The Effects of Season and Exogenous Hormones on the Reproductive Performance of Swine

J. C. Hillier and E. J. Turman

This project has involved several separate studies with gilts and boars. One study comparing lot-mating and hand-mating of gilts was published in an earlier Feeder's Day report (Okla. Agr. Exp. Sta. Misc. Publ. MP-78, p. 25). No results are ready to be released from the present study involving gilts in which various compounds are being studied for their effectiveness in synchronizing estrus.

A study has just been completed on the effects of season and three types of shelters on semen quality of boars. Twelve Yorkshire boars were divided into three groups and maintained in lots with access the year round to an open shade only, an open fronted house and an insulated, air conditioned house. Semen was collected three times weekly and evaluated once weekly. There was a marked decline in semen quality associated with hot summer weather, and providing air conditioning did not prevent this decline. In general the semen quality of the boars in the open fronted house remained as good as that of boars in the insulated house. The data is now being analyzed and the results will be published at a later date.

Swine Breeding Research Program

I. T. Omtvedt

The swine breeding projects consist of a 90 sow herd at Ft. Reno and a 50 sow herd at Stillwater yielding approximately 280 litters yearly. These herds are primarily involved in a basic selection study to determine if performance can be improved by selection for crossing ability in traits that reveal heterosis in crossing but have low heritabilities and normally show very little response to direct selection. Two lines of breeding are being selected on the basis of their crossbred half-sisters' productivity (litter size and weight at 3 weeks). A zero-selection control line is also maintained along with these two lines for the purpose of measuring the changes that take place in the selected lines. Only four generations of selection have been completed and it is too early to draw any conclusions at this time.

Investigations are also being conducted on the inheritance of pork quality traits such as color, firmness, marbling and tenderness. The increased concern over the incidence of pale, soft, watery pork prompted the initiation of this project in 1965. The two primary objectives were to determine the genetic relationships between various measurements of quality, and to estimate the extent to which these conditions are inherited. The data are presently being analyzed and the results will be available for the 1969 Progress Report.

In addition to the environmental physiology research partially reported in this bulletin, studies regarding swine management and performance testing are also being conducted. Three studies underway at the present time are: (1) an analysis of sow weight and sow condition scores to determine their influence on reproductive performance; (2) a study to develop selection indices involving various combinations of economically important traits; and (3) an analysis of the performance records of littermate boars, barrows and gilts to investigate the influence of sex and sire-sex interactions in growth rate, probed backfat thickness and carcass traits.

The Desirability of Pork Products Processed Prior to Chilling

R. L. Henrickson, I. T. Omtvedt, Gopal Reddy, Allen Parr, Earl Cagle and F. Arganosa

High temperature curing of porcine muscle appears to have practical value for the meat industry. Data are available which support the view that muscle processed prior to chilling has a greater water-holding capacity than muscle processed post-chill. Total moisture, press fluid, and free fluids in the can all cause one to review rapid processing of meat with renewed vision. Pre-chilled processed muscle tended to take up the cure more rapidly and provided a more stable cured tissue as evident by nitrosopigment content.

Shear force values indicated that pre-chilled canned muscle is not as tender as post-chilled muscle. This may be a practical advantage since canned ham is often over heated resulting in poor texture. It is difficult at this time to predict the significance of tenderness in canned ham since it has not been possible to establish the desired tenderness level for this product. Studies concerned with the size and condition of the muscle fiber did not reveal great differences due to the processing treatment. However, there was some fiber variation between muscles.