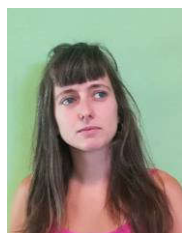


# Cyanobacterial extracts as biostimulants for hydroponically-grown basil.

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## About the author:

BSc degree in 2013 in Agricultural Sciences and Technologies at the University of Florence with a thesis entitled "Culture of the microalga *Phaeodactylum tricornutum* under nutrient stress for the production of biofuels". MSc degree in 2017 in Plant and Microbial Biotechnology at the University of Pisa with a thesis on "Molecular and functional characterization of arbuscular mycorrhizal fungi from a biodiversity hot spot of the UNESCO reserve Selva Pisana". Since 2013 collaboration with F&M (Fotosintetica & Microbiologica S.r.l.) in isolation and characterization of microalgal and cyanobacterial strains and in the maintenance of the F&M algae culture collection. Currently PhD student at the Department of Agriculture, Food, Environment and Forestry (DAGRI) of the University of Florence, in the group led by Prof. Mario Tredici, working on the use of microalgae and cyanobacterial strains for the development of new biostimulants.

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## Abstract:

To meet the challenges posed by the growing global population and climate change, farmers are called to increase global food production reducing chemical inputs and environmental impacts. Nowadays, the use of microalgae in agriculture is attracting the interest of growers and agrochemical industries; however, the wide genetic variability of these microorganisms has yet to be fully explored. Few biostimulants based on microalgae, mainly *Chlorella* and *Arthrospira* spp., are currently on the market. In this work we evaluated the biostimulant activity of five extracts obtained from cyanobacteria belonging to the *Nostocales*, *Oscillatoriales* and *Synechococcales*, on hydroponically grown basil (*Ocimum basilicum* L.). Plants were cultivated in floating systems on ½ Hoagland medium for 28 days and treated weekly with foliar applications of the extracts. Two commercial biostimulants were also tested for comparison: an *Ascophyllum nodosum* extract and an animal protein hydrolysate. Three of the tested strains, administered at the concentration of 1 g (extract dry weight) l<sup>-1</sup> were the most effective in promoting plant growth, with an increase in plant fresh and dry weight of about 30% and 40%, respectively, compared to the untreated control; moreover, these plants presented one node more than the untreated controls and the number of leaves consequently increased by more than 20%. The *A. nodosum* extract showed no significant effects while the protein hydrolysate slightly depressed plant growth compared to the control. Our results demonstrate that foliar application of cyanobacterial extracts may strongly enhance plant growth and yield and could be used for improving the sustainability of agricultural fertilization practices.

Keywords:

Cyanobacteria, biostimulants, *Ocimum basilicum* L., hydroponics

17.45-18.00	7.8	<b>Bhattacharyya Debraj</b> , Associate Professor Indian Institute of Technology Hyderabad, IND <i>Comparative study on algal and algal-bacterial systems for removal of micropollutant from laundry wastewater</i>
<b>18.00</b>		<b>Closure of the Conference day</b>

## CONFERENCE PROGRAM DAY 3 - THURSDAY, 5 DECEMBER 2019

8.00-8.25		Registration / welcome coffee
8.25-8.30		Opening Session
8.30-9.00		<b>Keynote Lecture - Olavur Gregersen</b> , Managing Director, Ocean Rainforest, FO <i>Seaweed Cultivation – The Pioneering Challenge of Scaling Up to Meet Market Demands</i>
9.00-10.45		<b>Session 8: Macroalgae Genetics to Cultivation</b> <b>Chair: Pi Nyvall Collen, Scientific Director, OLMIX, FR</b>
9.00-9.15	8.1	<b>Teresa Mouga</b> , Coordinating Professor, Polytechnic of Leiria, PT <i>Optimization of the cultivation of <i>Gracilaria gracilis</i> for pigment production</i>
9.15-9.30	8.2	<b>Maren Sæther</b> , Quality manager, Seaweed Energy Solutions AS, NO <i>Commercial cultivation and processing of kelps for sustainable production of food and other products</i>
9.30-9.45	8.3	<b>Bertrand Jacquemin</b> , PhD Project Manager, CEVA, FR <i>Seaweed cultivation and challenges for a sustainable management of the genetic resources</i>
9.45-10.00	8.4	<b>Han Yang Yeh</b> , PhD student, National Taiwan Ocean University, TW <i>Early development for artificial cultivation Of <i>Sargassum ilicifolium</i> under laboratory conditions</i>
10.00-10.15	8.5	<b>Helena Melo Amaro</b> , Post-Doc, CIIMAR, PT <i>Light quality- a tool to modulate <i>Ulva sp.</i> growth, pigments production and antioxidant capacity</i>
10.15-10.30	8.6	<b>Elena Ficara</b> , Associate Professor, Politecnico di Milano, IT <i>"IMAP Project: Two Years Pilot Scale Results"</i>
<b>10.30-11.15</b>		<b>Coffee Break and sponsors presentations</b>
11.15-12.45		<b>Session 9: Agro-Biostimulants</b> <b>Chair: Edgar Santos, Director of ALGATEC Eco Business Park, PT</b>
11.15-11.30	9.1	<b>Pi Nyvall Collen</b> , Scientific Director, OLMIX, FR <i>Seaweed based plant &amp; soil biostimulants as tools for agroecology practices</i>
11.30-11.45	9.2	<b>João Varela</b> , Principal Investigator, University of Algarve, PT <i>ALGARED+: Old and New Microalgae for Novel Bioactivities</i>
11.45-12.00	9.3	<b>Gaia Santini</b> , PhD student, University of Florence, IT <i>Cyanobacterial extracts as bio stimulants for hydroponically-grown basil</i>



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## ABSTRACT BOOK ALGAEUROPE CONFERENCE

