

# DEVELOPMENT OF VALUE-ADDED PRODUCTS FROM BIOMASS

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Conteira (*Hedychium gardnerianum*),

## OBJECT PREPARATION

Manufactured objects resulting from a suitable drying process conteira sheets, with application of compressive forces. This process allows said leaves acquire a higher strength, as well as to obtain the final shape of the proposed object.



Nature makes his own composites

## ABSTRACT

The growing concerns of consumers with respect, environmental issues stimulate the demand for biodegradable resources, which can reduce the reliance on synthetic packaging. Packaging made from petrochemicals, polyesters, polyamides, etc., have been abused by their high strength and flexibility, corrosion resistance and lower processing costs. However, with the global oil crisis to worsen, it is necessary to find alternatives to reduce dependence on society of these compounds. It is necessary to find new materials, recyclable and non-polluting, and ways to ensure sustainable development through productive alternatives "environmentally friendly". The existence of environmental legislation applied to finished products is increasing, so, environmental acceptance is the mark of the XXI century. Composite materials obtained from plants reinforced with vegetable fibers (biocomposites) are a promising alternative to glass fibers, the low cost of raw materials, recyclability and use of renewable resources, representing a potential source of income.

Currently, it is under study the development of biocomposites materials from natural fibers existing alien plants, such as the conteira (*Hedychium gardnerianum*), an invasive plant that threatens increasingly, biodiversity and survival of endemic plants of the region. The conteira growing rapidly multiplies easily and has no predators, which facilitates the full use of large amounts of these plants in the processing of products, idea never before implemented in the Azores.

## MOTIVATION

- ✓ Respond to the needs of materials in the 21st century
- ✓ Environmental concerns demands natural and biodegradable materials giving great attention to the problems of recyclability and environmental performance
- ✓ To cope with limitation of petroleum supply
- ✓ To cope with environmental pollution concern
- ✓ Economically favorable composites made of sustainable crop-derived products based in cases of success (Ex: automotive industry has given much attention to the use of eco-composites to meet environmental regulations while achieving reductions in weight and cost.
- ✓ Inexpensive crop-derived fibres as reinforcement
- ✓ Inexpensive crop-derived natural products for plastic substitutes
- ✓ Protect the biodiversity of Azores Islands. Conteira is an invasive plant...

Add value to an invasive

Develop daily *objects from nature*  
Harvesting and processing industry

Reduce plastic dependence

Use of natural areas already invaded

Growing in confined spaces (e.g., Agricultural areas)

Creation of an economic activity of harvesting

native flora recovery

create employment



Other plant



Conteira

Many other plants are fully attacked by insects, snails, and even fungi ...  
*Conteira* rarely presents predators marks  
Exception: sequential "holes" in some leaves  
"Leaves always of good quality"

## CONCLUSIONS

- ✓ The objects from the natural composite can be produced by compression molding
- ✓ Package industry is interested in new materials, because according to new regulations packs should be partially decomposable or recyclable.



Conteira fibre material with/without resin



Compression molding

Substrate ready for design product

## ACKNOWLEDGMENTS