



TECHNICAL BULLETIN

Dairy Cows

EFFECT OF AGOLIN RUMINANT ON PERFORMANCE AND METHANE PRODUCTION IN DAIRY COWS

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Blanca
From the Pyrenees



INTRODUCTION

Several previous studies have shown that AGOLIN RUMINANT can increase milk yield and reduce methane emissions in dairy cows. A recent study with dairy cows at IRTA, Blanca from the Pyrenees in the Catalunya region demonstrates the effect of AGOLIN RUMINANT on several production parameters, including milk yield, milk components and feed efficiency. In this study, methane rumen concentrations were also examined.



PROTOCOL

The trial was carried out in IRTA, Blanca from the Pyrenees, in Spain for a period of 8 weeks. Forty eight (48) Holstein cows were selected and evenly allocated to two groups. One group received 1g AGOLIN RUMINANT through the parlour (rotary). All cows were fed a standard dairy ration produced locally (see table 1) and individual intakes and milk samples were measured. Milking was twice a day.

Methane measurement

In this study, direct measurement of dissolved methane from extracted rumen fluid samples was used to determine the likely effect of AGOLIN on methane output of the cows. Following oral extraction the samples were incubated for 24 hours at 39C and the headspace gas was measured for methane concentrations using a gas chromatograph equipped with a thermal conductivity detector (GC-TCD).

TABLE 1: RELEVANT NUTRIENT COMPOSITION

DM (%FM)	63,4
NEI (Mcal/kg DM)	1,58
CP (%DM)	15,3
FAT (%DM)	3,2
NFC (%DM)	38,8
NDF (%DM)	34,6



RESULTS

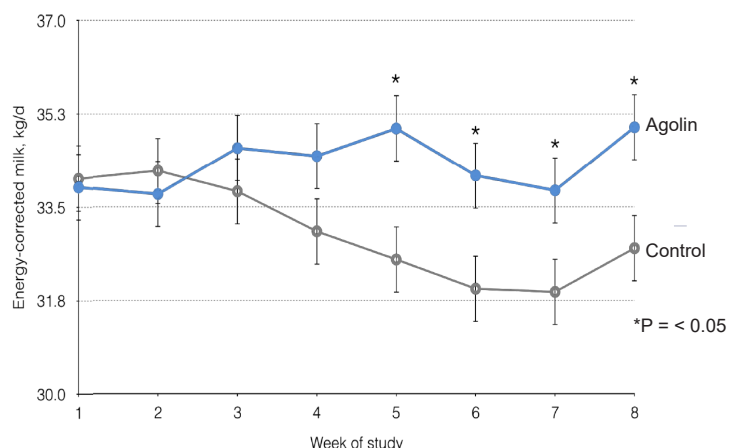
PRODUCTION PARAMETERS

There were significant improvements in milk yield (+1.1kgs) as well as in milk fat and protein yields (kgs/day).

	Control	Agolin	P
Yield, kg/d	31,8	32,9	< 0.001
ECM	33.0	34,4	< 0.001
Fat %	3.92	3.92	0.51
Fat kg/day	1.23	1.28	< 0.007
Protein %	3.12	3.15	0.49
Protein kg/day	0.985	1.029	< 0.01
DMI kg/d	22.9	23.4	0.64
FCR	1.41	1.43	0.01

ENERGY CORRECTED MILK YIELD IN KG/DAY

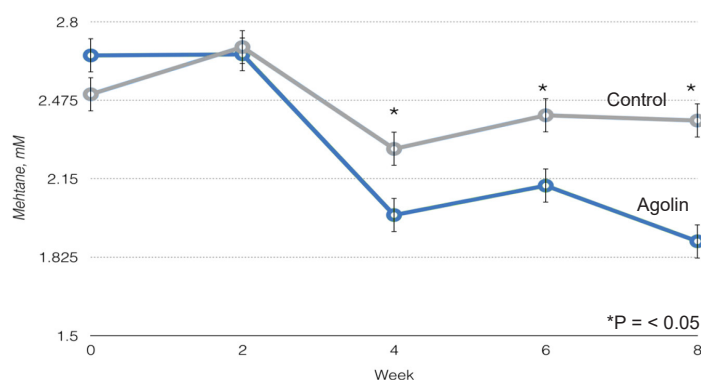
After an adaptation period there is a clear significant response on the Energy Corrected Milk (ECM) yield demonstrated.



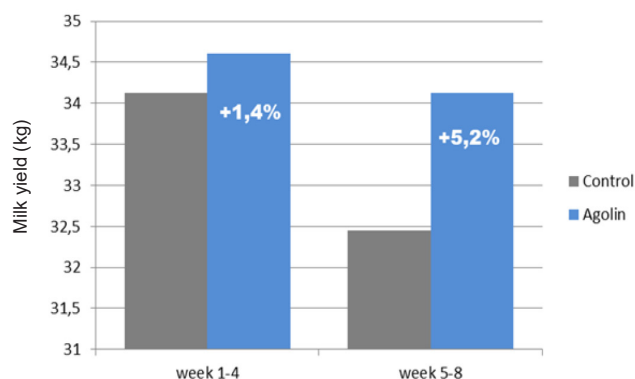
Graph 2 shows the milk yield improvement split between the pre and post adaptation period at four weeks.

There is a clear improvement in milk yield after the adaptation period. Milk yield increased by 5.2% in the experimental group.

GRAPH 3:
METHANE IN RUMEN SAMPLES VS CONTROL



GRAPH 2:
MILK YIELD - PRE AND POST ADAPTATION



Graph 3 shows the impact of AGOLIN RUMINANT on methane. In this study, rumen samples were taken at regular intervals directly from the cow and analysed for methane.

Using a model, an estimation of methane emissions based on rumen fluid levels was used. Again, after an initial adaptation period, methane levels in the rumen were significantly lower, on week 4, 6 and 8. Thus suggesting a reduction in emissions.



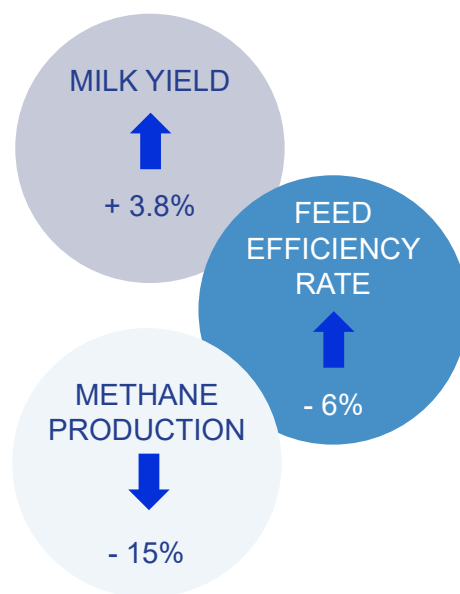
CONCLUSIONS

Performance

- Following an adaptation period of four weeks, a significant improvement (3.8%) in energy corrected milk (ECM) was observed in the AGOLIN fed group (P<0.05).
- Feed efficiency (kg milk/kg DM) improved significantly by 6% (P<0.01) in the second half of the study for the AGOLIN fed cows.
- Milk fat and protein yields increased in line with overall milk production in the AGOLIN fed cows.

Environment

Following an adaptation period of three to four weeks, there was a clear and significant reduction of 15% (P<0.05) in the molar concentration of methane in the rumen fluid, which suggests a corresponding reduced methane gas output.



Effects after 4 weeks of adaptation

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Certified by Carbon Trust for methane reduction and improved efficiency