Optimising nutrition, improving profitability

Advanced technologies for more accurate nutritional management
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Service and support

- NutriOpt support: maintaining your competitive advantage
- Trouw Nutrition, a global leader in animal nutrition
The increasingly competitive and complex nature of the food industry means that suppliers have to overcome all kinds of new regulatory and operational challenges.

While feed costs can account for as much as 70% of the overall production budget, the availability of raw materials is in decline, prices are becoming more volatile and competition is becoming more intense. In addition, as animal and plant genetics evolve, so nutrition also needs to be adapted to ensure optimum levels of efficiency.

All of this means it’s vital for suppliers to look into new techniques and controls to improve operational accuracy and maintain a competitive edge. With market conditions being so changeable, every decision you make could have a significant effect on your profit margins.

The importance of precision feeding

- Genetics: New opportunities in the production of animal feeds, crops and livestock.
- Feed: More accurate analysis of feedstuff nutritional content and greater understanding of market pricing.
- Animal: Better understanding of digestive processes and exact nutritional requirements.
- End product: High efficiencies in terms of getting to market, but with no compromise on quality.
- Consumer: Critical and demanding in terms of quality, choice, value, safety and sustainability.

It’s vital to look into new techniques and controls to improve operational accuracy and maintain a competitive edge.
Trouw Nutrition understands the challenges you face. We have long-term experience working with a wide range of animal production methods, and have developed detailed animal models based on accurate data to help manage common risks and optimise nutrition.

That’s why Trouw Nutrition has developed NutriOpt, which utilises the latest developments in science, economics and technology to precisely calculate the most efficient nutritional strategy to match your needs and the market conditions at any given time.

We give you the power to make smart, logical decisions
NutriOpt gives you the power to harness huge amounts of expert data, and manage risk by making smart decisions based on facts rather than assumptions.

We focus on technical performance as well as business performance
Our systems combine sound economic principles with scientific analysis to help you increase efficiency, performance and profits.

We have a strong scientific foundation
Our extensive specialist knowledge and data collected over 50 years helps us deliver industry-leading accuracy and predictability.

We believe in best practice principles
We use the latest innovations alongside trusted and established practices to deliver the very best results time after time.

We give you direct access to expertise and support by Trouw Nutrition
NutriOpt is powered by Trouw Nutrition – the global leader in animal nutrition. You can focus on your business knowing that you are employing the latest and most effective nutritional techniques.
What is NutriOpt?

NutriOpt is a modular, precision-feeding system designed to help achieve your financial and animal production goals through advanced, real-time nutritional analysis and modelling, and ongoing technical support.

How the concept of NutriOpt plugs in to your business

1. We are able to establish the exact nutritional value of your raw feedstuff by NIR, and make accurate interpretations using our nutritional digestibility matrices.

2. The system then employs a wealth of data from a range of sources, including market prices, livestock models and environmental factors.

3. This information is instantaneously converted into highly-accurate recommendations for your nutritional strategy, based on modelling algorithms that have been finely-tuned over decades.

4. By saving time and removing any elements of guesswork, NutriOpt gives you and your team the freedom and confidence to focus on higher value activities to build your business.

5. Our expert team can install your NutriOpt modules to order, and set up your system to match your specific business requirements.

Technical and economic benefits of NutriOpt

Optimising nutrition

NutriOpt determines the effectiveness of your feedstuffs by combining precise NIR measurements with the data contained in our Nutritional database – highly detailed feed evaluations and raw material comparisons backed by over 50 years of research experience. The system also gives you a direct link to the nutritional knowledge and animal models from our advanced research centres. This allows you to optimise your nutrition accurately based on the very latest scientific data.

Improving profitability

The outputs from NutriOpt allow you to finely tune every element of your operation for maximum economic success – feed type and composition, end-product yield, costs and revenues.

Key benefits for you

- Increases accuracy and predictability
- Simplifies the decision-making process
- Gives greater confidence and control
- Reduces risk
- Gives staff the freedom to work on other activities
NutriOpt is composed of modular components that work easily and seamlessly together in one advanced, integrated feeding system.

NIR measurements and the Nutritional database
Industry-leading NIR feedstuff calibrations from Trouw Nutrition MasterLab are used to accurately measure and determine the exact nutritional composition of your chosen ingredients. NutriOpt’s Nutritional database contains the very latest dynamic equations to interpret this data in ways that far outperform traditional static tables.

Economic benefit: saves on average €2-€10 per ton feed*

Animal and economic models
Animal and economic models allow you to tailor growth performance at the optimum level for your particular operational targets, financial targets and the value chain.

Economic benefit: saves on average €5-€8 per ton feed**

Nutritional add-ons
Nutritional add-ons provide additional intelligence and tools for split-feeding, feed structure optimisation, phosphorus and phytase utilisation, and other specialist industry-specific challenges. These add-ons plug seamlessly into the NutriOpt system to deliver even greater accuracy for optimum cost formulation.

Economic benefit: saves on average €3-€5 per ton feed***

* Based on comparison of the variation of opportunity costs of raw materials due to different nutrient measurement systems in UFV Brazilian Tables, INRA, CVB and NRC nutrient tables, based on corn, wheat and soymeal prices of Q3 2013.

** Poultry: Based on comparison of economic performance of flocks raised for targeted feed conversion ratio and broilers raised for targeted economic performance, based on feed prices and frozen carcass prices comprising Jul 2012 to Jul 2013, using Trouw Nutrition broiler modelling.

*** Trouw Nutrition R&D trials 2013.
A fully integrated modular system

Benefits of using the whole NutriOpt system

**Operating to a higher standard**
NutriOpt’s individual components can operate successfully on their own, and can also be combined to achieve even higher levels of convenience, accuracy and efficiency. Each component uses the same nutrient system as its counterparts, and the underlying nutritional principles are unified. This way, it’s possible to create an enhanced system that delivers greater accuracy and, in turn, achieve greater economic efficiency.

**Typical savings with NutriOpt**

NIR measurements and Nutritional database estimations are based on comparison of the variation of opportunity costs of raw materials due to different nutrient measurement systems in UFV Brazilian Tables, INRA, CVB and NRC nutrient tables, based on corn, wheat and soymeal prices of Q3 2013.


Trouw Nutrition R&D trials 2013.
NIR measurements

Our NIR service provides enhanced analysis of your feedstuffs from your NIR feed-scanning equipment.

Given the wide variation in the quality of available feedstuffs, it is vital to determine the exact composition of your ingredients. Any inaccuracies could significantly effect your bottom line.

Trouw Nutrition MasterLab maintains one of the largest calibration databases in the industry, which we use to precisely analyse your ingredients within minutes of your scan. The data is based on samples gathered globally from Trouw Nutrition companies and customers in each continent.

Over 30 years of experience with NIR

Over 150 calibration lines

Over 300 NIR instruments worldwide and rapidly growing

Over 750,000 analyses to support the calibration lines
The real cost of accuracy
Trouw Nutrition has invested heavily in terms of money, resources and time to ensure that our nutritional analysis is more accurate than of many other labs. By setting our standards higher, you get more accurate data, which results in a real cost savings of up to 50 cent per ton feed.

Qualification of reactive lysine
One of the latest innovations is the addition of a new quality parameter to the NIR system: reactive lysine. This new parameter will enable farmers, feed manufacturers and others to rapidly assess the quality of the reactive lysine content in their raw materials.

More accurate classification and assessment of nutritional value of feedstuffs results in costs savings up to 50 cent per ton feed (crude protein in soymeal as reference)

The information can be used for a variety of quality control and storage purposes. For example, raw materials in the feed plant can be managed more efficiently and stored separately, based on quality, enabling more precise feeding. And the objective data the tool provides makes it possible to renegotiate the purchase price of raw materials, keeping costs under control.

Nutritional database
Our Nutritional database uses dynamic equations to accurately map nutrient content and digestibility to deliver more detailed performance insight. These equations are based on over 50 years of research, and incorporate the very latest information collated by our global research and development centres.

The Nutritional database seamlessly connects with NIR to provide instant nutritional profiles, ready to use in your optimum cost formulation.

Based on comparison of the variation of opportunity costs of raw materials due to different nutrient measurement systems in UFV Brazilian Tables, INRA, CVB and NRC nutrient tables, based on corn, wheat and soymeal prices of Q32013.
Animal modelling

Trouw Nutrition has developed highly-detailed software models of all major animal species. This allows you to accurately predict how your animals will perform based on the nutrition they receive, their environment, and other key variables.

Our application specialists will work with you to create an accurate simulation of your business operation, tailored to your specific circumstances and objectives.

Economic modelling

In some cases, maximum technical performance is not necessarily the most profitable. Poultry may require higher performance feed which could actually reduce nutritional efficiency. The NutriOpt economic models combined with our animal models gives you a more accurate insight into true performance optimisation.

The model uses up-to-date ingredient prices and projected yield revenue to calculate the optimum nutrition and growth rate for the best economic performance, as opposed to focusing only on technical performance.

The result is a new benchmark in animal nutrition management – allowing you to adapt quickly to changing market conditions, and make complex nutritional decisions with confidence.

Saves on average, per ton feed:

€5–€8

Based on comparison of economic performance of flocks raised for targeted feed conversion ratio and broilers raised for targeted economic performance, based on feed prices and frozen carcass prices comprising Jul2012 to Jun2013, using Trouw Nutrition broiler modelling.
Nutritional add-ons

NutriOpt is designed to deliver highly accurate results through a combination of intelligence and convenience, which is demonstrated by our nutritional add-ons for specialist applications.

These add-ons summarise the extensive findings which our global R&D team made across a wide range of specialist nutritional challenges such as feed structure optimisation for broilers to improve nutrient efficiency. In each case, our aim has been to enhance ingredient and nutrient potential in order to increase feed efficiency and economic performance.

By harnessing the latest science and innovation from our research and development centres, our nutritional add-ons offer high levels of convenience with user-friendly tools and easy integration with other systems including NIR and the Nutritional database. This allows your staff to quickly and easily generate accurate assessments of nutritional profiles based on the exact quality of your feed, your animals, your production environment, and your economic objectives – allowing you to enhance animal performance and reduce costs through increased efficiency.

R&D resources

* 5 worldwide research centres
* 50 over collaborations with research institutions worldwide
* 100 experts worldwide
* 50 over years of dedicated R&D knowledge and experience

Our areas of qualified expertise:
- Animal nutrition
- Veterinary science
- Immunology
- Molecular biology
- Biochemistry
- Feed technology
Poultry-specific solutions

Trouw Nutrition companies have an in-depth understanding of the poultry business, both in terms of technical production and economic modelling. We fully understand the challenges you face and the wide range of factors that can influence the success of your business.

NutriOpt includes an economic model and nutritional add-ons specifically formulated for the poultry sector, which translates science into profitability by optimising nutrition.

NutriOpt: tailored for the poultry business
Genetic changes in broiler breeders mean that their body weight gain, feed conversion ratio and meat yield over time have gradually improved. However, broiler breeder management techniques, such as feed allocation and body weight targets, have not kept up with these changes. As a result, broiler breeders are increasingly suffering from feed and nutrient restrictions that are detrimental to their welfare and have a negative impact on their performance later in life.

That’s why Trouw Nutrition has developed a special broiler breeder feeding strategy, which is now available via the NutriOpt precision feeding system.

**How does it work?**
The NutriOpt broiler breeder recommendations contain special feeding strategies for the different phases of rearing. These are aimed at reducing hunger and adjusting body weight targets, while also improving the animals’ wellbeing.

**Rearing phase: body weight targets combined with diluted diets**
During the rearing phase, a combination of high body weight targets and diluted diets is used, which increases the time the birds spend eating. The dilution of the diet increases eating motivation and reduces pecking behaviour. A mash diet is advised, as research indicates that this is more effective than a crumble diet in increasing the amount of time spent eating.

**Production phase: higher body weight targets to support overall performance**
Research shows that, in the production phase, rearing breeder hens to higher target body weights supports an improved overall performance in the production of hatching eggs, irrespective of the diet the birds are fed.

However, a diluted diet is useful in that it reduces non-desirable activities (e.g., pecking) by keeping the birds busy eating. Therefore, the broiler breeder feed recommendations include advice on how to obtain a higher body weight in combination with a diluted diet.

Research suggests that when young breeders are given a diluted diet, offspring performance does not change. Raising breeders to a higher body weight, however, does have a positive impact on offspring production, as research shows that it not only improves animal welfare, but also reduces the mortality rate of the offspring.

The NutriOpt broiler breeder recommendations are available via the NutriOpt system. You can define the optimal feeding strategy that fits your current breeding program to help you formulate the best diet for your broiler breeders.

**Key benefits**
- Reduced hunger and pecking activities
- Improved animal welfare
- Improved laying percentage
Traditionally, it has been the norm to formulate broiler diets based around maximum animal performance. However, this can require a highly concentrated and protein-rich diet, which can be costly and thereby have a negative effect on profitability.

Trouw Nutrition shows that feeding for the best broiler performance instead of the best economic outcome could reduce the gross margin of a typical broiler operation by more than €20,000 per week (based on 1 million broilers per week).

As the system uses market data, it can respond instantly to pricing changes. This ensures you are always working towards the highest level of profitability, whatever the market conditions.

**Key benefits of the broiler economic model**

- Applicable to different broiler breeds
- Allows you to project and review different nutritional strategies
- Models optimum economic performance

**Broiler economic modelling**

Our global R&D has developed a flexible, precise tool to help you calculate the optimum energy and amino acid levels required for optimum broiler meat production. By combining economic data with technical data, it is possible to accurately formulate the best possible diet for your livestock to produce the best return on investment.

**Technical and economical performance**

The broiler economic model also allows you to view a body development curve based on how you formulate nutrients in the diet. This makes it a powerful tool for nutritionists to evaluate feeding strategies in advance, and see the predicted effects on growth rate, feed conversion, and carcass and breast yield.
Feed structure nutritional add-on for broilers

The absorption of nutrients is the key to optimal bird development. It is necessary, therefore, to ensure that the gizzards are properly stimulated, since gizzard functionality determines the level of nutrient absorption by the bird. Finely ground feed reduces the level of gizzard stimulation, which reduces nutrient absorption, affecting the development and functionality of the birds. Coarse feed, however, stimulates gizzard development and functionality, leading to a higher absorption of nutrients by the birds.

How the concept works
Our aim is to help you find the perfect feed balance to optimise efficiencies through improved transit times and digestibility of nutrients. By using scientific methods to accurately pinpoint the optimal quality and quantity of structural components needed in your birds’ diet, you could significantly reduce your production costs and increase profitability.

Defunctioning stomach
- **Gizzard**
  - Not working, low dry matter content
  - Feed particle size not changed before passing into intestine: reduced absorption

- **Proventriculus**
  - Large capacity reduces contact with content

Functioning stomach
- **Gizzard**
  - Grinds and mixes, feed particle size reduced before passing into intestine, high dry matter content

- **Proventriculus**
  - Small capacity allows adequate gastric activity

*Finely ground feed reduces stomach stimulation, development and function.*

*Coarse feed stimulates stomach development and function.*

Benefits of feed structure add-on for broilers: improved FCR and lower feed costs

- Structural components stimulate gizzard development and functionality.
- Better gizzard functionality helps to optimise transit time and to enhance digestibility.
- Better digestibility and nutrient utilisation results in:
  - Improved feed conversion ratio (FCR).
  - Improved broiler performance, leading to lower feed costs.
  - Improved litter quality, leading to better animal welfare.
  - Grains can be replaced by more economic alternatives, lowering the feed costs even more.

Using NutriOpt will help you benefit from our insights

Robust research has demonstrated that improved digestibility generates higher levels of FCR. Our feed structure add-ons allow you to capitalise on our expertise through the NutriOpt system, letting you accurately determine the right levels of structural components needed in your feed for the optimal development of your livestock.

Key benefits of the NutriOpt feed structure add-ons

- Reduced feed and production costs through accurate nutrition.
- Seamless integration into cost formulation solutions.
- Uses a data matrix allows nutrient levels to be precisely attributed to structural component sources.
- Recommendations for identifying structural sources and handling in feed mills.
- Expert support and training from our customer service team.

Our aim is to help you find the perfect feed balance to optimise efficiencies.
We take pride in offering local, high-quality customer support to help you get the most from NutriOpt. Our application experts will be able to help you implement, calibrate and maintain your NutriOpt system, to help you maximise the benefits to your business. From installation to upgrade, we’ll be there when you need us.

As new data becomes available, it is fed into the system to make it more accurate. And with ongoing access to live updates, staff training programmes, industry knowledge and technical bulletins, we can keep you up-to-date on the latest innovations in nutrition, helping you maintain a competitive advantage in today’s constantly-changing market.
As the world’s population grows and an increasing proportion of people gain greater disposable income, there is more freedom to make choices about food. This will lead to an increased consumption of proteins such as meat, fish, milk and eggs.

Trouw Nutrition forms an essential link in the process chain, converting raw materials into efficient and nutritious feed solutions for farmed animals and fish.

Our ambition is to help meet these increasing demands in a sustainable manner. We will do this by:
• constantly seeking ways to raise the efficiency and nutritional value of our products
• monitoring and streamlining the productivity of our activities and those of our customers
• reducing the environmental impact of our value chains

Trouw Nutrition
As part of the Nutreco family, Trouw Nutrition professionals work closely with other Nutreco companies and are in constant liaison with research and development colleagues at the different research centres. This focussed approach allows Trouw Nutrition to deliver world-class feed solutions that are tailored to specific customer needs and local market requirements.

Our R&D
We have five global research centres for all major species and feed ingredients in animal nutrition.
Our areas of expertise are:
• Animal nutrition
• Veterinary science
• Immunology
• Molecular biology
• Biochemistry
• Feed technology
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