

1. INTRODUCTION

This prototype applies the principle of adsorption. Adsorption is the process in which the particles of a substance are deposited on the surface of the bulk of matter. Adsorption consists of two components adsorbate and adsorbent. Adsorbate is the particle of material being adsorbed (such as contaminants in wastewater). Adsorbent is the material being used as the adsorbing phase. Maize cob is a cheaper and eco-friendly solution to the problem of water pollution. In this work, corn-cobs were collected, ground into powder and turned into the charcoal by heating it in a tin can with small hole at high temperature. The obtained charcoal was treated with lemon juice (acidic medium) in order to cleanse the powder as well as to remove the impurities and thus increase the surface area of the charcoal powder. The treated powder was washed thoroughly, sun-dried and stored.

2. OBJECTIVES

- To prepare a prototype of wastewater treatment
- To remove the impurities present in the waste water

3. METHODOLOGY

3.1. Preparation cobs and activation of charcoal

Corn cob charcoal was obtained by charring the cobs at high temperature in absence of air in a tin can with tiny hole. Sieving was done to get granular particles after grinding the charcoal. The charcoal was washed with clean and added lemon juice to cleanse and remove the impurities. Lemon juice is used in place of phosphoric acid. The lemon juice treated charcoal was washed again with clean water and dried in the sun and kept inside mesh to prevent scattering.

3.2. Preparation of Layered Cob Column in Bamboo Shoot

- Pebble layer
- Activated Charcoal layer
- Powdered corn cobs
- Corn cobs-small pieces layer
- Cob longitudinal sections layer
- Whole corn cobs layer



Photographs of the bamboo shoot showing the placement of different ingredients

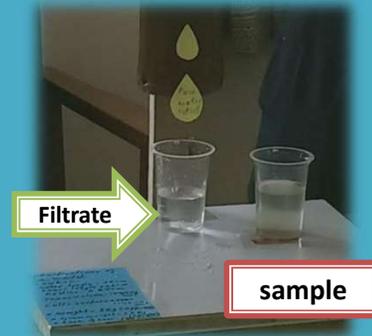
3.3 Evaluation of Water Sample

- Opacity
- pH value
- Odour
- Colour

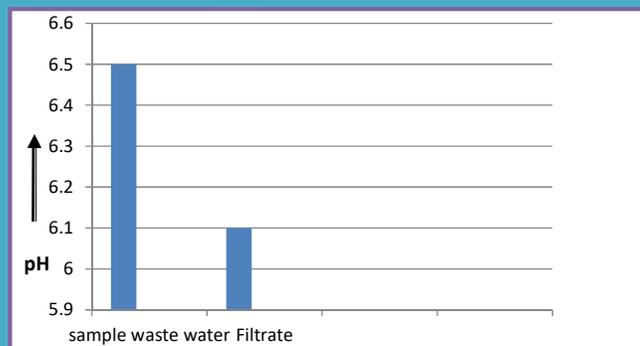
4. RESULTS & DISCUSSION



Microscopic view of oil drops in sample



sample



Properties	Sample waste water	Filtered water sample
Opacity	Turbid	Transparent
pH value	6.5	6.1
Odour	muddy smell	no odour
Colour	light brown	colourless

5. CONCLUSION

Corn cob is a cheaper and eco-friendly material to filter wastewater by adsorption. The cob filter is able to adsorb the contaminant particles of wastewater.

REFERENCES

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ACKNOWLEDGEMENTS

We thank Mr. Bidit Lamasal, and Prof. Rameshwar Adhikari (from Tribhuvan University and Nepal Polymer Institute) and Mr. Devendra Kumar Karna (from STAN) for their support in preparing the project and presentation.