BAQUA

Solutions through the new use for a waste of banana crop to develop products in aquaculture and plastics sectors.

OBJECTIVES

The main objective is to establish a new circular economy approach to take advantage of **wastes from banana plantation** (pseudostem of the plant). Two different raw materials are obtained: high quality **natural fibres** and the residual **pulp**.

- Treated fibre can be used as a cheap and natural additive, obtaining different **fibre-reinforced plastic parts**.
- With the residual pulp natural antioxidants additives are developed, which serve as a supplement in the production of **fish diets for aquaculture**, improving the **nutritional quality** of them.

THE LIFE PROGRAMME

This project is co-financed by European Union through the LIFE Programme.

LIFE15 ENV/ES/000157
Environment and Resource Efficiency

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Solutions through the new use for a waste of **banana** crop to develop products in **aquaculture** and **plastics sectors**

CONSORTIUM

Coordinating beneficiary

ULPGC - Univerisad de Las Palmas de Gran Canaria www.ulpgc.es

- The Research Group Integrated and Advanced Manufacturing (CFI) www.cfi.ulpgc.es
- The Aquaculture Research Group (GIA) www.giaqua.org

Associated beneficiaries

AQUANARIA S.L. (Spain) www.aquanariafish.com

AMBI - AMBI Metalplast d.o.o. (Slovenia) www.metalplast.si

DIBAQ - DIBAQ Diproteg S.A. (Spain) http://www.dibaq.com

SPIF - Swedish Plastic Association (Sweden) www.plastindustri.org

TECNO - Tecnopackaging (Spain) www.tecnopackaging.com

FIRST
RESULTS OBTAINED

Fibre
and pulp extraction

Until now, the Integrated and Advanced Manufacturing Research Group (CFI), with the pilot plant installed, has managed to obtain **68 % of the existing fibre and 76 % of the available dry pulp** in each pseudostem.

The work of the CFI is focused on obtaining more fibre, better quality, cleaner and looser.

In the second generation, it is pretended to obtain brushed non-treated fibre, apart from the treated one.

Fish feed diets

The Aquaculture Research Group (GIA) has tested the first diets based on dry pseudostem pulp, adding between **0.5 – 20 %** of this in the feed. From the study of the fish fed with this feed (tilapia), as recommendation, the maximum amount of pulp, that can be incorporated, is **4 %**.

In addition, the GIA is trying to integrate other residual banana products in the diets such as the banana flower (florilla), since it has a high content of natural antioxidants (polyphenols).

Biodegradable
plastic for packaging

Tecnopackaging has obtained its first fish feed bags and banana sleeves, getting a **5% of fibre** in its composition and making use of biodegradable and food contact approved plastics (starch-based biopolymers).

Currently, the first tests of validation of these products are underway and the introduction of a higher percentage of fibre is being studied.

Plastics
with natural fibre additives

AMBI has managed to manufacture several pieces of plastic by injection, incorporating fibre. The results obtained were the following: incorporation of **5 – 20 % of fibre** in mounting sleeves, **10 – 40 % of fibre** in burner covers and **10 – 30 %** in housings. It has been proven that the mechanical strength increases drastically with the fibre content.

In the second generation, fibre will be combined with more types of plastic materials, such as ABS and PS, using them in the manufacture of other parts.