

**Title: Preparation and characterization of handsheet using cellulose based Agri-weed: A sustainable utilization of *Urena Lobata* fiber**

**Author Names:** Sadikur Rahman , Kamrul Hasan , Md. Reazuddin Repon , Md. Mahbubul Haque

**Abstract:** The increasing depletion of reserves of [natural resources](#) has led to a growing worldwide focus on the exploitation of available waste in new domains. The presence of weedy plants is pervasive on a global scale and has [detrimental effects](#) on several aspects of the environment, agriculture, and people's health. Therefore, repurposing these Agri-weed plants for beneficial purposes would be a significant achievement. Furthermore, since raw materials constitute a substantial portion of manufacturing costs, using weeds as a feasible substitute for raw materials might potentially provide considerable advantages for manufacturers. In this study, an endeavor has been made to the utilization of agricultural waste “*Urena Lobata*”, for the purpose of paper production. In the interim, the utilization of *Urena Lobata* as an alternative and sustainable raw material for [pulp and paper industry](#) could potentially offer a beneficial approach to mitigation of deforestation. The effective production of handsheets with weights of 70 g/m<sup>2</sup> and 80 g/m<sup>2</sup> was achieved using *Urena Lobata* fiber, Bleached *Urena Lobata* Fiber, and hardwood [kraft pulp](#). [Mechanical characteristics](#) of handsheet's were comprehensively examined by the bursting index, [tensile strength](#), tear index, brightness percentage and [scanning electron microscope](#) for handsheet's morphology. The results show that the handsheets produced by *Urena Lobata* fiber exhibit a much lower brightness percentage, high [tensile strength](#) and bursting index. Alongside, handsheets by bleached *Urena Lobata* fiber indicate higher brightness percentage, satisfactory values for tensile strength, bursting index, and tear index. The prepared materials are suitable for a broad spectrum of prospective applications, encompassing newsprint, tissue paper, filtration paper as well as high-quality writing and printing paper.

**Key words:** Agri-weed *Urena lobata* Wood pulp Handsheet and paper

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