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ABSTRACT BOOK



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SESSION 12: Young Algeneer's Corner



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MICROALGAE AS A PROMISING SOURCE OF PLANT BIOSTIMULANTS

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ABSTRACT

Microalgae are nowadays considered one of the most promising sources for the development of new biostimulants. In fact, besides their use as biofertilizers and soil conditioners, microalgae are known to produce a remarkable diversity of biologically active molecules including phenolics, proteins, vitamins, carbohydrates, amino acids, polysaccharides and phytohormones, that can positively affect plant growth and increase their abiotic stress tolerance. Moreover, the cultivation of these microorganisms in controlled and confined systems (bioreactors) offers the possibility to optimize the cultivation conditions for the production of the active compounds and obtain a better standardization of the final product, consequently improving the reproducibility of the effects on treated plants. These issues are among the most critical aspects in the year-round production of commercial biostimulants, where the raw materials are collected from natural environments or derive from agro-industrial by-products. Today the algal biostimulants market is almost exclusively represented by seaweed extracts, while few microalgal extracts, derived mainly from *Arthrospira* and *Chlorella* species, are currently available. Moreover, scientific literature in this field is still scarce especially as regards the number of investigated strains. Considering that in the coming years biostimulants will play a key role in addressing agricultural challenges and that the biostimulant market is rapidly expanding (CAGR > 10%), further research is needed to deepen our knowledge on the effects of different microalgal strains, doses and methods of application on different plant species and reveal the molecules that mediate these effects. This will allow the development and marketing of a second generation of tailored microbial biostimulants adapted to specific crops and environments, thus facilitating the diffusion of these products among farmers.

Keywords: microalgae, biostimulants, bioactivity, sustainability, agriculture.

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