Feed-a-Gene

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Factsheet n°4

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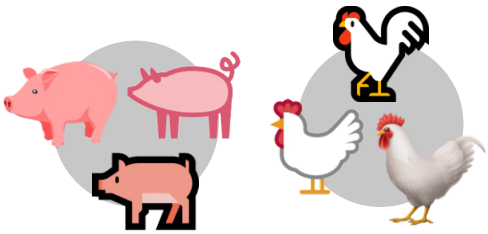
Precision feeding systems for pigs and poultry

Better nutrient efficiency

Lower feed cost

Reduced environmental impact

The challenge

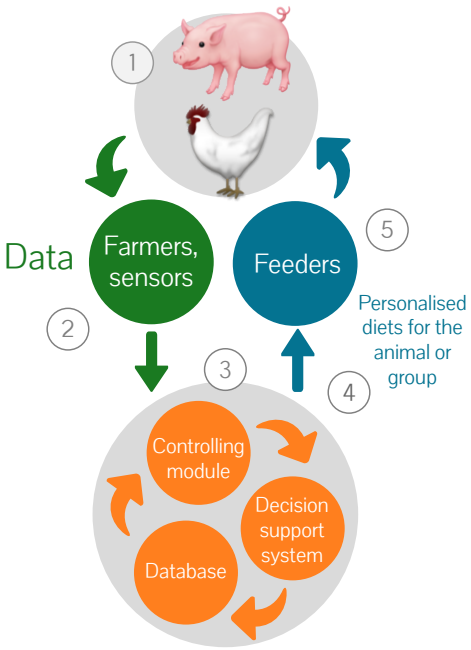


Each animal is unique!

In conventional production systems, monogastric animals are mostly fed as a group, even though there is a large variation in nutritional requirements among individuals. The requirements also change very rapidly over time and according to physiological stage.

As a result, providing the same diet for long periods of time and without taking individual variation into account is associated with poor adequacy between nutritional requirements and supplies. This impairs the efficiency of nutrient utilization.

Our solutions



The Feed-a-Gene project developed novel precision feeding systems:

- for growing pigs, fed *ad libitum* or in restricted feeding
- for gestating and lactating sows
- for broilers and laying hens

These systems adjust the nutrient supply in real-time to the nutritional requirements of the animal or group of animals, taking into account daily performance and physiological stage.

Precision feeding improves feed and nutrient efficiency, and reduces feed cost and environmental impact.

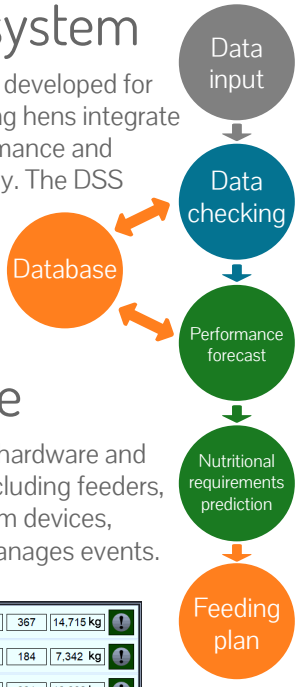
Novel technologies & concepts

Several novel technologies have been developed in the Feed-a-Gene project. These technologies are combined in systems for precision feeding that can be adapted to different situations in pig and poultry farms.

Decision support system

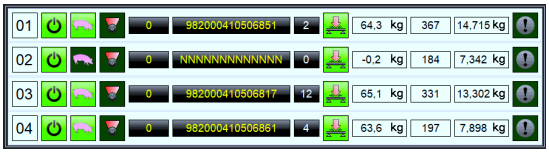
The decision support systems (DSS) developed for growing pigs, sows, broilers and laying hens integrate biological models that predict performance and nutrient requirements for the next day. The DSS ensures data flow and data integrity.

The application of the DSS was tested and validated in experimental pig and poultry farms.



Controlling module

The controlling module includes the hardware and software for managing all devices including feeders, scales and sensors. It stores data from devices, communicates with the DSS, and manages events.



Communication language

A high-level agent communication language developed for precision feeding systems is used to share data and information among heterogenous system components.

Precision feeders

For pigs, several pre-industrial prototypes of precision feeders for growing animals (*ad libitum* or restricted feeding) have been developed and validated in farm conditions. Commercial feeders for sows (gestating, lactating) have been adapted to integrate the DSS and enable appropriate mixing of feed.

For poultry, current commercial devices can be combined using the controlling module, to measure performance (weighing scales) and adapt diet composition (weighing and mixing hopper) using the DSS.

Recommendations & benefits

- Precision feeding systems ensure an optimal nutrient supply by blending two pre-mix feeds with different nutritional characteristics. This allows reducing feed cost, nutrient excretion, and the associated environmental impacts.
- Precision feeding systems ensure the real-time monitoring of performance traits (*e.g.*, feed and nutrient intake, and weight gain) in individual animals or in groups of animals, and enable the detection of early perturbations.

Feed-a-Gene

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