

A project on ‘Utilization of banana stem for papermaking’ was sponsored by DST. India being the largest producer of banana in the world, about 10.0 million tonnes of oven dried material is generated as waste from banana plant. Only small quantity is suitably utilized, rest goes waste due to non-availability of suitable process for its utilization in value added products.

Salient findings of the project

Banana stem pulp has unique paper making properties. The fibers have big lumen diameter and thin cell wall thickness making the fibers easily collapsible. The pulp also has a blend of long fibers and short fibers in equal proportion. After fractionation, short fiber fraction of the pulp was found suitable for making glassine, greaseproof and barrier papers as it has very high air resistance even without any mechanical treatment. Long fiber fraction of the pulp has very high double fold values and physical strength properties like tear and tensile strength. It was found suitable for superior quality specialty papers viz. currency notes and tea bag papers etc. The Bleachability of banana stem pulp was comparable with agro residue pulps. As such banana stem can be blended with wheat straw or bagasse up to 10% prior to pulping, which may reduce the use of imported softwood/hardwood pulp, used as reinforcement fibres in agro residue based paper mills.

Suitable device for dewatering banana stem was fabricated (Fig. 1). Wet cleaning of dewatered banana stem was found effective to preserve the fibrous material for longer period of time (Fig. 2).



Fig. 1: Dewatering device for banana stem



Fig. 2: Wet cleaning of banana stem fibers

