



4-1-2001

## New Swine Unit Opens

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The new swine teaching and research facility at New Bolton Center is now in full use by students, faculty, and visitors. On January 26, before the pigs moved in, an open house was held for producers and veterinarians from surrounding areas. The facility is the first of its kind in the USA. It incorporates novel technologies imported from Europe for animal comfort, animal feeding and nutritional management. Drs. Parsons and Pitcher selected an Austrian firm, Schauer Maschinenfabrik, to provide the penning, flooring, farrowing crates, and a specialized feeding system. Construction of the building was carried out by Farmer Boy Ag., Inc., of Myerstown, Pa.

The building can accommodate 80 sows and their offspring. It features four 10-crate farrowing rooms that can be converted into nursery pens. The farrowing crates are adjustable in length, height, and position in the pen to provide the sows with maximum comfort. Unlike conventional farrowing crates, this crate can be opened shortly after parturition to create a creep area for the piglets while providing freedom for the sow to turn around during lactation. At weaning the sow is removed, the crate is swung up and a nursery pen is created where the litter can stay until about eight weeks of age. Weaning is a potentially stressful

time for piglets as they are separated from their mothers, moved to a new pen, mixed with pigs from other litters, and started on solid food.

Although more expensive to build, the housing system in the new facility de-couples the nutritional stresses from the social stresses of traditional weaning by leaving the litter social hierarchy intact as the piglets remain in the pen where they were born. Once the piglets are two months old, they are moved to larger pens in grow/finish rooms where

they can be raised to market weight.

After weaning, the dams are moved to individual gestation stalls where they can recuperate from lactation and eventually will be bred by artificial insemination. Unlike unconventional gestation crates, these “swing-side” crates are especially designed for sows to work in concert with their neighbors to turn around at will. After confirmed pregnant and given sufficient time of their embryos to implant in the uterus, sows are then moved to the gestation pen.

Gestating sows stay in a loose-housing area where the animals can walk around or lie down in a raised sleeping area. Such group housing of sows has been largely abandoned by the modern swine industry due to problems associated with uniform feeding of the animals. Socially dominant sows tend to “hog” the feed, getting fat while others go hungry and lose body con-



dition. The new swine unit has specialized feeding technology that allows for individual animal nutrition in a group housing situation. Each animal is uniquely identified with an ear tag containing a computer microchip. An animal enters the feeder, the computer recognizes her identity, and she is fed an individually tailored ration. The sow may return later in the day to the feeder, but will not get any additional feed if her daily allotment is already consumed.

Adjacent to the loose-housing area is a pen for the boar. A small window or head-hole in the side of the boar's pen allows him to have nose-to-nose contact with sows. Animals in estrus will seek out the boar. A strategically

positioned microchip reader detects and counts the visits of sows to the boar and provides automated heat detection. A sow in estrus will exceed her threshold for visits in a day and can be marked automatically with a paint sprayer alerting staff and students that she is open and needs to be rebreed.

Rations feed to the sows, the boar, and throughout the unit are mixed on demand by a small in-house feed mill called "Spotmix" that is computer controlled. Once mixed the feed travels through a network of vacuum pipes and valves to the feeder in need

odors. Manure storage is underneath the entire building in a concrete basin, and fans draw air

permit observation and discussion without disrupting the animals. The other farrowing areas and the growing pens can be observed through windows from the corridor.

Swine are an important part of Pennsylvania agriculture. This new building enables the School to provide the students with practical hands-on experience with swine production and swine medicine, and to expose the swine industry to the newest technologies. It also opens the door to new avenues of research that target maximizing animal comfort and minimizing environmental impact of swine farming.



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where water is added as the feed is delivered. Palatability of the feed is improved if fed wet, but must be fed in only small amounts to prevent the feed from souring. This is not a problem with the fully automated feeding system as it can be programmed to deliver feed as many times a day as necessary. The new feed system has great promise for conducting nutritional studies as it provides a high degree of flexibility in making and delivering different diets. This technology will allow better matching of dietary formulation to the animal's requirements and result in a reduction of nutrient excretion by the pigs, thus minimizing the unit's environmental impact.

The facility is also designed to minimize

from the building into the pits maximizing the air quality in the building. For biosecurity reasons, the facility has limited access as visitors must shower before going into the animal areas.

The facility is equipped for modern husbandry and management techniques. Students learn semen-collection and evaluation and artificial insemination techniques. Data and records are kept in the computer system and the production can be monitored closely and easily. The computers also allow the use of the data to create models for larger herds to let the students work on large scale production problems. The classroom is integrated into the facility, large windows into one farrowing area and into the loose-stall and gestation stall area



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- 1 Dr. Tom Parsons, State Senator Bell and Associate Dean for New Bolton Center, Bruce Rappoport at the unit's open house.
- 2 Loose-housing area.
- 3 Grow/finish unit.
- 4 The feeder
- 5 A farrowing crate in raised position.
- 6 The central feed mixing and dispatching unit.