The Blue on Land: Agriculture Applications of Algae Produced with Circular Resources

Date: Wednesday, 27 November 2024
Theme: Blue Bio Resources

Workshop Summary

Challenges in Scaling Biostimulants

Dr. Andrea Romero Perez outlined technical challenges in the biostimulant industry, including inconsistent bioactivity, lack of efficacy evidence, and application variability. Market constraints, such as high costs and uncertain consumer demand, also hinder growth. Seaweed biostimulants rely heavily on unsustainable wild harvests, which cannot meet future demands, emphasizing the need for offshore, multi-use, and land-based farming. Despite challenges, the market is growing at 13% annually and is poised to become a key segment in the seaweed sector.

Case Study: Vetik (Estonia)

The Vetik project successfully utilized local resources to produce high value biostimulants, achieving strong market traction. However, regulatory hurdles, including CE certification and REACH compliance, remain significant barriers to broader commercialization.

Investment Landscape

Investment in the blue economy lags behind green technologies due to the absence of benchmarks and a high-risk, capital-intensive operating environment. Most funding comes from corporate sources, including family offices and venture capital. Key focus areas include food, aquaculture feeds, and cosmetics, while multi-application ventures face greater investment challenges.

Blue Biorefinery Case: *Porphyra*

Jessica Knoop's GAME Project investigates controlled cultivation on land of *Porphyra*, a fast-growing red seaweed from the North Sea. Research aims to tailor bioactive compound production and develop products like biostimulants and biopesticides. Gaps in lifecycle understanding and metabolite stability in human systems require further research.

Algae-based Fertilising Products with circular nutrients and carbon

Efthalia Arvaniti presented findings on sustainable algae-based alternatives for biobased fertilisers from EU4Algae and Algae Industry Study projects (CINEA) that are synthesising knowledge on using algae to remediate industrial waste streams with algae and use beach-cast algae to recover nutrients to produce fertuilising products, but legal and resource challenges limit scalability. Further innovation is required to ensure reliability and compliance.

Waste Utilization for Biostimulants and Fertilizers

Alla Silkina highlighted the Algaebrew Project, which uses brewery wastewater and digestate to cultivate algae for biofertilizers and feeds. Pre-treatment optimization and nutrient stability are critical challenges. Preliminary validation of biofertilizers is promising, but biostimulants need further testing to confirm effectiveness.

Algaeponic Effluents for Biostimulants

Cristina Brito's REALM Project demonstrated the potential of aquaponics wastewater for growing microalgae used in biostimulants and aquafeeds. Early trials showed improved plant performance, reduced chemical inputs, and increased crop stress tolerance. Challenges include optimizing nutrient recovery, dosage, and refining application methods.

Moderated Discussion: Sustainability and Scalability

The panel discussed the price gap between wild-harvested and land-based seaweed, emphasizing the need for sustainable cultivation methods despite higher costs. Beach-cast algae offer potential for nutrient recycling but face environmental and regulatory concerns. Circular solutions, such as wastewater remediation, could lower costs and enhance sustainability. Establishing benchmarks for production costs and product quality is essential to attract investment and scale the industry effectively.