



## **Task 4.3 - Converting VFAs rich residue stream from the two steps AD into bio-polymers**

### ***State-of-the-art: Converting agricultural wastes into polyhydroxyalkanoates using photosynthetic mixed cultures***

*The conversion of agricultural wastes into value added products is both economically and environmentally desirable. Currently, several chain processes are being developed in the NoAW project that allow the step conversion of manure and maize silage waste into methane and polyhydroxyalkanoates (PHAs). In one of the steps, these agricultural wastes are fermented into organic acids, which are the ideal building blocks for PHAs production. PHAs are biodegradable polymers with physical and chemical properties similar to conventional plastics, thus being generally called as bioplastics. These bioplastics can be biologically synthesized with mixed microbial cultures fed with the organic acids obtained from the wastes. Typically, these microbial cultures require intensive aeration which can increase the cost of the final PHA product. In the NoAW project, the challenge is to develop a process that uses photosynthetic organisms that instead of aeration can use free sunlight, thus decreasing PHA production costs. With a more competitive price, PHA may find its place in the market and replace conventional plastics in several applications, like in groceries packaging or in agricultural mulches, leading to more sustainable practices.*

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