

## A REVIEW : DOMESTIC WASTE WATER TREATMENT WITH CORN COBS

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**Abstract—** This project deals with the filtration of waste water using corncobs which are generally used as fuel which creates air pollution and global warming. Corn cobs are one of the most planty and important agricultural wastes in maize cultivation. Thus, the primary concern is the economical and efficient utilization of these corn cobs for a purpose. As they are porous, they can be used as water filtrates. In this project discusses about a low cost water filtration system which uses corncobs as filter materials in its various forms. In developing countries, good quality water is contaminated due to the disposal of untreated municipal and domestic waste water into natural water reservoirs and lakes. Most of the wastewater is not treated properly according to standards, and usually is disposed of and utilized for irrigation without appropriate treatment.

**Keywords—** Corn cobs, Domestic waste.

### I. INTRODUCTION

Domestic wastewater is generated from residential, commercial and institutional buildings. It include house waste like liquid from toilets, baths, kitchens, sinks, etc disposed with sewers waste also include storm water runoff as a rainwater travels over a roofs of a buildings it contains various contaminants. Domestic waste is a major source of pollution specially in urban areas of pollution specially in urban areas because there is gap between demand and supply of water sewage has present many suspended and dissolved organic solids. The organic substance like fats, protein, oil are mainly present in domestic waste water.

In waste water content high Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Total suspended solids (TSS), Total solids (TS), potassium are present in domestic waste water.[2] This treated waste water can be used for agricultural purpose or flushing system.

Corn cob is a part of maize plant which are the grains are attached also it has a shape of cylindrical woody part it has long rounded parts of maize cob. Corn cobs have high mechanical strength, rigidity, porosity and it also suitable absorbent. Corn cobs takes action on contamination like detergent, salts, suspended particles, colour, and grease and other minerals are absorbed on the surface of corn cobs. It will separate more than 50% of contaminants which include suspended particles. [2].

This method of separation is a cheap and ecofriendly way of purifying the domestic waste water will good for new market of corn cobs. For experiment purpose collection of corn cobs are take place and dried for a one month.

Corn cobs are in a rounded part or cylindrical part in a length of 7.99 cm. It diameter upto 2.5 cm. It specific surface area 1.03 cm<sup>2</sup>. Porosity average 69.8%. [3]

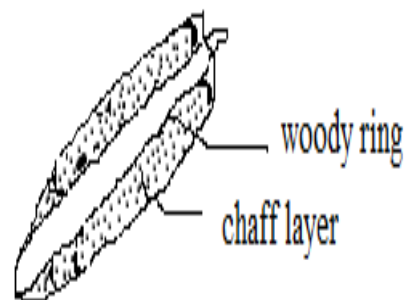


Fig 1-cob details

### II. LITERATURE REVIEW

In this review they have done a project on to filtration using corn cobs, Bone char and wood chippings. In this case they have studied gradual removal impurities using corn cobs in all samples they have recommended that all there sewers of active corn cobs that used for filtration purpose. They result obtained that each of the activated corn cobs has different rate of removal. [1]

In this review they have studied on geo purification system which is has successfully remove organic compounds, nitrogen, phosphorous, bacterial, viruses they have require more time period to conduct the test because retention period will give to percolate into the geo purifier. This process good to disposed of untreated waste water they use the silty and sandy soil in the to prepare a setup. They resulted the use of corn cobs with silts and sandy soil give 25% removal efficiency at bottom and top upto 50% removal efficiency. [2]

In this review they have collected waste water sample from sewage collection area at Zakariya University in Multan. They have analyzed for various waste water parameters like testing of BOD and COD with standard they have studied in different cities of waste collection to study the various waste water treatment gives the better efficiency in this reviews they conclude that to remove the BOD upto 75% and COD 75%. [3]

In this present work they were research on to remove heavy metals from waste water. Corn cobs are has good efficiency to adsorb the metal ion so they have done project in March-April. They collected the corn cobs and dried at 80°C temp to give better result. They uses the maize cobs powder, and small cobs in their experiment they have metal with atomic absorption spectrometer. Result shows that adsorption it means the adsorption is favorable. [4]

In this review they have done project of defluoridation of of ground water to remove excess fluoride into the water using corn cobs powder they are basically use the two methods to remove of excess fluoride into the water are, flocculation and adsorption. In this methods using the corn cobs use as a adsorbing agent. They have aimed to final the excess fluoride into water and compare with Indian standards. [5]

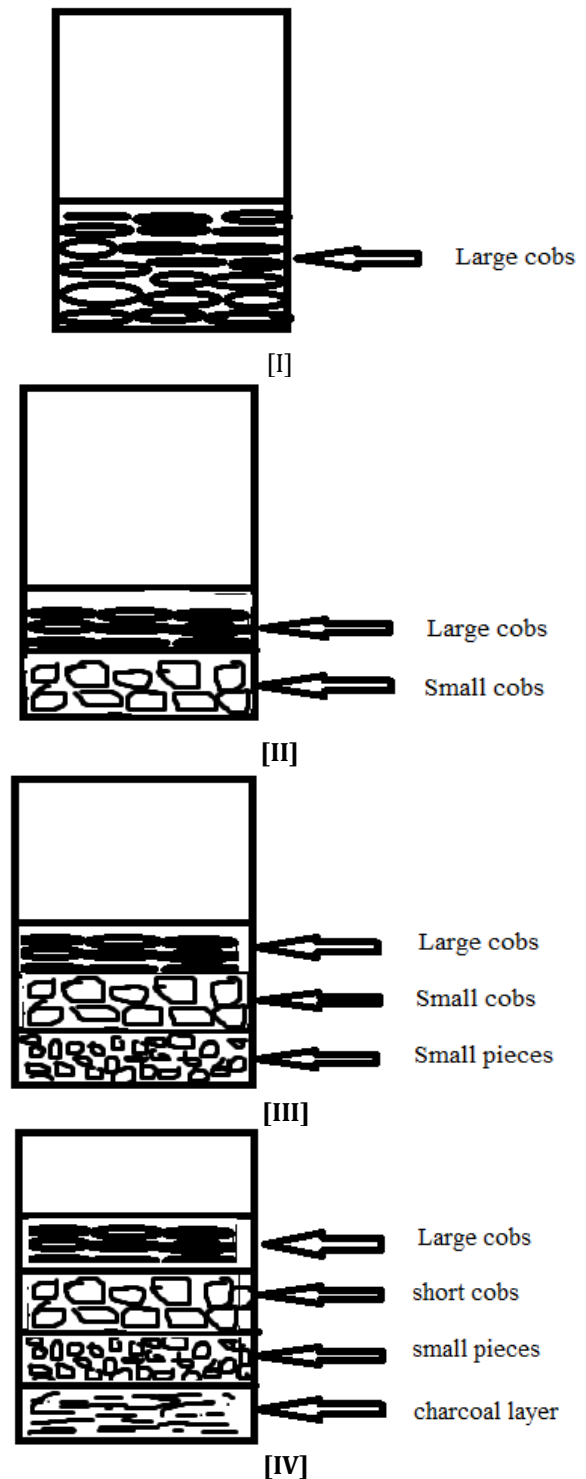
In this review they have written a ground of low cost bio adsorbent from waste water their objectives shows the to choose the cheapest method to purification of waste water this study based on adsorption of contaminants using corn cobs because corn is a cheapest as compare to other chemical adsorbent it is a major crop plant in all over world in day to day life. The result so obtained that the colored substance which appear in layer of corn cobs and suspended particle are absorbed by corn cob layer. [6]

### III. METHODS AND MATERIALS

The paper deals with using corn cobs in order to treat domestic waste water. The corn cobs are burnt in high temperature to use the cobs in a bottom layer of cobs as charcoal layer. Corn cobs are placed in vertically or horizontal manner for better filtration efficiency. The waste passing through top layer to bottom layer, then allowed to pass with sand bed to overcome better filtration result.

We are going to filtrate water using bottle in that placing corn cob and then filter the domestic waste, in second step take three layer as corn cobs, short cobs and small pieces then filter the waste. In fourth step use the charcoal layer in bottom face and then filter waste water, all samples are collected and then take test on it the expected result will be approximately safe and compare to other waste treatment

plant. We are going to filtrate waste water in a randomly one by one take the samples which allowed into the filtration setup then the water will be usable for agricultural process.



**Fig 2-Experimental setup**

### IV. CONCLUSION

From study of literature, it is observed that Activated carbons and corn cobs have a different rate of removal contaminants from the raw water samples and physical parameters like hardness, TDS, TSS, TS, Potassium are removal efficiency about 50-70%.

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