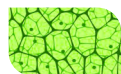


## Editorial

### The inauguration of our new green facility on September 7, and more...!

September was a busy (and fruitful) month for Nor-Feed. The inauguration of our new factory on September 7 with the presence of more than 150 people from different countries, marked a new chapter in our history. The 2,500 square meters new facility is fully automated and will quadruple Nor-Feed's annual production. After the ceremony, the participants had the chance to visit the plant, and learn more about our manufacturing processes and new equipments. On the same week, we had our annual Partners Meeting organised in Angers, gathering clients and partners from all over the world. A great opportunity to meet "in person", and share market feedback, recent trials data and partners testimonials. Last but not least, from September 14 to 16 we were at the 2021 edition of SPACE, in Rennes, our first exhibition in person for almost 2 years!



## Focus on...

### Life Cycle Assessment of feed additives

Life Cycle Assessment (or LCA) is a method for quantifying the environmental impacts of a product throughout its life cycle (manufacturing, transport, packaging, use, etc.).

The LCA method is a recognised method, governed by standards <sup>(1)</sup> and used internationally by the scientific community, private players and political authorities. In the feed industry, resource consumption and pollutant emissions linked to the use of raw materials are easily calculated. However, LCA applies to the entire feed and food chain, and in particular to additives used in animal nutrition, and it meets a growing societal demand <sup>(2)</sup>, given that livestock farming, like other human activities, contributes to greenhouse gas emissions <sup>(3)</sup>.

The LCA covers the entire life cycle of the additive, from the raw materials sourced upstream, to manufacturing, transport and use, and up to the final consumption of the product downstream. The environmental impact of animal feed is directly related to the quantities consumed by the animals; the composition of the feed and the digestive efficiency of the animals are also taken into account, two criteria on which additives can have a significant impact.

The LCA is based on a multi-criteria approach <sup>(4)</sup>, which studies in particular water use, agricultural land use, CO<sub>2</sub> and fine particle emissions, eutrophication, acidification and climate change, in order to measure the full impact of the additive. The LCA identifies the main

sources of environmental impact of the production and use of the additive at the scale of its life cycle on the one hand. And it assesses the influence of the introduction of the additive on the environmental impact of the production of 1kg of meat, milk or eggs.

By comparing what the production of the additive 'weighs' with what its use 'saves', the net benefit to the feed chain can be calculated.

In the case of a citrus extract used in pig feed <sup>(5)</sup>, for example, its manufacture and distribution to an integrator emit a certain amount of CO<sub>2</sub>, occupy agricultural land and consume water (respectively 13.1 kg of CO<sub>2</sub> eq., 5.3m<sup>2</sup> of cultivated area and 66L of water for 25kg of additive). At the same time, the same quantity of additive reduces water consumption by 610 m<sup>3</sup> and the surface area used by the industry by 5 ha. On the scale of a 300-sow farm, the integration of the additive into the ration makes it possible to reduce CO<sub>2</sub> eq. emissions by 117 tonnes per year, water consumption by 1,919 m<sup>3</sup> and the agricultural land used by 16.4 ha, illustrating the positive impact of certain additives in improving the environmental balance of animal production.



Sources : (1) [www.iso.org/standard/38498.html](http://www.iso.org/standard/38498.html) (2) Colloque Agribalyse, 29 septembre 2020. (3) [giec.ch](http://giec.ch) (4) [ecolab.gitbook.io/documentation-agribalyse/methodologie-acv](https://ecolab.gitbook.io/documentation-agribalyse/methodologie-acv) (5) EVEA/Nor-Feed, juillet 2020

# Field Evidence

## Nor-Spice AB®: impact on the development of *E.Coli* and *Lactobacillus acidophilus*

### Materials and method:

The growth rate of 2 strains of bacteria was monitored in the presence or absence of citrus extract. The strains studied were *Escherichia coli* JM109 (*E. coli*) and *Lactobacillus acidophilus* R52 (*L. acidophilus*). For each strain two media are used:

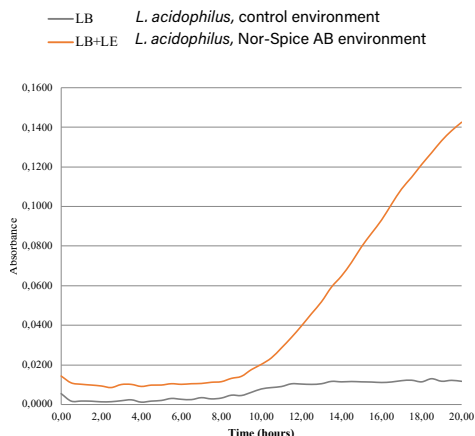


- Control: Sabouraud medium
- Nor-Spice AB®: Sabouraud medium + citrus extract

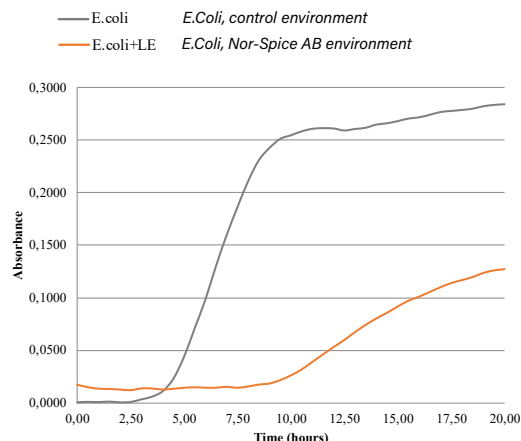
The growth of the bacteria was evaluated by following the growth kinetics of the bacteria at 650 nm. Here the indicator chosen is the doubling time, i.e. the time required for the bacterial population to double.

### Results:

Development of *Lactobacillus acidophilus* alone in a Sabouraud environment, or with the Citrus extract



Development of *Escherichia coli* alone in a Sabouraud environment, or with the Citrus extract



### Conclusion:

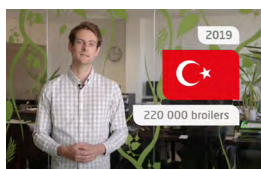
In the presence of citrus extract, the doubling time of *L. acidophilus* decreases: the population therefore grows faster than the population of the control group. Indeed, in the presence of citrus extract, the *L. acidophilus* population is doubled 97 min before the control group (256 min in Nor-Spice AB group VS. 353 min for the control group). In contrast, the doubling time is increased for *E.Coli*: in the presence of citrus extract, it takes 2h45 more for the *E.Coli* population to be doubled (245 min in Nor-Spice AB group VS 80 min for the control group). Citrus extracts therefore have an impact on the stimulation of lactic bacteria and the slowing down of the development of opportunistic bacteria such as *E.Coli*. The interest of the supplementation with Nor-Spice AB is again confirmed and in a very clear way. This experiment could be repeated for other bacterial strains such as *Campylobacter* for example. To be continued!

Do not hesitate to contact us for more information.



Speaking about our new factory, the short film of our inauguration is available! You can watch it by clicking [HERE](#) or on our social media: [LinkedIn](#), [YouTube](#) and [Facebook](#). We also have a lot of pictures available, and if you want to receive them, send a message to:

[contact@norfeed.net](mailto:contact@norfeed.net)



We have a new video about Norponin® XO<sub>2</sub> and field trials. You can watch it on [YouTube](#), [LinkedIn](#) or [Facebook](#). If you want to have the video with subtitles in your language, please send an e-mail to:

[contact@norfeed.net](mailto:contact@norfeed.net)

This letter is sent to you because your address is on our subscriber list. You can unsubscribe at any time by sending an e-mail to [contact@norfeed.net](mailto:contact@norfeed.net)