PRACTICE ABSTRACT NO. 28

SEA2LAND

FERTINAGRO BIOTECH

Optimized technical datasheets

Main results / outcomes

SEA2LAND has produced 13 intermediate products (IPs) and 13 bio-based fertilisers (BBFs) from fishery and fish processing side-streams in the Cantabrian, Adriatic and Baltic regions, turning them into market-ready inputs for agriculture.

These include high-value formulations such as protein hydrolysates with 4–6% total N and up to 20% free amino acids for fast foliar uptake, and solid/liquid humic extracts with more than 90% organic matter and up to 43% humic/fulvic substances. The BBFs serve diverse functions: plant biostimulants (FER1–5, UNI1), organo-mineral nutrition (FER3), soil improvers and amendments (UNI2, UNI5, VER), liming agents (UNI4), and organic pellets (BP). All products comply with EU 2019/1009 contaminant thresholds, facilitating CE-marking and organic certification. The processes valorise up to 95% of the original biomass, reducing disposal costs and replacing synthetic fertilisers in line with circular economy principles.

This creates added value across the chain: fishermen and processors generate new income streams, farmers gain access to greener nutrients and enhanced resilience, and coastal communities close nutrient loops while cutting CO_2 emissions.

Practical recommendations

- Choose the right product: apply amino acids during stress peaks, use biochar/compost blends to boost soil carbon or apply liming agent to correct acidic soils.
- Cluster raw materials and place transformation units near to ports to reduce transport and guarantee steady feedstock.
- Fast track approval: use the datasheet specs to complete conformity dossiers and Annex II checks for organic farming.
- Pilot, measure, adjust: start small, monitor yield and soil analyses, then adjust doses.

Pilot Region	**IP**	**BBF Proposed**	**BBF prototypes Obtained**
Cantabrian	**IP1**. Viscera protein enzymatic hydrolysate	Foliar fertiliser	**FER1**. Solid biostimulant N, AA, organic matter and humic extract. **FER2**. Liquid biostimulant N and AA.
	***IP2**. Cooking waters protein enzymatic hydrolysate	Plant biostimulant	
	IP3. Viscera protein autolysate	Plant biostimulant Foliar fertiliser	**FER3**. NPK solution with aminoacids **FER4**. Liquid biostimulant N, AA, organic matter and humic extract.
	IP4. Microalgae biomass	Plant biostimulant	**FER5** Fertilizer with humic acids.
Adriatic	**IP5**. Protein hydrolysate	Plant biostimulant	**UNI1**. Liquid biostimulant
	IP6. Biochar	Soil improver/growth media	**UNI5**. Organic soil amendment or Soil improver
	IP7. Biochar-compost composite	Soil improver/growth media	**UNI2**. Soil improver
	IP8. Mineral fraction	Liming agent	**UNI4**. Liming agent
	****IP9**. Chitin/chitosan	N-fertiliser	**UNI3**. Liquid organic fertilizer
Baltic	**IP10**. Bokashi pellet	Organic fertiliser	**BP**. Organic fertilizer bokashi pellet
	IP11. Bokashi ferment. Liquid.	Foliar fertiliser	**FS**. Biostimulant with amino and humic acids
	IP12. Vermicompost	Soil improver/growth media	**VER**. Organic soil improver/ growth media
	IP13. Fermented fish and other food wastes	Organic fertilizer, foliar fertilizer, soil improver	**BP**., **FS**., **VER**.

Figure 1: Compilating table of IPs and BBFs included in Deliverable 3.7

About this abstract

Authors: Joaquín Romero, Carlos Fuertes (Fertinagro Biotech)
Date: June 2025
SEA2LAND project is a collaborative Innovation Action(IA) funded by the EU in the frame of the Horizon 2020 programme. The project aims to provide solutions to help overcome challenges related to food production, climate change and waste reuse. Based on the circular economy model, SEA2LAND promotes the production of large-scale fertilisers in the EU from own raw materials. This solution is expected to reduce the soil nutrient imbalance in Europe.
The project is running from January 2021 to June 2025.
Website: www.sea2landproject.eu

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FERTINAGRO BIOTECH

Fichas técnicas de los productos optimizados

Principales resultados

SEA2LAND ha producido 13 productos intermedios (IPs) y 13 fertilizantes (BBFs) a partir de subproductos de la pesca y su procesamiento en las regiones del Cantábrico, Adriático y Báltico, transformándolos en insumos agrícolas listos para comercializar.

Estos incluyen formulaciones de alto valor, como hidrolizados proteicos con 4-6% de N total y hasta 20 % de aminoácidos libres para rápida absorción foliar, y extractos húmicos sólidos/líquidos con más de 90 % de materia orgánica y hasta 43 % de sustancias húmicas/fúlvicas. Los BBFs cumplen diversas funciones: bioestimulante, nutrición organomineral, enmiendas del suelo, enmiendas calizas y pellet orgánico. Todos cumplen con los límites de contaminantes del Reglamento UE 2019/1009, facilitando el marcado CE y la certificación ecológica. Los procesos valorizan hasta el 95 % de la biomasa, reduciendo costes de eliminación y sustituyendo fertilizantes sintéticos.

Esto genera valor añadido en toda la cadena: los pescadores y procesadores obtienen nuevos ingresos, los agricultores acceden a nutrientes más sostenibles y mayor resiliencia, y las comunidades costeras cierran ciclos de nutrientes mientras reducen emisiones de CO_2.

Recomendaciones prácticas

- Elegir el producto adecuado: aplicar aminoácidos en picos de estrés, mezclas de biochar/compost para aumentar el carbono del suelo o enmiendas calizas para corregir suelos ácidos.
- Agrupar materias primas y situar las unidades de transformación cerca de los puertos para reducir el transporte y asegurar suministro constante.
- Aprobación acelerada: uso de las fichas técnicas para completar los expedientes de conformidad y las verificaciones para agricultura ecológica.
- Probar, medir, ajustar: empezar en pequeño, monitorizar el rendimiento y el suelo y ajustar las dosis.

Pilot Region	IP	BBF Proposed	BBF prototypes Obtained
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	IP13. Fermented fish and other food wastes	Organic fertilizer, foliar fertilizer, soil improver	**BP**., **FS**., **VER**.

Figura 1: Tabla recopilación de IPs y BBFs incluida en el Deliverable 3.7

Acerca de este resumen

Authors: Joaquín Romero, Carlos Fuertes (Fertinagro Biotech)

Date: May 2025

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