VALUE ADDED PRODUCTS FROM BANANA

The paper industry represents two percent of the world commerce and its demand has been increasing every day. Paper still is the main form of communication among people, especially in the education field. It also has an infinite number of industrial uses, amongst which we can mention those related with packing and health care.

The cellulose and paper industry uses around one third of total production of industry wood and this proportion is increasing. Two thirds of the fiber used to make paper comes from virgin fiber and the rest comes from waste fibers. Between 5 and 10% of the derivatives of the cellulose are produced based on fibers that do not come from wood.

Environmental concerns in manufacturing traditional paper

Amongst many environmental worries related to the manufacturing of traditional paper, we can mention:

1. Biodiversity loss
2. Replacement of natural or primary woods by tree plantations
3. The insufficient use of waste paper and fibres that do not come from wood
4. The domain of large-scale mills that have a great political influence
5. The continuous use of chlorine as a bleach
6. Insufficient research regarding alternative technologies to produce paper in a cleaner way
7. High levels of paper use which are not sustainable, especially in rich specially countries
8. Systems of paper recollection and exports of paper impact the way of living of paper collectors in poor countries
9. Excessive demand of transport in the commercial cycle of paper

10. The hidden subsidies that promote the use of wood fiber rather than alternative fibers

Banana paper

Banana paper is used in two different senses: to refer to a paper made from the bark of the banana plant, mainly used for artistic purposes, or paper made from banana fiber, obtained from an industrialized process, from the stem and the non-utilizable fruits. This paper can be either handmade or made by industrialized hand-made machine.

The banana agro-industry processes each year 42 million tons of bananas with 20,000 square kilometres plant. This industry generates numerous wastes such as: the plastic that wrap the bananas, plastic cords to tie the wrapping, damaged bananas and the stem the stems are composed of 92% water, 3% resins and 2% glucose, the rest is vegetable fiber.

This particular composition makes it decompose with the solid component not getting destroyed. This causes a severe impact on the surrounding ecosystems, the detriment of rivers and underground waters, also the massive reproduction of flies and

nauseous smells. Agro-industrial fibers come from the waste of processing common agricultural products.

Packing of bananas: As a result of pulling apart the banana bunches from the main stem, we have the stems left over. These contain 5% of usable fiber to manufacture paper.

Steps in Production

Step 1 - Gathering the raw materials: It is composed of both 100% recycled post-consumer paper and agro-industrial waste. The post-consumer paper is obtained from offices, tetra pack containers, magazines and newspapers and sent to the mill. Then agricultural waste is collected from banana, coffee, lemon, mango, and tobacco plantations.

Step 2 - Preparing the agricultural fiber: The scraps from the trees and left over fruits are first ground down until they resemble sawdust, turning into pure agro-industrial fibers. The fiber is washed to remove natural resins that would cause unnecessary binding, possibly fouling the machines, and taking away from the integrity of the paper

Step 3 - Preparing the post-consumer fiber: Once the mill process has begun, the collected paper is thrown into the pulper along with water. The two are squashed and churned until the paper dissolves into the water. The process is called pulping and produces what is called the vehicle which means it is the base fiber in the paper for the agro-industrial fiber to be added.

Step 4 - Mixing the two to create the final product: Mixing the post-consumer paper with the agro industrial fibers begins with putting the two products through a sprinkling system and an endless band and that acts as a sieve and keeps the pulp in suspension. The speed of the band and pressure of the sprinkling system dictates the

thickness of the paper which can be 60, 90, 120, or 250 grams. The paper is then threaded into a set of drums and another endless band, made of absorbent material to further dry the paper. At the end of this process the paper will only retain 3% water and will receive natural colouring to provide attractive shades to the paper

Step 5 - The editorial and conversion process: One of the final and most complex processes of production, the editorial and conversion processes will determine the shape and aesthetic quality of the paper. It involves processes like rewinding and converting that prepares the paper to be cut into the shapes yielded in the shapes finished product. Skilled artisans cut and assemble decorative on on-lays and labels, laminating covers and assuring a top notch product.

Step 6 - The packing process: To ensure quality, strict packing standards are practiced, cutting down on waste by using only necessary and high quality packaging materials. Barcode identification is used to simplify warehouse accounting, leading to less headaches and more time to work with paper

Eco-paper Advantages

Due to the design, concept and the environmental philosophy surrounding the products, there are many strengths:

- It is an original product
- It is an attractive product: its beautiful design shows hours of dedication.
- It is an environmentally friendly product
- It is of very good quality and elegant
- It is a new concept
- It is a market not yet exploited to its full potential
- There is a growing market for green products

- There is an ever-growing need for environmental awareness

- Developed countries show more concern for the environment

- Little competition from similar products

Equipments required

Pulper

Chipper

Digester

Calendaring Machine

Refiner