# Innovative split-feeding system for broiler breeders

A proprietary split-feeding programme for broiler breeders is disrupting conventional approaches to poultry nutrition.

Developed by Trouw Nutrition, a Nutreco company, the split-feeding innovation has demonstrated improved hatching rates and lower feed costs in research centre trials and commercial farm studies.

**by The Technical Team, Trouw Nutition. www.trouwnutrition.com**

The system delivers nutrients that support the birds' requirements for egg formation at different times of day, as research conducted with laying hens shows birds' circadian rhythms impact intake.

Birds' intake of protein and energy nutrients is higher in the morning when the egg yolk is produced, while calcium intake increases later in the day.

## Feeding programmes adapted

These research insights inspired Trouw Nutrition scientists to adapt feeding programmes so birds receive different nutrients at different times of day – energy, protein and phosphorous to support egg-laying production in the morning, and nutrients to support eggshell formation in the afternoon.

## Performance and animal welfare benefits noted in vitro and in vivo

Broiler breeder studies conducted at the Trouw Nutrition Poultry Research & Development Centre and on five commercial farms validate the performance, economic and animal welfare benefits of a split-feeding strategy.

A series of research centre studies involving more than 2,800 broiler breeders compared performance parameters of hens fed a regular broiler breeder diet to hens receiving a split-feeding programme in the morning and afternoon.

The split-feeding programme was designed to provide a more accurate nutrient supply, according to the egg formation need of breeders.

This dietary strategy also provided less crude protein (CP), apparent metabolisable energy (AME) poultry, calcium (Ca) and digestible phosphorous (dP) compared to the control diet.

Researchers evaluated egg production frequency, time spent eating, bird behaviour and eggshell quality. Some key findings of the research centre studies include:

- Increased egg production in birds fed a split-feeding regimen compared to the control group, resulting in higher total and hatching eggs, as well as higher chick production.
- A significantly lower feed cost for birds fed the split-feeding system compared to birds receiving the control diet (Table 1).
- Birds receiving the split-feeding programme demonstrated improved feathering, reduced pecking and showed fewer behaviours indicative of hunger.

Research centre results were

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**Fig. 1. Weekly egg production.**

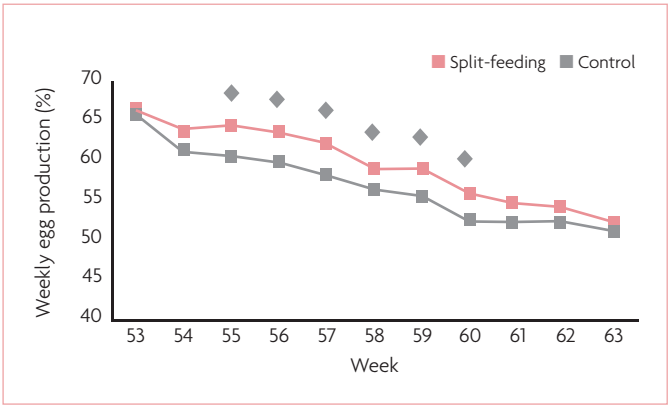
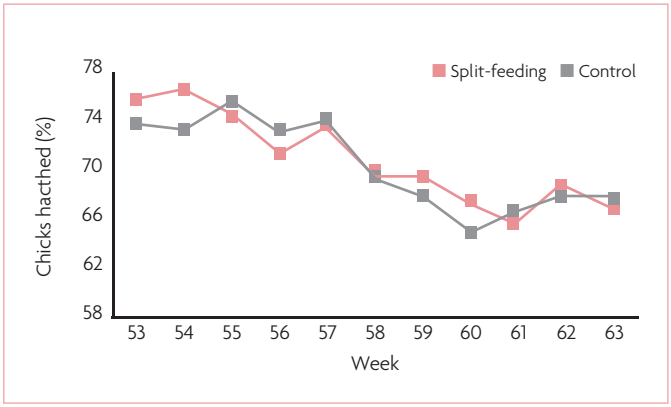



**Fig. 2. Chicks hatched.**



| Diet | Feed cost/egg produced (€ cent) | Feed cost/hatching egg (€ cent) | Feed cost/chick (€ cent) |
|---|---|---|---|
| Standard | 6.163 | 6.905 | 10.40 |
| Split-feeding | 5.638 | 6.184 | 9.312 |
| Savings (%) | -8.5 | -10.4 | -10.5 |

**Table 1. Feed cost of production, split-feeding vs standard.**

| | Egg produced | Hatching egg | Chicks hatched |
|---|---|---|---|
| Control | 49.62 | 48.61 | 35.45 |
| Split-feeding | 48.99 | 47.53 | 37.34 |

**Table 2. Split-feeding vs control group.**

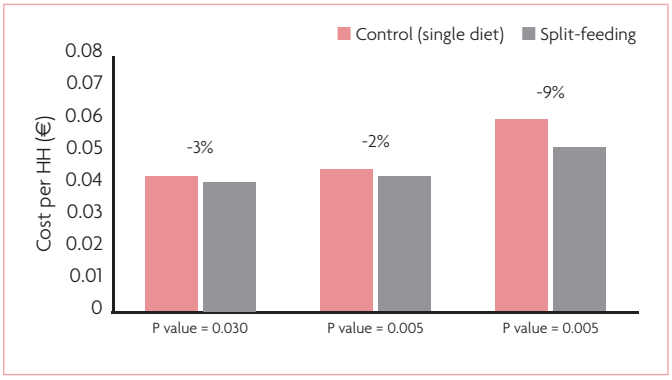



**Fig. 3. Cost per hatched chick, split-feeding vs control.**

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further confirmed by three concept tests of split-feeding programmes on commercial farms. Farm studies at SADA company were conducted between May 2015 and November 2018, involving 122,600 breeders (Ross/Cobb). Some key findings of the farm studies include:

- +1.9 chicks hatched in flocks fed the split-feeding programme compared to control (Table 2).
- A 9% reduction in feed costs (Fig. 3), of 3-7% per hatched chick.
- Flocks fed with split feeding also displayed significant improvements when it comes to eggshell quality. Eggshell quality parameters include weight, thickness, breaking strength and SWUSA values (Fig. 4).

## Supports environmentally responsible food production

Research findings further noted that as the efficiency of the split-feeding programme means broiler breeder hens consume fewer nutrients, $CO_2$ emissions are reduced up to 10%, resulting in less excretion of nutrients into the environment.

Remarking on the findings, Felipe Sanchez Fernandez, Global Application and Solution Specialist, Poultry and Technology Transfer, Trouw Nutrition, stated, "Split feeding brings breeders closer to their voluntary and physiological feeding behaviour.

This system's ability to address the nutritional requirements of broiler breeders supports efficient feeding, producer economics and farmers' sustainability efforts." ■

**Fig. 4. Eggshell quality parameters, split-feeding vs control**