

VALIDATION TRIALS BY



UNIVERSITÉ DE
SHERBROOKE

On the Effect of Treating Bovine Slurry with Plocher® G

*Plocher® G has since been improved and is now called Plocher® H (2016)

Introduction:

As part of a research project done in partnership with the Environment and Sustainable Development Observatory at the University of Sherbrooke (Quebec, Canada), trials were conducted on liquid manure from dairy cows treated with Plocher G in 2007.

The Plocher G is a unique bio-stimulant with oxygen and other natural information embedded in a calcium carbonate carrier.

Yves Mongeau's farm with 60 dairy cows in Quebec, Canada was chosen.



Yves Mongeau's Farm

Objective trials:

These tests were designed to determine the influence of Plocher G on the following parameters of slurry:

- dissolved oxygen,
- strong odors,
- temperature,
- pathogen,
- beneficial fungi,
- beneficial protozoa,
- biological index,
- fertilizing value.

Treatment protocol:

On 11th August, manure is collected from the slurry pit of the farm.



2 plastics barrels were evenly filled with liquid manure:

- 50 g of Plocher G in 2 liters of water was added to one of the barrels distributed evenly in the slurry using a wooden board.
- 2 liters of water were mixed into the second barrel in order to serve as witness. (Control)



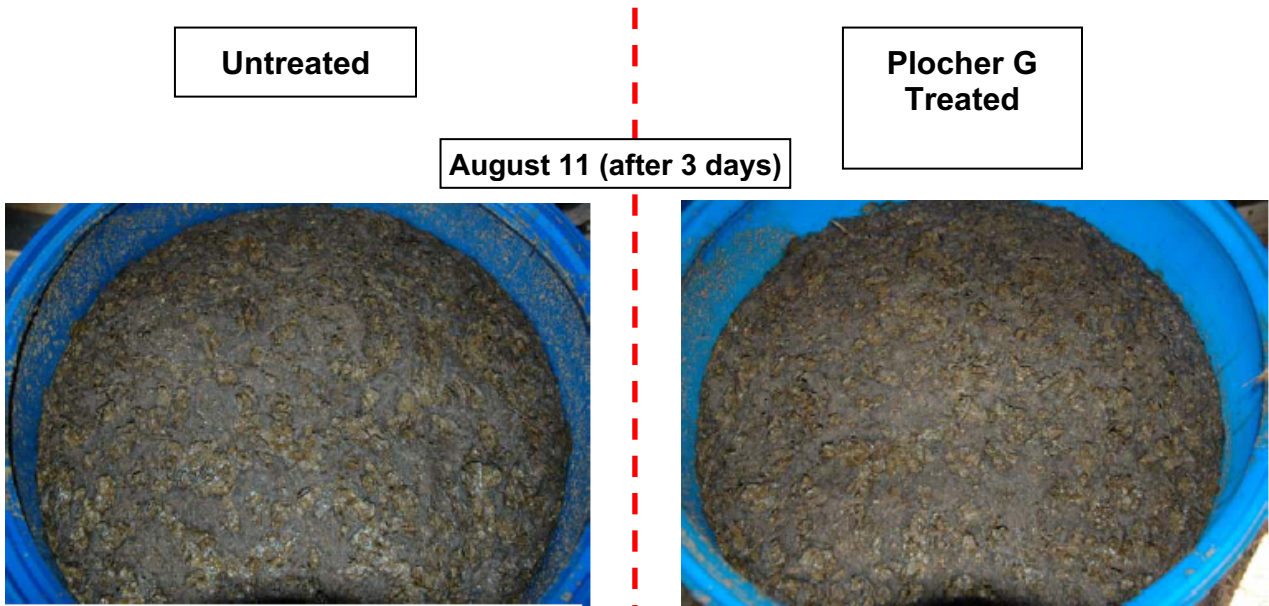
Taking samples for laboratory analysis

The two barrels were stirred with a board every 2 weeks.

On November 14th (3 months after the start of testing), 30 additional grams of Plocher G with 2 liters of water was added into the Plocher treated slurry.

Visual results:

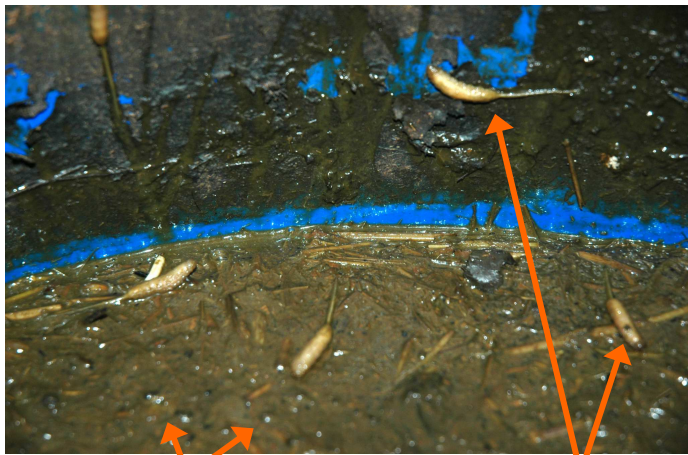
Monitoring changes in slurry: Plocher treated and witness:



Untreated

Treated

Septembre 5 (25 days later)



Gas bubbles

(methane and ammonia)

Larvae



Septembre 20 (45 days later)



Untreated



Treated



Observation of the evolution of manure slurry shows us clearly that :

Witness slurry had:

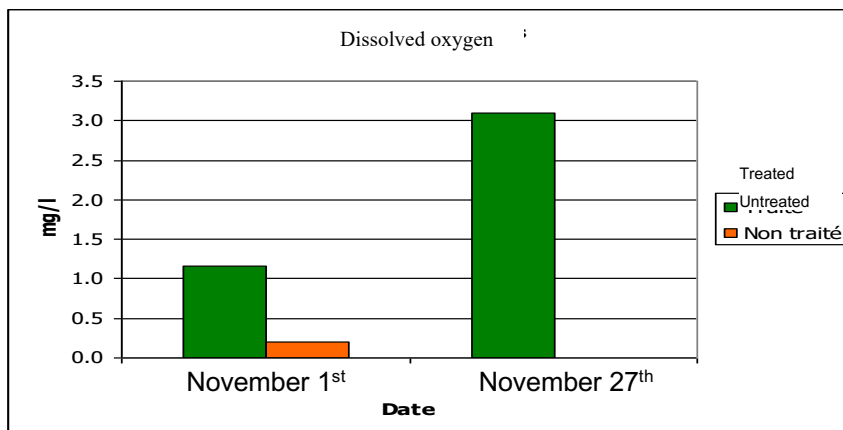
- a yellowish color
- a thick mud and non-homogeneous (straw not decomposed)
- many larvae
- gaseous events (methane bubbles)

Slurry treated with Plocher G had:

- a dark brown color (which represents a favorable decomposition) and humus formation
- a homogeneous liquid (straw decomposed)
- no larva
- no methane bubbles

Results of the laboratory analysis

Dissolved oxygen



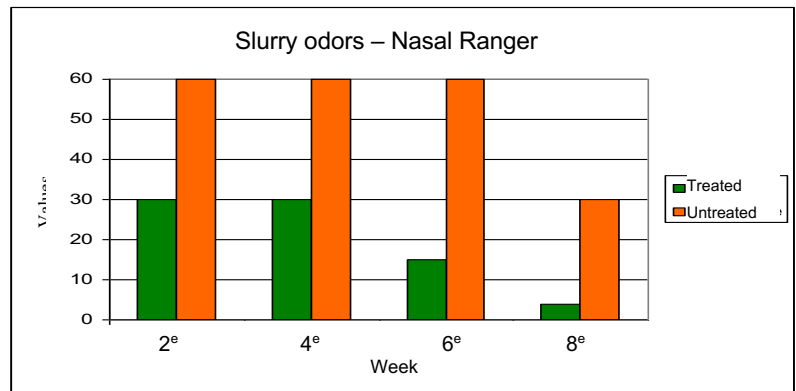
In early November, the control barrel slurry had only 0.2 mg / l of dissolved oxygen against almost 1.2 mg / l for Plocher treated slurry.

At the end of the month, the slurry control no longer had totally dissolved oxygen while the slurry treaty, which received an extra 30 grams of Plocher G on November 14 had about 3.1 mg / l of of oxygen.

The presence of oxygen in the Plocher slurry encourages a favorable aerobic bacterial activity and liquid humus formation.

Odors:

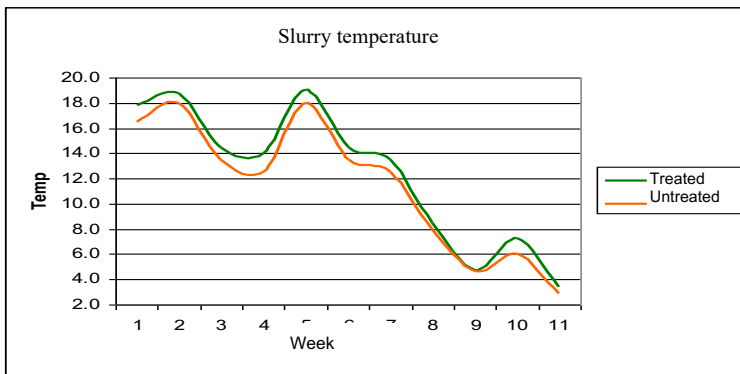
The evaluation of odor was carried out using the "Nasal Ranger" device 2 weeks after the start of the trials and with 4 consecutives biweekly readings taken.



The evaluation of odors clearly shows that treated manure Plocher compared to manure witness issued:

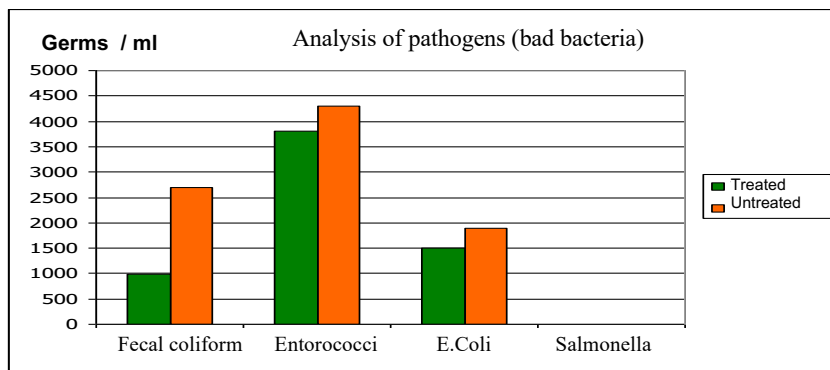
- 2 times less unpleasant smells, the 2nd and 4th week,
- 4 times less unpleasant smells, the 6th week
- 6 to 7 times less unpleasant smells, the 8th week.

Slurry temperature:



Slurry treated with G Plocher presented during the 11 weeks after the 1st treatment, a higher temperature of about one degree compared to the control slurry.

Pathogens:

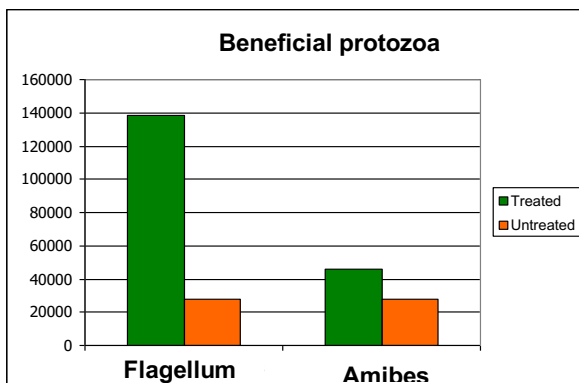
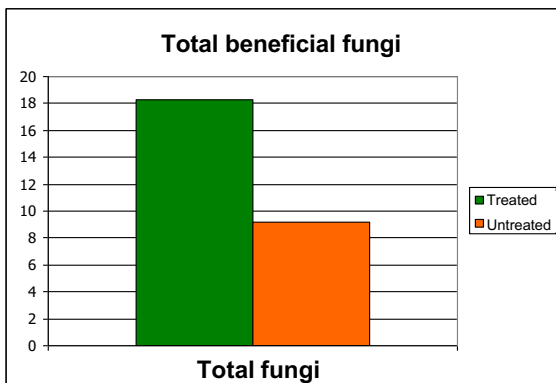


Laboratory analysis of November 27th showed that the number of pathogenic bacteria in the treated slurry had already started to reduce.

Important: experienced has shown that, if the slurry was treated longer, the number of pathogens would have been reduced further.

Bodycote

Microbial life – Good for the soil (fungi and protozoa) :



Analysis also revealed that the slurry treated with Plocher G had a beneficial microbial life (fungi and protozoa) much more abundant than the control slurry.



SOIL FOODWEB, INC.

Biological index:

Recall: Biological index – HP Rusch.

The index is obtained by biological assessing quantitatively and qualitatively, beneficial assimilation and decomposition flora present in compost or soil.

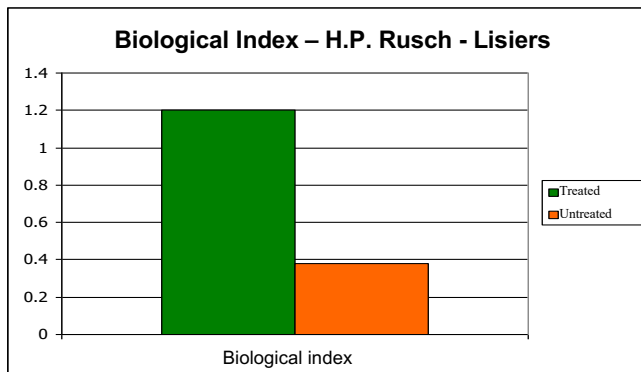
Quantitatively assessment: bacterial counts of total microorganisms.

Qualitatively assessment: visual inspection of bacterial colonies of target organisms, following incubation with or without source of carbohydrates.

From the test results, it is possible to determine quantitatively and qualitatively maturity and fertility of compost or soil and express a quality index (index biological).

All of these results demonstrate the ability of compost or manure to cause the development of a beneficial symbiotic microbial flora.

(Source : www.agrireseau.qc.ca/agriculturebiologique/documents/Rapport%20vie%20du%20sol%2022%20février%202008.pdf).



The beneficial biology index of Plocher treated slurry is more than 3 times higher than the index of the non-treated manure.

Agri-Quanta Laboratory

Example:



Poor quality soil - biological index low / low presence of bacterial colonies



Quality soil - high biological index
Presence of various bacterial colonies

Conclusions:

Compared to the control slurry (untreated), the slurry treated with Plocher G Cattle Manure presents:

- a more liquid aspect and is more homogeneous
- less odor,
- less insects and larvae,
- less pathogenic bacteria,
- a beneficial microbiological life for soil is more abundant.

These trials have shown that slurry which has been treated with Plocher G, showed characteristics of a trend of accelerated decomposition and increase value. The manure control (untreated), in contrast, showed the characteristics of an evolution in putrefaction (loss of value).