AGRITECH & FOODTECH | ENVIRONMENT & SUSTAINABILITY

Zero wine-producing waste with microalgae

CIRCULAR ECONOMY | CIRCULAR WASTE MANAGEMENT - FOOD WASTE | FERMENTATION PROCESSES

The waste from the winemaking processes can now be exploited to 100%, with a closed, semi-continuous process, applicable on site in wineries. The technology allows the purification of discharges and organic wine waste, otherwise to be disposed of without any other use, through a joint action of anaerobic-microalgae digestion with the production of green products.

Technical Features

The developed process allows to apply a 100% green waste recovery treatment in an advantageous and efficient way for wine producers and to solve the limitations in microalgae cultivation on anaerobic digestion waste so far known. Any type of winemaking lees, waste water and sludge from wine production can be treated in anaerobic digestion, leading to the production of co-digestate which can be applied, due to its chemical characteristics and high nutrient content, as an input, without dilution, in a semi-continuous photobioreactor, without biomass recirculation, for the production of microalgae. The organic substrate resulting from anaerobic digestion is converted into biogas (renewable energy source), while the microalgae biomass, produced in phytodepuration can find applications in biorefineries and green chemistry.
Link to the relative page on Ca' Foscari site

Possible Applications

- Autonomous treatment systems for even small-scale wine producers;
- Waste valorization in circular economy;
- Production of biogas and secondary products for animal feed.

Advantages

- Efficient treatment of wine-making lees on site for wineries (no disposal costs);
- Valorization of waste into secondary products with high added value;
- Phytodepuration of effluent and removal of organic and inorganic compounds;
- Recirculation at the head of the post-treatment effluent system (no discharge).

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PATENT STATUS
Granted

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