

# Ultimate Earth, Inc.

We hold the strategic intention to ensure that execution matches the intended strategy. As needed, we build in tracking metrics to measure market success.

We work with management teams and boards to facilitate strategic planning. We use a common sense fast track approach to reach key issues quickly.

We can work with you on managing your Kenaf business and facilitating the acceleration of market entry, new product line development and/or company structure issues, to maximize marketing impact.



**Ultimate Earth's** aim is to work with individuals, local businesses and entities to build awareness and demand for environmentally preferable products and businesses in their community by developing functional “green” businesses within a community.



Our current **goal** is to ensure a stable supply of high quality raw materials to meet the global increasing demands for raw materials and products that are not harmful to our planet. In doing so, we will create jobs in **Kenaf** farming, processing and product manufacturing.

# Kenaf The Story

- ▶ Kenaf plant (*Hibiscus cannabinus* L.) is a warm season, short-day, annual herbaceous plant, originating from West Africa, which has been cultivated since around 4000 B.C.
- ▶ Kenaf plant belongs to the Malvaceae, a family notable for both its economic and horticultural importance. In different parts of the world, Kenaf plant has many other names such as mesta (India, Bengal), stockroot (south Africa), Java jute (Indonesia), and ambari (Taiwan), and others.
- ▶ It also has a high growth rate, rising to heights of 12-18 feet in about 4-5 months. Its yield of 6-10 tons (new varieties may reach 12 tons) of dry weight per acre per year are generally 3-5 times greater than the yield for Southern pine trees which can take from 7- 10 years to reach harvestable size.





# In other words...

Since it is harvestable annually, beginning with the first year, Kenaf can deliver from *twenty-one (21) to thirty-five (35)* times the dry weight, and consequently revenue, per comparable stand of Southern Pine trees.



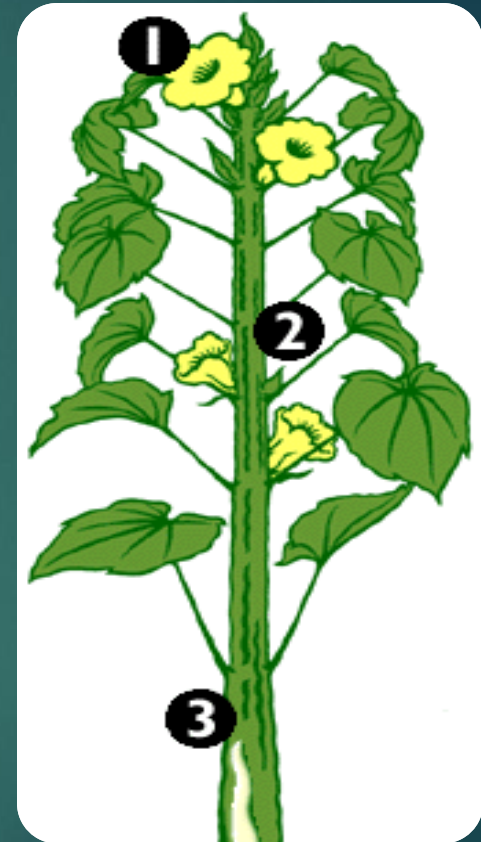
# More Kenaf Facts

- ▶ The **Kenaf** plant is one of the fastest growing plants in the world, much faster than local weeds, so it requires minimal soil preparation and is easy to plant and maintain.
- ▶ Because the soil does not have to be tilled, maximum microorganism density is maintained and chemical fertilizers are not needed. Kenaf plant is an extremely efficient plant that uses minimal resources, with exceptional output.



# Kenaf the Plant

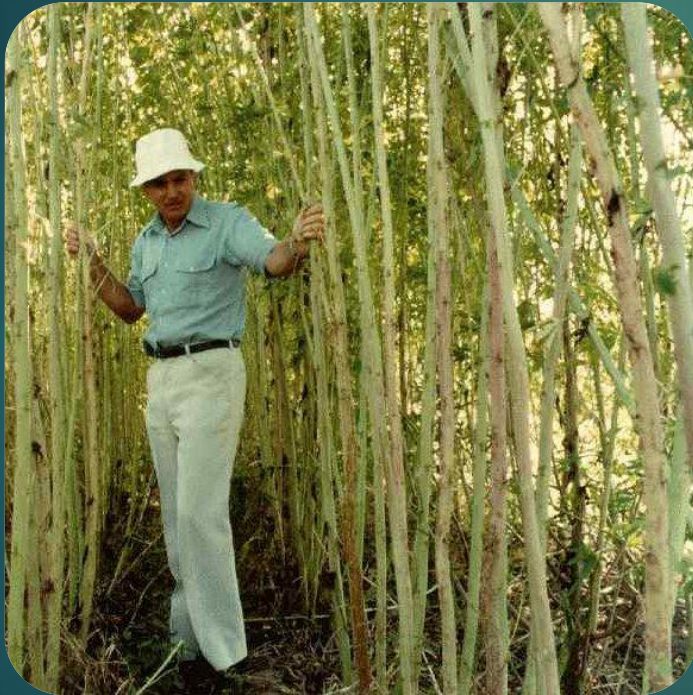
- ▶ **1** -The different varieties of kenaf have different flowering schedules. Some varieties flower earlier than others. Generally, the flowering will last 3 to 4 weeks or more per plant, with each individual flower blooming for only one day.
- ▶ **2** - The stalk of the kenaf plant consists of two distinct fiber types. The outer fiber is called "bast" and comprises roughly 40% of the stalk's dry weight. The refined bast fibers measure 2.6mm and are similar to the best softwood fibers used to make paper.
- ▶ **3** - The whiter, inner fiber is called "core", and comprises 60% of the stalk's dry weight. These refined fibers measure .6mm and are comparable to hardwood tree fibers, which are used in a widening range of paper products.





# Kenaf ROI Potential vs. Southern Pine

Kenaf: Higher per acre yields, and **at least** one harvest every year beginning the first year

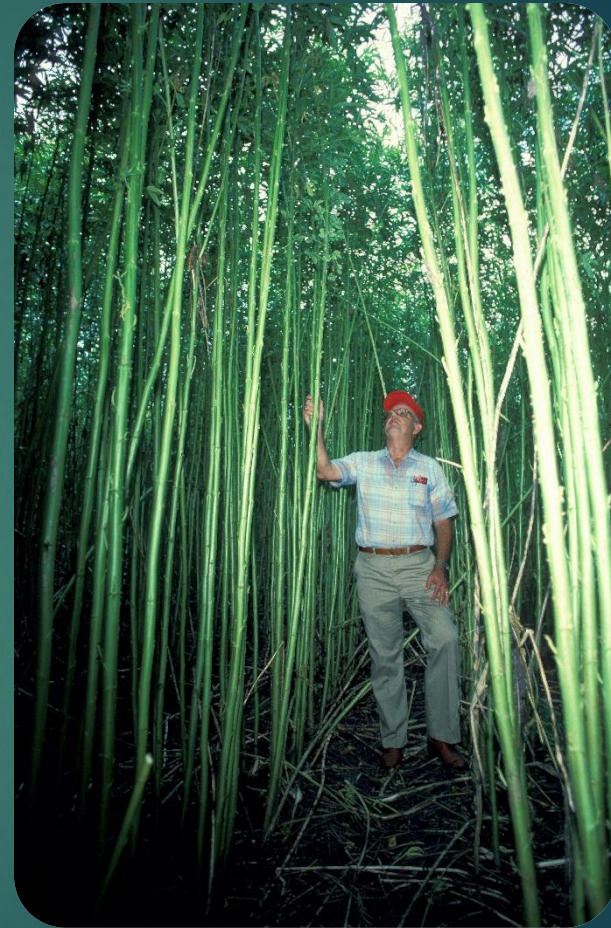


Southern Pine: Must invest, manage, and wait 6+ years **before** harvestable.



# Environmental Impact

- ▶ Growing kenaf will beneficially affect the climate and environment.
- ▶ Each acre of kenaf will draw 8-12 tons of CO<sub>2</sub> from the atmosphere.
- ▶ An acre of pine trees draws 1 ton of CO<sub>2</sub> from the atmosphere.
- ▶ 45% of kenaf's dry weight is carbon, 99% of which comes from atmospheric CO<sub>2</sub> removal.





# Meeting the Global Demand



***In the last two decades*** the developments in the field of natural fiber-polymeric composites have grown from laboratory scale fundamental research to industrial implementation. As industry attempts to lessen the dependence on petroleum based fuels and products, there is an increasing need to investigate more environmentally friendly, sustainable materials to replace existing materials.

Kenaf has emerged as one of the most appropriate and effective natural ways to allow business to continue to improve the quality of manufactured goods while meeting the challenges of environmental responsibility and sustainability, and continue to maintain profitability. As the kenaf supply network continues to form, demand for raw product has outstripped available supply.

# A Global Demand...

## Non-woven :

- ▶ New commercial opportunities for sustainable and renewable non-woven products can be made from natural fibers, wastes and recycled material, and Kenaf is no exception. The non-woven products can be made into:
- ▶ Absorption cloths for consumer products
- ▶ Boards for building construction
- ▶ Filtration
- ▶ Furniture upholstery
- ▶ Insulation for buildings and machines
- ▶ Oil absorption mats and rolls
- ▶ Packaging



# A Global Demand...

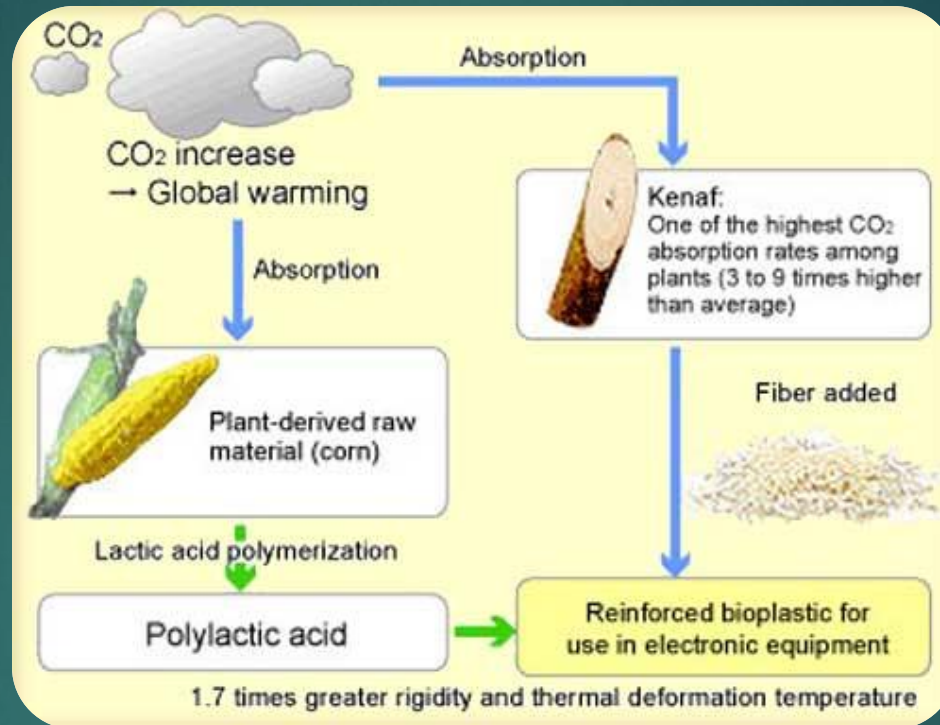
## Kenaf Achievements Worldwide

- NEC Corporation has developed a bio plastic with substantially higher heat resistance and strength (rigidity) than conventional bio plastics). This bio plastic that features a thermal deformation temperature of 1.8 times higher and strength of 1.7 times higher than conventional PLAs. This was achieved by reinforcing polylactic acid with Kenaf fiber. (source: [www.omnexus.com](http://www.omnexus.com))





# A Growing Demand



Bio plastics such as polylactic acid (PLA) made of corn, (considered a material to replace conventional petroleum-based plastics), has insufficient heat resistance and strength unless combined with Kenaf fiber as a reinforcing agent (source: NEC & UNITIKA, 20 March 2006).

# A Global Demand



Thirty percent of Lexus' HS interior and cargo areas employ plastics derived from plants (Kenaf fiber and castor oil seed) using nanotechnology (Source : [www.lexus.com](http://www.lexus.com)).

# A Global Demand



Door panels of the Toyota Land Cruiser used in Dakar Rally 2007 & 2009 were reinforced with Kenaf fiber. Harrier 3-D door trim and seat back board (Kenaf fiber + PP). (Source : Toyota Auto Body Co., Ltd.; Forum Proceedings at JEC Composites Show Asia, Singapore. Oct 2009)



# A Growing Demand



Chemicals and hydrocarbons are efficiently absorbed by products made of Kenaf core produced by Kengro Biosorb, Massachusetts, USA. (Source:

[www.kengro.com/chemicalsabsorbed](http://www.kengro.com/chemicalsabsorbed))

# More Kenaf Uses

Following are examples of products made from natural/kenaf plant fibers:

- ▶ Biofuel
- ▶ paper pulp
- ▶ automobile interior panels
- ▶ composite with PP in polymer industry
- ▶ fiberglass substitute
- ▶ textile composite
- ▶ animal bedding
- ▶ particle board
- ▶ industrial absorbent materials
- ▶ soil-less potting mixes
- ▶ animal forage
- ▶ packing material
- ▶ organic filler for plastics

Kenaf plants have different purposes and are already used in the following industries:

- ▶ Automotive industry – substitute & replacement of synthetic fibres & fillers
- ▶ Green Building – decking, roofing
- ▶ Furniture – many kinds of MDF types of board
- ▶ Paper – substitute for wood chips for pulping
- ▶ Petroleum – absorbents & mud additive
- ▶ Bio-Energy – as a source for cellulose-ethanol
- ▶ Environmental hazards – absorbents of many types of chemicals from soil & water

# Processing Kenaf



One of the first processing decisions is whether the whole stalk, either as an unmodified stalk or as a chopped stalk, will be separated into its **bast** and **fiber** components or left not separated for use as a combined fiber source.

*For example, kenaf used in some paper products or processes can be pulped using a mixed fiber supply (separated bast and core), while certain processing applications involve not separating the bast and core components.*



# Processing Kenaf

One method of fiber separation adapts unused cotton gin facilities, which are scattered throughout the southern region of the United States, to process the kenaf fibers.

The modified gin equipment and facilities provide excellent machinery for separating the kenaf core material from the bast fibers, similar to the method that cotton gins use to separate cotton seed from cotton fibers. Since the number of active cotton gin facilities is decreasing with the decline in cotton production, unused gin facilities are available for converting to kenaf separation facilities.



# Kenaf Business

Green fibres are being sought worldwide as the world moves away from synthetic fabrics and fibres made from petroleum products.

Kenaf plant is one of the premier green fibres, with a history of over 4000 years of use by mankind. That is why we say Kenaf plant is the “ old-new” crop.

We seek to put together an environmentally sound Kenaf fibre business as part of a growing trend toward environmental businesses.

**This is the ideal time to develop a Kenaf plant business for a variety of reasons:**

- The growing worldwide impetus toward green and environmentally sound projects and businesses.
- The high productivity of Kenaf plant can be useful as a raw material for industrial feedstock. For example, each dry stem yields of 25-30 tons per hectare which produces 7 to 17 tons of bast fibre.
- There is worldwide interest in Kenaf plant based products.
- Present needs for a fibre substitute in asbestos based fibreboard. Producers are presently using virgin wood pulp which is not environmentally sound.
- Kenaf fibre can be used in vehicle interiors, fibre for making paper, and pulp for use in fibreboard.

