THE MELISSA PROJECT: WASTE RECYCLING FOR PLANT PRODUCTION

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MELISSA (Micro-Ecological Life Support System Alternative) has been conceived as a micro-organisms- and higher plants-based ecosystem intended as a tool to gain understanding of the behaviour of artificial ecosystems, and for the development of the technology for a future life support system for long-term manned space missions, e.g. a lunar base or a mission to Mars. The collaboration was established through a Memorandum of Understanding and is managed by ESA/ESTEC. It involves several independent organisations: CNRS/IBP Gif sur Yvette/Orsay (France), University of Ghent (Belgique), University of Clermont Ferrand (France), VITO Mol (Belgique), ADERSA (France), University "Autonoma" of Barcelona (España), University of Guelph (Canada).

The driving element of MELISSA is the recovering of edible biomass from waste (faeces, urea), carbon dioxide and minerals. Based on the principle of an "aquatic" ecosystem, MELISSA comprises 5 compartments from the anoxygenic fermenter up to the photosynthetic one (algae and higher plants). In this presentation, we will present in detail the structure of the project, present the main results obtained over the last 10 years and outline the current areas of the research activity.