INTRODUCTION

The 12-sided plywood farrowing house at present being produced and presented by Nutrena Mills, Inc., of U.S.A., under the name “Pigloo” developed from work done in New Zealand where many of the original units were of concrete construction.

The cost of concrete units, the desire for a portable unit which could be readily prefabricated, and the undesirable cold surfaces which concrete present, dictated a switch to plywood units when the New Zealand plans were adapted in the U.S.A.

The Nutrena Mills Feed Company has now had units under test for three years in four states. They report very low losses from crushing and disease, the two big problems in any farrowing unit.

A study of this type of portable farrowing unit under Canadian climatic conditions was felt desirable to evaluate the unit for cold weather farrowing.

OBJECTIVES OF THE STUDY

1. To farrow sows during cold weather in portable farrowing units constructed of plywood.
2. To obtain temperature and other records to assist in evaluating the units under varying climatic conditions.
3. To study the management of this type of farrowing unit.
4. To prepare a plan incorporating revisions found necessary for improved operation of the units.

CONSTRUCTION

The units were built in the Agricultural Engineering Shop during January and February of 1959. The units consist of 11 vertical plywood panels and a canvas covered opening forming an outer wall on a plywood floor mounted on skids.

The roof consists of two large plywood panels, hinged at centre to provide access to the unit. Guard rails, etc., in the farrowing area were fabricated and installed in the unit. Construction was completed from engineering drawings and a materials list, copies of which are available from the authors upon request.

Construction presented no particular problems but it was apparent that the shop work required to produce and install the hardware for the unit was very time-consuming. This was due to the fact that the hardware was practically designed as the construction progressed.

If the hardware in the unit was produced in quantity and offered as a hardware kit it would greatly reduce the shop labour required by the farmer. Some farmers have the equipment and training to fabricate this hardware themselves but many do not.

An exercise pen was constructed and installed adjacent to the farrowing unit.

OPERATION—WINTER 1958-1959

Two sows farrowed in units during February and March, 1959. One structure was located outside, at the South end and adjacent to a swine barn as illustrated. This structure is referred to as Unit A throughout the report.

A second “Unit B” of identical construction was located inside a building, formerly a University Farm Blacksmith Shop. No artificial heat was provided in this building and location inside of the structure was designed to provide protection of the farrowing pen from cold winds. Location inside the building, however, shaded the structure from exposure to sunlight.

Unit A was placed on the site on February 11, 1959, and prepared for reception of a gilt. Straw was packed between the skids under the floor, to provide insulation and to prevent cold drafts below the structure. A recording thermometer was located inside the semicircular galvanized metal floor area, at floor level. Initially, one 250 watt heat lamp was located 20 inches above the floor in this area. Temperatures in the floor area of 34° to 36° F. were recorded with outside temperatures ranging from -5° F. to -4-5° F. Three heat lamps were used and were lowered to 12 inches above the floor on February 13th in an effort to raise the temperature. Appreciable increase in temperature was obtained between Friday, February 13th and Monday, February 16th. The addition of the sow to the unit resulted in a further significant rise in inside temperature.
the hover area below heat lamps. Its purpose was to increase reflection of radiant heat from heat lamps resulting in a further utilization of heat available.

On February 19th frozen manure was removed from areas away from the heat lamps. Freezing temperatures encountered were too cold for pigs to be born. During this period an average wind of 10 miles per hour blew from the South-West.

The sow farrowed February 20th, beginning at 10:00 p.m. and finishing at 11:30 p.m. with eleven pigs.

The gilt was unattended during farrowing and three pigs died during the night due to chilling or freezing. These pigs escaped from the heated area by crawling over a floor divider board. The gilt had piled the bedding in the corner to make this possible. Increasing the height of the divider board by approximately two inches would prevent the recurrence of this difficulty. This additional height may be obtained by attaching a flexible rubber strip to the top of the divider board and top.

A second gilt was placed in Unit "B" and farrowed March 4, 1959, unattended, between 3 a.m. and 8 a.m. This litter consisted of 15 pigs, 5 of which were killed by the sow during the first night. The gilt in question happened to be a particularly nervous individual; whether or not confinement in the restricted farrowing area contributed to the nervousness cannot be established. A similar occurrence could have taken place in a farrowing pen. Use of a farrowing crate could avoid this difficulty. A sixth pig died four days after farrowing as a result of pneumonia.

OPERATION—WINTER 1959-1960

One sow farrowed in the unit in December, 1959, with a litter of ten pigs, one of which was born dead. No serious problems were encountered.

After careful consideration of one year's operation of the two units (a total of six sows in the two units), it was decided that two inches of insulation should be added to one of the units. In the main farrowing barn, however only the litter of four piglets farrowed in the uninsulated unit a few hours before farrowing was -14° F. and eight piglets out of a litter of twelve were frozen to death. This sow was also very nervous and angry, requiring three men to handle her. The plywood partition was again rooed out.

Only one sow farrowed in the insulated unit during the winter months of 1960. From a litter of eleven piglets, two were stillborn and one suffocated, but none were frozen. This sow was placed in the unit ten or twelve days before farrowing. She was not as nervous as the other two sows.

The insulation did not have a large effect on the inside hover temperature at low temperatures, but did have a marked effect on the overall temperature in the unit. When the outside temperature reached thirty degrees or higher the inside hover temperature rose to as high as 117° F.

The two sows which farrowed and were retained in the units until weaning time lost about the same amount of weight during lactation, but averaged slightly less in daily feed consumption than sows in the conventional farrowing barn. It should be noted, however, that the sows in the unit were nursing fewer piglets than their counterparts. The two litters averaged, at three weeks of age, weights similar to those raised in the barn, however only the litter of four piglets had a good six-week weaning weight. The litter of eight piglets gained less from three to six weeks than it did from birth to three weeks, indicating a need for creep feed.

As a general observation there was less scarring in the units than in the regular farrowing barn.

RESULTS AND DISCUSSION

1. The average weight of the pigs in the units compared favorably with averages of other litters farrowed during the same period in the main farrowing barn.

Operation of the self feeder for the young pigs was not successful. The gilt was able to gain access to feed in the feeder and waste occurred due to scattering on the floor.

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tained from official weather records at Stevenson Field, is shown in the accompanying chart. The current consumption for a 250 watt bulb in 24 hours would be 6 k.w. hr. per day which is not excessive. Current consumption by weeks is also shown on the chart.

CONCLUSIONS

Except for the bulb failure mentioned, which would likely not happen unless the bulbs were disturbed, it would appear that heat lamps are quite satisfactory as a means of preventing livestock watering tanks from freezing. It is significant that, although the outside temperatures may vary from 40-50 degrees F. within a day or two, the water temperature changes but very slowly. Using tanks with energized water would need to be well insulated and properly managed.

REFERENCES


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The pigs in the litter appeared healthy but it could not be concluded that they were in better health than pigs in the main farrowing barn. They were observed outside in the gilt exercising area on different occasions, particularly when the sun was shining.

2. Cleaning out operations in both units were difficult due to the design of the structure and limited space available.

3. Handling of small pigs for inoculation, vaccination, notching, etc., required the operator to work in very close quarters.

4. Water had to be warmed and placed in an individual trough for sows in each structure. Ice formation was encountered which required melting with resulting additional labor in caring for the sow and litter.

An individual unit would not warrant expenditure in an electrically heated water bowl.

CONCLUSIONS

1. Portable farrowing units of the type tested are superior to many existing farm buildings which are used for farrowing sows but are inferior to a properly designed and equipped farrowing barn.

2. Units of this design will provide economical housing for a farmer raising a few litters per year, particularly if farrowing is planned during the summer months.

3. Outside temperatures during winter farrowing were in the range of 5° F. to 9° F. Inside temperatures during the same period were 76° F. to 84° F. The minimum desired temperature in a farrowing barn is 60° F. Based on the results obtained so far, it is not feasible to operate these units at temperatures below 60° F. Much lower temperatures are frequently experienced during the winter months in Manitoba.

4. The nervousness and hyper excitability of some sows made it impossible for one man to manage them.

5. Piglet losses due to freezing is a problem, especially in the uninsulated units. No conclusions can be drawn from the one litter farrowed in the insulated unit.

6. Some change in design may have to be made to facilitate cleaning (a small door may be the answer).

7. Some of the smaller sows were able to lie with their back to the hover area. (A change in design may be of some advantage.)

8. A thermostat would be desirable to control hover temperature.

9. Two of these portable farrowing units were constructed and used at Iowa State University. The general feeling at Iowa State was that the portable unit provided rather satisfactory shelter when compared with other individual units.

ACKNOWLEDGEMENTS

1. The Plywood Manufacturers' Association of British Columbia donated $200.00 to cover material costs for two units. Mr. R. L. Robinson, Field Representative for this association, assisted with the planning and construction of the units and made valued contributions to the compilation of this report.

2. The Animal Science Department, University of Manitoba, supplied sows and provided staff to manage the units in operation. Helpful suggestions in relation to the operation of these units were contributed by Professor M. E. Scale of this department.