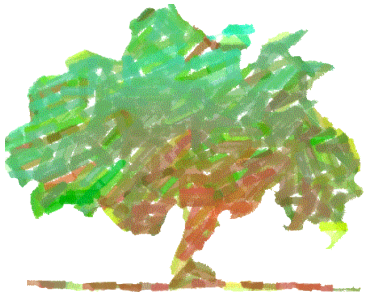
CLaMber

Castilla-La Mancha

IRIAF
Instituto Regional de Investigación y Desarrollo Agroalimentario y Forestal de Castilla - La Mancha



PYME INNOVADORA
Válido hasta el 31 de diciembre de 2018
GOBIERNO DE ESPAÑA · MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD

BIOMASA PENINSULAR

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"M.S.W. ORGANIC FRACTION under SEPARATE COLLECTION SCHEMES: GOOD PRACTICES and BIOREFINERY APPROACH"

European Union
European Regional Development Fund

BIOREGIO
Interreg Europe

2nd Interregional event

Castilla-La Mancha, Puertollano

November 28th, 2017

SUMMARY

1. ACTIVITY of **Grupo BIOMASA**
2. **ALGODOR** R&D&i and EXP PRODUCTION CENTRE
3. The **CLAMBER** MSWOF Project
4. Other RELATED PROJECTS
5. WHAT IS **OUT to the MARKET?**

1. Activity of Grupo BIOMASA

BIOMASA PENINSULAR holding company of Grupo BIOMASA, providing full services related to recycling organic by-products:

- Consulting and Engineering
- R&D&i technology and bio-products development
- Design and turnkey supply of composting systems
- Development and production of Bio-based fertilisers (Compost, Biochar) and new solid and liquid biofertilisers, biostimulants

BIOMASA del GUADALQUIVIR subsidiary company, specialized in management services of Bioresidues and By-products

- Recycling services of bio-residues / Operation Recycling plants

Tech Platforms and Associations

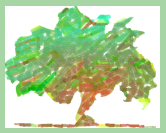
European Sustainable Phosphorus Platform (ESPP).
http://www.phosphorusplatform.eu/

Spanish Technology Platform of Plant Biotechnology "BIOVEGEN"
www.biovegen.org from December 2014

Member of Spanish Water Technology Platform PTEA"
www.plataformaagua.org from March 2015

Member of Scientific - Technological Park of Córdoba
www.rabanales21.com

SPANISH BIOCLUSTER – SBIOC, associated to BIC- European Bio-based Industries Consortium (BBI-JTI).



Recycling and Production Plants

Grupo BIOMASA operates 5 Recycling Centres with 170.000 m2 surface with a treatment capacity of 140.000 t/year:

- El Salao" Composting Plant. Vegas del Genil (Granada)
- "Els Ramblars" Municipal Recycling Center. Xabia (Alicante)
- "Montes Orientales" Composting Plant. Darro (Granada)
- "Algodor" R&D&i Experimental Production Centre. Toledo
- "El Raigal" Composting Plant. Almonte (Huelva)

2. Algodor RD Exp Production Centre

Organic fraction processing line

Anaerobic digestion line

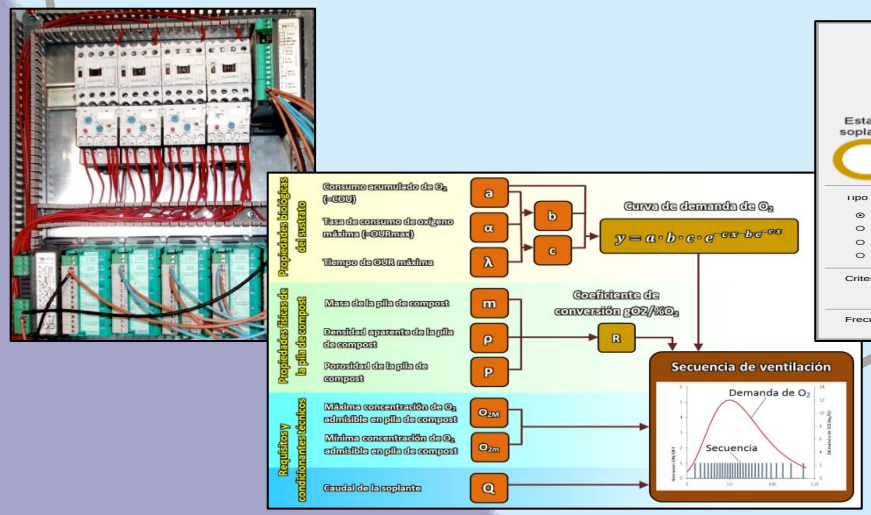
SEPARATE COLLECTION

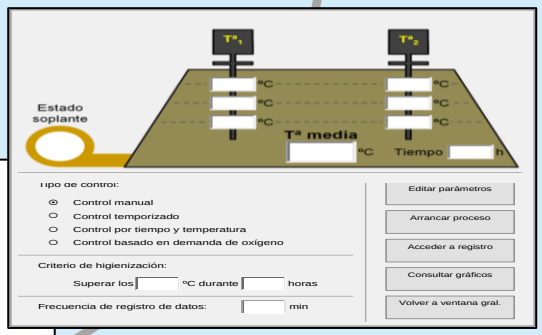
Auxiliary equipment and installations

Dynamic Composting Reactor of 1500 L.

COMPOSTING

Pilot Plant of Windrow aerated piles w/ semi-permeable cover





Monitoring and Control

COOPERATION with TOLEDO GASTRONOMY SCHOOL

In SUMMARY: GOOD PRACTICES TECNOLOGY BIOPRODUCTS

- Model of Separate collection and Treatment for MSWOF.
- Development of bio-products with high added value (liquids and solids).
  - Liquid Bio-fertilizers with phytofortifying action
  - Compost enriched with Biochar and PGPRs (Plant Growth Promoting Rhizobacteria)
- Development of Monitoring Software for Composting process control.
- Engineering Composting system.

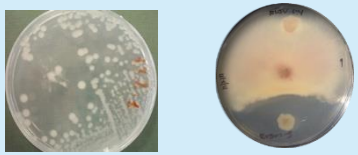
3. The CLAMBER MSWOF Project

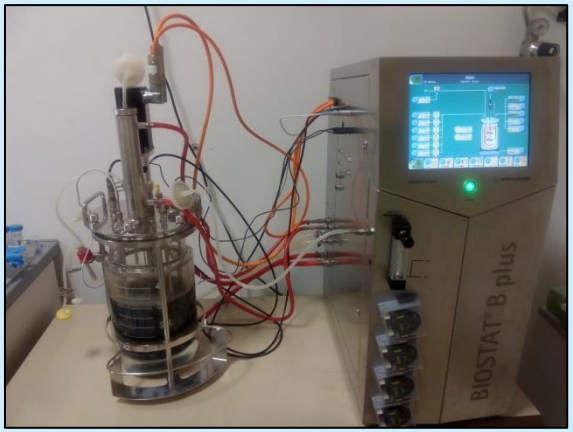
LIQUID BIOFERTILISER (PHYTOFORTIFICANT)

Reception of the digestate and formulation of the culture medium

Incubation of selected bacteria

- ***Bacillus amyloliquefaciens***
- ***Bacillus subtilis***





Development in the digestate, consist of maintaining at a constant temperature of 28 ° C and continuous agitation of 500 rpm.

Expected Bacillus concentration of 10^7 UFC/mL were exceeded, as concentrations of microorganisms above 10^8 UFC/mL were reached.

COMPOST ENRICHED WITH MICROORGANISMS

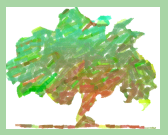
Inoculant - compost mixed at 1% ratio (inoculant volume/compost weight)

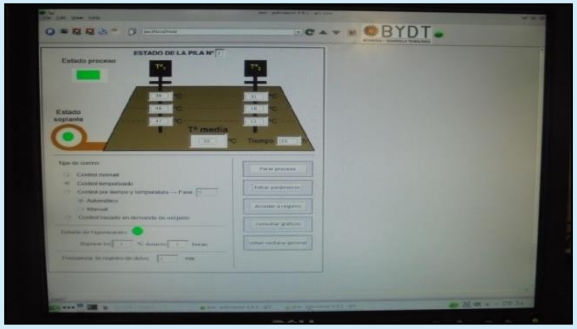
Agronomic trials

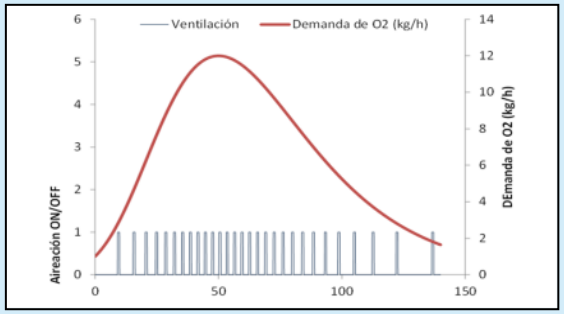
- Effect of bio-fertilizer in **Pepper** seedbed
  The bio-fertilizer at doses between 0.5% and 1.0% provides the best results.

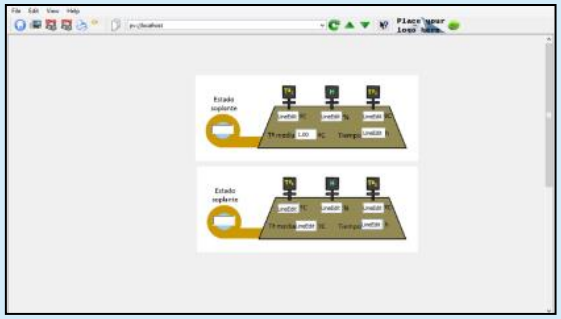

- Field trial on pepper with different doses of biofertilizer
  Biofertilization increased the yield compared to the non-biofertilized control by 26% in the best case. Improving in all cases.


- Enhanced compost assays with PGPRs: **microcosm Maize test**
  The best results were obtained with the
  Enriched compost at 5 t/ha dose.
  30% increase in wet weight and 27% in dry weight.







Composting monitoring and control

Composting pilot 1500 L in colaboration

4. Other related Projects

PROJECT	ENDING
URBIOFIN: BIC 2016 – H2020 Demonstration of an integrated innovative biorefinery for the transformation of M.S.W. into new BioBased products https://www.urbiofin.eu/	2021
LIFE ENV ES00800 TL BIOFER: Nutrients and regenerated water recycling in WWTPs through Twin Layer microalgae culture for biofertilizers production http://life-tlbiofer.eu	2018
AgriREFIN - BIOREFINERÍA AGRÍCOLA para VALORIZACIÓN de BIORESIDUOS de la HORTICULTURA INTENSIVA. (Grupos Operativos MAPAMA 2016 - Fase I)	2017
REFERTIL VII FP: Improvement of bio-waste transformation / nutrient recovery by combined natural products: compost and biochar http://refertil.info	2015
CDTI NNTT ABIOAGRIN: Nuevas Tecnologías para la Aplicación de Bio-Agro-Insumos en la Producción Agrícola Sostenible en Andalucía. http://www.nnttabioagrin.com	2014

5. What is out to the market?

Bio-products

(Initially developed with IRIAF and Cooperatives in Castilla La Mancha)

- Liquid Biofertiliser
- Biochar and PGPRs (Rhizobacteriae) ammended Compost (Carbo-compost)
- Capiltalising knowledge for biostimulants and biofertilisers production

Technology

(**Design and turn-key for small and medium size composting plants**)

- Advanced and flexible Compost Process Monitoring Software
- Standardized probes and comm equipment for process monitoring
- Wireless data transmission and remote control access via internet

Services

- Integrated model of Separate collection and Treatment for MSWOF
- Engineering, Eq Supply and Operation of Composting systems

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"THANK YOU FOR YOUR ATTENTION"

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