

Mechanical Means to Measure Feed Efficiency

The Calan Swine Feeding System for Electronic Individual Feeding of Group Housed Pigs

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For many years, swine breeders and animal researchers have recognized the desirability of individual feeding. The ability to evaluate feed intake of individual pigs over a known period of growth can serve as a valuable tool for selective breeding.

At many breeding establishments, growing boars are housed and fed on an individual basis. Feed intake is recorded on a routine basis. The total intake of feed for a predetermined number of days is then divided by the number of pounds of weight gain that has been recorded during a similar period, resulting in an expression of feed efficiency for the animal in question. This practice, although very desirable, has certain limitations, including:

1. Pigs are housed on an individual basis, which very often results in inefficient space utilization of high intensity housing facilities.
2. Energy utilization, within the housing complex, is often greater on a per animal basis, due to a lower animal population.
3. The behavior pattern of the pig can be adversely affected in a number of ways:
 - a. The length of run within the pen is generally limited, preventing adequate exercise.
 - b. Isolation prevents interaction between pigs, further contributing to inadequate exercise and favorable muscle development.
 - c. A greater adjustment period after confinement in individual quarters is sometimes necessary, before some boars become aggressive breeders.
 - d. The practice of housing pigs individually tends to artificially protect non-aggressive pigs. Often non-aggressive pigs will fail to adequately perform in group conditions to which they are later destined to be subjected.

The overall objective in selecting favorable production oriented traits, should be directed at the evaluation of the pig in an environment that most closely resembles the conditions that prevail in commercial

production facilities. Given these circumstances, research has been under way for several years by Calan Electronics of Ormiston, Scotland, in cooperation with the Rowett Institute, Aberdeen, Scotland, to develop a new approach to individual feeding. As a result, an electro-mechanical individual feeding system has been developed to meet the needs of the animal evaluation and research community.

This system possesses the capability of permitting up to 12 pigs to be housed in a group pen, while at the same time, enabling each pig to be fed individually. Each pig is fitted with an electronic sensing device (key), affixed to the ear. The pen is equipped with one feed dispensing unit for each pig within the pen. A pen of 12 animals requires 12 individual feeding units. Each unit resembles a mini-stall electronically equipped to identify with the pig possessing the appropriate key.

When the correct animal enters the mini-stall, an electronic signal triggers a locking mechanism, controlling a metal feed door that serves as a barrier between the pig and its allotted feed. The configuration of the unit ensures that only the designated pig can activate his assigned mini-stall. When the locking mechanism is activated, the metal feed door is unlocked, thereby allowing the animal to push the feed door open with his snout, and consume the ration on an ad libitum free access basis. The ration is, in turn, dispensed from a feed hopper, capable of accommodating several days' feed. Through this method, any pig within the pen is free to feed at any time.

Observation of early installations of this equipment, indicate that the average daily feed intake is at least equal to intakes of pigs housed individually. It has also been observed that pigs housed and fed under these conditions more closely parallel the activity and behavioral patterns that are associated with group housing.

At this time, it would appear that this approach to individual feeding will offer the industry an effective and practical approach to individual performance selection of group housed animals. If applied correctly, this device could represent a major breakthrough in the quest for more efficient pork production.