



agolin®

for DAIRY COWS

PERFORMANCE - FERTILITY - ENVIRONMENT

What is AGOLIN RUMINANT?

AGOLIN RUMINANT is a blend of high quality plant extracts from species such as coriander, nutmeg or wild carrot, designed to optimise ruminant feed intake and feed utilisation.



Coriander

Many years of research have resulted in this specific blend of powerful components with great benefits to ruminant animals. Further product features are its pleasant smell and physical forms, which are well accepted by the feed industry and farmers.

AGOLIN and Rumen Efficiency

Research trials demonstrate AGOLIN's potential to alleviate nutritional stress in ruminants through its positive effects on the rumen microbiota. INRA, the French agricultural institute discovered a significantly larger rumen bacteria population and a reduced number of protozoa when AGOLIN was fed to cows. The feed additive produces the following rumen responses, both in vitro and in vivo, when supplemented to the diets:

Reduced methane and ammonia production in the rumen lead to better energy and protein retention and consequently improved productivity in the animals.

Performance

Many University and field trials with Agolin show positive responses in dairy cows. A recent example is the long term trial carried out in the University of Aberystwyth, sponsored by the European Institute of Technology, where animal performance, health and environmental parameters were measured.

A Holstein dairy herd (N = 149) fed with grass and maize based silage was divided into two groups. The duration of the experiment was close to 6 months.

Most of the production parameters were increased, such as energy corrected milk production, milk yield and total milk fat and protein production. A portion of this performance increase is due to the higher dry matter intake of the Agolin fed cows.

University of Aberystwyth, UK, duration 1/4 days

	Control	AGOLIN	Diff., %
Number of cows	76	73	
ECM, kg/head/day	33,0	36,0*	+9,1 %
Milk yield, kg/head/day	28,3	31,2*	+10,2%
Milk fat, kg/head/day	1,32	1,44*	+9,1%
Milk protein, kg/h/day	0,96	1,05*	+9,4%
DMI, kg/head/day	20,8	21,7	+4,3%
Feed efficiency Kg milk / Kg DMI	1,36	1,44	+5,7%

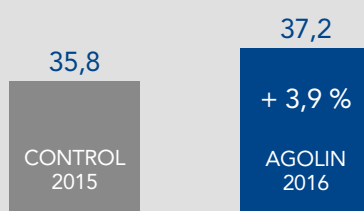
* = p < 0.05

The protein and fat concentration in the milk was maintained in the experimental group. Furthermore, the feed efficiency rate was improved from 1.36 to 1.44 or 5.7 % as shown in the table above.

In Spain, a large field trial with 936 cows on 7 farms was carried out under the lead of a veterinarian. Agolin was added to the feed in 2016 and compared with the previous year. The monitoring showed an improved milk yield of 3,9 % and an even higher average milk production of the first lactating animals of 5,2 %.

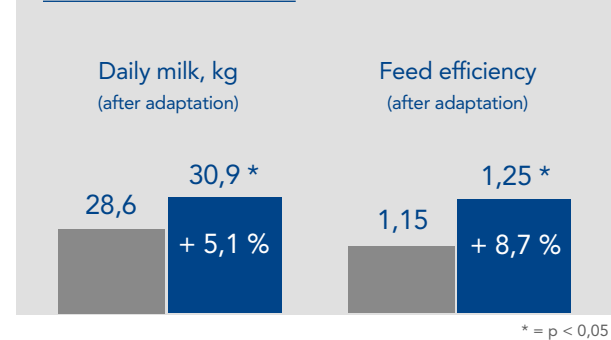
Field trial with 936 cows, Spain

Milk yield, kg/cow/day



Another institutional trial with dairy cows, fed with a typical local TMR (maize and rye grass based), was carried by IRTA (Blanca) in Spain. Twenty paired groups of Ponderosa Holstein were selected and one of each pair, randomly selected, was fed with 1 g AGOLIN RUMINANT for a period of 8 weeks. Following an adaptation period of 3 weeks, an improvement of 5 % in milk yields was measured.

IRTA, Spain, N = 2 x 20



There were no differences in feed intake between the groups. As a result the feed efficiency was significantly improved by 8 % in the Agolin fed animals after rumen adaptation.



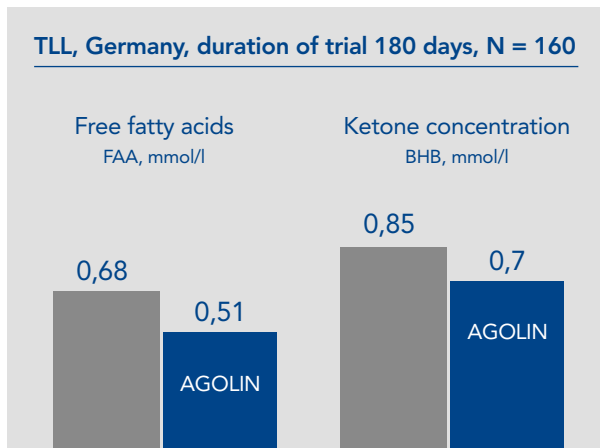
Fertility

In a number of long term trials with Agolin, the reproductive performance - another key success factor of a herd - was also monitored.

In one trial, carried out at "Thüringer Landesanstalt für Landwirtschaft" (TLL) 160 Holstein cows in early lactation were split in two groups. The animals were fed twice a day with TMR containing mainly maize silage, grass silage and a high amount of concentrates.

The average intake of the feed ration supplemented with AGOLIN was significantly improved to 26.5 kg. Also the average milk production and the energy and protein corrected milk production during the 6 months trial tended to be higher.

In the TLL experiment metabolic indicators, namely free fatty acids (FAA) and ketone body concentrations (BHB), were measured in the blood serum. As AGOLIN reduces both blood parameters in the first month of lactation, it is an indication for an improved energy balance and reduced lipolysis.



Consequently, the Institute concluded that the dairy cows adapted better to a negative energy balance, which would likely lead to improved animal performance, backfat thickness, and fertility.

TLL, Germany, duration of trial 180 days, N = 160

	Control	AGOLIN
Insemination attempts / head	1,8	1,7
Pregnancy rate, %	58,1	73,2

A similar increase in fertility was observed in the long term trial with Aberystwyth in England, where the pregnancy rate was increased by 15 %.

An Italian dairy farm with 400 dairy cows (Simmental and Montbéliarde) has been supplementing AGOLIN since 2016. The monitoring showed improved animal performance and a positive influence on fertility parameters such as “days open” and “calving interval”:

Field trial, Italy, number of cows 400

	Control 2015	AGOLIN 2016	AGOLIN 2017
Days open	131	102	101
Calving interval	411	386	382
Insemination attempts / head	3,0	2,6	2,3

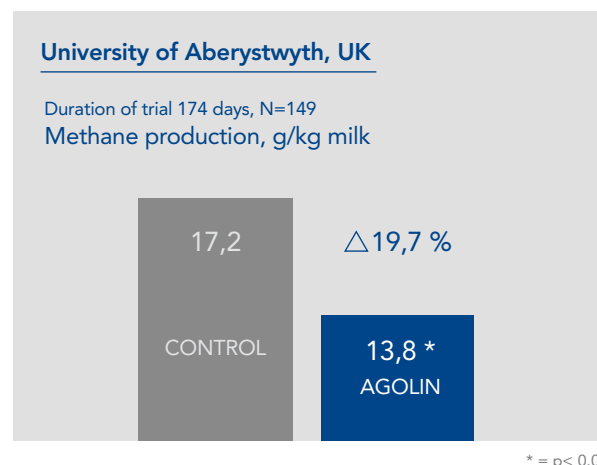
Environment

It is well known that ruminants have an important environmental impact due to the eructation of methane, which is produced via enteric fermentation. A cow produces up to 500 l of methane gas per day. According to the Food and Agriculture Organisation (FAO) beef cattle and dairy cows are responsible for about 15 % of global methane emissions, which corresponds to 4600 million tonnes of CO₂-eq per year.

During the 6 month trial at Aberystwyth University in Wales (grass based ration), cow methane production was measured individually with a novel system called “Greenfeed”.



The results showed a highly significant reduction in methane production per animal (6 %) and 19 % per kg milk produced.



A previous EU research project (7th framework programme) also confirmed AGOLIN’s ability to significantly reduce methane emissions from ruminant livestock. In a trial carried out by INRA in France, where cows were fed with a maize based ration, AGOLIN reduced enteric methane production in dairy cows significantly by 30 % per animal. In this trial a tracer gas technique was used.

In the Institute for Agriculture and Fisheries Research (ILVO) in Belgium, gas from cows and beef cattle was measured, but in metabolic chambers. Also in these experiments AGOLIN confirmed its ability to reduce methane significantly.

agolin®

for

RUMEN EFFICIENCY

AGOLIN RUMINANT is widely used for dairy cows in Europe, Asia and the USA. Trials in these regions showed the following benefits :

- **Optimal feed intake**
- **Higher milk yield**
- **Improved feed efficiency**
- **Positive effect on reproduction**
- **Methane mitigation**

Furthermore, the product is supplemented to minerals and compound feeds for heifers, beef cattle, sheep and goats.

Legislation

For EU countries, AGOLIN products comply with the regulation (EC) 1831/2003 on feed additives as well as with FDA guidelines in the USA.

Inclusion level

1 g AGOLIN RUMINANT / cow and day

Product description and packaging

The product is available in powder (micro encapsulated) and liquid form. A version of AGOLIN for organic production is also available. All compounds used in the AGOLIN products are of food quality and GMO-free.

Founded in 2006, AGOLIN SA develops, produces and markets innovative feed additives, based on botanical compounds, which are effective, easy to use and safe. These best-in-class products have been successfully introduced into Europe, Asia and the US.

Agolin's quality management system (FAMI-QS) ensures safety and guarantees traceability. **FAMI-QS**

The company is a member of FEFANA, the EU Association of Speciality Feed Ingredients and their Mixtures.

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