RESEARCH ABSTRACT

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ANIMAL SCIENCE

Title: Litter size produced by gilts divergently selected on reproductive components. - **NPB #98-238.**

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Abstract:

One of the factors that influences litter size in swine is the ability of the mother to gestate to term the major possible proportion of viable embryos. This ability has been termed uterine capacity and is considered dependent on the physical capacity of the uterus, fetal demand of nutrients, and the efficiency of the placenta to supply them. The weight ratio between the fetus and its placenta at birth was used as a measurement of placental efficiency in two experiments directed to investigate the effect of this trait on litter size. In the first experiment, a selection index including litter size, birth weight and placental weight was used. Divergent selection was practiced with two replicates per line. After one generation of selection the numerical trends in the index values behaved accordingly with the expectations.

In the second experiment, carried out in collaboration with the University of Nebraska, gilts from two lines previously selected for either an index of components of litter size or at random were evaluated for correlated responses in placental efficiency. Placental efficiency was measured as the ratio of piglet weight to placental weight at birth. An increase of three fully formed piglets in the selected line was accompanied by a decrease in both piglet and placenta weight at birth. The reduction in placenta weight was smaller, resulting the selected line having a smaller placental efficiency than the control line. These results suggest that physiological mechanisms other than increased placental efficiency are responsible for the higher litter size in the selected line.