

Better digestibility and a more efficient use of feed in pig fattening

If the decrease of the production cost is a constant challenge, feed cost is one of its major components. Indeed, knowing that feed represents from 65-70% of the total cost of production and that energy represents 86% of the cost in swine diets, working on feed efficiency, and improving the Feed Conversion Ratio (FCR), is definitely a significant economic issue and a major challenge for pig producers.

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To improve this indicator, it can be interesting to work on several aspects, both on feed and animal levels, such as:

- Optimising the feed digestibility by the choice of adapted raw materials free from anti-nutritional factors.
- Improving the feed digestibility by cooking or pelleting processes.
- Enhancing the physiological digestive abilities of the pigs, with special nutrients or a combination of them.

For more than 15 years, the advanced research on plant extracts has been at the centre of the know-how of the CCPA Group for all animal species and, in particular, for pigs, to drive towards a more

efficient feed use and reduced total production costs. Through this phyto-expertise, the deep knowledge of the actions of a large number of plant extracts has enabled CCPA to select those with a physiological action on digestion, and specifically some stimulating the production of enzymes.

The benefits of spices

Among the nutritional specialties resulting from the R&D of the CCPA Group, one of them, called Crea Advance, can optimise the digestive process of swine for an optimal use of the nutrients (proteins, energy and lipids), from post weaning to the fattening period.

Its originality lies in its composition based on a synergistic association of vegetable extracts and spices.

The three spices in its formulation act in synergy and have complementary effects on the various segments of the digestive tract (see Table 1), leading to a better digestibility of the feed and, more generally, of the organic matter.

Moreover, these spices influence the structure of the intestinal barrier favourably.

Furthermore, by its original mode of action, this new solution enables a release of energy and amino acids. Several trials in CCPA experimental farms evaluated and attributed a

Table 1. Crea Advance has a formulation combining three spices with complementary effects.

	Spice 1	Spice 2	Spice 3
Salivary secretions and amylase activity	+	+	+
Gastric secretions and mucous blood flow	+	+	
Biliary secretions	+		+
Pancreatic enzyme activity	++	++	++
Brush border enzyme activity	++		+
Gut barrier structure	++	+	
Immune system maturation	+		
Antioxidant and anti-inflammatory activity			++

Trial	Area	Feed	Diet	ADG (%)	FCR improvement (%)
1	France	Dry	Wheat, barley, soya	+ 4	-2.5
2	France	Dry	Wheat, barley, soya, rapeseed	+3	-3.0
3	EU	Liquid	Co-products, barley, soya	+2.5	-4.1
4	EU	Dry	Corn, wheat, soya	+1	-3.0

Table 2. The synthesis of Crea Advance in field trials with 3,500 pigs.

nutritional value of the amount of these released nutrients. These measures obtained during in vivo trials in farms were confirmed with laboratory in vitro experimentations (Artemis Laboratory, France).

The crossed results established an objective evaluation of the energy and protein savings, as follows:

- +1.3% on energy digestibility.
- +2% on total protein digestibility.
- +1.3% on organic matter digestibility.

As far as feed cost is concerned, that represents a saving of about €2.5 per ton of complete feed.

In pig farms, these values would be similar to a FCR improved from 3.0 to 4.2%.

The proof in the field

These good results have been successfully checked in field conditions, by varying different criteria:

- Animal weight (12-120kg).
- Feed program (single or combined).
- Raw materials used in the feed (cereals, co-products).
- Levels of energy and proteins (high or low).
- Genetics used (more or less muscular).

These trials were led in three European countries, with a total of 3,500 pigs in breeding systems allowing an accurate measure of performance (especially the FCR), with a product incorporation into liquid or dry feed (Table 2).

It is important to note that the improvement of the FCR did not adversely impact the other performance criteria: daily weight gain, carcass quality, mortality, etc.

Conclusion

In conclusion, acting on digestive enzyme secretion appears as a good way to significantly improve the FCR.

The farm trials results of Crea Advance confirmed the scientific data and enabled the technical response of this natural combination of plant extracts and spices to be predicted precisely.

In a market more and more receptive to money saving and respect for the environment, CCPA Group's new approach is definitely an interesting way to improve breeding profitability. ■

Several trials were led in field conditions to evaluate the FCR improvement.

