

Pig Crushing Mortality by Hut Type In Outdoor Farrowing

M. S. Honeyman, associate professor
of animal science
W. Roush, livestock research specialist

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Summary and Implications

This study emphasizes the difference in pig crushing mortality rates in various outdoor farrowing hut types and suggests that huts with a larger floor space may help reduce preweaning pig crushing. Mothering ability by the sow may be particularly important in outdoor systems where the sows have greater freedom and mobility.

Introduction

Mortality of young pigs is a major problem in the swine industry. Preweaning mortality averaging 15% is not uncommon in large U.S. swine industry databases. About 50% of the losses occur in the first three days after birth (Tubbs et al., 1993). Pig crushing (trauma) by sows accounts for about 40% of all preweaning mortality and is the leading cause of piglet mortality in both indoor and outdoor farrowing systems (Edwards et al., 1994; Vaillancourt and Tubbs, 1992). Forty percent of the litters in a national U.S. survey had no preweaning mortality. For first parity litters in the survey, 42% had no preweaning mortality (Tubbs et al., 1993).

Piglet mortality is often higher in outdoor farrowing systems than in indoor farrowing systems as reported in the United States (Penner et al., 1996) and many other countries (Mortensen et al., 1994; Edwards, 1994).

One factor affecting piglet mortality in outdoor systems is the type (size and shape) of the farrowing hut (Algers, 1994; McGlone, 1995). Therefore, a study was conducted to evaluate piglet mortality by hut type in a U.S. outdoor farrowing system.

Materials and Methods

For six years (1990 to 1995) seven different commercial floorless farrowing huts (wood A-frame, A; steel English style, B; modified plywood A-frame, C; plastic pig saver, D; curved steel, E; plywood pig saver, F; plastic A-frame, G) (see illustrations) were used with an outdoor farrowing herd at the Iowa State University (ISU) Western Research Farm near Castana, Iowa. Only hut type F had guard rails. Not all huts were used each year. A total of 279 litters were farrowed. Piglet deaths were recorded from birth until 10 to 14 days of age when the pigs began to

leave the hut. Farrowing occurred in September and early October of each year. Cause of piglet death was noted as crushing or other by visual inspection. Primiparous Yorkshire x Duroc x Hampshire sows were used.

The huts were randomly arranged in farrowing pastures. The primiparous sows were allowed free access to select a bedded hut and were not confined in the huts. Fenders were not used on the huts. However, bedding boards or their equivalent were used to keep straw and piglets in the huts. The sows had free access to feed and water (ad libitum) at central locations within the pastures.

Results and Discussions

Results of preweaning mortality by hut type are shown in table 1. Crushing death rates (6.0 to 22.4%) differed by hut type ($P < .05$), but other deaths (0 to 2.5%) did not differ by hut type ($P > .05$). There was a negative correlation between floor space (36.0 to 49.5 sq. ft.) and crushing deaths by hut type (-.58).

The smaller huts tended to have the higher crushing losses. For example, huts A, D, E, and G had floor space of (36.0 to 37.4) sq. ft. and had crushing losses of 11 to 22%. Conversely the larger huts tended to have lower crushing losses. For example, huts B, C, and F had floor space of 42.0 to 49.5 sq. ft. and had crushing losses of less than 8%. Other factors may have been important. For example, hut F came equipped with guard rails and had a low pig crushing loss rate of 6%. It was also a large hut. Huts B and C have the door in the corner rather than the center of the end as the other huts do. Huts B and C had low pig crushing losses of 6.3 and 7.6%, respectively.

The construction material of the hut (steel, plastic, or plywood) did not seem to affect crushing losses. Overall hut design probably is a factor, but is difficult to characterize. The new English arc-type hut (B) shows promise but needs more evaluation.

The number of live pigs born per litter (7.4 to 9.83) differed ($P < .05$). Also, the number of live pigs born per litter and crushing deaths by hut type were positively correlated (.29). Consistent with national U.S. survey data, 41% of the litters had no preweaning mortality.

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Table 1. Table 1. Years used, floor space, litters farrowed, number of live pigs per litter, and preweaning mortality for pigs farrowed outdoors in different hut types.

Hut type	Year	Floor space (sq. ft.)	Litters (no.)	Live pigs/litter	Crushed deaths (%)	Other deaths (%)	Total deaths (%)
A	6	36.0	29	9.2 ^a ± 5	22.4 ^a ± 3.1	2.4 ± 9	24.8 ^a ± 3.2
B	1	49.5	10	8.9 ^{ab} ± 8	6.3 ^{bc} ± 5.3	0.0 ± 1.6	6.3 ^{bc} ± 5.5
C	6	42.0	93	9.3 ^a ± 3	7.6 ^c ± 1.7	1.2 ± 5	8.8 ^c ± 1.8
D	1	32.5	10	7.4 ^b ± 8	10.8 ^{abc} ± 5.3	0.0 ± 1.6	10.8 ^{bc} ± 5.5
E	6	33.8	83	9.2 ^a ± 3	11.7 ^{bc} ± 1.8	2.0 ± 5	13.8 ^{bc} ± 1.9
F	5	42.6	24	8.7 ^{ab} ± 5	6.0 ^c ± 3.4	2.0 ± 1.0	8.0 ^c ± 3.6
G	6	37.4	30	9.8 ^a ± 5	15.7 ^{ab} ± 3.1	2.5 ± 9	18.2 ^{ab} ± 3.2

^{abc}Least squares means in the same column with different superscripts differ (P<.05).

A.



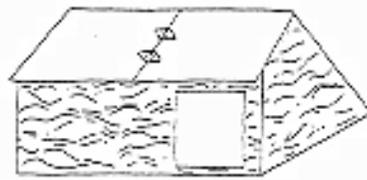
A-frame (wood)

B.



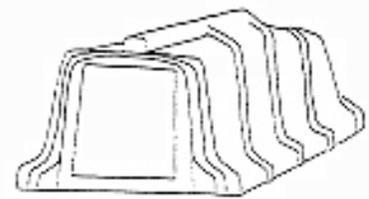
English style (steel)

C.



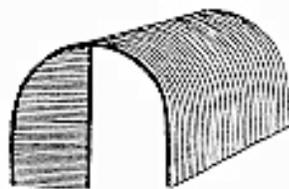
Modified A-frame

D.



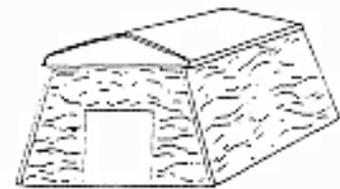
Pig-saver (plastic)

E.



Quonset (curved steel)

F.



Pig-saver (plywood)

G.



A-frame (plastic)