiments I and II

| <u>Experiment I</u>       |                       |                        |                          |
|---------------------------|-----------------------|------------------------|--------------------------|
| <u>Penning Treatments</u> |                       |                        |                          |
| <u>12 to 19 weeks</u>     | <u>19 to 25 weeks</u> | <u>Soundness score</u> | <u>Mating test score</u> |
| individual                | individual            | 3.7                    | 3.0                      |
| group                     | individual            | 3.7                    | 3.2                      |
| group                     | group                 | 4.1                    | 3.5                      |

  

| <u>Experiment II</u>      |                       |                        |                          |
|---------------------------|-----------------------|------------------------|--------------------------|
| <u>Penning Treatments</u> |                       |                        |                          |
| <u>6 to 12 weeks</u>      | <u>12 to 27 weeks</u> | <u>Soundness score</u> | <u>Mating test score</u> |
| individual                | individual            | 2.8 <sup>c</sup>       | 3.7                      |
| group                     | individual            | 3.0 <sup>b,c</sup>     | 4.2                      |
| individual                | group                 | 3.4 <sup>a,b</sup>     | 3.9                      |
| group                     | group                 | 3.7 <sup>a</sup>       | 4.3                      |

a,b,c Means with different superscripts are different ( $P < .05$ ).

Table 3. Correlations Between Sexual Acts During Rearing and Average Mating Test Score<sup>a</sup>

| Sexual behaviors    | Experiment I <sup>b</sup>                 | Experiment II <sup>c</sup>           |
|---------------------|-------------------------------------------|--------------------------------------|
|                     | Avg. mating test score<br>35 weeks of age | Avg. libido score<br>39 weeks of age |
| Naso-nasal contacts | -                                         | .23                                  |
| Nosing side         | .28                                       | .46                                  |
| Sheath sniffs       | .46                                       | .19                                  |
| Anal sniffs         | .49                                       | .20                                  |
| Mounts              | .76**                                     | .55*                                 |
| Total sexual acts   | .63                                       | .34                                  |

<sup>a</sup>A larger number indicates a closer relationship between the sexual behavior and mating test score.

<sup>b</sup>Based on observations from 12 to 19 weeks of age.

<sup>c</sup>Based on observations from 12 to 27 weeks of age.

\* $P < .05$ ; \*\* $P < .01$ .