

## ANIMAL SCIENCE

**Title:** Strategies to optimize sow longevity **NPB #03-110**

**Investigator:** Sandra Rodriguez-Zas

**Institution:** University of Illinois at Urbana-Champaign

**Date Received:** December 3, 2004

**Abstract:** Sow longevity and production records of 148,568 sows in 32 Central Illinois commercial herds from January 1995 to May 2001 were analyzed using survival and repeatability models respectively, to characterize sow performance and profitability. The largest difference in longevity between the major genetic lines was approximately one parity. The significant differences in sow removal rate or hazard among genetic lines constitute evidence that sow longevity could be improved by using replacements from specific genetic lines. Assuming a zero discount rate per parity, genetic lines with longer herd life resulted in greater profit than genetic lines with shorter herd life, however this difference was reduced with increasing discount rates.

A dynamic programming model was used to find the optimal parity for voluntary replacement in sow breeding herds and the associated economic value while accounting for involuntary culling. Results from the sensitivity analysis showed that sow replacement cost and salvage value had the highest impact on the optimal parity at replacement followed by the returns per piglet. In comparison, the discount rate and number of parities per year generally had smaller influence on the optimal parity. The optimal replacement age was 6 parities under the default or average biological and economical conditions and this is higher than three to four parities, the average age at removal in US breeding herds. Our study demonstrated that genetic lines and minimization of voluntary culling in early parities can provide producers with more opportunities to maximize profitability through effective voluntary culling.

*These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed*

**For more information contact:**

**National Pork Board, P.O. Box 9114, Des Moines, Iowa USA**

800-456-7675, **Fax:** 515-223-2646, **E-Mail:** [porkboard@porkboard.org](mailto:porkboard@porkboard.org), **Web:** <http://www.porkboard.org/>