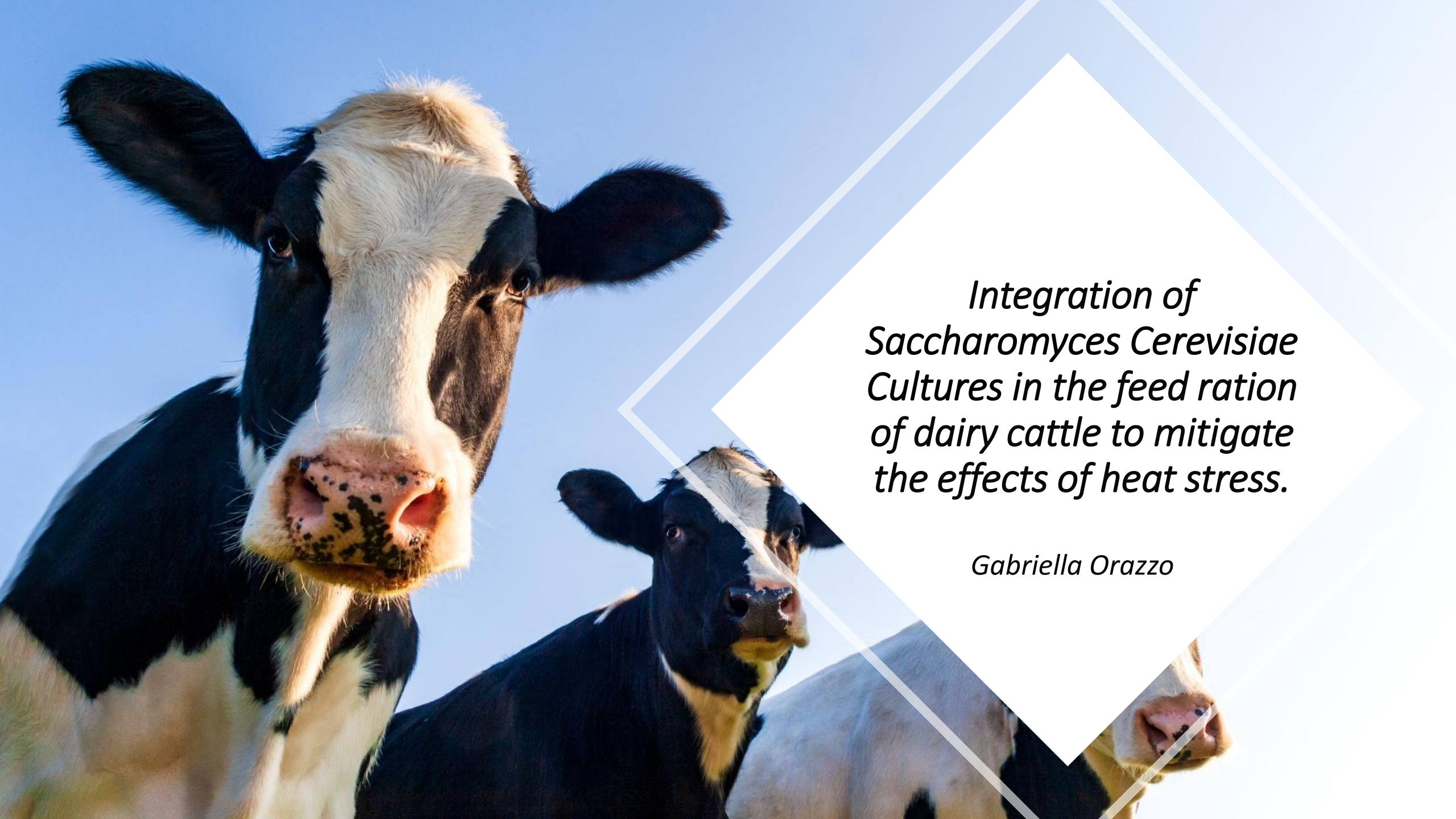
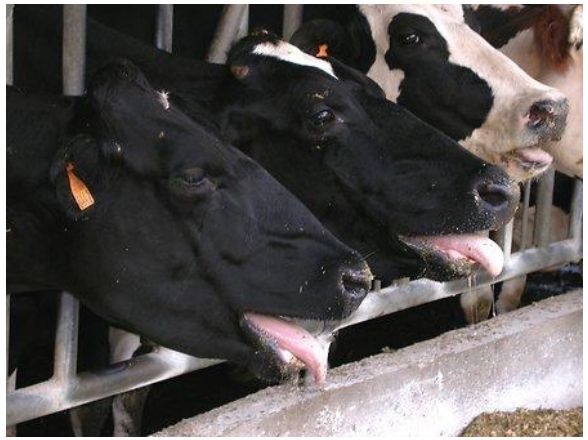


Integration of Saccharomyces Cerevisiae Cultures in the feed ration of dairy cattle to mitigate the effects of heat stress.

Gabriella Orazzo

Introduction

- Temperatures are rising in every region of the world as a result of global warming.



HEAT STRESS

"Effects of Saccharomyces Cerevisiae cultures on performance and immune performance of dairy cows during heat stress"
Dewei Du et al., 2022

What is heat stress?

A condition in which animals pass from a thermoneutral zone in which they do not consume energy to thermoregulate, to a critical thermal zone (hot / could) in which they are no longer able to maintain thermal homeostasis.

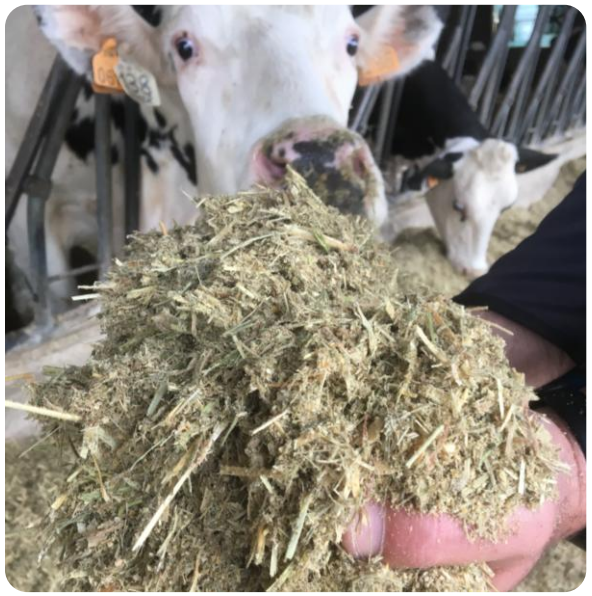
Energy consuming

ECONOMIC LOSSES

- Health and welfare;
- Milk yield;
- Growth rates:
- Reproductive efficiency;
- Udder health.

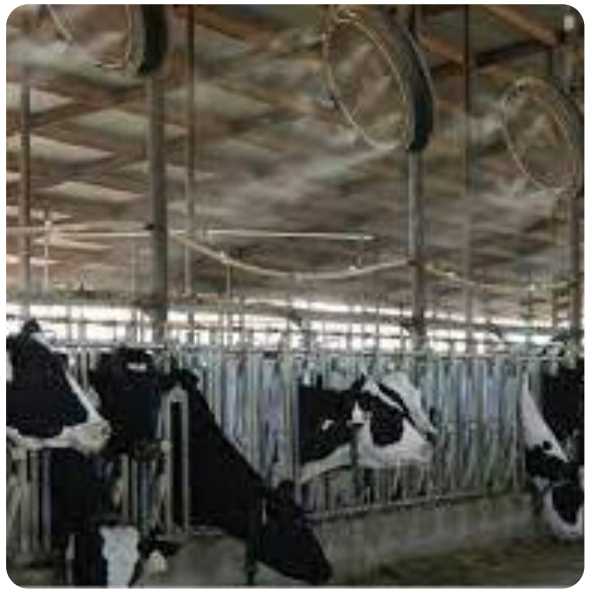
"Effects of a Saccharomyces cerevisiae fermentation product on heat-stressed dairy cows" M. Al-Qaisi et AL, 2020.

How to fight heat stress?



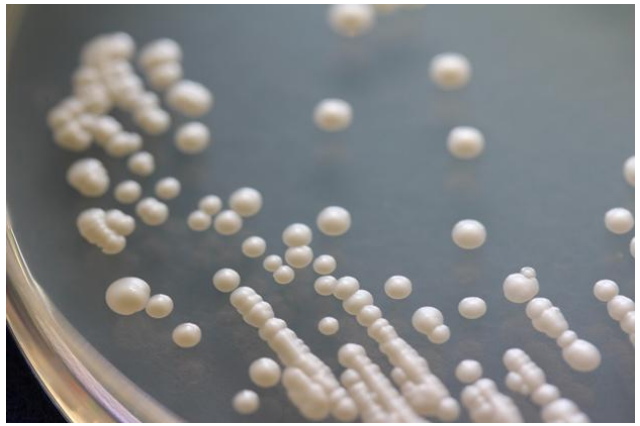
Management of feed ration

Ventilation technologies



FUNGAL SUPPEMENTS

How to fight heat stress?



FUNGAL SUPPEMENTS

Saccharomyces cerevisiae formulation

Characteristics:

- *Saccharomyces cerevisiae* culture (SC) is a concentrated and dried formulation obtained by high-density liquid and deep solid fermentations of selected strains.
- Composition = yeast metabolites (primary and secondary), cells and residual medium.

Beneficial activities:

- reduces the O_2 of the rumen;
- promotes beneficial bacterial and fungal growth;
- keeps the pH constant;
- degrade the fiber.

+ FEED EFFICIENCY

How to fight heat stress?

Application of *Saccharomyces cerevisiae* formulation

Beneficial effects on production

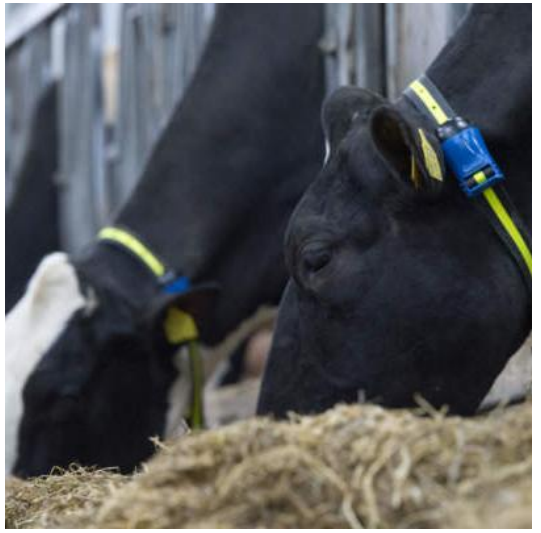
1. Decrease of rectal temperature and respiratory rate;
2. Improve dry matter intake (DMI);
3. Increase the milk yield;
4. Reduces the effects of negative energy balance (NEB);
5. Improves the immune system and the inflammatory response

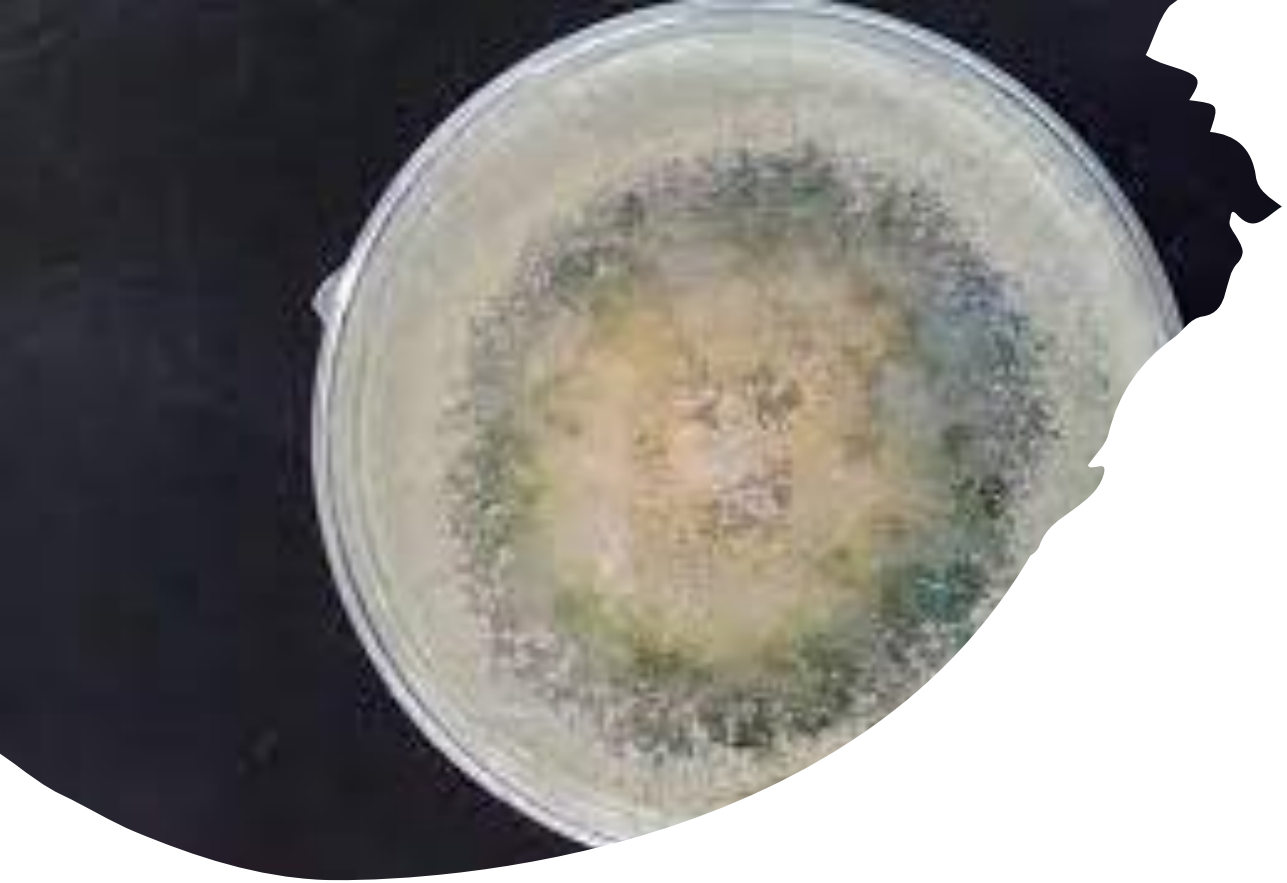
   ⇨ **+ IgG, IgA, IgM**
   - IL-2 and IFN-g

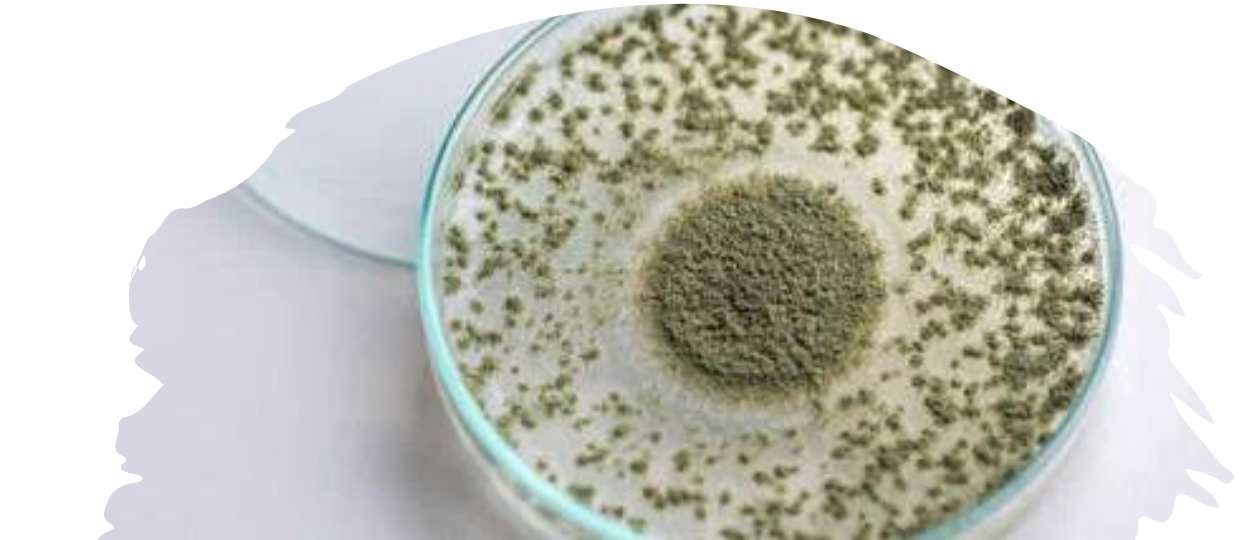
6. Enhance udder health;
7. Increase the antioxidant capacity, reduce cell damage, and decrease the production of oxygen radicals.

How to monitor the effects?

- Thermohygrometer -->**THI**
- Body temperature devices;
- Accelerometer/pedometer
  --> rumen activity
- Milking robot --> milk analysis







….other kinds of fungus

- *Trichoderma* spp

- *Aspergillus oxyzae*

→ ***LYTIC ENZYMES***

↓

Enhance the digestibility of neutral detergent fiber (NDF)

What about the conclusions?

I. Economical sustainability

-costs
+revenues

II. Environmental sustainability

-CH_4 production

Thanks for the attention!