Title: Development of Computer Template(s) to Economically Assess Alternatives to Individual Housing of Gestating Sows - NPB #02-178

Investigator: Donald G. Levis, PhD

Institution: The Ohio State University

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Abstract: A literature search was conducted to find information on how the following factors are involved with group-housing of sows and gilts: space requirement per animal, animals per pen, effect of feed intake, feeding system, feed expense, ventilation system, heating and cooling systems, floor design, labor requirements, system for mixing animals, stereotypies, reproductive performance (farrowing rate, litter size) and health and welfare (e.g., injury rate, death rate, body condition). A total of 334 papers were reviewed. A vast number of the publications dealt with some aspect of evaluating behavior or welfare of sows instead of factors listed above. Three Microsoft Excel 2000 spreadsheets were developed to evaluate the production and financial implications between the following types of housing systems for gestating sows: (1) remodeling of an existing individual stalls gestation facility to loosely house sows in groups, (2) a new gestation facility to loosely house sows as groups, and (3) a new hoop structure that loosely house sows and feeds the sows either indoors or outdoors. Within each spreadsheet two options can be simultaneously evaluated. The main input categories of the model include cost of building structure, cost of equipment, annual ownership cost, and annual variable cost of gestation facility. The following annual ownership cost can be easily changed: labor, feed, utilities, veterinary & health supplies, semen cost, loan payment, and depreciation on breeding stock. The user can enter known values or have the computer calculate values. After the total annual ownership and variable costs are calculated, the user can change the reproductive performance values (farrowing rate, litter size, and litter per sow per year) to estimate their effect on cost of the gestation phase per pig weaned. Tables are generated to indicate the difference in breeding-gestation cost between options and reproductive performance. Overall conclusion is that scientific data is not adequately available to assist pork producers in designing alternative systems for housing sows in groups. In addition, these spreadsheets will help pork producers evaluate various group-housing systems under the assumptions they enter.